English
(Global Ver.)

NIPPON CHEMI-CON

2018

ALUMINUM ELECTROLYTIC CAPACITORS

CAT.NO.E1001S

Aluminum Electrolytic Capacitors

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Aluminum Electrolytic Capacitors

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AEC-Q200 : AEC-Q200 compliant. Please contact your local Chemi-Con office for more details, test data, information and also non indicated products.

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

■ RESIN-MOLDED SURFACE MOUNT TYPE

3D Click here!

Resin-Molded Type — Digitalization Super Low ESR

- PMA — 105℃5,000H

■ SURFACE MOUNT TYPE

3D Click here!

Surface Mount Type — Digitalization Super Low ESR

- PXA — 105℃3,000/15,000H
- AEC-Q200 PXN — New! — High moisture resistance
- PXT — High moisture resistance
- PXE — 105℃15,000H
- ★PXF — Low ESR
- ★PXG — 105℃16 to 25V
- PXS — Long Life
- ★PXK — Downsizing
- PXJ — Downsizing

125℃ High Temperature

- PXH — 125℃1,000H
- AEC-Q200 PXD — 125℃2,000H

■ RADIAL LEAD TYPE

3D Click here!

Radial Lead Type — Digitalization Super Low ESR

- ★PSF — Low ESR,Long Life
- PSJ — Low ESR
- PSC — 105℃15,000H
- PSE — Long Life
- ★PSG — 105℃16 to 35V
- ★PSK — Downsizing,Long Life

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

■ SURFACE MOUNT TYPE

3D Click here!

Surface Mount Type — Digitalization Super Low ESR Automotive Application

- AEC-Q200 HXB — 105℃5,000H
- AEC-Q200 HXD — 105℃5,000H

125℃/135℃ High Temperature

- AEC-Q200 HXA — 125℃4,000H
- AEC-Q200 HXC — 125℃4,000H
- AEC-Q200 HXE — New! — 135℃2,000/4,000H *

■ RADIAL LEAD TYPE

3D Click here!

Radial Lead Type — Digitalization Super Low ESR Automotive Application

- AEC-Q200 HSD — 105℃5,000H

125℃/135℃ High Temperature

- AEC-Q200 HSC — 125℃4,000H
- AEC-Q200 HSE — New! — 135℃4,000H

* Please contact us for detail.

ALUMINUM ELECTROLYTIC CAPACITORS

■ SURFACE MOUNT TYPE (CE32)

3D Click here!

105℃ High Voltage

- AEC-Q200 MKB — 400V

Surface Mount Standard

- ★MVA — 85℃
- AEC-Q200 ★MVE — 105℃

105℃ Low Impedance — Digitalization

- AEC-Q200 MVY — 105℃1,000 to 5,000H
- Low Z
- AEC-Q200 ★MZA — 105℃2,000/5,000H
- Low Z
- AEC-Q200 MZJ — 105℃2,000H
- Downsizing
- AEC-Q200 MZR — Upgrade! — 105℃2,000H

105℃ Low Impedance / Long Life

- MLA — 105℃3,000H
- Long Life
- MZE — 105℃7,000/8,000H
- Long Life
- MZF — 105℃10,000H
- MZK — 105℃5,000H Low Profile

125℃ High Temperature — Automotive Application

- AEC-Q200 MVH — 125℃
- Downsizing
- AEC-Q200 MHL — 125℃ 2,000/4,000H
- AEC-Q200 MHS — 125℃ 5,000H
- AEC-Q200 ★MHB — 125℃ Low ESR
- Low ESR
- AEC-Q200 MHJ — 125℃ Low ESR
- Low ESR
- AEC-Q200 MHK — 125℃ Low ESR

105℃ Long Life

- MVL — 105℃3,000/5,000H
- Long Life
- MLE — 105℃7,000/8,000H
- Long Life
- MLF — 105℃10,000H
- MVJ — 105℃2,000H
- MLK — 105℃5,000H Low Profile

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ALUMINUM ELECTROLYTIC CAPACITORS

■ RADIAL LEAD TYPE

3D Click here!

Low Profile (5 to 25mm height)
- SRM 85℃5mmL
- KRE 105℃5mmL
- SRG 85℃7 to 25mmL (Low Profile)
- KRG/KMA 105℃7 to 25mmL (Low Profile)

Radial Lead Standard
- ★SMQ 85℃
- ★KMQ 105℃
- SMG 85℃ (Downsizing)
- KMG 105℃ (Downsizing)

105℃ Low Impedance / High Ripple (6.3 to 100V) — Low Profile Power Supply Output Filter
- KZE Low Z → KZH Low Z → (Long Life) KZM Long Life, Low Z → (High Ripple) ★KZN Long Life, Low Z
- KY Long Life, Low Z → (Downsizing) ★KYA Long Life, Low Z → (Low Z) ★KYB Long Life, Low Z
- AEC-Q200 New! KYC Long Life, Low ESR
- AEC-Q200 LXV Low Z → AEC-Q200 LXY Long Life, Low Z → (Low Z) AEC-Q200 LXZ Long Life, Low Z → (Downsizing) AEC-Q200 ★LZA Long Life, Low Z

105℃ High Ripple / Long Life (160V and more) — Power Supply Input Filter
- PAG 105℃2,000H → (Downsizing) ★KHE 105℃2,000H
- ★KWA 105℃5,000H
- KXG 105℃8,000/10,000H → (Downsizing) AEC-Q200 ★KXJ 105℃8,000 to 12,000H → (Downsizing) KXL 105℃10,000/12,000H

125℃/135℃ High Temperature — Automotive Application
- AEC-Q200 GXF 125℃ High Ripple
- AEC-Q200 ★GPA 125℃ High Ripple → (High Ripple) AEC-Q200 GPD 135℃ High Ripple
- AEC-Q200 GXE 125℃ (Downsizing)
- AEC-Q200 GXL 125℃ Long Life
- High vibration resistance: AEC-Q200 GVD 135℃2,000 to 3,000H → (High Ripple) AEC-Q200 GVA 125℃5,000H

For Airbag
- AEC-Q200 LBK 105℃5,000H → (Downsizing) AEC-Q200 LBG 105℃5,000H

For Photo Flash
- PH

Downsizing (160V and more) — LED Lighting Compact Charger
- KXE 105℃10,000/12,000H → (Long Life) KXF 105℃15,000/20,000H

Long Life
- FL 105℃3,000H → (Long Life) LE 105℃10,000H

No Sparks against Over-Voltage
- KLJ 105℃2,000H

■ For Audio

Surface Mount Type
- MELODY MAK 105℃1,000H

- MELODY MAR 85℃2,000H

Radial Lead Type

- AWJ 85℃ High grade
- MELODY ARI 85℃5/7mmL
- MELODY AVH 85℃1,000H
- ASG 85℃ Downsizing

Snap-in Type
- MELODY AJ 85℃1,000H

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GROUP CHART

☆: Recommendation products

ALUMINUM ELECTROLYTIC CAPACITORS

■ SNAP-IN TYPE

Snap-in Standard
- ★SMQ 85℃2,000H
- ★KMQ 105℃2,000H
- SMH 85℃6.3 to 100V
- KMH 105℃6.3 to 100V

Long Life
- KHS 105℃3,000H
- Downsizing
- KMS 105℃3,000H (Upgrade!)
- Downsizing
- KMM 105℃3,000H
- SMM 85℃3,000H

105℃ Long Life
- LXQ 105℃5,000H → Long Life → LXM 105℃7,000H → Long Life → TXH 105℃10,000H
- LXG 105℃10 to 100V
- Downsizing → ★LXS 105℃5,000H (Upgrade!) → Downsizing → LHS 105℃5,000H

Inverter control application
- RLA 85℃3,000H → Long Life → RLB 85℃5,000H
- KLA 105℃3,000H

Super Downsizing
- SMR 85℃2,000H
- KMR 105℃2,000H → Downsizing → ★KMW 105℃2,000H → Downsizing → ★KMZ 105℃2,000H

High Ripple
- KMT 105℃3,000H

No Sparks against Over-Voltage
- CHA 105℃2,000H

Charge and Discharge application
- KMV 105℃3,000H

■ SCREW-MOUNT TYPE

Screw-Mount Standard
- KMQ 105℃2,000H
- Downsizing
- SME 85℃2,000H
- KMH 105℃2,000H

85℃ High Ripple (5,000/20,000H)
- RWF 85℃5,000H → High Ripple → RWH 85℃5,000H
- RWL 85℃20,000H

85℃ High Ripple (2,000H) — For Inverter
- ★RWE 350 to 550V → Downsizing → RWQ 350 to 550V → High Ripple → ★RWR High Ripple

105℃ High Ripple — For Inverter
- LXA 105℃2,000/5,000H → High Ripple → LXR 105℃5,000H

Oval shape (85℃)
- FTP 85℃5,000H

Compact Size
High ripple

High Voltage (500V and more)
- RHB 575 to 700V
- RHA 500 to 650V

Charge and Discharge application
- RWV 85℃5,000H

UNITED CHEMI-CON, INC. Products
- U37F 85℃5,000H → Long Life → U37L 85℃10,000H → Long Life → U37X 85℃15,000H
- Toroidal Shape: UTOR 105℃5,000H

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CAPACITOR SERIES TABLE, CONTENTS

■CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Series		Features	Standard Type	Miniaturization Low profile type	Low impedance	Long life	High temperature	AEC-Q200	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
Resin-Molded Surface Mount Type	PMA	Super low ESR, low profile		●	●				–	105℃ 5,000 hours	16 to 25
Surface Mount Type	PXN (New!)	Super low ESR, high ripple current, high moisture resistance		●	●	●		●	SMD	105℃ 5,000 hours	2.5 to 16
	PXT	Super low ESR, high ripple current, high moisture resistance		●	●	●			SMD	105℃ 15,000 hours	2.5 to 16
	PXJ	Super low ESR, high ripple current, downsized		●	●	●			SMD	105℃ 15,000 hours	2.5 to 25
	PXG	Super low ESR, high ripple current, downsized		●	●	●			SMD	105℃ 3,000 to 15,000 hours	16 to 25
	PXK	Super low ESR, high ripple current, downsized		●	●	●			SMD	105℃ 3,000 to 15,000 hours	2.5 to 16
	PXS	Super low ESR, high ripple current		●	●	●			SMD	105℃ 20,000 hours	4 to 16
	PXF	Super low ESR, high ripple current		●	●	●			SMD	105℃ 3,000 to 15,000 hours	2 to 10
	PXE	Super low ESR, high ripple current		●	●	●			SMD	105℃ 15,000 hours	2.5 to 16
	PXA	Super low ESR, high ripple current	●	●	●	●			SMD	105℃ 3,000 to 15,000 hours	2.5 to 25
	PXD	125℃, super low ESR, high ripple current		●	●		●	●	SMD	125℃ 2,000 hours	2.5 to 10
	PXH	125℃, super low ESR, high ripple current		●	●		●		SMD	125℃ 1,000 hours	2.5 to 20
Radial Lead Type	PSJ	Super low ESR, high ripple current, downsized		●	●				Radial	105℃ 2,000 to 5,000 hours	2.5
	PSG	Super low ESR, high ripple current		●	●	●			Radial	105℃ 15,000 to 20,000 hours	16 to 35
	PSK	Super low ESR, high ripple current		●	●	●			Radial	105℃ 20,000 hours	2.5 to 6.3
	PSF	Super low ESR, high ripple current		●	●	●			Radial	105℃ 20,000 hours	2 to 16
	PSE	Super low ESR, high ripple current		●	●	●			Radial	105℃ 20,000 hours	2.5 to 6.3
	PSC	Super low ESR, high ripple current		●	●	●			Radial	105℃ 15,000 hours	2.5 to 16
	PSA	Super low ESR, high ripple current (Ask Engineering Bulletin No.721 in detail)		●	●	●			Radial	105℃ 15,000 hours	2.5 to 16
	PS	Super low ESR, high ripple current (Ask Engineering Bulletin No.711 in detail)		●	●	●			Radial	105℃ 15,000 hours	2.5 to 35

■CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Series		Features	Standard Type	Miniaturization Low profile type	Low impedance	Long life	High temperature	AEC-Q200	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
Surface Mount Type	HXE (New!)	135℃, super low ESR, high ripple current (Ask Engineering Bulletin No.867 in detail)			●	●	●	●	SMD	135℃ 2,000 to 4,000 hours +R	16 to 35
	HXC	125℃, super low ESR, high ripple current	●		●	●	●	●	SMD	125℃ 4,000 hours +R	16 to 63
	HXD	Super low ESR, high ripple current	●		●			●	SMD	105℃ 5,000 hours +R	16 to 63
	HXA	125℃, super low ESR, high ripple current			●	●	●	●	SMD	125℃ 4,000 hours +R	16 to 80
	HXB	Super low ESR, high ripple current			●			●	SMD	105℃ 5,000 hours +R	16 to 80
Radial Lead Type	HSE (New!)	135℃, super low ESR, high ripple current			●	●	●	●	Radial	135℃ 4,000 hours +R	25 to 63
	HSC	125℃, super low ESR, high ripple current	●		●	●	●	●	Radial	125℃ 4,000 hours +R	25 to 63
	HSD	Super low ESR, high ripple current	●		●			●	Radial	105℃ 5,000 hours +R	25 to 63

■ALUMINUM ELECTROLYTIC CAPACITORS

Series			Features	Standard Type	Miniaturization Low profile type	Low impedance	Long life	High temperature	AEC-Q200	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
Surface Mount Type	General Purpose	MVA	85℃,standard	●	●					SMD	85℃ 2,000 hours	4 to 450
		MVE	105℃, standard	●	●				●	SMD	105℃ 1,000 to 2,000 hours	6.3 to 450
	Low Impedance	MZR (Upgrade!)	Super low ESR, downsized		●	●			●	SMD	105℃ 2,000 hours	6.3 to 50
		MZJ	Super low ESR		●	●			●	SMD	105℃ 2,000 hours	6.3 to 35
		MZA	Super low impedance, Case size 4 to 18mm		●	●	●		●	SMD	105℃ 2,000 to 5,000 hours	6.3 to 100
		MVY	Low impedance, standard, Case size 4 to 18mm	●		●			●	SMD	105℃ 1,000 to 5,000 hours	6.3 to 100
		MZF	10,000 hours, Long life, low impedance			●	●			SMD	105℃ 10,000 hours	6.3 to 50
		MZE	7,000/8,000 hours, Long life, low impedance			●	●			SMD	105℃ 7,000 to 8,000 hours	6.3 to 50
		MZK	5,000 hours, Long life, low impedance		●	●	●			SMD	105℃ 5,000 hours	6.3 to 35
		MLA	3,000 hours, Long life, low impedance			●	●			SMD	105℃ 3,000 hours	6.3 to 50
	Long Life	MLF	10,000 hours, Long life				●			SMD	105℃ 10,000 hours	6.3 to 50
		MLE	7,000/8,000 hours, Long life				●			SMD	105℃ 7,000 to 8,000 hours	6.3 to 50
		MLK	5,000 hours, Long life		●		●			SMD	105℃ 5,000 hours	6.3 to 35
		MVL	3,000/5,000 hours, Long life				●			SMD	105℃ 3,000 to 5,000 hours	6.3 to 50
		MVJ	2,000 hours, Long life				●			SMD	105℃ 2,000 hours	6.3 to 50
	Special Application	MHS	125℃, High temperature reflow soldering(3times)		●		●	●	●	SMD	125℃ 5,000 hours	16 to 100
		MVH	125℃, Case size 6.3 to 18mm	●			●	●	●	SMD	125℃ 1,000 to 5,000 hours	10 to 450
		MHL	125℃, Downsized				●	●	●	SMD	125℃ 2,000 to 4,000 hours	10 to 35
		MHB	125℃, Specified ESR after endurance Case size 8 to 18mm					●	●	SMD	125℃ 1,500 to 3,000 hours	10 to 100
		MHJ	125℃, Specified ESR after endurance					●	●	SMD	125℃ 2,000 to 3,000 hours	10 to 35
		MHK	125℃, Specified ESR after endurance					●	●	SMD	125℃ 2,000 hours	35
		MKB	Specified ESR at low temperature						●	SMD	105℃ 3,000 hours	400
		MV-BP	Bi-polar (Ask Engineering Bulletin No.624 in detail)		●					SMD	85℃ 2,000 hours	6.3 to 50
		MVK-BP	Bi-polar (Ask Engineering Bulletin No.624 in detail)		●					SMD	105℃ 1,000 hours	6.3 to 50

: Recommendation products

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Series			Features	Standard Type	Miniaturization Low profile type	Low impedance	Long life	High temperature	AEC-Q200	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
Radial Lead Type	Low Profile	SRM	85℃, 5mm height, standard	●	●					Radial	85℃ 1,000 hours	4 to 50
		SRE	85℃, 5mm height (Ask Engineering Bulletin No.524 in detail)		●					Radial	85℃ 1,000 hours	4 to 50
		KRE	105℃, 5mm height, standard	●	●					Radial	105℃ 1,000 hours	6.3 to 50
		SRA	85℃, 7mm height (Ask Engineering Bulletin No.524 in detail)		●					Radial	85℃ 1,000 hours	4 to 63
		KMA	105℃, 7mm height, standard	●	●					Radial	105℃ 1,000 hours	4 to 63
		SRG	φ4×7 to φ18×25mm, low profile		●					Radial	85℃ 1,000 to 2,000 hours	6.3 to 50
		KRG	φ4×7 to φ18×25mm, low profile		●					Radial	105℃ 1,000 hours	6.3 to 50
	General Purpose	SMQ	85℃, Downsized		●					Radial	85℃ 2,000 hours	6.3 to 450
		KMQ	105℃, Downsized		●					Radial	105℃ 1,000 to 2,000 hours +R	6.3 to 450
		SMG	85℃, standard	●	●					Radial	85℃ 2,000 hours	6.3 to 450
		KMG	105℃, standard	●	●					Radial	105℃ 1,000 to 2,000 hours +R	6.3 to 450
		SME-BP	Bi-polar, downsized (Ask Engineering Bulletin No.865 in detail)		●					Radial	85℃ 2,000 hours	6.3 to 100
		KME-BP	Bi-polar, downsized (Ask Engineering Bulletin No.866 in detail)		●					Radial	105℃ 1,000 hours	6.3 to 100
	Power Supply Output, Low Impedance	KZN	Long life, low impedance		●	●	●			Radial	105℃ 6,000 to 10,000 hours +R	6.3 to 100
		KZM	Long life, super low impedance		●	●	●			Radial	105℃ 6,000 to 10,000 hours +R	6.3 to 50
		KZH	Super low impedance, downsized		●	●	●			Radial	105℃ 5,000 to 6,000 hours +R	6.3 to 35
		KZE	Low impedance, downsized		●	●	●			Radial	105℃ 1,000 to 5,000 hours +R	6.3 to 100
		KYC New!	Low ESR, downsized		●	●	●		●	Radial	105℃ 3,000 to 5,000 hours +R	16 to 50
		KYB	Low impedance, downsized		●	●	●			Radial	105℃ 4,000 to 10,000 hours +R	6.3 to 100
		KYA	Low impedance, downsized		●	●	●			Radial	105℃ 4,000 to 10,000 hours +R	6.3 to 100
		KY	Low impedance, standard	●		●	●			Radial	105℃ 4,000 to 10,000 hours +R	6.3 to 100
		LZA	Low impedance, downsized		●	●	●		●	Radial	105℃ 4,000 to 7,000 hours +R	6.3 to 35
		LXZ	Low impedance, downsized	●	●	●	●		●	Radial	105℃ 2,000 to 8,000 hours +R	6.3 to 63
		LXY	Low impedance			●	●		●	Radial	105℃ 2,000 to 8,000 hours +R	10 to 63
		LXV	Low impedance			●	●		●	Radial	105℃ 2,000 to 5,000 hours +R	6.3 to 100
	Power Supply Input	KXL	Long life, downsized, for input filtering		●		●			Radial	105℃ 10,000 to 12,000 hours +R	400 to 450
		KXJ	Long life, downsized, for input filtering		●		●		●	Radial	105℃ 8,000 to 12,000 hours +R	160 to 500
		KXG	Long life, downsized, for input filtering	●	●		●			Radial	105℃ 8,000 to 10,000 hours +R	160 to 450
		KWA	Low profile, long life for input filtering		●		●			Radial	105℃ 5,000 hours +R	400 to 450
		KHE	Low profile, high ripple for input filtering		●					Radial	105℃ 2,000 hours +R	400 to 450
		PAG	Low profile, for input filtering		●					Radial	105℃ 2,000 hours +R	200 to 450
		KLJ	No sparks with DC overvoltage, downsized		●					Radial	105℃ 2,000 hours +R	200 to 450
		KXF	Long life, downsized, for input filtering		●		●			Radial	105℃ 15,000/20,000 hours +R	160 to 450
		KXE	Long life, downsized, for input filtering		●		●			Radial	105℃ 10,000 to 12,000 hours +R	160 to 400
	Power Supply Output	LE	Long life, downsized		●		●			Radial	105℃ 10,000 hours +R	10 to 100
		FL	Long life, downsized		●		●			Radial	105℃ 3,000 hours +R	6.3 to 50
	High Temperature	GPA	125/150℃, downsized (Guaranteed short time at 150℃)		●	●	●	●	●	Radial	125℃ 3,000 to 5,000 hours +R	25 to 100
		GVA	125℃, high vibration resistance		●	●	●	●	●	Radial	125℃ 5,000 hours+R	25 to 100
		GXF	125℃,high ripple		●	●		●	●	Radial	125℃ 3,000 hours +R	25 to 400
		GXE	125℃, low impedance, downsized		●	●	●	●	●	Radial	125℃ 2,000 to 5,000 hours +R	10 to 450
		GXL	125℃				●	●	●	Radial	125℃ 5,000 hours +R	10 to 50
		GPD	135/150℃, high ripple (Guaranteed short time at 150℃)		●	●	●	●	●	Radial	135℃ 2,000 to 3,000 hours +R	25 to 100
		GVD	135℃, high vibration resistance		●	●	●	●	●	Radial	135℃ 2,000 to 3,000 hours+R	25 to 100
	Special Application	LBK	For airbag, downsized		●	●	●		●	Radial	105℃ 5,000 hours +R	25 & 35
		LBG	For airbag		●	●	●		●	Radial	105℃ 5,000 hours +R	25 & 35
		PH	For photo flash		●					Radial	55℃ 5,000 times charging	300 to 330

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■ALUMINUM ELECTROLYTIC CAPACITORS

Series			Features	Standard Type	Miniaturization Low profile type	High ripple	Long life	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
Snap-in Type	General Purpose	SMR	85℃, high ripple, downsized		●	●		Pin	85℃ 2,000 hours +R	400 to 450
		SMQ	85℃, standard	●	●	●		Pin	85℃ 2,000 hours +R	160 to 450
		KMZ	105℃, super downsized		●			Pin	105℃ 2,000 hours +R	420 & 450
		KMW	105℃, super downsized		●			Pin	105℃ 2,000 hours +R	400 to 450
		KMR	105℃, downsized		●	●		Pin	105℃ 2,000 hours +R	160 to 450
		KMQ	105℃, standard	●		●		Pin	105℃ 2,000 hours +R	35, 50, 160 to 450
		RLB	85℃, 5,000 hours , high ripple		●	●		Pin	85℃ 5,000 hours +R	180 to 250
		RLA	85℃, high ripple		●	●		Pin	85℃ 3,000 hours +R	180 to 250
		KLA	105℃, high ripple		●	●		Pin	105℃ 3,000 hours +R	180 to 250
		SMM	85℃, 3,000 hours	●		●	●	Pin	85℃ 3,000 hours +R	160 to 450
		KMT	105℃, high ripple			●		Pin	105℃ 3,000 hours +R	420 & 450
		KHS	105℃, downsized		●	●	●	Pin	105℃ 3,000 hours +R	450 to 500
		KMS (Upgrade!)	105℃, downsized	●	●	●	●	Pin	105℃ 3,000 hours +R	160 to 600
		KMM	105℃, 3,000 hours	●		●	●	Pin	105℃ 3,000 hours +R	160 to 450
		SMH	85℃, standard (Ask Engineering Bulletin No.585 for 160 to 450V)					Pin	85℃ 2,000 hours +R	6.3 to 100
		KMH	105℃, standard (Ask Engineering Bulletin No.584 for 160 to 450V)					Pin	105℃ 2,000 hours +R	6.3 to 100
	Low Profile	KLM	15mm height, low profile (Ask Engineering Bulletin No.855 in detail)		●			Pin	105℃ 2,000 hours +R	160 to 400
	High Temperature	TXH	Long life				●	Pin	105℃ 10,000 hours +R	200 to 450
		LXM	Long life, downsized		●		●	Pin	105℃ 7,000 hours +R	160 to 450
		LHS	Long life, downsized		●	●	●	Pin	105℃ 5,000 hours +R	450 to 500
		LXS (Upgrade!)	Long life, downsized	●	●	●	●	Pin	105℃ 5,000 hours +R	160 to 600
		LXQ	Long life, downsized		●		●	Pin	105℃ 5,000 hours +R	160 to 450
		LXG	Long life				●	Pin	105℃ 5,000 hours +R	10 to 100
	Special Application	CHA	No sparks with DC overvoltage			●		Pin	105℃ 2,000 hours +R	200 to 450
		LXH	No sparks with DC overvoltage (Ask Engineering Bulletin No.856 in detail)		●	●	●	Pin	105℃ 3,000/5,000 hours +R	200 & 400
		KMV	For charge and discharge application					Pin	105℃ 3,000 hours +R	350 to 450
Screw-Mount Type	General Purpose	SME	85℃, standard (Ask Engineering Bulletin No.548 for 160 to 250V)	●				Screw	85℃ 2,000 hours +R	10 to 100
		KMQ	105℃, downsized		●			Screw	105℃ 2,000 hours +R	315 to 450
		KMH	105℃, standard	●				Screw	105℃ 2,000 hours +R	10 to 400
	For Inverter	RWH	High ripple, downsized		●	●	●	Screw	85℃ 5,000 hours +R	350 to 450
		RWG	Long life, high ripple, downsized (Ask Engineering Bulletin No.747 in detail)		●	●	●	Screw	85℃ 5,000 hours +R	350 to 450
		RWF	Long life, high ripple		●	●	●	Screw	85℃ 5,000 hours +R	350 to 450
		RWR	High ripple, downsized		●	●		Screw	85℃ 2,000 hours +R	350 to 450
		RWQ	High ripple, downsized	●	●	●		Screw	85℃ 2,000 hours +R	350 to 550
		RWE	High ripple	●	●	●		Screw	85℃ 2,000 hours +R	350 to 550
		RWY	Long life, high ripple, low cost (Ask Engineering Bulletin No.661 in detail)			●	●	Screw	85℃ 5,000 hours +R	350 to 450
		RWL	Long life, high ripple			●	●	Screw	85℃ 20,000 hours +R	350 to 450
		RHB	85℃, high voltage					Screw	85℃ 2,000 hours +R	575 to 700
		RHA	High voltage, high ripple		●	●	●	Screw	85℃ 5,000 hours +R	500 to 650
		FTP	Ovalized can shape, high ripple		●	●	●	Screw	85℃ 5,000 hours +R	63 to 450
		LXA	105℃, long life		●		●	Screw	105℃ 2,000/5,000 hours +R	10 to 525
		LXR	105℃, long life, high ripple			●	●	Screw	105℃ 5,000 hours +R	350 to 450
		RWV	For charge and discharge application					Screw	85℃ 5,000 hours +R	350 to 450

■ALUMINUM ELECTROLYTIC CAPACITORS (UNITED CHEMI-CON, INC. Products)

Series			Features	Standard Type	Miniaturization Low profile type	High ripple	Long life	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
Screw-Mount Type	For Inverter	U37F	Long life, high ripple		●	●	●	Screw	85℃ 5,000 hours +R	350 to 500
		U37L	Long life, high ripple			●	●	Screw	85℃ 10,000 hours +R	350 to 500
		U37X	Long life, high ripple			●	●	Screw	85℃ 15,000 hours +R	350 to 500
		UTOR	Toroidal shape, long life, high ripple			●	●	Screw	105℃ 5,000 hours +R	350 to 500

■ALUMINUM ELECTROLYTIC CAPACITORS FOR AUDIO

Series		Features	Standard Type	Miniaturization Low profile type	Terminal type	Endurance (+R=With ripple)	Rated voltage range (Vdc)
For Audio	MAR MELODIO	Surface mount type	●	●	SMD	85℃ 2,000 hours	6.3 to 50
	MAK MELODIO	105℃, Surface mount type			SMD	105℃ 1,000 hours	6.3 to 50
	ARI MELODIO	5mm / 7mm height	●	●	Radial	85℃ 1,000 hours	6.3 to 50
	ASG	Standard, downsized		●	Radial	85℃ 2,000 hours	6.3 to 100
	ASH	Standard (Ask Engineering Bulletin No.742 in detail)		●	Radial	85℃ 1,000 hours	6.3 to 100
	AVH MELODIO	Standard		●	Radial	85℃ 1,000 hours	6.3 to 100
	AWJ	High grade		●	Radial	85℃ 1,000 hours	16 to 100
	SNX-BP	General purpose speaker network		●	Radial	85℃ 1,000 hours	63
	AJ MELODIO	For input filtering, snap-in type		●	Pin	85℃ 1,000 hours	25 to 25

: Recommendation products

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

PART NUMBERING SYSTEM

Part numbering system

Our part numbering system is common to all of Nippon Chemi-Con's subsidiaries worldwide, and has been switching the conventional part numbering system. The part number uses 18-digit codes to express information of principal product specifications such as product category, series name, rated voltage, capacitance, case size and RoHS compliance.

●Categories

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Code	Details
A	Conductive Polymer Aluminum Solid Capacitors (Polar)
H	Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (Polar)
E	Aluminum Electrolytic Capacitors (Polar)
B	Aluminum Electrolytic Capacitors (Bi-polar)
K	Multilayer Ceramic Capacitors
F	Film Capacitors
D	Electric Double Layer Capacitors
T	Metal Oxide Varistors
L	Amorphous Choke Coils

●Example

Product type	Part number (Example)	Conventional part number (Ref.)
Surface mount type	EMVE160ADA100MD55G	MVE16VC10MD55E0
Radial lead type	EKMQ6R3ETC102MHB5D	TC04RKMQ6. 3VB1000MF50E0
Snap-in type	EKMQ201VSN471MP30S	KMQ200VSSN470M22BE0
Screw mount terminal type	ERWE551LGC821MCD0U	RWE550LGSN820MCC13EA

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ENVIRONMENTAL CONSIDERATION

Environment friendly capacitors

Nippon Chemi-Con has been taking proactive approaches toward developing and marketing less environmentally-load products in response to the international efforts for reducing hazardous substances and to the regulations. Nippon Chemi-Con had already abolished 4 additional substances, which will be prohibited from July 2019 in accordance with revised RoHS directive (2011/65/EU), by innovating alternative materials of the outer tube.

RoHS2 Compliant : Compliant to the 2011/65/EU and the revisions (2015/863/EU)
ELV Compliant : Compliant to the 2000/53/EC and the revisions (2016/774/EU)

Please contact us for more information about "Halogen-free specification".

◆Pb-free and Non-PVC Products

1. Lead wire (Plating)

Category			Plating material on lead wires
Conductive Polymer Aluminum Solid Capacitors	Resin-Molded Chip		Sn
	Chip		Sn-Bi
	Radial		Sn
Conductive Polymer Hybrid Aluminum Electrolytic Capacitors	Chip		Sn-Bi
	Radial		Sn
Aluminum Electrolytic Capacitors	Chip	case code : D55 to JA0	Sn-Bi
		case code : KE0 to MN0	Sn
	Radial	case dia : to φ8	Sn-Bi
		case dia : φ10 to	Sn
	Snap-in		Sn
	Screw-Mount		Originally lead-free

*Please consult with us when you need "Pb-free parts" other than the above mentioned terminal plating materials.
(Note) **Sn** : Tin, **Bi** : Bismuth

2. Sleeve

Category			Sleeve material
Conductive Polymer Aluminum Solid Capacitors	Resin-Molded Chip		Sleeveless (Resin-Molded case)
	Chip		Sleeveless (Coating case)
	Radial		Sleeveless (Coating case)
Conductive Polymer Hybrid Aluminum Electrolytic Capacitors	Chip		Sleeveless (Coating case)
	Radial		Sleeveless (Coating case)
Aluminum Electrolytic Capacitors	Chip		Sleeveless (Coating case)
	Radial	φ8×5L	Sleeveless (Coating case)
		except φ8×5L	PET
	Snap-in		PET
	Screw-Mount		PVC

*Please consult with us when you need "Non-PVC parts" other than the above mentioned outer sleeve materials.

The colors of a PET sleeve are "Black", "Brown", and "Dark blue".
Standard designs of "Pb-free" Snap-in type are not equipped with a plastic disc.
Please consult with us when you need nonflammable grade for outer sleeve material.

Identification of friendly parts is given by a supplement code (18th digit) of the part number.
For details, please refer to "Product code guide" for each type.

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NIPPON CHEMI-CON

PACKAGING

TAPING SPECIFICATIONS (Applicable standard JIS C 0806-3)

SURFACE MOUNT TYPE (TAPING)

◆CARRIER TAPE [mm]

Fig.1

Fig.2

Fig.3

Fig.4

Fig.5

[mm]

Series	Items	W	A	B	F	P	t	S	Fig.
		±0.3	±0.2	±0.2	±0.1	±0.1	±0.2	±0.1	
Alchip™ MVA/MVE MZR/MZJ MZA/MVY MZF/MZE MZK/MLA MLF/MLE MLK/MVL MVJ/MHS MVH/MHL MHB/MHJ MHK/MKB NPCAP™ PMA PXN/PXT PXJ/PXG PXK/PXS PXF/PXE PXA/PXD PXH Hybrid HXE/HXC HXD/HXA HXB	D55	12.0	4.7	4.7	5.5	8.0	5.7	–	1
	D60,D61	12.0	4.7	4.7	5.5	8.0	6.3	–	1
	D73	12.0	4.6	4.6	5.5	8.0	7.5	–	1
	E40	12.0	5.7	5.7	5.5	12.0	4.4	–	2
	E46	12.0	5.7	5.7	5.5	12.0	4.9	–	2
	E55	12.0	5.7	5.7	5.5	12.0	5.7	–	2
	E60,E61	12.0	5.7	5.7	5.5	12.0	6.3	–	2
	E73	16.0	5.7	5.7	7.5	12.0	7.5	–	2
	F30	16.0	7.5	8.0	7.5	12.0	3.7	–	3
	F45,F46	16.0	7.0	7.0	7.5	12.0	4.9	–	2
	F55	16.0	7.0	7.0	7.5	12.0	5.7	–	2
	F60,F61	16.0	7.0	7.0	7.5	12.0	6.3	–	2
	F73	16.0	7.0	7.0	7.5	12.0	7.5	–	2
	F80	16.0	7.0	7.0	7.5	12.0	8.2	–	2
	F90	16.0	7.0	7.0	7.5	12.0	9.2	–	2
	FA0	16.0	7.0	7.0	7.5	12.0	10.3	–	2
	H63	16.0	8.7	8.7	7.5	12.0	6.8	–	2
	H70	24.0	8.7	8.7	11.5	12.0	7.3	–	2
	H80	24.0	8.7	8.7	11.5	12.0	8.3	–	2
	HA0	24.0	8.7	8.7	11.5	16.0	11.0	–	4
	HC0	24.0	8.7	8.7	11.5	16.0	12.7	–	4
	J80	24.0	10.7	10.7	11.5	16.0	8.3	–	4
	JA0	24.0	10.7	10.7	11.5	16.0	11.0	–	4
	JC0	24.0	10.7	10.7	11.5	16.0	12.8	–	4
	KE0	32.0	13.4	13.4	14.2	24.0	14.0	28.4	5
	KG5	32.0	13.4	13.4	14.2	24.0	16.5	28.4	5
	KN0	32.0	13.4	13.4	14.2	24.0	22.1	28.4	5
	LH0	44.0	17.5	17.5	20.2	28.0	16.8	40.4	5
	LN0	44.0	17.5	17.5	20.2	28.0	22.1	40.4	5
	MH0	44.0	19.5	19.5	20.2	32.0	17.1	40.4	5
	MN0	44.0	19.5	19.5	20.2	32.0	22.1	40.4	5

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PACKAGING

◆REEL DIMENSIONS [mm]

◆POLARITY

Alchip™ -MVA/MVE/MZR
MZJ/MZA/MVY
MZF/MZE/MZK
MLA/MLF/MLE
MLK/MVL/MVJ
MHS/MVH/MHL
MHB/MHJ/MHK
MKB

NP CAP™ -PMA
PXN/PXT/PXJ/PXG
PXK/PXS/PXF/PXE
PXA/PXD/PXH

Hybrid -HXE/HXC/HXD
HXA/HXB

◆QUANTITY PER REEL/BOX

Series	Size code	Quantity (pcs/reel)	Quantity (pcs/box)	W_1 (mm)
Alchip™ MVA/MVE MZR/MZJ MZA/MVY MZF/MZE MZK/MLA MLF/MLE MLK/MVL MVJ/MHS MVH/MHL MHB/MHJ MHK/MKB Hybrid HXE/HXC HXD/HXA HXB	D55,D60,D61	2,000	10,000	14
	D73	1,500	7,500	14
	E55,E60,E61	1,000	5,000	14
	E73	1,000	5,000	18
	F55,F60,F61,F73	1,000	5,000	18
	F80	900	4,500	18
	F90	800	4,000	18
	H63	1,000	5,000	18
	HA0	500	1,500	26
	JA0	500	1,500	26
	KE0	250*1	750*1	34
	KG5	200*1	600*1	34
	KN0	150	450	34
	LH0	175*1	350*1	46
	LN0	125*1	250*1	46
	MH0	150*1	300*1	46
	MN0	100*1	200*1	46
NPCAP™ PMA PXN/PXT PXJ/PXG PXK/PXS PXF/PXE PXA/PXD PXH	E40,E46,E60,E61	1,000	10,000	14
	F35,F45,F46,F60,F61	1,000	7,000	18
	F80	900	6,300	18
	FA0	750	5,250	18
	H70	1,000	6,000	26
	H80	900	5,400	26
	HA0	500	3,000	26
	HC0	400	1,200	26
	J80	500	3,000	26
	JA0	500	3,000	26
	JC0	400	1,200	26

*1 : Changed the packing quantity. (Size Code : KE0 to MN0)

SURFACE MOUNT TYPE (TRAY)

◆DIMENSIONS [mm]

●TRAY CODE : TR

Size code	H [mm]	W1 [mm]	H1 [mm]	Quantity [pcs/tray]	Quantity [pcs/box]
KE0 & KG5	21.0	284	18.5	120	600
LH0 & LN0	28.0	284	24.0	80	400
MH0 & MN0	28.0	284	24.0	60	300

VIBRATION RESISTANT STRUCTURE (Terminal code : G)

◆DIMENSIONS [mm]

●Terminal code : G
●Size code : HA0 to JA0

: Dummy terminals

●Size code : KE0 to MN0

: Dummy terminals

◆RECOMMENDED SOLDER LAND

Solder land on PC board

The vibration resistant model supports the vibration condition of 30G.
Since vibration is affected by solder thickness and other characteristics and conditions, please contact us for details.

Size code	Dimensions of products (mm)									Solder land (mm)		
	D	L	A	B	C	W	P	(a)	(b)	a	b	c
HA0	8.0	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1	(0.5)	(1.8)	3.1	4.2	3.5
JA0	10.0	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5	(0.5)	(2.1)	4.5	4.4	3.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2	(1.3)	(3.0)	3.4	6.3	9.3
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2	(1.3)	(3.0)	3.4	6.3	9.3
KN0	12.5	21.5	13.0	13.0	13.7	1.0 to 1.3	4.2	(1.3)	(3.0)	3.4	6.3	9.3
LH0	16.0	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5	(2.0)	(3.0)	4.7	7.8	9.6
LN0	16.0	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5	(2.0)	(3.0)	4.7	7.8	9.6
MH0	18.0	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5	(2.0)	(4.0)	4.7	8.8	9.6
MN0	18.0	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5	(2.0)	(4.0)	4.7	8.8	9.6

( ); Ref.

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NIPPON CHEMI-CON

PACKAGING

RADIAL LEAD TYPE TAPING SPECIFICATIONS (Applicable standard JIS C 0806-2)

Conductive Polymer Aluminum Solid Capacitors
Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

◆DIMENSION [mm]

Fig.1

Taping Code : TX

ϕD=ϕ5

Fig.2

Taping Code : TD

ϕD=ϕ6.3 to 10

Code	Taping Code	Case size ϕD	Case size A	ϕd	P	P_0	P_1	P_2	F	W	W_0	W_1	W_2	H	H_1	ϕD_0	△h_1	△h_2	t	T	Fig
tol.	—	—	—	±0.05	±1.0	±0.2	±0.7	±1.0	$^{+0.8}_{-0.2}$	±0.5	min.	±0.5	max.	±0.75	max.	±0.2	±0.2	±0.2	±0.3	±1.0	
Nominal	TX	5	8	0.45*1	12.7	12.7	5.35	6.35	2.0*2	18	10	9.0	2.5	18.5	28.25	4.0	0	0	0.7	0	1
	TD	6.3	5	0.45	12.7	12.7	5.1	6.35	2.5	18	10	9.0	2.5	18.5	28.25	4.0	0	0	0.7	0	2
		6.3	8	0.6	12.7	12.7	5.1	6.35	2.5	18	10	9.0	2.5	18.5	28.75*1	4.0	0	0	0.7	0	2
		6.3	10.5	0.5	12.7	12.7	5.1	6.35	2.5	18	10	9.0	2.5	18.5	30.05	4.0	0	0	0.7	0	2
		8	6	0.6	12.7	12.7	4.6	6.35	3.5	18	10	9.0	2.5	20.0	28.25*1	4.0	0	0	0.7	0	2
		8	8	0.6	12.7	12.7	4.6	6.35	3.5	18	10	9.0	2.5	20.0	29.75	4.0	0	0	0.7	0	2
		8	11.5	0.6*1	12.7	12.7	4.6	6.35	3.5	18	10	9.0	2.5	20.0	33.75	4.0	0	0	0.7	0	2
		8	16	0.6	12.7	12.7	4.6	6.35	3.5	18	10	9.0	2.5	20.0	38.25	4.0	0	0	0.7	0	2
		8	20	0.6	12.7	12.7	4.6	6.35	3.5	18	10	9.0	2.5	20.0	42.25	4.0	0	0	0.7	0	2
		10	10.5	0.6	12.7	12.7	3.85	6.35	5.0	18	10	9.0	2.5	18.5	30.75	4.0	0	0	0.7	0	2
		10	11.5	0.6*1	12.7	12.7	3.85	6.35	5.0	18	10	9.0	2.5	18.5	32.25	4.0	0	0	0.7	0	2
		10	12.5	0.6	12.7	12.7	3.85	6.35	5.0	18	10	9.0	2.5	18.5	33.25	4.0	0	0	0.7	0	2
		10	16	0.6	12.7	12.7	3.85	6.35	5.0	18	10	9.0	2.5	18.5	36.75	4.0	0	0	0.7	0	2
		10	20	0.6	12.7	12.7	3.85	6.35	5.0	18	10	9.0	2.5	18.5	40.75	4.0	0	0	0.7	0	2

* 1 : Each product family has different value. Please refer to each page.
* 2 : For case size ϕ5×8 (Taping code : TX), H dimension shall be $2.0^{+0.5/-0.2}$.

TAPING CODE

Example

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A PSG 160 E TD 561 M HB5 S

- Supplement code
- Size code
- Capacitance tolerance code
- Nominal capacitance code
- Lead forming code (Radial lead type)

Type	Contents	Code 9th	Code 10th
Taping (Radial lead)	Straight(ϕ5)	T	X
	Straight(except ϕ5)	T	D

- Terminal code
- Rated voltage code
- Series code
- Category

QUANTITY PER AMMO PACK

Ammo pack box

Typical example

Case size ϕD×L(mm)		A (mm)	B (mm)	C (mm)	Quantity (pcs.)
ϕ5	L=8mm	240	51	336	2,000
ϕ6.3	L=5 & 8mm	285	51	336	2,000
	L=10.5mm	284	51	336	
ϕ8	L=6 to 11.5mm	240	51	336	1,000
	L=16mm	240	56	336	
	L=20mm	240	62	336	
ϕ10	L=10.5 to 12.5mm	190	51	337	500
	L=16mm	308	56	337	800
	L=20mm	308	62	337	

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RADIAL LEAD TYPE TAPING SPECIFICATIONS (Applicable standard JIS C 0806-2)

Aluminum Electrolytic Capacitors

◆DIMENSION [mm]

Fig.1
Taping Code : TA, TC
ϕD=ϕ4 to 8

Fig.2
Taping Code : TD
ϕD=ϕ5
ϕD×L=ϕ4×7

Fig.3
Taping Code : TD
ϕD=ϕ6.3 to 12.5

Fig.4
Taping Code : TE
ϕD=ϕ12.5

Code	Taping Code	Case size ϕD	Case size A	ϕd	P	P_0	P_1	P_2	F	W	W_0	W_1	W_2	H	H_0	H_1	Fig
tol.		—	—	±0.05	±1.0	±0.2	±0.7	±1.0	$^{+0.8}_{-0.2}$	±0.5	min.	±0.5	max.	±0.75	±0.5		
Nominal	TA	4	5	0.45	12.7	12.7	5.1	6.35	2.5	18.0	6.0	9.0	1.5	17.5	16.0	H1=H+A Check insertion machine specs.	1
	TC						3.85		5								
	TD		7	0.45	12.7	12.7	5.1	6.35	2.5	18.0	6.0	9.0	1.5	18.5*3	16.0		2
	TC						3.85		5					17.5			1
	TD		11.5	0.45	12.7	12.7	5.1	6.35	2.5	18.0	10.0	9.0	1.5	17.5	16.0		1
	TC						3.85		5								
	TD	5	5 to 7	0.45	12.7	12.7	5.1	6.35	2.5	18.0	6.0	9.0	1.5	18.5	—		2
	TC						3.85		5					17.5	16.0		1
	TD		11 to 15	0.5*2	12.7	12.7	5.1	6.35	2.5	18.0	10.0	9.0	1.5	18.5	—		2
	TC						3.85		5						16.0		1
	TD	6.3	5 to 7	0.45	12.7	12.7	5.1	6.35	2.5	18.0	6.0	9.0	1.5	18.5	—		3
	TC						3.85		5					17.5	16.0		1
	TD		11 to 15	0.5	12.7	12.7	5.1	6.35	2.5	18.0	10.0	9.0	1.5	18.5	—		3
	TC						3.85		5						16.0		1
	TD	8	5	0.45	12.7	12.7	5.1	6.35	2.5	18.0	6.0	9.0	1.5	18.5	—		3
	TC						3.85		5					17.5	16.0		1
	TD		11.5 to 20	0.6	12.7	12.7	4.6	6.35	3.5	18.0	10.0	9.0	1.5	20.0	—		3
	TC						3.85		5						16.0		1
tol.		±0.5	max.	±0.05	±1.0	±0.3	±0.7	±1.3	$^{+0.8}_{-0.2}$	±0.5	min.	±0.5	max.	$^{+2.0}_{-0}$	—		
Nominal	TD	10	21	0.6*2	12.7	12.7	3.85	6.35	5	18.0	12.5	9.0	1.5	18.0	—		3
	TD	12.5	26	0.6*2	15	15	5.0	7.5	5	18.0	12.5	9.0	1.5	18.0	—		3
	TE			0.6*2	25.4	12.7	3.85	6.35	5	18.0	12.5	9.0	1.5	18.0	—		4

* 1 : Each product family has different value. Please refer to each page.
* 2 : For case size ϕ4×7 (Taping code : TD), H dimension shall be $18.5^{-0.5/+0.75}$.
* 3 : The taping for size ϕ16 and ϕ18 is available as a custom design.
* 4 : For the Taping code TD products with case diameter ≧ 12.5mm, you can also select an option (Taping code: TS) that enhanced taping packaging.

TAPING CODE

Example

1 E 2 3 4 KMQ 5 6 7 500 8 E 9 10 TC 11 12 13 100 14 M 15 16 17 E11 18 D

- Supplement code
- Size code
- Capacitance tolerance code
- Nominal capacitance code
- Lead forming code (Radial lead type)

Type	Contents	Code 9th	Code 10th
Taping (Radial lead)	Straight	T	D
	Grodual forming		
	Straight(Skip a hole)	T	E
	Forming(F=2.5mm)	T	A
	Forming(F=5.0mm)	T	C

- Terminal code
- Rated voltage code
- Series code
- Category

QUANTITY PER AMMO PACK

Ammo pack box

Typical example

Case size ϕD×L(mm)		A (mm)	B (mm)	Quantity (pcs.)
ϕ4	L=5 & 7mm	183	42	2,000
	L=11.5mm	183	51	
ϕ5	L=5 & 7mm	232	42	2,000
	L=11 to 15mm	232	51	
	L=17mm	235	60	
ϕ6.3	L=5 & 7mm	282	42	2,000
	L=11 to 15mm	284	51	
	L=17mm	284	55	
ϕ8	L=5mm	232	42	1,000
	L=11.5 to 15mm	232	51	
	L=17 & 20mm	235	60	
ϕ10	L≦16mm	308	56	800
	L=17 to 20mm	308	62	
	L=21 to 25mm	308	67	
	L=26 to 30mm	308	71	500
ϕ12.5	L≦16mm	308	62	500
	L=17 to 25mm	308	67	

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NIPPON CHEMI-CON

PACKAGING

RADIAL LEAD TYPE (CUT/FORMED LEAD)

The following lead configurations are available. When ordering, please indicate the type of lead configurations by using the appropriate supplement code, such as C3, FC, MC or RC in the product part number.

Terminal type	Size	Terminal type	Size
●Lead code : FC (Forming Cut type)	φD=5 to 8	●Lead code : C3 (Cutting type) Dimension (C) • φD= 4 to 8: C3: 3.5±0.5(Second standard C5: 5.0±0.5) • φD=10 to 18: C3: 3.5±0.5(Second standard C5: $5.0^{+1.0}_{-0}$)	φD=4 to 18
●Lead code : FM (Snap-in type)	φD=5 to 8	●Lead code : MC (Snap-in type)	φD=10 to 18
●Lead code : BC (Horizontal type)*3 Dimension (P) • φ10, φ12.5 : P=5.0±0.5 • φ14.5, φ16, φ18 : P=7.5±0.5	φD=10 to 18	●Lead code : BD (Horizontal type)*3 Dimension (P) • φ10, φ12.5 : P=5.0±0.5 • φ14.5, φ16, φ18 : P=7.5±0.5	φD=10 to 18
●Lead code : IJ (Forming Cut type) Dimension	φD=10 to 18		

φD	A・B	φd	P
10 to 12.5	3.2±0.5	0.6	5.0±0.5
14.5 to 18	3.2±0.5	0.8	7.5±0.5

*1 Please consult with us about other terminal forming.
*2 Please refer to dimensions of each series for gas escape end seal style.
*3 Conventionally, lead forming code is used in common by (BC) for two type of the lead bent directions. We added lead forming code (BD) newly and clarified the lead bent directions. Please place an order after the choice for an appropriate lead forming code depending on condition of use.

◆DIMENSION (P) [mm]

Lead forming / Size		Cutting type		Snap-in type	
		FC	C3(C5)	FM	MC
φ4		—	1.5	—	—
φ5		5.0	2.0	5.0	—
φ6.3		5.0	2.5	5.0	—
φ8	5L	5.0	2.5	5.0	—
	11.5L min.	5.0	3.5	5.0	—
φ10		—	5.0	—	5.0
φ12.5		—	5.0	—	5.0
φ14.5		—	7.5	—	7.5
φ16		—	7.5	—	7.5
φ18		—	7.5	—	7.5

*4 Please refer to dimensions of each series for lead-wire diameter (φd).

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PACKAGING

MINIMUM ORDER QUANTITY

Please order by units of minimum order quantity.

◆SURFACE MOUNT

●Vertical

Series	Size code	Quantity (pcs)	
		Taping	Tray (pcs/box)
Alchip™ MVA/MVE/MZR MZJ/MZA/MVY MZF/MZE/MZK MLA/MLF/MLE MLK/MVL/MVJ MHS/MVH/MHL MHB/MHJ/MHK MKB	D55, D60, D61	2,000	—
	D73	1,500	—
	E40, E46, E55, E60, E61, E73	1,000	—
	F30, F45, F46, F55, F60, F61, F73	1,000	—
	F80, H80	900	—
	F90	800	—
	FA0	750	—
	H63, H70	1,000	—
	HA0	500	—
NPCAP™ PMA PXN/PXT/PXJ PXG/PXK/PXS PXF/PXE/PXA PXD/PXH	HC0	400	—
	J80, JA0	500	—
	JC0	400	—
	KE0	250*1	600
	KG5	200*1	600
	KN0	150	—
Hybrid HXE/HXC/HXD HXA/HXB	LH0	175*1	400
	LN0	125*1	400
	MH0	150*1	300
	MN0	100*1	300

*1 : Changed the packing quantity. (Size Code : KE0 to MN0)

◆RADIAL

Size		Bagged *2		Taping (pcs)	Tray (pcs)
		Long lead type (pcs/box)	Formed lead type *3 (pcs/box)		Cut type (C3, C5)
φ4	5L	2,000	3,000	2,000	—
	7L	2,000	2,000	2,000	—
φ5	5L	2,000	3,000	2,000	—
	7L	1,000	2,000	2,000	—
	8L	1,000	1,000	2,000	—
	11 to 11.5L	3,000	1,000	2,000	—
φ6.3	5L	2,000 (1,000) *4	2,000 (1,000) *4	2,000	—
	7 to 8L	1,000	1,000	2,000	—
	10.5 to 15L	2,000 (1,000) *4	1,000	2,000	—
φ8	20L max.	1,000	1,000	1,000	—
φ10	9L	2,000	3,000	800	1,500
	11.5L	500	500	500	—
	12.5L	2,000 (500) *4	3,000 (500) *4	800 (500) *4	1,500 (—) *4
	16 to 20L	2,000	2,000	800	1,500
	25L	1,000	2,000	800	1,500
	30 to 45L	1,000	1,000	—	750
	50L	500	1,000	—	—
φ12.5	16L max.	1,000	2,000	500	1,500
	20 to 25L	1,000	1,000	500	1,500
	30L	1,000	1,000	—	750
	35 to 45L	500	500	—	750
	50L	500	500	—	—
φ14.5	20L max.	500	1,000	250	500
	25L	500	500	250	500
	30 to 45L	500	500	—	500
	50L	250	250	—	—
φ16	15L	500	1,000	250	500
	20 to 25L	500	500	250	500
	30 to 35.5L	500	500	—	500
	40L	250	500	—	500
	45L	250	500	—	—
	50L	250	250	—	—
φ18	25L max.	500	500	250	500
	30 to 50L	250	250	—	500

*2 The GVA, GPD and GVD series are not compatible with bagging. They are packaged in a box.
*3 Standard bagged quantity. Please contact us for details.
*4 Minimum order quantity for conductive polymer aluminum solid capacitors and conductive polymer hybrid aluminum electrolytic capacitors.

Series	Case size		Boxed (pcs)
	φD	L	Long lead type
Aluminum Electrolytic Capacitors GVA／GPD／GVD	12.5	20 to 31.5	500
		35 to 40	
	14.5	20 to 31.5	300
		35 to 40	
	16	20 to 31.5	250
		35 to 40	
	18	20 to 31.5	200
		35 to 40	

◆SNAP-IN

200 pieces

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NIPPON CHEMI-CON **PACKAGING**

AVAILABLE TERMINALS FOR SNAP-IN AND SCREW-MOUNT TYPE

- We can make the following terminal type on custom design.
- There is a restriction for specification of product, please consult with us when the product is required.
- Please consult with us about terminal type other than those following listed.

Snap-in type

[mm]

Terminal, Dummy code : VNN

D=ϕ22 toϕ35

Terminal, Dummy code : LIN

D=ϕ30 toϕ40

Terminal, Dummy code : VEN

D=ϕ30, ϕ35

Terminal, Dummy code : VRD

D=ϕ35, ϕ40

B : Positive, A, C : Dummy

Terminal, Dummy code : VND

D=ϕ35, ϕ40

B : Positive, A, C : Dummy

Terminal, Dummy code : LIS

D=ϕ50

A : Dummy

Horizontal mounting Terminal, Dummy code : LCN

D=ϕ20×30 to 50L, ϕ22×30 to 50L

*1 Negative terminal : Mesh marking
*2 Use the dummy terminals for mechanical support only.
The dummy terminals must not be connected to any circuit trace on PC board, be sure to electrically isolate from the negative and the positive terminals.

Screw-mount type

[mm]

Stud mounting type

D=ϕ63.5 to ϕ89

Mounting screw and case are same potential as the cathode terminal. Please careful of isolation between chassis.

Please consult with us about other size.

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STANDARDIZATION

The series in the following table has been deleted from this catalog.
Since they will be discontinued, please use the recommended replacement series when designing new products.

◆CHIP TYPE REPLACEMENTS

Discontinued series	Characteristics	Replacements
MV	85℃ standard	MVA
MVK	105℃ standard	MVE

◆LEAD TYPE REPLACEMENTS

Discontinued series	Characteristics	Replacements
KMY	Low impedance, Long life	KY
KLG	No sparks with DC overvoltage	KLJ
SMH	85℃ large radial	SMQ/PAG
KMH	105℃ large radial	KMQ/PAG
LLA	85℃ low leakage current	*

◆SNAP-IN REPLACEMENTS

Discontinued series	Characteristics	Replacements
SLM	85℃ L=15mm	*

* Please contact us.

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Return Group Chart

WORLD-WIDE MANUFACTURING LOCATIONS

●AVAILABLE ITEMS BY MANUFACTURING LOCATIONS (Production in Japan is excluded)

Classification		Series	SAMYOUNG ELECTRONICS (Korea)	QINGDAO SAMYOUNG ELECTRONICS (China)	CHEMI-CON WUXI (China)	P.T.INDONESIA CHEMI-CON (Indonesia)	TAIWAN CHEMI-CON (Taiwan)	CHEMI-CON MALAYSIA (Malaysia)	UNITED CHEMI-CON (USA)
Conductive Polymer Electrolyte Type	SMD	PXE					●		
		PXF					●		
		PXG					●		
	Radial lead	PSC					●		
		PSE					●		
		PSF					●		
		PSG					●		
SMD		MVA/MVE	●	●	●	●			
		MVY	●		●	●			
		MZA				●			
		MVH			●	●			
Radial lead Low profile		KMA				●			
		SRG				●			
Radial lead General purpose		SMG/KMG	●	●	●	●	●		
		SMQ/KMQ			●	●	●		
Radial lead Low impedance, High ripple current		LXZ			●	●			
		LXV			●	●	●		
		KY	●	●	●	●	●		
		KYA	●	●	●	●	●		
		KYB			●	●	●		
		KZE	●	●	●	●	●		
		KZH			●	●	●		
		KZM			●	●	●		
		KZN			●	●	●		
		KXG			●	●	●		
		KXJ			●	●	●		
		PAG			●	●	●		
Radial lead High temperature Long life		GPA			●	●			
		GXE			●	●			
		LE				●			
Snap-in		SMQ/KMQ						●	
		KMR	●	●				●	
		SMM/KMM						●	
		KMS						●	
		LXS/LXQ	●	●				●	
		LXM						●	
		CHA						●	
		KMV						●	
Screw-mount terminal		KMH			●				●
		RWE			●				●
		RWF			●				●
		RWL			●				●
		LXA			●				●
		U37F/U37L/U37X							●
		UTOR							●

*1 Please be sure to contact us before ordering as our product range is continuously improved and the product you require may have been superseded.
*2 Refer to our web site for factory address.

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Return Group Chart

Conductive Polymer Aluminum Solid Capacitors

PRECAUTIONS AND GUIDELINES (Conductive Polymer)

The NPCAP™ is a Conductive Polymer Solid Aluminum Capacitor that uses highly conductive polymer electrolytic material. Please read the following in order to get the most out of your NPCAP™ capacitor.
For Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, see Precautions and Guidelines (Conductive Polymer Hybrid).
For Aluminum Electrolytic Capacitors, see Precautions and Guidelines (Aluminum Electrolytic Capacitors).

1 Designing Device Circuits

1) Types of Circuits Where NPCAP™ Capacitors are Not to be Used

The leakage current in conductive polymer solid aluminum capacitors (hereafter called capacitors) may vary depending on thermal stresses during soldering. Avoid the use of capacitors in the following types of circuits:

① High-impedance circuits that are to sustain voltages.
② Coupling circuits
③ Time constant circuits
Because the capacitance varies depending on the environment the capacitors are used in, there is a possibility that the capacitor can affect a time constant circuit where sensitivity to variation in capacitance is required.
④ Other circuits that are significantly affected by leakage current

2) Circuit Design

Verify the following before designing the circuit:

① The electrical characteristics of the capacitor will vary depending on differences in temperature and frequency. You had better design after verifying the scope of these factors.
② When connecting two or more capacitors in parallel, ensure that the design takes current balancing into account.
③ When two or more capacitors are connected in series, variability in applied voltage may cause over-voltage conditions. Contact Nippon Chemi-Con before using capacitors connected in series.
④ Avoid putting heat generating parts either around the capacitor or on the reverse of the circuit board.

3) Use in High Reliable and Critical Applications

Consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.

4) Polarity

The NPCAP™ is a polarized solid aluminum electrolytic capacitor. Do not apply either reverse voltages or AC voltages to the polarized capacitors, using reversed polarity may cause a short circuit. Refer to the catalog, product specifications or capacitor body to confirm the polarity prior to use.

5) Operating Voltage

Do not apply a greater than rated voltage, if a voltage greater than the rated voltage is suddenly applied the leakage current increases causing shorting. The peak voltage of superimposed AC voltages (ripple voltages) on DC voltages must not exceed the full rated voltage. Capacitors do not require voltage derating within the category temperature. While there are specifications for surge voltages exceeding the rated voltage, usage conditions apply, and continued operation for extended periods of time under such conditions cannot be guaranteed.

6) Ripple Current

Do not apply currents in excess of the rated ripple current. The superimposition of a large ripple current increases the rate of heating within the capacitor. When excessive ripple current is imposed the internal temperature increases which can shorten life and shorting may occur.

7) Operating Temperature

Use within the stated category temperature range, if used outside this range, characteristics can deteriorate potentially leading to problems.

8) Charging and Discharging the Capacitor

Do not use the NPCAP™ capacitor in circuits where the capacitor is repetitively charged and discharged rapidly. Repetitively charging and discharging the capacitor rapidly may reduce the capacitance or may cause damage due to internal heating. Use of a protective circuit to ensure reliability is recommended when rush currents exceed 20A.

9) Leakage current

The leakage current may increase when the capacitors are subjected to the conditions below. After that, however, the leakage current will gradually decrease by self-healing action of the dielectric oxide layer when the capacitors are applied with a voltage less than the rated voltage within the Category Temperature range. As the voltage is closer to the rated voltage and the temperature is closer to the upper limit of Category Temperature range, the leakage current decreases faster.
The leakage current will increase by the following factors,

① Soldering
② Testing of high temperature exposure with no voltage applied, high temperature/humidity storage, temperature cycles, etc.

10) Failures and Service Life

Based on the JIS C 5003 Standard, the failure rate for NPCAP™ capacitors (with a 60% reliability standard) is as follows:

0.5%/1,000 hours (applied the rate voltage at the upper limit of Category Temperature range)

(1) Failure Modes

① The principal failure mode is wear-out failure, that is, capacitance decreases and ESR increases, and eventually the capacitors become open circuit failure. In addition, short circuit failure may happen with over-voltage and excessive current applied to the capacitors.
② The failure rate would be reduced by reducing ambient temperatures, ripple current and applying voltage.
③ If the short-circuited capacitor, which may be caused by over-voltages higher than the rated voltage or other conditions, has a large amount of current passed through, the aluminum can of the capacitor / resin molded case bulges and might be expelled with odor gas emitted.
④ The product contains flammable materials. If the short causes a spark it may ignite.
Please be careful when installing the product, its position and the layout design.

- Increase safety by using in conjunction with a protective circuit or protective equipment.
- Install measures such as redundant circuits so that the failure of a part of the equipment will not cause unstable operation.

(2) Service Life

① SMD (Resin-Molded chip type) , the service life depends on the thermal degradation of conductive polymer or sealing resin.
② SMD (Chip type) and radial lead type use rubber as the sealing material, so the service life depends on the thermal integrity of this rubber.
When long life performance is required in actual use, please

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use the capacitor at lower temperature within the category temperature.

11) Capacitor Insulation

Insulation of the capacitor's case is not guaranteed. Ensure electrical insulation between the capacitor case, negative electrode, positive electrode and circuit pattern.

12) Capacitor Usage Environment

Do not use/expose capacitors to the following conditions.

① Oil, water, salty water, take care to avoid storage in damp locations.
② Direct sunlight
③ Toxic gases such as hydrogen, sulfide, sulfurous acids, nitrous acids, chlorine and chlorine compounds, bromine and bromine compounds, ammonia, etc.
④ Ozone, ultraviolet rays and radiation.
⑤ Severe vibration or mechanical shock conditions beyond the limits advised in the product specification section of the catalog. The standard vibration condition is applicable to JIS C 5101-4.

13) Capacitor mounting

① For the surface mount capacitor, design the solder land on the PC board in accordance with the catalog or the product specification.
② For radial capacitors, design the terminal holes on the PC board to fit the terminal dimension of the capacitor.
③ Do not pass any circuit traces beneath the seal side of a capacitor. The trace must pass 1 to 2mm to the side of the capacitor.
④ Do not pass any via holes underneath a capacitor on double-sided PC board
⑤ In designing double-sided PC boards,do not locate any copper trace under the seal side of a capacitor

2 Installing Capacitors

1) Installing

① Do not reuse capacitors already assembled in equipment that have been exposed to power.
② The capacitor may have self charge. If this happens, discharge the capacitor through a resistor of approximately 1kΩ before use.
③ If capacitors are stored at a temperature of 35℃ or more and more than 75%RH, the leakage current may increase. This may also occur if the capacitors are stored for a longer period than the period which is specified in the catalog or the product specification. In this case, they can be reformed by the voltage treatment through a resistor of approximately 1kΩ.
④ Verify the rated capacitance and voltage of the capacitors when installing.
⑤ Verify the polarity of the capacitors.
⑥ Do not use the capacitors if they have been dropped on the floor.
⑦ Do not deform the case of the capacitors.
⑧ Verify that the lead spacing of the capacitor fits the hole spacing in the PC board before installing the capacitors.
⑨ Do not apply any mechanical force in excess of the limits prescribed in the catalog or the product specification of the capacitors. Avoid subjecting the capacitor to strong forces, as this may break the electrode terminals, bend or deform the capacitor, or damage the packaging, and may also cause short/open circuits, increased leakage current, or damage the appearance. Also, note the capacitors may be damaged by mechanical shocks caused by cut the lead wire, the vacuum/insertion head, component checker or centering operation of an automatic mounting or insertion machine.

2) Heat Resistance during Soldering

Ensure that the soldering conditions meet the specifications recommended by Nippon Chemi-Con. Note that the leakage current may increase or capacitance may decrease due to thermal stresses that occur during soldering, etc. Furthermore, the leakage current which rose gradually decreases, when voltage is applied at below the category upper limit temperature. Additionally the self repairing action is faster when voltage near the rated voltage rather than at a higher voltage is applied at below the category's upper temperature limit.

① Verify the following before using a soldering iron:
- That the soldering conditions (temperature and time) are within the ranges specified in the catalog or product specifications.
- That the tip of the soldering iron does not come into contact with the capacitor itself.

② Verify the following when flow soldering:
- Do not dip the body of a capacitor into the solder bath only dip the terminals in. The soldering must be done on the reverse side of PC board.
- Soldering conditions (preheat, solder temperature and dipping time) should be within the limits prescribed in the catalog or the product specifications.
- Do not apply flux to any part of capacitors other than their terminals.
- Make sure the capacitors do not come into contact with any other components while soldering.
- Flow soldering must not be used for the SMD(Chip type) capacitors.

③ Verify the following when reflow soldering:
- Soldering conditions (preheat, solder temperature and soldering time) should be within the limits prescribed in the catalogs or the product specification.
- The heat level should be appropriate. (Note that the thermal stress on the capacitor varies depending on the type and position of the heater in the reflow oven, and the color and material of the capacitor.)
- Please consult us about Vapor phase soldering (VPS).
- Except for the surface mount type, reflow soldering must not be used for the capacitors.

④ Do not reuse a capacitor that has already been soldered to PC board and then removed. When using a new capacitor in the same location, remove the flux, etc. first, and then use a soldering iron to solder on the new capacitor in accordance with the specifications.

3) Handling After Soldering

Do not apply any mechanical stress to the capacitor after soldering onto the PC board.

① Do not lean or twist the body of the capacitor after soldering the capacitors onto the PC board.
② Do not use the capacitors for lifting or carrying the assembly board.
③ Do not hit or poke the capacitor after soldering to PC board. When stacking the assembly board, be careful that other components do not touch the aluminum electrolytic capacitors.
④ Do not drop the assembled board.

4) Cleaning PC boards

Do not wash PMA series by using any cleaning agents.

① Do not wash capacitors by using the following cleaning agents. Solvent resistant capacitors are only suitable for washing using the cleaning conditions prescribed in the catalog or the product specification. In particular, ultrasonic cleaning will accelerate damage to capacitors.
- Halogenated solvents; cause capacitors to fail due to corrosion.
- Alkali system solvents; corrode (dissolve) an aluminum case.
- Petroleum system solvents; cause the rubber seal material

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to deteriorate.
- Xylene; causes the rubber seal material to deteriorate.
- Acetone; erases the markings.

CFC alternatives or the other cleaners above; please consult with us.

② Verify the following points when washing capacitors.
- Monitor conductivity, pH, specific gravity and the water content of cleaning agents. Contamination adversely affects these characteristics.
- Be sure not to expose the capacitors under solvent rich conditions or keep capacitors inside a closed container. In addition, please dry the solvent sufficiently on the PC board and the capacitor with an air knife (temperature should be less than the maximum rated category temperature of the capacitor) for 10 minutes. Aluminum electrolytic capacitors can be characteristically and catastrophically damaged by halogen ions, particularly by chlorine ions, though the degree of the damage mainly depends upon the characteristics of the electrolyte and rubber seal material. When halogen ions come into contact with the capacitors, the foil corrodes when a voltage is applied. This corrosion causes an extremely high leakage current which results venting and an open circuit.

If the new types of cleaning agents mentioned below are used, the following are recommended as cleaning conditions for some of new cleaning agents.

-Higher alcohol cleaning agents

Pine Alpha ST-100S (Arakawa Chemical)
Clean Through 750 H, 750K, 750L, and 710M (Kao)
Technocare FRW-14 through 17 (Momentive performance material)
Cleaning Conditions:
Using these cleaning agents, capacitors are capable of withstanding immersion or ultrasonic cleaning for 10 minutes at a maximum liquid temperature of 60℃. Find optimum condition for washing, rinsing, and drying. Be sure not to rub the marking off the capacitor which can be caused by contact with other components or the PC board. Note that shower cleaning adversely affects the markings on the sleeve.

-Non-Halogenated Solvent Cleaning

AK225AES (Asahi Glass)
Cleaning Conditions:
Immersion, ultrasonic or vapor cleaning for 5 minutes. However, from an environmental point of view, these types of solvent will be banned in near future. We would recommend not using them if at all possible.

-Isopropyl Alcohol (IPA)

IPA (Isopropyl Alcohol) is one of the most acceptable cleaning agents; it is necessary to maintain a flux content in the cleaning liquid at a maximum limit of 2 Wt.%.

5) Precautions for using adhesives and coating materials

① Do not use any adhesive and coating materials containing halogenated solvent.

② Verify the following before using adhesive and coating material.
- Remove flux and dust left over between the rubber seal and the PC board before applying adhesive or coating materials to the capacitor.
- Dry and remove any residual cleaning agents before applying adhesive and coating materials to the capacitors. Do not cover over the whole surface of the rubber seal with the adhesive or coating materials.
- For permissible heat conditions for curing adhesives or coating materials, please consult with us.
- Covering over the whole surface of the capacitor rubber seal with resin may result in a hazardous condition because the inside pressure cannot be completely released. Also, a large amount of halogen ions in resins will cause the capacitors to fail because the halogen ions penetrate into the rubber seal and the inside of the capacitor.
- Some coating materials, it cannot be implemented to the capacitor.
  Please note change on the surface might be caused according to the kind of solvents used for mounting adhesives and coating agents.

6) Fumigation

In exporting or importing electronic devices, they may be exposed to fumigation with halide such as methyl bromide. Where aluminum electrolytic capacitors are exposed to halide such as methyl bromide, the capacitors will be damaged with the corrosion reaction with halogen ions in the same way as cleaning agents. For the export and import, Nippon Chemi-Con considers using some packaging method and so forth so that fumigation is not required. For customers to export or import electronic devices, semi-assembly products or capacitor components, confirm if they will be exposed to fumigation and also consider final condition of packaging. (Note that either cardboard or vinyl package has a risk of fumigation gas penetration.)

3 The Operation of Devices

1) Do not touch the capacitor terminals directly.

2) Do not short-circuit the terminal of a capacitor by letting it come into contact with any conductive object. Also, do not spill electric-conductive liquid such as acid or alkaline solution over the capacitor.

3) Do not use capacitors in circumstances where they would be subject to exposure to the following materials
- Oil, water, salty water or damp location.
- Direct sunlight.
- Ozone, ultraviolet rays or radiation.
- Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine or its compounds, and ammonium.
- Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalog or product specification. The standard vibration condition is applicable to JIS C 5101-4.

4 Maintenance Inspection

1) Make periodic inspections of capacitors that have been used in industrial applications. Before inspection, turn off the power supply and carefully discharge the electricity in the capacitors. Verify the polarity when measuring the capacitors with a volt-ohm meter. Do not apply any mechanical stress to the terminals of the capacitors.

2) The following items should be checked during the periodic inspections.
① Significant damage in appearance
② Electrical characteristics: Leakage current, capacitance, tan δ and other characteristics prescribed in the catalog or product specification.

We recommend replacing the capacitors if the parts are out of specification.

5 Contingencies

1) If gas has vented from the capacitor during use, there is a short circuit and burning, or the capacitor discharges an odor or smoke, turn off the main power supply to the equipment or unplug the power cord.

2) If there is a problem with the capacitor or a fire breaks out, the capacitor may produce a burning gas or reactive gas from the outer resin, etc. If this happens, keep your hands and face away from the gas. If vented gas is inhaled or comes into contact with your eyes, flush your eyes immediately with water and/or gargle. If vented gas comes into contact with the skin, wash the affected area thoroughly with soap and water.

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PRECAUTIONS AND GUIDELINES (Conductive Polymer)

6 Storage

We recommend the following conditions for storage.

1) Store capacitors in a cool, dry place. Store at a temperature between 5 and 35℃, with a humidity of 75% or less.
(table-1 Maximum storage term)

	Before the bag is opened	After the bag is opened
SMD(Resin-Molded chip type)	Within 2 years after manufacturing	Within 7 days after the bag is opened
SMD(Chip type)	Within 3 years after manufacturing	Within 6 months after the bag is opened
Radial	Within 3 years after manufacturing	—

SMD products are sealed in a special laminated aluminum bag. Use all capacitors once the bag is opened. Return unused capacitors to the bag, and seal it with a zipper. Please refer to (Table -1 maximum storage term) for storage conditions. Be sure to follow our recommendations for reflow soldering.

2) Store the capacitors in a location free from direct contact with water, salt water, and oil.
3) Store in a location where the capacitor is not exposed to toxic gas, such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine or chlorine compounds, bromine or other halogen gases, methyl bromide or other halogen compounds, ammonia, or similar.
4) Store in a location where the capacitor is not exposed to ozone, ultraviolet radiation, or other radiation.
5) It is recommended to store capacitors in their original packaging wherever possible.
6) The JEDEC J-STD-020 standard does not apply.

7 Disposal

Please consult with a local industrial waste disposal specialist when disposing of aluminum electrolytic capacitors.

8 About AEC-Q200

The Automotive Electronics Council (AEC) was originally established by major American automotive related manufactures.
Today, the committees are composed of representatives from the sustaining Members of manufacturing companies in automotive electrical components. It has standardized the criteria for "stress test qualification" and "reliability tests" for electronic components.
AEC-Q200 is the reliability test standard for approval of passive components in Automotive applications. It specifies the test type, parameters and quantity, etc. for each component. The criteria of the reliability tests such as for our main products, "Aluminum Electrolytic Capacitors" are described in this standard.
Pursuant to the customer's specific testing requirements, Chemi-Con submits the test results according to AEC-Q200 for Aluminum Electrolytic Capacitors used in automotive applications on request.
An electronic component manufacturer cannot simply claim that their product is "AEC-Q200 Qualified". It can be claimed "Compliant", "Capable", "Available", etc., however each component must be tested per each users "Qualification Test Plan" in order to claim AEC-Q200 status.
Please contact us for more information.

9 Response to the Substances of Concern

1) Nippon Chemi-Con aims for developing products that meet laws and regulations concerning substances of concern.
(Some products may contain regulated substances for exempted application)
Please contact us for more information about law-compliance status.
2) According to the content of REACH handbook (Guidance on requirements for substances in articles which is published on May 2008), our electronic components are "articles without any intended release". Therefore they are not applicable for "Registration" for EU REACH Regulation Article 7 (1).
Reference: Electrolytic Condenser Investigation Society
"Study of REACH Regulation in EU about Electrolytic Capacitor"
(publicized on 13 March 2008)

10 Catalogs

Specifications in the catalogs are subject to change without notice. Test data shown in the catalogs are not assured as the whole performance values, but typical values.
For more details, refer to JEITA RCR-2367C (March 2006) with the title of "Safety Application Guide for fixed aluminum electrolytic capacitors for use in electronic equipment".

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RECOMMENDED SOLDERING CONDITIONS FOR NPCAP™

◆SURFACE MOUNT TYPE

The following conditions are recommended for air or infrared reflow soldering PMA/PXJ/PXG/PXK/PXS/PXF/PXE/PXA/PXD/PXH series onto a glass epoxy circuit board of 90×50×0.8mm (with resist) by cream solder. The temperatures shown are the surface temperature values on the top of the can and tem per a ture of capacitor terminal.
Reflow should be performed twice or less.
Please ensure that the capacitor became cold enough to the room temperature (5 to 35℃) before the second reflow.

● Recommended soldering heat conditions

Series	Voltage range (Vdc)	Preheat	Time maintained above 217℃	Time maintained above 230℃	Peak temp.	Reflow number
PMA	16 to 25V	150 to 180℃ 120 sec. max.	50 sec. max.	40 sec. max.	260℃max.	1-cycle only
			40 sec. max.	30 sec. max.		2-cycles allowed
PXN/PXT PXJ/PXG PXK/PXS PXF/PXE PXA/PXD PXH	2.5 to 16V		50 sec. max.	40 sec. max.	260℃max.	1-cycle only
					250℃max.	2-cycles allowed
	20 to 25V		50 sec. max.	40 sec. max.	250℃max.	1-cycle only
			40 sec. max.	30 sec. max.		2-cycles allowed

Note : Resin-Molded chip type have capability to withstand dip or flow soldering (Peak temperature:260℃) . Please consult us for details.

● Recommended Solder Land on PC Board

Fig.1 Chip type

Fig.2 Resin-Molded chip type

Fig.3 Resin-Molded chip type
<Share with Ta/Al multilayer capacitors (7343 size) >

[mm]

Size code	a	b	c	d	e	f	Fig.
E40, E46, E60, E61	1.4	3.0	1.6	-	-	-	1
F30	1.9	3.5	2.0	-	-	-	2
	1.9	3.5	2.0	4.0	2.0	3.0	3
F45, F46, F60, F61 F80, FA0	1.9	3.5	1.6	-	-	-	1
H70, H80, HA0, HC0	3.1	4.2	2.2	-	-	-	1
J80, JA0, JC0	4.5	4.4	2.2	-	-	-	1

◆RADIAL LEAD TYPE

● Recommended soldering heat conditions

Preheat :150℃ 120 seconds max.
Flow soldering :260+5℃ max. 10+1 seconds max.

◆PRECAUTIONS FOR USERS

Soldering method

SMD (Chip type) have no capability to with stand such dip or flow soldering as totally immersing components into a solder bath.

Reflow soldering

Reflow the capacitors within Recommended Reflow Soldering Conditions. Verify there is no temperature stress to the capacitors because the following differences might degrade capacitors electrically and mechanically. Please consult with us if other reflow conditions are employed.

1.Location of components : Temperature increases at the edge of PC board more than the center.
2.Population of PC board : The lower the component population is, the more temperature rises.
3.Material of PC board : A ceramic-made board needs more heat than a glass epoxy-made board. The heat increase may cause damage to the capacitors.
4.Thickness of PC board : A thicker board needs more heat than a thinner board. The heat may damage the capacitors.
5.Size of PC board : A larger board needs more heat than a smaller board. The heat may damage the capacitors.
6.Solder thickness
If very thin cream solder paste is to be used for SMD types, please consult with us.
7.Location of infrared ray lamps : IR reflow as well as hot plate reflow heats only on the reverse side of the PC board to lessen heat stress to the capacitors.
8.Case leakage current will increase (～mA) after the reflow process, the leakage current which rose gradually decreases when voltage is applied.
9.Please consult us about vapor phase soldering (VPS).

Rework of soldering

Use a soldering iron for rework. Do not exceed an iron tip temperature of 380±10℃ and an exposure time of 3±0.5 seconds.
Note that the soldering rework process cannot be applied to resin-molded chip type capacitors.

Mechanical stress

Do not grab the capacitors to lift the PC board and give stress to the capacitor. Avoid bending the PC board. This may damage the capacitors.

Cleaning assembly board

Immediately after solvent cleaning, remove residual solvent with an air knife for at least 10 minutes. If the solvent is insufficiently dry, the capacitors may corrode.
PMA series is not solvent resistant type.

Coating on assembly board

1.Before curing coating material, remove the cleaning solvents from the assembly board.
2.Before conformal coating, a chloride free pre-coat material is recommended to decrease the stress on the capacitors.

Molding with resin

Internal chemical reaction gradually produces gas in the capacitor; increasing internal pressure. If the end seal of the capacitor is completely coverd by resin the gas will be unable to escape causing a potentially dangerous situation. The chlorine in resin will penetrate the end seal, reach the element, and damage of the capacitor.

Glue

The followings are requirements for glue.
1.A low curing temperature over a short period of time
2.Strong adhension and heat resistance after curing
3.Long shelf life
4.No corrosion

Others

Refer to PRECAUTIONS AND GUIDELINES(Conductive Polymer).

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Lifetime Estimation of Conductive Polymer Aluminum Solid Capacitors

Subject series : PXN, PXT, PXJ, PXG, PXK, PXS, PXF, PXE, PXA, PXD, PXH, PSJ, PSG, PSK, PSF, PSE, PSC
Please consult us about lifetime equations for PMA series.

Conductive polymer aluminum solid capacitors are finite life electronic components like aluminum electrolytic capacitors.
The lifetime is affected by ambient temperature, humidity, ripple current and surge voltage.
The lifetime of aluminum electrolytic capacitors is affected mainly by the loss of electrolyte as the result of the liquid electrolyte evaporating through the rubber seal materials, resulting in capacitance drop and tan δ rise.
On the other hand, the lifetime of conductive polymer aluminum solid capacitors is affected mainly by oxidation degradation of the conductive polymer caused by osmose of oxygen or the thermal degradation of the conductive polymer by ambient temperature or self-heating, resulting in ESR rise and tan δ rise.
The infiltration rate of the oxygen is depend on the temperature as the liquid electrolyte evaporation and the relationship follows the Arrhenius's Law, too. Similarly, thermal degradation of the conductive polymer by self-heating follows the Arrhenius's Law, too.
Therefore, the lifetime estimation has been using the theory of lifetime reducing by half at every 10℃ rise of the ambient temperature.

1. Lifetime Estimation

Equation (1) can be used for estimating the lifetime of the conductive polymer aluminum solid capacitors based on the ambient temperature and the rise of internal temperature due to ripple current.

$$Lx = Lo \times 2^{\frac{To-Tx}{10}} \times 2^{\frac{-\Delta T}{10}} \quad \cdots\cdots\cdots\cdots\cdots\cdots(1)$$

Lx : Estimation of actual lifetime (hour)
Lo : Specified lifetime with the rated voltage at the upper limit of the category temperature (hour)
To : Maximum category temperature (℃)
Tx : Actual ambient temperature of the capacitor (℃)
(Note: Tx should be 40℃ if the actual ambient temperature is below it)
ΔT : Rise of internal temperature due to the rated ripple current (℃)

Longer lifetime is expected by lowering the ripple current and the ambient temperature.
Please consult us about lifetime equations for the series of the category temperature 125℃.
Subject series: PXD, PXH.

An approximate value of ripple current-caused ΔT can be calculated using Equation (2)

$$\Delta T = \Delta To \times \left(\frac{Ix}{Io}\right)^2 \quad \cdots\cdots\cdots\cdots\cdots\cdots(2)$$

ΔTo : Rise in internal temperature due to the rated ripple current (20℃)The product that the maximum category temperature is less than 105°C
Ix : Operating ripple current (Arms) actually flowing in the capacitor
Io : Rated ripple current (Arms), frequency compensated, at the upper limit of the category temperature range

Please contact us about the product that the maximum category temperature is more than 125°C.
To determine more accurate values of ΔT, they can be actually measured using a thermocouple.

2. Rated Ripple Current Frequency Multipliers

Self-heat rise is generated by the ripple current even though the conductive polymer aluminum solid capacitors have low ESR compared to liquid based electrolyte aluminum electrolytic capacitor. The ESR value differs depending on the frequency, thus the degree of self-heat rise differs depending on the ripple current frequency. Therefore, if the actual ripple current frequency differs from the specifications stated in the standard ratings, use the value obtained by multiplying the rated ripple current multiplier to convert the rated current.

Conductive polymer aluminum solid capacitors have super low ESR characteristic in high-frequency range. On the whole, ESR in low-frequency range relatively rises. Therefore, they can use only small ripple current in low-frequency range.
Please ensure that excessive ripple current is not applied to the capacitors in all frequency range.

3. Restriction of estimated lifetime calculation

The result calculated by the estimated lifetime formula, it is not guaranteed lifetime by Nippon Chemi-Con Corporation.
When designer calculate the lifetime of apparatus, please include an ample margin in consideration to the estimated lifetime of a capacitor.
When calculated lifetime result are over 15 years (131,400 hrs.) by using the estimated lifetime formula, please consider 15 years to be a maximum in considering that the sealing rubber characteristics vary during the lifetime.
If 15 years or more may be required as an expected lifetime, please consult us.

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PART NUMBERING SYSTEM

Product code guide (Conductive polymer Surface mount type)

(Example : PXJ series, 6.3V-390μF, φ6.3×5.8L)

Please refer to the following table

Contents	Code
Conductive Polymer	A

Series	Code
PXJ	PXJ

Type	Code
SMD	A

Tol.(%)	Code
±20	M

Terminal plating material	Code
Sn-Bi	G

1	2 3 4	5 6 7	8	9 10	11 12 13	14	15 16 17	18
A	P X J	6 R 3	A	R A	3 9 1	M	F 6 1	G
Category	Series code	Voltage code	Terminal code	Taping・Tray code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
2	2R0
2.5	2R5
4	4R0
6.3	6R3
10	100
16	160
20	200
25	250

Type	Reel dia. φ (mm)	Application size φD(mm)	Code
Plastic Reel	380	φD=5 to 10	RA
	330	φD=8 to 10	RB

Refer to product guide for taping specifications.

Cap.(μF)	Code
10	100
47	470
100	101
470	471
1,000	102
⋮	⋮

φD(mm)	Code
5	E
6.3	F
8	H
10	J

L(mm)	Code
3.0	30
3.9	40
4.4	45
4.5	46
5.7	60
5.8	61
6.7	70
7.7	80
9.7	A0
10	A0
12	C0
12.2	C0

*Refer to the appendix (Part number) for codes not listed here.

Product code guide (Conductive polymer Radial lead type)

(Example : PSK series, 6.3V-330μF, φ5×8L,Long Lead with bulk)

Please refer to the following table

Contents	Code
Conductive Polymer	A

Series	Code
PSK	PSK

Type	Code
Radial lead	E

Tol.(%)	Code
± 20	M

Terminal plating material	Code
Sn	S

1	2 3 4	5 6 7	8	9 10	11 12 13	14	15 16 17	18
A	P S K	6 R 3	E	L L	3 3 1	M	E 0 8	S
Category	Series code	Voltage code	Terminal code	Taping・Tray code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
2	2R0
2.5	2R5
4	4R0
6.3	6R3
10	100
16	160
20	200
25	250
35	350

Type	Contents	Code
Lead forming (Bulk)	Long Lead	LL
	Cut(3.5mm)	C3
	Cut(5.0mm)	C5
Taping	Straight	TD

Refer to product guide for taping specifications.

Cap.(μF)	Code
56	560
100	101
470	471
1,000	102
⋮	⋮

φD(mm)	Code
5	E
5.4	E
6.3	F
8	H
10	J

L(mm)	Code
5	05
6	06
8	08
10.5	A5
11.5	B5
12.5	C5
16	16
20	20

*Refer to the appendix (Part number) for codes not listed here.

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Product List

◆SURFACE MOUNT (CHIP) TYPE (2 to 10Vdc)

*1 ESR(mΩ max.)20℃, 100k to 300kHz *2 Rated ripple current(mArms)105℃, 100kHz

Cap (μF)	2Vdc				2.5Vdc				4Vdc				6.3Vdc				10Vdc			
	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2
33																	PXS	5×5.8	70	1100
																	PXA	5×5.7	40	1270
47													PXS	5×5.8	30	1970	PXE	5×5.8	28	2310
													PXA	5×5.7	35	1380	PXA	5×5.7	40	1270
																	PXA	6.3×4.4	41	1560
																	PXA	6.3×5.7	31	2250
																	PXD	5×5.8	50	1270
56													PXD	5×5.8	45	1380	PXE	5×5.8	28	2310
																	PXA	6.3×5.7	31	2250
																	PXD	6.3×5.8	40	2250
																	PXH	6.3×5.7	45	2250
68													PXA	6.3×5.7	27	2400	PXS	5×5.8	30	1970
																	PXE	5×5.8	28	2310
82													PXA	6.3×4.4	40	1670				
													PXA	6.3×5.7	27	2400				
													PXH	6.3×5.7	40	2400				
100									PXE	5×5.8	22	2610	PXS	5×5.8	25	2150				
									PXA	6.3×5.7	26	2450	PXE	5×5.8	24	2500				
													PXA	5×5.7	35	1380				
													PXA	6.3×4.4	40	1670				
													PXA	6.3×5.7	27	2400				
													PXD	6.3×5.8	35	2400				
													PXH	6.3×5.7	40	2400				
120					PXD	5×5.8	40	1450	PXA	6.3×4.4	38	1710	PXS	6.3×5.8	22	2570	PXN	5×5.8	35	2000
													PXE	5×5.8	24	2500	PXT	5×5.8	45	2000
													PXA	6.3×5.7	27	2400	PXS	6.3×5.8	27	2320
																	PXF	5×5.8	22	2600
																	PXE	6.3×5.8	25	2530
																	PXA	8×6.7	27	2800
																	PXH	8×6.7	35	2800
150									PXS	5×5.8	25	2150	PXT	5×5.8	26	2350	PXS	8×6.7	30	2760
									PXE	5×5.8	22	2610	PXK	6.3×4.5	19	2780	PXE	6.3×7.7	21	2880
									PXA	5×5.7	30	1490	PXF	5×3.9	20	2700	PXA	8×6.7	27	2800
									PXA	6.3×5.7	26	2450	PXF	5×4.5	25	2100	PXD	8×6.7	35	2800
									PXH	6.3×5.7	35	2450	PXF	5×5.8	12	3500	PXH	8×6.7	35	2800
													PXA	8×6.7	25	3020				
													PXH	8×6.7	30	3020				
180					PXE	5×5.8	21	2670	PXK	6.3×4.5	19	2780	PXK	5×5.8	17	3390	PXN	6.3×5.8	30	2500
220					PXK	6.3×4.5	19	2780	PXK	5×5.8	17	3390	PXN	5×5.8	30	2500	PXT	6.3×5.8	40	2200
					PXF	5×3.9	12	3300	PXA	8×6.7	25	3020	PXT	5×5.8	26	2350	PXE	8×6.7	21	3220
					PXF	5×4.5	25	2100	PXH	8×6.7	30	3020	PXT	6.3×5.8	26	2600				
					PXA	6.3×5.7	25	2500					PXK	6.3×4.5	18	3200				
					PXD	6.3×5.8	30	2500					PXS	6.3×5.8	22	2570				
					PXH	6.3×5.7	35	2500					PXF	5×5.8	12	3500				
													PXF	6.3×5.8	10	3900				
													PXE	6.3×5.8	15	3160				
													PXA	8×6.7	25	3020				
													PXD	8×6.7	30	3020				
													PXH	8×6.7	30	3020				
270									PXT	5×5.8	26	2350	PXF	6.3×7.7	9	4200	PXN	8×6.7	25	3300
									PXE	6.3×5.8	15	3160	PXE	6.3×7.7	14	3470	PXJ	6.3×5.8	15	4000
																	PXF	6.3×5.8	20	2800
																	PXE	8×6.7	21	3220
																	PXA	8×12	14	4420
																	PXA	10×7.7	24	3770
330					PXN	5×5.8	30	2500	PXT	6.3×5.8	26	2600	PXN	6.3×5.8	25	2800	PXE	8×7.7	19	3390
					PXT	5×5.8	26	2350	PXF	6.3×5.8	10	3900	PXT	6.3×5.8	26	2600	PXA	8×12	14	4420
					PXK	5×5.8	16	3500	PXE	6.3×5.8	15	3160	PXK	6.3×5.8	17	3390	PXA	10×7.7	24	3770
					PXK	6.3×4.5	16	3500	PXA	8×6.7	25	3020	PXF	6.3×5.8	10	3900	PXD	10×7.7	25	3500
					PXF	5×5.8	10	3900					PXF	6.3×7.7	9	4200	PXH	10×7.7	30	3700
					PXF	6.3×4.4	12	3500					PXF	8×6.7	10	4500				
													PXE	6.3×7.7	14	3470				
													PXE	8×6.7	14	3950				
													PXA	10×7.7	20	4130				
390					PXT	5×5.8	26	2350	PXT	6.3×5.8	26	2600	PXJ	6.3×5.8	10	4900	PXT	6.3×7.7	22	2850
					PXT	6.3×5.8	26	2600	PXK	6.3×5.8	17	3390	PXS	8×6.7	22	3220	PXJ	6.3×7.7	13	4460
					PXF	5×5.8	10	3900	PXF	6.3×7.7	9	4200	PXF	8×6.7	10	4500	PXJ	6.3×9.7	13	4000
					PXF	6.3×5.8	10	3900	PXE	6.3×7.7	14	3470	PXE	8×6.7	14	3950	PXE	8×10	17	4000
					PXE	6.3×5.8	15	3160					PXA	8×12	12	4770				
470					PXF	6.3×7.7	9	4200	PXF	8×6.7	10	4500	PXF	8×7.7	9	4500	PXJ	8×6.7	15	4000
					PXE	6.3×7.7	13	3600	PXE	8×6.7	14	3950	PXE	8×7.7	13	3950	PXE	10×7.7	19	3800
									PXA	10×7.7	20	4130	PXA	8×12	12	4770	PXA	10×12.2	12	5300
													PXA	10×7.7	20	4130				
													PXD	10×7.7	25	3500				
													PXH	10×7.7	25	3700				
560					PXN	6.3×5.8	25	2800	PXS	8×6.7	22	3220	PXN	8×6.7	20	3500	PXN	10×7.7	25	3400
					PXT	6.3×5.8	26	2600	PXF	8×6.7	10	4500	PXT	6.3×7.7	22	2850	PXA	10×12.2	12	5300
					PXK	6.3×5.8	16	3500	PXE	8×6.7	14	3950	PXJ	6.3×7.7	8	5000				
					PXF	6.3×5.8	10	3900	PXA	8×12	12	4770	PXJ	6.3×9.7	10	4300				
					PXF	6.3×7.7	9	4200					PXF	8×7.7	9	4500				
					PXF	8×6.7	10	4500												
					PXE	6.3×7.7	13	3600												
					PXE	8×6.7	13	4100												
					PXA	8×6.7	23	3100												
					PXH	8×6.7	30	3100												
680	PXF	6.3×5.8	12	3500	PXF	8×6.7	10	4500	PXT	6.3×7.7	22	2850	PXJ	8×6.7	10	4500	PXE	10×10	13	4820
					PXE	8×6.7	13	4100	PXF	8×7.7	9	4500	PXA	10×12.2	10	5500				
					PXA	8×12	12	4770	PXE	8×7.7	13	3950								
									PXA	10×7.7	20	4130								
									PXH	10×7.7	25	3700								

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Product List

◆SURFACE MOUNT (CHIP) TYPE (2.5 to 6.3Vdc)

*1 ESR(mΩ max.)20℃, 100k to 300kHz *2 Rated ripple current(mArms)105℃, 100kHz

Cap (μF)	2.5Vdc				4Vdc				6.3Vdc			
	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2
820	PXT	6.3×7.7	22	2850	PXA	10×12.2	10	5500	PXE	8×10	12	4770
	PXJ	6.3×5.8	10	4900					PXE	8×12	10	5150
	PXJ	6.3×7.7	7	5000					PXE	10×7.7	14	4300
	PXJ	6.3×9.7	10	4300					PXA	10×12.2	10	5500
	PXE	8×7.7	12	4260								
	PXE	8×12	9	5400								
1000	PXJ	6.3×9.7	10	4300	PXE	8×10	10	5220				
	PXF	8×7.7	9	4500	PXE	10×7.7	14	4300				
	PXE	8×7.7	12	4260								
	PXA	10×7.7	19	4240								
	PXH	10×7.7	25	3700								
1200	PXJ	6.3×9.7	10	4300	PXE	8×12	9	5400	PXN	10×7.7	20	3500
	PXJ	8×6.7	10	4500	PXE	10×10	10	5500	PXE	10×10	12	5025
	PXE	10×7.7	13	4450	PXA	10×12.2	10	5500				
1500	PXE	8×10	10	5220	PXE	10×10	10	5500	PXE	10×10	12	5025
	PXE	8×12	9	5400					PXE	10×12.2	10	5500
	PXA	10×12.2	10	5500								
1800					PXE	10×10	10	5500				
					PXE	10×12.2	9	5600				
2200	PXE	10×10	10	5500								
2700	PXE	10×12.2	9	5600								

◆SURFACE MOUNT (CHIP) TYPE (16 to 25Vdc)

Cap (μF)	16Vdc				20Vdc				23Vdc				25Vdc			
	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2
10													PXG	5×4.5	60	1700
													PXA	6.3×5.7	65	1500
15					PXA	6.3×4.4	57	1300	PXA	6.3×4.4	57	1300				
22	PXS	5×5.8	90	1060	PXA	6.3×5.7	50	1650					PXG	5×5.8	40	2450
	PXA	5×5.7	45	1210	PXH	6.3×5.7	60	1650					PXG	6.3×4.4	45	2350
	PXA	6.3×4.4	45	1490									PXA	8×6.7	50	1800
27					PXG	5×4.5	55	1770					PXG	5×5.8	40	2450
33	PXE	5×5.8	35	2070												
	PXA	6.3×5.7	37	2050												
39	PXG	5×4.5	50	1860	PXA	8×6.7	45	2000					PXG	6.3×5.8	30	2800
	PXS	5×5.8	35	1820									PXA	10×7.7	45	2100
	PXS	6.3×5.8	37	2050												
	PXE	5×5.8	35	2070												
	PXA	6.3×5.7	37	2050												
	PXH	6.3×5.7	50	2050												
47					PXG	5×5.8	30	2800					PXG	6.3×5.8	30	2800
					PXG	6.3×4.4	42	2400								
					PXA	8×6.7	45	2000								
					PXH	8×6.7	45	2000								
56	PXN	5×5.8	35	2000	PXG	5×5.8	30	2800					PXJ	6.3×5.8	28	3000
													PXG	6.3×5.8	30	2800
													PXG	6.3×7.7	28	2800
68	PXG	6.3×4.4	40	2450									PXG	8×6.7	28	3000
	PXS	6.3×5.8	30	2200												
	PXE	6.3×5.8	28	2390												
82	PXS	8×6.7	30	2760	PXA	10×7.7	40	2500					PXJ	6.3×7.7	28	3040
	PXE	6.3×7.7	24	2700	PXH	10×7.7	45	2400					PXJ	6.3×9.7	28	3000
	PXA	8×6.7	30	2700									PXG	8×7.7	26	3100
	PXH	8×6.7	40	2700												
100	PXN	6.3×5.8	30	2500									PXG	8×10	24	3300
	PXT	5×5.8	45	2000												
	PXG	5×5.8	27	3000												
	PXK	6.3×5.8	24	2490												
	PXE	6.3×7.7	24	2700												
	PXE	8×6.7	24	3010												
120	PXS	8×6.7	27	2900	PXG	6.3×5.8	25	3200					PXJ	8×6.7	38	3200
	PXE	8×6.7	24	3010									PXG	8×10	22	3500
150	PXN	8×6.7	25	3300	PXJ	6.3×5.8	23	3300					PXG	10×7.7	25	3400
	PXE	8×7.7	22	3150	PXJ	6.3×7.7	18	3790								
	PXA	10×7.7	26	3430	PXJ	6.3×9.7	18	3200								
	PXH	10×7.7	35	3020	PXG	6.3×7.7	25	3200								
					PXA	10×12.2	20	4320								
180	PXT	6.3×5.8	40	2200	PXG	8×6.7	25	3200								
	PXG	6.3×5.8	22	3300												
	PXE	8×10	18	3890												
	PXA	8×12	16	4360												
	PXA	10×7.7	26	3430												
	PXH	10×7.7	35	3020												
220	PXJ	6.3×5.8	20	3500	PXJ	8×6.7	28	3300					PXG	10×10	20	3800
	PXG	6.3×7.7	22	3300	PXG	8×7.7	23	3300								
	PXE	8×10	18	3890	PXG	8×10	23	3400								
	PXE	10×7.7	22	3450												
	PXA	10×12.2	14	5050												
270	PXT	6.3×7.7	22	2850												
	PXJ	6.3×7.7	10	5080												
	PXJ	6.3×7.7	13	4460												
	PXJ	6.3×9.7	16	3500												
	PXG	8×6.7	22	3300												
330	PXN	10×7.7	25	3400												
	PXG	8×6.7	22	3300												
	PXG	8×7.7	21	3400												
	PXG	8×10	21	3400												
	PXE	10×10	16	4350												
	PXA	10×12.2	14	5050												
390	PXJ	8×6.7	25	3600	PXG	8×10	20	3700								
					PXG	10×7.7	22	3650								
560	PXG	8×10	18	3900	PXG	10×10	18	4100								
	PXG	10×7.7	20	3800												
820	PXG	10×10	16	4200												
	PXG	10×12.2	12	5400												
1000	PXG	10×10	18	4100												
	PXG	10×12.2	12	5400												

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Product List

◆RADIAL LEAD TYPE (2 to 10Vdc)

*1 ESR(mΩ max.)20℃, 100k to 300kHz(PSJ series : 300kHz) *2 Rated ripple current(mArms)105℃, 100kHz

Cap (μF)	2Vdc				2.5Vdc				4Vdc				6.3Vdc				10Vdc			
	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2
220					PSK	5×8	7	4350												
270													PSK	5×8	10	3700				
330					PSK	5×8	7	4350	PSK	5×8	8	4050	PSK	5×8	8	4050				
					PSF	6.3×8	5	5900												
390					PSJ	5.4×8	4	5600									PSC	8×11.5	9	5650
470					PSJ	5.4×8	4.5	5200	PSF	6.3×8	5	5900	PSE	6.3×8	8	4700				
					PSK	5×8	7	4350					PSC	8×8	8	5700				
					PSF	6.3×8	5	5900												
560					PSJ	6.3×8	4	6500	PSF	6.3×8	5	5900	PSE	6.3×8	8	4700				
					PSJ	6.3×8	4.5	6200	PSE	6.3×8	7	5000	PSC	8×8	8	5700				
					PSK	5×8	7	4350	PSC	8×8	7	6100								
					PSF	6.3×8	5	5900												
					PSC	8×8	7	6100												
680					PSE	8×6	8	4900	PSC	8×11.5	7	6100					PSC	10×11.5	7	6100
820					PSF	6.3×8	5	5900					PSF	6.3×8	8	4700				
					PSE	6.3×8	7	5000					PSC	10×11.5	7	6640				
					PSC	8×8	5	6100												
					PSC	8×8	7	6100												
1000	PSF	6.3×8	5	5900	PSC	8×8	7	6100	PSC	10×11.5	6	6640								
					PSC	8×11.5	7	6100												
1200					PSF	6.3×8	5	5900												
1500					PSC	8×11.5	7	6100					PSC	10×11.5	10	5560				
1600					PSF	8×8	5	6100												
2700					PSC	10×11.5	8	5560												

◆RADIAL LEAD TYPE (16 to 35Vdc)

Cap (μF)	16Vdc				20Vdc				25Vdc				35Vdc			
	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2	Series	Nominal Case size (φD×L)	ESR*1	Ripple current*2
56									PSG	6.3×5	30	2600				
68													PSG	8×11.5	18	4380
82									PSG	6.3×8	28	2780				
100	PSF	6.3×5	24	2490												
	PSF	6.3×10.5	25	2820												
120					PSG	6.3×5	20	3200					PSG	10×11.5	16	4670
150	PSG	6.3×5	20	3200												
180					PSG	6.3×8	18	3460	PSG	8×8	18	3770				
									PSG	8×11.5	16	4650				
220									PSG	8×11.5	16	4650				
270	PSG	6.3×8	10	5080												
	PSG	6.3×8	15	3800												
	PSG	8×6	22	3300												
	PSF	8×8	10	5000												
	PSF	8×11.5	11	5080												
	PSC	8×11.5	11	5080												
330	PSF	8×8	13	4700	PSG	8×8	17	3880	PSG	10×11.5	14	5000				
	PSC	10×11.5	10	6100												
	PSC	10×12.5	10	6100												
390					PSG	8×11.5	14	4970	PSG	10×11.5	14	5000				
470	PSG	8×8	8	5400												
	PSG	8×8	16	4000												
	PSF	8×11.5	11	5400												
	PSF	10×11.5	10	6100												
	PSC	10×11.5	10	6100												
560	PSG	8×11.5	8	6100					PSG	10×11.5	14	5000				
	PSG	8×11.5	14	4970												
680					PSG	10×11.5	12	5400								
820	PSG	8×16	8	7000												
	PSG	10×11.5	12	5400												
1000	PSG	8×20	8	7500												
	PSG	10×11.5	12	5400												
1200	PSG	8×20	8	7500												
1500	PSG	10×16	8	7700												
1800	PSG	10×20	8	8100												
2200	PSG	10×20	8	8100												

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PMA Series

- The new construction provides a low profile and high CV.
- Super low ESR, impedance, and high heat resistance characteristics have been secured by using highly conductive polymer electrolytic materials.
- Compatible with digitalization and high frequencies of electrical equipment with superior noise absorption.
- Excellent ESR characteristics, high ripple current, 5,000 hours at 105°C.
- Low-profile product lineup
- Outer coating: Flame-retardant epoxy resin UL94 V-0 or equivalent
- Non-solvent resistant type
- RoHS2 Compliant
- Halogen free products

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	16 to 25V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 60℃, 90 to 95% RH without voltage applied. Appearance: No significant damage Capacitance change: ≦-20 to +40% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

Size code	A	B	C	L	W	P
F30	7.0±0.1	7.0±0.1	7.2±0.2	3.0 max.	1.2±0.2	2.65±0.2

◆MARKING

EX) 25V22μF

- Rated voltage symbol

Rated voltage (V_{dc})	16	20	25
Symbol	C	D	E

- Capacitance symbol
  Capacitance code (ex. 22μF : 220)

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PMA Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A PMA □□□ A RA □□□ M F30 S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 22μF:220, 39μF:390)
- Taping code
- Terminal code
- Voltage code (ex. 20V:200, 25V:250)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
16	56	F30	448	40	2,200	APMA160ARA560MF30S
	68	F30	544	50	2,000	APMA160ARA680MF30S
20	39	F30	390	45	2,100	APMA200ARA390MF30S
	47	F30	470	50	2,000	APMA200ARA470MF30S
25	22	F30	275	50	2,000	APMA250ARA220MF30S
	33	F30	412	50	2,000	APMA250ARA330MF30S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXN Series New!

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- High moisture resistance, Bias Humidity: 1,000 hours at 85℃, 85%RH
- Rated voltage range: 2.5 to 16Vdc, Capacitance range: 56～1,200μF
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 16Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃85% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Size Code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.6 to 1.1	3.1
J80	10	7.7	10.3	10.3	11.0	0.6 to 1.1	4.5

◆MARKING

EX) 6.3V220μF

PXN series is a conductive polymer aluminum solid capacitor. All conductive polymer aluminum solid capacitors, including the PXN series may temporarily exhibit increased leakage current due to heat stress during the reflow soldering process.
However, applying stepped voltage under the category temperature range gradually decreases the increased leakage current to normal levels. The speed or recovery time that leakage current decreases by self-healing depends on the temperature and voltage: (The closer to category upper limit temperature and rated voltage, the more rapid the leakage current decrease).
Conductive polymer aluminum solid capacitors do not utilize liquid electrolyte. Therefore it takes a longer period of time to accomplish self-healing than aluminum electrolytic capacitors that have liquid electrolyte impregnation.

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXN Series New!

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P X N □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 100μF:101, 1,200μF:122)
- Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5, 10V:100)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	330	E61	700	30	2,500	APXN2R5ARA331ME61G
	560	F61	700	25	2,800	APXN2R5ARA561MF61G
6.3	220	E61	700	30	2,500	APXN6R3ARA221ME61G
	330	F61	700	25	2,800	APXN6R3ARA331MF61G
	560	H70	705	20	3,500	APXN6R3ARA561MH70G
	1,200	J80	1,510	20	3,500	APXN6R3ARA122MJ80G
10	120	E61	700	35	2,000	APXN100ARA121ME61G
	180	F61	700	30	2,500	APXN100ARA181MF61G
	270	H70	700	25	3,300	APXN100ARA271MH70G
	560	J80	1,120	25	3,400	APXN100ARA561MJ80G
16	56	E61	700	35	2,000	APXN160ARA560ME61G
	100	F61	700	30	2,500	APXN160ARA101MF61G
	150	H70	700	25	3,300	APXN160ARA151MH70G
	330	J80	1,050	25	3,400	APXN160ARA331MJ80G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

PXN series is a conductive polymer aluminum solid capacitor. All conductive polymer aluminum solid capacitors, including the PXN series may temporarily exhibit increased leakage current due to heat stress during the reflow soldering process.
However, applying stepped voltage under the category temperature range gradually decreases the increased leakage current to normal levels. The speed or recovery time that leakage current decreases by self-healing depends on the temperature and voltage: (The closer to category upper limit temperature and rated voltage, the more rapid the leakage current decrease).
Conductive polymer aluminum solid capacitors do not utilize liquid electrolyte. Therefore it takes a longer period of time to accomplish self-healing than aluminum electrolytic capacitors that have liquid electrolyte impregnation.

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXT Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- High moisture resistance, Bias Humidity: 1,000 hours at 85℃, 85%RH
- Rated voltage range: 2.5 to 16V_{dc}, Capacitance range: 100 to 820μF
- Case size range : φ5×5.8L to φ6.3×7.7L
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 16V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃85% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Size Code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9

◆MARKING

EX) 2.5V390μF

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P X T □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 100μF:101, 390μF:391)
- Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5, 10V:100)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

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NPCAP™-PXT Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	330	E61	700	26	2,350	APXT2R5ARA331ME61G
	390	E61	700	26	2,350	APXT2R5ARA391ME61G
	390	F61	700	26	2,600	APXT2R5ARA391MF61G
	560	F61	700	26	2,600	APXT2R5ARA561MF61G
	820	F80	1,020	22	2,850	APXT2R5ARA821MF80G
4	270	E61	700	26	2,350	APXT4R0ARA271ME61G
	330	F61	700	26	2,600	APXT4R0ARA331MF61G
	390	F61	780	26	2,600	APXT4R0ARA391MF61G
	680	F80	1,360	22	2,850	APXT4R0ARA681MF80G
6.3	150	E61	700	26	2,350	APXT6R3ARA151ME61G
	220	E61	700	26	2,350	APXT6R3ARA221ME61G
	220	F61	700	26	2,600	APXT6R3ARA221MF61G
	330	F61	1,030	26	2,600	APXT6R3ARA331MF61G
	560	F80	1,760	22	2,850	APXT6R3ARA561MF80G
10	120	E61	700	45	2,000	APXT100ARA121ME61G
	220	F61	1,100	40	2,200	APXT100ARA221MF61G
	390	F80	1,950	22	2,850	APXT100ARA391MF80G
16	100	E61	800	45	2,000	APXT160ARA101ME61G
	180	F61	1,440	40	2,200	APXT160ARA181MF61G
	270	F80	2,160	22	2,850	APXT160ARA271MF80G

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXJ Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- Rated voltage range : 2.5 to 25Vdc, Capacitance range : 56 to 1,200µF
- Case size range : φ6.3×5.8L to φ8×6.7L
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PXJ
↑ Downsizing
PXG

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 25Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Size Code	φD	L	A	B	C	W	P
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
FA0	6.3	9.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1

◆MARKING

EX) 2.5V820µF

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXJ Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P X J □□□ A R A □□□ M □□□ □

- Supplement code (Note 1)
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 22μF:220, 39μF:390)
- Taping code
- Terminal code
- Voltage code (ex. 20V:220, 25V:250)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

(Note1) :PXJ series, 16V270μF (Rated ripple current 5,080mArms) have supplement code "J". Terminal and terminal plating are the same as all other in PXJ series.

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	820	F61	1,020	10	4,900	APXJ2R5ARA821MF61G
	820	F80	1,020	7	5,000	APXJ2R5ARA821MF80G
	820	FA0	1,020	10	4,300	APXJ2R5ARA821MFA0G
	1,000	FA0	1,250	10	4,300	APXJ2R5ARA102MFA0G
	1,200	FA0	1,500	10	4,300	APXJ2R5ARA122MFA0G
	1,200	H70	1,500	10	4,500	APXJ2R5ARA122MH70G
6.3	390	F61	1,220	10	4,900	APXJ6R3ARA391MF61G
	560	F80	1,760	8	5,000	APXJ6R3ARA561MF80G
	560	FA0	1,760	10	4,300	APXJ6R3ARA561MFA0G
	680	H70	2,140	10	4,500	APXJ6R3ARA681MH70G
10	270	F61	1,350	15	4,000	APXJ100ARA271MF61G
	390	F80	1,950	13	4,460	APXJ100ARA391MF80G
	390	FA0	1,950	13	4,000	APXJ100ARA391MFA0G
	470	H70	2,350	15	4,000	APXJ100ARA471MH70G
16	220	F61	704	20	3,500	APXJ160ARA221MF61G
	270	F80	864	10	5,080	APXJ160ARA271MF80J
	270	F80	864	13	4,460	APXJ160ARA271MF80G
	270	FA0	864	16	3,500	APXJ160ARA271MFA0G
	390	H70	1,240	25	3,600	APXJ160ARA391MH70G
20	150	F61	600	23	3,300	APXJ200ARA151MF61G
	150	F80	600	18	3,790	APXJ200ARA151MF80G
	150	FA0	600	18	3,200	APXJ200ARA151MFA0G
	220	H70	880	28	3,300	APXJ200ARA221MH70G
25	56	F61	280	28	3,000	APXJ250ARA560MF61G
	82	F80	410	28	3,040	APXJ250ARA820MF80G
	82	FA0	410	28	3,000	APXJ250ARA820MFA0G
	120	H70	600	38	3,200	APXJ250ARA121MH70G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXG Series

- Super low ESR, high ripple current capability
- Rated voltage range : 16 to 25Vdc, Capacitance range : 10 to 1,000μF
- Case size : φ5×4.5L to φ10×12.2L
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PXG

↑ Downsized

PXE

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	16 to 25Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours (E46,F45 : 3,000 hours) at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours (E46,F45 : 500 hours). Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ)and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L+0.1/-0.2 for E46 and F45
L±0.5 for HA0, JA0 and JC0

Size Code	φD	L	A	B	C	W	P
E46	5	4.5	5.3	5.3	5.9	0.5 to 0.8	1.4
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F45	6.3	4.4	6.6	6.6	7.2	0.5 to 0.8	1.9
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1
H80	8	7.7	8.3	8.3	9.0	0.7 to 1.1	3.1
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
J80	10	7.7	10.3	10.3	11.0	0.7 to 1.1	4.5
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
JC0	10	12.2	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 25V47μF

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer type)"

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
16	39	E46	312	50	1,860	APXG160ARA390ME46G
	68	F45	544	40	2,450	APXG160ARA680MF45G
	100	E61	320	27	3,000	APXG160ARA101ME61G
	180	F61	576	22	3,300	APXG160ARA181MF61G
	220	F80	704	22	3,300	APXG160ARA221MF80G
	270	H70	864	22	3,300	APXG160ARA271MH70G
	330	H70	1,050	22	3,300	APXG160ARA331MH70G
	330	H80	1,050	21	3,400	APXG160ARA331MH80G
	330	HA0	1,050	21	3,400	APXG160ARA331MHA0G
	560	HA0	1,790	18	3,900	APXG160ARA561MHA0G
	560	J80	1,790	20	3,800	APXG160ARA561MJ80G
	820	JA0	2,620	16	4,200	APXG160ARA821MJA0G
	820	JC0	2,620	12	5,400	APXG160ARA821MJC0G
	1,000	JA0	3,200	18	4,100	APXG160ARA102MJA0G
	1,000	JC0	3,200	12	5,400	APXG160ARA102MJC0G
20	27	E46	270	55	1,770	APXG200ARA270ME46G
	47	E61	188	30	2,800	APXG200ARA470ME61G
	47	F45	470	42	2,400	APXG200ARA470MF45G
	56	E61	224	30	2,800	APXG200ARA560ME61G
	120	F61	480	25	3,200	APXG200ARA121MF61G
	150	F80	600	25	3,200	APXG200ARA151MF80G
	180	H70	720	25	3,200	APXG200ARA181MH70G
	220	H80	880	23	3,300	APXG200ARA221MH80G
	220	HA0	880	23	3,400	APXG200ARA221MHA0G
	390	HA0	1,560	20	3,700	APXG200ARA391MHA0G
	390	J80	1,560	22	3,650	APXG200ARA391MJ80G
	560	JA0	2,240	18	4,100	APXG200ARA561MJA0G
25	10	E46	125	60	1,700	APXG250ARA100ME46G
	22	E61	110	40	2,450	APXG250ARA220ME61G
	22	F45	275	45	2,350	APXG250ARA220MF45G
	27	E61	135	40	2,450	APXG250ARA270ME61G
	39	F61	195	30	2,800	APXG250ARA390MF61G
	47	F61	235	30	2,800	APXG250ARA470MF61G
	56	F61	280	30	2,800	APXG250ARA560MF61G
	56	F80	280	28	2,800	APXG250ARA560MF80G
	68	H70	340	28	3,000	APXG250ARA680MH70G
	82	H80	410	26	3,100	APXG250ARA820MH80G
	100	HA0	500	24	3,300	APXG250ARA101MHA0G
	120	HA0	600	22	3,500	APXG250ARA121MHA0G
	150	J80	750	25	3,400	APXG250ARA151MJ80G
	220	JA0	1,100	20	3,800	APXG250ARA221MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXK Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- Rated voltage range : 2.5 to 16Vdc, Capacitance range : 100 to 560μF
- Suitable for DC-DC converters, voltage regulators and decoupling applications used to computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PXK
↑ Downsized
PXE

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 16Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15V (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours (F46 : 3,000 hours) at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours (F46 : 500hours). Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after following voltage treatment.
Voltage treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L+0.1/-0.2 for F46

Size Code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F46	6.3	4.5	6.6	6.6	7.2	0.5 to 0.8	1.9
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9

◆MARKING

EX) 2.5V330μF

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer type)"

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NPCAP™-PXK Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	220	F46	300	19	2,780	APXK2R5ARA221MF46G
	330	E61	412	16	3,500	APXK2R5ARA331ME61G
	330	F46	700	16	3,500	APXK2R5ARA331MF46G
	560	F61	700	16	3,500	APXK2R5ARA561MF61G
4	180	F46	360	19	2,780	APXK4R0ARA181MF46G
	220	E61	440	17	3,390	APXK4R0ARA221ME61G
	390	F61	780	17	3,390	APXK4R0ARA391MF61G
6.3	150	F46	472	19	2,780	APXK6R3ARA151MF46G
	180	E61	567	17	3,390	APXK6R3ARA181ME61G
	220	F46	700	18	3,200	APXK6R3ARA221MF46G
	330	F61	1,040	17	3,390	APXK6R3ARA331MF61G
16	100	F61	320	24	2,490	APXK160ARA101MF61G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXS Series

- Super low ESR, high ripple current capability
- Longer life (20,000 hours at 105℃)
- Rated voltage range : 4 to 16Vdc, Capacitance range : 22 to 560μF
- Case size : φ5×5.8L to φ8×6.7L
- Suitable for DC-DC converters, voltage regulators and decoupling applications for computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PXS
↑ Longer life
PXE/PXA

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	4 to 16Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	I=0.2CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (Vdc) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 20,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ)and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Size Code	φD	L	A	B	C	W	P
E61	5.0	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8.0	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1

◆MARKING

EX) 6.3V390μF

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A P X S □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470, 150μF:151)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3, 10V:100)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

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NPCAP™-PXS Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
4	150	E61	25	2,150	APXS4R0ARA151ME61G
	560	H70	22	3,220	APXS4R0ARA561MH70G
6.3	47	E61	30	1,970	APXS6R3ARA470ME61G
	100	E61	25	2,150	APXS6R3ARA101ME61G
	120	F61	22	2,570	APXS6R3ARA121MF61G
	220	F61	22	2,570	APXS6R3ARA221MF61G
	390	H70	22	3,220	APXS6R3ARA391MH70G
10	33	E61	70	1,100	APXS100ARA330ME61G
	68	E61	30	1,970	APXS100ARA680ME61G
	120	F61	27	2,320	APXS100ARA121MF61G
	150	H70	30	2,760	APXS100ARA151MH70G
16	22	E61	90	1,060	APXS160ARA220ME61G
	39	E61	35	1,820	APXS160ARA390ME61G
	39	F61	37	2,050	APXS160ARA390MF61G
	68	F61	30	2,200	APXS160ARA680MF61G
	82	H70	30	2,760	APXS160ARA820MH70G
	120	H70	27	2,900	APXS160ARA121MH70G

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXF Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- Rated voltage range : 2 to 10Vdc, Capacitance range : 120 to 1,000μF
- Case size range : φ5×3.9L to φ8×7.7L
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PXF
↑ Lower ESR
PXE

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2 to 10Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours (E40, E46, F45 : 3,000 hours) at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours (E40, E46, F45 : 500 hours) . Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L+0.1/-0.2 for E40, E46 and F45

Size Code	φD	L	A	B	C	W	P
E40	5	3.9	5.3	5.3	5.9	0.5 to 0.8	1.4
E46	5	4.5	5.3	5.3	5.9	0.5 to 0.8	1.4
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F45	6.3	4.4	6.6	6.6	7.2	0.5 to 0.8	1.9
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1
H80	8	7.7	8.3	8.3	9.0	0.7 to 1.1	3.1

◆MARKING

EX) 2.5V390μF

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A P X F □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 330μF:331, 1,000μF:102)
- Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5, 10V:100)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXF Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2	680	F61	700	12	3,500	APXF2R0ARA681MF61G
2.5	220	E40	700	12	3,300	APXF2R5ARA221ME40G
	220	E46	700	25	2,100	APXF2R5ARA221ME46G
	330	E61	700	10	3,900	APXF2R5ARA331ME61G
	330	F45	700	12	3,500	APXF2R5ARA331MF45G
	390	E61	700	10	3,900	APXF2R5ARA391ME61G
	390	F61	292	10	3,900	APXF2R5ARA391MF61G
	470	F80	352	9	4,200	APXF2R5ARA471MF80G
	560	F61	700	10	3,900	APXF2R5ARA561MF61G
	560	F80	420	9	4,200	APXF2R5ARA561MF80G
	560	H70	420	10	4,500	APXF2R5ARA561MH70G
	680	H70	510	10	4,500	APXF2R5ARA681MH70G
	1,000	H80	750	9	4,500	APXF2R5ARA102MH80G
4	330	F61	396	10	3,900	APXF4R0ARA331MF61G
	390	F80	468	9	4,200	APXF4R0ARA391MF80G
	470	H70	564	10	4,500	APXF4R0ARA471MH70G
	560	H70	672	10	4,500	APXF4R0ARA561MH70G
	680	H80	816	9	4,500	APXF4R0ARA681MH80G
6.3	150	E40	700	20	2,700	APXF6R3ARA151ME40G
	150	E46	700	25	2,100	APXF6R3ARA151ME46G
	150	E61	700	12	3,500	APXF6R3ARA151ME61G
	220	E61	700	12	3,500	APXF6R3ARA221ME61G
	220	F61	415	10	3,900	APXF6R3ARA221MF61G
	270	F80	510	9	4,200	APXF6R3ARA271MF80G
	330	F61	700	10	3,900	APXF6R3ARA331MF61G
	330	F80	623	9	4,200	APXF6R3ARA331MF80G
	330	H70	623	10	4,500	APXF6R3ARA331MH70G
	390	H70	737	10	4,500	APXF6R3ARA391MH70G
	470	H80	888	9	4,500	APXF6R3ARA471MH80G
	560	H80	1,050	9	4,500	APXF6R3ARA561MH80G
10	120	E61	240	22	2,600	APXF100ARA121ME61G
	270	F61	540	20	2,800	APXF100ARA271MF61G

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXE Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
  (ESR and rated ripple current values are improved from PXA series.)
- Rated voltage range : 2.5 to 16Vdc, Capacitance range : 33 to 2,700µF
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 16Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours at 105℃.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦150% of the initial specified value
	ESR: ≦150% of the initial specified value
	Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦150% of the initial specified value
	ESR: ≦150% of the initial specified value
	Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦150% of the initial specified value
	ESR: ≦150% of the initial specified value
	Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

(Note) L±0.5 for HA0, HC0, JA0, JC0

Size Code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1
H80	8	7.7	8.3	8.3	9.0	0.7 to 1.1	3.1
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
HC0	8	12.0	8.3	8.3	9.0	0.7 to 1.1	3.1
J80	10	7.7	10.3	10.3	11.0	0.7 to 1.1	4.5
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
JC0	10	12.2	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 2.5V390µF

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer type)"

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXE Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	180	E61	90.0	21	2,670	APXE2R5ARA181ME61G
	390	F61	195	15	3,160	APXE2R5ARA391MF61G
	470	F80	235	13	3,600	APXE2R5ARA471MF80G
	560	F80	280	13	3,600	APXE2R5ARA561MF80G
	560	H70	280	13	4,100	APXE2R5ARA561MH70G
	680	H70	340	13	4,100	APXE2R5ARA681MH70G
	820	H80	410	12	4,260	APXE2R5ARA821MH80G
	820	HC0	410	9	5,400	APXE2R5ARA821MHC0G
	1,000	H80	500	12	4,260	APXE2R5ARA102MH80G
	1,200	J80	600	13	4,450	APXE2R5ARA122MJ80G
	1,500	HA0	750	10	5,220	APXE2R5ARA152MHA0G
	1,500	HC0	750	9	5,400	APXE2R5ARA152MHC0G
	2,200	JA0	1,100	10	5,500	APXE2R5ARA222MJA0G
	2,700	JC0	1,350	9	5,600	APXE2R5ARA272MJC0G
4	100	E61	80.0	22	2,610	APXE4R0ARA101ME61G
	150	E61	120	22	2,610	APXE4R0ARA151ME61G
	270	F61	216	15	3,160	APXE4R0ARA271MF61G
	330	F61	264	15	3,160	APXE4R0ARA331MF61G
	390	F80	312	14	3,470	APXE4R0ARA391MF80G
	470	H70	376	14	3,950	APXE4R0ARA471MH70G
	560	H70	448	14	3,950	APXE4R0ARA561MH70G
	680	H80	544	13	3,950	APXE4R0ARA681MH80G
	1,000	HA0	800	10	5,220	APXE4R0ARA102MHA0G
	1,000	J80	800	14	4,300	APXE4R0ARA102MJ80G
	1,200	HC0	960	9	5,400	APXE4R0ARA122MHC0G
	1,200	JA0	960	10	5,500	APXE4R0ARA122MJA0G
	1,500	JA0	1,200	10	5,500	APXE4R0ARA152MJA0G
	1,800	JA0	1,440	10	5,500	APXE4R0ARA182MJA0G
	1,800	JC0	1,440	9	5,600	APXE4R0ARA182MJC0G
6.3	100	E61	126	24	2,500	APXE6R3ARA101ME61G
	120	E61	151	24	2,500	APXE6R3ARA121ME61G
	220	F61	277	15	3,160	APXE6R3ARA221MF61G
	270	F80	340	14	3,470	APXE6R3ARA271MF80G
	330	F80	415	14	3,470	APXE6R3ARA331MF80G
	330	H70	415	14	3,950	APXE6R3ARA331MH70G
	390	H70	491	14	3,950	APXE6R3ARA391MH70G
	470	H80	592	13	3,950	APXE6R3ARA471MH80G
	820	HA0	1,030	12	4,770	APXE6R3ARA821MHA0G
	820	HC0	1,030	10	5,150	APXE6R3ARA821MHC0G
	820	J80	1,030	14	4,300	APXE6R3ARA821MJ80G
	1,200	JA0	1,510	12	5,025	APXE6R3ARA122MJA0G
	1,500	JA0	1,890	12	5,025	APXE6R3ARA152MJA0G
	1,500	JC0	1,890	10	5,500	APXE6R3ARA152MJC0G
10	47	E61	94.0	28	2,310	APXE100ARA470ME61G
	56	E61	112	28	2,310	APXE100ARA560ME61G
	68	E61	136	28	2,310	APXE100ARA680ME61G
	120	F61	240	25	2,530	APXE100ARA121MF61G
	150	F80	300	21	2,880	APXE100ARA151MF80G
	220	H70	440	21	3,220	APXE100ARA221MH70G
	270	H70	540	21	3,220	APXE100ARA271MH70G
	330	H80	660	19	3,390	APXE100ARA331MH80G
	390	HA0	780	17	4,000	APXE100ARA391MHA0G
	470	J80	940	19	3,800	APXE100ARA471MJ80G
	680	JA0	1,360	13	4,820	APXE100ARA681MJA0G
16	33	E61	105	35	2,070	APXE160ARA330ME61G
	39	E61	124	35	2,070	APXE160ARA390ME61G
	68	F61	217	28	2,390	APXE160ARA680MF61G
	82	F80	262	24	2,700	APXE160ARA820MF80G
	100	F80	320	24	2,700	APXE160ARA101MF80G
	100	H70	320	24	3,010	APXE160ARA101MH70G
	120	H70	384	24	3,010	APXE160ARA121MH70G
	150	H80	480	22	3,150	APXE160ARA151MH80G
	180	HA0	576	18	3,890	APXE160ARA181MHA0G
	220	HA0	704	18	3,890	APXE160ARA221MHA0G
	220	J80	704	22	3,450	APXE160ARA221MJ80G
	330	JA0	1,050	16	4,350	APXE160ARA331MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXA Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte
- Rated voltage range : 2.5 to 25Vdc, case size range : φ5×5.7L to φ10×12.2L
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 25Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (Rated voltage 2.5 to 20Vdc, 25Vdc) / Rated voltage×1.00 (Rated voltage 23Vdc) (at 105℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours (F45 : 3,000 hours) at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours(F45 : 500 hours). Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L+0.1/-0.2 for F45
L±0.5 for HC0 and JC0

Size code	φD	L	A	B	C	W	P
E60	5	5.7	5.3	5.3	5.9	0.5 to 0.8	1.4
F45	6.3	4.4	6.6	6.6	7.2	0.5 to 0.8	1.9
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1
HC0	8	12.0	8.3	8.3	9.0	0.7 to 1.1	3.1
J80	10	7.7	10.3	10.3	11.0	0.7 to 1.1	4.5
JC0	10	12.2	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 16V39μF

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer type)"

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXA Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size code	Leakage current (μA max./ after 2 min.)	ESR (mΩ max./ 20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	220	F60	110	25	2,500	APXA2R5ARA221MF60G
	560	H70	280	23	3,100	APXA2R5ARA561MH70G
	680	HC0	340	12	4,770	APXA2R5ARA681MHC0G
	1,000	J80	500	19	4,240	APXA2R5ARA102MJ80G
	1,500	JC0	750	10	5,500	APXA2R5ARA152MJC0G
4	100	F60	80.0	26	2,450	APXA4R0ARA101MF60G
	120	F45	240	38	1,710	APXA4R0ARA121MF45G
	150	E60	120	30	1,490	APXA4R0ARA151ME60G
	150	F60	120	26	2,450	APXA4R0ARA151MF60G
	220	H70	176	25	3,020	APXA4R0ARA221MH70G
	330	H70	264	25	3,020	APXA4R0ARA331MH70G
	470	J80	376	20	4,130	APXA4R0ARA471MJ80G
	560	HC0	448	12	4,770	APXA4R0ARA561MHC0G
	680	J80	544	20	4,130	APXA4R0ARA681MJ80G
	820	JC0	656	10	5,500	APXA4R0ARA821MJC0G
	1,200	JC0	960	10	5,500	APXA4R0ARA122MJC0G
6.3	47	E60	59.2	35	1,380	APXA6R3ARA470ME60G
	68	F60	85.6	27	2,400	APXA6R3ARA680MF60G
	82	F45	258	40	1,670	APXA6R3ARA820MF45G
	82	F60	103	27	2,400	APXA6R3ARA820MF60G
	100	E60	126	35	1,380	APXA6R3ARA101ME60G
	100	F45	315	40	1,670	APXA6R3ARA101MF45G
	100	F60	126	27	2,400	APXA6R3ARA101MF60G
	120	F60	151	27	2,400	APXA6R3ARA121MF60G
	150	H70	189	25	3,020	APXA6R3ARA151MH70G
	220	H70	277	25	3,020	APXA6R3ARA221MH70G
	330	J80	415	20	4,130	APXA6R3ARA331MJ80G
	390	HC0	491	12	4,770	APXA6R3ARA391MHC0G
	470	HC0	592	12	4,770	APXA6R3ARA471MHC0G
	470	J80	592	20	4,130	APXA6R3ARA471MJ80G
	680	JC0	856	10	5,500	APXA6R3ARA681MJC0G
	820	JC0	1,030	10	5,500	APXA6R3ARA821MJC0G

WV (Vdc)	Cap (μF)	Size code	Leakage current (μA max./ after 2 min.)	ESR (mΩ max./ 20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
10	33	E60	66.0	40	1,270	APXA100ARA330ME60G
	47	E60	94.0	40	1,270	APXA100ARA470ME60G
	47	F45	235	41	1,560	APXA100ARA470MF45G
	47	F60	94.0	31	2,250	APXA100ARA470MF60G
	56	F60	112	31	2,250	APXA100ARA560MF60G
	120	H70	240	27	2,800	APXA100ARA121MH70G
	150	H70	300	27	2,800	APXA100ARA151MH70G
	270	HC0	540	14	4,420	APXA100ARA271MHC0G
	270	J80	540	24	3,770	APXA100ARA271MJ80G
	330	HC0	660	14	4,420	APXA100ARA331MHC0G
	330	J80	660	24	3,770	APXA100ARA331MJ80G
	470	JC0	940	12	5,300	APXA100ARA471MJC0G
	560	JC0	1,120	12	5,300	APXA100ARA561MJC0G
16	22	E60	70.4	45	1,210	APXA160ARA220ME60G
	22	F45	176	45	1,490	APXA160ARA220MF45G
	33	F60	105	37	2,050	APXA160ARA330MF60G
	39	F60	124	37	2,050	APXA160ARA390MF60G
	82	H70	262	30	2,700	APXA160ARA820MH70G
	150	J80	480	26	3,430	APXA160ARA151MJ80G
	180	HC0	576	16	4,360	APXA160ARA181MHC0G
	180	J80	576	26	3,430	APXA160ARA181MJ80G
	220	JC0	704	14	5,050	APXA160ARA221MJC0G
	330	JC0	1,050	14	5,050	APXA160ARA331MJC0G
20	15	F45	150	57	1,300	APXA200ARA150MF45G
	22	F60	88.0	50	1,650	APXA200ARA220MF60G
	39	H70	156	45	2,000	APXA200ARA390MH70G
	47	H70	188	45	2,000	APXA200ARA470MH70G
	82	J80	328	40	2,500	APXA200ARA820MJ80G
	150	JC0	600	20	4,320	APXA200ARA151MJC0G
23	15	F45	172	57	1,300	APXA230ARA150MF45G
25	10	F60	125	65	1,500	APXA250ARA100MF60G
	22	H70	275	50	1,800	APXA250ARA220MH70G
	39	J80	487	45	2,100	APXA250ARA390MJ80G

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Frequency (Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXD Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- For automobile modules and other high temperature applications
- Endurance : 125℃ 2,000 hours
- Rated voltage range : 2.5 to 10Vdc, Capacitance range : 47 to 470μF
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

PXD

Longer life

PXH

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +125℃
Rated Voltage Range	2.5 to 10Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 125℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 125℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 125℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 125℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 125℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Size code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1
J80	10	7.7	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 10V330μF

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer type)"

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NPCAP™-PXD Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/100kHz)		Part No.
					-55℃≦Tx≦+105℃*1	+105℃＜Tx≦+125℃*1	
2.5	120	E61	60.0	40	1,450	650	APXD2R5ARA121ME61G
	220	F61	110	30	2,500	770	APXD2R5ARA221MF61G
6.3	56	E61	70.5	45	1,380	600	APXD6R3ARA560ME61G
	100	F61	126	35	2,400	720	APXD6R3ARA101MF61G
	220	H70	277	30	3,020	960	APXD6R3ARA221MH70G
	470	J80	592	25	3,500	1,100	APXD6R3ARA471MJ80G
10	47	E61	94.0	50	1,270	550	APXD100ARA470ME61G
	56	F61	112	40	2,250	680	APXD100ARA560MF61G
	150	H70	300	35	2,800	880	APXD100ARA151MH70G
	330	J80	660	25	3,500	1,100	APXD100ARA331MJ80G

*1 Tx : Ambient temperature（℃）

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
SMD type	0.05	0.30	0.55	0.70	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Surface Mount

NPCAP™-PXH Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- Suitable for DC-DC converters, voltage regulators and decoupling applications.
- Endurance : 125℃ 1,000 hours
- Rated voltage range : 2.5 to 20Vdc, Capacitance range : 22 to 1,000µF
- Case size range : φ6.3×5.7L to φ10×7.7L
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PXH
↑ Higher temperature
PXA

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +125℃
Rated Voltage Range	2.5 to 20Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 125℃)
Leakage Current	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 125℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value ESR: ≦200% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 125℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 125℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 125℃.

◆DIMENSIONS [mm]

●Terminal Code : A

Size code	φD	L	A	B	C	W	P
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H70	8	6.7	8.3	8.3	9.0	0.7 to 1.1	3.1
J80	10	7.7	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 20V22µF

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer type)"

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NPCAP™-PXH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/100kHz)		Part No.
					-55℃≦Tx≦+105℃*1	+105℃＜Tx≦+125℃*1	
2.5	220	F60	110	35	2,500	770	APXH2R5ARA221MF60G
	560	H70	280	30	3,100	960	APXH2R5ARA561MH70G
	1,000	J80	500	25	3,700	1,100	APXH2R5ARA102MJ80G
4	150	F60	120	35	2,450	770	APXH4R0ARA151MF60G
	220	H70	176	30	3,020	960	APXH4R0ARA221MH70G
	680	J80	544	25	3,700	1,100	APXH4R0ARA681MJ80G
6.3	82	F60	103	40	2,400	720	APXH6R3ARA820MF60G
	100	F60	126	40	2,400	720	APXH6R3ARA101MF60G
	150	H70	189	30	3,020	960	APXH6R3ARA151MH70G
	220	H70	277	30	3,020	960	APXH6R3ARA221MH70G
	470	J80	592	25	3,700	1,100	APXH6R3ARA471MJ80G
10	56	F60	112	45	2,250	680	APXH100ARA560MF60G
	120	H70	240	35	2,800	880	APXH100ARA121MH70G
	150	H70	300	35	2,800	880	APXH100ARA151MH70G
	330	J80	660	30	3,700	1,010	APXH100ARA331MJ80G
16	39	F60	125	50	2,050	650	APXH160ARA390MF60G
	82	H70	262	40	2,700	830	APXH160ARA820MH70G
	150	J80	480	35	3,020	930	APXH160ARA151MJ80G
	180	J80	576	35	3,020	930	APXH160ARA181MJ80G
20	22	F60	88.0	60	1,650	590	APXH200ARA220MF60G
	47	H70	188	45	2,000	780	APXH200ARA470MH70G
	82	J80	328	45	2,400	820	APXH200ARA820MJ80G

*1 Tx : Ambient temperature（℃）

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
2.5 to 6.3V_{dc}	0.05	0.30	0.55	0.70	1.00
10 to 20V_{dc}	0.05	0.25	0.55	0.55	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSJ Series

- Super low ESR, high ripple current capability
- ESR 4mΩ max. lineup
- Endurance : 2,000 to 5,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PSJ
↑ Lower ESR
PSF

◆SPECIFICATIONS

Items	Characteristics	
Category Temperature Range	-55 to +105℃	
Rated Voltage Range	2.5Vdc	
Capacitance Tolerance	±20% (M)	(at 20℃, 120Hz)
Surge Voltage	Rated voltage(V)×1.15	(at 105℃)
Leakage Current *Note	500μA max.	(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.10 max.	(at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25	(at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours(φ5.4×8L : 2,000 hours) at 105℃.	
	Appearance	No significant damage
	Capacitance change	≦±20% of the initial value
	D.F. (tan δ)	≦150% of the initial specified value
	ESR	≦150% of the initial specified value
	Leakage current	≦The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to DC voltage at 60℃, 90 to 95% RH for 1,000 hours.	
	Appearance	No significant damage
	Capacitance change	≦±20% of the initial value
	D.F. (tan δ)	≦150% of the initial specified value
	ESR	≦150% of the initial specified value
	Leakage current	≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds.	
	Appearance	No significant damage
	Capacitance change	≦±20% of the initial value
	D.F. (tan δ)	≦150% of the initial specified value
	ESR	≦150% of the initial specified value
	Leakage current	≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)	

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : E

Size code	E08	F08
φD	5.4	6.3
φd	0.6	0.6
F	2.0	2.5
φD'	φD+0.5max.	
L'	L+1.5max.	

◆MARKING

EX) 2.5V560μF

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NPCAP™-PSJ Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A PSJ 2R5 E □□ □□□ M □□□ □

- Supplement code (Note1)
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 390μF:391, 560μF:561)
- Lead forming·Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

(Note1) : PSJ series, 2.5V560μF (ESR 4mΩ max.) has supplement code "J".
Terminal and terminal plating are the same as all other in PSJ series.

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	ESR (mΩ max./20℃, 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	390	5.4×8	4	5,600	APSJ2R5E□□391ME08S
	470	5.4×8	4.5	5,200	APSJ2R5E□□471ME08S
	560	6.3×8	4	6,500	APSJ2R5E□□561MF08J
	560	6.3×8	4.5	6,200	APSJ2R5E□□561MF08S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
Radial lead type	0.10	0.35	0.60	0.80	1.00

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSG Series

- Super low ESR, high ripple current capability
- Endurance: 15,000 to 20,000 hours at 105℃
- Rated voltage : 16 to 35Vdc
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage	16 to 35Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage(V)×1.15 (at 105℃)
Leakage Current *Note	I=0.2CV or 500μA, whichever is greater Where, I : Leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.12 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 20,000 hours (20 to 35V : 15,000 hours) at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to DC voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦The initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦The initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : E

F05,F08,H06,H08

Size code	F05	F08	H06	H08	HB5	H16	H20	JB5	J16	J20
φD	6.3		8.0					10.0		
φd	0.45	0.6								
F	2.5		3.5					5.0		
φD'	φD+0.5max.									
L'	L+1.0max. (Note1)				L+1.5max.					

Note1 : L+1.2 max. for 16V270μF (Rated ripple current 5,080mArms).

HB5,H16,H20,JB5,J16,J20

◆MARKING

EX) 16V150μF

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSG Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P S G □□□ E □□ □□□ M □□□ □

- Supplement code (Note2)
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 150μF:151,1,000μF:102)
- Lead forming·Taping code
- Terminal code
- Voltage code (ex. 16V:160,20V:200)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

(Note2) : PSG series, 16V270μF (Rated ripple current 5,080mArms) ,16V470μF (Rated ripple current 5,400mArms) ,16V560μF (Rated ripple current 6,100mArms)have supplement code "J". Terminal and terminal plating are the same as all other in PSG series.

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L (mm)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
16	150	6.3×5	20	3,200	APSG160E□□151MF05S
	270	6.3×8	10	5,080	APSG160E□□271MF08J
	270	6.3×8	15	3,800	APSG160E□□271MF08S
	270	8×6	22	3,300	APSG160E□□271MH06S
	470	8×8	8	5,400	APSG160E□□471MH08J
	470	8×8	16	4,000	APSG160E□□471MH08S
	560	8×11.5	8	6,100	APSG160E□□561MHB5J
	560	8×11.5	14	4,970	APSG160E□□561MHB5S
	820	8×16	8	7,000	APSG160E□□821MH16S
	820	10×11.5	12	5,400	APSG160E□□821MJB5S
	1,000	8×20	8	7,500	APSG160E□□102MH20S
	1,000	10×11.5	12	5,400	APSG160E□□102MJB5S
	1,200	8×20	8	7,500	APSG160E□□122MH20S
	1,500	10×16	8	7,700	APSG160E□□152MJ16S
	1,800	10×20	8	8,100	APSG160E□□182MJ20S
	2,200	10×20	8	8,100	APSG160E□□222MJ20S
20	120	6.3×5	20	3,200	APSG200E□□121MF05S
	180	6.3×8	18	3,460	APSG200E□□181MF08S
	330	8×8	17	3,880	APSG200E□□331MH08S
	390	8×11.5	14	4,970	APSG200E□□391MHB5S
	680	10×11.5	12	5,400	APSG200E□□681MJB5S
25	56	6.3×5	30	2,600	APSG250E□□560MF05S
	82	6.3×8	28	2,780	APSG250E□□820MF08S
	180	8×8	18	3,770	APSG250E□□181MH08S
	180	8×11.5	16	4,650	APSG250E□□181MHB5S
	220	8×11.5	16	4,650	APSG250E□□221MHB5S
	330	10×11.5	14	5,000	APSG250E□□331MJB5S
	390	10×11.5	14	5,000	APSG250E□□391MJB5S
	560	10×11.5	14	5,000	APSG250E□□561MJB5S
35	68	8×11.5	18	4,380	APSG350E□□680MHB5S
	120	10×11.5	16	4,670	APSG350E□□121MJB5S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
Radial lead type	0.10	0.35	0.60	0.80	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSK Series

- Super low ESR, high ripple current capability
- Downsized from PSE series (φ6.3×8L to φ5×8L)
- Long life (20,000 hours at 105℃)
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

PSK
↑ Downsized
PSE

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 6.3 V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage(V)×1.15 (at 105℃)
Leakage Current*Note	500μA max. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.10 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 20,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to DC voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦The initial specified value ESR: ≦The initial specified value Leakage current: ≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦The initial specified value ESR: ≦The initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : E

Size code	E08
φD	5.0
φd	0.5(Note2)
F	2.0
φD'	φD+0.5max.
L'	L+1.0max.

Note2 : 0.45 for rated vollage 2.5V

◆MARKING

EX) 2.5V560μF

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NPCAP™-PSK Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A PSK □□□ E □□ □□□ M E08 S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 560μF:561)
- Lead forming·Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5, 6.3V:6R3)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L (mm)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	220	5×8	7	4,350	APSK2R5E□□221ME08S
	330	5×8	7	4,350	APSK2R5E□□331ME08S
	470	5×8	7	4,350	APSK2R5E□□471ME08S
	560	5×8	7	4,350	APSK2R5E□□561ME08S
4	330	5×8	8	4,050	APSK4R0E□□331ME08S
6.3	270	5×8	10	3,700	APSK6R3E□□271ME08S
	330	5×8	8	4,050	APSK6R3E□□331ME08S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
Radial lead type	0.10	0.35	0.60	0.80	1.00

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSF Series

- Super low ESR, high ripple current capability
- ESR 5mΩmax. (2 to 4Vdc)
- Longer life (20,000 hours at 105℃)
- Rated voltage range : 2 to 16Vdc
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2 to 16Vdc
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage(V)×1.15 (at 105℃)
Leakage Current *Note	Shall not exceed values shown in STANDARD RATINGS. (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.10 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 20,000 hours at 105℃.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦150% of the initial specified value
	ESR: ≦150% of the initial specified value
	Leakage current: ≦The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to DC voltage at 60℃, 90 to 95% RH for 1,000 hours.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦The initial specified value
	ESR: 2 to 6.3Vdc : ≦The initial specified value
	ESR: 16Vdc : ≦150% of the initial specified value
	Leakage current: ≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦The initial specified value
	ESR: 2 to 6.3Vdc : ≦The initial specified value
	ESR: 16Vdc : ≦150% of the initial specified value
	Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : E

F05, F08, H08 Coated Case

FA5, HB5, JB5 Coated Case

Size code	F05	F08	FA5	H08	HB5	JB5
φD	6.3			8.0		10.0
φd	0.45	0.6	0.5	0.6		
F	2.5			3.5		5.0
φD'	φD+0.5max.					
L'	L+1.0max. (Note1)		L+0.3max.	L+1.0max.	L+1.5max.	

Note1 : L+1.2 max. for 6.3V820μF

◆MARKING

EX) 2.5V560μF

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NPCAP™-PSF Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P S F □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 560μF:561)
- Lead forming·Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5, 16V:160)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Leakage current (μA max./after 2min.)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2	1,000	6.3×8	500	5	5,900	APSF2R0E□□102MF08S
2.5	330	6.3×8	500	5	5,900	APSF2R5E□□331MF08S
	470	6.3×8	500	5	5,900	APSF2R5E□□471MF08S
	560	6.3×8	500	5	5,900	APSF2R5E□□561MF08S
	820	6.3×8	500	5	5,900	APSF2R5E□□821MF08S
	1,200	6.3×8	1,200	5	5,900	APSF2R5E□□122MF08S
	1,600	8×8	800	5	6,100	APSF2R5E□□162MH08S
4	470	6.3×8	500	5	5,900	APSF4R0E□□471MF08S
	560	6.3×8	500	5	5,900	APSF4R0E□□561MF08S
6.3	820	6.3×8	1,030	8	4,700	APSF6R3E□□821MF08S
16	100	6.3×5	500	24	2,490	APSF160E□□101MF05S
	100	6.3×10.5	500	25	2,820	APSF160E□□101MFA5S
	270	8×8	864	10	5,000	APSF160E□□271MH08S
	270	8×11.5	864	11	5,080	APSF160E□□271MHB5S
	330	8×8	1,050	13	4,700	APSF160E□□331MH08S
	470	8×11.5	1,500	11	5,400	APSF160E□□471MHB5S
	470	10×11.5	1,500	10	6,100	APSF160E□□471MJB5S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
Radial lead type	0.10	0.35	0.60	0.80	1.00

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSE Series

- Super low ESR, high ripple current capability
- Downsized from PSC series (φ8×8L to φ6.3×8L)
- Endurance is longer than PSC series (20,000 hours at 105℃)
- Rated voltage range : 2.5 to 6.3Vdc
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 6.3Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage(V)×1.15 (at 105℃)
Leakage Current *Note	I=0.2CV or 500μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.10 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 20,000 hours at 105℃.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦150% of the initial specified value
	ESR: ≦200% of the initial specified value
	Leakage current: ≦The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to DC voltage at 60℃, 90 to 95% RH for 1,000 hours.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦The initial specified value
	ESR: ≦The initial specified value
	Leakage current: ≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds.
	Appearance: No significant damage
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦The initial specified value
	ESR: ≦The initial specified value
	Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : E

Size code	F08	H06
φD	6.3	8.0
φd	0.6	
F	2.5	3.5
φD'	φD+0.5max.	
L'	L+1.5max.	

◆MARKING

EX) 2.5V820μF

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NPCAP™-PSE Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P S E □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 820μF:821)
- Lead forming·Taping code
- Terminal code
- Voltage code (ex. 2.5V:2R5, 4V:4R0, 6.3V:6R3)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	680	8×6	8	4,900	APSE2R5E□□681MH06S
	820	6.3×8	7	5,000	APSE2R5E□□821MF08S
4	560	6.3×8	7	5,000	APSE4R0E□□561MF08S
6.3	470	6.3×8	8	4,700	APSE6R3E□□471MF08S
	560	6.3×8	8	4,700	APSE6R3E□□561MF08S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
Radial lead type	0.10	0.35	0.60	0.80	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSC Series

- Super low ESR, high ripple current capability
- Rated voltage range : 2.5 to 16Vdc
- Nominal capacitance range : 270 to 2,700µF
- Endurance : 15,000 hours at 105℃
- Suitable for DC-DC converters, voltage regulators and decoupling applications for computer motherboards
- Added 2.5V 820µF (ESR 5mΩ max.)
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	2.5 to 16Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Surge Voltage	Rated voltage×1.15 (at 105℃)
Leakage Current *Note	I=0.2CV or 500µA, whichever is greater. Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (Vdc) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.10 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.15 Z(-55℃)/Z(+20℃)≦1.25 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 15,000 hours at 105℃. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to DC voltage at 60℃, 90 to 95% RH for 1,000 hours. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds. Appearance: No significant damage Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value ESR: ≦150% of the initial specified value Leakage current: ≦The initial specified value
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 105℃)

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃.

◆DIMENSIONS [mm]

●Terminal Code : E

Size code	H08	HB5	JB5	JC5
φD	8.0	8.0	10.0	10.0
φd	0.6	0.8(Note1)	0.8(Note1)	0.6
F	3.5	3.5	5.0	5.0
φD'	φD+0.5max.			
L'	L+1.0max.	L+1.5max.		

Note1 : 0.6 for rated volt 16V.

◆MARKING

EX) 2.5V820µF

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Radial Lead

NPCAP™-PSC Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A P S C □□□ E □□ □□□ M □□□ □

- Supplement code (Note2)
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 330μF:331, 1000μF:102)
- Lead forming·Taping code
- Terminal code
- Voltage code (ex. 4V:4R0,6.3V:6R3,10V:100)
- Series code
- Category

Please refer to "Product code guide (conductive polymer type)"

(Note2) PSC series, 2.5V820μF(ESR 5mΩ max.) has supplement code "J".
Can case, terminal and terminal plating are the same as all others in PSC series.

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	ESR (mΩ max./20℃, 100k to 300kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
2.5	560	8×8	7	6,100	APSC2R5E□□561MH08S
	820	8×8	5	6,100	APSC2R5E□□821MH08J
	820	8×8	7	6,100	APSC2R5E□□821MH08S
	1,000	8×8	7	6,100	APSC2R5E□□102MH08S
	1,000	8×11.5	7	6,100	APSC2R5E□□102MHB5S
	1,500	8×11.5	7	6,100	APSC2R5E□□152MHB5S
	2,700	10×11.5	8	5,560	APSC2R5E□□272MJB5S
4	560	8×8	7	6,100	APSC4R0E□□561MH08S
	680	8×11.5	7	6,100	APSC4R0E□□681MHB5S
	1,000	10×11.5	6	6,640	APSC4R0E□□102MJB5S
6.3	470	8×8	8	5,700	APSC6R3E□□471MH08S
	560	8×8	8	5,700	APSC6R3E□□561MH08S
	820	10×11.5	7	6,640	APSC6R3E□□821MJB5S
	1,500	10×11.5	10	5,560	APSC6R3E□□152MJB5S
10	390	8×11.5	9	5,650	APSC100E□□391MHB5S
	680	10×11.5	7	6,100	APSC100E□□681MJB5S
16	270	8×11.5	11	5,080	APSC160E□□271MHB5S
	330	10×11.5	10	6,100	APSC160E□□331MJB5S
	330	10×12.5	10	6,100	APSC160E□□331MJC5S
	470	10×11.5	10	6,100	APSC160E□□471MJB5S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	120	1k	10k	50k	100k to 500k
Radial lead type	0.10	0.35	0.60	0.80	1.00

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Return Group Chart

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

PRECAUTIONS AND GUIDELINES (Conductive Polymer Hybrid)

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (Hereinafter called capacitor) that uses highly conductive polymer electrolytic materials and electrolyte. Please read the following in order to get the most out of your capacitor.
For Conductive Polymer Aluminum Solid Capacitors, see Precautions and Guidelines (Conductive Polymer).
For Aluminum Electrolytic Capacitors, see Precautions and Guidelines (Aluminum Electrolytic Capacitors).

1 Device circuits design considerations

1) Confirm installation and operating requirements for the capacitors, then use them within the performance limits prescribed in this catalog or product specifications.

2) Polarity

Capacitors are polarized.
Never apply a reverse voltage or AC voltage. Connecting with wrong polarity will short-circuit or damage the capacitor with the pressure relief vent opening early on. To identify the polarity of a capacitor, see the relevant diagram in the catalogs or product specifications, or the polarity marking on the body of the capacitors.

3) Operating voltage

Do not apply an over-voltage that exceeds a rated voltage specified for the capacitors.
The total peak value of the ripple voltage plus the DC voltage must not exceed the rated voltage of the capacitors. Capacitors do not require voltage derating within the category temperature. Although capacitors specify a surge voltage that exceeds the full rated voltage, it does not assure long-term use but limited use under specific conditions.

4) Ripple current

Do not apply an over current that exceeds the rated ripple current specified for the capacitors. Excessive ripple current will increase heat production within the capacitors, causing the capacitors to be damaged as follows:

- Shorten lifetime
- Open pressure relief vent
- Short circuit

At the time of low DC bias voltage, reverse voltage may be applied if uses with less than rated ripple current. Please use it as far as the reverse voltage is not applied. The rated ripple current is specified along with a specific ripple frequency. Where using the capacitors at any ripple frequency other than the specified frequency, calculate the allowable ripple current by multiplying the rated ripple current by a frequency compensation factor (Frequency Multiplier) specified for each product series.

5) Operating temperature (Category temperature)

Do not apply high temperatures that exceed the upper limit of the category temperature range specified for the capacitors.
Using the capacitors at temperatures higher than the upper limit will considerably shorten the lifetime of the capacitors and make the pressure relief vent open. The temperature, please confirm the temperature of the capacitors which included the ambient temperature of the device, not only the temperature in the device but also radiant heat of the heating element (power transistor, resistance) in the apparatus, self heating caused by the ripple current. Additionally, please do not place heating element on the back side of the capacitors. In addition, please use the capacitors within category temperature range because the life of the capacitors are affected by the operating temperature. In other words, lowering ambient temperatures will extend the expected lifetime of the capacitors.

6) Lifetime

Select the capacitors to meet the service life requirements of device.

7) Charging and discharging

Do not use capacitors in circuits intended for rapid charge and discharge cycle operations.
If capacitors are used in the circuits that repeat a charge and discharge with a large voltage drop or a rapid charge and discharge at short interval cycle, capacitance will decrease and/or the capacitors will be damaged by internal heat generation.
Please consult us the capacitors to use for the circuit where rapid charge and discharge is repeated.
Please be careful about rush currents. Recommend to install protective circuit.

8) Failure mode of capacitors

Non-solid aluminum electrolytic capacitors have a limited lifetime which ends in an open circuit failure mode, in general.
Depending on the product type and operating conditions, the failure mode may involve in opening of the pressure relief vent.
But it may lead to shot circuit mode failure when capacitor is used in the overload more than the guarantee ranges including over voltage and the over current.

9) Capacitor insulation

The can case of capacitor does not assure electrical insulation.
The outer coating on can case is aimed for indication and does not assure function of the electrical insulation.
Electrically isolate the outer can case of a capacitor from the negative terminal, the positive terminal and circuit patterns.

10) Operating conditions

Do not use/expose capacitors to the following conditions:

① Direct contact with water, salt water or oil, or high condensation environment.
② Direct sunlight
③ Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine and its compounds, bromine and its compounds and ammonium.
④ Ozone, ultraviolet rays or radiation.
⑤ Extreme vibration or mechanical shock that exceeds limits in the catalogs or product specifications.
The standard vibration condition is applicable to JIS C 5101-4.

11) Mounting

Capacitors contain paper separators and electric-conductive electrolyte that contains organic solvent as main solvent material, both of which are flammable. If the electrolyte leaks onto a printed circuit board, it can erode the device circuit pattern, may short-circuit the copper traces, smoke and burn. Make sure of designing a PC board as follows:

① Provide clearance space (2mm minimum) over the pressure relief vent of a capacitor to avoid blocking the correct opening of the pressure relief vent for 10mm case diameter of capacitor.
② Do not locate any wire or circuit pattern over the pressure relief vent of a capacitor.
③ Avoid locating any heat source components near capacitors or on the opposite side of the PC board under capacitors.
④ Design the solder land on the PC board in accordance with the catalog or the product specification.
⑤ For radial capacitors, design the terminal holes on the PC board to fit the terminal dimension of the capacitor.
⑥ Do not print any copper trace under the seal (terminal) side of a capacitor. When the electrolyte leaks out, it may occur circuit pattern short-circuit, and tracking or migration. Copper traces should be 1 mm (preferably 2mm or more) spaced apart from the side of the capacitor body.
⑦ In designing a double-sided PC board, do not locate any

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through-hole via or unnecessary hole underneath a capacitor.
⑧ In designing a double-sided PC board, do not print any circuit pattern underneath a capacitor.

12) Using capacitors for significantly safety-oriented applications

Consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.

13) Others

Design device circuits taking into consideration the following conditions:
① Electrical characteristics of a capacitor depend on the temperature and frequency. In designing the device circuits, consider the change in the characteristics.
② If using more than one capacitor connected in parallel, design the device circuits to balance the current flow in individual capacitors.
③ If using more than one capacitor connected in series, connect shunting resistors in parallel with the individual capacitors to balance the voltage.

2 Installation

1) Assembling

① Do not try to reuse the capacitors once assembled and electrified
② Capacitors may have been spontaneously recharged with time by a recovery voltage phenomenon.
Capacitors may produce recovery voltage higher than aluminum electrolytic capacitors and conductive polymer aluminum solid capacitors. In this case, discharge electricity through approximately 1kΩ before use.
③ If capacitors have been stored at any conditions more than 35°C and 75%RH for long storage periods of time more than the limits specified in the catalogs or product specifications, they may have high leakage current. In this case, make pre-conditioning by applying the rated voltage through a resistor of approximately 1kΩ.
④ Confirm the rated capacitance and voltage of capacitors before installation.
⑤ Confirm the polarity of capacitors before installation.
⑥ Do not try to use the capacitors that were dropped to the floor and so forth.
⑦ Do not deform the can case of a capacitor.
⑧ Verify that the lead spacing of the capacitor fits the hole spacing in the PC board before installing the capacitors.
⑨ Do not apply excessive mechanical force to capacitors more than the limits prescribed in the catalogs or product specifications. Avoid excessive mechanical force while the capacitors are in the process of vacuum-picking, placing and positioning by automatic mounting machines or cutting the lead wires by automatic insertion machines.

2) Soldering and heat resistance

① For soldering using a soldering iron, consider the following conditions:
Soldering conditions (temperature and time) should be (380 ± 10°C, 3 ± 0.5second).
Do not touch the body of a capacitor with the hot tip of the soldering iron.
② Verify the following when flow soldering:
・Do not dip the body of a capacitor into the solder bath only dip the terminals in. The soldering must be done on the reverse side of PC board.
・Soldering conditions (preheat, solder temperature and dipping time) should be within the limits prescribed in the catalog or the product specifications.
・Do not apply flux to any part of capacitors other than their terminals.
・Make sure the capacitors do not come into contact with any other components while soldering.
③ For reflow soldering, consider the following conditions:
Soldering conditions (preheat, reflow temperature and time) should be within the limits prescribed in the catalogs or product specifications.
・When using the infrared heater and setting its temperatures, adjust the heating levels taking into consideration that the color and materials of a capacitor vary in their infrared absorbance.
・The allowable number of reflow passes is specified in the catalogs or product specifications.
・Please consult us about vapor phase soldering (VPS).
④ Do not try to reuse the capacitors once assembled.
⑤ Only use radial lead type capacitors for flow soldering. The other type capacitors are not designed for the flow soldering.
⑥ Only use chip type capacitors for reflow soldering. The other type capacitors are not designed for the reflow soldering.

3) Handling after soldering

After soldering the PC board, do not apply the following mechanical stress to the capacitor:
① Do not tilt, push down or twist the body of the capacitor.
② Do not grab the body of the capacitor to carry the assembly board.
③ Do not hit anything against the capacitor. When stacking the assembled boards, do not put any of the PC boards or other components against the capacitor.
④ Do not drop the assembled board.

4) Cleaning assembly boards

① Do not clean capacitors with the following cleaning agents:
- Halogenated solvents: cause capacitor failures due to corrosion.
- Alkali system solvents: corrode (dissolve) the aluminum can case.
- Terpene and petroleum system solvents: deteriorate the rubber seal materials.
- Xylene: deteriorates the rubber seal materials as well.
- Acetone: erases the markings printed on a capacitor.

Where cleaning is necessary, use only solvent resistant type capacitors that have been assured for the cleaning within the specific cleaning conditions prescriber in the catalogs or product specifications. In particular, carefully set up the conditions for ultrasonic cleaning system. Consult us regarding alternative CFCs or other cleaners before use.
② Where cleaning the capacitors, confirm the following conditions:
- Control the contamination (the conductivity, pH, specific gravity, water content, etc.) of the cleaning agents.
- After the cleaning, do not leave the capacitors (assembly boards) in an environment of cleaning agent-rich or in a closed container. Sufficiently evaporate the residual cleaning agent from the assembly boards and the capacitors by forced hot air at temperatures less than the upper limit of category temperature range for more than 10 minutes.
In general, aluminum electrolytic capacitors are sensitive to contamination of halogen ions (particularly to chlorine ions). Depending on the properties of the electrolyte and rubber seal materials used in a capacitor, the halogen ions lead up to catastrophic failures on the capacitor. Where the inside of a capacitor has been contaminated with more than a certain amount of halogen ions and the capacitor is in use, the corrosion reaction of aluminum occurs. The corrosion causes the capacitor to have a significant increase in leakage current with heat produced, open the pressure relief vent and become open circuit mode failure.
Due to global environmental issues (greenhouse effects and other environmental destruction by depletion of the ozone layer),

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the conventional cleaning solvents of CFC 113, Trichloroethylene and 1,1,1-trichloroethylene were replaced by substitutes. The following are some substitute cleaning agents and allowable cleaning conditions:

a) Fatty-alcohol cleaning agents
Pine Alpha ST-100S (Arakawa Chemical)
Clean Through 750H, 750K, 750L and 710M (Kao)
Technocare FRW-14, 15, 16 and 17 (Momentive Performance Materials)

[Cleaning conditions]
Either of immersion or ultrasonic cleaning, for a maximum of 10 minutes and at a maximum liquid temperature of 60°C is acceptable. Make sure that the markings on the capacitor are not rubbed against any other component or the PC board during cleaning. Note that shower cleaning affects the markings on the capacitor.

b) Alternative CFCs
AK225AES (Asahi Glass)
[Cleaning conditions]
Solvent resistant type capacitors, which were originally developed to intend to resist Freon TE or Freon TES, are also capable of withstanding any one of immersion, ultrasonic or vapor cleaning, for a maximum of 5 minutes.
However, this type of cleaning agent is not recommended to use, as the cleaning materials may be banned in near future in view of global environmental issues

c) IPA (Isopropyl Alcohol)
Immersion cleaning with a maximum flux concentration of 2 wt% is acceptable.

5) Adhesives and coating materials

① Do not use any adhesive or coating materials containing halogenated solvents.
② Make sure of the following conditions before applying adhesive or coating materials to a capacitor,
・No flux residue nor stain is left between the rubber seal of a capacitor and PC board.
・Dry the capacitor to remove residual cleaning agents before applying adhesive and coating materials. Do not cover up the entire surface of the rubber seal of the capacitor with adhesives or coating materials.
・Consult us Heating and curing conditions for adhesives and coating materials.
・Covering up the entire surface of the rubber seal with resin mold materials will obstruct the normal diffusion of internal hydrogen gas from a capacitor and result in serious failures. Also, where the adhesive and coating materials contain a large amount of halogen ions, the halogen ions will contaminate the inside of the capacitor through the rubber seal materials, causing the capacitor to become a failure.
・Depending on solvent materials that the adhesive or coating materials contains, note that the surface of a capacitor may change in appearance.

6) Fumigation

In exporting or importing electronic devices, they may be exposed to fumigation with halide such as methyl bromide.
Where the capacitors are exposed to halide such as methyl bromide, the capacitors will be damaged with the corrosion reaction with halogen ions in the same way as cleaning agents. For the export and import, Nippon Chemi-Con considers using some packaging method and so forth so that fumigation is not required. For customers to export or import electronic devices, semi-assembly products or capacitor components, confirm if they will be exposed to fumigation and also consider final condition of packaging. (Note that either cardboard or vinyl package has a risk of fumigation gas penetration.)

3 Precautions during operation of devices

(1) Never touch the terminals of a capacitor directly with bare hands.
(2) Do not short-circuit between the capacitor terminals with anything conductive. Also, do not spill any conductive liquid such as acid or alkaline solution over a capacitor.
(3) Confirm environmental conditions where the device will be placed. Do not use the devise in the following environmental conditions:
① Water or oil spatters, or high condensation environment.
② Direct sunlight.
③ Ozone, ultraviolet rays or radiation.
④ Toxic gases such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine and its compounds, bromine and itscompounds and ammonium.
⑤ Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalog or product specification.
The standard vibration condition is applicable to JIS C 5101-4.

4 Maintenance inspections

(1) For industrial use capacitors, make periodic inspections of the capacitors. Before the inspections, turn off the power supply of the device and discharge the electricity of the capacitors. Where checking it by a volt-ohm meter, confirm the polarity beforehand. Do not apply mechanical stress to the terminals of the capacitors during inspection.
(2) Characteristics to be inspected
① Significant damage in appearance: vent opening, electrolyte leakage, etc.
② Electrical characteristics: Leakage current, capacitance, tan δ and other characteristics prescribed in the catalogs or product specifications. If finding anything abnormal on the characteristics above, check the specifications of the capacitor and take appropriate actions such as replacement.

5 Contingencies

1) A capacitor with more than a certain case size has the pressure relief vent functioning to escape abnormal gas pressure increase. If gas expels from a venting capacitor, disconnect the power supply of the device or unplug the power supply cord. If not disconnecting the power supply, the device circuit may be damaged due to the short circuit failure of the capacitor or short-circuited with the liquid that the gas was condensed to. It may cause secondary damages such as device burnout in the worst case scenario. The gas that comes out of the open vent is vaporized electrolyte not smoke.
2) The gas expelled from a venting capacitor is more than 100°C. Never expose your face to the capacitor. If your eyes are exposed to the gas or you inhale it, immediately flush your eyes and/or gargle with water. If the electrolyte comes in contact with the skin, wash with soap and water.

6 Storage

1) Do not store capacitors at high temperature or high humidity. Store the capacitors indoors at temperatures of 5 to 35°C and humidifies of less than 75%RH.
In principle, aluminum electrolytic capacitors should be used within 2 years after production.
2) Keep capacitors packed in the original packaging material wherever possible.
3) Avoid the following storage environmental conditions:
① Water spattering, high temperatures, high humidity or condensation environment.
② Oil spattering or oil mist filled.

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③ Salt water spattering or salt filled.
④ Acidic toxic gases such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine, bromine and methyl bromide filled.
⑤ Alkaline toxic gases such as ammonium filled.
⑥ Acid or alkaline solutions spattering.
⑦ Direct sunlight, ozone, ultraviolet rays or radiation.
⑧ Extreme vibration or shock loading.
4) JEDEC J-STD-020 is not applicable.

7 Capacitor disposal

Please consult with a local organization for the proper disposal of industrial waste. For incinerating capacitors, apply a high temperature incineration (over 800°C). Incinerating them at temperatures lower than that may produce toxic gases such as chlorine. To prevent capacitors from explosion, punch holes in or sufficiently crush the can cases of the capacitors, then incinerate.

8 About AEC-Q200

The Automotive Electronics Council (AEC) was originally established by major American automotive related manufactures. Today, the committees are composed of representatives from the sustaining Members of manufacturing companies in automotive electrical components. It has standardized the criteria for "stress test qualification" and "reliability tests" for electronic components.
AEC-Q200 is the reliability test standard for approval of passive components in Automotive applications. It specifies the test type, parameters and quantity, etc. for each component. The criteria of the reliability tests such as for our main products, "Aluminum Electrolytic Capacitors" are described in this standard.
Pursuant to the customer's specific testing requirements, Chemi-Con submits the test results according to AEC-Q200 for Aluminum Electrolytic Capacitors used in automotive applications on request.
An electronic component manufacturer cannot simply claim that their product is "AEC-Q200 Qualified". It can be claimed "Compliant", "Capable", "Available", etc., however each component must be tested per each users "Qualification Test Plan" in order to claim AEC-Q200 status.
Please contact us for more information.

9 Response to the Substances of Concern

1) Nippon Chemi-Con aims for developing products that meet laws and regulations concerning substances of concern.
(Some products may contain regulated substances for exempted application)
Please contact us for more information about law-compliance status.

2) According to the content of REACH handbook (Guidance on requirements for substances in articles which is published on May 2008), our electronic components are "articles without any intended release". Therefore they are not applicable for "Registration" for EU REACH Regulation Article 7 (1).
Reference: Electrolytic Condenser Investigation Society Study of REACH Regulation in EU about Electrolytic Capacitor (publicized on 13 March 2008)

10 Catalogs

Specifications in the catalogs are subject to change without notice. Test data shown in the catalogs are not assured as the whole performance values, but typical values. For more details, refer to JEITA RCR-2367C (March 2006) with the title of "Safety Application Guide for fixed aluminum electrolytic capacitors for use in electronic equipment".

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RECOMMENDED SOLDERING CONDITIONS

◆SURFACE MOUNT TYPE

The following conditions are recommended for air or infrared reflow soldering HXE/HXC/HXD/HXA/HXB series onto a glass epoxy circuit board of 90×50×0.8mm (with resist) by cream solder. The temperatures shown are the surface temperature values on the top of the can and temperature of capacitor terminal.
Reflow should be performed twice or less.
Please ensure that the capacitor became cold enough to the room temperature (5 to 35℃) before the second reflow.

● Recommended soldering heat conditions

Size Code	Preheat	Time maintained above 217℃	Time maintained above 230℃	Peak temp.	Reflow number
E61, F61, F80	150 to 180V 120 sec. max.	50 sec. max.	40 sec.max.	260℃ max.	2-cycles allowed
HA0, JA0		50 sec. max.	40 sec.max.	260℃ max.	1-cycle only
				245℃ max.	2-cycles allowed

● Recommended Solder Land on PC Board

Solder land on PC board

[mm]

Size code	Terminal code : A			Terminal code : G		
	a	b	c	a	b	c
E61	1.4	3.0	1.6			
F61, F80	1.9	3.5	1.6			
HA0	3.1	4.2	2.2	3.1	4.2	3.5
JA0	4.5	4.4	2.2	4.5	4.4	3.5

◆RADIAL LEAD TYPE

● Recommended soldering heat conditions

Preheat ：150℃ 120 seconds max.
Flow soldering ：260+5℃ max. 10+1 seconds max.

◆PRECAUTIONS FOR USERS

Soldering method
SMD type have no capability to withstand such dip or wave soldering as totally immersing components into a solder bath.

Reflow soldering
Reflow the capacitors within Recommended Reflow Soldering Conditions. Verify there is no temperature stress to the capacitors because the following differences might degrade capacitors electrically and mechanically. Please consult with us if other reflow conditions are employed.

1.Location of components : Temperature increases at the edge of PC board more than the center.
2.Population of PC board : The lower the component population is, the more temperature rises.
3.Material of PC board : A ceramic-made board needs more heat than a glass epoxy-made board. The heat increase may cause damage to the capacitors.
4.Thickness of PC board : A thicker board needs more heat than a thinner board. The heat may damage the capacitors.
5.Size of PC board : A larger board needs more heat than a smaller board. The heat may damage the capacitors.
6.Solder thickness
If very thin cream solder paste is to be used for SMD types, please consult with us.
7.Location of infrared ray lamps : IR reflow as well as hot plate reflow heats only on the reverse side of the PC board to lessen heat stress to the capacitors.
8.Case leakage current will increase (～mA) after the reflow process, the leakage current which rose gradually decreases when voltage is applied.
9.Please consult us about vapor phase soldering (VPS).

Rework of soldering
Use a soldering iron for rework. Do not exceed an iron tip temperature of 380±10℃ and an exposure time of 3±0.5 seconds.

Mechanical stress
Do not grab the capacitors to lift the PC board and give stress to the capacitor. Avoid bending the PC board. This may damage the capacitors.

Cleaning assembly board
Immediately after solvent cleaning, remove residual solvent with an air knife for at least 10 minutes. If the solvent is insufficiently dry, the capacitors may corrode.

Coating on assembly board
1.Before curing coating material, remove the cleaning solvents from the assembly board.
2.Before conformal coating, a chloride free pre-coat material is recommended to decrease the stress on the capacitors.

Molding with resin
Internal chemical reaction gradually produces gas in the capacitor; increasing internal pressure. If the end seal of the capacitor is completely coverd by resin the gas will be unable to escape causing a potentially dangerous situation. The chlorine in resin will penetrate the end seal, reach the element, and damage of the capacitor.

Glue
The followings are requirements for glue.
1.A low curing temperature over a short period of time
2.Strong adhension and heat resistance after curing
3.Long shelf life
4.No corrosion

Others
Refer to PRECAUTIONS AND GUIDELINES(Conductive Polymer Hybrid).

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Return Group Chart

PART NUMBERING SYSTEM

Product code guide (Conductive polymer hybrid Surface mount type)

(Example : HXC series, 16V-82μF, ϕ6.3×5.8L)

Please refer to the following table

Contents	Code
Conductive Polymer Hybrid	H

Series	Code
HXC	HXC

Type	Code
No dummy terminal	A
With dummy terminal	G

Tol.(%)	Code
±20	M

Terminal plating material	Code
Sn-Bi	G

1	2 3 4	5 6 7	8	9 10	11 12 13	14	15 16 17	18
H	HXC	160	A	RA	820	M	F61	G
Category	Series code	Voltage code	Terminal code	Taping・Tray code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
16	160
25	250
35	350
50	500
63	630

Type	Reel dia. ϕ (mm)	Application size ϕD(mm)	Code
Plastic Reel	380	ϕD=4 to 10	RA

Refer to product guide for taping specifications.

Cap.(μF)	Code
10	100
22	220
33	330
82	820
100	101
220	221
330	331
⋮	⋮

ϕD(mm)	Code
6.3	F
8	H
10	J

L(mm)	Code
5.8	61
7.7	80
10	A0

*Refer to the appendix (Part number) for codes not listed here.

Product code guide (Conductive polymer hybrid Radial lead type)

(Example : HSC series, 25V-330μF, ϕ10×12.5L, Long Lead with bulk)

Please refer to the following table

Contents	Code
Conductive Polymer Hybrid	H

Series	Code
HSC	HSC

Type	Code
Radial lead	E

Tol.(%)	Code
± 20	M

Terminal plating material	Code
Sn	S

1	2 3 4	5 6 7	8	9 10	11 12 13	14	15 16 17	18
H	HSC	250	E	LL	331	M	JC5	S
Category	Series code	Voltage code	Terminal code	Taping・Tray code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
25	250
35	350
50	500
63	630

Type	Contents	Code
Lead forming (Bulk)	Long Lead	LL
	Cut(3.5mm)	C3
	Cut(5.0mm)	C5
Taping	Straight	TD

Refer to product guide for taping specifications.

Cap.(μF)	Code
100	101
330	331

ϕD(mm)	Code
10	J

L(mm)	Code
12.5	C5

*Refer to the appendix (Part number) for codes not listed here.

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXC Series

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 4,000 hours at 125℃
- Rated voltage range : 16 to 63Vdc, Capacitance range : 6.8 to 470μF
- For high temperature and high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

HXC
↑ Higher temperature
HXD

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +125℃
Rated Voltage Range	16 to 63Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(Vdc): 16V, 25V, 35V, 50V, 63V tan δ (Max.): 0.16, 0.14, 0.12, 0.10, 0.08 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 4,000 hours at 125℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃, 85% RH for 2,000 hours. Appearance: No significant damage Capacitance change: ≦ ±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : E61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

Size Code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

▨ : Dummy terminals

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
H H X C □□□ □ R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470, 100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (conductive polymer hybrid type)"

◆MARKING

EX) 35V270μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
16	C
25	E
35	V
50	H
63	J

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXC Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (mΩ max./20℃, 100kHz)	Rated ripple current (mArms/125℃, 100kHz)	Part No.
16	47	E61	80	550	HHXC160ARA470ME61G
	82	F61	45	950	HHXC160ARA820MF61G
	150	F80	27	1,450	HHXC160ARA151MF80G
	270	HA0	22	1,700	HHXC160□RA271MHA0G
	470	JA0	18	2,100	HHXC160□RA471MJA0G
25	33	E61	80	550	HHXC250ARA330ME61G
	47	F61	50	900	HHXC250ARA470MF61G
	56	F61	50	900	HHXC250ARA560MF61G
	68	F80	30	1,400	HHXC250ARA680MF80G
	100	F80	30	1,400	HHXC250ARA101MF80G
	150	HA0	27	1,600	HHXC250□RA151MHA0G
	220	HA0	27	1,600	HHXC250□RA221MHA0G
	270	JA0	20	2,000	HHXC250□RA271MJA0G
	330	JA0	20	2,000	HHXC250□RA331MJA0G
35	22	E61	100	550	HHXC350ARA220ME61G
	27	F61	60	900	HHXC350ARA270MF61G
	47	F61	60	900	HHXC350ARA470MF61G
	47	F80	35	1,400	HHXC350ARA470MF80G
	68	F80	35	1,400	HHXC350ARA680MF80G
	100	HA0	27	1,600	HHXC350□RA101MHA0G
	150	HA0	27	1,600	HHXC350□RA151MHA0G
	150	JA0	20	2,000	HHXC350□RA151MJA0G
	270	JA0	20	2,000	HHXC350□RA271MJA0G
50	10	F61	80	750	HHXC500ARA100MF61G
	15	F80	40	1,100	HHXC500ARA150MF80G
	22	F61	80	750	HHXC500ARA220MF61G
	33	F80	40	1,100	HHXC500ARA330MF80G
	33	HA0	30	1,250	HHXC500□RA330MHA0G
	47	HA0	30	1,250	HHXC500□RA470MHA0G
	56	JA0	25	1,600	HHXC500□RA560MJA0G
	68	HA0	30	1,250	HHXC500□RA680MHA0G
	100	JA0	25	1,600	HHXC500□RA101MJA0G
	120	JA0	25	1,600	HHXC500□RA121MJA0G
63	6.8	F61	120	700	HHXC630ARA6R8MF61G
	10	F61	120	700	HHXC630ARA100MF61G
	10	F80	80	900	HHXC630ARA100MF80G
	22	F80	80	900	HHXC630ARA220MF80G
	22	HA0	40	1,100	HHXC630□RA220MHA0G
	33	HA0	40	1,100	HHXC630□RA330MHA0G
	33	JA0	30	1,400	HHXC630□RA330MJA0G
	47	HA0	40	1,100	HHXC630□RA470MHA0G
	56	JA0	30	1,400	HHXC630□RA560MJA0G
	82	JA0	30	1,400	HHXC630□RA820MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
to 10	0.03	0.30	0.50	0.60	0.70	0.75	1.00
15 to 33	0.07	0.30	0.50	0.60	0.70	0.75	1.00
47 to 150	0.10	0.40	0.60	0.70	0.80	0.80	1.00
220 to 470	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXD Series

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 5,000 hours at 105℃
- Rated voltage range : 16 to 63Vdc, Capacitance range : 6.8 to 470μF
- For high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	16 to 63Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(Vdc): 16V, 25V, 35V, 50V, 63V tan δ (Max.): 0.16, 0.14, 0.12, 0.10, 0.08 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105 ℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105 ℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃, 85% RH for 2,000 hours. Appearance: No significant damage Capacitance change: ≦ ±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : E61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

Size Code	φD	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

▨ : Dummy terminals

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer hybrid type)"

◆MARKING

EX) 35V47μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
16	C
25	E
35	V
50	H
63	J

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXD Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (mΩmax./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
16	47	E61	80	900	HHXD160ARA470ME61G
	82	F61	45	1,600	HHXD160ARA820MF61G
	150	F80	27	2,200	HHXD160ARA151MF80G
	270	HA0	22	2,500	HHXD160□RA271MHA0G
	470	JA0	18	2,600	HHXD160□RA471MJA0G
25	33	E61	80	900	HHXD250ARA330ME61G
	47	F61	50	1,300	HHXD250ARA470MF61G
	56	F61	50	1,300	HHXD250ARA560MF61G
	68	F80	30	2,000	HHXD250ARA680MF80G
	100	F80	30	2,000	HHXD250ARA101MF80G
	150	HA0	27	2,300	HHXD250□RA151MHA0G
	220	HA0	27	2,300	HHXD250□RA221MHA0G
	270	JA0	20	2,500	HHXD250□RA271MJA0G
	330	JA0	20	2,500	HHXD250□RA331MJA0G
35	22	E61	100	900	HHXD350ARA220ME61G
	27	F61	60	1,300	HHXD350ARA270MF61G
	47	F61	60	1,300	HHXD350ARA470MF61G
	47	F80	35	2,000	HHXD350ARA470MF80G
	68	F80	35	2,000	HHXD350ARA680MF80G
	100	HA0	27	2,300	HHXD350□RA101MHA0G
	150	HA0	27	2,300	HHXD350□RA151MHA0G
	150	JA0	20	2,500	HHXD350□RA151MJA0G
	270	JA0	20	2,500	HHXD350□RA271MJA0G
50	10	F61	80	1,100	HHXD500ARA100MF61G
	15	F80	40	1,600	HHXD500ARA150MF80G
	22	F61	80	1,100	HHXD500ARA220MF61G
	33	F80	40	1,600	HHXD500ARA330MF80G
	33	HA0	30	1,800	HHXD500□RA330MHA0G
	47	HA0	30	1,800	HHXD500□RA470MHA0G
	56	JA0	25	2,000	HHXD500□RA560MJA0G
	68	HA0	30	1,800	HHXD500□RA680MHA0G
	100	JA0	25	2,000	HHXD500□RA101MJA0G
	120	JA0	25	2,000	HHXD500□RA121MJA0G
63	6.8	F61	120	1,000	HHXD630ARA6R8MF61G
	10	F61	120	1,000	HHXD630ARA100MF61G
	10	F80	80	1,500	HHXD630ARA100MF80G
	22	F80	80	1,500	HHXD630ARA220MF80G
	22	HA0	40	1,600	HHXD630□RA220MHA0G
	33	HA0	40	1,600	HHXD630□RA330MHA0G
	33	JA0	30	1,800	HHXD630□RA330MJA0G
	47	HA0	40	1,600	HHXD630□RA470MHA0G
	56	JA0	30	1,800	HHXD630□RA560MJA0G
	82	JA0	30	1,800	HHXD630□RA820MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
to 10	0.03	0.30	0.50	0.60	0.70	0.75	1.00
15 to 33	0.07	0.30	0.50	0.60	0.70	0.75	1.00
47 to 150	0.10	0.40	0.60	0.70	0.80	0.80	1.00
220 to 470	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXA Series

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 4,000 hours at 125℃
- For high temperature and high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

HXA
↑ Higher temperature
HXB

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +125℃
Rated Voltage Range	16 to 80V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(V_{dc}): 16V, 25V, 35V, 50V, 63V, 80V tan δ (Max.): 0.16, 0.14, 0.12, 0.10, 0.08, 0.08 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 4,000 hours at 125℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : F61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

Size Code	φD	L	A	B	C	W	P
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

: Dummy terminals

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
H H X A □□□ □ R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470, 100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (conductive polymer hybrid type)"

◆MARKING

EX) 35V47μF

●Rated voltage symbol

Rated voltage (V_{dc})	Symbol
16	C
25	E
35	V
50	H
63	J
80	K

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (mΩ max./20℃, 100kHz)	Rated ripple current (mArms/125℃, 100kHz)	Part No.
16	82	F61	45	950	HHXA160ARA820MF61G
	150	F80	27	1,450	HHXA160ARA151MF80G
	270	HA0	22	1,700	HHXA160□RA271MHA0G
	470	JA0	18	2,100	HHXA160□RA471MJA0G
25	47	F61	50	900	HHXA250ARA470MF61G
	56	F61	50	900	HHXA250ARA560MF61G
	68	F80	30	1,400	HHXA250ARA680MF80G
	100	F80	30	1,400	HHXA250ARA101MF80G
	150	HA0	27	1,600	HHXA250□RA151MHA0G
	220	HA0	27	1,600	HHXA250□RA221MHA0G
	270	JA0	20	2,000	HHXA250□RA271MJA0G
	330	JA0	20	2,000	HHXA250□RA331MJA0G
35	27	F61	60	900	HHXA350ARA270MF61G
	47	F61	60	900	HHXA350ARA470MF61G
	47	F80	35	1,400	HHXA350ARA470MF80G
	68	F80	35	1,400	HHXA350ARA680MF80G
	100	HA0	27	1,600	HHXA350□RA101MHA0G
	150	HA0	27	1,600	HHXA350□RA151MHA0G
	150	JA0	20	2,000	HHXA350□RA151MJA0G
	270	JA0	20	2,000	HHXA350□RA271MJA0G
50	10	F61	80	750	HHXA500ARA100MF61G
	15	F80	40	1,100	HHXA500ARA150MF80G
	22	F61	80	750	HHXA500ARA220MF61G
	33	F80	40	1,100	HHXA500ARA330MF80G
	33	HA0	30	1,250	HHXA500□RA330MHA0G
	47	HA0	30	1,250	HHXA500□RA470MHA0G
	56	JA0	25	1,600	HHXA500□RA560MJA0G
	68	HA0	30	1,250	HHXA500□RA680MHA0G
	100	JA0	25	1,600	HHXA500□RA101MJA0G
63	6.8	F61	120	700	HHXA630ARA6R8MF61G
	10	F61	120	700	HHXA630ARA100MF61G
	10	F80	80	900	HHXA630ARA100MF80G
	22	F80	80	900	HHXA630ARA220MF80G
	22	HA0	40	1,100	HHXA630□RA220MHA0G
	33	HA0	40	1,100	HHXA630□RA330MHA0G
	33	JA0	30	1,400	HHXA630□RA330MJA0G
	56	JA0	30	1,400	HHXA630□RA560MJA0G
80	22	HA0	45	1,100	HHXA800□RA220MHA0G
	39	JA0	35	1,200	HHXA800□RA390MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
to 10	0.03	0.30	0.50	0.60	0.70	0.75	1.00
15 to 33	0.07	0.30	0.50	0.60	0.70	0.75	1.00
39 to 150	0.10	0.40	0.60	0.70	0.80	0.80	1.00
220 to 470	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTRYLTIC CAPACITORS

Surface Mount

HXB Series

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 5,000 hours at 105℃
- For high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	16 to 80Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(Vdc): 16V, 25V, 35V, 50V, 63V, 80V tan δ (Max.): 0.16, 0.14, 0.12, 0.10, 0.08, 0.08 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105 ℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105 ℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : F61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

Size Code	φD	L	A	B	C	W	P
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

: Dummy terminals

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (conductive polymer hybrid type)"

◆MARKING

EX) 35V47μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
16	C
25	E
35	V
50	H
63	J
80	K

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Surface Mount

HXB Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (mΩ max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
16	82	F61	45	1,600	HHXB160ARA820MF61G
	150	F80	27	2,200	HHXB160ARA151MF80G
	270	HA0	22	2,500	HHXB160□RA271MHA0G
	470	JA0	18	2,600	HHXB160□RA471MJA0G
25	47	F61	50	1,300	HHXB250ARA470MF61G
	56	F61	50	1,300	HHXB250ARA560MF61G
	68	F80	30	2,000	HHXB250ARA680MF80G
	100	F80	30	2,000	HHXB250ARA101MF80G
	150	HA0	27	2,300	HHXB250□RA151MHA0G
	220	HA0	27	2,300	HHXB250□RA221MHA0G
	270	JA0	20	2,500	HHXB250□RA271MJA0G
	330	JA0	20	2,500	HHXB250□RA331MJA0G
35	27	F61	60	1,300	HHXB350ARA270MF61G
	47	F61	60	1,300	HHXB350ARA470MF61G
	47	F80	35	2,000	HHXB350ARA470MF80G
	68	F80	35	2,000	HHXB350ARA680MF80G
	100	HA0	27	2,300	HHXB350□RA101MHA0G
	150	HA0	27	2,300	HHXB350□RA151MHA0G
	150	JA0	20	2,500	HHXB350□RA151MJA0G
	270	JA0	20	2,500	HHXB350□RA271MJA0G
50	10	F61	80	1,100	HHXB500ARA100MF61G
	15	F80	40	1,600	HHXB500ARA150MF80G
	22	F61	80	1,100	HHXB500ARA220MF61G
	33	F80	40	1,600	HHXB500ARA330MF80G
	33	HA0	30	1,800	HHXB500□RA330MHA0G
	47	HA0	30	1,800	HHXB500□RA470MHA0G
	56	JA0	25	2,000	HHXB500□RA560MJA0G
	68	HA0	30	1,800	HHXB500□RA680MHA0G
	100	JA0	25	2,000	HHXB500□RA101MJA0G
63	6.8	F61	120	1,000	HHXB630ARA6R8MF61G
	10	F61	120	1,000	HHXB630ARA100MF61G
	10	F80	80	1,500	HHXB630ARA100MF80G
	22	F80	80	1,500	HHXB630ARA220MF80G
	22	HA0	40	1,600	HHXB630□RA220MHA0G
	33	HA0	40	1,600	HHXB630□RA330MHA0G
	33	JA0	30	1,800	HHXB630□RA330MJA0G
	56	JA0	30	1,800	HHXB630□RA560MJA0G
80	22	HA0	45	1,600	HHXB800□RA220MHA0G
	39	JA0	35	1,700	HHXB800□RA390MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
to 10	0.03	0.30	0.50	0.60	0.70	0.75	1.00
15 to 33	0.07	0.30	0.50	0.60	0.70	0.75	1.00
39 to 150	0.10	0.40	0.60	0.70	0.80	0.80	1.00
220 to 470	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Radial Lead

HSE Series New!

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 4,000 hours at 135℃
- Rated voltage range : 25 to 63Vdc, Capacitance range : 100 to 330μF
- For high temperature and high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

HSE
↑ Higher temperature
HSC

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +135℃
Rated Voltage Range	25 to 63Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.05CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.16 max. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0 (at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 4,000 hours at 125℃ or 135℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 135℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃, 85% RH for 2,000 hours. Appearance: No significant damage Capacitance change: ≦ ±30% of the initial value D.F. (tan δ): ≦ 200% of the initial specified value ESR: ≦ 200% of the initial specified value Leakage current: ≦ The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Size Code	JC5
φD	10
φd	0.6
F	5.0
φD'	φD+0.5max.
L'	L+1.5max.

◆MARKING

EX) 35V270μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
25	E
35	V
50	H
63	J

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
H HSE □□□ E □□ □□□ M JC5 S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470, 100μF:101)
- Lead forming Taping code
- Terminal code
- Voltage code (ex. 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (conductive polymer hybrid type)"

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Radial Lead

HSE New! Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L (mm)	ESR (mΩ max./20℃, 100kHz)	Rated ripple current (mArms/100kHz)		Part No.
				125℃	135℃	
25	330	10×12.5	16	3,800	2,300	HHSE250E□□331MJC5S
35	270	10×12.5	17	3,700	2,200	HHSE350E□□271MJC5S
50	120	10×12.5	19	3,500	2,100	HHSE500E□□121MJC5S
63	100	10×12.5	20	3,400	2,000	HHSE630E□□101MJC5S

□□:Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
100, 120	0.10	0.40	0.60	0.70	0.80	0.80	1.00
270, 330	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Radial Lead

HSC Series

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 4,000 hours at 125℃
- Rated voltage range : 25 to 63Vdc, Capacitance range : 100 to 330μF
- For high temperature and high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

HSC
↑ Higher temperature
HSD

◆SPECIFICATIONS

Items	Characteristics	
Category Temperature Range	-55 to +125℃	
Rated Voltage Range	25 to 63Vdc	
Capacitance Tolerance	±20% (M)	(at 20℃, 120Hz)
Leakage Current	I=0.05CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V)	(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.16 max.	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0	(at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 4,000 hours at 125℃.	
	Capacitance change	≦±30% of the initial value
	D.F. (tan δ)	≦ 200% of the initial specified value
	ESR	≦ 200% of the initial specified value
	Leakage current	≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4.	
	Capacitance change	≦±30% of the initial value
	D.F. (tan δ)	≦ 200% of the initial specified value
	ESR	≦ 200% of the initial specified value
	Leakage current	≦ The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃, 85% RH for 2,000 hours.	
	Appearance	No significant damage
	Capacitance change	≦ ±30% of the initial value
	D.F. (tan δ)	≦ 200% of the initial specified value
	ESR	≦ 200% of the initial specified value
	Leakage current	≦ The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Size Code	JC5
φD	10
φd	0.6
F	5.0
φD'	φD+0.5max.
L'	L+1.5max.

◆MARKING

EX) 25V330μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
25	E
35	V
50	H
63	J

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
H HSC □□□ E □□ □□□ M JC5 S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470, 100μF:101)
- Lead forming Taping code
- Terminal code
- Voltage code (ex. 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (conductive polymer hybrid type)"

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HSC Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L (mm)	ESR (mΩ max./20℃, 100kHz)	Rated ripple current (mArms/125℃, 100kHz)	Part No.
25	330	10×12.5	16	2,300	HHSC250E□□331MJC5S
35	270	10×12.5	17	2,200	HHSC350E□□271MJC5S
50	120	10×12.5	19	2,100	HHSC500E□□121MJC5S
63	100	10×12.5	20	2,000	HHSC630E□□101MJC5S

□□:Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
100, 120	0.10	0.40	0.60	0.70	0.80	0.80	1.00
270, 330	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Radial Lead

HSD Series

- High reliability and high voltage are realized by hybrid electrolyte
- Endurance with ripple current : 5,000 hours at 105℃
- Rated voltage range : 25 to 63Vdc, Capacitance range : 100 to 330μF
- For high reliability applications.
  (Automotive equipment, Base station equipment, etc.)
- RoHS2 Compliant
- Halogen Free
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

HSC
↑ Higher temperature
HSD

◆SPECIFICATIONS

Items	Characteristics	
Category Temperature Range	-55 to +105℃	
Rated Voltage Range	25 to 63Vdc	
Capacitance Tolerance	±20% (M)	(at 20℃, 120Hz)
Leakage Current	I=0.05CV Where, I : Max. leakage current (μA), C: Nominal capacitance(μF), V : Rated voltage(V)	(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.16 max.	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)/Z(+20℃)≦1.5 Z(-55℃)/Z(+20℃)≦2.0	(at 100kHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105 ℃.	
	Capacitance change	≦±30% of the initial value
	D.F. (tan δ)	≦ 200% of the initial specified value
	ESR	≦ 200% of the initial specified value
	Leakage current	≦ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105 ℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4.	
	Capacitance change	≦±30% of the initial value
	D.F. (tan δ)	≦ 200% of the initial specified value
	ESR	≦ 200% of the initial specified value
	Leakage current	≦ The initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjecting them to the DC rated voltage at 85℃, 85% RH for 2,000 hours.	
	Appearance	No significant damage
	Capacitance change	≦ ±30% of the initial value
	D.F. (tan δ)	≦ 200% of the initial specified value
	ESR	≦ 200% of the initial specified value
	Leakage current	≦ The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Size Code	JC5
φD	10
φd	0.6
F	5.0
φD'	φD+0.5max.
L'	L+1.5max.

◆MARKING

EX) 25V330μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
25	E
35	V
50	H
63	J

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
H HSD □□□ E □□ □□□ M JC5 S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 100μF:101, 330μF:331)
- Taping code
- Lead forming Terminal code
- Voltage code (ex. 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (conductive polymer hybrid type)"

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NIPPON CHEMI-CON

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Radial Lead

HSD Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φ D×L (mm)	ESR (mΩ max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
25	330	10×12.5	16	3,100	HHSD250E□□331MJC5S
35	270	10×12.5	17	3,000	HHSD350E□□271MJC5S
50	120	10×12.5	19	2,800	HHSD500E□□121MJC5S
63	100	10×12.5	20	2,600	HHSD630E□□101MJC5S

□□:Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	5k	10k	20k	30k	100k to 500k
100, 120	0.10	0.40	0.60	0.70	0.80	0.80	1.00
270, 330	0.13	0.45	0.65	0.75	0.85	0.85	1.00

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Return Group Chart

Aluminum Electrolytic Capacitors

Precautions and Guidelines (Aluminum Electrolytic Capacitors)

For Conductive Polymer Aluminum Solid Capacitors, see Precautions and Guidelines (Conductive Polymer).
For Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, see Precautions and Guidelines (Conductive Polymer Hybrid).

1 Device circuits design considerations

1) Confirm installation and operating requirements for capacitors, then use them within the performance limits prescribed in this catalog or product specifications.

2) Polarity

Aluminum electrolytic capacitors are polarized.
Never apply a reverse voltage or AC voltage. Connecting with wrong polarity will short-circuit or damage the capacitor with the pressure relief vent opening early on. To identify the polarity of a capacitor, see the relevant diagram in the catalogs or product specifications, or the polarity marking on the body of the capacitor. Incidentally, the rubber end seal bungs of the radial lead type capacitors have a solder-flux gas escaping configuration, which is nothing to do with the polarity of the capacitors. For circuits where the polarity is occasionally reversed, use a bi-polar type of aluminum electrolytic capacitor. However, note that even bi-polar type capacitors must not be used for AC circuits.

3) Operating voltage

Do not apply an over-voltage that exceeds a rated voltage specified for the capacitors. The total peak value of the ripple voltage plus the DC voltage must not exceed the rated voltage of the capacitors. Although capacitors specify a surge voltage that exceeds the full rated voltage, it does not assure long-term use but limited use under specific conditions.

4) Ripple current

Do not apply an overcurrent that exceeds the rated ripple current specified for the capacitors. Excessive ripple current will increase heat production within the capacitors, causing the capacitors to be damaged as follows:
- Shorten lifetime
- Open pressure relief vent
- Short circuit

The rated ripple current is specified along with a specific ripple frequency.
Where using the capacitors at any other ripple frequency other than the specified frequency, calculate the allowable ripple current by multiplying the rated ripple current by a frequency compensation factor (Frequency Multiplier) specified for each product series.

5) Operating temperature (Category temperature)

Do not apply high temperatures that exceed the upper limit of the category temperature range specified for the capacitors.
Using the capacitor at temperatures higher than the upper limit will considerably shorten the lifetime of the capacitor and make the pressure relief vent open.
In other words, lowering ambient temperatures will extend the expected lifetime of the capacitors.

6) Lifetime

Select the capacitors to meet the service life requirements of a device.

7) Charging and discharging

Do not use capacitors in circuits intended for rapid charge and discharge cycle operations.
If capacitors are used in the circuits that repeat a charge and discharge with a large voltage drop or a rapid charge and discharge at a short interval cycle, capacitance will decrease and/or the capacitors will be damaged by internal heat generation.
Consult us for a heavy charge and discharge type of capacitor so that the capacitor will be designed in accordance with requirements of duty cycle of charge and discharge, the number of cycles, discharging resistance and operating temperatures.

8) Failure mode of capacitors

Non-solid aluminum electrolytic capacitors have a limited lifetime which ends in an open circuit failure mode, in general. Depending on the product type and operating conditions, the failure mode may involve in opening of the pressure relief vent.

9) Capacitor insulation

Electrically isolate the following sections of a capacitor from the negative terminal, the positive terminal and the circuit patterns.
- The outer can case of a non-solid aluminum capacitor.
- The dummy terminal of a snap-in type non-solid aluminum capacitor, which is designed for mounting stability.

10) Outer sleeve

The outer sleeve of a capacitor does not assure electrical insulation (except for screw-terminal type capacitors). It should not be used where electrical insulation is required.

11) Operating conditions

Do not use/expose capacitors to the following conditions:
① Direct contact with water, salt water or oil, or high condensation environment.
② Direct sunlight.
③ Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine and its compounds, bromine and its compounds and ammonium.
④ Ozone, ultraviolet rays or radiation.
⑤ Extreme vibration or mechanical shock that exceeds limits in the catalogs or product specifications.
The standard vibration condition is applicable to JIS C 5101-4.

12) Mounting

① Non-solid aluminum electrolytic capacitors contain paper separators and electric-conductive electrolyte that contains organic solvent as main solvent material, both of which are flammable. If the electrolyte leaks onto a printed circuit board, it can erode the device circuit pattern, may short-circuit the copper traces, smoke and burn. Make sure of designing a PC board as follows:
- Provide the appropriate hole spacing on the PC board to match the terminal spacing of a capacitor.
- Provide the following adequate clearance space over the pressure relief vent of a capacitor to avoid blocking the correct opening of the pressure relief vent.

Case diameter	Clearance
φ8(6.3) to φ16mm:	2mm minimum
φ18 to φ35mm:	3mm minimum
φ40 mm and above:	5mm minimum

- Do not locate any wire or circuit pattern over the pressure relief vent of a capacitor.
- If a capacitor is mounted with its pressure relief vent facing down on the PC board, provide a ventilation hole in the board beneath it to let gas escape when the vent opens.
- Do not print any copper trace under the seal (terminal) side of a capacitor. Copper traces should be 1 mm (preferably 2mm or more) spaced apart from the side of the capacitor body.
- Avoid locating any heat source components near capacitors or on the opposite side of the PC board under capacitors.
- In designing a double-sided PC board, do not locate any through-hole via or unnecessary hole underneath a capacitor.
- In designing a double-sided PC board, do not print any circuit pattern underneath a capacitor.

② For a screw terminal type capacitor, tightening the terminal screws and the mounting clamp should be within the maximum torque specified in the catalogs or product specifications. Do not mount a screw terminal type capacitor with the terminals facing downward. Also, if the body of a capacitor is installed horizontally such as being laid on its side, do not

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position the pressure relief vent downward.
③ For a chip type capacitor, design the land patterns of the PC board in accordance with the recommended footprint dimensions described in the catalogs or product specifications.

13) Using capacitors for significantly safety-oriented applications

Consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.
Note that some products such as photoflash use capacitors which have been designed for specific applications cannot be used for any other application.

14) Others

Design device circuits taking into consideration the following conditions:
① Electrical characteristics of a capacitor depend on the temperature and frequency. In designing the device circuits, consider the change in the characteristics.
② If using more than one capacitor connected in parallel, design the device circuits to balance the current flow in individual capacitors.
③ If using more than one capacitor connected in series, connect shunting resistors in parallel with the individual capacitors to balance the voltage.

2 Installation

1) Assembling

① Do not try to reuse the capacitors once assembled and electrified, except only capacitors that are taken from a device for periodic inspection to measure their electrical characteristics.
② Capacitors may have been spontaneously recharged with time by a recovery voltage phenomenon. In this case, discharge the capacitors through a resistor of approximately 1kΩ before use.
③ If non-solid aluminum electrolytic capacitors have been stored at any conditions more than 35℃ and 75%RH for long storage periods of time more than the limits specified in the catalogs or product specifications, they may have high leakage current. In this case, make pre-conditioning by applying the rated voltage through a resistor of approximately 1kΩ.
④ Confirm the rated capacitance and voltage of capacitors before installation.
⑤ Confirm the polarity of capacitors before installation.
⑥ Do not try to use the capacitors that were dropped to the floor and so forth.
⑦ Do not deform the can case of a capacitor.
⑧ Make sure that the terminal spacing of a capacitor equals the holes spacing on the PC board before installing the capacitor. For radial lead type capacitors, some standard preformed lead types are also available.
⑨ When installing a snap-in type capacitor on the PC board, insert the terminals into the holes and press the capacitor down until the body is settled flush on the surface of the PC board (without the body standing off).
⑩ Do not apply excessive mechanical force to capacitors more than the limits prescribed in the catalogs or product specifications. Avoid excessive mechanical force while the capacitors are in the process of vacuum-picking, placing and positioning by automatic mounting machines or cutting the lead wires by automatic insertion machines.

2) Soldering and heat resistance

① For soldering using a soldering iron, consider the following conditions:
- Soldering conditions (temperature and time) should be within the limits prescribed in the catalogs or product specifications.
- If it is necessary to pre-form the terminal spacing of a capacitor to match the hole spacing on the PC board before assembly and soldering, do not make mechanical stress reach into the body of the capacitor but only the lead wires.
- Do not touch the body of a capacitor with the hot tip of the soldering iron.

② For flow soldering, consider the following conditions:
- Do not dip the body of a capacitor into a solder bath. Expose only the terminals to the melt solder with the PC board interposing between the solder and the body of the capacitor. Solder only the reverse side of the PC board where the body of the capacitor is not located.
- Soldering conditions should be within the limits prescribed in the catalogs or product specifications.
- Do not apply flux to any part of a capacitor other than the terminals.
- Do not let any other component lean against nor come into contact with the capacitor while soldering.

③ For reflow soldering, consider the following conditions:
- Soldering conditions (preheat, reflow temperature and time) should be within the limits prescribed in the catalogs or product specifications.
- When using the infrared heater and setting its temperatures, adjust the heating levels taking into consideration that the color and materials of a capacitor vary in their infrared absorbance.
- The allowable number of reflow passes is specified in the catalogs or product specifications.
- When mounting a capacitor on the double-sided PC board, do not place any wiring pattern underneath the capacitor.
- Please consult us about vapor phase soldering (VPS).

④ Do not try to reuse the capacitor that was removed from the PC board after soldering.
⑤ Only use chip type capacitors for reflow soldering. The other type capacitors are not designed for the reflow.

3) Handling after soldering

After soldering the PC board, do not apply the following mechanical stress to the capacitor:
① Do not tilt, push down or twist the body of the capacitor.
② Do not grab the body of the capacitor to carry the assembly board.
③ Do not hit anything against the capacitor. When stacking the assembled boards, do not put any of the PC boards or other components against the capacitor.
④ Do not drop the assembled board.

4) Cleaning assembly boards

① Do not clean capacitors with the following cleaning agents:
- Halogenated solvents: cause capacitor failures due to corrosion.
- Alkali system solvents: corrode (dissolve) the aluminum can case.
- Terpene and petroleum system solvents: deteriorate the rubber seal materials.
- Xylene: deteriorates the rubber seal materials as well.
- Acetone: erases the markings printed on a capacitor.

Where cleaning is necessary, use only solvent resistant type capacitors that have been assured for the cleaning within the specific cleaning conditions prescriber in the catalogs or product specifications. In particular, carefully set up the conditions for ultrasonic cleaning system.
② Where cleaning the solvent resistance type of aluminum electrolytic capacitors, confirm the following conditions:
- Control the contamination (the conductivity, pH, specific gravity, water content, etc.) of the cleaning agents.
- After the cleaning, do not leave the capacitors (assembly boards) in an environment of cleaning agent-rich or in a

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closed container. Sufficiently evaporate the residual cleaning agent from the assembly boards and the capacitors by forced hot air at temperatures less than the upper limit of category temperature range for more than 10 minutes.
In general, aluminum electrolytic capacitors are sensitive to contamination of halogen ions (particularly to chlorine ions). Depending on the properties of the electrolyte and rubber seal materials used in a capacitor, the halogen ions lead up to catastrophic failures on the capacitor. Where the inside of a capacitor has been contaminated with more than a certain amount of halogen ions and the capacitor is in use, the corrosion reaction of aluminum occurs. The corrosion causes the capacitor to have a significant increase in leakage current with heat produced, open the pressure relief vent and become open circuit mode failure.
Due to global environmental issues (greenhouse effects and other environmental destruction by depletion of the ozone layer), the conventional cleaning solvents of CFC 113, Trichloroethylene and 1,1,1-trichloroethylene were replaced by substitutes.
The following are some substitute cleaning agents and allowable cleaning conditions:

a) Fatty-alcohol cleaning agents
Pine Alpha ST-100S (Arakawa Chemical)
Clean Through 750H, 750K, 750L and 710M (Kao)
Technocare FRW-14, 15, 16 and 17 (Momentive Performance Materials)

[Compatible capacitor products]

Terminal Shape	Subject Series
Surface Mount Type	All Series
Radial Lead Type	All Series
Snap-in Type	All Series (Less and equal 100Vdc)

[Cleaning conditions]
Either of immersion or ultrasonic cleaning, for a maximum of 10 minutes and at a maximum liquid temperature of 60℃ is acceptable. Make sure that the markings on the capacitor are not rubbed against any other component or the PC board during cleaning. Note that shower cleaning affects the markings on the capacitor.

b) HCFC (Freon 225) as Alternative CFCs
AK225AES (Asahi Glass)

[Cleaning conditions]
Solvent resistant type capacitors, which were originally developed to intend to resist Freon TE or Freon TES, are also capable of withstanding any one of immersion, ultrasonic or vapor cleaning, for a maximum of 5 minutes (or 2 minutes for KRE series capacitors or 3 minutes for SRM series).
However, this type of cleaning agent is not recommended to use, as the cleaning materials may be banned in near future in view of global environmental issues.

c) IPA (Isopropyl Alcohol)
Immersion cleaning with a maximum flux concentration of 2 wt% is acceptable.

5) Adhesives and coating materials

① Do not use any adhesive or coating materials containing halogenated solvents.
② Make sure of the following conditions before applying adhesive or coating materials to a capacitor,
- No flux residue nor stain is left between the rubber seal of a capacitor and PC board.
- Dry the capacitor to remove residual cleaning agents before applying adhesive and coating materials. Do not cover up the entire surface of the rubber seal of the capacitor with adhesives or coating materials.
- Heating and curing conditions for adhesives and coating materials should be followed as prescribed in the catalogs or product specifications.
- Covering up the entire surface of the rubber seal with resin mold materials will obstruct the normal diffusion of internal hydrogen gas from a capacitor and result in serious failures. Also, where the adhesive and coating materials contain a large amount of halogen ions, the halogen ions will contaminate the inside of the capacitor through the rubber seal materials, causing the capacitor to become a failure.
- Depending on solvent materials that the adhesive or coating materials contains, note that the outer sleeve of a capacitor may lose a gloss or whiten in appearance.

6) Fumigation

In exporting or importing electronic devices, they may be exposed to fumigation with halide such as methyl bromide. Where aluminum electrolytic capacitors are exposed to halide such as methyl bromide, the capacitors will be damaged with the corrosion reaction with halogen ions in the same way as cleaning agents. For the export and import, Nippon Chemi-Con considers using some packaging method and so forth so that fumigation is not required. For customers to export or import electronic devices, semi-assembly products or capacitor components, confirm if they will be exposed to fumigation and also consider final condition of packaging. (Note that either cardboard or vinyl package has a risk of fumigation gas penetration.)

3 Precautions during operation of devices

1) Never touch the terminals of a capacitor directly with bare hands.
2) Do not short-circuit between the capacitor terminals with anything conductive.
Also, do not spill any conductive liquid such as acid or alkaline solution over a capacitor.
3) Confirm environmental conditions where the device will be placed. Do not use the devise in the following environmental conditions:
① Water or oil spatters, or high condensation environment.
② Direct sunlight.
③ Ozone, ultraviolet rays or radiation.
④ Toxic gases such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine and its compounds, bromine and its compounds and ammonium.
⑤ Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalog or product specification. The standard vibration condition is applicable to JIS C 5101-4.

4 Maintenance inspections

1) For industrial use capacitors, make periodic inspections of the capacitors. Before the inspections, turn off the power supply of the device and discharge the electricity of the capacitors. Where checking it by a volt-ohm meter, confirm the polarity beforehand. Do not apply mechanical stress to the terminals of the capacitors during inspection.
2) Characteristics to be inspected
① Significant damage in appearance: vent opening, electrolyte leakage, etc.
② Electrical characteristics: Leakage current, capacitance, tan δ and other characteristics prescribed in the catalogs or product specifications.

If finding anything abnormal. on the characteristics above, check the specifications of the capacitor and take appropriate actions such as replacement.

5 Capacitor venting

1) A capacitor with more than a certain case size has the pressure relief vent functioning to escape abnormal gas pressure increase.
If gas expels from a venting capacitor, disconnect the power supply of the device or unplug the power supply cord. If not

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disconnecting the power supply, the device circuit may be damaged due to the short circuit failure of the capacitor or short-circuited with the liquid that the gas was condensed to. It may cause secondary damages such as device burnout in the worst case scenario.
The gas that comes out of the open vent is vaporized electrolyte, not smoke.

2) The gas expelled from a venting capacitor is more than 100°C. Never expose your face to the capacitor. If your eyes are exposed to the gas or you inhale it, immediately flush your eyes and/or gargle with water. If the electrolyte comes in contact with the skin, wash with soap and water.

6 Storage

1) Do not store capacitors at high temperature or high humidity. Store the capacitors indoors at temperatures of 5 to 35℃ and humidities of less than 75%RH.
In principle, aluminum electrolytic capacitors should be used within three years after production.
2) Keep capacitors packed in the original packaging material wherever possible.
3) Avoid the following storage environmental conditions:
① Water spattering, high temperatures, high humidity or condensation environment.
② Oil spattering or oil mist filled.
③ Salt water spattering or salt filled.
④ Acidic toxic gases such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine, bromine and methyl bromide filled.
⑤ Alkaline toxic gases such as ammonium filled.
⑥ Acid or alkaline solutions spattering.
⑦ Direct sunlight, ozone, ultraviolet rays or radiation.
⑧ Extreme vibration or shock loading.
4) JEDEC J-STD-020 is not applicable.

7 Capacitor disposal

Please consult with a local organization for the proper disposal of industrial waste. For incinerating capacitors, apply a high-temperature incineration (over 800℃). Incinerating them at temperatures lower than that may produce toxic gases such as chlorine. To prevent capacitors from explosion, punch holes in or sufficiently crush the can cases of the capacitors, then incinerate.

8 About AEC-Q200

The Automotive Electronics Council (AEC) was originally established by major American automotive related manufactures. Today, the committees are composed of representatives from the sustaining Members of manufacturing companies in automotive electrical components. It has standardized the criteria for "stress test qualification" and "reliability tests" for electronic components.
AEC-Q200 is the reliability test standard for approval of passive components in Automotive applications. It specifies the test type, parameters and quantity, etc. for each component. The criteria of the reliability tests such as for our main products, "Aluminum Electrolytic Capacitors" are described in this standard.
Pursuant to the customer's specific testing requirements, Chemi-Con submits the test results according to AEC-Q200 for Aluminum Electrolytic Capacitors used in automotive applications on request.
An electronic component manufacturer cannot simply claim that their product is "AEC-Q200 Qualified". It can be claimed "Compliant", "Capable", "Available", etc., however each component must be tested per each users "Qualification Test Plan" in order to claim AEC-Q200 status.
Please contact us for more information.

9 Response to the Substances of Concern

1) Nippon Chemi-Con aims for developing products that meet laws and regulations concerning substances of concern.
(Some products may contain regulated substances for exempted application)
Please contact us for more information about law-compliance status.
2) According to the content of REACH handbook (Guidance on requirements for substances in articles which is published on May 2008), our electronic components are "articles without any intended release". Therefore they are not applicable for "Registration" for EU REACH Regulation Article 7 (1).
Reference: Electrolytic Condenser Investigation Society
"Study of REACH Regulation in EU about Electrolytic Capacitor"
(publicized on 13 March 2008)

10 Catalogs

Specifications in the catalogs are subject to change without notice. Test data shown in the catalogs are not assured as the whole performance values, but typical values.
For more details, refer to JEITA RCR-2367C (March 2006) with the title of "Safety Application Guide for fixed aluminum electrolytic capacitors for use in electronic equipment".

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RECOMMENDED SOLDERING CONDITIONS

◆SURFACE MOUNT TYPE

Alchip™ MVA/MVE/MZR/MZJ/MZA/MVY/MZF/MZE/MZK/MLA/MLF/MLE/MLK/MVL/MVJ/MHS/MVH/MHL/MHB/MHJ/MHK/MKB

The following conditions are recommended for air convection and infrared reflow soldering on the SMD products onto a glass epoxy circuit boards by cream solder. The dimensions of the glass epoxy boards with resist are 90×50×0.8mm for D55 to KG5 case code SMD capacitors and 180×90×0.8mm for LH0 to MN0 case codes SMD capacitors.
The temperatures shown are the surface temperature values on the top of the can and on the capacitor terminals.
Reflow should be performed twice or less. (The only MHS series : 3times or less)
Please ensure that the capacitor became cold enough to the room temperature (5 to 35℃) before the second reflow and the third reflow (The only MHS series) .
Consult with us when performing reflow profile in IPC / JEDEC (J-STD-020)

●Recommended soldering heat conditions (Except for Conductive Polymer Aluminum Solid Capacitors)

Series	Size code	Voltage range (V_{DC})	Preheat	Time maintained above 217℃	Time maintained above 230℃	Peak temp.	Reflow number
MVA, MVE, MZR MZJ, MZA, MVY MZF, MZE, MZK MLA, MLF, MLE MLK, MVL, MVJ MVH, MHL, MHB MHJ, MHK, MKB	D55 to F90	4 to 63V (Except 63V for MVH)	150 to 180℃ 120sec. max.	90sec. max	60sec. max.	260℃max.	2 times or less
		63V(MVH), 80V		60sec. max.	40sec. max.	250℃max.	2 times or less
	H63 to JA0	4 to 50V		60sec. max.	30sec. max.	245℃max.	2 times or less
		63 to 100, 400V		30sec. max.	20sec. max.	240℃max.	2 times or less
	KE0 to MN0	6.3 to 50V		30sec. max.	20sec. max.	240℃max.	2 times or less
		63 to 450V		20sec. max.	—	230℃max.	2 times or less

Series	Size code	Voltage range (V_{DC})	Preheat	Time maintained above 217℃	Time maintained above 240℃	Peak temp.	Reflow number
MHS	KE0 to MN0	16 to 100V	150 to 180℃ 120sec. max.	70sec. max.	20sec. max.	245℃max.	3 times or less

●Recommended Solder Land on PC Board

: Solder land on PC board

[mm]

Size code	Terminal code : A			Terminal code : G		
	a	b	c	a	b	c
D55, D60, D61, D73	1.0	2.6	1.6			
E55, E60, E61, E73	1.4	3.0	1.6			
F55, F60, F61, F73, F80, F90	1.9	3.5	1.6			
H63	2.3	4.5	1.6			
HA0	3.1	4.2	2.2	3.1	4.2	3.5
JA0	4.5	4.4	2.2	4.5	4.4	3.5
KE0, KG5, KN0	4.0	5.7	2.5	3.4	6.3	9.3
LH0, LN0	6.0	6.9	2.5	4.7	7.8	9.6
MH0, MN0	6.0	7.9	2.5	4.7	8.8	9.6

◆RADIAL LEAD AND SNAP-IN TYPE

● **Recommended soldering heat conditions**
Flow soldering :260±5℃ for 10±1 seconds
Hand soldering :380±10℃ for 3±0.5 seconds

◆PRECAUTIONS FOR USERS

Soldering method
The capacitors of Alchip-series have no capability to withstand such dip or wave soldering as totally immerses components into a solder bath.

Reflow soldering
Reflow the capacitors within recommended reflow soldering conditions. Verify there is no temperature stress to the capacitors because the following differences might degrade capacitors electrically and mechanically. Please consult us if other reflow conditions are employed.
1.Location of components : Temperature increases at the edge of PC board more than the center.
2.Population of PC board : The lower the component population is, the more temperature rises.
3.Material of PC board : A ceramic made board needs more heat than a glass epoxy made board. The heat increase may cause damage to the capacitors.
4.Thickness of PC board : A thicker board needs more heat than a thinner board. The heat increase may damage the capacitors.
5.Size of PC board : A larger board needs more heat than a smaller board. The heat increase may damage the capacitors.
6.Solder thickness
If very thin cream solder paste is to be used for SMD types, please consult with us.
7.Location of infrared ray lamps : IR reflow as well as hot plate reflow heats only on the reverse side of the PC board to lessen heat stress to the capacitors.
8.Please consult us about vapor phase soldering (VPS).

Rework of soldering
Use a soldering iron for rework. Do not exceed an iron tip temperature of 380±10℃ and an exposure time of 3±0.5 seconds.

Mechanical stress
Do not use the capacitors for lifting the PC board and give stress to the capacitor. Avoid bending the PC board. This may damage the capacitors.

Cleaning assembly board
Immediately after solvent cleaning, remove residual solvent with an air knife for at least 10 minutes. If the solvent is insufficiently dry, the capacitors may corrode.

Coating on assembly board
1.Before curing coating material, remove the cleaning solvents from the assembly board.
2.Before conformal coating, a chloride free pre-coat material is recommended to decrease the stress on the capacitors.

Molding with resin
Internal chemical reaction gradually produces gas in the capacitor; then, increasing internal pressure. If the end seal of the capacitor is completely coverd by resin the gas will be unable to escape causing a potentially dangerous situation. The chlorine contained resin will penetrate into the end seal, reach the inside element, and cause damage of the capacitor.

Others
Refer to PRECAUTIONS AND GUIDELINES.

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PART NUMBERING SYSTEM

Product code guide (Surface mount type)

(Example : MVA series, 25V-47μF, φ6.3×5.2L)

Please refer to the following table

Contents	Code
Polar	E
Bi-polar	B

Series	Code
MVA	MVA
MV(Bi-polar)	MV-

Type	Code
No dummy terminal	A
With dummy terminal	G

Tol.(%)	Code
±20	M

Terminal plating material	Code
Sn-Bi	G
Sn	S

1	2 3 4	5 6 7	8	9 10	11 12 13	14	15 16 17	18
E	MVA	250	A	RA	470	M	F55	G
Category	Series code	Voltage code	Terminal code	Taping・Tray code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
4	4R0
6.3	6R3
10	100
25	250
100	101
250	251
⋮	⋮

Taping type		Reel dia. φ(mm)	Application size φD(mm)	Code
Taping	Plastic Reel	380	φD=4 to 18	RA
	Cardboard Reel	380	φD=4 to 18 (not φD=12.5)	DA
		330	φD=4 to 18	DB
Tray		-	φD=12.5 to 18	TR

Refer to product guide for taping and tray specifications.

Cap.(μF)	Code
1.0	1R0
4.7	4R7
10	100
47	470
100	101
470	471
1,000	102
⋮	⋮

φD(mm)	Code
4	D
5	E
6.3	F
8	H
10	J
12.5	K
16	L
18	M

L(mm)	Code
5.2	55
5.7	60
5.8	61
6.3	63
7.0	73
7.7	80
8.7	90
10	A0
13.5	E0
16	G5
16.5	H0
21.5	N0

*Refer to the appendix (Part number) for codes not listed here.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 85℃

Alchip™-MVA Series

- φ4 through φ18 case sizes are fully lined up
- Endurance : 2,000 hours at 85℃
- Suitable to fit for downsized equipment
- Solvent resistant type except 100 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVA → MVE (105℃)

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃
Rated Voltage Range	4 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)

Leakage Current

Rated voltage (Vdc)	4 to 100V	160 to 450V
D55 to JA0	I=0.01CV or 3μA, whichever is greater.(after 2 minutes)	—
KE0 to MN0	I=0.03CV or 4μA, whichever is greater.(after 1 minute)	I=0.04CV+100μA max.(after 1 minute)

Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃)

Dissipation Factor (tan δ)

Rated voltage (Vdc)		4V	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	400 & 450V
tan δ (Max.)	D55 to JA0	0.42	0.35	0.30	0.26	0.16	0.14	0.12	0.12	0.12	—	—
	KE0 to MN0	—	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.20	0.25

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (Vdc)		4V	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	400 & 450V
D55 to JA0	Z(-25℃)/Z(+20℃)	7	4	3	2	2	2	2	2	3	—	—
	Z(-40℃)/Z(+20℃)	17	10	8	6	4	3	3	3	4	—	—
KE0 to MN0	Z(-25℃)/Z(+20℃)	—	5	4	3	2	2	2	2	2	3	6
	Z(-40℃)/Z(+20℃)	—	12	10	8	5	4	3	3	3	6	10

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 85℃.

Size code	D55 to JA0	D55 to JA0	KE0 to MN0
Rated voltage (Vdc)	4V & 6.3V	10 to 100V	6.3 to 450V
Capacitance change	≦±30% of the initial value	≦±20% of the initial value	
D.F. (tan δ)	≦200% of the initial specified value	≦200% of the initial specified value	
Leakage current	≦The initial specified value	≦The initial specified value	

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Size code	D55 to JA0	D55 to JA0	KE0 to MN0
Rated voltage	4V & 6.3V	10 to 100V	6.3 to 450V
Capacitance change	≦±30% of the initial value	≦±20% of the initial value	
D.F. (tan δ)	≦200% of the initial specified value	≦200% of the initial specified value	
Leakage current	≦The initial specified value	≦The initial specified value	

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : D55 to MN0

Note : L±0.5 for HA0 to MN0

- Terminal Code : G (Vibration resistant structure)
- Size code : LH0 to MN0

: Dummy terminals

Size code	D	L	A	B	C	W	P
D55	4	5.2	4.3	4.3	5.1	0.5 to 0.8	1.0
E55	5	5.2	5.3	5.3	5.9	0.5 to 0.8	1.4
F55	6.3	5.2	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

◆MARKING

D55 to JA0

EX) 16V47μF

KE0 to HN0

EX) 25V1,000μF

◆PART NUMBERING SYSTEM

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
D55 to JA0	1.0	1.00	1.50	1.75	1.80
	2.2 to 10	1.00	1.30	1.40	1.50
	22 to 1,500	1.00	1.05	1.08	1.08
KE0 to MN0	4.7	1.00	1.75	2.30	2.50
	10 to 68	1.00	1.50	1.75	1.80
	100 to 1,000	1.00	1.30	1.40	1.50
	2,200 to 10,000	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

Please refer to "Product code guide (surface mount type)"

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 85℃

Alchip™-MVA Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
4	33	D55	0.42	25	EMVA4R0ARA330MD55G
	47	D55	0.42	30	EMVA4R0ARA470MD55G
	100	E55	0.42	50	EMVA4R0ARA101ME55G
	220	F55	0.42	80	EMVA4R0ARA221MF55G
	330	F80	0.42	135	EMVA4R0ARA331MF80G
	470	F80	0.42	150	EMVA4R0ARA471MF80G
	1,000	HA0	0.42	320	EMVA4R0ARA102MHA0G
6.3	33	D55	0.35	30	EMVA6R3ARA330MD55G
	47	D55	0.35	33	EMVA6R3ARA470MD55G
	100	E55	0.35	55	EMVA6R3ARA101ME55G
	220	F55	0.35	88	EMVA6R3ARA221MF55G
	330	F80	0.35	135	EMVA6R3ARA331MF80G
	470	HA0	0.35	280	EMVA6R3ARA471MHA0G
	680	HA0	0.35	290	EMVA6R3ARA681MHA0G
	820	HA0	0.35	320	EMVA6R3ARA821MHA0G
	1,000	JA0	0.35	430	EMVA6R3ARA102MJA0G
	1,500	JA0	0.35	480	EMVA6R3ARA152MJA0G
	2,200	KE0	0.40	890	EMVA6R3ARA222MKE0S
	3,300	KG5	0.42	1,000	EMVA6R3ARA332MKG5S
	3,300	LH0	0.42	1,200	EMVA6R3□RA332MLH0S
	4,700	LH0	0.44	1,400	EMVA6R3□RA472MLH0S
	6,800	LN0	0.48	1,750	EMVA6R3□RA682MLN0S
	6,800	MH0	0.48	1,700	EMVA6R3□RA682MMH0S
	10,000	MN0	0.56	2,000	EMVA6R3□RA103MMN0S
10	22	D55	0.30	26	EMVA100ARA220MD55G
	33	D55	0.30	30	EMVA100ARA330MD55G
	47	E55	0.30	44	EMVA100ARA470ME55G
	100	F55	0.30	70	EMVA100ARA101MF55G
	150	F55	0.30	79	EMVA100ARA151MF55G
	220	F80	0.30	130	EMVA100ARA221MF80G
	330	HA0	0.30	270	EMVA100ARA331MHA0G
	470	HA0	0.30	280	EMVA100ARA471MHA0G
	1,000	JA0	0.30	430	EMVA100ARA102MJA0G
	2,200	KE0	0.36	960	EMVA100ARA222MKE0S
	3,300	LH0	0.38	1,300	EMVA100□RA332MLH0S
	4,700	LN0	0.40	1,550	EMVA100□RA472MLN0S
	4,700	MH0	0.40	1,600	EMVA100□RA472MMH0S
	6,800	MN0	0.44	1,850	EMVA100□RA682MMN0S
16	22	D55	0.26	26	EMVA160ARA220MD55G
	33	E55	0.26	37	EMVA160ARA330ME55G
	47	E55	0.26	44	EMVA160ARA470ME55G
	100	F55	0.26	70	EMVA160ARA101MF55G
	150	F80	0.26	110	EMVA160ARA151MF80G
	220	F80	0.26	130	EMVA160ARA221MF80G
	330	HA0	0.26	270	EMVA160ARA331MHA0G
	470	HA0	0.26	280	EMVA160ARA471MHA0G
	680	JA0	0.26	380	EMVA160ARA681MJA0G
	1,000	KE0	0.30	710	EMVA160ARA102MKE0S
	2,200	LH0	0.32	1,150	EMVA160□RA222MLH0S
	3,300	LN0	0.34	1,450	EMVA160□RA332MLN0S
	3,300	MH0	0.34	1,450	EMVA160□RA332MMH0S
	4,700	MN0	0.36	1,750	EMVA160□RA472MMN0S
25	10	D55	0.16	24	EMVA250ARA100MD55G
	22	E55	0.16	41	EMVA250ARA220ME55G
	33	E55	0.16	47	EMVA250ARA330ME55G
	47	F55	0.16	60	EMVA250ARA470MF55G
	56	F55	0.16	66	EMVA250ARA560MF55G
	100	F80	0.16	120	EMVA250ARA101MF80G
	150	HA0	0.16	210	EMVA250ARA151MHA0G
	220	HA0	0.16	260	EMVA250ARA221MHA0G
	330	HA0	0.16	300	EMVA250ARA331MHA0G
	470	JA0	0.16	400	EMVA250ARA471MJA0G
	1,000	KE0	0.26	820	EMVA250ARA102MKE0S
	2,200	LN0	0.28	1,450	EMVA250□RA222MLN0S
	2,200	MH0	0.28	1,400	EMVA250□RA222MMH0S
	3,300	MN0	0.30	1,800	EMVA250□RA332MMN0S
35	4.7	D55	0.14	18	EMVA350ARA4R7MD55G
	10	D55	0.14	24	EMVA350ARA100MD55G
	22	E55	0.14	41	EMVA350ARA220ME55G
35	33	F55	0.14	54	EMVA350ARA330MF55G
	100	F80	0.14	120	EMVA350ARA101MF80G
	150	HA0	0.14	210	EMVA350ARA151MHA0G
	220	HA0	0.14	260	EMVA350ARA221MHA0G
	330	JA0	0.14	360	EMVA350ARA331MJA0G
	470	KE0	0.22	600	EMVA350ARA471MKE0S
	1,000	LH0	0.22	1,100	EMVA350□RA102MLH0S
	2,200	MN0	0.24	1,700	EMVA350□RA222MMN0S
50	3.3	D55	0.12	15	EMVA500ARA3R3MD55G
	4.7	D55	0.12	18	EMVA500ARA4R7MD55G
	10	E55	0.12	30	EMVA500ARA100ME55G
	22	F55	0.12	47	EMVA500ARA220MF55G
	33	F80	0.12	70	EMVA500ARA330MF80G
	47	F80	0.12	85	EMVA500ARA470MF80G
	100	HA0	0.12	190	EMVA500ARA101MHA0G
	220	JA0	0.12	320	EMVA500ARA221MJA0G
	330	KE0	0.18	600	EMVA500ARA331MKE0S
	470	KG5	0.18	740	EMVA500ARA471MKG5S
	470	LH0	0.18	850	EMVA500□RA471MLH0S
	1,000	LN0	0.18	1,300	EMVA500□RA102MLN0S
	1,000	MN0	0.18	1,400	EMVA500□RA102MMN0S
63	1.0	D55	0.12	8.0	EMVA630ARA1R0MD55G
	2.2	D55	0.12	12	EMVA630ARA2R2MD55G
	3.3	E55	0.12	17	EMVA630ARA3R3ME55G
	4.7	E55	0.12	20	EMVA630ARA4R7ME55G
	10	F55	0.12	32	EMVA630ARA100MF55G
	22	F80	0.12	60	EMVA630ARA220MF80G
	33	HA0	0.12	110	EMVA630ARA330MHA0G
	47	HA0	0.12	130	EMVA630ARA470MHA0G
	56	JA0	0.12	160	EMVA630ARA560MJA0G
	68	JA0	0.12	170	EMVA630ARA680MJA0G
	100	KE0	0.14	380	EMVA630ARA101MKE0S
	220	KE0	0.14	580	EMVA630ARA221MKE0S
	330	KG5	0.14	720	EMVA630ARA331MKG5S
	330	LH0	0.14	820	EMVA630□RA331MLH0S
	470	LH0	0.14	950	EMVA630□RA471MLH0S
	470	MH0	0.14	1,000	EMVA630□RA471MMH0S
100	22	HA0	0.12	90	EMVA101ARA220MHA0G
	33	JA0	0.12	120	EMVA101ARA330MJA0G
	68	KE0	0.10	380	EMVA101ARA680MKE0S
	100	KE0	0.10	440	EMVA101ARA101MKE0S
	220	LN0	0.10	850	EMVA101□RA221MLN0S
	220	MH0	0.10	800	EMVA101□RA221MMH0S
	330	MN0	0.10	1,000	EMVA101□RA331MMN0S
160	47	KG5	0.20	370	EMVA161ARA470MKG5S
	68	LH0	0.20	500	EMVA161□RA680MLH0S
	100	LN0	0.20	590	EMVA161□RA101MLN0S
	100	MH0	0.20	590	EMVA161□RA101MMH0S
200	22	KE0	0.20	240	EMVA201ARA220MKE0S
	33	KG5	0.20	310	EMVA201ARA330MKG5S
	47	LH0	0.20	420	EMVA201□RA470MLH0S
	68	LN0	0.20	510	EMVA201□RA680MLN0S
	68	MH0	0.20	510	EMVA201□RA680MMH0S
	100	MN0	0.20	590	EMVA201□RA101MMN0S
250	10	KE0	0.20	150	EMVA251ARA100MKE0S
	22	KG5	0.20	240	EMVA251ARA220MKG5S
	33	LH0	0.20	340	EMVA251□RA330MLH0S
	47	LN0	0.20	420	EMVA251□RA470MLN0S
	47	MH0	0.20	420	EMVA251□RA470MMH0S
	68	MN0	0.20	490	EMVA251□RA680MMN0S
400	4.7	KE0	0.25	120	EMVA401ARA4R7MKE0S
	10	LH0	0.25	140	EMVA401□RA100MLH0S
	22	LN0	0.25	280	EMVA401□RA220MLN0S
	22	MH0	0.25	280	EMVA401□RA220MMH0S
	33	MN0	0.25	350	EMVA401□RA330MMN0S
450	4.7	KE0	0.25	120	EMVA451ARA4R7MKE0S
	10	LH0	0.25	140	EMVA451□RA100MLH0S
	22	LN0	0.25	280	EMVA451□RA220MLN0S
	33	MN0	0.25	350	EMVA451□RA330MMN0S

□ : Enter the appropriate terminal code.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 105℃

Alchip™-MVE Series

MVE → Longer life → MVL, MVJ

- Endurance : 1,000 to 2,000 hours at 105℃
- Case size range : φ4×5.2L to φ18×21.5L
- Solvent resistant type except 100 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 450Vdc
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)
Leakage Current	Rated voltage (Vdc): 6.3 to 100V / 160 to 450V D55 to JA0: I=0.01CV or 3μA, whichever is greater (2 minutes) / — KE0 to MN0: I=0.03CV or 4μA, whichever is greater (1 minute) / I=0.04CV+100μA (1minute) Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃)
Dissipation Factor (tan δ)	See STANDARD RATINGS (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 100V, 160 to 250V, 400 to 450V D55 to JA0: Z(-25℃)/Z(+20℃): 4, 3, 2, 2, 2, 2, 2, 3, —, — D55 to JA0: Z(-40℃)/Z(+20℃): 12, 8, 6, 4, 3, 3, 3, 4, —, — KE0 to MN0: Z(-25℃)/Z(+20℃): 5, 4, 3, 2, 2, 2, 2, 2, 3, 6 KE0 to MN0: Z(-40℃)/Z(+20℃): 10, 8, 6, 4, 3, 3, 3, 3, 6, 10 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for the specified period of time at 105℃. Size code: D55 to F80 / HA0 to MN0 Time: 1,000 hours / 2,000 hours Capacitance change: ≦±30% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦300% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours (500 hours for B55 to F80 size) at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Size code: D55 to F80 / HA0 to MN0 Capacitance change: ≦±25% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : A

●Size code : D55 to MN0

Note : L±0.5 for HA0 to MN0

●Terminal Code : G (Vibration resistant structure)

●Size code : LH0 to MN0

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
D55	4	5.2	4.3	4.3	5.1	0.5 to 0.8	1.0
E55	5	5.2	5.3	5.3	5.9	0.5 to 0.8	1.4
F55	6.3	5.2	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

◆MARKING

D55 to JA0

Ex)16V22μF

KE0 to MN0

Ex)25V1,000μF

◆PART NUMBERING SYSTEM

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
D55 to JA0	1.0	1.00	1.50	1.75	1.80
	2.2 to 10	1.00	1.30	1.40	1.50
	22 to 1,500	1.00	1.05	1.08	1.08
KE0 to MN0	3.3 to 4.7	1.00	1.75	2.30	2.50
	10 to 68	1.00	1.50	1.75	1.80
	100 to 1,000	1.00	1.30	1.40	1.50
	2,200 to 6,800	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

Please refer to "Product code guide (surface mount type)"

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 105℃

Alchip™-MVE Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
6.3	22	D55	0.30	22	EMVE6R3ARA220MD55G
	33	E55	0.30	34	EMVE6R3ARA330ME55G
	47	E55	0.30	38	EMVE6R3ARA470ME55G
	100	F55	0.30	69	EMVE6R3ARA101MF55G
	220	F80	0.45	120	EMVE6R3ARA221MF80G
	330	HA0	0.40	290	EMVE6R3ARA331MHA0G
	470	HA0	0.45	320	EMVE6R3ARA471MHA0G
	680	HA0	0.45	340	EMVE6R3ARA681MHA0G
	1,000	JA0	0.40	410	EMVE6R3ARA102MJA0G
	1,500	JA0	0.45	550	EMVE6R3ARA152MJA0G
	2,200	KE0	0.40	680	EMVE6R3ARA222MKE0S
	2,200	LH0	0.40	840	EMVE6R3□RA222MLH0S
	3,300	KG5	0.42	850	EMVE6R3ARA332MKG5S
	3,300	MH0	0.42	1,000	EMVE6R3□RA332MMH0S
	4,700	LN0	0.44	1,200	EMVE6R3□RA472MLN0S
	4,700	MH0	0.44	1,200	EMVE6R3□RA472MMH0S
	6,800	LN0	0.48	1,200	EMVE6R3□RA682MLN0S
	6,800	MN0	0.48	1,350	EMVE6R3□RA682MMN0S
10	22	E55	0.24	30	EMVE100ARA220ME55G
	33	E55	0.24	34	EMVE100ARA330ME55G
	47	F55	0.24	48	EMVE100ARA470MF55G
	100	F55	0.30	69	EMVE100ARA101MF55G
	150	F80	0.35	100	EMVE100ARA151MF80G
	220	F80	0.35	120	EMVE100ARA221MF80G
	330	HA0	0.35	290	EMVE100ARA331MHA0G
	470	HA0	0.35	320	EMVE100ARA471MHA0G
	1,000	JA0	0.35	410	EMVE100ARA102MJA0G
	2,200	KG5	0.36	750	EMVE100ARA222MKG5S
	2,200	LH0	0.36	850	EMVE100□RA222MLH0S
	3,300	LH0	0.38	1,000	EMVE100□RA332MLH0S
	3,300	MH0	0.38	1,100	EMVE100□RA332MMH0S
	4,700	LN0	0.40	1,300	EMVE100□RA472MLN0S
	4,700	MN0	0.40	1,350	EMVE100□RA472MMN0S
16	10	D55	0.20	17	EMVE160ARA100MD55G
	22	E55	0.20	30	EMVE160ARA220ME55G
	33	F55	0.20	45	EMVE160ARA330MF55G
	47	F55	0.20	48	EMVE160ARA470MF55G
	100	F55	0.26	69	EMVE160ARA101MF55G
	150	F80	0.28	100	EMVE160ARA151MF80G
	220	F80	0.28	120	EMVE160ARA221MF80G
	330	HA0	0.28	290	EMVE160ARA331MHA0G
	470	HA0	0.28	320	EMVE160ARA471MHA0G
	680	JA0	0.28	470	EMVE160ARA681MJA0G
	1,000	KE0	0.30	550	EMVE160ARA102MKE0S
	1,000	LH0	0.30	650	EMVE160□RA102MLH0S
	2,200	LH0	0.32	950	EMVE160□RA222MLH0S
	2,200	MH0	0.32	1,000	EMVE160□RA222MMH0S
	3,300	LN0	0.34	1,200	EMVE160□RA332MLN0S
	3,300	MH0	0.34	1,200	EMVE160□RA332MMH0S
25	10	E55	0.16	27	EMVE250ARA100ME55G
	22	F55	0.16	44	EMVE250ARA220MF55G
	33	F55	0.16	50	EMVE250ARA330MF55G
	47	F55	0.16	60	EMVE250ARA470MF55G
	100	F80	0.18	100	EMVE250ARA101MF80G
	150	HA0	0.18	240	EMVE250ARA151MHA0G
	220	HA0	0.18	320	EMVE250ARA221MHA0G
	330	JA0	0.16	450	EMVE250ARA331MJA0G
	470	JA0	0.18	490	EMVE250ARA471MJA0G
	1,000	LH0	0.26	820	EMVE250□RA102MLH0S
	1,000	MH0	0.26	880	EMVE250□RA102MMH0S
	2,200	LN0	0.28	1,250	EMVE250□RA222MLN0S
	2,200	MN0	0.28	1,300	EMVE250□RA222MMN0S
35	4.7	D55	0.14	16	EMVE350ARA4R7MD55G
	10	E55	0.14	27	EMVE350ARA100ME55G
	22	F55	0.14	44	EMVE350ARA220MF55G
	47	F80	0.16	80	EMVE350ARA470MF80G
	100	F80	0.16	100	EMVE350ARA101MF80G
	150	HA0	0.16	260	EMVE350ARA151MHA0G
	220	JA0	0.16	375	EMVE350ARA221MJA0G
35	330	JA0	0.16	450	EMVE350ARA331MJA0G
	470	KE0	0.22	520	EMVE350ARA471MKE0S
	470	LH0	0.22	650	EMVE350□RA471MLH0S
	1,000	LH0	0.22	750	EMVE350□RA102MLH0S
	1,000	MH0	0.22	1,000	EMVE350□RA102MMH0S
	2,200	MN0	0.24	1,450	EMVE350□RA222MMN0S
50	1.0	D55	0.12	8.0	EMVE500ARA1R0MD55G
	2.2	D55	0.12	12	EMVE500ARA2R2MD55G
	3.3	D55	0.12	15	EMVE500ARA3R3MD55G
	4.7	E55	0.12	20	EMVE500ARA4R7ME55G
	10	F55	0.12	32	EMVE500ARA100MF55G
	33	F80	0.14	65	EMVE500ARA330MF80G
	47	F80	0.14	80	EMVE500ARA470MF80G
	100	HA0	0.14	230	EMVE500ARA101MHA0G
	220	JA0	0.14	375	EMVE500ARA221MJA0G
	330	KE0	0.18	500	EMVE500ARA331MKE0S
	330	LH0	0.18	600	EMVE500□RA331MLH0S
	470	LH0	0.18	700	EMVE500□RA471MLH0S
	470	MH0	0.18	750	EMVE500□RA471MMH0S
	1,000	MN0	0.18	1,200	EMVE500□RA102MMN0S
63	1.0	D55	0.12	8.0	EMVE630ARA1R0MD55G
	2.2	D55	0.12	12	EMVE630ARA2R2MD55G
	3.3	E55	0.12	17	EMVE630ARA3R3ME55G
	4.7	F55	0.12	22	EMVE630ARA4R7MF55G
	10	F55	0.12	32	EMVE630ARA100MF55G
	22	F80	0.12	58	EMVE630ARA220MF80G
	33	HA0	0.12	140	EMVE630ARA330MHA0G
	47	HA0	0.12	170	EMVE630ARA470MHA0G
	100	JA0	0.12	310	EMVE630ARA101MJA0G
	220	KE0	0.14	470	EMVE630ARA221MKE0S
	220	LH0	0.14	560	EMVE630□RA221MLH0S
	330	LH0	0.14	700	EMVE630□RA331MLH0S
	330	MH0	0.14	750	EMVE630□RA331MMH0S
	470	LN0	0.14	900	EMVE630□RA471MLN0S
	470	MH0	0.14	900	EMVE630□RA471MMH0S
100	22	HA0	0.12	100	EMVE101ARA220MHA0G
	33	JA0	0.12	150	EMVE101ARA330MJA0G
	47	KE0	0.10	250	EMVE101ARA470MKE0S
	68	KE0	0.10	300	EMVE101ARA680MKE0S
	100	KE0	0.10	380	EMVE101ARA101MKE0S
	100	LH0	0.10	450	EMVE101□RA101MLH0S
	220	LN0	0.10	750	EMVE101□RA221MLN0S
	220	MH0	0.10	750	EMVE101□RA221MMH0S
	330	MN0	0.10	980	EMVE101□RA331MMN0S
160	33	KE0	0.15	95	EMVE161ARA330MKE0S
	47	LH0	0.15	260	EMVE161□RA470MLH0S
	68	LN0	0.15	320	EMVE161□RA680MLN0S
	68	MH0	0.15	320	EMVE161□RA680MMH0S
	100	LN0	0.15	380	EMVE161□RA101MLN0S
200	10	KE0	0.15	80	EMVE201ARA100MKE0S
	22	KG5	0.15	110	EMVE201ARA220MKG5S
	33	LH0	0.15	220	EMVE201□RA330MLH0S
	47	LN0	0.15	270	EMVE201□RA470MLN0S
	47	MH0	0.15	270	EMVE201□RA470MMH0S
	68	MN0	0.15	330	EMVE201□RA680MMN0S
250	4.7	KE0	0.15	65	EMVE251ARA4R7MKE0S
	10	KG5	0.15	105	EMVE251ARA100MKG5S
	22	LH0	0.15	180	EMVE251□RA220MLH0S
	33	LN0	0.15	230	EMVE251□RA330MLN0S
	33	MH0	0.15	230	EMVE251□RA330MMH0S
	47	MN0	0.15	280	EMVE251□RA470MMN0S
400	4.7	KG5	0.20	50	EMVE401ARA4R7MKG5S
	10	LH0	0.20	85	EMVE401□RA100MLH0S
	22	MN0	0.20	130	EMVE401□RA220MMN0S
450	3.3	KE0	0.20	40	EMVE451ARA3R3MKE0S
	4.7	KG5	0.20	50	EMVE451ARA4R7MKG5S
	10	LH0	0.20	85	EMVE451□RA100MLH0S
	22	MN0	0.20	130	EMVE451□RA220MMN0S

□ : Enter the appropriate terminal code.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR, 105℃

Alchip™-MZR Series *Upgrade!*

- Added case size φ5×5.8L and φ6.3×5.8L
- Downsizing and Lower ESR, 2,000hours at 105℃
- Rated voltage range : 6.3 to 50V, Nominal capacitance range : 22 to 2,200μF
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistance structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MZR
↑ Downsized
MZJ

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-55 to +105℃							
Rated Voltage Range	6.3 to 50V_{dc}							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	(at 20℃, 120Hz)
	tan δ (Max.)	0.26	0.19	0.16	0.14	0.12	0.10	
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	(at 120Hz)
	Z(-25℃)/Z(+20℃)	2	2	2	2	2	2	
	Z(-40℃)/Z(+20℃)	3	3	3	3	3	3	
	Z(-55℃)/Z(+20℃)	4	4	4	3	3	3	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 105℃.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charging with the specified surge voltage for 30±5 seconds through a protective resistor (as required for RC=0.1±0.05sec) and open-circuiting for 5.5 minutes at a room temperature of 15 to 35℃.							
	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	
	Surge voltage (V_{dc})	7.2V	12V	18V	29V	40V	58V	
	Appearance	No significant damage						
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						
	(Caution) Surge Voltage Test intends to evaluate capacitors in durability of an exceptional excessive voltage under specific conditions.It does not imply long-term use at all.							

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : E61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 35V330μF

- Rated voltage symbol

Rated voltage (V_{dc})	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H

Applying voltage over the rated voltages causes the capacitors to have short lifetime.
Besides, applying voltage over the specified surge voltages may cause to have short circuit failure. A protection circuit should be used if applied voltage will exceed the rated voltages.

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR, 105℃

Alchip™-MZR Series (Upgrade!)

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E MZR □□□ □ RA □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 220μF:221, 470μF:471)
- Taping code
- Terminal code (A, G)
- Voltage code (ex. 6.3V:6R3, 10V:100, 35V:350)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	tan δ	ESR (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	220	E61	0.26	0.36	240	EMZR6R3ARA221ME61G
	330	F61	0.26	0.26	300	EMZR6R3ARA331MF61G
	680	F80	0.26	0.16	600	EMZR6R3ARA681MF80G
	1,500	HA0	0.26	0.08	850	EMZR6R3□RA152MHA0G
	2,200	JA0	0.26	0.06	1,190	EMZR6R3□RA222MJA0G
10	150	E61	0.19	0.36	240	EMZR100ARA151ME61G
	220	F61	0.19	0.26	300	EMZR100ARA221MF61G
	470	F80	0.19	0.16	600	EMZR100ARA471MF80G
	1,000	HA0	0.19	0.08	850	EMZR100□RA102MHA0G
	1,500	JA0	0.19	0.06	1,190	EMZR100□RA152MJA0G
16	100	E61	0.16	0.36	240	EMZR160ARA101ME61G
	220	F61	0.16	0.26	300	EMZR160ARA221MF61G
	330	F80	0.16	0.16	600	EMZR160ARA331MF80G
	680	HA0	0.16	0.08	850	EMZR160□RA681MHA0G
	1,000	JA0	0.16	0.06	1,190	EMZR160□RA102MJA0G
25	68	E61	0.14	0.36	240	EMZR250ARA680ME61G
	100	F61	0.14	0.26	300	EMZR250ARA101MF61G
	220	F80	0.14	0.16	600	EMZR250ARA221MF80G
	470	HA0	0.14	0.08	850	EMZR250□RA471MHA0G
	820	JA0	0.14	0.06	1,190	EMZR250□RA821MJA0G
35	47	E61	0.12	0.36	240	EMZR350ARA470ME61G
	100	F61	0.12	0.26	300	EMZR350ARA101MF61G
	150	F80	0.12	0.16	600	EMZR350ARA151MF80G
	330	HA0	0.12	0.08	850	EMZR350□RA331MHA0G
	560	JA0	0.12	0.06	1,190	EMZR350□RA561MJA0G
50	22	E61	0.10	0.88	165	EMZR500ARA220ME61G
	47	F61	0.10	0.68	195	EMZR500ARA470MF61G
	100	F80	0.10	0.34	350	EMZR500ARA101MF80G
	220	HA0	0.10	0.18	670	EMZR500□RA221MHA0G
	330	JA0	0.10	0.12	900	EMZR500□RA331MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
22 to 150	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 2,200	0.60	0.87	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR, 105℃

Alchip™-MZJ Series

- Lower ESR, 2,000 hours at 105℃
- Rated voltage range : 6.3 to 35V
- Nominal capacitance range : 22 to 1,800μF
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MZJ
↑ Lower ESR
MZA

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	6.3 to 35V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}) 6.3V 10V 16V 25V 35V tan δ (Max.) 0.26 0.19 0.16 0.14 0.12 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc}) 6.3V 10V 16V 25V 35V Z(-25℃)/Z(+20℃) 2 2 2 2 2 Z(-40℃)/Z(+20℃) 3 3 3 3 3 Z(-55℃)/Z(+20℃) 4 4 4 3 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 105℃. Capacitance change ≦±30% of the initial value D.F. (tan δ) ≦200% of the initial specified value Leakage current ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change ≦±30% of the initial value D.F. (tan δ) ≦200% of the initial specified value Leakage current ≦The initial specified value
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charging with the specified surge voltage for 30±5 seconds through a protective resistor (as required for RC=0.1±0.05sec) and open-circuiting for 5.5 minutes at a room temperature of 15 to 35℃. Rated voltage (V_{dc}) 6.3V 10V 16V 25V 35V Surge voltage (V_{dc}) 7.2V 12V 18V 29V 40V Appearance No significant damage Capacitance change ≦±20% of the initial value D.F. (tan δ) ≦200% of the initial specified value Leakage current ≦The initial specified value (Caution) Surge Voltage Test intends to evaluate capacitors in durability of an exceptional excessive voltage under specific conditions.It does not imply long-term use at all.

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : E61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 35V220μF

- Rated voltage symbol

Rated voltage (V_{dc})	6.3	10	16	25	35
Symbol	j	A	C	E	V

Applying voltage over the rated voltages causes the capacitors to have short lifetime.
Besides, applying voltage over the specified surge voltages may cause to have short circuit failure. A protection circuit should be used if applied voltage will exceed the rated voltages.

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR, 105℃

Alchip™-MZJ Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E MZJ □□□ □ RA □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 22μF:220, 1,000μF:102)
- Taping code
- Terminal code (A, G)
- Voltage code (ex. 6.3V:6R3, 10V:100, 35V:350)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	tan δ	ESR (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	100	E61	0.26	0.36	240	EMZJ6R3ARA101ME61G
	220	F61	0.26	0.26	300	EMZJ6R3ARA221MF61G
	330	F80	0.26	0.16	600	EMZJ6R3ARA331MF80G
	1,000	HA0	0.26	0.08	850	EMZJ6R3□RA102MHA0G
	1,500	JA0	0.26	0.06	1,190	EMZJ6R3□RA152MJA0G
	1,800	JA0	0.26	0.06	1,190	EMZJ6R3□RA182MJA0G
10	150	F61	0.19	0.26	300	EMZJ100ARA151MF61G
	680	HA0	0.19	0.08	850	EMZJ100□RA681MHA0G
	1,000	JA0	0.19	0.06	1,190	EMZJ100□RA102MJA0G
	1,200	JA0	0.19	0.06	1,190	EMZJ100□RA122MJA0G
16	47	E61	0.16	0.36	240	EMZJ160ARA470ME61G
	100	F61	0.16	0.26	300	EMZJ160ARA101MF61G
	150	F80	0.16	0.16	600	EMZJ160ARA151MF80G
	220	F80	0.16	0.16	600	EMZJ160ARA221MF80G
	470	HA0	0.16	0.08	850	EMZJ160□RA471MHA0G
	680	JA0	0.16	0.06	1,190	EMZJ160□RA681MJA0G
	820	JA0	0.16	0.06	1,190	EMZJ160□RA821MJA0G
25	22	E61	0.14	0.36	240	EMZJ250ARA220ME61G
	33	E61	0.14	0.36	240	EMZJ250ARA330ME61G
	33	F61	0.14	0.26	300	EMZJ250ARA330MF61G
	47	F61	0.14	0.26	300	EMZJ250ARA470MF61G
	68	F61	0.14	0.26	300	EMZJ250ARA680MF61G
	100	F80	0.14	0.16	600	EMZJ250ARA101MF80G
	330	HA0	0.14	0.08	850	EMZJ250□RA331MHA0G
	470	JA0	0.14	0.06	1,190	EMZJ250□RA471MJA0G
	560	JA0	0.14	0.06	1,190	EMZJ250□RA561MJA0G
35	22	E61	0.12	0.36	240	EMZJ350ARA220ME61G
	33	F61	0.12	0.26	300	EMZJ350ARA330MF61G
	47	F61	0.12	0.26	300	EMZJ350ARA470MF61G
	68	F61	0.12	0.26	300	EMZJ350ARA680MF61G
	100	F80	0.12	0.16	600	EMZJ350ARA101MF80G
	100	HA0	0.12	0.08	850	EMZJ350□RA101MHA0G
	150	HA0	0.12	0.08	850	EMZJ350□RA151MHA0G
	220	HA0	0.12	0.08	850	EMZJ350□RA221MHA0G
	330	JA0	0.12	0.06	1,190	EMZJ350□RA331MJA0G
	390	JA0	0.12	0.06	1,190	EMZJ350□RA391MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
22 to 150	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

Alchip™-MZA Series

- Endurance : 2,000 to 5,000 hours at 105℃
- Low impedance
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MZA
↑ Lower Z
MVY

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	6.3 to 100Vdc
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)

Dissipation Factor (tan δ)

Rated voltage(Vdc)		6.3V	10V	16V	25V	35V	50V	63V	80V	100V
tanδ(Max.)	D61 to JA0	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.08	—
	KE0 to MN0	—	—	—	0.16	0.14	0.12	0.12	0.10	0.10

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. impedance Ratio)

Rated voltage(Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V
Z(-25℃)/Z(+20℃)	2	2	2	2	2	2	2	2	2
Z(-40℃)/Z(+20℃)	3	3	3	3	3	3	3	3	3
Z(-55℃)/Z(+20℃)	4	4	4	3	3	3	3	3	3

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for specified time at 105℃.

Time	D61 to JA0 : 2,000 hours KE0 to MN0 : 5,000 hours
Capacitance change	≦±30% of the initial value
D.F. (tan δ)	≦200% of the initial specified value
Leakage current	≦The initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : D61 to MN0

Note : L±0.5 for HA0 to MN0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to MN0

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
D61	4	5.8	4.3	4.3	5.1	0.5 to 0.8	1.0
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (surface mount type)"

◆MARKING

D61 to JA0
EX) 16V220μF

KE0 to MN0
EX) 25V1,000μF

●Rated voltage symbol (D61 to JA0)

Rated voltage (Vdc)	6.3	10	16	25	35	50	63	80
Symbol	j	A	C	E	V	H	J	K

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

Alchip™-MZA Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size code	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -40℃	Rated ripple current (mArms/105℃,100kHz)	Part No.
6.3	22	D61	1.35	–	90	EMZA6R3ARA220MD61G
	47	D61	1.35	–	90	EMZA6R3ARA470MD61G
	47	E61	0.70	–	160	EMZA6R3ARA470ME61G
	100	E61	0.70	–	160	EMZA6R3ARA101ME61G
	100	F61	0.36	–	240	EMZA6R3ARA101MF61G
	220	F61	0.36	–	240	EMZA6R3ARA221MF61G
	330	F80	0.34	–	280	EMZA6R3ARA331MF80G
	470	HA0	0.16	–	600	EMZA6R3□RA471MHA0G
	1,000	HA0	0.16	–	600	EMZA6R3□RA102MHA0G
	1,500	JA0	0.08	–	850	EMZA6R3□RA152MJA0G
10	22	D61	1.35	–	90	EMZA100ARA220MD61G
	33	D61	1.35	–	90	EMZA100ARA330MD61G
	33	E61	0.70	–	160	EMZA100ARA330ME61G
	220	F80	0.34	–	280	EMZA100ARA221MF80G
	330	HA0	0.16	–	600	EMZA100□RA331MHA0G
	470	HA0	0.16	–	600	EMZA100□RA471MHA0G
	680	HA0	0.16	–	600	EMZA100□RA681MHA0G
	1,000	JA0	0.08	–	850	EMZA100□RA102MJA0G
16	10	D61	1.35	–	90	EMZA160ARA100MD61G
	22	D61	1.35	–	90	EMZA160ARA220MD61G
	22	E61	0.70	–	160	EMZA160ARA220ME61G
	47	E61	0.70	–	160	EMZA160ARA470ME61G
	47	F61	0.36	–	240	EMZA160ARA470MF61G
	100	F61	0.36	–	240	EMZA160ARA101MF61G
	220	F80	0.34	–	280	EMZA160ARA221MF80G
	330	HA0	0.16	–	600	EMZA160□RA331MHA0G
	470	HA0	0.16	–	600	EMZA160□RA471MHA0G
	680	JA0	0.08	–	850	EMZA160□RA681MJA0G
25	10	D61	1.35	–	90	EMZA250ARA100MD61G
	22	E61	0.70	–	160	EMZA250ARA220ME61G
	33	E61	0.70	–	160	EMZA250ARA330ME61G
	33	F61	0.36	–	240	EMZA250ARA330MF61G
	47	F61	0.36	–	240	EMZA250ARA470MF61G
	100	F80	0.34	–	280	EMZA250ARA101MF80G
	220	HA0	0.16	–	600	EMZA250□RA221MHA0G
	330	HA0	0.16	–	600	EMZA250□RA331MHA0G
	470	JA0	0.08	–	850	EMZA250□RA471MJA0G
	1,000	KE0	0.060	0.30	1,320	EMZA250□RA102MKE0S
	1,300	KG5	0.056	0.28	1,470	EMZA250□RA132MKG5S
	1,800	LH0	0.047	0.24	1,820	EMZA250□RA182MLH0S
	2,400	MH0	0.045	0.23	2,060	EMZA250□RA242MMH0S
	3,000	LN0	0.034	0.17	2,400	EMZA250□RA302MLN0S
	3,900	MN0	0.032	0.16	2,640	EMZA250□RA392MMN0S
35	4.7	D61	1.35	–	90	EMZA350ARA4R7MD61G
	10	D61	1.35	–	90	EMZA350ARA100MD61G
	10	E61	0.70	–	160	EMZA350ARA100ME61G
	22	E61	0.70	–	160	EMZA350ARA220ME61G
	33	F61	0.36	–	240	EMZA350ARA330MF61G
	47	F61	0.36	–	240	EMZA350ARA470MF61G
	100	F80	0.34	–	280	EMZA350ARA101MF80G
	100	HA0	0.16	–	600	EMZA350□RA101MHA0G
	220	HA0	0.16	–	600	EMZA350□RA221MHA0G
35	330	JA0	0.08	–	850	EMZA350□RA331MJA0G
	620	KE0	0.060	0.30	1,320	EMZA350□RA621MKE0S
	820	KG5	0.056	0.28	1,470	EMZA350□RA821MKG5S
	1,200	LH0	0.047	0.24	1,820	EMZA350□RA122MLH0S
	1,600	MH0	0.045	0.23	2,060	EMZA350□RA162MMH0S
	1,800	LN0	0.034	0.17	2,400	EMZA350□RA182MLN0S
	2,400	MN0	0.032	0.16	2,640	EMZA350□RA242MMN0S
50	4.7	D61	2.9	–	60	EMZA500ARA4R7MD61G
	10	E61	1.52	–	85	EMZA500ARA100ME61G
	10	F61	0.88	–	165	EMZA500ARA100MF61G
	22	F61	0.88	–	165	EMZA500ARA220MF61G
	33	F80	0.68	–	195	EMZA500ARA330MF80G
	47	F80	0.68	–	195	EMZA500ARA470MF80G
	100	HA0	0.34	–	350	EMZA500□RA101MHA0G
	220	JA0	0.18	–	670	EMZA500□RA221MJA0G
	330	KE0	0.11	0.55	980	EMZA500□RA331MKE0S
	430	KG5	0.10	0.50	1,090	EMZA500□RA431MKG5S
	620	LH0	0.087	0.44	1,320	EMZA500□RA621MLH0S
	820	MH0	0.087	0.44	1,420	EMZA500□RA821MMH0S
	1,000	LN0	0.050	0.25	1,910	EMZA500□RA102MLN0S
	1,300	MN0	0.050	0.25	2,180	EMZA500□RA132MMN0S
63	4.7	E61	4.8	–	50	EMZA630ARA4R7ME61G
	10	F61	2.2	–	80	EMZA630ARA100MF61G
	22	F80	2.1	–	120	EMZA630ARA220MF80G
	33	HA0	0.70	–	250	EMZA630□RA330MHA0G
	47	HA0	0.70	–	250	EMZA630□RA470MHA0G
	68	HA0	0.70	–	250	EMZA630□RA680MHA0G
	100	JA0	0.45	–	400	EMZA630□RA101MJA0G
	240	KE0	0.19	1.54	880	EMZA630□RA241MKE0S
	300	KG5	0.17	1.19	1,000	EMZA630□RA301MKG5S
	430	LH0	0.15	1.05	1,220	EMZA630□RA431MLH0S
	560	MH0	0.12	0.84	1,430	EMZA630□RA561MMH0S
	680	LN0	0.085	0.58	1,790	EMZA630□RA681MLN0S
	910	MN0	0.070	0.49	1,960	EMZA630□RA911MMN0S
80	3.3	E61	5.0	–	25	EMZA800ARA3R3ME61G
	4.7	F61	3.0	–	40	EMZA800ARA4R7MF61G
	10	F80	2.4	–	60	EMZA800ARA100MF80G
	22	HA0	1.3	–	130	EMZA800□RA220MHA0G
	33	HA0	1.3	–	130	EMZA800□RA330MHA0G
	47	JA0	0.70	–	200	EMZA800□RA470MJA0G
	150	KE0	0.22	1.54	810	EMZA800□RA151MKE0S
	220	KG5	0.17	1.19	1,000	EMZA800□RA221MKG5S
	330	LH0	0.15	1.05	1,220	EMZA800□RA331MLH0S
	430	MH0	0.12	0.84	1,430	EMZA800□RA431MMH0S
	470	LN0	0.085	0.58	1,790	EMZA800□RA471MLN0S
	680	MN0	0.070	0.49	1,960	EMZA800□RA681MMN0S
100	110	KE0	0.28	2.24	740	EMZA101□RA111MKE0S
	130	KG5	0.21	1.68	900	EMZA101□RA131MKG5S
	200	LH0	0.18	1.44	1,090	EMZA101□RA201MLH0S
	270	MH0	0.15	1.2	1,280	EMZA101□RA271MMH0S
	330	LN0	0.11	0.88	1,580	EMZA101□RA331MLN0S
	430	MN0	0.091	0.73	1,690	EMZA101□RA431MMN0S

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
D61 to JA0	3.3 to 4.7	0.35	0.70	0.90	1.00
	10 to 100	0.40	0.75	0.90	1.00
	220 to 470	0.50	0.85	0.94	1.00
	680 to 1,500	0.60	0.87	0.95	1.00
KE0 to MN0	110 to 200	0.40	0.75	0.90	1.00
	220 to 620	0.50	0.85	0.94	1.00
	680 to 1,800	0.60	0.87	0.95	1.00
	2,400 to 3,000	0.75	0.90	0.95	1.00
	3,900	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

Alchip™-MVY Series

- Endurance : 1,000 to 5,000 hours at 105℃
- Low impedance
- For digital equipment, especially DC-DC converters
- Solvent resistant type except 80 & 100Vdc (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃ (6.3 to 63Vdc)　-40 to +105℃ (80 & 100Vdc)
Rated Voltage Range	6.3 to 100Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)

Dissipation Factor (tan δ)

Rated voltage (Vdc)		6.3V	10V	16V	25V	35V	50V	63V	80V	100V
tan δ (Max.)	D55 to F80	0.24	0.20	0.16	0.14	0.12	0.12	—	—	—
	HA0 & JA0	0.28	0.24	0.20	0.16	0.14	0.12	—	—	—
	KE0 to MN0	0.26	0.22	0.18	0.16	0.14	0.12	0.14	0.10	0.10

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (Vdc)		6.3V	10V	16V	25V	35V	50V	63V	80V	100V
Z(-40℃)/Z(+20℃)	D55 to JA0	3	2	2	2	2	2	—	—	—
	KE0 to MN0	10	8	6	4	3	3	3	3	3

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for specified ime at 105℃.

Time	D55 to F80 : 1,000 hours HA0 & JA0 : 2,000 hours KE0 to MN0 : 5,000 hours	
Rated voltage	6.3Vdc (D55 to JA0)	6.3 to 100Vdc
Capacitance change	≦±30% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦300% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Rated voltage	6.3Vdc (D55 to JA0)	6.3 to 100Vdc
Capacitance change	≦±30% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦300% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦The initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : D55 to MN0

Note : L±0.5 for HA0 to MN0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to MN0

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
D55	4	5.2	4.3	4.3	5.1	0.5 to 0.8	1.0
E55	5	5.2	5.3	5.3	5.9	0.5 to 0.8	1.4
F55	6.3	5.2	6.6	6.6	7.2	0.5 to 0.8	1.9
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (surface mount type)"

◆MARKING

D55 to JA0

EX) 6.3V100μF

KE0 to MN0

EX) 16V1,000μF

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

Alchip™-MVY Series

◆STANDARD RATINGS

is not solvent resistant (80/100Vdc).

WV (Vdc)	Cap (μF)	Size code	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	22	D55	3.0	60	EMVY6R3ARA220MD55G
	33	E55	1.8	95	EMVY6R3ARA330ME55G
	47	E55	1.8	95	EMVY6R3ARA470ME55G
	100	F55	1.0	140	EMVY6R3ARA101MF55G
	220	F55	1.0	140	EMVY6R3ARA221MF55G
	330	F80	0.34	280	EMVY6R3ARA331MF80G
	470	HA0	0.30	450	EMVY6R3□RA471MHA0G
	680	HA0	0.30	450	EMVY6R3□RA681MHA0G
	1,000	HA0	0.30	450	EMVY6R3□RA102MHA0G
	1,500	JA0	0.15	670	EMVY6R3□RA152MJA0G
	2,200	KE0	0.070	820	EMVY6R3□RA222MKE0S
	2,200	LH0	0.054	1,260	EMVY6R3□RA222MLH0S
	3,300	KG5	0.060	950	EMVY6R3□RA332MKG5S
	3,300	MH0	0.054	1,350	EMVY6R3□RA332MMH0S
	4,700	LN0	0.038	1,630	EMVY6R3□RA472MLN0S
	4,700	MH0	0.054	1,350	EMVY6R3□RA472MMH0S
	6,800	LN0	0.038	1,630	EMVY6R3□RA682MLN0S
	6,800	MN0	0.038	1,750	EMVY6R3□RA682MMN0S
	8,200	MN0	0.038	1,750	EMVY6R3□RA822MMN0S
10	22	E55	1.8	95	EMVY100ARA220ME55G
	33	E55	1.8	95	EMVY100ARA330ME55G
	47	F55	1.0	140	EMVY100ARA470MF55G
	100	F55	1.0	140	EMVY100ARA101MF55G
	220	F80	0.34	280	EMVY100ARA221MF80G
	330	HA0	0.30	450	EMVY100□RA331MHA0G
	470	HA0	0.30	450	EMVY100□RA471MHA0G
	680	JA0	0.15	670	EMVY100□RA681MJA0G
	1,000	JA0	0.15	670	EMVY100□RA102MJA0G
	2,200	KG5	0.060	950	EMVY100□RA222MKG5S
	2,200	LH0	0.054	1,260	EMVY100□RA222MLH0S
	3,300	LH0	0.054	1,260	EMVY100□RA332MLH0S
	3,300	MH0	0.054	1,350	EMVY100□RA332MMH0S
	4,700	LN0	0.038	1,630	EMVY100□RA472MLN0S
	4,700	MN0	0.038	1,750	EMVY100□RA472MMN0S
	6,800	MN0	0.038	1,750	EMVY100□RA682MMN0S
16	10	D55	3.0	60	EMVY160ARA100MD55G
	22	E55	1.8	95	EMVY160ARA220ME55G
	33	F55	1.0	140	EMVY160ARA330MF55G
	47	F55	1.0	140	EMVY160ARA470MF55G
	100	F55	1.0	140	EMVY160ARA101MF55G
	220	F80	0.34	280	EMVY160ARA221MF80G
	330	HA0	0.30	450	EMVY160□RA331MHA0G
	470	HA0	0.30	450	EMVY160□RA471MHA0G
	680	JA0	0.15	670	EMVY160□RA681MJA0G
	1,000	KE0	0.070	820	EMVY160□RA102MKE0S
	1,000	LH0	0.054	1,260	EMVY160□RA102MLH0S
	2,200	LH0	0.054	1,260	EMVY160□RA222MLH0S
	2,200	MH0	0.054	1,350	EMVY160□RA222MMH0S
	3,300	LN0	0.038	1,630	EMVY160□RA332MLN0S
	3,300	MH0	0.054	1,350	EMVY160□RA332MMH0S
	4,700	MN0	0.038	1,750	EMVY160□RA472MMN0S
25	10	E55	1.8	95	EMVY250ARA100ME55G
	22	F55	1.0	140	EMVY250ARA220MF55G
	33	F55	1.0	140	EMVY250ARA330MF55G
	47	F55	1.0	140	EMVY250ARA470MF55G
	100	F80	0.34	280	EMVY250ARA101MF80G
	220	HA0	0.30	450	EMVY250□RA221MHA0G
25	330	HA0	0.30	450	EMVY250□RA331MHA0G
	470	JA0	0.15	670	EMVY250□RA471MJA0G
	1,000	LH0	0.054	1,260	EMVY250□RA102MLH0S
	1,000	MH0	0.054	1,350	EMVY250□RA102MMH0S
	2,200	LN0	0.038	1,630	EMVY250□RA222MLN0S
	2,200	MN0	0.038	1,750	EMVY250□RA222MMN0S
	3,300	MN0	0.038	1,750	EMVY250□RA332MMN0S
35	4.7	D55	3.0	60	EMVY350ARA4R7MD55G
	10	E55	1.8	95	EMVY350ARA100ME55G
	22	F55	1.0	140	EMVY350ARA220MF55G
	33	F55	1.0	140	EMVY350ARA330MF55G
	47	F55	1.0	140	EMVY350ARA470MF55G
	47	F61	1.0	140	EMVY350ARA470MF61G
	68	F80	0.34	280	EMVY350ARA680MF80G
	100	HA0	0.30	450	EMVY350□RA101MHA0G
	220	HA0	0.30	450	EMVY350□RA221MHA0G
	330	JA0	0.15	670	EMVY350□RA331MJA0G
	470	KE0	0.070	820	EMVY350□RA471MKE0S
	470	LH0	0.054	1,260	EMVY350□RA471MLH0S
	1,000	LH0	0.054	1,260	EMVY350□RA102MLH0S
	1,000	MH0	0.054	1,350	EMVY350□RA102MMH0S
	2,200	MN0	0.038	1,750	EMVY350□RA222MMN0S
50	1.0	D55	5.0	30	EMVY500ARA1R0MD55G
	2.2	D55	5.0	30	EMVY500ARA2R2MD55G
	3.3	D55	5.0	30	EMVY500ARA3R3MD55G
	4.7	E55	3.0	50	EMVY500ARA4R7ME55G
	10	F55	2.0	70	EMVY500ARA100MF55G
	22	F55	2.0	70	EMVY500ARA220MF55G
	33	F80	0.60	170	EMVY500ARA330MF80G
	47	F80	0.60	170	EMVY500ARA470MF80G
	68	HA0	0.60	300	EMVY500□RA680MHA0G
	100	HA0	0.60	300	EMVY500□RA101MHA0G
	220	JA0	0.30	500	EMVY500□RA221MJA0G
	330	KE0	0.11	650	EMVY500□RA331MKE0S
	330	LH0	0.087	900	EMVY500□RA331MLH0S
	470	LH0	0.087	900	EMVY500□RA471MLH0S
	470	MH0	0.087	1,060	EMVY500□RA471MMH0S
	1,000	MN0	0.050	1,520	EMVY500□RA102MMN0S
63	68	KE0	0.19	500	EMVY630□RA680MKE0S
	100	KE0	0.19	500	EMVY630□RA101MKE0S
	220	KE0	0.19	500	EMVY630□RA221MKE0S
	220	LH0	0.12	845	EMVY630□RA221MLH0S
	330	LH0	0.12	845	EMVY630□RA331MLH0S
	330	MH0	0.12	905	EMVY630□RA331MMH0S
	470	LN0	0.085	1,100	EMVY630□RA471MLN0S
	470	MH0	0.12	905	EMVY630□RA471MMH0S
80	100	KE0	0.33	450	EMVY800□RA101MKE0S
	220	KG5	0.26	550	EMVY800□RA221MKG5S
	330	LN0	0.16	900	EMVY800□RA331MLN0S
	330	MH0	0.24	700	EMVY800□RA331MMH0S
	470	MN0	0.16	950	EMVY800□RA471MMN0S
100	47	KE0	0.33	450	EMVY101□RA470MKE0S
	68	KE0	0.33	450	EMVY101□RA680MKE0S
	100	KE0	0.33	450	EMVY101□RA101MKE0S
	100	LH0	0.24	650	EMVY101□RA101MLH0S
	220	LN0	0.16	900	EMVY101□RA221MLN0S
	220	MH0	0.24	700	EMVY101□RA221MMH0S
	330	MN0	0.16	950	EMVY101□RA331MMN0S

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
D55 to JA0	1.0 to 4.7	0.35	0.70	0.90	1.00
	10 to 100	0.40	0.75	0.90	1.00
	220 to 470	0.50	0.85	0.94	1.00
	680 to 1,500	0.60	0.87	0.95	1.00
KE0 to MN0	47 to 100	0.40	0.75	0.90	1.00
	220 to 470	0.50	0.85	0.94	1.00
	1,000	0.60	0.87	0.95	1.00
	2,200 to 3,300	0.75	0.90	0.95	1.00
	4,700 to 8,200	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 10000-hours-life, 105℃

Alchip™-MZF Series

- Endurance : 10,000 hours at 105℃
- Low impedance
- Rated voltage range : 6.3 to 50V
- Nominal capacitance range : 10 to 470μF
- Suitable for long life and low profile products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MLA —Longer life→ MZE —Longer life→ **MZF**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	6.3 to 50Vdc
Capacitance Tolerance	±20%(M) (at 20℃,120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V tan δ (Max.): 0.32, 0.28, 0.26, 0.16, 0.14, 0.14 (at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V Z(-10℃)/Z(+20℃): 4, 3, 2, 2, 2, 2 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 10,000 hours at 105℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
E73	5	7.0	5.3	5.3	5.9	0.5 to 0.8	1.4
F73	6.3	7.0	6.6	6.6	7.2	0.5 to 0.8	1.9
F90	6.3	8.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M Z F □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,25V:250)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 16V47μF

●Rated voltage symbol

Rated voltage (Vdc)	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 10000-hours-life, 105℃

Alchip™-MZF Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	47	E73	2.2	95	EMZF6R3ARA470ME73G
	100	F73	1.1	140	EMZF6R3ARA101MF73G
	220	F90	1.0	230	EMZF6R3ARA221MF90G
	330	F90	1.0	230	EMZF6R3ARA331MF90G
	470	HA0	0.22	600	EMZF6R3ARA471MHA0G
10	33	E73	2.2	95	EMZF100ARA330ME73G
	150	F73	1.1	140	EMZF100ARA151MF73G
16	22	E73	2.2	95	EMZF160ARA220ME73G
	47	F73	1.1	140	EMZF160ARA470MF73G
	100	F73	1.1	140	EMZF160ARA101MF73G
	150	F90	1.0	230	EMZF160ARA151MF90G
	220	F90	1.0	230	EMZF160ARA221MF90G
	330	HA0	0.22	600	EMZF160ARA331MHA0G
	470	JA0	0.16	850	EMZF160ARA471MJA0G
25	22	E73	2.2	95	EMZF250ARA220ME73G

WV (V_{dc})	Cap (μF)	Size code	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
25	33	F73	1.1	140	EMZF250ARA330MF73G
	47	F73	1.1	140	EMZF250ARA470MF73G
	100	F90	1.0	230	EMZF250ARA101MF90G
	220	HA0	0.22	600	EMZF250ARA221MHA0G
	330	JA0	0.16	850	EMZF250ARA331MJA0G
35	10	E73	2.2	95	EMZF350ARA100ME73G
	10	F73	1.1	140	EMZF350ARA100MF73G
	22	E73	2.2	95	EMZF350ARA220ME73G
	22	F73	1.1	140	EMZF350ARA220MF73G
	33	F90	1.0	230	EMZF350ARA330MF90G
	47	F90	1.0	230	EMZF350ARA470MF90G
	100	HA0	0.22	600	EMZF350ARA101MHA0G
	220	JA0	0.16	850	EMZF350ARA221MJA0G
50	47	HA0	0.53	350	EMZF500ARA470MHA0G
	100	JA0	0.35	670	EMZF500ARA101MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 150	0.40	0.75	0.90	1.00
220 to 470	0.50	0.85	0.94	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 7000 to 8000-hours-life, 105℃

Alchip™-MZE Series

- Endurance : 7,000 to 8,000 hours at 105℃
- Low impedance
- Rated voltage range : 6.3 to 50V
- Nominal capacitance range : 10 to 470μF
- Suitable for long life and low profile products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVY → Longer life → MLA → Longer life → **MZE**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	6.3 to 50V_{dc}
Capacitance Tolerance	±20%(M) (at 20℃,120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}) 6.3V 10V 16V 25V 35V 50V tan δ (Max.) 0.32 0.28 0.26 0.16 0.14 0.14 (at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(V_{dc}) 6.3V 10V 16V 25V 35V 50V Z(-10℃)/Z(+20℃) 4 3 2 2 2 2 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for specified time at 105℃. Time: E73 & F73 : 7,000 hours; F90 to JA0 : 8,000 hours Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
E73	5	7.0	5.3	5.3	5.9	0.5 to 0.8	1.4
F73	6.3	7.0	6.6	6.6	7.2	0.5 to 0.8	1.9
F90	6.3	8.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M Z E □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,25V:250)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 16V47μF

●Rated voltage symbol

Rated voltage (V_{dc})	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 7000 to 8000-hours-life, 105℃

Alchip™-MZE Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	47	E73	2.2	95	EMZE6R3ARA470ME73G
	100	F73	1.1	140	EMZE6R3ARA101MF73G
	220	F90	1.0	230	EMZE6R3ARA221MF90G
	330	F90	1.0	230	EMZE6R3ARA331MF90G
	470	HA0	0.22	600	EMZE6R3ARA471MHA0G
10	33	E73	2.2	95	EMZE100ARA330ME73G
	150	F73	1.1	140	EMZE100ARA151MF73G
16	22	E73	2.2	95	EMZE160ARA220ME73G
	47	F73	1.1	140	EMZE160ARA470MF73G
	100	F73	1.1	140	EMZE160ARA101MF73G
	150	F90	1.0	230	EMZE160ARA151MF90G
	220	F90	1.0	230	EMZE160ARA221MF90G
	330	HA0	0.22	600	EMZE160ARA331MHA0G
	470	JA0	0.16	850	EMZE160ARA471MJA0G
25	22	E73	2.2	95	EMZE250ARA220ME73G

WV (V_{dc})	Cap (μF)	Size code	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
25	33	F73	1.1	140	EMZE250ARA330MF73G
	47	F73	1.1	140	EMZE250ARA470MF73G
	100	F90	1.0	230	EMZE250ARA101MF90G
	220	HA0	0.22	600	EMZE250ARA221MHA0G
	330	JA0	0.16	850	EMZE250ARA331MJA0G
35	10	E73	2.2	95	EMZE350ARA100ME73G
	10	F73	1.1	140	EMZE350ARA100MF73G
	22	E73	2.2	95	EMZE350ARA220ME73G
	22	F73	1.1	140	EMZE350ARA220MF73G
	33	F90	1.0	230	EMZE350ARA330MF90G
	47	F90	1.0	230	EMZE350ARA470MF90G
	100	HA0	0.22	600	EMZE350ARA101MHA0G
	220	JA0	0.16	850	EMZE350ARA221MJA0G
50	47	HA0	0.53	350	EMZE500ARA470MHA0G
	100	JA0	0.35	670	EMZE500ARA101MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 150	0.40	0.75	0.90	1.00
220 to 470	0.50	0.85	0.94	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 5000-hours-life, 105℃

Alchip™-MZK Series

- Endurance : 5,000 hours at 105℃
- Low impedance
- Rated voltage range : 6.3 to 35V
- Nominal capacitance range : 10 to 150μF
- Suitable for low profile products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVY —Longer life→ **MZK**

◆SPECIFICATIONS

Items	Characteristics						
Category Temperature Range	-25 to +105℃						
Rated Voltage Range	6.3 to 35Vdc						
Capacitance Tolerance	±20%(M)						(at 20℃,120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)						(at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	
	tan δ (Max.)	0.32	0.28	0.26	0.16	0.14	(at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(Vdc)	6.3V	10V	16V	25V	35V	
	Z(-10℃)/Z(+20℃)	4	3	2	2	2	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours at 105℃.						
	Capacitance change	≦±30% of the initial value					
	D.F. (tan δ)	≦300% of the initial specified value					
	Leakage current	≦The initial specified value					
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.						
	Capacitance change	≦±30% of the initial value					
	D.F. (tan δ)	≦300% of the initial specified value					
	Leakage current	≦The initial specified value					

◆DIMENSIONS [mm]

●Terminal Code : A

Size code	D	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E MZK □□□ A RA □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,35V:350)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 35V47μF

●Rated voltage symbol

Rated voltage (Vdc)	6.3	10	16	25	35
Symbol	j	A	C	E	V

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 5000-hours-life, 105℃

Alchip™-MZK Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	100	E61	2.2	95	EMZK6R3ARA101ME61G
10	150	F61	1.1	140	EMZK100ARA151MF61G
16	33	E61	2.2	95	EMZK160ARA330ME61G
	47	E61	2.2	95	EMZK160ARA470ME61G
	100	F61	1.1	140	EMZK160ARA101MF61G
25	68	F61	1.1	140	EMZK250ARA680MF61G
35	10	E61	2.2	95	EMZK350ARA100ME61G
	10	F61	1.1	140	EMZK350ARA100MF61G
	22	E61	2.2	95	EMZK350ARA220ME61G
	22	F61	1.1	140	EMZK350ARA220MF61G
	33	F61	1.1	140	EMZK350ARA330MF61G
	47	F61	1.1	140	EMZK350ARA470MF61G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	120	1k	10k	100k
6.3 to 35V_{dc}	0.40	0.75	0.90	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

Alchip™-MLA Series

- Low impedance, long life
- Rated voltage 6.3 to 50V, Capacitance 10 to 1,000μF
- Case size φ5×5.8L to φ10×10L
- Suitable for applications requiring long life and low impedance such as equipment in continuous operation, industrial applications, etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVY → Longer life → **MLA**

◆SPECIFICATIONS

Items	Characteristics								
Category Temperature Range	-40 to +105℃								
Rated Voltage Range	6.3 to 50Vdc								
Capacitance Tolerance	±20%(M)								(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)								(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(Vdc)		6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	E61 to F61	0.28	0.24	0.22	0.16	0.13	0.12	
		F80	0.32	0.27	0.24	0.16	0.13	0.12	
		HA0 to JA0	0.28	0.24	0.22	0.16	0.13	0.12	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(Vdc)		6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)		4	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)		10	7	5	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 3,000 hours at 105℃.								
	Capacitance change		≦±30% of the initial value						
	D.F. (tan δ)		≦300% of the initial specified value						
	Leakage current		≦The initial specified value						
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.								
	Capacitance change		≦±30% of the initial value						
	D.F. (tan δ)		≦300% of the initial specified value						
	Leakage current		≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 16V100μF

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M L A □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 10μF:100,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,50V:500)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
6.3	j
10	A
16	C
25	E
35	V
50	H

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

Alchip™-MLA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	tan δ	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	47	E61	0.28	1.30	95	EMLA6R3ARA470ME61G
	100	F61	0.28	0.70	140	EMLA6R3ARA101MF61G
	150	F61	0.28	0.70	140	EMLA6R3ARA151MF61G
	220	F80	0.32	0.70	230	EMLA6R3ARA221MF80G
	330	F80	0.32	0.70	230	EMLA6R3ARA331MF80G
	330	HA0	0.28	0.16	600	EMLA6R3ARA331MHA0G
	470	HA0	0.28	0.16	600	EMLA6R3ARA471MHA0G
	1,000	JA0	0.28	0.08	850	EMLA6R3ARA102MJA0G
10	33	E61	0.24	1.30	95	EMLA100ARA330ME61G
	47	F61	0.24	0.70	140	EMLA100ARA470MF61G
	100	F61	0.24	0.70	140	EMLA100ARA101MF61G
	150	F61	0.24	0.70	140	EMLA100ARA151MF61G
	220	F80	0.27	0.70	230	EMLA100ARA221MF80G
	220	HA0	0.24	0.16	600	EMLA100ARA221MHA0G
	330	HA0	0.24	0.16	600	EMLA100ARA331MHA0G
	470	HA0	0.24	0.16	600	EMLA100ARA471MHA0G
16	22	E61	0.22	1.30	95	EMLA160ARA220ME61G
	33	F61	0.22	0.70	140	EMLA160ARA330MF61G
	47	F61	0.22	0.70	140	EMLA160ARA470MF61G
	100	F61	0.22	0.70	140	EMLA160ARA101MF61G
	100	F80	0.24	0.70	230	EMLA160ARA101MF80G
	150	F80	0.24	0.70	230	EMLA160ARA151MF80G
	220	F80	0.24	0.70	230	EMLA160ARA221MF80G
	220	HA0	0.22	0.16	600	EMLA160ARA221MHA0G
	330	HA0	0.22	0.16	600	EMLA160ARA331MHA0G
	470	HA0	0.22	0.16	600	EMLA160ARA471MHA0G
	470	JA0	0.22	0.08	850	EMLA160ARA471MJA0G
25	10	E61	0.16	1.30	95	EMLA250ARA100ME61G
	22	E61	0.16	1.30	95	EMLA250ARA220ME61G
	22	F61	0.16	0.70	140	EMLA250ARA220MF61G
25	33	F61	0.16	0.70	140	EMLA250ARA330MF61G
	47	F61	0.16	0.70	140	EMLA250ARA470MF61G
	47	F80	0.16	0.70	230	EMLA250ARA470MF80G
	100	F80	0.16	0.70	230	EMLA250ARA101MF80G
	100	HA0	0.16	0.16	600	EMLA250ARA101MHA0G
	150	HA0	0.16	0.16	600	EMLA250ARA151MHA0G
	220	HA0	0.16	0.16	600	EMLA250ARA221MHA0G
	330	HA0	0.16	0.16	600	EMLA250ARA331MHA0G
	330	JA0	0.16	0.08	850	EMLA250ARA331MJA0G
	470	JA0	0.16	0.08	850	EMLA250ARA471MJA0G
35	10	E61	0.13	1.30	95	EMLA350ARA100ME61G
	22	F61	0.13	0.70	140	EMLA350ARA220MF61G
	33	F61	0.13	0.70	140	EMLA350ARA330MF61G
	33	F80	0.13	0.70	230	EMLA350ARA330MF80G
	47	F80	0.13	0.70	230	EMLA350ARA470MF80G
	100	F80	0.13	0.70	230	EMLA350ARA101MF80G
	100	HA0	0.13	0.16	600	EMLA350ARA101MHA0G
	150	HA0	0.13	0.16	600	EMLA350ARA151MHA0G
	220	HA0	0.13	0.16	600	EMLA350ARA221MHA0G
	220	JA0	0.13	0.08	850	EMLA350ARA221MJA0G
	330	JA0	0.13	0.08	850	EMLA350ARA331MJA0G
50	10	F61	0.12	2.00	70	EMLA500ARA100MF61G
	22	F61	0.12	2.00	70	EMLA500ARA220MF61G
	33	F80	0.12	1.60	100	EMLA500ARA330MF80G
	47	F80	0.12	1.60	100	EMLA500ARA470MF80G
	47	HA0	0.12	0.34	350	EMLA500ARA470MHA0G
	100	HA0	0.12	0.34	350	EMLA500ARA101MHA0G
	100	JA0	0.12	0.18	670	EMLA500ARA101MJA0G
	150	JA0	0.12	0.18	670	EMLA500ARA151MJA0G
	220	JA0	0.12	0.18	670	EMLA500ARA221MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 150	0.40	0.75	0.90	1.00
220 to 470	0.50	0.85	0.94	1.00
1,000	0.60	0.87	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

10000-hours-life, 105℃

Alchip™-MLF Series

- Endurance : 10,000 hours at 105℃
- Rated voltage range : 6.3 to 50V
- Nominal capacitance range : 1.0 to 1,000μF
- Suitable for long life and low profile products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVL —Longer life→ MLE —Longer life→ **MLF**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	6.3 to 50V$_{dc}$
Capacitance Tolerance	±20%(M) (at 20℃,120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$): 6.3V, 10V, 16V, 25V, 35V, 50V tan δ (Max.): 0.32, 0.28, 0.26, 0.16, 0.14, 0.14 (at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(V$_{dc}$): 6.3V, 10V, 16V, 25V, 35V, 50V Z(-10℃)/Z(+20℃): 4, 3, 2, 2, 2, 2 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 10,000 hours at 105℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
D73	4	7.0	4.3	4.3	5.1	0.5 to 0.8	1.0
E73	5	7.0	5.3	5.3	5.9	0.5 to 0.8	1.4
F73	6.3	7.0	6.6	6.6	7.2	0.5 to 0.8	1.9
F90	6.3	8.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M L F □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,25V:250)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 16V47μF

●Rated voltage symbol

Rated voltage (V$_{dc}$)	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

10000-hours-life, 105℃

Alchip™-MLF Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Rated ripple current (mArms/105℃, 120Hz)	Part No.
6.3	22	D73	22	EMLF6R3ARA220MD73G
	47	E73	36	EMLF6R3ARA470ME73G
	100	F73	60	EMLF6R3ARA101MF73G
	220	F90	101	EMLF6R3ARA221MF90G
	330	HA0	160	EMLF6R3ARA331MHA0G
	1,000	JA0	313	EMLF6R3ARA102MJA0G
10	33	E73	35	EMLF100ARA330ME73G
	220	HA0	141	EMLF100ARA221MHA0G
16	10	D73	18	EMLF160ARA100MD73G
	22	E73	30	EMLF160ARA220ME73G
	47	F73	50	EMLF160ARA470MF73G
	100	F90	81	EMLF160ARA101MF90G
	470	JA0	254	EMLF160ARA471MJA0G
25	33	F73	48	EMLF250ARA330MF73G
	47	F90	63	EMLF250ARA470MF90G
	100	HA0	116	EMLF250ARA101MHA0G

WV (V_{dc})	Cap (μF)	Size code	Rated ripple current (mArms/105℃, 120Hz)	Part No.
35	1.0	D73	6.2	EMLF350ARA1R0MD73G
	2.2	D73	11	EMLF350ARA2R2MD73G
	3.3	D73	14	EMLF350ARA3R3MD73G
	4.7	D73	15	EMLF350ARA4R7MD73G
	4.7	E73	19	EMLF350ARA4R7ME73G
	10	E73	25	EMLF350ARA100ME73G
	10	F73	30	EMLF350ARA100MF73G
	22	F73	42	EMLF350ARA220MF73G
	22	F90	49	EMLF350ARA220MF90G
	33	F90	57	EMLF350ARA330MF90G
	220	JA0	216	EMLF350ARA221MJA0G
50	33	HA0	77	EMLF500ARA330MHA0G
	47	HA0	92	EMLF500ARA470MHA0G
	100	JA0	151	EMLF500ARA101MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0	1.00	1.50	1.75	1.80
2.2 to 10	1.00	1.30	1.40	1.50
22 to 1,000	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

7000 to 8000-hours-life, 105℃

Alchip™-MLE Series

- Endurance : 7,000 to 8,000 hours at 105℃
- Rated voltage range : 6.3 to 50V
- Nominal capacitance range : 1.0 to 1,000μF
- Suitable for long life and low profile products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVJ → (Longer life) MVL → (Longer life) **MLE**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	6.3 to 50Vdc
Capacitance Tolerance	±20%(M) (at 20℃,120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V tan δ (Max.): 0.32, 0.28, 0.26, 0.16, 0.14, 0.14 (at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V Z(-10℃)/Z(+20℃): 4, 3, 2, 2, 2, 2 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for specified time at 105℃. Time: D73 to F73 : 7,000 hours; F90 to JA0 : 8,000 hours Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
D73	4	7.0	4.3	4.3	5.1	0.5 to 0.8	1.0
E73	5	7.0	5.3	5.3	5.9	0.5 to 0.8	1.4
F73	6.3	7.0	6.6	6.6	7.2	0.5 to 0.8	1.9
F90	6.3	8.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M L E □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,25V:250)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 16V47μF

●Rated voltage symbol

Rated voltage (Vdc)	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

7000 to 8000-hours-life, 105℃

Alchip™-MLE Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Rated ripple current (mArms/105℃, 120Hz)	Part No.
6.3	22	D73	22	EMLE6R3ARA220MD73G
	47	E73	36	EMLE6R3ARA470ME73G
	100	F73	60	EMLE6R3ARA101MF73G
	220	F90	101	EMLE6R3ARA221MF90G
	330	HA0	160	EMLE6R3ARA331MHA0G
	1,000	JA0	313	EMLE6R3ARA102MJA0G
10	33	E73	35	EMLE100ARA330ME73G
	220	HA0	141	EMLE100ARA221MHA0G
16	10	D73	18	EMLE160ARA100MD73G
	22	E73	30	EMLE160ARA220ME73G
	47	F73	50	EMLE160ARA470MF73G
	100	F90	81	EMLE160ARA101MF90G
	470	JA0	254	EMLE160ARA471MJA0G
25	33	F73	48	EMLE250ARA330MF73G
	47	F90	63	EMLE250ARA470MF90G
	100	HA0	116	EMLE250ARA101MHA0G

WV (V_{dc})	Cap (μF)	Size code	Rated ripple current (mArms/105℃, 120Hz)	Part No.
35	1.0	D73	6.2	EMLE350ARA1R0MD73G
	2.2	D73	11	EMLE350ARA2R2MD73G
	3.3	D73	14	EMLE350ARA3R3MD73G
	4.7	D73	15	EMLE350ARA4R7MD73G
	4.7	E73	19	EMLE350ARA4R7ME73G
	10	E73	25	EMLE350ARA100ME73G
	10	F73	30	EMLE350ARA100MF73G
	22	F73	42	EMLE350ARA220MF73G
	22	F90	49	EMLE350ARA220MF90G
	33	F90	57	EMLE350ARA330MF90G
	220	JA0	216	EMLE350ARA221MJA0G
50	33	HA0	77	EMLE500ARA330MHA0G
	47	HA0	92	EMLE500ARA470MHA0G
	100	JA0	151	EMLE500ARA101MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0	1.00	1.50	1.75	1.80
2.2 to 10	1.00	1.30	1.40	1.50
22 to 1,000	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

5000-hours-life, 105℃

Alchip™-MLK Series

- 6.1mm height
- Endurance : 5,000 hours at 105℃
- Rated voltage range : 6.3 to 35V
- Nominal capacitance range : 4.7 to 100μF
- Suitable to fit for downsized equipment
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVL —Longer life→ **MLK**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	6.3 to 35Vdc
Capacitance Tolerance	±20%(M) (at 20℃,120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V tan δ (Max.): 0.32, 0.28, 0.26, 0.16, 0.14 (at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(Vdc): 6.3V, 10V, 16V, 25V, 35V Z(-10℃)/Z(+20℃): 4, 3, 2, 2, 2 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours at 105℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : A

Size code	D	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M L K □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 4.7μF:4R7,10μF:100,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,25V:250)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 35V10μF

●Rated voltage symbol

Rated voltage (Vdc)	6.3	10	16	25	35
Symbol	j	A	C	E	V

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size code	tanδ	Rated ripple current (mArms/ 105℃,120Hz)	Part No.
6.3	47	E61	0.32	36	EMLK6R3ARA470ME61G
	100	F61	0.32	60	EMLK6R3ARA101MF61G
10	33	E61	0.28	35	EMLK100ARA330ME61G
16	22	E61	0.26	30	EMLK160ARA220ME61G
	47	F61	0.26	50	EMLK160ARA470MF61G
25	33	F61	0.16	48	EMLK250ARA330MF61G
35	4.7	E61	0.14	19	EMLK350ARA4R7ME61G
	10	E61	0.14	25	EMLK350ARA100ME61G
	10	F61	0.14	30	EMLK350ARA100MF61G
	22	F61	0.14	42	EMLK350ARA220MF61G

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Frequency(Hz)	120	1k	10k	100k
6.3 to 35Vdc	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

3000 to 5000-hours-life, 105℃

Alchip™-MVL Series

- Endurance : 3,000 to 5,000 hours at 105℃
- Suitable for applications requiring long life such as continuously operating equipment, industrial applications, etc
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +105℃							
Rated Voltage Range	6.3 to 50Vdc							
Capacitance Tolerance	±20%(M)							(at 20℃,120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃, after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	
	Max. tan δ	0.28	0.24	0.20	0.16	0.13	0.12	(at 20℃,120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(Vdc)	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	10	7	5	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for specified time at 105℃.							
	Time	D60 to F80 : 3,000 hours HA0 & JA0 : 5,000 hours						
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : A

Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
D60	4	5.7	4.3	4.3	5.1	0.5 to 0.8	1.0
E60	5	5.7	5.3	5.3	5.9	0.5 to 0.8	1.4
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 16V47μF

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

3000 to 5000-hours-life, 105℃

Alchip™-MVL Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
6.3	22	D60	0.28	22	EMVL6R3ARA220MD60G
	47	E60	0.28	36	EMVL6R3ARA470ME60G
	100	F60	0.28	60	EMVL6R3ARA101MF60G
	220	F80	0.28	101	EMVL6R3ARA221MF80G
	330	HA0	0.28	160	EMVL6R3ARA331MHA0G
	1,000	JA0	0.28	313	EMVL6R3ARA102MJA0G
10	33	E60	0.24	35	EMVL100ARA330ME60G
	220	HA0	0.24	141	EMVL100ARA221MHA0G
16	10	D60	0.20	18	EMVL160ARA100MD60G
	22	E60	0.20	30	EMVL160ARA220ME60G
	47	F60	0.20	50	EMVL160ARA470MF60G
	100	F80	0.20	81	EMVL160ARA101MF80G
	470	JA0	0.20	254	EMVL160ARA471MJA0G
25	33	F60	0.16	48	EMVL250ARA330MF60G
	47	F80	0.16	63	EMVL250ARA470MF80G
	100	HA0	0.16	116	EMVL250ARA101MHA0G
	330	JA0	0.16	238	EMVL250ARA331MJA0G

WV (V_{dc})	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
35	4.7	D60	0.13	15	EMVL350ARA4R7MD60G
	10	E60	0.13	25	EMVL350ARA100ME60G
	22	F60	0.13	42	EMVL350ARA220MF60G
	33	F80	0.13	57	EMVL350ARA330MF80G
	220	JA0	0.13	216	EMVL350ARA221MJA0G
50	1.0	D60	0.12	6.2	EMVL500ARA1R0MD60G
	2.2	D60	0.12	11	EMVL500ARA2R2MD60G
	3.3	D60	0.12	14	EMVL500ARA3R3MD60G
	4.7	E60	0.12	19	EMVL500ARA4R7ME60G
	10	F60	0.12	30	EMVL500ARA100MF60G
	22	F80	0.12	49	EMVL500ARA220MF80G
	33	HA0	0.12	77	EMVL500ARA330MHA0G
	47	HA0	0.12	92	EMVL500ARA470MHA0G
	100	JA0	0.12	151	EMVL500ARA101MJA0G

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0	1.00	1.50	1.75	1.80
2.2 to 10	1.00	1.30	1.40	1.50
22 to 1,000	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

2000-hours-life, 105℃

Alchip™-MVJ Series

- Endurance : 2,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVL
↑ longer life
MVJ
↑ longer life
MVE

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +105℃							
Rated Voltage Range	6.3 to 50V_{dc}							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.30	0.24	0.20	0.16	0.14	0.12	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	12	8	6	4	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 105℃.							
	Rated voltage	6.3V_{dc}		10 & 16V_{dc}		25 to 50V_{dc}		
	Capacitance change	≦±30% of the initial value		≦±25% of the initial value		≦±20% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		≦300% of the initial specified value		≦200% of the initial specified value		
	Leakage current	≦The initial specified value		≦The initial specified value		≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Rated voltage	6.3V_{dc}		10 & 16V_{dc}		25 to 50V_{dc}		
	Capacitance change	≦±30% of the initial value		≦±25% of the initial value		≦±20% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		≦300% of the initial specified value		≦200% of the initial specified value		
	Leakage current	≦The initial specified value		≦The initial specified value		≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : A

Size code	D	L	A	B	C	W	P
D60	4	5.7	4.3	4.3	5.1	0.5 to 0.8	1.0
E60	5	5.7	5.3	5.3	5.9	0.5 to 0.8	1.4
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E M V J □□□ A R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 4.7μF:4R7,10μF:100)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,10V:100,50V:500)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 6.3V100μF

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/ 105℃,120Hz)	Part No.
6.3	22	D60	0.30	21	EMVJ6R3ARA220MD60G
	47	E60	0.30	36	EMVJ6R3ARA470ME60G
	100	F60	0.30	56	EMVJ6R3ARA101MF60G
10	33	E60	0.24	34	EMVJ100ARA330ME60G
16	10	D60	0.20	16	EMVJ160ARA100MD60G
	22	E60	0.20	30	EMVJ160ARA220ME60G
	47	F60	0.20	48	EMVJ160ARA470MF60G
25	33	F60	0.16	45	EMVJ250ARA330MF60G

WV (V_{dc})	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/ 105℃,120Hz)	Part No.
35	4.7	D60	0.14	15	EMVJ350ARA4R7MD60G
	10	E60	0.14	25	EMVJ350ARA100ME60G
	22	F60	0.14	40	EMVJ350ARA220MF60G
50	1.0	D60	0.12	5.6	EMVJ500ARA1R0MD60G
	2.2	D60	0.12	10	EMVJ500ARA2R2MD60G
	3.3	D60	0.12	14	EMVJ500ARA3R3MD60G
	4.7	E60	0.12	19	EMVJ500ARA4R7ME60G
	10	F60	0.12	29	EMVJ500ARA100MF60G

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0	1.00	1.50	1.75	1.80
2.2 to 10	1.00	1.30	1.40	1.50
22 to 100	1.00	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHS Series

- Downsizing, High capacitance
- Endurance : 5,000 hours at 125℃
- For high temperature and high reliability applications (Base station equipment, etc)
- High temperature reflow soldering (3 times)
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics								
Category Temperature Range	-40 to +125℃								
Rated Voltage Range	16 to 100V$_{dc}$								
Capacitance Tolerance	±20%(M)								(at 20℃, 120Hz)
Leakage Current	I=0.03CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)								(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(V$_{dc}$)	16V	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.18	0.14	0.14	0.14	0.14	0.12	0.10	
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.								(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(V$_{dc}$)	16V	25V	35V	50V	63V	80V	100V	
	Z(-25℃)/Z(+20℃)	3	2	2	2	2	2	2	
	Z(-40℃)/Z(+20℃)	6	4	3	3	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours at 125℃.								
	Capacitance change	≦±30% of the initial value							
	D.F. (tan δ)	≦300% of the initial specified value							
	Leakage current	≦The initial specified value							
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.								
	Capacitance change	≦±30% of the initial value							
	D.F. (tan δ)	≦300% of the initial specified value							
	Leakage current	≦The initial specified value							

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : KE0 and KG5

- Terminal Code : G(Vibration resistant structure)
- Size code : KE0 and KG5

: Dummy terminals

Size code	φD	L	A	B	C	W	P
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E MHS □□□ □ RA □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 470μF:471, 1,000μF:102)
- Taping code
- Terminal code (A, G)
- Voltage code (ex. 16V:160, 35V:350)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 35V680μF

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHS Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (Ω max./100kHz)		Rated ripple current (mArms/125℃, 100kHz)	Part No.
			20℃	−40℃		
16	1,500	KE0	0.087	1.1	1,060	EMHS160□RA152MKE0S
	2,000	KG5	0.070	0.84	1,160	EMHS160□RA202MKG5S
25	1,000	KE0	0.087	1.1	1,060	EMHS250□RA102MKE0S
	1,300	KG5	0.070	0.84	1,160	EMHS250□RA132MKG5S
35	680	KE0	0.087	1.1	1,060	EMHS350□RA681MKE0S
	820	KG5	0.070	0.84	1,160	EMHS350□RA821MKG5S
50	360	KE0	0.16	2.0	880	EMHS500□RA361MKE0S
	470	KG5	0.12	1.5	970	EMHS500□RA471MKG5S
63	240	KE0	0.17	2.5	920	EMHS630□RA241MKE0S
	330	KG5	0.13	1.8	1,030	EMHS630□RA331MKG5S
80	180	KE0	0.17	2.5	920	EMHS800□RA181MKE0S
	240	KG5	0.13	1.8	1,030	EMHS800□RA241MKG5S
100	110	KE0	0.17	2.5	920	EMHS101□RA111MKE0S
	150	KG5	0.13	1.8	1,030	EMHS101□RA151MKG5S

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
110 to 180	0.40	0.75	0.90	1.00
240 to 470	0.50	0.85	0.94	1.00
680 to 2,000	0.60	0.87	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MVH Series

- Lower ESR, Higher ripple current
- Endurance : 1,000 to 5,000 hours at 125℃
- Suitable to fit for automotive equipment
- Solvent resistant type except 63 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MVH
↑ 125℃
MVE

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +125℃
Rated Voltage Range	10 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)

Leakage Current

Rated voltage (Vdc)	10 to 100Vdc	160 to 450Vdc
F60 to JA0	I=0.01CV or 3μA, whichever is greater.	I=0.04CV+100
KE0 to MN0	I=0.03CV or 4μA, whichever is greater.	

Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)

Dissipation Factor (tan δ)

Rated voltage (Vdc)		10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	400 & 450V
tan δ (Max.)	F60 to JA0	0.24	0.20	0.16	0.14	0.14	0.12	0.12	0.10	—	—
	KE0 to MN0	0.22	0.18	0.16	0.14	0.12	0.14	—	0.10	0.20	0.24

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (Vdc)		10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	400 & 450V
F60 to JA0	Z(-25℃)/Z(+20℃)	3	2	2	2	2	2	2	2	—	—
	Z(-40℃)/Z(+20℃)	6	4	4	3	3	3	3	3	—	—
KE0 to MN0	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	—	2	3	6
	Z(-40℃)/Z(+20℃)	8	6	4	3	3	3	—	3	6	10

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for the specified time at 125℃.

Time	F60 to H63 (10 to 100Vdc) : 1,000hours HA0 to JA0 (10 to 100Vdc) : 2,000hours KE0 to MN0 (10 to 100Vdc) : 5,000hours KE0 to MN0 (160 to 450Vdc) : 2,000hours
Capacitance change	≦±30% of the initial value
D.F. (tan δ)	≦300% of the initial specified value
Leakage current	≦The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours (500 hours for 400 to 450Vdc) at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Rated voltage(Vdc)	10 to 50Vdc	63 to 450Vdc
Capacitance change	≦±30% of the initial value	≦±30% of the initial value
D.F. (tan δ)	≦300% of the initial specified value	≦300% of the initial specified value
Leakage current	≦The initial specified value	≦500% of the initial specified value

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : F60 to MN0

Note : L±0.3 for F60 and F80

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to MN0

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H63	8	6.3	8.3	8.3	9.0	0.5 to 0.8	2.3
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M V H □□□ □ □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 4.7μF:4R7,10μF:100)
- Taping·Tray code
- Terminal code (A, G)
- Voltage code (ex. 10V:100,50V:500, 100V: 101)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

F60 to JA0
EX) 35V47μF

KE0 to MN0
EX) 16V1,000μF

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MVH Series

◆STANDARD RATINGS

□ is not solvent resistant (63 to 450Vdc).

WV (Vdc)	Cap (μF)	Size code	ESR (Ω max./100kHz) 20℃	ESR (Ω max./100kHz) -40℃	Rated ripple current (mArms/125℃) 100kHz	Rated ripple current (mArms/125℃) 120Hz	Part No.
10	100	F80	0.90	14.0	110	—	EMVH100ARA101MF80G
	100	H63	0.90	14.0	110	—	EMVH100ARA101MH63G
	220	F80	0.90	14.0	110	—	EMVH100ARA221MF80G
	220	H63	0.90	14.0	110	—	EMVH100ARA221MH63G
	220	HA0	0.40	6.0	220	—	EMVH100□RA221MHA0G
	330	HA0	0.40	6.0	220	—	EMVH100□RA331MHA0G
	330	JA0	0.30	4.5	296	—	EMVH100□RA331MJA0G
	470	JA0	0.30	4.5	296	—	EMVH100□RA471MJA0G
	1,000	KE0	0.14	2.1	750	—	EMVH100□RA102MKE0S
	2,200	LH0	0.10	1.5	1,000	—	EMVH100□RA222MLH0S
	2,200	MH0	0.10	1.5	1,200	—	EMVH100□RA222MMH0S
	3,300	MH0	0.10	1.5	1,200	—	EMVH100□RA332MMH0S
	4,700	MN0	0.058	0.87	1,550	—	EMVH100□RA472MMN0S
16	47	F60	1.6	24.0	69	—	EMVH160ARA470MF60G
	100	HA0	0.40	6.0	220	—	EMVH160□RA101MHA0G
	220	HA0	0.40	6.0	220	—	EMVH160□RA221MHA0G
	220	JA0	0.30	4.5	296	—	EMVH160□RA221MJA0G
	330	JA0	0.30	4.5	296	—	EMVH160□RA331MJA0G
	470	KE0	0.14	2.1	750	—	EMVH160□RA471MKE0S
	680	KE0	0.14	2.1	750	—	EMVH160□RA681MKE0S
	680	LH0	0.10	1.5	1,000	—	EMVH160□RA681MLH0S
	1,000	MH0	0.10	1.5	1,200	—	EMVH160□RA102MMH0S
	2,200	MH0	0.10	1.5	1,200	—	EMVH160□RA222MMH0S
25	33	F60	1.6	24.0	69	—	EMVH250ARA330MF60G
	47	F80	0.90	14.0	110	—	EMVH250ARA470MF80G
	47	H63	0.90	14.0	110	—	EMVH250ARA470MH63G
	100	F80	0.90	14.0	110	—	EMVH250ARA101MF80G
	100	H63	0.90	14.0	110	—	EMVH250ARA101MH63G
	100	HA0	0.40	6.0	220	—	EMVH250□RA101MHA0G
	220	HA0	0.40	6.0	220	—	EMVH250□RA221MHA0G
	220	JA0	0.30	4.5	296	—	EMVH250□RA221MJA0G
	330	JA0	0.30	4.5	296	—	EMVH250□RA331MJA0G
	330	KE0	0.14	2.1	750	—	EMVH250□RA331MKE0S
	470	KE0	0.14	2.1	750	—	EMVH250□RA471MKE0S
	470	LH0	0.10	1.5	1,000	—	EMVH250□RA471MLH0S
	680	LH0	0.10	1.5	1,000	—	EMVH250□RA681MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH250□RA681MMH0S
	1,000	MN0	0.058	0.87	1,550	—	EMVH250□RA102MMN0S
35	10	F60	1.6	24.0	69	—	EMVH350ARA100MF60G
	22	F60	1.6	24.0	69	—	EMVH350ARA220MF60G
	33	F80	0.90	14.0	110	—	EMVH350ARA330MF80G
	33	H63	0.90	14.0	110	—	EMVH350ARA330MH63G
	47	F80	0.90	14.0	110	—	EMVH350ARA470MF80G
	47	H63	0.90	14.0	110	—	EMVH350ARA470MH63G
	47	HA0	0.40	6.0	220	—	EMVH350□RA470MHA0G
	100	HA0	0.40	6.0	220	—	EMVH350□RA101MHA0G
	100	JA0	0.30	4.5	296	—	EMVH350□RA101MJA0G
	220	JA0	0.30	4.5	296	—	EMVH350□RA221MJA0G
	330	KE0	0.14	2.1	750	—	EMVH350□RA331MKE0S
	330	LH0	0.10	1.5	1,000	—	EMVH350□RA331MLH0S
	470	KG5	0.11	1.5	900	—	EMVH350□RA471MKG5S
	470	LH0	0.10	1.5	1,000	—	EMVH350□RA471MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH350□RA681MMH0S
50	10	F60	2.8	42.0	51	—	EMVH500ARA100MF60G
	10	H63	1.6	30.0	83	—	EMVH500ARA100MH63G
	22	F80	2.0	30.0	83	—	EMVH500ARA220MF80G
	22	H63	1.6	30.0	83	—	EMVH500ARA220MH63G
50	33	F80	2.0	30.0	83	—	EMVH500ARA330MF80G
	33	H63	1.6	30.0	83	—	EMVH500ARA330MH63G
	33	HA0	0.70	11.0	160	—	EMVH500□RA330MHA0G
	47	HA0	0.70	11.0	160	—	EMVH500□RA470MHA0G
	47	JA0	0.50	7.5	247	—	EMVH500□RA470MJA0G
	100	JA0	0.50	7.5	247	—	EMVH500□RA101MJA0G
	100	KE0	0.23	3.5	550	—	EMVH500□RA101MKE0S
	220	KE0	0.23	3.5	550	—	EMVH500□RA221MKE0S
	220	LH0	0.15	2.3	850	—	EMVH500□RA221MLH0S
	330	KG5	0.18	2.7	700	—	EMVH500□RA331MKG5S
	330	LH0	0.15	2.3	850	—	EMVH500□RA331MLH0S
	470	MH0	0.15	2.3	920	—	EMVH500□RA471MMH0S
63	10	F80	2.0	100	60	—	EMVH630ARA100MF80G
	10	H63	2.0	110	60	—	EMVH630ARA100MH63G
	22	HA0	0.70	35.0	100	—	EMVH630□RA220MHA0G
	33	HA0	0.70	35.0	100	—	EMVH630□RA330MHA0G
	33	JA0	0.50	25.0	170	—	EMVH630□RA330MJA0G
	47	HA0	0.70	35.0	100	—	EMVH630□RA470MHA0G
	47	JA0	0.50	25.0	170	—	EMVH630□RA470MJA0G
	100	KE0	0.25	12.5	500	—	EMVH630□RA101MKE0S
	220	KG5	0.20	10.0	600	—	EMVH630□RA221MKG5S
	330	LH0	0.18	9.0	820	—	EMVH630□RA331MLH0S
	470	LN0	0.11	5.5	1,100	—	EMVH630□RA471MLN0S
80	10	HA0	0.75	50.0	70	—	EMVH800□RA100MHA0G
	22	HA0	0.75	50.0	70	—	EMVH800□RA220MHA0G
	22	JA0	0.55	35.0	115	—	EMVH800□RA220MJA0G
	33	HA0	0.75	50.0	70	—	EMVH800□RA330MHA0G
	33	JA0	0.55	35.0	115	—	EMVH800□RA330MJA0G
	47	JA0	0.55	35.0	115	—	EMVH800□RA470MJA0G
100	10	HA0	0.75	50.0	70	—	EMVH101□RA100MHA0G
	22	HA0	0.75	50.0	70	—	EMVH101□RA220MHA0G
	22	JA0	0.55	35.0	115	—	EMVH101□RA220MJA0G
	33	JA0	0.55	35.0	115	—	EMVH101□RA330MJA0G
	47	KE0	0.33	16.5	450	—	EMVH101□RA470MKE0S
	68	KG5	0.26	13.0	550	—	EMVH101□RA680MKG5S
	100	LH0	0.24	12.0	650	—	EMVH101□RA101MLH0S
	220	MN0	0.16	8.0	950	—	EMVH101□RA221MMN0S
160	10	KE0	—	—	—	100	EMVH161□RA100MKE0S
	22	LH0	—	—	—	180	EMVH161□RA220MLH0S
	33	MH0	—	—	—	245	EMVH161□RA330MMH0S
	68	MN0	—	—	—	380	EMVH161□RA680MMN0S
200	10	KE0	—	—	—	100	EMVH201□RA100MKE0S
	22	LH0	—	—	—	180	EMVH201□RA220MLH0S
	33	LN0	—	—	—	250	EMVH201□RA330MLN0S
	33	MH0	—	—	—	245	EMVH201□RA330MMH0S
	47	MN0	—	—	—	315	EMVH201□RA470MMN0S
250	10	KG5	—	—	—	110	EMVH251□RA100MKG5S
	22	LN0	—	—	—	200	EMVH251□RA220MLN0S
	22	MH0	—	—	—	205	EMVH251□RA220MMH0S
	33	MN0	—	—	—	260	EMVH251□RA330MMN0S
400	4.7	KE0	—	—	—	70	EMVH401□RA4R7MKE0S
	6.8	LH0	—	—	—	100	EMVH401□RA6R8MLH0S
	10	LN0	—	—	—	140	EMVH401□RA100MLN0S
	10	MH0	—	—	—	135	EMVH401□RA100MMH0S
450	3.3	KG5	—	—	—	65	EMVH451□RA3R3MKG5S
	4.7	LH0	—	—	—	85	EMVH451□RA4R7MLH0S
	10	MN0	—	—	—	145	EMVH451□RA100MMN0S

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Rated voltage (Vdc)	Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 100	F60 to JA0	10	0.66	0.86	0.93	1.00
		22 to 470	0.93	0.97	1.00	1.00
	KE0 to MN0	47 to 100	0.40	0.75	0.90	1.00
		220 to 470	0.50	0.85	0.94	1.00
		680 to 1,000	0.60	0.87	0.95	1.00
		2,200 to 3,300	0.75	0.90	0.95	1.00
		4,700	0.85	0.95	0.98	1.00
160 to 450	KE0 to MN0	3.3 to 33	1.00	1.50	1.75	1.80
		47 to 68	1.00	1.30	1.40	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHL Series

- Downsized and Longer life from current MVH series
- Endurance : 2,000 to 4,000 hours at 125℃
- Rated voltage range : 10 to 35V. Nominal capacitance range : 47 to 680μF
- For automobile modules and other high temperature applications
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics					
Category Temperature Range	-40 to +125℃					
Rated Voltage Range	10 to 35V_{dc}					
Capacitance Tolerance	±20%(M)					(at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)					(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(V_{dc})	10V	16V	25V	35V	
	tan δ (Max.)	0.24	0.20	0.16	0.14	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(V_{dc})	10V	16V	25V	35V	
	Z(-25℃)/Z(+20℃)	3	2	2	2	
	Z(-40℃)/Z(+20℃)	6	4	4	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for specified time at 125℃.					
	Time	F61 & F80 : 2,000 hours HA0 & JA0 : 4,000 hours				
	Capacitance change	≦±30% of the initial value				
	D.F. (tan δ)	≦300% of the initial specified value				
	Leakage current	≦The initial specified value				
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.					
	Capacitance change	≦±30% of the initial value				
	D.F. (tan δ)	≦300% of the initial specified value				
	Leakage current	≦The initial specified value				

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : F61 to JA0

Note : L±0.5 for HA0 and JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0

: Dummy terminals

Size code	φD	L	A	B	C	W	P
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 35V47μF

●Rated voltage symbol

Rated voltage (V_{dc})	Symbol
10	A
16	C
25	E
35	V

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHL Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	Impedance (Ω max./100kHz)		Rated ripple current (mArms/125℃, 100kHz)	Part No.
			20℃	-40℃		
10	100	F61	1.2	22	110	EMHL100ARA101MF61G
	220	F80	0.60	12	220	EMHL100ARA221MF80G
	330	HA0	0.30	5.5	296	EMHL100□RA331MHA0G
	470	HA0	0.30	5.5	296	EMHL100□RA471MHA0G
	680	JA0	0.20	3.6	440	EMHL100□RA681MJA0G
16	47	F61	1.2	22	110	EMHL160ARA470MF61G
	100	F61	1.2	22	110	EMHL160ARA101MF61G
	220	F80	0.60	12	220	EMHL160ARA221MF80G
	330	HA0	0.30	5.5	296	EMHL160□RA331MHA0G
	470	JA0	0.20	3.6	440	EMHL160□RA471MJA0G
	680	JA0	0.20	3.6	440	EMHL160□RA681MJA0G
25	47	F61	1.2	22	110	EMHL250ARA470MF61G
	100	F80	0.60	12	220	EMHL250ARA101MF80G
	220	HA0	0.30	5.5	296	EMHL250□RA221MHA0G
	330	JA0	0.20	3.6	440	EMHL250□RA331MJA0G
35	47	F61	1.2	22	110	EMHL350ARA470MF61G
	100	F80	0.60	12	220	EMHL350ARA101MF80G
	220	HA0	0.30	5.5	296	EMHL350□RA221MHA0G
	330	JA0	0.20	3.6	440	EMHL350□RA331MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
47 to 680	0.93	0.97	1.00	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHB Series

MHJ
↑ Lower ESR
MHB
↑ Lower ESR
MVH

- ESR : Less than MVH
- Endurance : 1,500 to 3,000 hours at 125℃
- Rated voltage range : 10 to 100V
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics										
Category Temperature Range	-40 to +125℃										
Rated Voltage Range	10 to 100V_{dc}										
Capacitance Tolerance	±20%(M)										(at 20℃, 120Hz)
Leakage Current	HA0 & JA0	I=0.01CV									
	KE0 to MN0	I=0.03CV									
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)										(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated Voltage (V_{dc})		10V	16V	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	HA0 & JA0	0.24	0.20	0.16	0.14	–	–	–	–	
		KE0 to MN0	–	–	0.14	0.12	0.10	0.10	0.08	0.08	
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.										(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated Voltage (V_{dc})		10V	16V	25V	35V	50V	63V	80V	100V	
	HA0 & JA0	Z(-25℃)/Z(+20℃)	3	2	2	2	–	–	–	–	
		Z(-40℃)/Z(+20℃)	4	3	3	3	–	–	–	–	
	KE0 to MN0	Z(-25℃)/Z(+20℃)	–	–	2	2	2	2	2	2	
		Z(-40℃)/Z(+20℃)	–	–	4	4	4	4	4	4	(at 120Hz)
Endurance	HA0 & JA0	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 125℃.									
		Capacitance change	≦±30% of the initial value								
		D.F. (tan δ)	≦300% of the initial specified value								
		Leakage current	≦The initial specified value								
	KE0 to MN0	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125℃.									
		Time	KE0 & KG5 : 1,500hours LH0 & MH0 : 2,000hours KN0 & LN0 & MN0 : 3,000hours								
		Capacitance change	≦±30% of the initial value								
		D.F. (tan δ)	≦300% of the initial specified value								
		Leakage current	≦The initial specified value								
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.										
	Capacitance change	≦±30% of the initial value									
	D.F. (tan δ)	≦300% of the initial specified value									
	Leakage current	≦The initial specified value									

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : HA0 to MN0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to MN0

Size code	φD	L	A	B	C	W	P
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
KN0	12.5	21.5	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

▨ : Dummy terminals

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E M H B □□□ □ □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping·Tray code
- Terminal code (A, G)
- Voltage code (ex. 35V:350,100V:101)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

HA0, JA0
EX) 16V220μF

KE0 to MN0
EX) 35V1,000μF

- Rated voltage symbol (HA0, JA0)

Rated voltage (V_{dc})	10	16	25	35
Symbol	A	C	E	V

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHB Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR(Initial) (Ω max./100k to 400kHz)		ESR(End of life) (Ω max.)			Rated ripple current (mArms/125℃, 100k to 400kHz)	Part No.
					100kHz		400kHz		
			20℃	-40℃	20℃	-40℃	-40℃		
10	330	HA0	0.3	3.0	–	–	6.0	240	EMHB100□RA331MHA0G
	470	JA0	0.2	2.0	–	–	4.5	330	EMHB100□RA471MJA0G
16	100	HA0	0.3	3.0	–	–	6.0	240	EMHB160□RA101MHA0G
	220	HA0	0.3	3.0	–	–	6.0	240	EMHB160□RA221MHA0G
25	100	HA0	0.3	3.0	–	–	6.0	240	EMHB250□RA101MHA0G
	220	HA0	0.3	3.0	–	–	6.0	240	EMHB250□RA221MHA0G
	330	JA0	0.2	2.0	–	–	4.5	330	EMHB250□RA331MJA0G
	820	KE0	0.060	0.30	0.30	3.7	–	1,320	EMHB250□RA821MKE0S
	1,100	KG5	0.056	0.28	0.28	3.4	–	1,470	EMHB250□RA112MKG5S
	(1,500)	(KN0)	(0.044)	(0.22)	(0.18)	(2.2)	–	(1,620)	(EMHB250□TR152MKN0S)
	1,600	LH0	0.047	0.24	0.24	2.9	–	1,820	EMHB250□RA162MLH0S
	2,200	MH0	0.045	0.23	0.23	2.8	–	2,000	EMHB250□RA222MMH0S
	2,700	LN0	0.034	0.17	0.10	1.3	–	2,280	EMHB250□RA272MLN0S
	3,300	MN0	0.032	0.16	0.090	0.60	–	2,490	EMHB250□RA332MMN0S
35	47	HA0	0.3	3.0	–	–	6.0	240	EMHB350□RA470MHA0G
	100	HA0	0.3	3.0	–	–	6.0	240	EMHB350□RA101MHA0G
	100	JA0	0.2	2.0	–	–	4.5	330	EMHB350□RA101MJA0G
	220	JA0	0.2	2.0	–	–	4.5	330	EMHB350□RA221MJA0G
	560	KE0	0.060	0.30	0.30	3.7	–	1,320	EMHB350□RA561MKE0S
	680	KG5	0.056	0.28	0.28	3.4	–	1,470	EMHB350□RA681MKG5S
	(910)	(KN0)	(0.044)	(0.22)	(0.18)	(2.2)	–	(1,620)	(EMHB350□TR911MKN0S)
	1,000	LH0	0.047	0.24	0.24	2.9	–	1,820	EMHB350□RA102MLH0S
	1,300	MH0	0.045	0.23	0.23	2.8	–	2,000	EMHB350□RA132MMH0S
	1,600	LN0	0.034	0.17	0.10	1.3	–	2,280	EMHB350□RA162MLN0S
	2,200	MN0	0.032	0.16	0.090	0.60	–	2,490	EMHB350□RA222MMN0S
50	270	KE0	0.11	0.55	0.55	6.6	–	980	EMHB500□RA271MKE0S
	360	KG5	0.10	0.50	0.50	6.0	–	1,090	EMHB500□RA361MKG5S
	(470)	(KN0)	(0.076)	(0.38)	(0.38)	(4.6)	–	(1,200)	(EMHB500□TR471MKN0S)
	510	LH0	0.087	0.44	0.44	5.2	–	1,320	EMHB500□RA511MLH0S
	680	MH0	0.087	0.44	0.44	5.2	–	1,420	EMHB500□RA681MMH0S
	820	LN0	0.050	0.25	0.25	3.0	–	2,040	EMHB500□RA821MLN0S
	1,100	MN0	0.050	0.25	0.25	3.0	–	2,240	EMHB500□RA112MMN0S
63	200	KE0	0.22	1.54	0.88	14	–	540	EMHB630□RA201MKE0S
	270	KG5	0.17	1.19	0.68	11	–	650	EMHB630□RA271MKG5S
	(330)	(KN0)	(0.13)	(0.94)	(0.53)	(8.5)	–	(830)	(EMHB630□TR331MKN0S)
	360	LH0	0.15	1.05	0.60	9.6	–	780	EMHB630□RA361MLH0S
	470	MH0	0.12	0.84	0.48	7.7	–	940	EMHB630□RA471MMH0S
	560	LN0	0.085	0.58	0.19	3.0	–	1,790	EMHB630□RA561MLN0S
	750	MN0	0.070	0.49	0.19	3.0	–	1,910	EMHB630□RA751MMN0S
80	130	KE0	0.22	1.54	0.88	14	–	540	EMHB800□RA131MKE0S
	160	KG5	0.17	1.19	0.68	11	–	650	EMHB800□RA161MKG5S
	(220)	(KN0)	(0.13)	(0.94)	(0.53)	(8.5)	–	(830)	(EMHB800□TR221MKN0S)
	240	LH0	0.15	1.05	0.60	9.6	–	780	EMHB800□RA241MLH0S
	330	MH0	0.12	0.84	0.48	7.7	–	940	EMHB800□RA331MMH0S
	390	LN0	0.085	0.58	0.19	3.0	–	1,790	EMHB800□RA391MLN0S
	510	MN0	0.070	0.49	0.19	3.0	–	1,910	EMHB800□RA511MMN0S
100	75	KE0	0.28	2.24	1.1	22	–	480	EMHB101□RA750MKE0S
	100	KG5	0.21	1.68	0.84	17	–	580	EMHB101□RA101MKG5S
	(130)	(KN0)	(0.17)	(1.32)	(0.66)	(13)	–	(740)	(EMHB101□TR131MKN0S)
	130	LH0	0.18	1.44	0.72	14	–	720	EMHB101□RA131MLH0S
	180	MH0	0.15	1.20	0.60	12	–	840	EMHB101□RA181MMH0S
	220	LN0	0.11	0.88	0.25	3.9	–	1,580	EMHB101□RA221MLN0S
	300	MN0	0.091	0.73	0.22	3.9	–	1,690	EMHB101□RA301MMN0S

□ : Enter the appropriate terminal code.
( ) :Second standard

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
HA0 to JA0	47 to 470	0.93	0.97	1.00	1.00
KE0 to MN0	75 to 200	0.40	0.75	0.90	1.00
	220 to 560	0.50	0.85	0.94	1.00
	680 to 1,600	0.60	0.87	0.95	1.00
	2,200 to 3,300	0.75	0.90	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHJ Series

- Endurance : 2,000 to 3,000 hours at 125℃
- Rated voltage range : 10 to 35V
- Nominal capacitance range : 47 to 470μF
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics					
Category Temperature Range	-40 to +125℃					
Rated Voltage Range	10 to 35Vdc					
Capacitance Tolerance	±20%(M)					(at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)					(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage(Vdc)	10V	16V	25V	35V	
	tan δ (Max.)	0.30	0.23	0.18	0.16	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(Vdc)	10V	16V	25V	35V	
	Z(-25℃)/Z(+20℃)	3	2	2	2	
	Z(-40℃)/Z(+20℃)	4	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 3,000 hours (2,000 hours for F80 size) at 125℃.					
	Capacitance change	≦±30% of the initial value				
	D.F. (tan δ)	≦300% of the initial specified value				
	Leakage current	≦The initial specified value				
	ESR after 2,000 hours (Ω max./100kHz)		F80	HA0	JA0	
		20℃	3.5	0.60	0.40	
		-40℃	40	4.5	3.5	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.					
	Capacitance change	≦±30% of the initial value				
	D.F. (tan δ)	≦300% of the initial specified value				
	Leakage current	≦The initial specified value				

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : F80 to JA0

Note : L±0.3 for F80

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to JA0

▨ : Dummy terminals

Size code	φD	L	A	B	C	W	P
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 16V100μF

●Rated voltage symbol

Rated voltage (Vdc)	Symbol
10	A
16	C
25	E
35	V

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHJ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (Ω max./100kHz)		Rated ripple current (mArms/125℃, 100kHz)	Part No.
			20℃	−40℃		
10	220	HA0	0.15	3.0	350	EMHJ100□RA221MHA0G
	330	HA0	0.15	3.0	350	EMHJ100□RA331MHA0G
	330	JA0	0.12	2.0	550	EMHJ100□RA331MJA0G
	470	JA0	0.12	2.0	550	EMHJ100□RA471MJA0G
16	100	F80	0.45	5.0	220	EMHJ160ARA101MF80G
	100	HA0	0.15	3.0	350	EMHJ160□RA101MHA0G
	220	HA0	0.15	3.0	350	EMHJ160□RA221MHA0G
	330	JA0	0.12	2.0	550	EMHJ160□RA331MJA0G
	470	JA0	0.12	2.0	550	EMHJ160□RA471MJA0G
25	100	HA0	0.15	3.0	350	EMHJ250□RA101MHA0G
	220	JA0	0.12	2.0	550	EMHJ250□RA221MJA0G
	330	JA0	0.12	2.0	550	EMHJ250□RA331MJA0G
35	47	F80	0.45	5.0	220	EMHJ350ARA470MF80G
	47	HA0	0.15	3.0	350	EMHJ350□RA470MHA0G
	100	HA0	0.15	3.0	350	EMHJ350□RA101MHA0G
	220	JA0	0.12	2.0	550	EMHJ350□RA221MJA0G

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
47 to 100	0.40	0.75	0.90	1.00
220 to 470	0.50	0.85	0.94	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHK Series

- Endurance : 2,000 hours at 125℃
- Specified ESR after endurance
- For automobile modules and other high temperature applications
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MHK
↑ Lower ESR
MHJ

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-40 to +125℃		
Rated Voltage Range	35V_{dc}		
Capacitance Tolerance	±20%(M)		(at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 2 minute)
Dissipation Factor (tan δ)	Rated voltage(V_{dc})	35V	
	tan δ (Max.)	0.14	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(V_{dc})	35V	
	Z(-25℃)/Z(+20℃)	2	
	Z(-40℃)/Z(+20℃)	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 125℃.		
	Capacitance change	≦±30% of the initial value	
	D.F. (tan δ)	≦300% of the initial specified value	
	Leakage current	≦The initial specified value	
	ESR(Ω max./-40℃, 400kHz)	6.0	
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±30% of the initial value	
	D.F. (tan δ)	≦300% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

- Terminal Code : A
- Size code : F80

Size code	D	L	A	B	C	W	P
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E MHK 350 A RA □□□ M F80 G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 47μF:470,100μF:101)
- Taping code
- Terminal code
- Voltage code (ex.35V:350)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆MARKING

EX) 35V47μF

●Rated voltage symbol

Rated voltage (V_{dc})	Symbol
35	V

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NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MHK Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (Ω max./100k to 400kHz)		Rated ripple current (mArms/125℃, 100k to 400kHz)	Part No.
			20℃	-40℃		
35	47	F80	0.30	3.0	240	EMHK350ARA470MF80G
	100	F80	0.30	3.0	240	EMHK350ARA101MF80G

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
47 to 100	0.40	0.75	0.90	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR, 105℃

Alchip™-MKB Series

- Low ESR
- Endurance : 3,000 hours at 105℃
- Rated voltage 400V, Capacitance 2.2 to 4.7μF
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-40 to +105℃		
Rated Voltage Range	400V_{dc}		
Capacitance Tolerance	±20%(M)		(at 20℃, 120Hz)
Leakage Current	I=0.04CV+100(max.) Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 1 minute)
Dissipation Factor (tan δ)	Rated voltage(V_{dc})	400V	
	tan δ (Max.)	0.25	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated voltage(V_{dc})	400V	
	Z(-25℃)/Z(+20℃)	6	
	Z(-40℃)/Z(+20℃)	10	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 3,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : A

●Terminal Code : G(Vibration resistant structure)

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 400V3.9μF

●Rated voltage symbol

Rated voltage (V_{dc})	Symbol
400	2G

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E M K B 4 0 1 □ R A □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 2.2μF:2R2)
- Taping code
- Terminal code (A, G)
- Voltage code
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Frequency(Hz)	120	1k	10k	100k
400V_{dc}	1.00	1.30	1.40	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size code	ESR (Ω max./120Hz) 20℃	ESR (Ω max./120Hz) -40℃	Rated ripple current (mArms/105℃,120Hz)	Part No.
400	2.2	HA0	20	1,000	26	EMKB401□RA2R2MHA0G
	3.3	JA0	10	500	37	EMKB401□RA3R3MJA0G
	3.9	JA0	10	500	38	EMKB401□RA3R9MJA0G
	4.7	JA0	10	500	39	EMKB401□RA4R7MJA0G

□ : Enter the appropriate terminal code.

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NIPPON CHEMI-CON

PART NUMBERING SYSTEM

Product code guide (Radial lead type)

(Example : KMQ series, 450V-100μF, ϕ18×40L, Long lead with bulk)

Please refer to the following table

Contents	Code
Polar	E
Bi-polar	B

Series	Code
KMQ	KMQ
FL	FL-

Type	Code
Radial lead	E

Tol.(%)	Code
±20	M
-10 to +20	V

Sleeve materia	Terminal plating material	Code
PET	Sn-Bi	D
	Sn	S
Sleeveless (Coating case)	Sn-Bi	G
	Sn	H

1	2 3 4	5 6 7	8	9 10	11 12 13	14	15 16 17	18
E	KMQ	451	E	LL	101	M	M40	S
Category	Series code	Voltage code	Terminal code	Lead forming/ Taping code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
4	4R0
6.3	6R3
10	100
25	250
100	101
250	251
⋮	⋮

Type	Contents	Code
Lead forming (Bulk)	Long Lead	LL
	Cut(3.5mm)	C3
	Cut(5.0mm)	C5
	Forming Cut	FC
		IJ
	Snap-in ϕD=5 to 8	FM
	Snap-in ϕD=10 to 18	MC
	Horizontal	BC
		BD
Taping	Straight	TD
	Gradual forming	
	Straight(Skip a hole)	TE
	Forming(F=2.5mm)	TA
	Forming(F=5.0mm)	TC

Refer to product guide for lead forming and taping specifications.

Cap.(μF)	Code
1.0	1R0
4.7	4R7
10	100
47	470
100	101
470	471
1,000	102
⋮	⋮

ϕD(mm)	Code
4	D
5	E
6.3	F
8	H
10	J
12.5	K
14.5	U
16	L
18	M
20	N
22	P

L(mm)	Code
5	05
7	07
9	09
11	11
11.5	B5
12.5	C5
13	13
15	15
16	16
20	20
25	25
30	30
31.5	N3
35	35
35.5	P1
40	40
45	45
50	50
55	55
60	60

*Refer to the appendix (Part number) for codes not listed here.

CUT/FORMED LEAD

Terminal type

●Lead code : FC (Forming Cut type)
Size : ϕD=5 to 8

Terminal type

●Lead code : C3 (Cutting type)
Size : ϕD=4 to 18

Dimension (C)
- ϕD= 4 to 8: C3: 3.5±0.5(Second standard C5: 5.0±0.5)
- ϕD=10 to 18: C3: 3.5±0.5(Second standard C5: $5.0^{+1.0}_{-0}$)

Terminal type

●Lead code : IJ (Forming Cut type)
Size : ϕD=10 to 18

Dimension

ϕD	A・B	ϕd	P
10 to 12.5	3.2±0.5	0.6	5.0±0.5
14.5 to 18	3.2±0.5	0.8	7.5±0.5

●Lead code : FM (Snap-in type)
Size : ϕD=5 to 8

●Lead code : MC (Snap-in type)
Size : ϕD=10 to 18

*1 Please consult with us about other terminal forming.
*2 Please refer to dimensions of each series for gas escape end seal.
*3 Conventionally, lead forming code is used in common by (BC) for two type of the lead bent directions. We added lead forming code (BD) newly and clarified the lead bent directions. Please place an order after the choice for an appropriate lead forming code depending on condition of use.

●Lead code : BC (Horizontal type)*3
Size : ϕD=10 to 18

Dimension (P)
- ϕ10, ϕ12.5 : P=5.0±0.5
- ϕ14.5, ϕ16, ϕ18 : P=7.5±0.5

●Lead code : BD (Horizontal type)*3
Size : ϕD=10 to 18

Dimension (P)
- ϕ10, ϕ12.5 : P=5.0±0.5
- ϕ14.5, ϕ16, ϕ18 : P=7.5±0.5

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized, 5mm height, 85℃

SRM Series

- 5mm height
- Endurance : 1,000 hours at 85℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics								
Category Temperature Range	-40 to +85℃								
Rated Voltage Range	4 to 50Vdc								
Capacitance Tolerance	±20% (M)								(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)								(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	4V	6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.40	0.38	0.30	0.23	0.17	0.15	0.13	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	4V	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	7	4	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	15	8	8	6	4	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 85℃.								
	Capacitance change	≦±20% of the initial value							
	D.F. (tan δ)	≦200% of the initial specified value							
	Leakage current	≦The initial specified value							
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.								
	Capacitance change	≦±20% of the initial value							
	D.F. (tan δ)	≦200% of the initial specified value							
	Leakage current	≦The initial specified value							

◆DIMENSIONS [mm]

●Terminal Code : E

*φ8 : Coating case

φD	4	5	6.3	8
φd	0.45	0.45	0.45	0.45
F	1.5	2.0	2.5	2.5
φD'	φD+0.5max.			
L'	L+1.0max.			

◆PART NUMBERING SYSTEM

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	300	1k	10k	100k
1	1.00	1.25	1.50	1.75	1.80
2.2 to 10	1.00	1.15	1.30	1.40	1.50
22 to 330	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
4	100	5×5	0.40	55	ESRM4R0E□□101ME05D
	220	6.3×5	0.40	88	ESRM4R0E□□221MF05D
6.3	22	4×5	0.38	22	ESRM6R3E□□220MD05D
	47	4×5	0.38	40	ESRM6R3E□□470MD05D
	330	8×5	0.38	141	ESRM6R3E□□331MH05G
10	33	4×5	0.30	36	ESRM100E□□330MD05D
	100	6.3×5	0.30	78	ESRM100E□□101MF05D
	220	8×5	0.30	148	ESRM100E□□221MH05G
16	10	4×5	0.23	18	ESRM160E□□100MD05D
	22	4×5	0.23	33	ESRM160E□□220MD05D
	33	5×5	0.23	47	ESRM160E□□330ME05D
	47	5×5	0.23	55	ESRM160E□□470ME05D
25	4.7	4×5	0.17	13	ESRM250E□□4R7MD05D
	10	4×5	0.17	25	ESRM250E□□100MD05D

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
25	22	5×5	0.17	41	ESRM250E□□220ME05D
	47	6.3×5	0.17	63	ESRM250E□□470MF05D
	100	8×5	0.17	116	ESRM250E□□101MH05G
35	3.3	4×5	0.15	12	ESRM350E□□3R3MD05D
	33	6.3×5	0.15	56	ESRM350E□□330MF05D
	47	8×5	0.15	85	ESRM350E□□470MH05G
50	1.0	4×5	0.13	7.2	ESRM500E□□1R0MD05D
	2.2	4×5	0.13	10	ESRM500E□□2R2MD05D
	3.3	4×5	0.13	14	ESRM500E□□3R3MD05D
	4.7	4×5	0.13	19	ESRM500E□□4R7MD05D
	10	5×5	0.13	31	ESRM500E□□100ME05D
	22	6.3×5	0.13	49	ESRM500E□□220MF05D
	33	8×5	0.13	76	ESRM500E□□330MH05G

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

5mm height, 105℃

KRE Series

- 5mm height
- Endurance : 1,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-55 to +105℃							
Rated Voltage Range	6.3 to 50Vdc							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.27	0.23	0.19	0.15	0.13	0.11	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	3	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	9	7	5	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 105℃.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : E

φD	4	5	6.3
φd	0.45	0.45	0.45
F	1.5	2.0	2.5
φD'	φD+0.5max.		
L'	L+1.0max.		

◆PART NUMBERING SYSTEM

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	300	1k	10k	100k
1	1.00	1.25	1.50	1.75	1.80
2.2 to 10	1.00	1.15	1.30	1.40	1.50
22 to 100	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
6.3	10	4×5	0.27	12	EKRE6R3E□□100MD05D
	22	4×5	0.27	21	EKRE6R3E□□220MD05D
	47	5×5	0.27	36	EKRE6R3E□□470ME05D
	100	6.3×5	0.27	56	EKRE6R3E□□101MF05D
10	33	5×5	0.23	34	EKRE100E□□330ME05D
16	4.7	4×5	0.19	9.4	EKRE160E□□4R7MD05D
	10	4×5	0.19	16	EKRE160E□□100MD05D
	22	5×5	0.19	30	EKRE160E□□220ME05D
	47	6.3×5	0.19	48	EKRE160E□□470MF05D
25	3.3	4×5	0.15	8.8	EKRE250E□□3R3MD05D
	4.7	4×5	0.15	12	EKRE250E□□4R7MD05D
	33	6.3×5	0.15	45	EKRE250E□□330MF05D

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
35	2.2	4×5	0.13	7.7	EKRE350E□□2R2MD05D
	3.3	4×5	0.13	11	EKRE350E□□3R3MD05D
	4.7	4×5	0.13	15	EKRE350E□□4R7MD05D
	10	5×5	0.13	25	EKRE350E□□100ME05D
	22	6.3×5	0.13	40	EKRE350E□□220MF05D
50	1.0	4×5	0.11	5.6	EKRE500E□□1R0MD05D
	2.2	4×5	0.11	10	EKRE500E□□2R2MD05D
	3.3	4×5	0.11	14	EKRE500E□□3R3MD05D
	4.7	5×5	0.11	19	EKRE500E□□4R7ME05D
	10	6.3×5	0.11	29	EKRE500E□□100MF05D

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

7mm height, 105℃

KMA Series

- 7mm height
- Endurance : 1,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

KRG
↑
Downsizing
KMA

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	4 to 63V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)

Dissipation Factor (tan δ)	Rated voltage (V_{dc})	4V	6.3V	10V	16V	25V	35V	50V	63V	
	tan δ (Max.)	0.35	0.22	0.19	0.16	0.14	0.12	0.10	0.08	(at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	4V	6.3V	10V	16V	25V	35V	50V	63V	
	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	2	2	
	Z(-40℃)/Z(+20℃)	10	6	5	3	3	3	3	3	(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 105℃.

Rated voltage	4 to 16V_{dc}	25 to 63V_{dc}
Capacitance change	≦±25% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦200% of the initial specified value	
Leakage current	≦The initial specified value	

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Rated voltage	4 to 16V_{dc}	25 to 63V_{dc}
Capacitance change	≦±25% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦200% of the initial specified value	
Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	4	5	6.3
φd	0.45	0.45	0.45
F	1.5	2.0	2.5
φD'	φD+0.5max.		
L'	L+1.0max.		

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E KMA □□□ E □□ □□□ M □□□ D

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,35V:350,50V:500)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
4	33	4×7	0.35	26	EKMA4R0E□□330MD07D
	47	4×7	0.35	34	EKMA4R0E□□470MD07D
	100	5×7	0.35	61	EKMA4R0E□□101ME07D
	220	6.3×7	0.35	95	EKMA4R0E□□221MF07D
6.3	22	4×7	0.22	31	EKMA6R3E□□220MD07D
	47	5×7	0.22	47	EKMA6R3E□□470ME07D
10	33	5×7	0.19	43	EKMA100E□□330ME07D
	100	6.3×7	0.19	80	EKMA100E□□101MF07D
16	10	4×7	0.16	25	EKMA160E□□100MD07D
	22	5×7	0.16	39	EKMA160E□□220ME07D
	47	6.3×7	0.16	59	EKMA160E□□470MF07D
	100	6.3×7	0.16	97	EKMA160E□□101MF07D
25	33	6.3×7	0.14	53	EKMA250E□□330MF07D
	47	6.3×7	0.14	71	EKMA250E□□470MF07D

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
35	4.7	4×7	0.12	20	EKMA350E□□4R7MD07D
	10	5×7	0.12	30	EKMA350E□□100ME07D
	22	6.3×7	0.12	47	EKMA350E□□220MF07D
	33	6.3×7	0.12	64	EKMA350E□□330MF07D
50	1.0	4×7	0.10	10	EKMA500E□□1R0MD07D
	2.2	4×7	0.10	15	EKMA500E□□2R2MD07D
	3.3	4×7	0.10	18	EKMA500E□□3R3MD07D
	4.7	5×7	0.10	23	EKMA500E□□4R7ME07D
	10	6.3×7	0.10	34	EKMA500E□□100MF07D
	22	6.3×7	0.10	57	EKMA500E□□220MF07D
63	1.0	4×7	0.08	11	EKMA630E□□1R0MD07D
	2.2	4×7	0.08	17	EKMA630E□□2R2MD07D
	3.3	5×7	0.08	21	EKMA630E□□3R3ME07D
	4.7	6.3×7	0.08	26	EKMA630E□□4R7MF07D
	10	6.3×7	0.08	43	EKMA630E□□100MF07D

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	300	1k	10k	100k
1	1.00	1.25	1.50	1.75	1.80
2.2 to 10	1.00	1.15	1.30	1.40	1.50
22 to 220	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low profile, 85℃

SRG Series

- Low profile : φ4×7mm to φ18×25mm
- Endurance : 1,000 to 2,000 hours at 85℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +85℃							
Rated Voltage Range	6.3 to 50V$_{dc}$							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$)	6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.28	0.24	0.20	0.16	0.14	0.12	
	When nominal capacitance exceeds 1,000μF, add 0.03 to the value above for each 1,000μF increase.							(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V$_{dc}$)	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	5	4	3	2	2	2	
	Z(-40℃)/Z(+20℃)	12	10	8	5	4	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours (1,000 hours for φ6.3 and smaller) at 85℃.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : E

φD	4	5	6.3	10 & 12.5	16 & 18
φd	0.45	0.45	0.45	0.6	0.8
F	1.5	2.0	2.5	5.0	7.5
φD'	φD+0.5max.				
L'	L+1.5max. (7L : L+1.0max.)				

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low profile, 85℃

SRG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case code φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
6.3	47	4×7	0.28	50	ESRG6R3E□□470MD07D
	100	5×7	0.28	87	ESRG6R3E□□101ME07D
	220	6.3×7	0.28	133	ESRG6R3E□□221MF07D
	1,000	10×9	0.28	505	ESRG6R3E□□102MJ09S
	4,700	16×15	0.37	1,410	ESRG6R3E□□472ML15S
	6,800	18×15	0.43	1,660	ESRG6R3E□□682MM15S
	10,000	18×20	0.55	2,020	ESRG6R3E□□103MM20S
10	33	4×7	0.24	46	ESRG100E□□330MD07D
	1,000	10×12.5	0.24	625	ESRG100E□□102MJC5S
	2,200	12.5×15	0.27	970	ESRG100E□□222MK15S
	3,300	16×15	0.30	1,310	ESRG100E□□332ML15S
	4,700	18×15	0.33	1,560	ESRG100E□□472MM15S
	6,800	18×20	0.39	1,870	ESRG100E□□682MM20S
	10,000	18×25	0.51	2,370	ESRG100E□□103MM25S
16	22	4×7	0.20	42	ESRG160E□□220MD07D
	47	5×7	0.20	73	ESRG160E□□470ME07D
	100	6.3×7	0.20	110	ESRG160E□□101MF07D
	470	10×9	0.20	410	ESRG160E□□471MJ09S
	1,000	12.5×13	0.20	715	ESRG160E□□102MK13S
	2,200	16×15	0.23	1,160	ESRG160E□□222ML15S
	3,300	18×15	0.26	1,460	ESRG160E□□332MM15S
	4,700	18×20	0.29	1,770	ESRG160E□□472MM20S
	6,800	18×25	0.35	2,170	ESRG160E□□682MM25S
25	33	5×7	0.16	66	ESRG250E□□330ME07D
	47	6.3×7	0.16	80	ESRG250E□□470MF07D
25	330	10×9	0.16	380	ESRG250E□□331MJ09S
	470	10×12.5	0.16	525	ESRG250E□□471MJC5S
	1,000	12.5×15	0.16	830	ESRG250E□□102MK15S
	2,200	18×15	0.19	1,360	ESRG250E□□222MM15S
	3,300	18×20	0.22	1,720	ESRG250E□□332MM20S
	4,700	18×25	0.25	2,070	ESRG250E□□472MM25S
35	10	4×7	0.14	32	ESRG350E□□100MD07D
	22	5×7	0.14	57	ESRG350E□□220ME07D
	33	6.3×7	0.14	73	ESRG350E□□330MF07D
	220	10×9	0.14	335	ESRG350E□□221MJ09S
	330	10×12.5	0.14	475	ESRG350E□□331MJC5S
	470	12.5×13	0.14	585	ESRG350E□□471MK13S
	1,000	16×15	0.14	1,010	ESRG350E□□102ML15S
	2,200	18×20	0.17	1,560	ESRG350E□□222MM20S
50	1.0	4×7	0.12	10	ESRG500E□□1R0MD07D
	2.2	4×7	0.12	15	ESRG500E□□2R2MD07D
	3.3	4×7	0.12	19	ESRG500E□□3R3MD07D
	4.7	4×7	0.12	24	ESRG500E□□4R7MD07D
	10	5×7	0.12	42	ESRG500E□□100ME07D
	22	6.3×7	0.12	64	ESRG500E□□220MF07D
	100	10×9	0.12	240	ESRG500E□□101MJ09S
	220	10×12.5	0.12	415	ESRG500E□□221MJC5S
	330	12.5×13	0.12	525	ESRG500E□□331MK13S
	470	16×15	0.12	745	ESRG500E□□471ML15S
	1,000	18×20	0.12	1,160	ESRG500E□□102MM20S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 47	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low profile, 105℃

KRG Series

- Low profile : φ4×7mm to φ18×25mm
- Endurance : 1,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	6.3 to 50V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V, 50V tan δ (Max.): 0.28, 0.24, 0.20, 0.16, 0.14, 0.12 When nominal capacitance exceeds 1,000μF, add 0.03 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V, 50V Z(-25℃)/Z(+20℃): 5, 4, 3, 2, 2, 2 Z(-40℃)/Z(+20℃): 10, 8, 6, 4, 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 105℃. Rated voltage: 6.3 to 16V_{dc} / 25 to 50V_{dc} Capacitance change: ≦±25% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Rated voltage: 6.3 to 16V_{dc} / 25 to 50V_{dc} Capacitance change: ≦±25% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	4	5	6.3	10 & 12.5	16 & 18
φd	0.45	0.45	0.45	0.6	0.8
F	1.5	2.0	2.5	5.0	7.5
φD'	φD+0.5max.				
L'	L+1.5max. (7L : L+1.0max.)				

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low profile, 105℃

KRG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
6.3	47	5×7	0.28	50	EKRG6R3E□□470ME07D
	1,000	10×9	0.28	365	EKRG6R3E□□102MJ09S
	4,700	16×15	0.37	1,010	EKRG6R3E□□472ML15S
	6,800	18×15	0.43	1,190	EKRG6R3E□□682MM15S
	10,000	18×20	0.55	1,440	EKRG6R3E□□103MM20S
10	22	4×7	0.24	35	EKRG100E□□220MD07D
	100	6.3×7	0.24	80	EKRG100E□□101MF07D
	1,000	10×12.5	0.24	445	EKRG100E□□102MJC5S
	2,200	12.5×15	0.27	690	EKRG100E□□222MK15S
	3,300	16×15	0.30	940	EKRG100E□□332ML15S
	4,700	18×15	0.33	1,120	EKRG100E□□472MM15S
	6,800	18×20	0.39	1,330	EKRG100E□□682MM20S
	10,000	18×25	0.51	1,700	EKRG100E□□103MM25S
16	33	5×7	0.20	53	EKRG160E□□330ME07D
	47	6.3×7	0.20	68	EKRG160E□□470MF07D
	100	6.3×7	0.20	97	EKRG160E□□101MF07D
	470	10×9	0.20	290	EKRG160E□□471MJ09S
	1,000	12.5×13	0.20	515	EKRG160E□□102MK13S
	2,200	16×15	0.23	830	EKRG160E□□222ML15S
	3,300	18×15	0.26	1,050	EKRG160E□□332MM15S
	4,700	18×20	0.29	1,260	EKRG160E□□472MM20S
	6,800	18×25	0.35	1,560	EKRG160E□□682MM25S
25	10	4×7	0.16	30	EKRG250E□□100MD07D
	22	5×7	0.16	46	EKRG250E□□220ME07D
	33	6.3×7	0.16	63	EKRG250E□□330MF07D
	47	6.3×7	0.16	71	EKRG250E□□470MF07D
25	330	10×9	0.16	270	EKRG250E□□331MJ09S
	470	10×12.5	0.16	370	EKRG250E□□471MJC5S
	1,000	12.5×15	0.16	590	EKRG250E□□102MK15S
	2,200	18×15	0.19	970	EKRG250E□□222MM15S
	3,300	18×20	0.22	1,220	EKRG250E□□332MM20S
	4,700	18×25	0.25	1,470	EKRG250E□□472MM25S
35	10	5×7	0.14	36	EKRG350E□□100ME07D
	22	6.3×7	0.14	57	EKRG350E□□220MF07D
	33	6.3×7	0.14	64	EKRG350E□□330MF07D
	220	10×9	0.14	235	EKRG350E□□221MJ09S
	330	10×12.5	0.14	340	EKRG350E□□331MJC5S
	470	12.5×13	0.14	415	EKRG350E□□471MK13S
	1,000	16×15	0.14	720	EKRG350E□□102ML15S
	2,200	18×20	0.17	1,110	EKRG350E□□222MM20S
50	1.0	4×7	0.12	10	EKRG500E□□1R0MD07D
	2.2	4×7	0.12	15	EKRG500E□□2R2MD07D
	3.3	4×7	0.12	18	EKRG500E□□3R3MD07D
	4.7	4×7	0.12	25	EKRG500E□□4R7MD07D
	10	6.3×7	0.12	44	EKRG500E□□100MF07D
	22	6.3×7	0.12	57	EKRG500E□□220MF07D
	100	10×9	0.12	170	EKRG500E□□101MJ09S
	220	10×12.5	0.12	290	EKRG500E□□221MJC5S
	330	12.5×13	0.12	370	EKRG500E□□331MK13S
	470	16×15	0.12	535	EKRG500E□□471ML15S
	1,000	18×20	0.12	830	EKRG500E□□102MM20S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 47	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized, 85℃

SMQ Series

- Downsized from current standard SMG series
- Endurance : 2,000 hours at 85℃
- Non solvent resistant type
- RoHS2 Compliant

SMQ
↑ Downsized
SMG

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃(6.3 to 400V$_{dc}$) -25 to +85℃(450V$_{dc}$)
Rated Voltage Range	6.3 to 450V$_{dc}$
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	6.3 to 100V$_{dc}$: I=0.03CV or 4μA, whichever is greater. 160 to 450V$_{dc}$: CV≦1,000: I=0.1CV+40 max.; CV>1,000: I=0.04CV+100 max. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 1 minute)

Dissipation Factor (tan δ)

Rated voltage (V$_{dc}$)	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	315 to 400V	450V
tan δ (Max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.09	0.08	0.20	0.24	0.24

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (V$_{dc}$)		6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 200V	250V	350V	400V	450V
Z(-25℃)/Z(+20℃)	≦φ8	5	4	3	2	2	2	2	2	3	3	4	4	6
	≧φ10	5	4	3	2	2	2	2	2	3	3	4	4	6
Z(-40℃)/Z(+20℃)	≦φ8	12	10	8	5	4	3	3	3	8	10	8	8	—
	≧φ10	12	10	8	5	4	3	3	3	4	4	6	6	—

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 85℃.

Capacitance change	≦±20% of the initial value
D.F. (tan δ)	≦200% of the initial specified value
Leakage current	≦The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Rated voltage	6.3 to 100V$_{dc}$	160 to 450V$_{dc}$
Capacitance change	≦±20% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦200% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦500% of the initial specified value

◆DIMENSIONS [mm]

● Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E SMQ □□□ E □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,50V:500,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized, 85℃

SMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
6.3	1,000	8×11.5	0.28	540	ESMQ6R3E□□102MHB5D
	2,200	10×16	0.30	890	ESMQ6R3E□□222MJ16S
	3,300	10×20	0.32	1,190	ESMQ6R3E□□332MJ20S
	4,700	12.5×20	0.34	1,550	ESMQ6R3E□□472MK20S
	6,800	12.5×25	0.38	1,920	ESMQ6R3E□□682MK25S
	10,000	16×25	0.46	2,350	ESMQ6R3E□□103ML25S
	15,000	16×31.5	0.56	2,550	ESMQ6R3E□□153MLN3S
	22,000	18×35.5	0.70	3,200	ESMQ6R3E□□223MMP1S
10	220	5×11	0.24	240	ESMQ100E□□221ME11D
	330	6.3×11	0.24	290	ESMQ100E□□331MF11D
	470	6.3×11	0.24	350	ESMQ100E□□471MF11D
	1,000	10×12.5	0.24	650	ESMQ100E□□102MJC5S
	2,200	10×16	0.26	990	ESMQ100E□□222MJ16S
	3,300	12.5×20	0.28	1,450	ESMQ100E□□332MK20S
	4,700	12.5×25	0.30	1,800	ESMQ100E□□472MK25S
	6,800	16×25	0.34	2,250	ESMQ100E□□682ML25S
	10,000	16×31.5	0.42	2,550	ESMQ100E□□103MLN3S
	15,000	16×35.5	0.52	2,880	ESMQ100E□□153MLP1S
	22,000	18×40	0.66	3,400	ESMQ100E□□223MM40S
16	220	6.3×11	0.20	260	ESMQ160E□□221MF11D
	330	6.3×11	0.20	320	ESMQ160E□□331MF11D
	470	8×11.5	0.20	440	ESMQ160E□□471MHB5D
	1,000	10×12.5	0.20	700	ESMQ160E□□102MJC5S
	2,200	10×20	0.22	1,000	ESMQ160E□□222MJ20S
	3,300	12.5×25	0.24	1,700	ESMQ160E□□332MK25S
	4,700	16×25	0.26	2,100	ESMQ160E□□472ML25S
	6,800	16×25	0.30	2,250	ESMQ160E□□682ML25S
	10,000	16×35.5	0.38	2,710	ESMQ160E□□103MLP1S
	15,000	18×40	0.48	3,100	ESMQ160E□□153MM40S
25	100	5×11	0.16	180	ESMQ250E□□101ME11D
	220	6.3×11	0.16	280	ESMQ250E□□221MF11D
	330	8×11.5	0.16	440	ESMQ250E□□331MHB5D
	470	10×12.5	0.16	550	ESMQ250E□□471MJC5S
	1,000	10×16	0.16	860	ESMQ250E□□102MJ16S
	2,200	12.5×25	0.18	1,550	ESMQ250E□□222MK25S
	3,300	16×25	0.20	1,980	ESMQ250E□□332ML25S
	4,700	16×25	0.22	2,200	ESMQ250E□□472ML25S
	6,800	16×35.5	0.26	2,600	ESMQ250E□□682MLP1S
	10,000	18×40	0.34	2,800	ESMQ250E□□103MM40S
35	47	5×11	0.14	130	ESMQ350E□□470ME11D
	68	6.3×11	0.14	160	ESMQ350E□□680MF11D
	100	6.3×11	0.14	210	ESMQ350E□□101MF11D
	220	8×11.5	0.14	385	ESMQ350E□□221MHB5D
	330	10×12.5	0.14	490	ESMQ350E□□331MJC5S
	470	10×16	0.14	650	ESMQ350E□□471MJ16S
	1,000	12.5×20	0.14	1,150	ESMQ350E□□102MK20S
	2,200	16×25	0.16	1,800	ESMQ350E□□222ML25S
	3,300	16×31.5	0.18	2,100	ESMQ350E□□332MLN3S
	4,700	16×35.5	0.20	2,500	ESMQ350E□□472MLP1S
	6,800	18×40	0.24	2,800	ESMQ350E□□682MM40S
50	1.0	5×11	0.12	17	ESMQ500E□□1R0ME11D
	2.2	5×11	0.12	28	ESMQ500E□□2R2ME11D
	3.3	5×11	0.12	35	ESMQ500E□□3R3ME11D
	4.7	5×11	0.12	41	ESMQ500E□□4R7ME11D
	10	5×11	0.12	60	ESMQ500E□□100ME11D
	22	5×11	0.12	95	ESMQ500E□□220ME11D
	33	5×11	0.12	125	ESMQ500E□□330ME11D
	47	6.3×11	0.12	155	ESMQ500E□□470MF11D
	68	6.3×11	0.12	210	ESMQ500E□□680MF11D
	100	8×11.5	0.12	260	ESMQ500E□□101MHB5D
	220	10×12.5	0.12	430	ESMQ500E□□221MJC5S
	330	10×16	0.12	590	ESMQ500E□□331MJ16S
	470	10×20	0.12	760	ESMQ500E□□471MJ20S
	1,000	12.5×25	0.12	1,350	ESMQ500E□□102MK25S
	2,200	16×31.5	0.14	1,980	ESMQ500E□□222MLN3S
	3,300	18×35.5	0.16	2,500	ESMQ500E□□332MMP1S
63	22	5×11	0.09	100	ESMQ630E□□220ME11D
63	33	6.3×11	0.09	140	ESMQ630E□□330MF11D
	47	6.3×11	0.09	170	ESMQ630E□□470MF11D
	68	8×11.5	0.09	220	ESMQ630E□□680MHB5D
	100	8×11.5	0.09	280	ESMQ630E□□101MHB5D
	220	10×16	0.09	490	ESMQ630E□□221MJ16S
	330	10×20	0.09	710	ESMQ630E□□331MJ20S
	470	12.5×20	0.09	900	ESMQ630E□□471MK20S
	1,000	16×25	0.09	1,300	ESMQ630E□□102ML25S
	2,200	18×35.5	0.11	2,300	ESMQ630E□□222MMP1S
100	1.0	5×11	0.08	21	ESMQ101E□□1R0ME11D
	2.2	5×11	0.08	30	ESMQ101E□□2R2ME11D
	3.3	5×11	0.08	40	ESMQ101E□□3R3ME11D
	4.7	5×11	0.08	45	ESMQ101E□□4R7ME11D
	10	5×11	0.08	70	ESMQ101E□□100ME11D
	22	6.3×11	0.08	130	ESMQ101E□□220MF11D
	33	8×11.5	0.08	180	ESMQ101E□□330MHB5D
	47	8×11.5	0.08	200	ESMQ101E□□470MHB5D
	68	10×12.5	0.08	270	ESMQ101E□□680MJC5S
	100	10×16	0.08	340	ESMQ101E□□101MJ16S
	220	12.5×20	0.08	550	ESMQ101E□□221MK20S
	330	12.5×25	0.08	760	ESMQ101E□□331MK25S
	470	16×25	0.08	1,000	ESMQ101E□□471ML25S
	1,000	18×35.5	0.08	1,350	ESMQ101E□□102MMP1S
160	10	8×11.5	0.20	80	ESMQ161E□□100MHB5D
	22	10×12.5	0.20	130	ESMQ161E□□220MJC5S
	33	10×16	0.20	180	ESMQ161E□□330MJ16S
	47	10×20	0.20	210	ESMQ161E□□470MJ20S
	68	12.5×20	0.20	350	ESMQ161E□□680MK20S
	100	12.5×25	0.20	430	ESMQ161E□□101MK25S
	220	16×31.5	0.20	760	ESMQ161E□□221MLN3S
	330	18×35.5	0.20	995	ESMQ161E□□331MMP1S
	470	18×40	0.20	1,200	ESMQ161E□□471MM40S
200	1.0	6.3×11	0.20	22	ESMQ201E□□1R0MF11D
	2.2	6.3×11	0.20	33	ESMQ201E□□2R2MF11D
	3.3	6.3×11	0.20	40	ESMQ201E□□3R3MF11D
	4.7	6.3×11	0.20	50	ESMQ201E□□4R7MF11D
	10	8×11.5	0.20	80	ESMQ201E□□100MHB5D
	22	10×16	0.20	150	ESMQ201E□□220MJ16S
	33	10×20	0.20	205	ESMQ201E□□330MJ20S
	47	12.5×20	0.20	270	ESMQ201E□□470MK20S
	68	12.5×25	0.20	350	ESMQ201E□□680MK25S
	100	16×25	0.20	475	ESMQ201E□□101ML25S
	220	16×35.5	0.20	700	ESMQ201E□□221MLP1S
	330	18×40	0.20	950	ESMQ201E□□331MM40S
250	3.3	6.3×11	0.20	40	ESMQ251E□□3R3MF11D
	4.7	6.3×11	0.20	50	ESMQ251E□□4R7MF11D
	10	10×12.5	0.20	100	ESMQ251E□□100MJC5S
	22	10×20	0.20	170	ESMQ251E□□220MJ20S
	33	10×20	0.20	200	ESMQ251E□□330MJ20S
	47	12.5×20	0.20	270	ESMQ251E□□470MK20S
	68	16×25	0.20	380	ESMQ251E□□680ML25S
	100	16×25	0.20	440	ESMQ251E□□101ML25S
	220	18×35.5	0.20	680	ESMQ251E□□221MMP1S
350	2.2	6.3×11	0.24	30	ESMQ351E□□2R2MF11D
	3.3	8×11.5	0.24	46	ESMQ351E□□3R3MHB5D
	4.7	8×11.5	0.24	55	ESMQ351E□□4R7MHB5D
	10	10×12.5	0.24	90	ESMQ351E□□100MJC5S
	22	12.5×20	0.24	185	ESMQ351E□□220MK20S
	33	12.5×25	0.24	240	ESMQ351E□□330MK25S
	47	16×25	0.24	325	ESMQ351E□□470ML25S
	68	16×25	0.24	400	ESMQ351E□□680ML25S
	100	18×31.5	0.24	530	ESMQ351E□□101MMN3S
400	1.0	6.3×11	0.24	22	ESMQ401E□□1R0MF11D
	2.2	8×11.5	0.24	38	ESMQ401E□□2R2MHB5D
	3.3	8×11.5	0.24	48	ESMQ401E□□3R3MHB5D
	4.7	10×12.5	0.24	60	ESMQ401E□□4R7MJC5S
	10	10×16	0.24	90	ESMQ401E□□100MJ16S

□□ : Enter the appropriate lead forming or taping code.

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SMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
400	22	12.5×25	0.24	205	ESMQ401E□□220MK25S
	33	16×25	0.24	275	ESMQ401E□□330ML25S
	47	16×25	0.24	280	ESMQ401E□□470ML25S
	68	16×31.5	0.24	340	ESMQ401E□□680MLN3S
	100	18×35.5	0.24	440	ESMQ401E□□101MMP1S
450	2.2	8×11.5	0.24	28	ESMQ451E□□2R2MHB5D
	3.3	10×12.5	0.24	40	ESMQ451E□□3R3MJC5S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
450	4.7	10×12.5	0.24	46	ESMQ451E□□4R7MJC5S
	10	10×20	0.24	80	ESMQ451E□□100MJ20S
	22	12.5×25	0.24	140	ESMQ451E□□220MK25S
	33	16×25	0.24	180	ESMQ451E□□330ML25S
	47	16×31.5	0.24	220	ESMQ451E□□470MLN3S
	68	18×35.5	0.24	260	ESMQ451E□□680MMP1S
	100	18×40	0.24	280	ESMQ451E□□101MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
1.0 to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 68	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized, 105℃

KMQ Series

- Downsized from current standard KMG series
- Solvent resistant type except 160 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

KMQ ↑ Downsized KMG

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃(6.3 to 100Vdc) -40 to +105℃(160 to 400Vdc) -25 to +105℃(450Vdc)
Rated Voltage Range	6.3 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	6.3 to 100Vdc: I=0.03CV or 4μA, whichever is greater. 160 to 450Vdc: CV≦1,000 I=0.1CV+40 max.; CV>1,000 I=0.04CV+100 max. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 1 minute)

Dissipation Factor (tan δ)

Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	350 to 400V	450V
tan δ (Max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.24	0.24

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (Vdc)		6.3V	10V	16V	25V	35V	50V	63 to 100V	160 to 200V	250V	350V	400V	450V
Z(-25℃)/Z(+20℃)	≦φ8	5	4	3	2	2	2	2	3	3	4	4	6
	≧φ10	5	4	3	2	2	2	2	3	3	4	4	6
Z(-40℃)/Z(+20℃)	≦φ8	10	8	6	4	3	3	3	8	10	8	8	—
	≧φ10	10	8	6	4	3	3	3	4	4	6	6	—

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 1,000 hours (2,000 hours for φ10 and more) at 105℃.

Capacitance change	≦±20% of the initial value
D.F. (tan δ)	≦200% of the initial specified value
Leakage current	≦The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Rated voltage	6.3 to 100Vdc	160 to 450Vdc
Capacitance change	≦±20% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦200% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦500% of the initial specified value

◆DIMENSIONS [mm]

● Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E KMQ □□□ E □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,35V:350,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized, 105℃

KMQ Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
6.3	1,000	8×11.5	0.28	390	EKMQ6R3E□□102MHB5D
	2,200	10×16	0.30	635	EKMQ6R3E□□222MJ16S
	3,300	10×20	0.32	840	EKMQ6R3E□□332MJ20S
	4,700	12.5×20	0.34	1,090	EKMQ6R3E□□472MK20S
	6,800	12.5×25	0.38	1,350	EKMQ6R3E□□682MK25S
	10,000	16×25	0.46	1,650	EKMQ6R3E□□103ML25S
	15,000	16×31.5	0.56	1,820	EKMQ6R3E□□153MLN3S
	22,000	18×35.5	0.70	2,280	EKMQ6R3E□□223MMP1S
10	220	5×11	0.24	155	EKMQ100E□□221ME11D
	330	6.3×11	0.24	210	EKMQ100E□□331MF11D
	470	6.3×11	0.24	250	EKMQ100E□□471MF11D
	1,000	10×12.5	0.24	460	EKMQ100E□□102MJC5S
	2,200	10×16	0.26	705	EKMQ100E□□222MJ16S
	3,300	12.5×20	0.28	1,000	EKMQ100E□□332MK20S
	4,700	12.5×25	0.30	1,260	EKMQ100E□□472MK25S
	6,800	16×25	0.34	1,570	EKMQ100E□□682ML25S
	10,000	16×31.5	0.42	1,820	EKMQ100E□□103MLN3S
	15,000	16×35.5	0.52	2,050	EKMQ100E□□153MLP1S
	22,000	18×40	0.66	2,420	EKMQ100E□□223MM40S
16	220	6.3×11	0.20	190	EKMQ160E□□221MF11D
	330	6.3×11	0.20	225	EKMQ160E□□331MF11D
	470	8×11.5	0.20	315	EKMQ160E□□471MHB5D
	1,000	10×12.5	0.20	500	EKMQ160E□□102MJC5S
	2,200	10×20	0.22	710	EKMQ160E□□222MJ20S
	3,300	12.5×25	0.24	1,170	EKMQ160E□□332MK25S
	4,700	16×25	0.26	1,500	EKMQ160E□□472ML25S
	6,800	16×25	0.30	1,600	EKMQ160E□□682ML25S
	10,000	16×35.5	0.38	1,930	EKMQ160E□□103MLP1S
	15,000	18×40	0.48	2,210	EKMQ160E□□153MM40S
25	100	5×11	0.16	125	EKMQ250E□□101ME11D
	220	6.3×11	0.16	200	EKMQ250E□□221MF11D
	330	8×11.5	0.16	310	EKMQ250E□□331MHB5D
	470	10×12.5	0.16	380	EKMQ250E□□471MJC5S
	1,000	10×16	0.16	610	EKMQ250E□□102MJ16S
	2,200	12.5×25	0.18	1,090	EKMQ250E□□222MK25S
	3,300	16×25	0.20	1,400	EKMQ250E□□332ML25S
	4,700	16×25	0.22	1,570	EKMQ250E□□472ML25S
	6,800	16×35.5	0.26	1,850	EKMQ250E□□682MLP1S
	10,000	18×40	0.34	2,000	EKMQ250E□□103MM40S
35	47	5×11	0.14	93	EKMQ350E□□470ME11D
	68	6.3×11	0.14	110	EKMQ350E□□680MF11D
	100	6.3×11	0.14	150	EKMQ350E□□101MF11D
	220	8×11.5	0.14	270	EKMQ350E□□221MHB5D
	330	10×12.5	0.14	350	EKMQ350E□□331MJC5S
	470	10×16	0.14	460	EKMQ350E□□471MJ16S
	1,000	12.5×20	0.14	810	EKMQ350E□□102MK20S
	2,200	16×25	0.16	1,260	EKMQ350E□□222ML25S
	3,300	16×31.5	0.18	1,500	EKMQ350E□□332MLN3S
	4,700	16×35.5	0.20	1,780	EKMQ350E□□472MLP1S
	6,800	18×40	0.24	2,000	EKMQ350E□□682MM40S
50	1.0	5×11	0.12	13	EKMQ500E□□1R0ME11D
	2.2	5×11	0.12	20	EKMQ500E□□2R2ME11D
	3.3	5×11	0.12	25	EKMQ500E□□3R3ME11D
	4.7	5×11	0.12	30	EKMQ500E□□4R7ME11D
	10	5×11	0.12	46	EKMQ500E□□100ME11D
	22	5×11	0.12	68	EKMQ500E□□220ME11D
	33	5×11	0.12	90	EKMQ500E□□330ME11D
	47	6.3×11	0.12	115	EKMQ500E□□470MF11D
	68	6.3×11	0.12	150	EKMQ500E□□680MF11D
	100	8×11.5	0.12	190	EKMQ500E□□101MHB5D
	220	10×12.5	0.12	300	EKMQ500E□□221MJC5S
	330	10×16	0.12	410	EKMQ500E□□331MJ16S
	470	10×20	0.12	540	EKMQ500E□□471MJ20S
	1,000	12.5×25	0.12	950	EKMQ500E□□102MK25S
	2,200	16×31.5	0.14	1,410	EKMQ500E□□222MLN3S
	3,300	18×35.5	0.16	1,770	EKMQ500E□□332MMP1S
63	22	5×11	0.10	71	EKMQ630E□□220ME11D
63	33	6.3×11	0.10	100	EKMQ630E□□330MF11D
	47	6.3×11	0.10	120	EKMQ630E□□470MF11D
	68	8×11.5	0.10	155	EKMQ630E□□680MHB5D
	100	8×11.5	0.10	200	EKMQ630E□□101MHB5D
	220	10×16	0.10	335	EKMQ630E□□221MJ16S
	330	10×20	0.10	510	EKMQ630E□□331MJ20S
	470	12.5×20	0.10	640	EKMQ630E□□471MK20S
	1,000	16×25	0.10	930	EKMQ630E□□102ML25S
	2,200	18×35.5	0.12	1,650	EKMQ630E□□222MMP1S
100	1.0	5×11	0.08	15	EKMQ101E□□1R0ME11D
	2.2	5×11	0.08	21	EKMQ101E□□2R2ME11D
	3.3	5×11	0.08	29	EKMQ101E□□3R3ME11D
	4.7	5×11	0.08	32	EKMQ101E□□4R7ME11D
	10	5×11	0.08	50	EKMQ101E□□100ME11D
	22	6.3×11	0.08	93	EKMQ101E□□220MF11D
	33	8×11.5	0.08	130	EKMQ101E□□330MHB5D
	47	8×11.5	0.08	140	EKMQ101E□□470MHB5D
	68	10×12.5	0.08	190	EKMQ101E□□680MJC5S
	100	10×16	0.08	240	EKMQ101E□□101MJ16S
	220	12.5×20	0.08	390	EKMQ101E□□221MK20S
	330	12.5×25	0.08	540	EKMQ101E□□331MK25S
	470	16×25	0.08	715	EKMQ101E□□471ML25S
	1,000	18×35.5	0.08	960	EKMQ101E□□102MMP1S
160	10	8×11.5	0.20	41	EKMQ161E□□100MHB5D
	22	10×12.5	0.20	92	EKMQ161E□□220MJC5S
	33	10×16	0.20	125	EKMQ161E□□330MJ16S
	47	10×20	0.20	150	EKMQ161E□□470MJ20S
	68	12.5×20	0.20	250	EKMQ161E□□680MK20S
	100	12.5×25	0.20	310	EKMQ161E□□101MK25S
	220	16×31.5	0.20	540	EKMQ161E□□221MLN3S
	330	18×35.5	0.20	705	EKMQ161E□□331MMP1S
	470	18×40	0.20	855	EKMQ161E□□471MM40S
200	1.0	6.3×11	0.20	16	EKMQ201E□□1R0MF11D
	2.2	6.3×11	0.20	25	EKMQ201E□□2R2MF11D
	3.3	6.3×11	0.20	30	EKMQ201E□□3R3MF11D
	4.7	6.3×11	0.20	35	EKMQ201E□□4R7MF11D
	10	8×11.5	0.20	57	EKMQ201E□□100MHB5D
	22	10×16	0.20	105	EKMQ201E□□220MJ16S
	33	10×20	0.20	140	EKMQ201E□□330MJ20S
	47	12.5×20	0.20	195	EKMQ201E□□470MK20S
	68	12.5×25	0.20	250	EKMQ201E□□680MK25S
	100	16×25	0.20	335	EKMQ201E□□101ML25S
	220	16×35.5	0.20	500	EKMQ201E□□221MLP1S
	330	18×40	0.20	675	EKMQ201E□□331MM40S
250	3.3	6.3×11	0.20	28	EKMQ251E□□3R3MF11D
	4.7	6.3×11	0.20	35	EKMQ251E□□4R7MF11D
	10	10×12.5	0.20	71	EKMQ251E□□100MJC5S
	22	10×20	0.20	105	EKMQ251E□□220MJ20S
	33	10×20	0.20	140	EKMQ251E□□330MJ20S
	47	12.5×20	0.20	190	EKMQ251E□□470MK20S
	68	16×25	0.20	270	EKMQ251E□□680ML25S
	100	16×25	0.20	310	EKMQ251E□□101ML25S
	220	18×35.5	0.20	485	EKMQ251E□□221MMP1S
350	2.2	6.3×11	0.24	21	EKMQ351E□□2R2MF11D
	3.3	8×11.5	0.24	30	EKMQ351E□□3R3MHB5D
	4.7	8×11.5	0.24	39	EKMQ351E□□4R7MHB5D
	10	10×12.5	0.24	64	EKMQ351E□□100MJC5S
	22	12.5×20	0.24	130	EKMQ351E□□220MK20S
	33	12.5×25	0.24	170	EKMQ351E□□330MK25S
	47	16×25	0.24	230	EKMQ351E□□470ML25S
	68	16×25	0.24	285	EKMQ351E□□680ML25S
	100	18×31.5	0.24	375	EKMQ351E□□101MMN3S
400	1.0	6.3×11	0.24	15	EKMQ401E□□1R0MF11D
	2.2	8×11.5	0.24	27	EKMQ401E□□2R2MHB5D
	3.3	8×11.5	0.24	34	EKMQ401E□□3R3MHB5D
	4.7	10×12.5	0.24	42	EKMQ401E□□4R7MJC5S
	10	10×16	0.24	64	EKMQ401E□□100MJ16S

□□ : Enter the appropriate lead forming or taping code.

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KMQ Series

◆STANDARD RATINGS

□ is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
400	22	12.5×25	0.24	145	EKMQ401E□□220MK25S
	33	16×25	0.24	195	EKMQ401E□□330ML25S
	47	16×25	0.24	200	EKMQ401E□□470ML25S
	68	16×31.5	0.24	240	EKMQ401E□□680MLN3S
	100	18×35.5	0.24	310	EKMQ401E□□101MMP1S
450	2.2	8×11.5	0.24	20	EKMQ451E□□2R2MHB5D
	3.3	10×12.5	0.24	28	EKMQ451E□□3R3MJC5S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
450	4.7	10×12.5	0.24	32	EKMQ451E□□4R7MJC5S
	10	10×20	0.24	56	EKMQ451E□□100MJ20S
	22	12.5×25	0.24	100	EKMQ451E□□220MK25S
	33	16×25	0.24	125	EKMQ451E□□330ML25S
	47	16×31.5	0.24	155	EKMQ451E□□470MLN3S
	68	18×35.5	0.24	185	EKMQ451E□□680MMP1S
	100	18×40	0.24	200	EKMQ451E□□101MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
1.0 to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 68	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 85℃

SMG Series

- Endurance : 2,000 hours at 85℃
- Solvent resistant type except 350 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

SMQ
↑ Downsized
SMG

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃(6.3 to 400Vdc) -25 to +85℃(450Vdc)
Rated Voltage Range	6.3 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	6.3 to 100Vdc: I=0.03CV or 4μA, whichever is greater. (after 1 minute)
	160 to 450Vdc: CV≦1,000 — After 1minute: I=0.1CV+40 max. — After 5minute: I=0.03CV+15 max.; CV>1,000 — After 1minute: I=0.04CV+100 max. — After 5minute: I=0.02CV+25 max.
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃)

Leakage Current: Time	After 1minute	After 5minute
CV≦1,000	I=0.1CV+40 max.	I=0.03CV+15 max.
CV>1,000	I=0.04CV+100 max.	I=0.02CV+25 max.

Dissipation Factor (tan δ)												
	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	350 to 400V	450V
	tan δ (Max.)	0.34	0.24	0.20	0.16	0.14	0.12	0.09	0.08	0.20	0.24	0.24

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)												
	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	350 to 400V	450V
	Z(-25℃)/Z(+20℃)	5	4	3	2	2	2	2	2	3	6	6
	Z(-40℃)/Z(+20℃)	12	10	8	5	4	3	3	3	4	6	—

(at 120Hz)

Endurance	
	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 85℃.
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦200% of the initial specified value
	Leakage current: ≦The initial specified value

Shelf Life			
	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Rated voltage	6.3 to 100Vdc	160 to 450Vdc
	Capacitance change	≦±20% of the initial value	≦±20% of the initial value
	D.F. (tan δ)	≦200% of the initial specified value	≦200% of the initial specified value
	Leakage current	≦The initial specified value	≦500% of the initial specified value

◆DIMENSIONS [mm]

● Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E SMG □□□ E □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,100V:101,315V:3B1)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 85℃

SMG Series

◆STANDARD RATINGS

□ is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
6.3	220	5×11	0.34	200	ESMG6R3E□□221ME11D
	330	6.3×11	0.34	270	ESMG6R3E□□331MF11D
	470	6.3×11	0.34	320	ESMG6R3E□□471MF11D
	1,000	8×11.5	0.34	540	ESMG6R3E□□102MHB5D
	2,200	10×20	0.36	1,000	ESMG6R3E□□222MJ20S
	3,300	10×20	0.38	1,185	ESMG6R3E□□332MJ20S
	4,700	12.5×20	0.40	1,545	ESMG6R3E□□472MK20S
	6,800	12.5×25	0.44	1,915	ESMG6R3E□□682MK25S
	10,000	16×25	0.52	2,330	ESMG6R3E□□103ML25S
	15,000	16×35.5	0.62	2,845	ESMG6R3E□□153MLP1S
	22,000	18×40	0.76	3,320	ESMG6R3E□□223MM40S
10	220	5×11	0.24	240	ESMG100E□□221ME11D
	330	6.3×11	0.24	290	ESMG100E□□331MF11D
	470	6.3×11	0.24	350	ESMG100E□□471MF11D
	1,000	10×12.5	0.24	650	ESMG100E□□102MJC5S
	2,200	10×20	0.26	1,070	ESMG100E□□222MJ20S
	3,300	12.5×20	0.28	1,420	ESMG100E□□332MK20S
	4,700	12.5×25	0.30	1,780	ESMG100E□□472MK25S
	6,800	16×25	0.34	2,220	ESMG100E□□682ML25S
	10,000	16×35.5	0.42	2,670	ESMG100E□□103MLP1S
	15,000	18×35.5	0.52	3,080	ESMG100E□□153MMP1S
16	100	5×11	0.20	160	ESMG160E□□101ME11D
	220	6.3×11	0.20	260	ESMG160E□□221MF11D
	330	8×11.5	0.20	370	ESMG160E□□331MHB5D
	470	8×11.5	0.20	440	ESMG160E□□471MHB5D
	1,000	10×16	0.20	785	ESMG160E□□102MJ16S
	2,200	12.5×20	0.22	1,295	ESMG160E□□222MK20S
	3,300	12.5×25	0.24	1,655	ESMG160E□□332MK25S
	4,700	16×25	0.26	2,090	ESMG160E□□472ML25S
	6,800	16×31.5	0.30	2,520	ESMG160E□□682MLN3S
	10,000	18×35.5	0.38	2,920	ESMG160E□□103MMP1S
25	47	5×11	0.16	115	ESMG250E□□470ME11D
	100	6.3×11	0.16	190	ESMG250E□□101MF11D
	220	8×11.5	0.16	330	ESMG250E□□221MHB5D
	330	8×11.5	0.16	440	ESMG250E□□331MHB5D
	470	10×12.5	0.16	545	ESMG250E□□471MJC5S
	1,000	10×20	0.16	955	ESMG250E□□102MJ20S
	2,200	12.5×25	0.18	1,540	ESMG250E□□222MK25S
	3,300	16×25	0.20	1,975	ESMG250E□□332ML25S
	4,700	16×31.5	0.22	2,420	ESMG250E□□472MLN3S
	6,800	18×35.5	0.26	2,880	ESMG250E□□682MMP1S
35	47	5×11	0.14	130	ESMG350E□□470ME11D
	100	6.3×11	0.14	210	ESMG350E□□101MF11D
	220	8×11.5	0.14	385	ESMG350E□□221MHB5D
	330	10×12.5	0.14	490	ESMG350E□□331MJC5S
	470	10×16	0.14	645	ESMG350E□□471MJ16S
	1,000	12.5×20	0.14	1,145	ESMG350E□□102MK20S
	2,200	16×25	0.16	1,785	ESMG350E□□222ML25S
	3,300	16×35.5	0.18	2,275	ESMG350E□□332MLP1S
	4,700	18×35.5	0.20	2,700	ESMG350E□□472MMP1S
50	1.0	5×11	0.12	17	ESMG500E□□1R0ME11D
	2.2	5×11	0.12	28	ESMG500E□□2R2ME11D
	3.3	5×11	0.12	35	ESMG500E□□3R3ME11D
	4.7	5×11	0.12	41	ESMG500E□□4R7ME11D
	10	5×11	0.12	60	ESMG500E□□100ME11D
	22	5×11	0.12	95	ESMG500E□□220ME11D
	33	5×11	0.12	125	ESMG500E□□330ME11D
	47	6.3×11	0.12	155	ESMG500E□□470MF11D
	100	8×11.5	0.12	260	ESMG500E□□101MHB5D
	220	10×12.5	0.12	430	ESMG500E□□221MJC5S
	330	10×16	0.12	585	ESMG500E□□331MJ16S
	470	10×20	0.12	755	ESMG500E□□471MJ20S
	1,000	12.5×25	0.12	1,340	ESMG500E□□102MK25S
	2,200	16×35.5	0.14	2,075	ESMG500E□□222MLP1S
	3,300	18×35.5	0.16	2,500	ESMG500E□□332MMP1S
63	10	5×11	0.09	65	ESMG630E□□100ME11D

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
63	22	5×11	0.09	100	ESMG630E□□220ME11D
	33	6.3×11	0.09	140	ESMG630E□□330MF11D
	47	6.3×11	0.09	170	ESMG630E□□470MF11D
	100	10×12.5	0.09	300	ESMG630E□□101MJC5S
	220	10×16	0.09	490	ESMG630E□□221MJ16S
	330	10×20	0.09	710	ESMG630E□□331MJ20S
	470	12.5×20	0.09	900	ESMG630E□□471MK20S
	1,000	16×25	0.09	1,300	ESMG630E□□102ML25S
100	1.0	5×11	0.08	21	ESMG101E□□1R0ME11D
	2.2	5×11	0.08	30	ESMG101E□□2R2ME11D
	3.3	5×11	0.08	40	ESMG101E□□3R3ME11D
	4.7	5×11	0.08	45	ESMG101E□□4R7ME11D
	10	6.3×11	0.08	75	ESMG101E□□100MF11D
	22	8×11.5	0.08	130	ESMG101E□□220MHB5D
	33	8×11.5	0.08	180	ESMG101E□□330MHB5D
	47	10×12.5	0.08	230	ESMG101E□□470MJC5S
	100	10×20	0.08	370	ESMG101E□□101MJ20S
	220	12.5×25	0.08	620	ESMG101E□□221MK25S
	330	12.5×25	0.08	760	ESMG101E□□331MK25S
	470	16×25	0.08	1,000	ESMG101E□□471ML25S
	1,000	18×40	0.08	1,380	ESMG101E□□102MM40S
160	3.3	6.3×11	0.20	40	ESMG161E□□3R3MF11D
	4.7	6.3×11	0.20	48	ESMG161E□□4R7MF11D
	10	10×12.5	0.20	94	ESMG161E□□100MJC5S
	22	10×20	0.20	170	ESMG161E□□220MJ20S
	33	10×20	0.20	205	ESMG161E□□330MJ20S
	47	12.5×20	0.20	270	ESMG161E□□470MK20S
	100	12.5×25	0.20	430	ESMG161E□□101MK25S
	220	16×31.5	0.20	760	ESMG161E□□221MLN3S
	330	18×35.5	0.20	995	ESMG161E□□331MMP1S
200	3.3	6.3×11	0.20	40	ESMG201E□□3R3MF11D
	4.7	8×11.5	0.20	55	ESMG201E□□4R7MHB5D
	10	10×12.5	0.20	94	ESMG201E□□100MJC5S
	22	10×20	0.20	170	ESMG201E□□220MJ20S
	33	10×20	0.20	205	ESMG201E□□330MJ20S
	47	12.5×20	0.20	270	ESMG201E□□470MK20S
	100	16×25	0.20	475	ESMG201E□□101ML25S
	220	18×35.5	0.20	810	ESMG201E□□221MMP1S
250	2.2	6.3×11	0.20	32	ESMG251E□□2R2MF11D
	3.3	8×11.5	0.20	46	ESMG251E□□3R3MHB5D
	4.7	8×11.5	0.20	55	ESMG251E□□4R7MHB5D
	10	10×16	0.20	105	ESMG251E□□100MJ16S
	22	10×20	0.20	170	ESMG251E□□220MJ20S
	33	12.5×20	0.20	230	ESMG251E□□330MK20S
	47	12.5×25	0.20	295	ESMG251E□□470MK25S
	100	16×31.5	0.20	515	ESMG251E□□101MLN3S
	220	18×40	0.20	825	ESMG251E□□221MM40S
350	1.0	6.3×11	0.24	22	ESMG351E□□1R0MF11D
	2.2	8×11.5	0.24	38	ESMG351E□□2R2MHB5D
	3.3	8×11.5	0.24	46	ESMG351E□□3R3MHB5D
	4.7	10×12.5	0.24	65	ESMG351E□□4R7MJC5S
	10	10×20	0.24	115	ESMG351E□□100MJ20S
	22	12.5×20	0.24	185	ESMG351E□□220MK20S
	33	16×25	0.24	275	ESMG351E□□330ML25S
	47	16×25	0.24	325	ESMG351E□□470ML25S
	100	18×31.5	0.24	530	ESMG351E□□101MMN3S
400	1.0	6.3×11	0.24	22	ESMG401E□□1R0MF11D
	2.2	8×11.5	0.24	38	ESMG401E□□2R2MHB5D
	3.3	10×12.5	0.24	54	ESMG401E□□3R3MJC5S
	4.7	10×16	0.24	71	ESMG401E□□4R7MJ16S
	10	10×20	0.24	115	ESMG401E□□100MJ20S
	22	12.5×25	0.24	205	ESMG401E□□220MK25S
	33	16×25	0.24	275	ESMG401E□□330ML25S
	47	16×31.5	0.24	350	ESMG401E□□470MLN3S
450	2.2	10×12.5	0.24	32	ESMG451E□□2R2MJC5S
	3.3	10×16	0.24	44	ESMG451E□□3R3MJ16S

□□ : Enter the appropriate lead forming or taping code.

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SMG Series

◆STANDARD RATINGS

□ is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
450	4.7	10×20	0.24	56	ESMG451E□□4R7MJ20S
	10	12.5×20	0.24	91	ESMG451E□□100MK20S
	22	16×25	0.24	165	ESMG451E□□220ML25S
	33	16×31.5	0.24	215	ESMG451E□□330MLN3S
	47	16×35.5	0.24	265	ESMG451E□□470MLP1S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
1.0 to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 47	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 105℃

KMG Series

- Endurance with ripple current : 1,000 to 2,000 hours at 105℃
- Solvent resistant type except 350 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

KMQ
↑ Downsized
KMG

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃(6.3 to 100Vdc) -40 to +105℃(160 to 400Vdc) -25 to +105℃(450Vdc)
Rated Voltage Range	6.3 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	6.3 to 100Vdc: I=0.03CV or 4μA, whichever is greater. (after 1 minute)
	160 to 450Vdc: CV≦1,000 — After 1minute: I=0.1CV+40 max. — After 5minutes: I=0.03CV+15 max.; CV>1,000 — After 1minute: I=0.04CV+100 max. — After 5minutes: I=0.02CV+25 max.
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 100V, 160 to 250V, 350 to 400V, 450V
	tan δ (Max.): 0.34, 0.24, 0.20, 0.16, 0.14, 0.12, 0.10, 0.08, 0.20, 0.24, 0.24
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 100V, 160 to 250V, 350 to 400V, 450V
	Z(-25℃)/Z(+20℃): 5, 4, 3, 2, 2, 2, 2, 2, 3, 6, 6
	Z(-40℃)/Z(+20℃): 12, 10, 8, 5, 4, 3, 3, 3, 4, 6, — (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 1,000 hours (2,000 hours to meet the following two conditions 1): 160Vdc and larger, 2) :φ12.5 and larger) at 105℃.
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦200% of the initial specified value
	Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.
	Rated voltage: 6.3 to 100Vcd — 160 to 450Vdc
	Capacitance change: ≦±20% of the initial value — ≦±20% of the initial value
	D.F. (tan δ): ≦200% of the initial specified value — ≦200% of the initial specified value
	Leakage current: ≦The initial specified value — ≦500% of the initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max						
L'	L+1.5max						

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Standard, 105℃

KMG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
6.3	220	5×11	0.34	140	EKMG6R3E□□221ME11D
	330	6.3×11	0.34	190	EKMG6R3E□□331MF11D
	470	6.3×11	0.34	230	EKMG6R3E□□471MF11D
	1,000	8×11.5	0.34	380	EKMG6R3E□□102MHB5D
	2,200	10×20	0.36	710	EKMG6R3E□□222MJ20S
	3,300	10×20	0.38	840	EKMG6R3E□□332MJ20S
	4,700	12.5×20	0.40	1,090	EKMG6R3E□□472MK20S
	6,800	12.5×25	0.44	1,350	EKMG6R3E□□682MK25S
	10,000	16×25	0.52	1,650	EKMG6R3E□□103ML25S
	15,000	16×35.5	0.62	2,010	EKMG6R3E□□153MLP1S
	22,000	18×40	0.76	2,350	EKMG6R3E□□223MM40S
10	220	6.3×11	0.24	170	EKMG100E□□221MF11D
	330	6.3×11	0.24	200	EKMG100E□□331MF11D
	470	8×11.5	0.24	250	EKMG100E□□471MHB5D
	1,000	10×12.5	0.24	460	EKMG100E□□102MJC5S
	2,200	10×20	0.26	760	EKMG100E□□222MJ20S
	3,300	12.5×20	0.28	1,000	EKMG100E□□332MK20S
	4,700	12.5×25	0.30	1,260	EKMG100E□□472MK25S
	6,800	16×25	0.34	1,570	EKMG100E□□682ML25S
	10,000	16×35.5	0.42	1,890	EKMG100E□□103MLP1S
	15,000	18×35.5	0.52	2,180	EKMG100E□□153MMP1S
16	100	5×11	0.20	110	EKMG160E□□101ME11D
	220	6.3×11	0.20	180	EKMG160E□□221MF11D
	330	8×11.5	0.20	260	EKMG160E□□331MHB5D
	470	8×11.5	0.20	310	EKMG160E□□471MHB5D
	1,000	10×16	0.20	560	EKMG160E□□102MJ16S
	2,200	12.5×20	0.22	920	EKMG160E□□222MK20S
	3,300	12.5×25	0.24	1,170	EKMG160E□□332MK25S
	4,700	16×25	0.26	1,480	EKMG160E□□472ML25S
	6,800	16×31.5	0.30	1,780	EKMG160E□□682MLN3S
	10,000	18×35.5	0.38	2,060	EKMG160E□□103MMP1S
25	47	5×11	0.16	80	EKMG250E□□470ME11D
	100	6.3×11	0.16	130	EKMG250E□□101MF11D
	220	8×11.5	0.16	230	EKMG250E□□221MHB5D
	330	8×11.5	0.16	310	EKMG250E□□331MHB5D
	470	10×12.5	0.16	380	EKMG250E□□471MJC5S
	1,000	10×20	0.16	680	EKMG250E□□102MJ20S
	2,200	12.5×25	0.18	1,090	EKMG250E□□222MK25S
	3,300	16×25	0.20	1,400	EKMG250E□□332ML25S
	4,700	16×31.5	0.22	1,710	EKMG250E□□472MLN3S
	6,800	18×35.5	0.26	2,040	EKMG250E□□682MMP1S
35	47	5×11	0.14	90	EKMG350E□□470ME11D
	100	6.3×11	0.14	150	EKMG350E□□101MF11D
	220	8×11.5	0.14	270	EKMG350E□□221MHB5D
	330	10×12.5	0.14	350	EKMG350E□□331MJC5S
	470	10×16	0.14	460	EKMG350E□□471MJ16S
	1,000	12.5×20	0.14	810	EKMG350E□□102MK20S
	2,200	16×25	0.16	1,260	EKMG350E□□222ML25S
	3,300	16×35.5	0.18	1,610	EKMG350E□□332MLP1S
	4,700	18×35.5	0.20	1,910	EKMG350E□□472MMP1S
50	1.0	5×11	0.12	13	EKMG500E□□1R0ME11D
	2.2	5×11	0.12	20	EKMG500E□□2R2ME11D
	3.3	5×11	0.12	25	EKMG500E□□3R3ME11D
	4.7	5×11	0.12	30	EKMG500E□□4R7ME11D
	10	5×11	0.12	40	EKMG500E□□100ME11D
	22	5×11	0.12	65	EKMG500E□□220ME11D
	33	5×11	0.12	90	EKMG500E□□330ME11D
	47	6.3×11	0.12	110	EKMG500E□□470MF11D
	100	8×11.5	0.12	180	EKMG500E□□101MHB5D
	220	10×12.5	0.12	300	EKMG500E□□221MJC5S
	330	10×16	0.12	410	EKMG500E□□331MJ16S
	470	10×20	0.12	530	EKMG500E□□471MJ20S
	1,000	12.5×25	0.12	950	EKMG500E□□102MK25S
	2,200	16×35.5	0.14	1,470	EKMG500E□□222MLP1S
	3,300	18×35.5	0.16	1,770	EKMG500E□□332MMP1S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
63	10	5×11	0.10	46	EKMG630E□□100ME11D
	22	5×11	0.10	71	EKMG630E□□220ME11D
	33	6.3×11	0.10	100	EKMG630E□□330MF11D
	47	6.3×11	0.10	120	EKMG630E□□470MF11D
	100	10×12.5	0.10	215	EKMG630E□□101MJC5S
	220	10×16	0.10	335	EKMG630E□□221MJ16S
	330	10×20	0.10	510	EKMG630E□□331MJ20S
	470	12.5×20	0.10	640	EKMG630E□□471MK20S
	1,000	16×25	0.10	930	EKMG630E□□102ML25S
100	1.0	5×11	0.08	15	EKMG101E□□1R0ME11D
	2.2	5×11	0.08	21	EKMG101E□□2R2ME11D
	3.3	5×11	0.08	29	EKMG101E□□3R3ME11D
	4.7	5×11	0.08	32	EKMG101E□□4R7ME11D
	10	6.3×11	0.08	54	EKMG101E□□100MF11D
	22	8×11.5	0.08	93	EKMG101E□□220MHB5D
	33	8×11.5	0.08	130	EKMG101E□□330MHB5D
	47	10×12.5	0.08	165	EKMG101E□□470MJC5S
	100	10×20	0.08	265	EKMG101E□□101MJ20S
	220	12.5×25	0.08	440	EKMG101E□□221MK25S
	330	16×25	0.08	540	EKMG101E□□331ML25S
	470	16×31.5	0.08	715	EKMG101E□□471MLN3S
	1,000	18×40	0.08	985	EKMG101E□□102MM40S
160	3.3	6.3×11	0.20	28	EKMG161E□□3R3MF11D
	4.7	6.3×11	0.20	34	EKMG161E□□4R7MF11D
	10	10×12.5	0.20	67	EKMG161E□□100MJC5S
	22	10×20	0.20	120	EKMG161E□□220MJ20S
	33	10×20	0.20	145	EKMG161E□□330MJ20S
	47	12.5×20	0.20	195	EKMG161E□□470MK20S
	100	16×25	0.20	335	EKMG161E□□101ML25S
	220	16×31.5	0.20	540	EKMG161E□□221MLN3S
	330	18×35.5	0.20	705	EKMG161E□□331MMP1S
200	3.3	6.3×11	0.20	28	EKMG201E□□3R3MF11D
	4.7	8×11.5	0.20	39	EKMG201E□□4R7MHB5D
	10	10×16	0.20	74	EKMG201E□□100MJ16S
	22	10×20	0.20	120	EKMG201E□□220MJ20S
	33	12.5×20	0.20	160	EKMG201E□□330MK20S
	47	12.5×20	0.20	195	EKMG201E□□470MK20S
	100	16×25	0.20	335	EKMG201E□□101ML25S
	220	18×35.5	0.20	575	EKMG201E□□221MMP1S
250	2.2	6.3×11	0.20	23	EKMG251E□□2R2MF11D
	3.3	8×11.5	0.20	32	EKMG251E□□3R3MHB5D
	4.7	8×11.5	0.20	39	EKMG251E□□4R7MHB5D
	10	10×16	0.20	74	EKMG251E□□100MJ16S
	22	12.5×20	0.20	130	EKMG251E□□220MK20S
	33	12.5×20	0.20	160	EKMG251E□□330MK20S
	47	12.5×25	0.20	210	EKMG251E□□470MK25S
	100	16×31.5	0.20	365	EKMG251E□□101MLN3S
	220	18×40	0.20	585	EKMG251E□□221MM40S
350	1.0	6.3×11	0.24	15	EKMG351E□□1R0MF11D
	2.2	8×11.5	0.24	26	EKMG351E□□2R2MHB5D
	3.3	10×12.5	0.24	38	EKMG351E□□3R3MJC5S
	4.7	10×16	0.24	50	EKMG351E□□4R7MJ16S
	10	10×20	0.24	80	EKMG351E□□100MJ20S
	22	12.5×20	0.24	130	EKMG351E□□220MK20S
	33	16×25	0.24	195	EKMG351E□□330ML25S
	47	16×25	0.24	230	EKMG351E□□470ML25S
	100	18×31.5	0.24	375	EKMG351E□□101MMN3S
400	1.0	6.3×11	0.24	15	EKMG401E□□1R0MF11D
	2.2	8×11.5	0.24	26	EKMG401E□□2R2MHB5D
	3.3	10×12.5	0.24	38	EKMG401E□□3R3MJC5S
	4.7	10×16	0.24	50	EKMG401E□□4R7MJ16S
	10	10×20	0.24	80	EKMG401E□□100MJ20S
	22	12.5×25	0.24	145	EKMG401E□□220MK25S
	33	16×25	0.24	195	EKMG401E□□330ML25S
	47	16×31.5	0.24	250	EKMG401E□□470MLN3S
	100	16×40	0.24	350	EKMG401E□□101ML40S

□□ : Enter the appropriate lead forming or taping code.

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KMG Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
450	2.2	10×12.5	0.24	23	EKMG451E□□2R2MJC5S
	3.3	10×16	0.24	31	EKMG451E□□3R3MJ16S
	4.7	10×20	0.24	40	EKMG451E□□4R7MJ20S
	10	12.5×20	0.24	65	EKMG451E□□100MK20S
	22	16×25	0.24	115	EKMG451E□□220ML25S
	33	16×31.5	0.24	155	EKMG451E□□330MLN3S
	47	16×35.5	0.24	185	EKMG451E□□470MLP1S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
1.0 to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 47	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	1.05	1.08	1.08

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZN Series

- Adoption of innovative high stability electrolyte
- High ripple current and long endurance
- Rated voltage range : 6.3 to 100Vdc, Capacitance range : 8.2 to 22,000µF
- Endurance with ripple current : 6,000 to 10,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

KZN
↑ Higher ripple
KZM

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 100Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3µA, whichever is greater. Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 80V, 100V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12, 0.10, 0.09, 0.09, 0.08 When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z (-25℃) / Z (+20℃): 2max. Z (-40℃) / Z (+20℃): 3max. (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃.

Time	Case size	φ5&φ6.3	φ8×11.5L	φ10×12.5L	φ8×15L, 20L	φ10×16L, 20L, 25L φ12.5 to φ18
	6.3Vdc	6,000 hours	8,000 hours	9,000 hours	9,000 hours	10,000 hours
	10 to 50Vdc	7,000 hours	9,000 hours	9,000 hours	10,000 hours	10,000 hours
	63 to 100Vdc	6,000 hours	8,000 hours	9,000 hours	9,000 hours	10,000 hours
Capacitance change		≦±25% of the initial value (6.3, 10Vdc : ≦±30%)				
D.F. (tan δ)		≦200% of the initial specified value				
Leakage current		≦The initial specified value				

Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.
Capacitance change	≦±25% of the initial value (6.3, 10Vdc : ≦±30%)
D.F. (tan δ)	≦200% of the initial specified value
Leakage current	≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
D'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZN Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	220	5×11	0.38	1.2	345	EKZN6R3E□□221ME11D
	470	6.3×11	0.17	0.51	540	EKZN6R3E□□471MF11D
	820	8×11.5	0.075	0.23	945	EKZN6R3E□□821MHB5D
	1,200	8×15	0.059	0.18	1,250	EKZN6R3E□□122MH15D
	1,200	10×12.5	0.053	0.16	1,330	EKZN6R3E□□122MJC5S
	1,500	8×20	0.041	0.13	1,500	EKZN6R3E□□152MH20D
	1,800	10×16	0.038	0.12	1,760	EKZN6R3E□□182MJ16S
	2,700	10×20	0.028	0.084	1,960	EKZN6R3E□□272MJ20S
	2,700	12.5×16	0.035	0.11	1,900	EKZN6R3E□□272MK16S
	3,300	10×25	0.026	0.072	2,250	EKZN6R3E□□332MJ25S
	3,900	12.5×20	0.025	0.075	2,480	EKZN6R3E□□392MK20S
	5,600	12.5×25	0.019	0.057	2,900	EKZN6R3E□□562MK25S
	6,800	12.5×30	0.018	0.054	3,450	EKZN6R3E□□682MK30S
	6,800	16×20	0.021	0.063	3,250	EKZN6R3E□□682ML20S
	8,200	12.5×35	0.016	0.048	3,570	EKZN6R3E□□822MK35S
	8,200	18×20	0.020	0.060	3,450	EKZN6R3E□□822MM20S
	10,000	16×25	0.017	0.051	3,630	EKZN6R3E□□103ML25S
	12,000	16×31.5	0.016	0.048	4,100	EKZN6R3E□□123MLN3S
	12,000	18×25	0.016	0.048	3,880	EKZN6R3E□□123MM25S
	15,000	16×35.5	0.014	0.042	4,280	EKZN6R3E□□153MLP1S
	15,000	18×31.5	0.014	0.042	4,190	EKZN6R3E□□153MMN3S
	18,000	16×40	0.013	0.039	4,580	EKZN6R3E□□183ML40S
	18,000	18×35.5	0.012	0.036	4,380	EKZN6R3E□□183MMP1S
	22,000	18×40	0.011	0.033	4,960	EKZN6R3E□□223MM40S
10	150	5×11	0.38	1.2	450	EKZN100E□□151ME11D
	330	6.3×11	0.17	0.51	700	EKZN100E□□331MF11D
	560	8×11.5	0.075	0.23	1,200	EKZN100E□□561MHB5D
	820	8×15	0.059	0.18	1,600	EKZN100E□□821MH15D
	1,000	8×20	0.041	0.13	1,960	EKZN100E□□102MH20D
	1,000	10×12.5	0.053	0.16	1,700	EKZN100E□□102MJC5S
	1,200	10×16	0.038	0.12	2,000	EKZN100E□□122MJ16S
	1,800	10×20	0.028	0.084	2,500	EKZN100E□□182MJ20S
	1,800	12.5×16	0.035	0.11	2,400	EKZN100E□□182MK16S
	2,200	10×25	0.026	0.072	2,900	EKZN100E□□222MJ25S
	2,700	12.5×20	0.025	0.075	2,600	EKZN100E□□272MK20S
	3,900	12.5×25	0.019	0.057	3,200	EKZN100E□□392MK25S
	4,700	12.5×30	0.018	0.054	3,660	EKZN100E□□472MK30S
	4,700	16×20	0.021	0.063	3,330	EKZN100E□□472ML20S
	5,600	12.5×35	0.016	0.048	4,120	EKZN100E□□562MK35S
	5,600	18×20	0.020	0.060	3,450	EKZN100E□□562MM20S
	6,800	16×25	0.017	0.051	3,810	EKZN100E□□682ML25S
	8,200	16×31.5	0.016	0.048	4,100	EKZN100E□□822MLN3S
	8,200	18×25	0.016	0.048	3,880	EKZN100E□□822MM25S
	10,000	16×35.5	0.014	0.042	4,280	EKZN100E□□103MLP1S
	10,000	18×31.5	0.014	0.042	4,190	EKZN100E□□103MMN3S
	12,000	16×40	0.013	0.039	4,580	EKZN100E□□123ML40S
	12,000	18×35.5	0.012	0.036	4,380	EKZN100E□□123MMP1S
	15,000	18×40	0.011	0.033	4,960	EKZN100E□□153MM40S
16	120	5×11	0.38	1.2	450	EKZN160E□□121ME11D
	270	6.3×11	0.17	0.51	700	EKZN160E□□271MF11D
	470	8×11.5	0.075	0.23	1,200	EKZN160E□□471MHB5D
	680	8×15	0.059	0.18	1,600	EKZN160E□□681MH15D
	680	10×12.5	0.053	0.16	1,700	EKZN160E□□681MJC5S
	820	8×20	0.041	0.13	1,960	EKZN160E□□821MH20D
	1,000	10×16	0.038	0.12	2,000	EKZN160E□□102MJ16S
	1,500	10×20	0.028	0.084	2,500	EKZN160E□□152MJ20S
	1,500	12.5×16	0.035	0.11	2,400	EKZN160E□□152MK16S
	1,800	10×25	0.026	0.072	2,900	EKZN160E□□182MJ25S
	2,200	12.5×20	0.025	0.075	2,600	EKZN160E□□222MK20S
	2,700	12.5×25	0.019	0.057	3,200	EKZN160E□□272MK25S
16	3,300	12.5×30	0.018	0.054	3,660	EKZN160E□□332MK30S
	3,900	12.5×35	0.016	0.048	4,120	EKZN160E□□392MK35S
	3,900	16×20	0.021	0.063	3,330	EKZN160E□□392ML20S
	4,700	18×20	0.020	0.060	3,450	EKZN160E□□472MM20S
	5,600	16×25	0.017	0.051	3,810	EKZN160E□□562ML25S
	6,800	16×31.5	0.016	0.048	4,100	EKZN160E□□682MLN3S
	6,800	18×25	0.016	0.048	3,880	EKZN160E□□682MM25S
	8,200	16×35.5	0.014	0.042	4,280	EKZN160E□□822MLP1S
	8,200	18×31.5	0.014	0.042	4,190	EKZN160E□□822MMN3S
	10,000	16×40	0.013	0.039	4,580	EKZN160E□□103ML40S
	10,000	18×35.5	0.012	0.036	4,380	EKZN160E□□103MMP1S
	12,000	18×40	0.011	0.033	4,960	EKZN160E□□123MM40S
25	68	5×11	0.38	1.2	450	EKZN250E□□680ME11D
	150	6.3×11	0.17	0.51	700	EKZN250E□□151MF11D
	270	8×11.5	0.075	0.23	1,200	EKZN250E□□271MHB5D
	470	8×15	0.059	0.18	1,600	EKZN250E□□471MH15D
	470	10×12.5	0.053	0.16	1,700	EKZN250E□□471MJC5S
	560	8×20	0.041	0.13	1,960	EKZN250E□□561MH20D
	680	10×16	0.038	0.12	2,000	EKZN250E□□681MJ16S
	820	10×20	0.028	0.084	2,500	EKZN250E□□821MJ20S
	1,000	12.5×16	0.035	0.11	2,400	EKZN250E□□102MK16S
	1,200	10×25	0.026	0.072	2,900	EKZN250E□□122MJ25S
	1,500	12.5×20	0.025	0.075	2,600	EKZN250E□□152MK20S
	1,800	12.5×25	0.019	0.057	3,200	EKZN250E□□182MK25S
	2,200	12.5×30	0.018	0.054	3,660	EKZN250E□□222MK30S
	2,200	16×20	0.021	0.063	3,330	EKZN250E□□222ML20S
	2,700	12.5×35	0.016	0.048	4,120	EKZN250E□□272MK35S
	3,300	16×25	0.017	0.051	3,810	EKZN250E□□332ML25S
	3,300	18×20	0.020	0.060	3,450	EKZN250E□□332MM20S
	4,700	16×31.5	0.016	0.048	4,100	EKZN250E□□472MLN3S
	4,700	18×25	0.016	0.048	3,880	EKZN250E□□472MM25S
	5,600	16×35.5	0.014	0.042	4,280	EKZN250E□□562MLP1S
	5,600	18×31.5	0.014	0.042	4,190	EKZN250E□□562MMN3S
	6,800	16×40	0.013	0.039	4,580	EKZN250E□□682ML40S
	6,800	18×35.5	0.012	0.036	4,380	EKZN250E□□682MMP1S
	8,200	18×40	0.011	0.033	4,960	EKZN250E□□822MM40S
35	47	5×11	0.38	1.2	450	EKZN350E□□470ME11D
	100	6.3×11	0.17	0.51	700	EKZN350E□□101MF11D
	180	8×11.5	0.075	0.23	1,200	EKZN350E□□181MHB5D
	220	8×15	0.059	0.18	1,600	EKZN350E□□221MH15D
	270	10×12.5	0.053	0.16	1,700	EKZN350E□□271MJC5S
	330	8×20	0.041	0.13	1,960	EKZN350E□□331MH20D
	390	10×16	0.038	0.12	2,000	EKZN350E□□391MJ16S
	470	10×20	0.028	0.084	2,500	EKZN350E□□471MJ20S
	560	12.5×16	0.035	0.11	2,400	EKZN350E□□561MK16S
	680	10×25	0.026	0.072	2,900	EKZN350E□□681MJ25S
	820	12.5×20	0.025	0.075	2,600	EKZN350E□□821MK20S
	1,200	12.5×25	0.019	0.057	3,200	EKZN350E□□122MK25S
	1,500	12.5×30	0.018	0.054	3,660	EKZN350E□□152MK30S
	1,500	16×20	0.021	0.063	3,330	EKZN350E□□152ML20S
	1,800	12.5×35	0.016	0.048	4,120	EKZN350E□□182MK35S
	1,800	16×25	0.017	0.051	3,810	EKZN350E□□182ML25S
	1,800	18×20	0.020	0.060	3,450	EKZN350E□□182MM20S
	2,700	16×31.5	0.016	0.048	4,100	EKZN350E□□272MLN3S
	2,700	18×25	0.016	0.048	3,880	EKZN350E□□272MM25S
	3,300	16×35.5	0.014	0.042	4,280	EKZN350E□□332MLP1S
	3,300	18×31.5	0.014	0.042	4,190	EKZN350E□□332MMN3S
	3,900	16×40	0.013	0.039	4,580	EKZN350E□□392ML40S
	3,900	18×35.5	0.012	0.036	4,380	EKZN350E□□392MMP1S
	4,700	18×40	0.011	0.033	4,960	EKZN350E□□472MM40S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZN Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
50	27	5×11	0.40	1.3	450	EKZN500E□□270ME11D
	56	6.3×11	0.18	0.54	700	EKZN500E□□560MF11D
	100	8×11.5	0.085	0.26	1,200	EKZN500E□□101MHB5D
	120	8×15	0.065	0.20	1,600	EKZN500E□□121MH15D
	150	10×12.5	0.073	0.22	1,280	EKZN500E□□151MJC5S
	180	8×20	0.049	0.16	1,960	EKZN500E□□181MH20D
	220	10×16	0.053	0.16	1,650	EKZN500E□□221MJ16S
	330	10×20	0.038	0.12	2,060	EKZN500E□□331MJ20S
	330	12.5×16	0.045	0.14	2,160	EKZN500E□□331MK16S
	390	10×25	0.032	0.10	2,420	EKZN500E□□391MJ25S
	470	12.5×20	0.032	0.10	2,300	EKZN500E□□471MK20S
	680	12.5×25	0.025	0.080	2,800	EKZN500E□□681MK25S
	820	12.5×30	0.023	0.074	3,370	EKZN500E□□821MK30S
	820	16×20	0.026	0.084	3,070	EKZN500E□□821ML20S
	1,000	12.5×35	0.021	0.067	3,810	EKZN500E□□102MK35S
	1,200	16×25	0.022	0.070	3,510	EKZN500E□□122ML25S
	1,200	18×20	0.025	0.075	3,120	EKZN500E□□122MM20S
	1,500	16×31.5	0.019	0.057	4,030	EKZN500E□□152MLN3S
	1,500	18×25	0.021	0.063	3,530	EKZN500E□□152MM25S
	1,800	16×35.5	0.016	0.048	4,220	EKZN500E□□182MLP1S
	2,200	16×40	0.014	0.042	4,500	EKZN500E□□222ML40S
	2,200	18×31.5	0.016	0.048	4,080	EKZN500E□□222MMN3S
	2,700	18×35.5	0.013	0.039	4,270	EKZN500E□□272MMP1S
	3,300	18×40	0.012	0.036	4,850	EKZN500E□□332MM40S
63	18	5×11	0.52	2.3	240	EKZN630E□□180ME11D
	39	6.3×11	0.24	1.1	420	EKZN630E□□390MF11D
	68	8×11.5	0.15	0.68	720	EKZN630E□□680MHB5D
	100	8×15	0.10	0.45	990	EKZN630E□□101MH15D
	120	8×20	0.077	0.35	1,200	EKZN630E□□121MH20D
	120	10×12.5	0.090	0.36	990	EKZN630E□□121MJC5S
	180	10×16	0.061	0.25	1,200	EKZN630E□□181MJ16S
	270	10×20	0.045	0.18	1,570	EKZN630E□□271MJ20S
	270	12.5×16	0.058	0.18	1,570	EKZN630E□□271MK16S
	330	10×25	0.037	0.12	1,990	EKZN630E□□331MJ25S
	390	12.5×20	0.033	0.10	1,990	EKZN630E□□391MK20S
	560	12.5×25	0.026	0.080	2,460	EKZN630E□□561MK25S
	680	12.5×30	0.024	0.075	2,760	EKZN630E□□681MK30S
	680	16×20	0.027	0.085	2,380	EKZN630E□□681ML20S
	820	12.5×35	0.022	0.068	3,040	EKZN630E□□821MK35S
	820	18×20	0.026	0.078	2,530	EKZN630E□□821MM20S
	1,000	16×25	0.024	0.072	2,890	EKZN630E□□102ML25S
	1,200	16×31.5	0.020	0.060	3,280	EKZN630E□□122MLN3S
	1,200	18×25	0.022	0.066	2,930	EKZN630E□□122MM25S
	1,500	16×35.5	0.018	0.054	3,440	EKZN630E□□152MLP1S
	1,500	18×31.5	0.018	0.054	3,380	EKZN630E□□152MMN3S
	1,800	16×40	0.016	0.048	3,690	EKZN630E□□182ML40S
	1,800	18×35.5	0.017	0.051	3,550	EKZN630E□□182MMP1S
	2,200	18×40	0.015	0.045	3,930	EKZN630E□□222MM40S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
80	12	5×11	0.72	3.2	220	EKZN800E□□120ME11D
	27	6.3×11	0.34	1.5	370	EKZN800E□□270MF11D
	47	8×11.5	0.20	0.90	620	EKZN800E□□470MHB5D
	68	8×15	0.14	0.63	780	EKZN800E□□680MH15D
	82	8×20	0.12	0.54	1,040	EKZN800E□□820MH20D
	82	10×12.5	0.14	0.56	780	EKZN800E□□820MJC5S
	120	10×16	0.090	0.36	1,040	EKZN800E□□121MJ16S
	180	10×20	0.068	0.28	1,430	EKZN800E□□181MJ20S
	180	12.5×16	0.090	0.27	1,430	EKZN800E□□181MK16S
	220	10×25	0.055	0.22	1,620	EKZN800E□□221MJ25S
	270	12.5×20	0.048	0.15	1,750	EKZN800E□□271MK20S
	390	12.5×25	0.038	0.12	2,210	EKZN800E□□391MK25S
	470	12.5×30	0.033	0.11	2,400	EKZN800E□□471MK30S
	470	16×20	0.036	0.12	1,950	EKZN800E□□471ML20S
	560	12.5×35	0.026	0.078	2,600	EKZN800E□□561MK35S
	680	16×25	0.028	0.084	2,430	EKZN800E□□681ML25S
	680	18×20	0.032	0.096	2,270	EKZN800E□□681MM20S
	820	16×31.5	0.022	0.066	2,640	EKZN800E□□821MLN3S
	820	18×25	0.027	0.081	2,500	EKZN800E□□821MM25S
	1,000	16×35.5	0.020	0.060	2,860	EKZN800E□□102MLP1S
	1,200	16×40	0.018	0.054	3,510	EKZN800E□□122ML40S
	1,200	18×31.5	0.020	0.060	2,860	EKZN800E□□122MMN3S
	1,500	18×35.5	0.018	0.054	3,510	EKZN800E□□152MMP1S
	1,800	18×40	0.017	0.051	3,860	EKZN800E□□182MM40S
100	8.2	5×11	0.72	3.2	220	EKZN101E□□8R2ME11D
	18	6.3×11	0.34	1.5	370	EKZN101E□□180MF11D
	33	8×11.5	0.20	0.90	620	EKZN101E□□330MHB5D
	47	8×15	0.14	0.63	780	EKZN101E□□470MH15D
	56	8×20	0.12	0.54	1,040	EKZN101E□□560MH20D
	56	10×12.5	0.14	0.56	780	EKZN101E□□560MJC5S
	82	10×16	0.090	0.36	1,040	EKZN101E□□820MJ16S
	100	10×20	0.068	0.28	1,430	EKZN101E□□101MJ20S
	120	12.5×16	0.090	0.27	1,430	EKZN101E□□121MK16S
	150	10×25	0.055	0.22	1,620	EKZN101E□□151MJ25S
	180	12.5×20	0.048	0.15	1,750	EKZN101E□□181MK20S
	220	12.5×25	0.038	0.12	2,210	EKZN101E□□221MK25S
	270	12.5×30	0.033	0.11	2,400	EKZN101E□□271MK30S
	270	16×20	0.036	0.12	1,950	EKZN101E□□271ML20S
	390	12.5×35	0.026	0.078	2,600	EKZN101E□□391MK35S
	390	16×25	0.028	0.084	2,430	EKZN101E□□391ML25S
	390	18×20	0.032	0.096	2,270	EKZN101E□□391MM20S
	470	16×31.5	0.022	0.066	2,640	EKZN101E□□471MLN3S
	560	16×35.5	0.020	0.060	2,860	EKZN101E□□561MLP1S
	560	18×25	0.027	0.081	2,500	EKZN101E□□561MM25S
	680	16×40	0.018	0.054	3,510	EKZN101E□□681ML40S
	680	18×31.5	0.020	0.060	2,860	EKZN101E□□681MMN3S
	820	18×35.5	0.018	0.054	3,510	EKZN101E□□821MMP1S
	1,000	18×40	0.017	0.051	3,860	EKZN101E□□102MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
8.2 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 22,000	0.85	0.95	0.98	1.00

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZM Series

- Long-Life version of KZH series
- Endurance with ripple current : 6,000 to 10,000 hours at 105℃
- Newly innovative electrolyte is employed to minimize ESR
- Rated voltage range : 6.3 to 50Vdc, Nominal capacitance range : 27 to 10,000µF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 50Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3µA, whichever is greater. Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12, 0.10 When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z (-25℃) / Z (+20℃): 2max. Z (-40℃) / Z (+20℃): 3max. (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃. Time: φ5 & φ6.3 : 6,000hours φ8 : 8,000hours φ10 to φ18 : 10,000hours Capacitance change: ≦±25% of the initial value (6.3, 10Vdc : ≦± 30%) D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±25% of the initial value (6.3, 10Vdc : ≦±30%) D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(µF) \ Frequency(Hz)	120	1k	10k	100k
27 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 10,000	0.85	0.95	0.98	1.00

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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KZM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	220	5×11	0.22	0.22	0.80	345	EKZM6R3E□□221ME11D
	470	6.3×11	0.22	0.094	0.35	540	EKZM6R3E□□471MF11D
	820	8×11.5	0.22	0.056	0.19	945	EKZM6R3E□□821MHB5D
	1,200	8×15	0.22	0.045	0.15	1,250	EKZM6R3E□□122MH15D
	1,200	10×12.5	0.22	0.039	0.14	1,330	EKZM6R3E□□122MJC5S
	1,500	8×20	0.22	0.029	0.11	1,500	EKZM6R3E□□152MH20D
	1,800	10×16	0.22	0.028	0.10	1,760	EKZM6R3E□□182MJ16S
	2,200	10×20	0.24	0.020	0.060	1,960	EKZM6R3E□□222MJ20S
	2,700	10×25	0.24	0.018	0.054	2,250	EKZM6R3E□□272MJ25S
	3,900	12.5×20	0.26	0.017	0.043	2,480	EKZM6R3E□□392MK20S
	4,700	12.5×25	0.28	0.015	0.038	2,900	EKZM6R3E□□472MK25S
	5,600	12.5×30	0.30	0.013	0.033	3,450	EKZM6R3E□□562MK30S
	6,800	12.5×35	0.32	0.012	0.031	3,570	EKZM6R3E□□682MK35S
	6,800	16×20	0.32	0.015	0.038	3,250	EKZM6R3E□□682ML20S
	8,200	16×25	0.36	0.013	0.035	3,630	EKZM6R3E□□822ML25S
	10,000	18×25	0.40	0.012	0.031	3,650	EKZM6R3E□□103MM25S
10	150	5×11	0.19	0.22	0.80	345	EKZM100E□□151ME11D
	330	6.3×11	0.19	0.094	0.35	540	EKZM100E□□331MF11D
	680	8×11.5	0.19	0.056	0.19	945	EKZM100E□□681MHB5D
	1,000	8×15	0.19	0.045	0.15	1,250	EKZM100E□□102MH15D
	1,000	10×12.5	0.19	0.039	0.14	1,330	EKZM100E□□102MJC5S
	1,500	8×20	0.19	0.029	0.11	1,500	EKZM100E□□152MH20D
	1,500	10×16	0.19	0.028	0.10	1,760	EKZM100E□□152MJ16S
	1,800	10×20	0.19	0.020	0.060	1,960	EKZM100E□□182MJ20S
	2,200	10×25	0.21	0.018	0.054	2,250	EKZM100E□□222MJ25S
	3,300	12.5×20	0.23	0.017	0.043	2,480	EKZM100E□□332MK20S
	3,900	12.5×25	0.23	0.015	0.038	2,900	EKZM100E□□392MK25S
	4,700	12.5×30	0.25	0.013	0.033	3,450	EKZM100E□□472MK30S
	4,700	16×20	0.25	0.015	0.038	3,250	EKZM100E□□472ML20S
	5,600	12.5×35	0.27	0.012	0.031	3,570	EKZM100E□□562MK35S
	6,800	16×25	0.29	0.013	0.035	3,630	EKZM100E□□682ML25S
	8,200	18×25	0.33	0.012	0.031	3,650	EKZM100E□□822MM25S
16	100	5×11	0.16	0.22	0.80	345	EKZM160E□□101ME11D
	220	6.3×11	0.16	0.094	0.35	540	EKZM160E□□221MF11D
	470	8×11.5	0.16	0.056	0.19	945	EKZM160E□□471MHB5D
	680	8×15	0.16	0.045	0.15	1,250	EKZM160E□□681MH15D
	680	10×12.5	0.16	0.039	0.14	1,330	EKZM160E□□681MJC5S
	1,000	8×20	0.16	0.029	0.11	1,500	EKZM160E□□102MH20D
	1,000	10×16	0.16	0.028	0.10	1,760	EKZM160E□□102MJ16S
	1,500	10×20	0.16	0.020	0.060	1,960	EKZM160E□□152MJ20S
	1,800	10×25	0.16	0.018	0.054	2,250	EKZM160E□□182MJ25S
	2,200	12.5×20	0.18	0.017	0.043	2,480	EKZM160E□□222MK20S
	2,700	12.5×25	0.18	0.015	0.038	2,900	EKZM160E□□272MK25S
	3,300	12.5×30	0.20	0.013	0.033	3,450	EKZM160E□□332MK30S
	3,300	16×20	0.20	0.015	0.038	3,250	EKZM160E□□332ML20S
	3,900	12.5×35	0.20	0.012	0.031	3,570	EKZM160E□□392MK35S
	4,700	16×25	0.22	0.013	0.035	3,630	EKZM160E□□472ML25S
	5,600	18×25	0.24	0.012	0.031	3,650	EKZM160E□□562MM25S

□□ : Enter the appropriate lead forming or taping code.

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KZM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
25	68	5×11	0.14	0.22	0.80	345	EKZM250E□□680ME11D
	150	6.3×11	0.14	0.094	0.35	540	EKZM250E□□151MF11D
	330	8×11.5	0.14	0.056	0.19	945	EKZM250E□□331MHB5D
	390	8×15	0.14	0.045	0.15	1,250	EKZM250E□□391MH15D
	470	10×12.5	0.14	0.039	0.14	1,330	EKZM250E□□471MJC5S
	560	8×20	0.14	0.029	0.11	1,500	EKZM250E□□561MH20D
	680	10×16	0.14	0.028	0.10	1,760	EKZM250E□□681MJ16S
	820	10×20	0.14	0.020	0.060	1,960	EKZM250E□□821MJ20S
	1,000	10×25	0.14	0.018	0.054	2,250	EKZM250E□□102MJ25S
	1,500	12.5×20	0.14	0.017	0.043	2,480	EKZM250E□□152MK20S
	1,800	12.5×25	0.14	0.015	0.038	2,900	EKZM250E□□182MK25S
	2,200	12.5×30	0.16	0.013	0.033	3,450	EKZM250E□□222MK30S
	2,200	16×20	0.16	0.015	0.038	3,250	EKZM250E□□222ML20S
	2,700	12.5×35	0.16	0.012	0.031	3,570	EKZM250E□□272MK35S
	3,300	16×25	0.18	0.013	0.035	3,630	EKZM250E□□332ML25S
	3,900	18×25	0.18	0.012	0.031	3,650	EKZM250E□□392MM25S
35	47	5×11	0.12	0.22	0.80	345	EKZM350E□□470ME11D
	100	6.3×11	0.12	0.094	0.35	540	EKZM350E□□101MF11D
	220	8×11.5	0.12	0.056	0.19	945	EKZM350E□□221MHB5D
	270	8×15	0.12	0.045	0.15	1,250	EKZM350E□□271MH15D
	330	10×12.5	0.12	0.039	0.14	1,330	EKZM350E□□331MJC5S
	390	8×20	0.12	0.029	0.11	1,500	EKZM350E□□391MH20D
	470	10×16	0.12	0.028	0.10	1,760	EKZM350E□□471MJ16S
	560	10×20	0.12	0.020	0.060	1,960	EKZM350E□□561MJ20S
	680	10×25	0.12	0.018	0.054	2,250	EKZM350E□□681MJ25S
	1,000	12.5×20	0.12	0.017	0.043	2,480	EKZM350E□□102MK20S
	1,200	12.5×25	0.12	0.015	0.038	2,900	EKZM350E□□122MK25S
	1,500	12.5×30	0.12	0.013	0.033	3,450	EKZM350E□□152MK30S
	1,500	16×20	0.12	0.015	0.038	3,250	EKZM350E□□152ML20S
	1,800	12.5×35	0.12	0.012	0.031	3,570	EKZM350E□□182MK35S
	2,200	16×25	0.14	0.013	0.035	3,630	EKZM350E□□222ML25S
	2,700	18×25	0.14	0.012	0.031	3,650	EKZM350E□□272MM25S
50	27	5×11	0.10	0.34	1.18	238	EKZM500E□□270ME11D
	56	6.3×11	0.10	0.14	0.50	385	EKZM500E□□560MF11D
	100	8×11.5	0.10	0.074	0.22	724	EKZM500E□□101MHB5D
	120	8×15	0.10	0.061	0.18	950	EKZM500E□□121MH15D
	150	10×12.5	0.10	0.061	0.18	979	EKZM500E□□151MJC5S
	180	8×20	0.10	0.046	0.14	1,190	EKZM500E□□181MH20D
	220	10×16	0.10	0.042	0.12	1,370	EKZM500E□□221MJ16S
	270	10×20	0.10	0.030	0.090	1,580	EKZM500E□□271MJ20S
	330	10×25	0.10	0.028	0.085	1,870	EKZM500E□□331MJ25S
	470	12.5×20	0.10	0.027	0.068	2,050	EKZM500E□□471MK20S
	560	12.5×25	0.10	0.023	0.059	2,410	EKZM500E□□561MK25S
	680	12.5×30	0.10	0.021	0.052	2,860	EKZM500E□□681MK30S
	820	12.5×35	0.10	0.019	0.051	2,960	EKZM500E□□821MK35S
	820	16×20	0.10	0.023	0.059	2,730	EKZM500E□□821ML20S
	1,000	16×25	0.10	0.021	0.056	3,010	EKZM500E□□102ML25S
	1,500	18×25	0.10	0.019	0.051	3,290	EKZM500E□□152MM25S

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZH Series

- Newly innovative electrolyte is employed to minimize impedance
- Endurance with ripple current: 5,000 to 6,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 35V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z (-25℃) / Z (+20℃): 2max. Z (-40℃) / Z (+20℃): 3max. (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage)for the specified period of time at 105℃. Time: φ5 & φ6.3 : 5,000hours φ8 to φ16 : 6,000hours Capacitance change: ≦±25% of the initial value (6.3, 10V_{dc} :≦±30%) D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±25% of the initial value (6.3, 10V_{dc} :≦±30%) D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16
φd	0.5	0.5	0.6	0.6	0.6	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5
φD'	φD+0.5max.					
L'	L+1.5max.					

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZH Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	220	5×11	0.24	0.80	330	EKZH6R3E□□221ME11D
	470	6.3×11	0.11	0.35	500	EKZH6R3E□□471MF11D
	820	8×11.5	0.062	0.19	900	EKZH6R3E□□821MHB5D
	1,200	8×15	0.048	0.15	1,210	EKZH6R3E□□122MH15D
	1,200	10×12.5	0.045	0.14	1,240	EKZH6R3E□□122MJC5S
	1,500	8×20	0.033	0.11	1,410	EKZH6R3E□□152MH20D
	1,800	10×16	0.032	0.10	1,650	EKZH6R3E□□182MJ16S
	2,200	10×20	0.020	0.060	1,960	EKZH6R3E□□222MJ20S
	2,700	10×25	0.018	0.054	2,250	EKZH6R3E□□272MJ25S
	3,900	12.5×20	0.017	0.043	2,480	EKZH6R3E□□392MK20S
	4,700	12.5×25	0.015	0.038	2,900	EKZH6R3E□□472MK25S
	5,600	12.5×30	0.013	0.033	3,450	EKZH6R3E□□562MK30S
	6,800	12.5×35	0.012	0.031	3,570	EKZH6R3E□□682MK35S
	6,800	16×20	0.015	0.038	3,250	EKZH6R3E□□682ML20S
	8,200	16×25	0.013	0.035	3,630	EKZH6R3E□□822ML25S
10	150	5×11	0.24	0.80	330	EKZH100E□□151ME11D
	330	6.3×11	0.11	0.35	500	EKZH100E□□331MF11D
	680	8×11.5	0.062	0.19	900	EKZH100E□□681MHB5D
	1,000	8×15	0.048	0.15	1,210	EKZH100E□□102MH15D
	1,000	10×12.5	0.045	0.14	1,240	EKZH100E□□102MJC5S
	1,500	8×20	0.033	0.11	1,410	EKZH100E□□152MH20D
	1,500	10×16	0.032	0.10	1,650	EKZH100E□□152MJ16S
	1,800	10×20	0.020	0.060	1,960	EKZH100E□□182MJ20S
	2,200	10×25	0.018	0.054	2,250	EKZH100E□□222MJ25S
	3,300	12.5×20	0.017	0.043	2,480	EKZH100E□□332MK20S
	3,900	12.5×25	0.015	0.038	2,900	EKZH100E□□392MK25S
	4,700	12.5×30	0.013	0.033	3,450	EKZH100E□□472MK30S
	4,700	16×20	0.015	0.038	3,250	EKZH100E□□472ML20S
	5,600	12.5×35	0.012	0.031	3,570	EKZH100E□□562MK35S
	6,800	16×25	0.013	0.035	3,630	EKZH100E□□682ML25S
16	100	5×11	0.24	0.80	330	EKZH160E□□101ME11D
	220	6.3×11	0.11	0.35	500	EKZH160E□□221MF11D
	470	8×11.5	0.062	0.19	900	EKZH160E□□471MHB5D
	680	8×15	0.048	0.15	1,210	EKZH160E□□681MH15D
	680	10×12.5	0.045	0.14	1,240	EKZH160E□□681MJC5S
	1,000	8×20	0.033	0.11	1,410	EKZH160E□□102MH20D
	1,000	10×16	0.032	0.10	1,650	EKZH160E□□102MJ16S
	1,500	10×20	0.020	0.060	1,960	EKZH160E□□152MJ20S
16	1,800	10×25	0.018	0.054	2,250	EKZH160E□□182MJ25S
	2,200	12.5×20	0.017	0.043	2,480	EKZH160E□□222MK20S
	2,700	12.5×25	0.015	0.038	2,900	EKZH160E□□272MK25S
	3,300	12.5×30	0.013	0.033	3,450	EKZH160E□□332MK30S
	3,300	16×20	0.015	0.038	3,250	EKZH160E□□332ML20S
	3,900	12.5×35	0.012	0.031	3,570	EKZH160E□□392MK35S
	4,700	16×25	0.013	0.035	3,630	EKZH160E□□472ML25S
25	68	5×11	0.24	0.80	330	EKZH250E□□680ME11D
	150	6.3×11	0.11	0.35	500	EKZH250E□□151MF11D
	330	8×11.5	0.062	0.19	900	EKZH250E□□331MHB5D
	390	8×15	0.048	0.15	1,210	EKZH250E□□391MH15D
	470	10×12.5	0.045	0.14	1,240	EKZH250E□□471MJC5S
	560	8×20	0.033	0.11	1,410	EKZH250E□□561MH20D
	680	10×16	0.032	0.10	1,650	EKZH250E□□681MJ16S
	820	10×20	0.020	0.060	1,960	EKZH250E□□821MJ20S
	1,000	10×25	0.018	0.054	2,250	EKZH250E□□102MJ25S
	1,500	12.5×20	0.017	0.043	2,480	EKZH250E□□152MK20S
	1,800	12.5×25	0.015	0.038	2,900	EKZH250E□□182MK25S
	2,200	12.5×30	0.013	0.033	3,450	EKZH250E□□222MK30S
	2,200	16×20	0.015	0.038	3,250	EKZH250E□□222ML20S
	2,700	12.5×35	0.012	0.031	3,570	EKZH250E□□272MK35S
	3,300	16×25	0.013	0.035	3,630	EKZH250E□□332ML25S
35	47	5×11	0.24	0.80	330	EKZH350E□□470ME11D
	100	6.3×11	0.11	0.35	500	EKZH350E□□101MF11D
	220	8×11.5	0.062	0.19	900	EKZH350E□□221MHB5D
	270	8×15	0.048	0.15	1,210	EKZH350E□□271MH15D
	330	10×12.5	0.045	0.14	1,240	EKZH350E□□331MJC5S
	390	8×20	0.033	0.11	1,410	EKZH350E□□391MH20D
	470	10×16	0.032	0.10	1,650	EKZH350E□□471MJ16S
	560	10×20	0.020	0.060	1,960	EKZH350E□□561MJ20S
	680	10×25	0.018	0.054	2,250	EKZH350E□□681MJ25S
	1,000	12.5×20	0.017	0.043	2,480	EKZH350E□□102MK20S
	1,200	12.5×25	0.015	0.038	2,900	EKZH350E□□122MK25S
	1,500	12.5×30	0.013	0.033	3,450	EKZH350E□□152MK30S
	1,500	16×20	0.015	0.038	3,250	EKZH350E□□152ML20S
	1,800	12.5×35	0.012	0.031	3,570	EKZH350E□□182MK35S
	2,200	16×25	0.013	0.035	3,630	EKZH350E□□222ML25S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
0.47 to 150	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 8,200	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZE Series

- Newly innovative electrolyte is employed to minimize impedance
- Endurance with ripple current: 1,000 to 5,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 100V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 80V, 100V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12, 0.10, 0.09, 0.09, 0.08 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z (-25℃) / Z (+20℃): 2max. Z (-40℃) / Z (+20℃): 3max. (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃. Time: 7L : 1,000hours φ5 & φ6.3 : 2,000hours φ8 : 3,000hours φ10 : 4,000hours φ12.5 to φ18 : 5,000hours Capacitance change: ≦±25% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±25% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD		5	6.3	8	10, 12.5	16, 18
φd	7L	0.45	0.45	—	—	—
	11L~	0.5	0.5	0.6	0.6	0.8
F		2.0	2.5	3.5	5.0	7.5
φD'		φD+0.5max.				
L'		L+1.5max.(7L : L+1.0max.)				

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZE Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	68	5×7	0.43	1.3	210	EKZE6R3E□□680ME07D
	150	5×11	0.30	1.0	250	EKZE6R3E□□151ME11D
	150	6.3×7	0.23	0.69	300	EKZE6R3E□□151MF07D
	330	6.3×11	0.13	0.41	405	EKZE6R3E□□331MF11D
	560	8×11.5	0.072	0.22	760	EKZE6R3E□□561MHB5D
	820	8×15	0.056	0.17	995	EKZE6R3E□□821MH15D
	1,000	10×12.5	0.053	0.16	1,030	EKZE6R3E□□102MJC5S
	1,200	8×20	0.041	0.13	1,250	EKZE6R3E□□122MH20D
	1,200	10×16	0.038	0.12	1,430	EKZE6R3E□□122MJ16S
	1,500	10×20	0.023	0.069	1,820	EKZE6R3E□□152MJ20S
	2,200	10×25	0.022	0.066	2,150	EKZE6R3E□□222MJ25S
	3,300	12.5×20	0.021	0.053	2,360	EKZE6R3E□□332MK20S
	3,900	12.5×25	0.018	0.045	2,770	EKZE6R3E□□392MK25S
	4,700	12.5×30	0.016	0.041	3,290	EKZE6R3E□□472MK30S
	5,600	12.5×35	0.015	0.039	3,400	EKZE6R3E□□562MK35S
	5,600	16×20	0.018	0.045	3,140	EKZE6R3E□□562ML20S
	6,800	16×25	0.016	0.043	3,460	EKZE6R3E□□682ML25S
10	56	5×7	0.44	1.4	210	EKZE100E□□560ME07D
	100	5×11	0.30	1.0	250	EKZE100E□□101ME11D
	120	6.3×7	0.23	0.69	300	EKZE100E□□121MF07D
	220	6.3×11	0.13	0.41	405	EKZE100E□□221MF11D
	470	8×11.5	0.072	0.22	760	EKZE100E□□471MHB5D
	680	8×15	0.056	0.17	995	EKZE100E□□681MH15D
	680	10×12.5	0.053	0.16	1,030	EKZE100E□□681MJC5S
	1,000	8×20	0.041	0.13	1,250	EKZE100E□□102MH20D
	1,000	10×16	0.038	0.12	1,430	EKZE100E□□102MJ16S
	1,200	10×20	0.023	0.069	1,820	EKZE100E□□122MJ20S
	1,500	10×25	0.022	0.066	2,150	EKZE100E□□152MJ25S
	2,200	12.5×20	0.021	0.053	2,360	EKZE100E□□222MK20S
	3,300	12.5×25	0.018	0.045	2,770	EKZE100E□□332MK25S
	3,900	12.5×30	0.016	0.041	3,290	EKZE100E□□392MK30S
	3,900	16×20	0.018	0.045	3,140	EKZE100E□□392ML20S
	4,700	12.5×35	0.015	0.039	3,400	EKZE100E□□472MK35S
	5,600	16×25	0.016	0.043	3,460	EKZE100E□□562ML25S
16	33	5×7	0.45	1.4	210	EKZE160E□□330ME07D
	56	5×11	0.30	1.0	250	EKZE160E□□560ME11D
	68	6.3×7	0.24	0.72	300	EKZE160E□□680MF07D
	120	6.3×11	0.13	0.41	405	EKZE160E□□121MF11D
	330	8×11.5	0.072	0.22	760	EKZE160E□□331MHB5D
	470	8×15	0.056	0.17	995	EKZE160E□□471MH15D
	470	10×12.5	0.053	0.16	1,030	EKZE160E□□471MJC5S
	680	8×20	0.041	0.13	1,250	EKZE160E□□681MH20D
	680	10×16	0.038	0.12	1,430	EKZE160E□□681MJ16S
	1,000	10×20	0.023	0.069	1,820	EKZE160E□□102MJ20S
	1,200	10×25	0.022	0.066	2,150	EKZE160E□□122MJ25S
	1,500	12.5×20	0.021	0.053	2,360	EKZE160E□□152MK20S
	2,200	12.5×25	0.018	0.045	2,770	EKZE160E□□222MK25S
	2,700	12.5×30	0.016	0.041	3,290	EKZE160E□□272MK30S
	2,700	16×20	0.018	0.045	3,140	EKZE160E□□272ML20S
	3,300	12.5×35	0.015	0.039	3,400	EKZE160E□□332MK35S
	3,900	16×25	0.016	0.043	3,460	EKZE160E□□392ML25S
25	27	5×7	0.46	1.4	210	EKZE250E□□270ME07D
	47	5×11	0.30	1.0	250	EKZE250E□□470ME11D
	56	6.3×7	0.24	0.72	300	EKZE250E□□560MF07D
	100	6.3×11	0.13	0.41	405	EKZE250E□□101MF11D
	220	8×11.5	0.072	0.22	760	EKZE250E□□221MHB5D
	330	8×15	0.056	0.17	995	EKZE250E□□331MH15D
	330	10×12.5	0.053	0.16	1,030	EKZE250E□□331MJC5S
	470	8×20	0.041	0.13	1,250	EKZE250E□□471MH20D
	470	10×16	0.038	0.12	1,430	EKZE250E□□471MJ16S
	680	10×20	0.023	0.069	1,820	EKZE250E□□681MJ20S
	820	10×25	0.022	0.066	2,150	EKZE250E□□821MJ25S
	1,000	12.5×20	0.021	0.053	2,360	EKZE250E□□102MK20S
	1,500	12.5×25	0.018	0.045	2,770	EKZE250E□□152MK25S
	1,800	12.5×30	0.016	0.041	3,290	EKZE250E□□182MK30S
25	1,800	16×20	0.018	0.045	3,140	EKZE250E□□182ML20S
	2,200	12.5×35	0.015	0.039	3,400	EKZE250E□□222MK35S
	2,700	16×25	0.016	0.043	3,460	EKZE250E□□272ML25S
35	18	5×7	0.47	1.5	210	EKZE350E□□180ME07D
	33	5×11	0.30	1.0	250	EKZE350E□□330ME11D
	39	6.3×7	0.25	0.75	300	EKZE350E□□390MF07D
	56	6.3×11	0.13	0.41	405	EKZE350E□□560MF11D
	150	8×11.5	0.072	0.22	760	EKZE350E□□151MHB5D
	220	8×15	0.056	0.17	995	EKZE350E□□221MH15D
	220	10×12.5	0.053	0.16	1,030	EKZE350E□□221MJC5S
	270	8×20	0.041	0.13	1,250	EKZE350E□□271MH20D
	330	10×16	0.038	0.12	1,430	EKZE350E□□331MJ16S
	470	10×20	0.023	0.069	1,820	EKZE350E□□471MJ20S
	560	10×25	0.022	0.066	2,150	EKZE350E□□561MJ25S
	680	12.5×20	0.021	0.053	2,360	EKZE350E□□681MK20S
	1,000	12.5×25	0.018	0.045	2,770	EKZE350E□□102MK25S
	1,200	12.5×30	0.016	0.041	3,290	EKZE350E□□122MK30S
	1,200	16×20	0.018	0.045	3,140	EKZE350E□□122ML20S
	1,500	12.5×35	0.015	0.039	3,400	EKZE350E□□152MK35S
	1,800	16×25	0.016	0.043	3,460	EKZE350E□□182ML25S
50	10	5×7	0.50	1.5	210	EKZE500E□□100ME07D
	22	5×11	0.34	1.18	238	EKZE500E□□220ME11D
	22	6.3×7	0.26	0.78	300	EKZE500E□□220MF07D
	56	6.3×11	0.14	0.50	385	EKZE500E□□560MF11D
	100	8×11.5	0.074	0.22	724	EKZE500E□□101MHB5D
	120	8×15	0.061	0.18	950	EKZE500E□□121MH15D
	150	10×12.5	0.061	0.18	979	EKZE500E□□151MJC5S
	180	8×20	0.046	0.14	1,190	EKZE500E□□181MH20D
	220	10×16	0.042	0.12	1,370	EKZE500E□□221MJ16S
	270	10×20	0.030	0.090	1,580	EKZE500E□□271MJ20S
	330	10×25	0.028	0.085	1,870	EKZE500E□□331MJ25S
	470	12.5×20	0.027	0.068	2,050	EKZE500E□□471MK20S
	560	12.5×25	0.023	0.059	2,410	EKZE500E□□561MK25S
	680	12.5×30	0.021	0.052	2,860	EKZE500E□□681MK30S
	820	12.5×35	0.019	0.051	2,960	EKZE500E□□821MK35S
	820	16×20	0.023	0.059	2,730	EKZE500E□□821ML20S
	1,000	16×25	0.021	0.056	3,010	EKZE500E□□102ML25S
63	15	5×11	0.88	3.5	165	EKZE630E□□150ME11D
	33	6.3×11	0.35	1.4	265	EKZE630E□□330MF11D
	56	8×11.5	0.22	0.88	500	EKZE630E□□560MHB5D
	82	8×15	0.16	0.64	665	EKZE630E□□820MH15D
	82	10×12.5	0.11	0.44	690	EKZE630E□□820MJC5S
	120	8×20	0.12	0.48	820	EKZE630E□□121MH20D
	120	10×16	0.076	0.31	950	EKZE630E□□121MJ16S
	180	10×20	0.056	0.23	1,150	EKZE630E□□181MJ20S
	180	12.5×16	0.072	0.29	1,150	EKZE630E□□181MK16S
	220	10×25	0.046	0.19	1,350	EKZE630E□□221MJ25S
	270	12.5×20	0.041	0.13	1,500	EKZE630E□□271MK20S
	390	12.5×25	0.031	0.093	1,900	EKZE630E□□391MK25S
	470	12.5×30	0.028	0.084	2,300	EKZE630E□□471MK30S
	470	16×20	0.032	0.096	2,000	EKZE630E□□471ML20S
	560	12.5×35	0.024	0.072	2,500	EKZE630E□□561MK35S
	680	12.5×40	0.021	0.063	2,800	EKZE630E□□681MK40S
	680	16×25	0.025	0.075	2,600	EKZE630E□□681ML25S
	680	18×20	0.030	0.090	2,500	EKZE630E□□681MM20S
	820	16×31.5	0.021	0.063	2,850	EKZE630E□□821MLN3S
	820	18×25	0.024	0.072	2,800	EKZE630E□□821MM25S
	1,000	16×35.5	0.019	0.057	2,900	EKZE630E□□102MLP1S
	1,200	16×40	0.018	0.054	3,400	EKZE630E□□122ML40S
	1,200	18×31.5	0.020	0.060	3,300	EKZE630E□□122MMN3S
	1,500	18×35.5	0.018	0.054	3,400	EKZE630E□□152MMP1S
	1,800	18×40	0.017	0.051	3,500	EKZE630E□□182MM40S
80	68	10×12.5	0.17	0.66	480	EKZE800E□□680MJC5S
	100	10×16	0.11	0.47	600	EKZE800E□□101MJ16S
	120	10×20	0.084	0.34	800	EKZE800E□□121MJ20S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KZE Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
80	150	10×25	0.069	0.28	900	EKZE800E□□151MJ25S
	150	12.5×16	0.11	0.34	750	EKZE800E□□151MK16S
	220	12.5×20	0.062	0.18	1,100	EKZE800E□□221MK20S
	330	12.5×25	0.047	0.14	1,250	EKZE800E□□331MK25S
	330	16×20	0.048	0.15	1,350	EKZE800E□□331ML20S
	390	12.5×30	0.042	0.13	1,500	EKZE800E□□391MK30S
	470	12.5×35	0.036	0.11	1,650	EKZE800E□□471MK35S
	470	16×25	0.038	0.12	1,700	EKZE800E□□471ML25S
	470	18×20	0.045	0.14	1,500	EKZE800E□□471MM20S
	560	12.5×40	0.032	0.095	1,800	EKZE800E□□561MK40S
	680	16×31.5	0.032	0.095	1,850	EKZE800E□□681MLN3S
	680	18×25	0.036	0.11	1,750	EKZE800E□□681MM25S
	820	16×35.5	0.029	0.086	2,000	EKZE800E□□821MLP1S
	820	18×31.5	0.030	0.090	1,900	EKZE800E□□821MMN3S
	1,000	16×40	0.027	0.081	2,200	EKZE800E□□102ML40S
	1,000	18×35.5	0.027	0.081	2,200	EKZE800E□□102MMP1S
	1,200	18×40	0.026	0.077	2,700	EKZE800E□□122MM40S
100	6.8	5×11	1.4	5.6	125	EKZE101E□□6R8ME11D
	15	6.3×11	0.57	2.3	205	EKZE101E□□150MF11D
	27	8×11.5	0.36	1.4	355	EKZE101E□□270MHB5D
	39	8×15	0.25	1.0	450	EKZE101E□□390MH15D

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
100	47	10×12.5	0.17	0.66	480	EKZE101E□□470MJC5S
	56	8×20	0.19	0.76	565	EKZE101E□□560MH20D
	68	10×16	0.11	0.47	600	EKZE101E□□680MJ16S
	82	10×20	0.084	0.34	800	EKZE101E□□820MJ20S
	100	12.5×16	0.11	0.34	750	EKZE101E□□101MK16S
	120	10×25	0.069	0.28	900	EKZE101E□□121MJ25S
	150	12.5×20	0.062	0.18	1,100	EKZE101E□□151MK20S
	220	12.5×25	0.047	0.14	1,250	EKZE101E□□221MK25S
	220	16×20	0.048	0.15	1,350	EKZE101E□□221ML20S
	270	12.5×30	0.042	0.13	1,500	EKZE101E□□271MK30S
	330	12.5×35	0.036	0.11	1,650	EKZE101E□□331MK35S
	330	16×25	0.038	0.12	1,700	EKZE101E□□331ML25S
	330	18×20	0.045	0.14	1,500	EKZE101E□□331MM20S
	390	12.5×40	0.032	0.095	1,800	EKZE101E□□391MK40S
	470	16×31.5	0.032	0.095	1,850	EKZE101E□□471MLN3S
	470	18×25	0.036	0.11	1,750	EKZE101E□□471MM25S
	560	16×35.5	0.029	0.086	2,000	EKZE101E□□561MLP1S
	560	18×31.5	0.030	0.090	1,900	EKZE101E□□561MMN3S
	680	16×40	0.027	0.081	2,200	EKZE101E□□681ML40S
	680	18×35.5	0.027	0.081	2,200	EKZE101E□□681MMP1S
	820	18×40	0.026	0.077	2,700	EKZE101E□□821MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

7L

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 33	0.42	0.70	0.90	1.00
39 to 150	0.50	0.73	0.92	1.00

11L to 40L

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
6.8 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR, 105℃

KYC Series New!

- New highly reliable electrolyte is employed to minimize ESR and maximize ripple current.
- For motercycle ACG starter.
- Endurance with ripple current : 3,000 to 5,000 hours at 105℃
- Rated voltage range : 16 to 50V, Capacitance range : 180 to 12,000μF
- Non solvent resistant type
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics					
Category Temperature Range	-40 to +105℃					
Rated Voltage Range	16 to 50V_{dc}					
Capacitance Tolerance	±20% (M)					(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)					(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	16V	25V	35V	50V	
	tan δ (Max.)	0.16	0.14	0.12	0.10	
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.					(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(V_{dc})	16V	25V	35V	50V	
	Z (-25℃) / Z (+20℃)	3	2	2	2	
	Z (-40℃) / Z (+20℃)	8	5	4	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours (3,000 hours for φ10) at 105℃.					
	Capacitance change	≦±25% of the initial value				
	D.F. (tan δ)	≦200% of the initial specified value				
	Leakage current	≦The initial specified value				
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.					
	Capacitance change	≦±25% of the initial value				
	D.F. (tan δ)	≦200% of the initial specified value				
	Leakage current	≦The initial specified value				

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	16	18
φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

KYC series is the product, based on AEC-Q200 standard, for specific applications or market such as compact mobility. Please contact us when selecting KYC series for the important applications related to automotive or its safety.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low ESR 105℃

KYC New! Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	ESR (Ω max./ 20℃, 100kHz)	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
16	910	10×12.5	0.14	1,120	EKYC160E□□911MJC5S
	1,300	10×16	0.10	1,570	EKYC160E□□132MJ16S
	2,000	10×20	0.065	1,940	EKYC160E□□202MJ20S
	3,300	12.5×20	0.050	2,150	EKYC160E□□332MK20S
	4,700	12.5×25	0.037	2,820	EKYC160E□□472MK25S
	5,600	12.5×30	0.029	3,120	EKYC160E□□562MK30S
	5,600	16×20	0.038	2,530	EKYC160E□□562ML20S
	6,800	18×20	0.037	2,700	EKYC160E□□682MM20S
	7,500	16×25	0.031	3,240	EKYC160E□□752ML25S
	9,100	16×30	0.025	3,580	EKYC160E□□912ML30S
	10,000	18×25	0.030	3,350	EKYC160E□□103MM25S
	12,000	18×30	0.024	3,710	EKYC160E□□123MM30S
25	560	10×12.5	0.14	1,120	EKYC250E□□561MJC5S
	820	10×16	0.10	1,570	EKYC250E□□821MJ16S
	1,300	10×20	0.065	1,940	EKYC250E□□132MJ20S
	2,000	12.5×20	0.050	2,150	EKYC250E□□202MK20S
	3,000	12.5×25	0.037	2,820	EKYC250E□□302MK25S
	3,600	16×20	0.038	2,530	EKYC250E□□362ML20S
	3,900	12.5×30	0.029	3,120	EKYC250E□□392MK30S
	4,700	18×20	0.037	2,700	EKYC250E□□472MM20S
	5,100	16×25	0.031	3,240	EKYC250E□□512ML25S
	6,200	16×30	0.025	3,580	EKYC250E□□622ML30S
	6,200	18×25	0.030	3,350	EKYC250E□□622MM25S
	8,200	18×30	0.024	3,710	EKYC250E□□822MM30S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	ESR (Ω max./ 20℃, 100kHz)	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
35	390	10×12.5	0.14	1,120	EKYC350E□□391MJC5S
	560	10×16	0.10	1,570	EKYC350E□□561MJ16S
	820	10×20	0.065	1,940	EKYC350E□□821MJ20S
	1,300	12.5×20	0.050	2,150	EKYC350E□□132MK20S
	1,800	12.5×25	0.037	2,820	EKYC350E□□182MK25S
	2,200	16×20	0.038	2,530	EKYC350E□□222ML20S
	2,400	12.5×30	0.029	3,120	EKYC350E□□242MK30S
	3,000	18×20	0.037	2,700	EKYC350E□□302MM20S
	3,300	16×25	0.031	3,240	EKYC350E□□332ML25S
	3,900	16×30	0.025	3,580	EKYC350E□□392ML30S
	4,300	18×25	0.030	3,350	EKYC350E□□432MM25S
	5,100	18×30	0.024	3,710	EKYC350E□□512MM30S
50	180	10×12.5	0.14	1,120	EKYC500E□□181MJC5S
	300	10×16	0.10	1,570	EKYC500E□□301MJ16S
	430	10×20	0.065	1,940	EKYC500E□□431MJ20S
	680	12.5×20	0.050	2,150	EKYC500E□□681MK20S
	910	12.5×25	0.037	2,820	EKYC500E□□911MK25S
	1,200	16×20	0.038	2,530	EKYC500E□□122ML20S
	1,300	12.5×30	0.029	3,120	EKYC500E□□132MK30S
	1,500	18×20	0.037	2,700	EKYC500E□□152MM20S
	1,600	16×25	0.031	3,240	EKYC500E□□162ML25S
	2,000	16×30	0.025	3,580	EKYC500E□□202ML30S
	2,200	18×25	0.030	3,350	EKYC500E□□222MM25S
	2,700	18×30	0.024	3,710	EKYC500E□□272MM30S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
180	0.40	0.82	0.93	1.00
300 to 560	0.50	0.85	0.94	1.00
680 to 2,000	0.60	0.87	0.95	1.00
2,200 to 4,300	0.75	0.90	0.95	1.00
4,700 to 12,000	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KYB Series

- Low impedance, high ripple and long life from KYA series
- Newly innovative electrolyte is employed to minimize impedance
- Endurance with ripple current : 4,000 to 10,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics										
Category Temperature Range	-40 to +105℃										
Rated Voltage Range	6.3 to 100Vdc										
Capacitance Tolerance	±20% (M)										(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)										(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08	
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.										(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	2	2	2	
	Z(-40℃)/Z(+20℃)	8	6	4	3	3	3	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃.										
	Rated Voltage(Vdc)	6.3 to 10Vdc						16 to 100Vdc			
	Time	φ5: 4,000hours φ6.3 & 8: 6,000hours φ10 to 18: 8,000hours						φ5: 5,000hours φ6.3 & 8: 7,000hours φ10 to 18: 10,000hours			
	Capacitance change	≦±30% of the initial value						≦±25% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value						≦200% of the initial specified value			
	Leakage current	≦The initial specified value						≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.										
	Capacitance change	≦±25% of the initial value									
	D.F. (tan δ)	≦200% of the initial specified value									
	Leakage current	≦The initial specified value									

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KYB Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	180	5×11	0.29	1.2	340	EKYB6R3E□□181ME11D
	390	6.3×11	0.15	0.60	540	EKYB6R3E□□391MF11D
	820	8×11.5	0.087	0.35	840	EKYB6R3E□□821MHB5D
	1,200	8×15	0.069	0.28	1,050	EKYB6R3E□□122MH15D
	1,200	10×12.5	0.064	0.26	1,050	EKYB6R3E□□122MJC5S
	1,500	8×20	0.060	0.24	1,210	EKYB6R3E□□152MH20D
	1,800	10×16	0.049	0.20	1,400	EKYB6R3E□□182MJ16S
	2,200	10×20	0.037	0.15	1,650	EKYB6R3E□□222MJ20S
	2,700	10×25	0.031	0.13	1,910	EKYB6R3E□□272MJ25S
	3,300	10×30	0.027	0.11	2,230	EKYB6R3E□□332MJ30S
	3,900	12.5×20	0.027	0.11	2,230	EKYB6R3E□□392MK20S
	4,700	12.5×25	0.024	0.096	2,530	EKYB6R3E□□472MK25S
	6,800	12.5×30	0.021	0.084	2,860	EKYB6R3E□□682MK30S
	6,800	16×20	0.025	0.10	2,610	EKYB6R3E□□682ML20S
	8,200	12.5×35	0.018	0.072	3,140	EKYB6R3E□□822MK35S
	8,200	18×20	0.021	0.084	3,000	EKYB6R3E□□822MM20S
	10,000	12.5×40	0.017	0.068	3,640	EKYB6R3E□□103MK40S
	10,000	16×25	0.020	0.080	3,140	EKYB6R3E□□103ML25S
	12,000	16×31.5	0.016	0.064	3,610	EKYB6R3E□□123MLN3S
	12,000	18×25	0.017	0.068	3,530	EKYB6R3E□□123MM25S
	15,000	16×35.5	0.014	0.056	4,080	EKYB6R3E□□153MLP1S
	15,000	18×31.5	0.014	0.056	4,220	EKYB6R3E□□153MMN3S
	18,000	16×40	0.013	0.052	4,220	EKYB6R3E□□183ML40S
	18,000	18×35.5	0.012	0.048	4,280	EKYB6R3E□□183MMP1S
	22,000	18×40	0.011	0.044	4,700	EKYB6R3E□□223MM40S
10	120	5×11	0.29	1.2	340	EKYB100E□□121ME11D
	330	6.3×11	0.15	0.60	540	EKYB100E□□331MF11D
	560	8×11.5	0.087	0.35	840	EKYB100E□□561MHB5D
	820	8×15	0.069	0.28	1,050	EKYB100E□□821MH15D
	1,000	8×20	0.060	0.24	1,210	EKYB100E□□102MH20D
	1,000	10×12.5	0.064	0.26	1,050	EKYB100E□□102MJC5S
	1,200	10×16	0.049	0.20	1,400	EKYB100E□□122MJ16S
	1,800	10×20	0.037	0.15	1,650	EKYB100E□□182MJ20S
	2,200	10×25	0.031	0.13	1,910	EKYB100E□□222MJ25S
	2,700	10×30	0.027	0.11	2,230	EKYB100E□□272MJ30S
	2,700	12.5×20	0.027	0.11	2,230	EKYB100E□□272MK20S
	3,900	12.5×25	0.024	0.096	2,530	EKYB100E□□392MK25S
	4,700	12.5×30	0.021	0.084	2,860	EKYB100E□□472MK30S
	4,700	16×20	0.025	0.10	2,610	EKYB100E□□472ML20S
	5,600	12.5×35	0.018	0.072	3,140	EKYB100E□□562MK35S
	6,800	12.5×40	0.017	0.068	3,640	EKYB100E□□682MK40S
	6,800	16×25	0.020	0.080	3,140	EKYB100E□□682ML25S
	6,800	18×20	0.021	0.084	3,000	EKYB100E□□682MM20S
	8,200	16×31.5	0.016	0.064	3,610	EKYB100E□□822MLN3S
	8,200	18×25	0.017	0.068	3,530	EKYB100E□□822MM25S
	10,000	16×35.5	0.014	0.056	4,080	EKYB100E□□103MLP1S
	10,000	18×31.5	0.014	0.056	4,220	EKYB100E□□103MMN3S
	12,000	16×40	0.013	0.052	4,220	EKYB100E□□123ML40S
	12,000	18×35.5	0.012	0.048	4,280	EKYB100E□□123MMP1S
	15,000	18×40	0.011	0.044	4,700	EKYB100E□□153MM40S
16	120	5×11	0.29	1.2	340	EKYB160E□□121ME11D
	270	6.3×11	0.15	0.60	540	EKYB160E□□271MF11D
	470	8×11.5	0.087	0.35	840	EKYB160E□□471MHB5D
	680	8×15	0.069	0.28	1,050	EKYB160E□□681MH15D
	680	10×12.5	0.064	0.26	1,050	EKYB160E□□681MJC5S
	820	8×20	0.060	0.24	1,210	EKYB160E□□821MH20D
	1,000	10×16	0.049	0.20	1,400	EKYB160E□□102MJ16S
	1,500	10×20	0.037	0.15	1,650	EKYB160E□□152MJ20S
	1,800	10×25	0.031	0.13	1,910	EKYB160E□□182MJ25S
	2,200	10×30	0.027	0.11	2,230	EKYB160E□□222MJ30S
	2,200	12.5×20	0.027	0.11	2,230	EKYB160E□□222MK20S
	3,300	12.5×25	0.024	0.096	2,530	EKYB160E□□332MK25S
	3,900	12.5×30	0.021	0.084	2,860	EKYB160E□□392MK30S
	3,900	16×20	0.025	0.10	2,610	EKYB160E□□392ML20S
16	4,700	12.5×35	0.018	0.072	3,140	EKYB160E□□472MK35S
	4,700	18×20	0.021	0.084	3,000	EKYB160E□□472MM20S
	5,600	12.5×40	0.017	0.068	3,640	EKYB160E□□562MK40S
	5,600	16×25	0.020	0.080	3,140	EKYB160E□□562ML25S
	6,800	16×31.5	0.016	0.064	3,610	EKYB160E□□682MLN3S
	6,800	18×25	0.017	0.068	3,530	EKYB160E□□682MM25S
	8,200	16×35.5	0.014	0.056	4,080	EKYB160E□□822MLP1S
	8,200	18×31.5	0.014	0.056	4,220	EKYB160E□□822MMN3S
	10,000	16×40	0.013	0.052	4,220	EKYB160E□□103ML40S
	10,000	18×35.5	0.012	0.048	4,280	EKYB160E□□103MMP1S
	12,000	18×40	0.011	0.044	4,700	EKYB160E□□123MM40S
25	82	5×11	0.29	1.2	340	EKYB250E□□820ME11D
	150	6.3×11	0.15	0.60	540	EKYB250E□□151MF11D
	330	8×11.5	0.087	0.35	840	EKYB250E□□331MHB5D
	390	8×15	0.069	0.28	1,050	EKYB250E□□391MH15D
	470	10×12.5	0.064	0.26	1,050	EKYB250E□□471MJC5S
	560	8×20	0.060	0.24	1,210	EKYB250E□□561MH20D
	680	10×16	0.049	0.20	1,400	EKYB250E□□681MJ16S
	1,000	10×20	0.037	0.15	1,650	EKYB250E□□102MJ20S
	1,200	10×25	0.031	0.13	1,910	EKYB250E□□122MJ25S
	1,500	10×30	0.027	0.11	2,230	EKYB250E□□152MJ30S
	1,500	12.5×20	0.027	0.11	2,230	EKYB250E□□152MK20S
	2,200	12.5×25	0.024	0.096	2,530	EKYB250E□□222MK25S
	2,700	12.5×30	0.021	0.084	2,860	EKYB250E□□272MK30S
	2,700	16×20	0.025	0.10	2,610	EKYB250E□□272ML20S
	3,300	12.5×35	0.018	0.072	3,140	EKYB250E□□332MK35S
	3,300	18×20	0.021	0.084	3,000	EKYB250E□□332MM20S
	3,900	12.5×40	0.017	0.068	3,640	EKYB250E□□392MK40S
	3,900	16×25	0.020	0.080	3,140	EKYB250E□□392ML25S
	4,700	16×31.5	0.016	0.064	3,610	EKYB250E□□472MLN3S
	4,700	18×25	0.017	0.068	3,530	EKYB250E□□472MM25S
	5,600	16×35.5	0.014	0.056	4,080	EKYB250E□□562MLP1S
	6,800	16×40	0.013	0.052	4,220	EKYB250E□□682ML40S
	6,800	18×31.5	0.014	0.056	4,220	EKYB250E□□682MMN3S
	8,200	18×35.5	0.012	0.048	4,280	EKYB250E□□822MMP1S
35	47	5×11	0.29	1.2	340	EKYB350E□□470ME11D
	100	6.3×11	0.15	0.60	540	EKYB350E□□101MF11D
	180	8×11.5	0.087	0.35	840	EKYB350E□□181MHB5D
	270	8×15	0.069	0.28	1,050	EKYB350E□□271MH15D
	330	8×20	0.060	0.24	1,210	EKYB350E□□331MH20D
	330	10×12.5	0.064	0.26	1,050	EKYB350E□□331MJC5S
	470	10×16	0.049	0.20	1,400	EKYB350E□□471MJ16S
	680	10×20	0.037	0.15	1,650	EKYB350E□□681MJ20S
	820	10×25	0.031	0.13	1,910	EKYB350E□□821MJ25S
	1,000	10×30	0.027	0.11	2,230	EKYB350E□□102MJ30S
	1,000	12.5×20	0.027	0.11	2,230	EKYB350E□□102MK20S
	1,500	12.5×25	0.024	0.096	2,530	EKYB350E□□152MK25S
	1,800	12.5×30	0.021	0.084	2,860	EKYB350E□□182MK30S
	1,800	16×20	0.025	0.10	2,610	EKYB350E□□182ML20S
	2,200	12.5×35	0.018	0.072	3,140	EKYB350E□□222MK35S
	2,200	18×20	0.021	0.084	3,000	EKYB350E□□222MM20S
	2,700	12.5×40	0.017	0.068	3,640	EKYB350E□□272MK40S
	2,700	16×25	0.020	0.080	3,140	EKYB350E□□272ML25S
	3,300	16×31.5	0.016	0.064	3,610	EKYB350E□□332MLN3S
	3,300	18×25	0.017	0.068	3,530	EKYB350E□□332MM25S
	3,900	16×35.5	0.014	0.056	4,080	EKYB350E□□392MLP1S
	4,700	16×40	0.013	0.052	4,220	EKYB350E□□472ML40S
	4,700	18×31.5	0.014	0.056	4,220	EKYB350E□□472MMN3S
	5,600	18×35.5	0.012	0.048	4,280	EKYB350E□□562MMP1S
50	27	5×11	0.48	2.0	238	EKYB500E□□270ME11D
	56	6.3×11	0.20	0.80	385	EKYB500E□□560MF11D
	100	8×11.5	0.12	0.48	620	EKYB500E□□101MHB5D
	150	8×15	0.093	0.38	810	EKYB500E□□151MH15D
	150	10×12.5	0.10	0.40	810	EKYB500E□□151MJC5S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KYB Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
50	180	8×20	0.075	0.30	980	EKYB500E□□181MH20D
	220	10×16	0.069	0.28	1,100	EKYB500E□□221MJ16S
	270	10×20	0.055	0.22	1,300	EKYB500E□□271MJ20S
	390	10×25	0.043	0.18	1,600	EKYB500E□□391MJ25S
	470	10×30	0.038	0.16	1,820	EKYB500E□□471MJ30S
	470	12.5×20	0.034	0.14	1,820	EKYB500E□□471MK20S
	680	12.5×25	0.030	0.12	2,100	EKYB500E□□681MK25S
	820	12.5×30	0.025	0.10	2,450	EKYB500E□□821MK30S
	820	16×20	0.028	0.12	2,350	EKYB500E□□821ML20S
	1,000	12.5×35	0.021	0.084	2,800	EKYB500E□□102MK35S
	1,000	18×20	0.025	0.10	2,600	EKYB500E□□102MM20S
	1,200	12.5×40	0.019	0.076	3,100	EKYB500E□□122MK40S
	1,200	16×25	0.024	0.096	2,750	EKYB500E□□122ML25S
	1,500	16×31.5	0.019	0.076	3,150	EKYB500E□□152MLN3S
	1,500	18×25	0.021	0.084	2,890	EKYB500E□□152MM25S
	1,800	16×35.5	0.016	0.064	3,550	EKYB500E□□182MLP1S
	2,200	16×40	0.014	0.056	3,900	EKYB500E□□222ML40S
	2,200	18×31.5	0.014	0.056	3,800	EKYB500E□□222MMN3S
	2,700	18×35.5	0.013	0.052	4,100	EKYB500E□□272MMP1S
63	18	5×11	0.50	2.0	220	EKYB630E□□180ME11D
	33	6.3×11	0.25	1.0	350	EKYB630E□□330MF11D
	56	8×11.5	0.16	0.64	530	EKYB630E□□560MHB5D
	82	8×15	0.12	0.48	700	EKYB630E□□820MH15D
	120	8×20	0.085	0.34	880	EKYB630E□□121MH20D
	120	10×12.5	0.11	0.44	725	EKYB630E□□121MJC5S
	180	10×16	0.073	0.30	1,050	EKYB630E□□181MJ16S
	220	10×20	0.055	0.22	1,300	EKYB630E□□221MJ20S
	330	10×25	0.045	0.18	1,550	EKYB630E□□331MJ25S
	390	10×30	0.040	0.16	1,780	EKYB630E□□391MJ30S
	390	12.5×20	0.036	0.15	1,780	EKYB630E□□391MK20S
	560	12.5×25	0.030	0.12	2,100	EKYB630E□□561MK25S
	680	12.5×30	0.026	0.11	2,415	EKYB630E□□681MK30S
	680	16×20	0.028	0.12	2,250	EKYB630E□□681ML20S
	820	12.5×35	0.022	0.088	2,700	EKYB630E□□821MK35S
	820	18×20	0.028	0.12	2,500	EKYB630E□□821MM20S
	1,000	12.5×40	0.020	0.080	3,000	EKYB630E□□102MK40S
	1,000	16×25	0.025	0.10	2,730	EKYB630E□□102ML25S
	1,200	16×31.5	0.020	0.080	3,000	EKYB630E□□122MLN3S
	1,200	18×25	0.022	0.088	2,800	EKYB630E□□122MM25S
	1,500	16×35.5	0.018	0.072	3,200	EKYB630E□□152MLP1S
	1,500	18×31.5	0.018	0.072	3,300	EKYB630E□□152MMN3S
	1,800	16×40	0.016	0.064	3,590	EKYB630E□□182ML40S
	1,800	18×35.5	0.017	0.068	3,570	EKYB630E□□182MMP1S
	2,200	18×40	0.016	0.064	3,670	EKYB630E□□222MM40S
80	12	5×11	0.80	3.2	163	EKYB800E□□120ME11D
	22	6.3×11	0.43	1.8	267	EKYB800E□□220MF11D
	39	8×11.5	0.18	0.72	462	EKYB800E□□390MHB5D
80	56	8×15	0.14	0.56	585	EKYB800E□□560MH15D
	82	8×20	0.11	0.44	735	EKYB800E□□820MH20D
	82	10×12.5	0.14	0.56	624	EKYB800E□□820MJC5S
	120	10×16	0.10	0.40	780	EKYB800E□□121MJ16S
	180	10×20	0.075	0.30	1,040	EKYB800E□□181MJ20S
	220	10×25	0.060	0.24	1,170	EKYB800E□□221MJ25S
	270	10×30	0.053	0.22	1,350	EKYB800E□□271MJ30S
	270	12.5×20	0.048	0.20	1,430	EKYB800E□□271MK20S
	390	12.5×25	0.039	0.16	1,620	EKYB800E□□391MK25S
	470	12.5×30	0.033	0.14	1,950	EKYB800E□□471MK30S
	470	16×20	0.036	0.15	1,750	EKYB800E□□471ML20S
	560	12.5×35	0.026	0.11	2,250	EKYB800E□□561MK35S
	560	18×20	0.032	0.13	2,100	EKYB800E□□561MM20S
	680	12.5×40	0.024	0.096	2,450	EKYB800E□□681MK40S
	680	16×25	0.028	0.12	2,250	EKYB800E□□681ML25S
	820	16×31.5	0.022	0.088	2,400	EKYB800E□□821MLN3S
	820	18×25	0.027	0.11	2,270	EKYB800E□□821MM25S
	1,000	16×35.5	0.020	0.080	2,600	EKYB800E□□102MLP1S
	1,200	16×40	0.018	0.072	2,900	EKYB800E□□122ML40S
	1,200	18×31.5	0.020	0.080	2,550	EKYB800E□□122MMN3S
	1,500	18×35.5	0.018	0.072	3,050	EKYB800E□□152MMP1S
100	6.8	5×11	0.80	3.2	163	EKYB101E□□6R8ME11D
	15	6.3×11	0.43	1.8	267	EKYB101E□□150MF11D
	27	8×11.5	0.18	0.72	462	EKYB101E□□270MHB5D
	39	8×15	0.14	0.56	585	EKYB101E□□390MH15D
	56	8×20	0.11	0.44	735	EKYB101E□□560MH20D
	56	10×12.5	0.14	0.56	624	EKYB101E□□560MJC5S
	82	10×16	0.10	0.40	780	EKYB101E□□820MJ16S
	100	10×20	0.075	0.30	1,040	EKYB101E□□101MJ20S
	120	10×25	0.060	0.24	1,170	EKYB101E□□121MJ25S
	150	10×30	0.053	0.22	1,350	EKYB101E□□151MJ30S
	180	12.5×20	0.048	0.20	1,430	EKYB101E□□181MK20S
	220	12.5×25	0.039	0.16	1,620	EKYB101E□□221MK25S
	270	12.5×30	0.033	0.14	1,950	EKYB101E□□271MK30S
	270	16×20	0.036	0.15	1,750	EKYB101E□□271ML20S
	330	16×25	0.028	0.12	2,250	EKYB101E□□331ML25S
	390	12.5×35	0.026	0.11	2,250	EKYB101E□□391MK35S
	390	18×20	0.032	0.13	2,100	EKYB101E□□391MM20S
	470	12.5×40	0.024	0.096	2,450	EKYB101E□□471MK40S
	470	16×31.5	0.022	0.088	2,400	EKYB101E□□471MLN3S
	560	16×35.5	0.020	0.080	2,600	EKYB101E□□561MLP1S
	560	18×25	0.027	0.11	2,270	EKYB101E□□561MM25S
	680	16×40	0.018	0.072	2,900	EKYB101E□□681ML40S
	680	18×31.5	0.020	0.080	2,550	EKYB101E□□681MMN3S
	820	18×35.5	0.018	0.072	3,050	EKYB101E□□821MMP1S
	1,000	18×40	0.017	0.068	3,510	EKYB101E□□102MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
6.8 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KYA Series

- Downsized from KY series
- Newly innovative electrolyte is employed to minimize impedance
- Endurance with ripple current : 4,000 to 10,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 100Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 100V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12, 0.10, 0.09, 0.08 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 100V Z(-25℃)/Z(+20℃): 4, 3, 2, 2, 2, 2, 2, 2 Z(-40℃)/Z(+20℃): 8, 6, 4, 3, 3, 3, 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃. Time: 6.3 to 10Vdc: φ5 & 6.3 : 4,000hours φ8 & 10 : 6,000hours φ12.5 to 16 : 8,000hours 16 to 100Vdc: φ5 & 6.3 : 5,000hours φ8 & 10 : 7,000hours φ12.5 to 16 : 10,000hours Capacitance change: ≦±25% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±25% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16
φd	0.5	0.5	0.6	0.6	0.6	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5
φD'	φD+0.5max.					
L'	L+1.5max.					

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KYA Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	100	5×11	0.90	3.6	150	EKYA6R3E□□101ME11D
	180	5×11	0.40	1.6	250	EKYA6R3E□□181ME11D
	220	5×11	0.40	1.6	250	EKYA6R3E□□221ME11D
	330	6.3×11	0.22	0.87	400	EKYA6R3E□□331MF11D
	470	6.3×11	0.22	0.87	400	EKYA6R3E□□471MF11D
	820	8×11.5	0.13	0.52	640	EKYA6R3E□□821MHB5D
	1,200	10×12.5	0.080	0.32	865	EKYA6R3E□□122MJC5S
	1,200	8×15	0.087	0.35	840	EKYA6R3E□□122MH15D
	1,500	8×20	0.069	0.27	1,050	EKYA6R3E□□152MH20D
	1,800	10×16	0.060	0.24	1,300	EKYA6R3E□□182MJ16S
	2,700	10×20	0.046	0.18	1,400	EKYA6R3E□□272MJ20S
	3,300	10×25	0.042	0.17	1,650	EKYA6R3E□□332MJ25S
	3,900	12.5×20	0.035	0.12	1,900	EKYA6R3E□□392MK20S
	4,700	12.5×25	0.027	0.089	2,230	EKYA6R3E□□472MK25S
	5,600	12.5×25	0.027	0.089	2,230	EKYA6R3E□□562MK25S
	10,000	16×25	0.021	0.060	2,930	EKYA6R3E□□103ML25S
	12,000	16×31.5	0.017	0.050	3,450	EKYA6R3E□□123MLN3S
	15,000	16×35.5	0.015	0.044	3,610	EKYA6R3E□□153MLP1S
10	100	5×11	0.90	3.6	150	EKYA100E□□101ME11D
	120	5×11	0.40	1.6	250	EKYA100E□□121ME11D
	330	6.3×11	0.22	0.87	400	EKYA100E□□331MF11D
	560	8×11.5	0.13	0.52	640	EKYA100E□□561MHB5D
	820	8×15	0.087	0.35	840	EKYA100E□□821MH15D
	820	10×12.5	0.080	0.32	865	EKYA100E□□821MJC5S
	1,000	10×12.5	0.080	0.32	865	EKYA100E□□102MJC5S
	1,200	8×20	0.069	0.27	1,050	EKYA100E□□122MH20D
	1,200	10×16	0.060	0.24	1,300	EKYA100E□□122MJ16S
	1,800	10×20	0.046	0.18	1,400	EKYA100E□□182MJ20S
	2,200	10×25	0.042	0.17	1,650	EKYA100E□□222MJ25S
	3,300	12.5×20	0.035	0.12	1,900	EKYA100E□□332MK20S
	3,900	12.5×25	0.027	0.089	2,230	EKYA100E□□392MK25S
	6,800	16×25	0.021	0.060	2,930	EKYA100E□□682ML25S
	10,000	16×31.5	0.017	0.050	3,450	EKYA100E□□103MLN3S
	12,000	16×35.5	0.015	0.044	3,610	EKYA100E□□123MLP1S
16	47	5×11	0.40	1.6	250	EKYA160E□□470ME11D
	100	5×11	0.40	1.6	250	EKYA160E□□101ME11D
	220	6.3×11	0.22	0.87	400	EKYA160E□□221MF11D
	270	6.3×11	0.22	0.87	400	EKYA160E□□271MF11D
	470	8×11.5	0.13	0.52	640	EKYA160E□□471MHB5D
	680	8×15	0.087	0.35	840	EKYA160E□□681MH15D
	680	10×12.5	0.080	0.32	865	EKYA160E□□681MJC5S
	820	8×20	0.069	0.27	1,050	EKYA160E□□821MH20D
	1,000	10×16	0.060	0.24	1,300	EKYA160E□□102MJ16S
	1,500	10×20	0.046	0.18	1,400	EKYA160E□□152MJ20S
	1,800	10×25	0.042	0.17	1,650	EKYA160E□□182MJ25S
	2,200	12.5×20	0.035	0.12	1,900	EKYA160E□□222MK20S
	3,300	12.5×25	0.027	0.089	2,230	EKYA160E□□332MK25S
	4,700	16×25	0.021	0.060	2,930	EKYA160E□□472ML25S
	5,600	16×25	0.021	0.060	2,930	EKYA160E□□562ML25S
	6,800	16×31.5	0.017	0.050	3,450	EKYA160E□□682MLN3S
	8,200	16×31.5	0.017	0.050	3,450	EKYA160E□□822MLN3S
	10,000	16×35.5	0.015	0.044	3,610	EKYA160E□□103MLP1S
25	33	5×11	0.40	1.6	250	EKYA250E□□330ME11D
	47	5×11	0.40	1.6	250	EKYA250E□□470ME11D
	68	5×11	0.40	1.6	250	EKYA250E□□680ME11D
	150	6.3×11	0.22	0.87	400	EKYA250E□□151MF11D
	330	8×11.5	0.13	0.52	640	EKYA250E□□331MHB5D
	390	8×15	0.087	0.35	840	EKYA250E□□391MH15D
	470	10×12.5	0.080	0.32	865	EKYA250E□□471MJC5S
	560	8×20	0.069	0.27	1,050	EKYA250E□□561MH20D
	680	10×16	0.060	0.24	1,300	EKYA250E□□681MJ16S
	1,000	10×20	0.046	0.18	1,400	EKYA250E□□102MJ20S
	1,200	10×25	0.042	0.17	1,650	EKYA250E□□122MJ25S
	1,500	12.5×20	0.035	0.12	1,900	EKYA250E□□152MK20S
	2,200	12.5×25	0.027	0.089	2,230	EKYA250E□□222MK25S
25	3,300	16×25	0.021	0.060	2,930	EKYA250E□□332ML25S
	3,900	16×25	0.021	0.060	2,930	EKYA250E□□392ML25S
	4,700	16×31.5	0.017	0.050	3,450	EKYA250E□□472MLN3S
	5,600	16×35.5	0.015	0.044	3,610	EKYA250E□□562MLP1S
35	33	5×11	0.40	1.6	250	EKYA350E□□330ME11D
	47	5×11	0.40	1.6	250	EKYA350E□□470ME11D
	100	6.3×11	0.22	0.87	400	EKYA350E□□101MF11D
	220	8×11.5	0.13	0.52	640	EKYA350E□□221MHB5D
	270	8×15	0.087	0.35	840	EKYA350E□□271MH15D
	330	10×12.5	0.080	0.32	865	EKYA350E□□331MJC5S
	390	8×20	0.069	0.27	1,050	EKYA350E□□391MH20D
	470	10×16	0.060	0.24	1,300	EKYA350E□□471MJ16S
	680	10×20	0.046	0.18	1,400	EKYA350E□□681MJ20S
	820	10×25	0.042	0.17	1,650	EKYA350E□□821MJ25S
	1,000	12.5×20	0.035	0.12	1,900	EKYA350E□□102MK20S
	1,500	12.5×25	0.027	0.089	2,230	EKYA350E□□152MK25S
	2,200	16×25	0.021	0.060	2,930	EKYA350E□□222ML25S
	2,700	16×25	0.021	0.060	2,930	EKYA350E□□272ML25S
	3,300	16×31.5	0.017	0.050	3,450	EKYA350E□□332MLN3S
	3,900	16×35.5	0.015	0.044	3,610	EKYA350E□□392MLP1S
50	1.0	5×11	4.0	16	30	EKYA500E□□1R0ME11D
	2.2	5×11	2.5	10	43	EKYA500E□□2R2ME11D
	3.3	5×11	2.2	8.8	53	EKYA500E□□3R3ME11D
	4.7	5×11	1.9	7.6	88	EKYA500E□□4R7ME11D
	10	5×11	1.5	6.0	100	EKYA500E□□100ME11D
	22	5×11	0.70	2.8	180	EKYA500E□□220ME11D
	27	5×11	0.70	2.8	250	EKYA500E□□270ME11D
	47	6.3×11	0.30	1.2	295	EKYA500E□□470MF11D
	56	6.3×11	0.30	1.2	295	EKYA500E□□560MF11D
	100	8×11.5	0.17	0.68	555	EKYA500E□□101MHB5D
	150	8×15	0.12	0.48	730	EKYA500E□□151MH15D
	180	10×12.5	0.12	0.48	760	EKYA500E□□181MJC5S
	180	8×20	0.091	0.36	910	EKYA500E□□181MH20D
	220	10×16	0.084	0.34	1,050	EKYA500E□□221MJ16S
	330	10×20	0.060	0.24	1,220	EKYA500E□□331MJ20S
	470	10×25	0.055	0.22	1,440	EKYA500E□□471MJ25S
	470	12.5×20	0.045	0.15	1,660	EKYA500E□□471MK20S
	560	12.5×20	0.045	0.15	1,660	EKYA500E□□561MK20S
	820	12.5×25	0.034	0.11	1,950	EKYA500E□□821MK25S
	1,000	16×25	0.025	0.075	2,555	EKYA500E□□102ML25S
	1,200	16×25	0.025	0.075	2,555	EKYA500E□□122ML25S
	1,800	16×31.5	0.022	0.066	3,010	EKYA500E□□182MLN3S
	2,200	16×35.5	0.019	0.057	3,150	EKYA500E□□222MLP1S
63	10	5×11	0.88	3.5	173	EKYA630E□□100ME11D
	15	5×11	0.88	3.5	173	EKYA630E□□150ME11D
	33	6.3×11	0.35	1.4	278	EKYA630E□□330MF11D
	56	8×11.5	0.22	0.88	500	EKYA630E□□560MHB5D
	82	8×15	0.16	0.64	665	EKYA630E□□820MH15D
	100	10×12.5	0.11	0.44	725	EKYA630E□□101MJC5S
	120	8×20	0.12	0.48	820	EKYA630E□□121MH20D
	120	10×16	0.076	0.31	950	EKYA630E□□121MJ16S
	220	10×20	0.056	0.23	1,200	EKYA630E□□221MJ20S
	330	10×25	0.046	0.19	1,350	EKYA630E□□331MJ25S
	330	12.5×20	0.041	0.13	1,570	EKYA630E□□331MK20S
	390	12.5×20	0.041	0.13	1,570	EKYA630E□□391MK20S
	470	12.5×25	0.031	0.093	1,990	EKYA630E□□471MK25S
	560	12.5×25	0.031	0.093	1,990	EKYA630E□□561MK25S
	1,000	16×25	0.025	0.075	2,730	EKYA630E□□102ML25S
	1,200	16×31.5	0.021	0.063	2,850	EKYA630E□□122MLN3S
	1,500	16×35.5	0.019	0.057	2,900	EKYA630E□□152MLP1S
100	1.0	5×11	4.5	15	20	EKYA101E□□1R0ME11D
	2.2	5×11	3.0	13	30	EKYA101E□□2R2ME11D
	3.3	5×11	2.7	11	40	EKYA101E□□3R3ME11D
	4.7	5×11	2.5	10	65	EKYA101E□□4R7ME11D
	6.8	5×11	1.4	5.6	125	EKYA101E□□6R8ME11D

□□ : Enter the appropriate lead forming or taping code.

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KYA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
100	10	6.3×11	0.57	2.3	205	EKYA101E□□100MF11D
	15	6.3×11	0.57	2.3	205	EKYA101E□□150MF11D
	27	8×11.5	0.36	1.4	355	EKYA101E□□270MHB5D
	39	8×15	0.25	1.0	450	EKYA101E□□390MH15D
	47	10×12.5	0.17	0.66	480	EKYA101E□□470MJC5S
	56	8×20	0.19	0.76	565	EKYA101E□□560MH20D
	68	10×16	0.11	0.47	600	EKYA101E□□680MJ16S
	100	10×20	0.084	0.34	800	EKYA101E□□101MJ20S
	150	10×25	0.069	0.28	900	EKYA101E□□151MJ25S
	180	12.5×20	0.062	0.18	1,100	EKYA101E□□181MK20S
	220	12.5×25	0.047	0.14	1,250	EKYA101E□□221MK25S
	330	16×25	0.038	0.12	1,700	EKYA101E□□331ML25S
	470	16×31.5	0.032	0.095	1,850	EKYA101E□□471MLN3S
	560	16×35.5	0.029	0.086	2,000	EKYA101E□□561MLP1S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KY Series

- Newly innovative electrolyte is employed to minimize ESR
- Endurance with ripple current : 4,000 to 10,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	6.3 to 100V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)

Dissipation Factor (tan δ)

Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	63V	80V	100V
tan δ (Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	63V	80V	100V
Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	2	2	2
Z(-40℃)/Z(+20℃)	8	6	4	3	3	3	3	3	3

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃.

Time	6.3 to 10V_{dc}	φ5 & 6.3 : 4,000hours φ8 & 10 : 6,000hours φ12.5 to 18 : 8,000hours
	16 to 100V_{dc}	φ5 & 6.3 : 5,000hours φ8 & 10 : 7,000hours φ12.5 to 18 : 10,000hours
Capacitance change		≦±25% of the initial value
D.F. (tan δ)		≦200% of the initial specified value
Leakage current		≦The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

Capacitance change	≦±25% of the initial value
D.F. (tan δ)	≦200% of the initial specified value
Leakage current	≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KY Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	150	5×11	0.58	2.3	210	EKY-6R3E□□151ME11D
	330	6.3×11	0.22	0.87	340	EKY-6R3E□□331MF11D
	680	8×11.5	0.13	0.52	640	EKY-6R3E□□681MHB5D
	820	10×12.5	0.080	0.32	865	EKY-6R3E□□821MJC5S
	1,000	8×15	0.087	0.35	840	EKY-6R3E□□102MH15D
	1,200	8×20	0.069	0.27	1,050	EKY-6R3E□□122MH20D
	1,200	10×16	0.060	0.24	1,210	EKY-6R3E□□122MJ16S
	1,500	10×20	0.046	0.18	1,400	EKY-6R3E□□152MJ20S
	1,800	12.5×15	0.049	0.16	1,450	EKY-6R3E□□182MK15S
	2,200	10×25	0.042	0.17	1,650	EKY-6R3E□□222MJ25S
	2,700	10×30	0.031	0.12	1,910	EKY-6R3E□□272MJ30S
	2,700	16×15	0.042	0.12	1,940	EKY-6R3E□□272ML15S
	3,300	12.5×20	0.035	0.12	1,900	EKY-6R3E□□332MK20S
	3,900	12.5×25	0.027	0.089	2,230	EKY-6R3E□□392MK25S
	3,900	18×15	0.043	0.11	2,210	EKY-6R3E□□392MM15S
	4,700	12.5×30	0.024	0.078	2,650	EKY-6R3E□□472MK30S
	5,600	12.5×35	0.020	0.065	2,880	EKY-6R3E□□562MK35S
	5,600	16×20	0.027	0.078	2,530	EKY-6R3E□□562ML20S
	6,800	12.5×40	0.017	0.056	3,350	EKY-6R3E□□682MK40S
	6,800	16×25	0.021	0.060	2,930	EKY-6R3E□□682ML25S
	6,800	18×20	0.026	0.067	2,860	EKY-6R3E□□682MM20S
	8,200	16×31.5	0.017	0.050	3,450	EKY-6R3E□□822MLN3S
	10,000	16×35.5	0.015	0.044	3,610	EKY-6R3E□□103MLP1S
	10,000	18×25	0.019	0.049	3,140	EKY-6R3E□□103MM25S
	12,000	16×40	0.013	0.038	4,080	EKY-6R3E□□123ML40S
	12,000	18×31.5	0.015	0.040	4,170	EKY-6R3E□□123MMN3S
	15,000	18×35.5	0.014	0.038	4,220	EKY-6R3E□□153MMP1S
	18,000	18×40	0.012	0.032	4,280	EKY-6R3E□□183MM40S
10	100	5×11	0.58	2.3	210	EKY-100E□□101ME11D
	220	6.3×11	0.22	0.87	340	EKY-100E□□221MF11D
	470	8×11.5	0.13	0.52	640	EKY-100E□□471MHB5D
	680	8×15	0.087	0.35	840	EKY-100E□□681MH15D
	680	10×12.5	0.080	0.32	865	EKY-100E□□681MJC5S
	1,000	8×20	0.069	0.27	1,050	EKY-100E□□102MH20D
	1,000	10×16	0.060	0.24	1,210	EKY-100E□□102MJ16S
	1,200	10×20	0.046	0.18	1,400	EKY-100E□□122MJ20S
	1,500	10×25	0.042	0.17	1,650	EKY-100E□□152MJ25S
	1,500	12.5×15	0.049	0.16	1,450	EKY-100E□□152MK15S
	2,200	10×30	0.031	0.12	1,910	EKY-100E□□222MJ30S
	2,200	12.5×20	0.035	0.12	1,900	EKY-100E□□222MK20S
	2,200	16×15	0.042	0.12	1,940	EKY-100E□□222ML15S
	2,700	18×15	0.043	0.11	2,210	EKY-100E□□272MM15S
	3,300	12.5×25	0.027	0.089	2,230	EKY-100E□□332MK25S
	3,900	12.5×30	0.024	0.078	2,650	EKY-100E□□392MK30S
	3,900	16×20	0.027	0.078	2,530	EKY-100E□□392ML20S
	4,700	12.5×35	0.020	0.065	2,880	EKY-100E□□472MK35S
	5,600	12.5×40	0.017	0.056	3,350	EKY-100E□□562MK40S
	5,600	16×25	0.021	0.060	2,930	EKY-100E□□562ML25S
	5,600	18×20	0.026	0.067	2,860	EKY-100E□□562MM20S
	6,800	16×31.5	0.017	0.050	3,450	EKY-100E□□682MLN3S
	6,800	18×25	0.019	0.049	3,140	EKY-100E□□682MM25S
	8,200	16×35.5	0.015	0.044	3,610	EKY-100E□□822MLP1S
	8,200	18×31.5	0.015	0.040	4,170	EKY-100E□□822MMN3S
	10,000	16×40	0.013	0.038	4,080	EKY-100E□□103ML40S
	10,000	18×35.5	0.014	0.038	4,220	EKY-100E□□103MMP1S
	12,000	18×40	0.012	0.032	4,280	EKY-100E□□123MM40S
16	56	5×11	0.58	2.3	210	EKY-160E□□560ME11D
	120	6.3×11	0.22	0.87	340	EKY-160E□□121MF11D
	330	8×11.5	0.13	0.52	640	EKY-160E□□331MHB5D
	470	8×15	0.087	0.35	840	EKY-160E□□471MH15D
	470	10×12.5	0.080	0.32	865	EKY-160E□□471MJC5S
	680	8×20	0.069	0.27	1,050	EKY-160E□□681MH20D
	680	10×16	0.060	0.24	1,210	EKY-160E□□681MJ16S
	1,000	10×20	0.046	0.18	1,400	EKY-160E□□102MJ20S
	1,000	12.5×15	0.049	0.16	1,450	EKY-160E□□102MK15S
	1,200	10×25	0.042	0.17	1,650	EKY-160E□□122MJ25S
	1,500	10×30	0.031	0.12	1,910	EKY-160E□□152MJ30S
16	1,500	12.5×20	0.035	0.12	1,900	EKY-160E□□152MK20S
	1,500	16×15	0.042	0.12	1,940	EKY-160E□□152ML15S
	2,200	12.5×25	0.027	0.089	2,230	EKY-160E□□222MK25S
	2,200	18×15	0.043	0.11	2,210	EKY-160E□□222MM15S
	2,700	12.5×30	0.024	0.078	2,650	EKY-160E□□272MK30S
	2,700	16×20	0.027	0.078	2,530	EKY-160E□□272ML20S
	3,300	12.5×35	0.020	0.065	2,880	EKY-160E□□332MK35S
	3,900	12.5×40	0.017	0.056	3,350	EKY-160E□□392MK40S
	3,900	16×25	0.021	0.060	2,930	EKY-160E□□392ML25S
	3,900	18×20	0.026	0.067	2,860	EKY-160E□□392MM20S
	4,700	16×31.5	0.017	0.050	3,450	EKY-160E□□472MLN3S
	4,700	18×25	0.019	0.049	3,140	EKY-160E□□472MM25S
	5,600	16×35.5	0.015	0.044	3,610	EKY-160E□□562MLP1S
	5,600	18×31.5	0.015	0.040	4,170	EKY-160E□□562MMN3S
	6,800	16×40	0.013	0.038	4,080	EKY-160E□□682ML40S
	8,200	18×35.5	0.014	0.038	4,220	EKY-160E□□822MMP1S
	10,000	18×40	0.012	0.032	4,280	EKY-160E□□103MM40S
25	47	5×11	0.58	2.3	210	EKY-250E□□470ME11D
	100	6.3×11	0.22	0.87	340	EKY-250E□□101MF11D
	220	8×11.5	0.13	0.52	640	EKY-250E□□221MHB5D
	330	8×15	0.087	0.35	840	EKY-250E□□331MH15D
	330	10×12.5	0.080	0.32	865	EKY-250E□□331MJC5S
	470	8×20	0.069	0.27	1,050	EKY-250E□□471MH20D
	470	10×16	0.060	0.24	1,210	EKY-250E□□471MJ16S
	680	10×20	0.046	0.18	1,400	EKY-250E□□681MJ20S
	680	12.5×15	0.049	0.16	1,450	EKY-250E□□681MK15S
	820	10×25	0.042	0.17	1,650	EKY-250E□□821MJ25S
	1,000	10×30	0.031	0.12	1,910	EKY-250E□□102MJ30S
	1,000	12.5×20	0.035	0.12	1,900	EKY-250E□□102MK20S
	1,000	16×15	0.042	0.12	1,940	EKY-250E□□102ML15S
	1,200	18×15	0.043	0.11	2,210	EKY-250E□□122MM15S
	1,500	12.5×25	0.027	0.089	2,230	EKY-250E□□152MK25S
	1,800	12.5×30	0.024	0.078	2,650	EKY-250E□□182MK30S
	1,800	16×20	0.027	0.078	2,530	EKY-250E□□182ML20S
	2,200	12.5×35	0.020	0.065	2,880	EKY-250E□□222MK35S
	2,200	18×20	0.026	0.067	2,860	EKY-250E□□222MM20S
	2,700	12.5×40	0.017	0.056	3,350	EKY-250E□□272MK40S
	2,700	16×25	0.021	0.060	2,930	EKY-250E□□272ML25S
	3,300	16×31.5	0.017	0.050	3,450	EKY-250E□□332MLN3S
	3,300	18×25	0.019	0.049	3,140	EKY-250E□□332MM25S
	3,900	16×35.5	0.015	0.044	3,610	EKY-250E□□392MLP1S
	3,900	18×31.5	0.015	0.040	4,170	EKY-250E□□392MMN3S
	4,700	16×40	0.013	0.038	4,080	EKY-250E□□472ML40S
	4,700	18×35.5	0.014	0.038	4,220	EKY-250E□□472MMP1S
	5,600	18×40	0.012	0.032	4,280	EKY-250E□□562MM40S
35	33	5×11	0.58	2.3	210	EKY-350E□□330ME11D
	56	6.3×11	0.22	0.87	340	EKY-350E□□560MF11D
	150	8×11.5	0.13	0.52	640	EKY-350E□□151MHB5D
	220	8×15	0.087	0.35	840	EKY-350E□□221MH15D
	220	10×12.5	0.080	0.32	865	EKY-350E□□221MJC5S
	270	8×20	0.069	0.27	1,050	EKY-350E□□271MH20D
	330	10×16	0.060	0.24	1,210	EKY-350E□□331MJ16S
	470	10×20	0.046	0.18	1,400	EKY-350E□□471MJ20S
	470	12.5×15	0.049	0.16	1,450	EKY-350E□□471MK15S
	560	10×25	0.042	0.17	1,650	EKY-350E□□561MJ25S
	680	10×30	0.031	0.12	1,910	EKY-350E□□681MJ30S
	680	12.5×20	0.035	0.12	1,900	EKY-350E□□681MK20S
	680	16×15	0.042	0.12	1,940	EKY-350E□□681ML15S
	1,000	12.5×25	0.027	0.089	2,230	EKY-350E□□102MK25S
	1,000	18×15	0.043	0.11	2,210	EKY-350E□□102MM15S
	1,200	12.5×30	0.024	0.078	2,650	EKY-350E□□122MK30S
	1,200	16×20	0.027	0.078	2,530	EKY-350E□□122ML20S
	1,500	12.5×35	0.020	0.065	2,880	EKY-350E□□152MK35S
	1,800	12.5×40	0.017	0.056	3,350	EKY-350E□□182MK40S
	1,800	16×25	0.021	0.060	2,930	EKY-350E□□182ML25S
	1,800	18×20	0.026	0.067	2,860	EKY-350E□□182MM20S
	2,200	16×31.5	0.017	0.050	3,450	EKY-350E□□222MLN3S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

KY Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
35	2,200	18×25	0.019	0.049	3,140	EKY-350E□□222MM25S
	2,700	16×35.5	0.015	0.044	3,610	EKY-350E□□272MLP1S
	2,700	18×31.5	0.015	0.040	4,170	EKY-350E□□272MMN3S
	3,300	16×40	0.013	0.038	4,080	EKY-350E□□332ML40S
	3,300	18×35.5	0.014	0.038	4,220	EKY-350E□□332MMP1S
	3,900	18×40	0.012	0.032	4,280	EKY-350E□□392MM40S
50	1.0	5×11	4.0	16.0	30	EKY-500E□□1R0ME11D
	2.2	5×11	2.5	10.0	43	EKY-500E□□2R2ME11D
	3.3	5×11	2.2	8.8	53	EKY-500E□□3R3ME11D
	4.7	5×11	1.9	7.6	88	EKY-500E□□4R7ME11D
	10	5×11	1.5	6.0	100	EKY-500E□□100ME11D
	22	5×11	0.70	2.8	180	EKY-500E□□220ME11D
	56	6.3×11	0.30	1.2	295	EKY-500E□□560MF11D
	100	8×11.5	0.17	0.68	555	EKY-500E□□101MHB5D
	120	8×15	0.12	0.48	730	EKY-500E□□121MH15D
	150	10×12.5	0.12	0.48	760	EKY-500E□□151MJC5S
	180	8×20	0.091	0.36	910	EKY-500E□□181MH20D
	220	10×16	0.084	0.34	1,050	EKY-500E□□221MJ16S
	270	10×20	0.060	0.24	1,220	EKY-500E□□271MJ20S
	270	12.5×15	0.061	0.20	1,260	EKY-500E□□271MK15S
	330	10×25	0.055	0.22	1,440	EKY-500E□□331MJ25S
	470	10×30	0.043	0.17	1,690	EKY-500E□□471MJ30S
	470	12.5×20	0.045	0.15	1,660	EKY-500E□□471MK20S
	470	16×15	0.055	0.17	1,690	EKY-500E□□471ML15S
	560	12.5×25	0.034	0.11	1,950	EKY-500E□□561MK25S
	560	18×15	0.054	0.15	1,930	EKY-500E□□561MM15S
	680	12.5×30	0.030	0.10	2,310	EKY-500E□□681MK30S
	820	12.5×35	0.025	0.083	2,510	EKY-500E□□821MK35S
	820	16×20	0.034	0.10	2,210	EKY-500E□□821ML20S
	1,000	12.5×40	0.021	0.069	2,920	EKY-500E□□102MK40S
	1,000	16×25	0.025	0.075	2,555	EKY-500E□□102ML25S
	1,000	18×20	0.036	0.097	2,490	EKY-500E□□102MM20S
	1,200	16×31.5	0.022	0.066	3,010	EKY-500E□□122MLN3S
	1,200	18×25	0.026	0.070	2,740	EKY-500E□□122MM25S
	1,500	16×35.5	0.019	0.057	3,150	EKY-500E□□152MLP1S
	1,800	16×40	0.016	0.048	3,710	EKY-500E□□182ML40S
	1,800	18×31.5	0.021	0.057	3,635	EKY-500E□□182MMN3S
	2,200	18×35.5	0.017	0.046	3,680	EKY-500E□□222MMP1S
	2,700	18×40	0.014	0.038	3,800	EKY-500E□□272MM40S
63	15	5×11	0.88	3.5	165	EKY-630E□□150ME11D
	33	6.3×11	0.35	1.4	265	EKY-630E□□330MF11D
	56	8×11.5	0.22	0.88	500	EKY-630E□□560MHB5D
	82	8×15	0.16	0.64	665	EKY-630E□□820MH15D
	82	10×12.5	0.11	0.44	690	EKY-630E□□820MJC5S
	120	8×20	0.12	0.48	820	EKY-630E□□121MH20D
	120	10×16	0.076	0.31	950	EKY-630E□□121MJ16S
	180	10×20	0.056	0.23	1,150	EKY-630E□□181MJ20S
	180	12.5×16	0.072	0.29	1,150	EKY-630E□□181MK16S
	220	10×25	0.046	0.19	1,350	EKY-630E□□221MJ25S
	270	12.5×20	0.041	0.13	1,500	EKY-630E□□271MK20S
	390	12.5×25	0.031	0.093	1,900	EKY-630E□□391MK25S
	470	12.5×30	0.028	0.084	2,300	EKY-630E□□471MK30S
	470	16×20	0.032	0.096	2,000	EKY-630E□□471ML20S
	560	12.5×35	0.024	0.072	2,500	EKY-630E□□561MK35S
	680	12.5×40	0.021	0.063	2,800	EKY-630E□□681MK40S
63	680	16×25	0.025	0.075	2,600	EKY-630E□□681ML25S
	680	18×20	0.030	0.090	2,500	EKY-630E□□681MM20S
	820	16×31.5	0.021	0.063	2,850	EKY-630E□□821MLN3S
	820	18×25	0.024	0.072	2,800	EKY-630E□□821MM25S
	1,000	16×35.5	0.019	0.057	2,900	EKY-630E□□102MLP1S
	1,200	16×40	0.018	0.054	3,400	EKY-630E□□122ML40S
	1,200	18×31.5	0.020	0.060	3,300	EKY-630E□□122MMN3S
	1,500	18×35.5	0.018	0.054	3,400	EKY-630E□□152MMP1S
	1,800	18×40	0.017	0.051	3,500	EKY-630E□□182MM40S
80	68	10×12.5	0.17	0.66	480	EKY-800E□□680MJC5S
	100	10×16	0.11	0.47	600	EKY-800E□□101MJ16S
	120	10×20	0.084	0.34	800	EKY-800E□□121MJ20S
	150	10×25	0.069	0.28	900	EKY-800E□□151MJ25S
	150	12.5×16	0.11	0.34	750	EKY-800E□□151MK16S
	220	12.5×20	0.062	0.18	1,100	EKY-800E□□221MK20S
	330	12.5×25	0.047	0.14	1,250	EKY-800E□□331MK25S
	330	16×20	0.048	0.15	1,350	EKY-800E□□331ML20S
	390	12.5×30	0.042	0.13	1,500	EKY-800E□□391MK30S
	470	12.5×35	0.036	0.11	1,650	EKY-800E□□471MK35S
	470	16×25	0.038	0.12	1,700	EKY-800E□□471ML25S
	470	18×20	0.045	0.14	1,500	EKY-800E□□471MM20S
	560	12.5×40	0.032	0.095	1,800	EKY-800E□□561MK40S
	680	16×31.5	0.032	0.095	1,850	EKY-800E□□681MLN3S
	680	18×25	0.036	0.11	1,750	EKY-800E□□681MM25S
	820	16×35.5	0.029	0.086	2,000	EKY-800E□□821MLP1S
	820	18×31.5	0.030	0.090	1,900	EKY-800E□□821MMN3S
	1,000	16×40	0.027	0.081	2,200	EKY-800E□□102ML40S
	1,000	18×35.5	0.027	0.081	2,200	EKY-800E□□102MMP1S
	1,200	18×40	0.026	0.077	2,700	EKY-800E□□122MM40S
100	6.8	5×11	1.4	5.6	125	EKY-101E□□6R8ME11D
	15	6.3×11	0.57	2.3	205	EKY-101E□□150MF11D
	27	8×11.5	0.36	1.4	355	EKY-101E□□270MHB5D
	39	8×15	0.25	1.0	450	EKY-101E□□390MH15D
	47	10×12.5	0.17	0.66	480	EKY-101E□□470MJC5S
	56	8×20	0.19	0.76	565	EKY-101E□□560MH20D
	68	10×16	0.11	0.47	600	EKY-101E□□680MJ16S
	82	10×20	0.084	0.34	800	EKY-101E□□820MJ20S
	100	12.5×16	0.11	0.34	750	EKY-101E□□101MK16S
	120	10×25	0.069	0.28	900	EKY-101E□□121MJ25S
	150	12.5×20	0.062	0.18	1,100	EKY-101E□□151MK20S
	220	12.5×25	0.047	0.14	1,250	EKY-101E□□221MK25S
	220	16×20	0.048	0.15	1,350	EKY-101E□□221ML20S
	270	12.5×30	0.042	0.13	1,500	EKY-101E□□271MK30S
	330	12.5×35	0.036	0.11	1,650	EKY-101E□□331MK35S
	330	16×25	0.038	0.12	1,700	EKY-101E□□331ML25S
	330	18×20	0.045	0.14	1,500	EKY-101E□□331MM20S
	390	12.5×40	0.032	0.095	1,800	EKY-101E□□391MK40S
	470	16×31.5	0.032	0.095	1,850	EKY-101E□□471MLN3S
	470	18×25	0.036	0.11	1,750	EKY-101E□□471MM25S
	560	16×35.5	0.029	0.086	2,000	EKY-101E□□561MLP1S
	560	18×31.5	0.030	0.090	1,900	EKY-101E□□561MMN3S
	680	16×40	0.027	0.081	2,200	EKY-101E□□681ML40S
	680	18×35.5	0.027	0.081	2,200	EKY-101E□□681MMP1S
	820	18×40	0.026	0.077	2,700	EKY-101E□□821MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, Downsized, 105℃

LZA Series

- Adoption of innovative electrolyte and new technologies
- Very low impedance at high frequency
- Endurance with ripple current: 4,000 to 7,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

LZA
↑ Lower Z
Downsized
LXZ

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	6.3 to 35Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V Z(-55℃)/Z(+20℃): 4, 3, 3, 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃.

Time	φ10 : 4,000hours φ12.5 : 5,000hours φ16 to φ18 : 7,000hours		
Rated voltage	6.3 to 10Vdc(φ10)	6.3 to 10Vdc(φ12.5 to φ18)	16 to 35Vdc
Capacitance change	≦±30% of the initial value	≦±20% of the initial value	≦±20% of the initial value
D.F.(tan δ)	≦300% of the initial specified value	≦200% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦The initial specified value	≦The initial specified value

Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
Rated voltage	6.3 to 10Vdc(φ10)	6.3 to 10Vdc(φ12.5 to φ18)	16 to 35Vdc
Capacitance change	≦±30% of the initial value	≦±20% of the initial value	≦±20% of the initial value
D.F.(tan δ)	≦300% of the initial specified value	≦200% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦The initial specified value	≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	16	18
φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E L Z A □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 680μF:681, 2,200μF:222)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3, 25V:250)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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LZA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./ 20℃, 100kHz)	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	1,500	10×12.5	0.063	960	ELZA6R3E□□152MJC5S
	1,800	10×16	0.049	1,240	ELZA6R3E□□182MJ16S
	2,700	10×20	0.035	1,550	ELZA6R3E□□272MJ20S
	3,300	10×25	0.033	1,740	ELZA6R3E□□332MJ25S
	4,700	12.5×20	0.029	1,890	ELZA6R3E□□472MK20S
	6,800	12.5×25	0.022	2,350	ELZA6R3E□□682MK25S
	6,800	16×20	0.026	2,330	ELZA6R3E□□682ML20S
	8,200	18×20	0.025	2,640	ELZA6R3E□□822MM20S
	10,000	16×25	0.019	2,760	ELZA6R3E□□103ML25S
	12,000	18×25	0.018	2,850	ELZA6R3E□□123MM25S
10	1,000	10×12.5	0.063	960	ELZA100E□□102MJC5S
	1,500	10×16	0.049	1,240	ELZA100E□□152MJ16S
	2,200	10×20	0.035	1,550	ELZA100E□□222MJ20S
	2,700	10×25	0.033	1,740	ELZA100E□□272MJ25S
	3,300	12.5×20	0.029	1,890	ELZA100E□□332MK20S
	4,700	12.5×25	0.022	2,350	ELZA100E□□472MK25S
	4,700	16×20	0.026	2,330	ELZA100E□□472ML20S
	6,800	16×25	0.019	2,760	ELZA100E□□682ML25S
	6,800	18×20	0.025	2,640	ELZA100E□□682MM20S
	8,200	18×25	0.018	2,850	ELZA100E□□822MM25S
16	820	10×12.5	0.063	960	ELZA160E□□821MJC5S
	1,000	10×16	0.049	1,240	ELZA160E□□102MJ16S
	1,500	10×20	0.035	1,550	ELZA160E□□152MJ20S
	1,800	10×25	0.033	1,740	ELZA160E□□182MJ25S
	2,200	12.5×20	0.029	1,890	ELZA160E□□222MK20S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./ 20℃, 100kHz)	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
16	3,300	12.5×25	0.022	2,350	ELZA160E□□332MK25S
	3,900	16×20	0.026	2,330	ELZA160E□□392ML20S
	5,600	16×25	0.019	2,760	ELZA160E□□562ML25S
	5,600	18×20	0.025	2,640	ELZA160E□□562MM20S
	8,200	18×25	0.018	2,850	ELZA160E□□822MM25S
25	470	10×12.5	0.063	960	ELZA250E□□471MJC5S
	680	10×16	0.049	1,240	ELZA250E□□681MJ16S
	1,000	10×20	0.035	1,550	ELZA250E□□102MJ20S
	1,200	10×25	0.033	1,740	ELZA250E□□122MJ25S
	1,500	12.5×20	0.029	1,890	ELZA250E□□152MK20S
	2,200	12.5×25	0.022	2,350	ELZA250E□□222MK25S
	2,700	16×20	0.026	2,330	ELZA250E□□272ML20S
	3,300	18×20	0.025	2,640	ELZA250E□□332MM20S
	3,900	16×25	0.019	2,760	ELZA250E□□392ML25S
	4,700	18×25	0.018	2,850	ELZA250E□□472MM25S
35	330	10×12.5	0.063	960	ELZA350E□□331MJC5S
	470	10×16	0.049	1,240	ELZA350E□□471MJ16S
	680	10×20	0.035	1,550	ELZA350E□□681MJ20S
	820	10×25	0.033	1,740	ELZA350E□□821MJ25S
	1,000	12.5×20	0.029	1,890	ELZA350E□□102MK20S
	1,500	12.5×25	0.022	2,350	ELZA350E□□152MK25S
	1,800	16×20	0.026	2,330	ELZA350E□□182ML20S
	2,200	18×20	0.025	2,640	ELZA350E□□222MM20S
	2,700	16×25	0.019	2,760	ELZA350E□□272ML25S
	3,300	18×25	0.018	2,850	ELZA350E□□332MM25S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
330 to 470	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 12,000	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, Downsized, 105℃

LXZ Series

- Adoption of innovative electrolyte and new technologies
- Very low impedance at high frequency
- Endurance with ripple current: 2,000 to 8,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

LXZ
↑ Lower Z
Downsized
LXY
↑ Lower Z
LXV

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	6.3 to 63Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12, 0.10, 0.08 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃. Time: φ5 & 6.3 : 2,000hours φ8 : 3,000hours φ10 : 5,000hours φ12.5 : 7,000hours φ16 & 18 : 8,000hours Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, Downsized, 105℃

LXZ Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	150	5×11.5	0.50	1.0	175	ELXZ6R3E□□151MEB5D
	330	6.3×11.5	0.25	0.50	290	ELXZ6R3E□□331MFB5D
	470	6.3×15	0.18	0.36	400	ELXZ6R3E□□471MF15D
	680	8×12	0.12	0.24	555	ELXZ6R3E□□681MH12D
	820	10×12.5	0.090	0.18	760	ELXZ6R3E□□821MJC5S
	1,000	8×15	0.090	0.18	730	ELXZ6R3E□□102MH15D
	1,200	8×20	0.080	0.16	810	ELXZ6R3E□□122MH20D
	1,200	10×16	0.068	0.136	1,050	ELXZ6R3E□□122MJ16S
	1,500	10×20	0.052	0.104	1,220	ELXZ6R3E□□152MJ20S
	2,200	10×25	0.045	0.090	1,440	ELXZ6R3E□□222MJ25S
	2,700	10×30	0.037	0.074	1,690	ELXZ6R3E□□272MJ30S
	3,300	12.5×20	0.038	0.076	1,660	ELXZ6R3E□□332MK20S
	3,900	12.5×25	0.030	0.060	1,950	ELXZ6R3E□□392MK25S
	4,700	12.5×30	0.025	0.050	2,310	ELXZ6R3E□□472MK30S
	5,600	12.5×35	0.022	0.044	2,510	ELXZ6R3E□□562MK35S
	5,600	16×20	0.029	0.058	2,210	ELXZ6R3E□□562ML20S
	6,800	12.5×40	0.017	0.034	2,870	ELXZ6R3E□□682MK40S
	6,800	16×25	0.022	0.044	2,560	ELXZ6R3E□□682ML25S
	6,800	18×20	0.028	0.056	2,490	ELXZ6R3E□□682MM20S
	8,200	16×30	0.019	0.038	3,010	ELXZ6R3E□□822ML30S
	10,000	16×35	0.017	0.034	3,150	ELXZ6R3E□□103ML35S
	10,000	18×25	0.020	0.040	2,740	ELXZ6R3E□□103MM25S
	12,000	16×40	0.015	0.030	3,710	ELXZ6R3E□□123ML40S
	12,000	18×30	0.018	0.036	3,330	ELXZ6R3E□□123MM30S
	15,000	18×35	0.016	0.032	3,680	ELXZ6R3E□□153MM35S
	18,000	18×40	0.015	0.030	3,800	ELXZ6R3E□□183MM40S
10	100	5×11.5	0.50	1.0	175	ELXZ100E□□101MEB5D
	220	6.3×11.5	0.25	0.50	290	ELXZ100E□□221MFB5D
	330	6.3×15	0.18	0.36	400	ELXZ100E□□331MF15D
	470	8×12	0.12	0.24	555	ELXZ100E□□471MH12D
	680	8×15	0.090	0.18	730	ELXZ100E□□681MH15D
	680	10×12.5	0.090	0.18	760	ELXZ100E□□681MJC5S
	1,000	8×20	0.080	0.16	810	ELXZ100E□□102MH20D
	1,000	10×16	0.068	0.136	1,050	ELXZ100E□□102MJ16S
	1,200	10×20	0.052	0.104	1,220	ELXZ100E□□122MJ20S
	1,500	10×25	0.045	0.090	1,440	ELXZ100E□□152MJ25S
	1,800	10×30	0.037	0.074	1,690	ELXZ100E□□182MJ30S
	2,200	10×30	0.037	0.074	1,690	ELXZ100E□□222MJ30S
	2,200	12.5×20	0.038	0.076	1,660	ELXZ100E□□222MK20S
	3,300	12.5×25	0.030	0.060	1,950	ELXZ100E□□332MK25S
	3,900	12.5×30	0.025	0.050	2,310	ELXZ100E□□392MK30S
	3,900	16×20	0.029	0.058	2,210	ELXZ100E□□392ML20S
	4,700	12.5×35	0.022	0.044	2,510	ELXZ100E□□472MK35S
	5,600	12.5×40	0.017	0.034	2,870	ELXZ100E□□562MK40S
	5,600	16×25	0.022	0.044	2,560	ELXZ100E□□562ML25S
	5,600	18×20	0.028	0.056	2,490	ELXZ100E□□562MM20S
	6,800	16×30	0.019	0.038	3,010	ELXZ100E□□682ML30S
	6,800	18×25	0.020	0.040	2,740	ELXZ100E□□682MM25S
	8,200	16×35	0.017	0.034	3,150	ELXZ100E□□822ML35S
	8,200	18×30	0.018	0.036	3,330	ELXZ100E□□822MM30S
	10,000	16×40	0.015	0.030	3,710	ELXZ100E□□103ML40S
	10,000	18×35	0.016	0.032	3,680	ELXZ100E□□103MM35S
	12,000	18×40	0.015	0.030	3,800	ELXZ100E□□123MM40S
16	47	5×11.5	0.50	1.0	175	ELXZ160E□□470MEB5D
	100	6.3×11.5	0.25	0.50	290	ELXZ160E□□101MFB5D
	220	6.3×15	0.18	0.36	400	ELXZ160E□□221MF15D
	330	8×12	0.12	0.24	555	ELXZ160E□□331MH12D
	470	8×15	0.090	0.18	730	ELXZ160E□□471MH15D
	470	10×12.5	0.090	0.18	760	ELXZ160E□□471MJC5S
	560	8×20	0.080	0.16	810	ELXZ160E□□561MH20D
	680	10×16	0.068	0.136	1,050	ELXZ160E□□681MJ16S
	1,000	10×20	0.052	0.104	1,220	ELXZ160E□□102MJ20S
	1,200	10×25	0.045	0.090	1,440	ELXZ160E□□122MJ25S
	1,500	10×30	0.037	0.074	1,690	ELXZ160E□□152MJ30S
	1,500	12.5×20	0.038	0.076	1,660	ELXZ160E□□152MK20S
	2,200	12.5×25	0.030	0.060	1,950	ELXZ160E□□222MK25S
	2,700	12.5×30	0.025	0.050	2,310	ELXZ160E□□272MK30S
16	2,700	16×20	0.029	0.058	2,210	ELXZ160E□□272ML20S
	3,300	12.5×35	0.022	0.044	2,510	ELXZ160E□□332MK35S
	3,900	12.5×40	0.017	0.034	2,870	ELXZ160E□□392MK40S
	3,900	16×25	0.022	0.044	2,560	ELXZ160E□□392ML25S
	3,900	18×20	0.028	0.056	2,490	ELXZ160E□□392MM20S
	4,700	16×30	0.019	0.038	3,010	ELXZ160E□□472ML30S
	4,700	18×25	0.020	0.040	2,740	ELXZ160E□□472MM25S
	5,600	16×35	0.017	0.034	3,150	ELXZ160E□□562ML35S
	5,600	18×30	0.018	0.036	3,330	ELXZ160E□□562MM30S
	6,800	16×40	0.015	0.030	3,710	ELXZ160E□□682ML40S
	8,200	18×35	0.016	0.032	3,680	ELXZ160E□□822MM35S
	10,000	18×40	0.015	0.030	3,800	ELXZ160E□□103MM40S
25	47	5×11.5	0.50	1.0	175	ELXZ250E□□470MEB5D
	100	6.3×11.5	0.25	0.50	290	ELXZ250E□□101MFB5D
	150	6.3×15	0.18	0.36	400	ELXZ250E□□151MF15D
	220	8×12	0.12	0.24	555	ELXZ250E□□221MH12D
	330	8×15	0.090	0.18	730	ELXZ250E□□331MH15D
	330	10×12.5	0.090	0.18	760	ELXZ250E□□331MJC5S
	390	8×20	0.080	0.16	810	ELXZ250E□□391MH20D
	470	10×16	0.068	0.136	1,050	ELXZ250E□□471MJ16S
	680	10×20	0.052	0.104	1,220	ELXZ250E□□681MJ20S
	820	10×25	0.045	0.090	1,440	ELXZ250E□□821MJ25S
	1,000	10×30	0.037	0.074	1,690	ELXZ250E□□102MJ30S
	1,000	12.5×20	0.038	0.076	1,660	ELXZ250E□□102MK20S
	1,500	12.5×25	0.030	0.060	1,950	ELXZ250E□□152MK25S
	1,800	12.5×30	0.025	0.050	2,310	ELXZ250E□□182MK30S
	1,800	16×20	0.029	0.058	2,210	ELXZ250E□□182ML20S
	2,200	12.5×30	0.025	0.050	2,310	ELXZ250E□□222MK30S
	2,200	12.5×35	0.022	0.044	2,510	ELXZ250E□□222MK35S
	2,200	18×20	0.028	0.056	2,490	ELXZ250E□□222MM20S
	2,700	12.5×40	0.017	0.034	2,870	ELXZ250E□□272MK40S
	2,700	16×25	0.022	0.044	2,560	ELXZ250E□□272ML25S
	3,300	16×25	0.022	0.044	2,560	ELXZ250E□□332ML25S
	3,300	16×30	0.019	0.038	3,010	ELXZ250E□□332ML30S
	3,300	18×20	0.028	0.056	2,490	ELXZ250E□□332MM20S
	3,300	18×25	0.020	0.040	2,740	ELXZ250E□□332MM25S
	3,900	16×35	0.017	0.034	3,150	ELXZ250E□□392ML35S
	3,900	18×30	0.018	0.036	3,330	ELXZ250E□□392MM30S
	4,700	16×40	0.015	0.030	3,710	ELXZ250E□□472ML40S
	4,700	18×35	0.016	0.032	3,680	ELXZ250E□□472MM35S
	5,600	18×40	0.015	0.030	3,800	ELXZ250E□□562MM40S
35	33	5×11.5	0.50	1.0	175	ELXZ350E□□330MEB5D
	56	6.3×11.5	0.25	0.50	290	ELXZ350E□□560MFB5D
	100	6.3×15	0.18	0.36	400	ELXZ350E□□101MF15D
	150	8×12	0.12	0.24	555	ELXZ350E□□151MH12D
	220	8×15	0.090	0.18	730	ELXZ350E□□221MH15D
	220	10×12.5	0.090	0.18	760	ELXZ350E□□221MJC5S
	270	8×20	0.080	0.16	810	ELXZ350E□□271MH20D
	330	10×16	0.068	0.136	1,050	ELXZ350E□□331MJ16S
	470	10×20	0.052	0.104	1,220	ELXZ350E□□471MJ20S
	560	10×20	0.052	0.104	1,220	ELXZ350E□□561MJ20S
	560	10×25	0.045	0.090	1,440	ELXZ350E□□561MJ25S
	680	10×30	0.037	0.074	1,690	ELXZ350E□□681MJ30S
	680	12.5×20	0.038	0.076	1,660	ELXZ350E□□681MK20S
	1,000	12.5×20	0.038	0.076	1,660	ELXZ350E□□102MK20S
	1,000	12.5×25	0.030	0.060	1,950	ELXZ350E□□102MK25S
	1,200	12.5×30	0.025	0.050	2,310	ELXZ350E□□122MK30S
	1,200	16×20	0.029	0.058	2,210	ELXZ350E□□122ML20S
	1,500	12.5×35	0.022	0.044	2,510	ELXZ350E□□152MK35S
	1,800	12.5×40	0.017	0.034	2,870	ELXZ350E□□182MK40S
	1,800	16×25	0.022	0.044	2,560	ELXZ350E□□182ML25S
	1,800	18×20	0.028	0.056	2,490	ELXZ350E□□182MM20S
	2,200	16×25	0.022	0.044	2,560	ELXZ350E□□222ML25S
	2,200	16×30	0.019	0.038	3,010	ELXZ350E□□222ML30S
	2,200	18×20	0.028	0.056	2,490	ELXZ350E□□222MM20S
	2,200	18×25	0.020	0.040	2,740	ELXZ350E□□222MM25S
	2,700	16×35	0.017	0.034	3,150	ELXZ350E□□272ML35S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, Downsized, 105℃

LXZ Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
35	2,700	18×30	0.018	0.036	3,330	ELXZ350E□□272MM30S
	3,300	16×40	0.015	0.030	3,710	ELXZ350E□□332ML40S
	3,300	18×35	0.016	0.032	3,680	ELXZ350E□□332MM35S
	3,900	18×40	0.015	0.030	3,800	ELXZ350E□□392MM40S
	4,700	18×40	0.015	0.030	3,800	ELXZ350E□□472MM40S
50	22	5×11.5	0.90	1.8	155	ELXZ500E□□220MEB5D
	47	6.3×11.5	0.45	0.90	260	ELXZ500E□□470MFB5D
	68	6.3×15	0.31	0.62	360	ELXZ500E□□680MF15D
	100	8×12	0.22	0.44	485	ELXZ500E□□101MH12D
	120	8×15	0.16	0.32	635	ELXZ500E□□121MH15D
	120	10×12.5	0.16	0.32	620	ELXZ500E□□121MJC5S
	180	8×20	0.12	0.24	730	ELXZ500E□□181MH20D
	180	10×16	0.13	0.26	850	ELXZ500E□□181MJ16S
	220	10×20	0.088	0.18	1,050	ELXZ500E□□221MJ20S
	330	10×25	0.073	0.15	1,250	ELXZ500E□□331MJ25S
	390	10×30	0.054	0.11	1,500	ELXZ500E□□391MJ30S
	390	12.5×20	0.059	0.12	1,480	ELXZ500E□□391MK20S
	470	12.5×20	0.059	0.12	1,480	ELXZ500E□□471MK20S
	560	12.5×25	0.044	0.088	1,840	ELXZ500E□□561MK25S
	680	12.5×30	0.039	0.078	2,220	ELXZ500E□□681MK30S
	680	16×20	0.048	0.096	1,840	ELXZ500E□□681ML20S
	820	12.5×35	0.033	0.066	2,290	ELXZ500E□□821MK35S
	820	18×20	0.042	0.084	1,980	ELXZ500E□□821MM20S
	1,000	12.5×40	0.029	0.058	2,500	ELXZ500E□□102MK40S
	1,000	16×25	0.034	0.068	2,240	ELXZ500E□□102ML25S
	1,200	16×30	0.028	0.056	2,700	ELXZ500E□□122ML30S
	1,200	18×25	0.029	0.058	2,610	ELXZ500E□□122MM25S
	1,500	16×35	0.025	0.050	2,800	ELXZ500E□□152ML35S
	1,800	16×40	0.021	0.042	3,200	ELXZ500E□□182ML40S
	1,800	18×30	0.025	0.050	3,000	ELXZ500E□□182MM30S
50	2,200	18×35	0.023	0.046	3,100	ELXZ500E□□222MM35S
	2,700	18×40	0.020	0.040	3,400	ELXZ500E□□272MM40S
63	12	5×11.5	1.9	4.0	145	ELXZ630E□□120MEB5D
	22	6.3×11.5	1.0	2.0	240	ELXZ630E□□220MFB5D
	39	6.3×15	0.61	1.4	330	ELXZ630E□□390MF15D
	68	8×12	0.34	0.75	405	ELXZ630E□□680MH12D
	100	8×15	0.27	0.65	535	ELXZ630E□□101MH15D
	100	10×12.5	0.255	0.51	540	ELXZ630E□□101MJC5S
	120	10×16	0.19	0.38	600	ELXZ630E□□121MJ16S
	150	8×20	0.21	0.52	690	ELXZ630E□□151MH20D
	180	10×20	0.145	0.29	890	ELXZ630E□□181MJ20S
	220	10×25	0.13	0.26	1,050	ELXZ630E□□221MJ25S
	330	10×30	0.090	0.18	1,300	ELXZ630E□□331MJ30S
	330	12.5×20	0.085	0.17	1,290	ELXZ630E□□331MK20S
	390	12.5×25	0.070	0.14	1,720	ELXZ630E□□391MK25S
	470	12.5×30	0.055	0.11	2,090	ELXZ630E□□471MK30S
	470	16×20	0.059	0.12	1,770	ELXZ630E□□471ML20S
	680	12.5×35	0.047	0.094	2,270	ELXZ630E□□681MK35S
	680	16×25	0.050	0.10	2,160	ELXZ630E□□681ML25S
	680	18×20	0.055	0.11	2,290	ELXZ630E□□681MM20S
	820	12.5×40	0.042	0.084	2,560	ELXZ630E□□821MK40S
	820	16×30	0.043	0.086	2,670	ELXZ630E□□821ML30S
	820	18×25	0.043	0.086	2,590	ELXZ630E□□821MM25S
	1,000	16×30	0.043	0.086	2,670	ELXZ630E□□102ML30S
	1,000	16×35	0.036	0.072	2,770	ELXZ630E□□102ML35S
	1,200	16×40	0.030	0.060	2,850	ELXZ630E□□122ML40S
	1,200	18×30	0.032	0.064	2,950	ELXZ630E□□122MM30S
	1,500	18×35	0.030	0.060	3,100	ELXZ630E□□152MM35S
	1,800	18×40	0.025	0.050	3,210	ELXZ630E□□182MM40S
	2,200	18×40	0.025	0.050	3,210	ELXZ630E□□222MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
12 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 18,000	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

LXY Series

- Adoption of innovative electrolyte and new technologies
- Endurance with ripple current : 2,000 to 8,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	10 to 63V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 10V, 16V, 25V, 35V, 50V, 63V tan δ (Max.): 0.19, 0.16, 0.14, 0.12, 0.10, 0.10 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-55℃)/Z(+20℃): 10 to 50V_{dc} : 3max.; 63V_{dc} : 6max. (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃. Time: φ5 & 6.3 : 2,000hours φ8 : 3,000hours φ10 : 5,000hours φ12.5 : 7,000hours φ16 & 18 : 8,000hours Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16
φd	0.5	0.5	0.6	0.6	0.6	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5
φD'	φD+0.5max.					
L'	L+1.5max.					

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E L X Y □□□ E □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 120μF:121, 2,200μF:222)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 10V:100, 25V:250, 63V:630)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 8,200	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

LXY Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
10	82	5×11.5	0.75	1.5	163	ELXY100E□□820MEB5D
	180	6.3×11.5	0.35	0.70	273	ELXY100E□□181MFB5D
	220	6.3×15	0.25	0.50	390	ELXY100E□□221MF15D
	330	8×12	0.17	0.34	445	ELXY100E□□331MH12D
	390	10×12.5	0.12	0.24	625	ELXY100E□□391MJC5S
	470	8×15	0.13	0.26	555	ELXY100E□□471MH15D
	680	8×20	0.095	0.19	740	ELXY100E□□681MH20D
	680	10×16	0.084	0.17	825	ELXY100E□□681MJ16S
	1,000	10×20	0.062	0.13	1,040	ELXY100E□□102MJ20S
	1,200	10×25	0.052	0.11	1,260	ELXY100E□□122MJ25S
	1,500	10×30	0.044	0.088	1,440	ELXY100E□□152MJ30S
	1,800	12.5×20	0.046	0.092	1,340	ELXY100E□□182MK20S
	2,200	12.5×25	0.034	0.068	1,690	ELXY100E□□222MK25S
	2,700	12.5×30	0.030	0.060	1,950	ELXY100E□□272MK30S
	3,300	12.5×35	0.024	0.048	2,220	ELXY100E□□332MK35S
	3,300	16×20	0.038	0.076	1,630	ELXY100E□□332ML20S
	3,900	12.5×40	0.022	0.044	2,390	ELXY100E□□392MK40S
	3,900	16×25	0.028	0.056	2,070	ELXY100E□□392ML25S
	5,600	16×30	0.025	0.050	2,350	ELXY100E□□562ML30S
	6,800	16×35	0.022	0.044	2,550	ELXY100E□□682ML35S
	8,200	16×40	0.018	0.036	2,900	ELXY100E□□822ML40S
16	56	5×11.5	0.75	1.5	163	ELXY160E□□560MEB5D
	120	6.3×11.5	0.35	0.70	273	ELXY160E□□121MFB5D
	180	6.3×15	0.25	0.50	390	ELXY160E□□181MF15D
	270	8×12	0.17	0.34	445	ELXY160E□□271MH12D
	270	10×12.5	0.12	0.24	625	ELXY160E□□271MJC5S
	330	8×15	0.13	0.26	555	ELXY160E□□331MH15D
	470	8×20	0.095	0.19	740	ELXY160E□□471MH20D
	470	10×16	0.084	0.17	825	ELXY160E□□471MJ16S
	680	10×20	0.062	0.13	1,040	ELXY160E□□681MJ20S
	820	10×25	0.052	0.11	1,260	ELXY160E□□821MJ25S
	1,200	10×30	0.044	0.088	1,440	ELXY160E□□122MJ30S
	1,200	12.5×20	0.046	0.092	1,340	ELXY160E□□122MK20S
	1,500	12.5×25	0.034	0.068	1,690	ELXY160E□□152MK25S
	2,200	12.5×30	0.030	0.060	1,950	ELXY160E□□222MK30S
	2,200	16×20	0.038	0.076	1,630	ELXY160E□□222ML20S
	2,700	12.5×35	0.024	0.048	2,220	ELXY160E□□272MK35S
	2,700	16×25	0.028	0.056	2,070	ELXY160E□□272ML25S
	3,300	12.5×40	0.022	0.044	2,390	ELXY160E□□332MK40S
	3,900	16×30	0.025	0.050	2,350	ELXY160E□□392ML30S
	4,700	16×35	0.022	0.044	2,550	ELXY160E□□472ML35S
	5,600	16×40	0.018	0.036	2,900	ELXY160E□□562ML40S
25	39	5×11.5	0.75	1.5	163	ELXY250E□□390MEB5D
	82	6.3×11.5	0.35	0.70	273	ELXY250E□□820MFB5D
	120	6.3×15	0.25	0.50	390	ELXY250E□□121MF15D
	150	8×12	0.17	0.34	445	ELXY250E□□151MH12D
	180	10×12.5	0.12	0.24	625	ELXY250E□□181MJC5S
	220	8×15	0.13	0.26	555	ELXY250E□□221MH15D
	330	8×20	0.095	0.19	740	ELXY250E□□331MH20D
	330	10×16	0.084	0.17	825	ELXY250E□□331MJ16S
	470	10×20	0.062	0.13	1,040	ELXY250E□□471MJ20S
	560	10×25	0.052	0.11	1,260	ELXY250E□□561MJ25S
	820	10×30	0.044	0.088	1,440	ELXY250E□□821MJ30S
	820	12.5×20	0.046	0.092	1,340	ELXY250E□□821MK20S
	1,000	12.5×25	0.034	0.068	1,690	ELXY250E□□102MK25S
	1,500	12.5×30	0.030	0.060	1,950	ELXY250E□□152MK30S
	1,500	16×20	0.038	0.076	1,630	ELXY250E□□152ML20S
	1,800	12.5×35	0.024	0.048	2,220	ELXY250E□□182MK35S
	1,800	16×25	0.028	0.056	2,070	ELXY250E□□182ML25S
	2,200	12.5×40	0.022	0.044	2,390	ELXY250E□□222MK40S
	2,700	16×30	0.025	0.050	2,350	ELXY250E□□272ML30S
	3,300	16×35	0.022	0.044	2,550	ELXY250E□□332ML35S
	3,900	16×40	0.018	0.036	2,900	ELXY250E□□392ML40S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
35	27	5×11.5	0.75	1.5	163	ELXY350E□□270MEB5D
	56	6.3×11.5	0.35	0.70	273	ELXY350E□□560MFB5D
	82	6.3×15	0.25	0.50	390	ELXY350E□□820MF15D
	120	8×12	0.17	0.34	445	ELXY350E□□121MH12D
	120	10×12.5	0.12	0.24	625	ELXY350E□□121MJC5S
	180	8×15	0.13	0.26	555	ELXY350E□□181MH15D
	220	8×20	0.095	0.19	740	ELXY350E□□221MH20D
	220	10×16	0.084	0.17	825	ELXY350E□□221MJ16S
	330	10×20	0.062	0.13	1,040	ELXY350E□□331MJ20S
	390	10×25	0.052	0.11	1,260	ELXY350E□□391MJ25S
	560	10×30	0.044	0.088	1,440	ELXY350E□□561MJ30S
	560	12.5×20	0.046	0.092	1,340	ELXY350E□□561MK20S
	680	12.5×25	0.034	0.068	1,690	ELXY350E□□681MK25S
	1,000	12.5×30	0.030	0.060	1,950	ELXY350E□□102MK30S
	1,000	16×20	0.038	0.076	1,630	ELXY350E□□102ML20S
	1,200	12.5×35	0.024	0.048	2,220	ELXY350E□□122MK35S
	1,200	16×25	0.028	0.056	2,070	ELXY350E□□122ML25S
	1,500	12.5×40	0.022	0.044	2,390	ELXY350E□□152MK40S
	1,800	16×30	0.025	0.050	2,350	ELXY350E□□182ML30S
	2,200	16×35	0.022	0.044	2,550	ELXY350E□□222ML35S
	2,700	16×40	0.018	0.036	2,900	ELXY350E□□272ML40S
50	18	5×11.5	1.2	2.4	129	ELXY500E□□180MEB5D
	39	6.3×11.5	0.54	1.1	219	ELXY500E□□390MFB5D
	56	6.3×15	0.34	0.68	310	ELXY500E□□560MF15D
	68	8×12	0.30	0.60	340	ELXY500E□□680MH12D
	82	8×15	0.20	0.40	470	ELXY500E□□820MH15D
	82	10×12.5	0.20	0.40	480	ELXY500E□□820MJC5S
	120	8×20	0.14	0.28	610	ELXY500E□□121MH20D
	120	10×16	0.13	0.26	755	ELXY500E□□121MJ16S
	180	10×20	0.088	0.18	945	ELXY500E□□181MJ20S
	220	10×25	0.073	0.15	1,150	ELXY500E□□221MJ25S
	330	10×30	0.054	0.11	1,260	ELXY500E□□331MJ30S
	330	12.5×20	0.059	0.12	1,190	ELXY500E□□331MK20S
	470	12.5×25	0.044	0.088	1,490	ELXY500E□□471MK25S
	560	12.5×30	0.039	0.078	1,720	ELXY500E□□561MK30S
	680	12.5×35	0.033	0.066	1,890	ELXY500E□□681MK35S
	680	16×20	0.050	0.10	1,420	ELXY500E□□681ML20S
	820	12.5×40	0.029	0.058	2,030	ELXY500E□□821MK40S
	820	16×25	0.034	0.068	1,880	ELXY500E□□821ML25S
	1,000	16×30	0.030	0.060	2,150	ELXY500E□□102ML30S
	1,200	16×35	0.027	0.054	2,320	ELXY500E□□122ML35S
	1,500	16×40	0.024	0.048	2,540	ELXY500E□□152ML40S
63	10	5×11.5	1.9	4.8	103	ELXY630E□□100MEB5D
	18	6.3×11.5	1.0	2.5	161	ELXY630E□□180MFB5D
	33	6.3×15	0.61	1.6	233	ELXY630E□□330MF15D
	47	8×12	0.47	1.2	274	ELXY630E□□470MH12D
	56	10×12.5	0.27	0.68	418	ELXY630E□□560MJC5S
	68	8×15	0.34	0.85	360	ELXY630E□□680MH15D
	68	10×16	0.21	0.53	525	ELXY630E□□680MJ16S
	82	8×20	0.21	0.53	500	ELXY630E□□820MH20D
	120	10×20	0.16	0.40	650	ELXY630E□□121MJ20S
	150	10×25	0.13	0.33	783	ELXY630E□□151MJ25S
	180	10×30	0.10	0.25	960	ELXY630E□□181MJ30S
	220	12.5×20	0.11	0.28	870	ELXY630E□□221MK20S
	270	12.5×25	0.074	0.19	1,150	ELXY630E□□271MK25S
	330	16×20	0.085	0.22	1,100	ELXY630E□□331ML20S
	390	12.5×30	0.068	0.17	1,280	ELXY630E□□391MK30S
	470	12.5×35	0.063	0.16	1,390	ELXY630E□□471MK35S
	470	16×25	0.055	0.14	1,480	ELXY630E□□471ML25S
	560	12.5×40	0.051	0.13	1,530	ELXY630E□□561MK40S
	680	16×30	0.046	0.12	1,720	ELXY630E□□681ML30S
	820	16×35	0.040	0.10	1,910	ELXY630E□□821ML35S
	1,000	16×40	0.036	0.090	2,070	ELXY630E□□102ML40S

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

LXV Series

- Low impedance
- Endurance with ripple current : 2,000 to 5,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	6.3 to 100V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 80V, 100V tan δ (Max.): 0.22, 0.19, 0.16, 0.14, 0.12, 0.10, 0.10, 0.09, 0.08 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change ΔC (-55℃ /+20℃): 0.7min. Max. impedance ratio (-55℃ /+20℃): 3max.(6.3V_{dc}: 4max.) (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃. Time: φ5 to 6.3 : 2,000hours φ8 &10: 3,000hours φ12.5to φ18: 5,000hours Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

LXV Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	120	5×11.5	0.72	1.8	165	ELXV6R3E□□121MEB5D
	220	6.3×11.5	0.38	0.95	255	ELXV6R3E□□221MFB5D
	330	6.3×15	0.27	0.68	330	ELXV6R3E□□331MF15D
	390	8×12	0.20	0.50	415	ELXV6R3E□□391MH12D
	470	10×12.5	0.12	0.30	635	ELXV6R3E□□471MJC5S
	560	8×15	0.16	0.40	495	ELXV6R3E□□561MH15D
	680	10×16	0.084	0.21	825	ELXV6R3E□□681MJ16S
	820	8×20	0.11	0.28	640	ELXV6R3E□□821MH20D
	1,200	10×20	0.062	0.16	1,060	ELXV6R3E□□122MJ20S
	1,500	10×25	0.052	0.13	1,260	ELXV6R3E□□152MJ25S
	2,200	10×30	0.044	0.11	1,450	ELXV6R3E□□222MJ30S
	2,200	12.5×20	0.046	0.12	1,360	ELXV6R3E□□222MK20S
	2,700	12.5×25	0.034	0.085	1,700	ELXV6R3E□□272MK25S
	3,900	12.5×30	0.030	0.075	1,980	ELXV6R3E□□392MK30S
	3,900	16×20	0.038	0.095	1,770	ELXV6R3E□□392ML20S
	4,700	12.5×35	0.027	0.068	2,230	ELXV6R3E□□472MK35S
	5,600	12.5×40	0.024	0.060	2,460	ELXV6R3E□□562MK40S
	5,600	16×25	0.028	0.070	2,190	ELXV6R3E□□562ML25S
	5,600	18×20	0.036	0.090	1,940	ELXV6R3E□□562MM20S
	6,800	16×30	0.025	0.063	2,510	ELXV6R3E□□682ML30S
	6,800	18×25	0.027	0.068	2,350	ELXV6R3E□□682MM25S
	8,200	16×35	0.022	0.055	2,770	ELXV6R3E□□822ML35S
	10,000	16×40	0.018	0.045	3,110	ELXV6R3E□□103ML40S
	10,000	18×30	0.024	0.060	2,720	ELXV6R3E□□103MM30S
	12,000	18×35	0.021	0.053	3,050	ELXV6R3E□□123MM35S
	15,000	18×40	0.017	0.043	3,300	ELXV6R3E□□153MM40S
10	82	5×11.5	0.72	1.8	165	ELXV100E□□820MEB5D
	180	6.3×11.5	0.38	0.95	255	ELXV100E□□181MFB5D
	270	6.3×15	0.27	0.68	330	ELXV100E□□271MF15D
	330	8×12	0.20	0.50	415	ELXV100E□□331MH12D
	390	10×12.5	0.12	0.30	635	ELXV100E□□391MJC5S
	470	8×15	0.16	0.40	495	ELXV100E□□471MH15D
	680	8×20	0.11	0.28	640	ELXV100E□□681MH20D
	680	10×16	0.084	0.21	825	ELXV100E□□681MJ16S
	1,000	10×20	0.062	0.16	1,060	ELXV100E□□102MJ20S
	1,200	10×25	0.052	0.13	1,260	ELXV100E□□122MJ25S
	1,500	10×30	0.044	0.11	1,450	ELXV100E□□152MJ30S
	1,800	12.5×20	0.046	0.12	1,360	ELXV100E□□182MK20S
	2,200	12.5×25	0.034	0.085	1,700	ELXV100E□□222MK25S
	2,700	12.5×30	0.030	0.075	1,980	ELXV100E□□272MK30S
	3,300	12.5×35	0.027	0.068	2,230	ELXV100E□□332MK35S
	3,300	16×20	0.038	0.095	1,770	ELXV100E□□332ML20S
	3,900	12.5×40	0.024	0.060	2,460	ELXV100E□□392MK40S
	3,900	16×25	0.028	0.070	2,190	ELXV100E□□392ML25S
	3,900	18×20	0.036	0.090	1,940	ELXV100E□□392MM20S
	4,700	18×25	0.027	0.068	2,350	ELXV100E□□472MM25S
	5,600	16×30	0.025	0.063	2,510	ELXV100E□□562ML30S
	6,800	16×35	0.022	0.055	2,770	ELXV100E□□682ML35S
	6,800	18×30	0.024	0.060	2,720	ELXV100E□□682MM30S
	8,200	16×40	0.018	0.045	3,110	ELXV100E□□822ML40S
	8,200	18×35	0.021	0.053	3,050	ELXV100E□□822MM35S
	10,000	18×40	0.017	0.043	3,300	ELXV100E□□103MM40S
16	56	5×11.5	0.72	1.8	165	ELXV160E□□560MEB5D
	120	6.3×11.5	0.38	0.95	255	ELXV160E□□121MFB5D
	180	6.3×15	0.27	0.68	330	ELXV160E□□181MF15D
	270	8×12	0.20	0.50	415	ELXV160E□□271MH12D
	270	10×12.5	0.12	0.30	635	ELXV160E□□271MJC5S
	330	8×15	0.16	0.40	495	ELXV160E□□331MH15D
	470	8×20	0.11	0.28	640	ELXV160E□□471MH20D
	470	10×16	0.084	0.21	825	ELXV160E□□471MJ16S
	680	10×20	0.062	0.16	1,060	ELXV160E□□681MJ20S
	820	10×25	0.052	0.13	1,260	ELXV160E□□821MJ25S
	1,200	10×30	0.044	0.11	1,450	ELXV160E□□122MJ30S
	1,200	12.5×20	0.046	0.12	1,360	ELXV160E□□122MK20S
	1,500	12.5×25	0.034	0.085	1,700	ELXV160E□□152MK25S
	2,200	12.5×30	0.030	0.075	1,980	ELXV160E□□222MK30S
	2,200	16×20	0.038	0.095	1,770	ELXV160E□□222ML20S
16	2,700	12.5×35	0.027	0.068	2,230	ELXV160E□□272MK35S
	2,700	16×25	0.028	0.070	2,190	ELXV160E□□272ML25S
	3,300	12.5×40	0.024	0.060	2,460	ELXV160E□□332MK40S
	3,300	18×20	0.036	0.090	1,940	ELXV160E□□332MM20S
	3,900	16×30	0.025	0.063	2,510	ELXV160E□□392ML30S
	3,900	18×25	0.027	0.068	2,350	ELXV160E□□392MM25S
	4,700	16×35	0.022	0.055	2,770	ELXV160E□□472ML35S
	4,700	18×30	0.024	0.060	2,720	ELXV160E□□472MM30S
	5,600	16×40	0.018	0.045	3,110	ELXV160E□□562ML40S
	6,800	18×35	0.021	0.053	3,050	ELXV160E□□682MM35S
	8,200	18×40	0.017	0.043	3,300	ELXV160E□□822MM40S
25	39	5×11.5	0.72	1.8	165	ELXV250E□□390MEB5D
	82	6.3×11.5	0.38	0.95	255	ELXV250E□□820MFB5D
	120	6.3×15	0.27	0.68	330	ELXV250E□□121MF15D
	150	8×12	0.20	0.50	415	ELXV250E□□151MH12D
	180	10×12.5	0.12	0.30	635	ELXV250E□□181MJC5S
	220	8×15	0.16	0.40	495	ELXV250E□□221MH15D
	330	8×20	0.11	0.28	640	ELXV250E□□331MH20D
	330	10×16	0.084	0.21	825	ELXV250E□□331MJ16S
	470	10×20	0.062	0.16	1,060	ELXV250E□□471MJ20S
	560	10×25	0.052	0.13	1,260	ELXV250E□□561MJ25S
	820	10×30	0.044	0.11	1,450	ELXV250E□□821MJ30S
	820	12.5×20	0.046	0.12	1,360	ELXV250E□□821MK20S
	1,000	12.5×25	0.034	0.085	1,700	ELXV250E□□102MK25S
	1,500	12.5×30	0.030	0.075	1,980	ELXV250E□□152MK30S
	1,500	16×20	0.038	0.095	1,770	ELXV250E□□152ML20S
	1,800	12.5×35	0.027	0.068	2,230	ELXV250E□□182MK35S
	1,800	16×25	0.028	0.070	2,190	ELXV250E□□182ML25S
	2,200	12.5×40	0.024	0.060	2,460	ELXV250E□□222MK40S
	2,200	18×20	0.036	0.090	1,940	ELXV250E□□222MM20S
	2,700	16×30	0.025	0.063	2,510	ELXV250E□□272ML30S
	2,700	18×25	0.027	0.068	2,350	ELXV250E□□272MM25S
	3,300	16×35	0.022	0.055	2,770	ELXV250E□□332ML35S
	3,300	18×30	0.024	0.060	2,720	ELXV250E□□332MM30S
	3,900	16×40	0.018	0.045	3,110	ELXV250E□□392ML40S
	3,900	18×35	0.021	0.053	3,050	ELXV250E□□392MM35S
	4,700	18×40	0.017	0.043	3,300	ELXV250E□□472MM40S
35	27	5×11.5	0.72	1.8	165	ELXV350E□□270MEB5D
	56	6.3×11.5	0.38	0.95	255	ELXV350E□□560MFB5D
	82	6.3×15	0.27	0.68	330	ELXV350E□□820MF15D
	120	8×12	0.20	0.50	415	ELXV350E□□121MH12D
	120	10×12.5	0.12	0.30	635	ELXV350E□□121MJC5S
	180	8×15	0.16	0.40	495	ELXV350E□□181MH15D
	220	8×20	0.11	0.28	640	ELXV350E□□221MH20D
	220	10×16	0.084	0.21	825	ELXV350E□□221MJ16S
	330	10×20	0.062	0.16	1,060	ELXV350E□□331MJ20S
	390	10×25	0.052	0.13	1,260	ELXV350E□□391MJ25S
	560	10×30	0.044	0.11	1,450	ELXV350E□□561MJ30S
	560	12.5×20	0.046	0.12	1,360	ELXV350E□□561MK20S
	680	12.5×25	0.034	0.085	1,700	ELXV350E□□681MK25S
	1,000	12.5×30	0.030	0.075	1,980	ELXV350E□□102MK30S
	1,000	16×20	0.038	0.095	1,770	ELXV350E□□102ML20S
	1,200	12.5×35	0.027	0.068	2,230	ELXV350E□□122MK35S
	1,200	16×25	0.028	0.070	2,190	ELXV350E□□122ML25S
	1,500	12.5×40	0.024	0.060	2,460	ELXV350E□□152MK40S
	1,500	18×20	0.036	0.090	1,940	ELXV350E□□152MM20S
	1,800	16×30	0.025	0.063	2,510	ELXV350E□□182ML30S
	1,800	18×25	0.027	0.068	2,350	ELXV350E□□182MM25S
	2,200	16×35	0.022	0.055	2,770	ELXV350E□□222ML35S
	2,200	18×30	0.024	0.060	2,720	ELXV350E□□222MM30S
	2,700	16×40	0.018	0.045	3,110	ELXV350E□□272ML40S
	2,700	18×35	0.021	0.053	3,050	ELXV350E□□272MM35S
	3,300	18×40	0.017	0.043	3,300	ELXV350E□□332MM40S
50	18	5×11.5	1.1	3.3	165	ELXV500E□□180MEB5D
	39	6.3×11.5	0.56	1.6	255	ELXV500E□□390MFB5D
	56	6.3×15	0.41	1.2	310	ELXV500E□□560MF15D
	68	8×12	0.29	0.84	415	ELXV500E□□680MH12D

□□ : Enter the appropriate lead forming or taping code.

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Low impedance, 105℃

LXV Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -10℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
50	82	8×15	0.24	0.72	505	ELXV500E□□820MH15D
	82	10×12.5	0.16	0.40	530	ELXV500E□□820MJC5S
	120	8×20	0.18	0.52	610	ELXV500E□□121MH20D
	120	10×16	0.12	0.30	755	ELXV500E□□121MJ16S
	180	10×20	0.088	0.22	945	ELXV500E□□181MJ20S
	220	10×25	0.068	0.17	1,150	ELXV500E□□221MJ25S
	330	10×30	0.059	0.15	1,260	ELXV500E□□331MJ30S
	330	12.5×20	0.059	0.15	1,190	ELXV500E□□331MK20S
	470	12.5×25	0.045	0.11	1,500	ELXV500E□□471MK25S
	560	12.5×30	0.039	0.098	1,720	ELXV500E□□561MK30S
	680	12.5×35	0.033	0.083	1,900	ELXV500E□□681MK35S
	680	16×20	0.043	0.11	1,500	ELXV500E□□681ML20S
	820	12.5×40	0.029	0.073	2,120	ELXV500E□□821MK40S
	820	16×25	0.033	0.083	1,880	ELXV500E□□821ML25S
	820	18×20	0.039	0.098	1,660	ELXV500E□□821MM20S
	1,000	16×30	0.029	0.073	2,150	ELXV500E□□102ML30S
	1,000	18×25	0.030	0.075	2,020	ELXV500E□□102MM25S
	1,200	16×35	0.025	0.063	2,320	ELXV500E□□122ML35S
	1,500	16×40	0.021	0.053	2,650	ELXV500E□□152ML40S
	1,500	18×30	0.026	0.065	2,340	ELXV500E□□152MM30S
	1,800	18×35	0.023	0.058	2,620	ELXV500E□□182MM35S
	2,200	18×40	0.020	0.050	2,790	ELXV500E□□222MM40S
63	12	5×11.5	1.9	4.8	100	ELXV630E□□120MEB5D
	27	6.3×11.5	1.1	2.8	160	ELXV630E□□270MFB5D
	39	6.3×15	0.62	1.6	230	ELXV630E□□390MF15D
	47	8×12	0.49	1.3	275	ELXV630E□□470MH12D
	56	10×12.5	0.27	0.68	420	ELXV630E□□560MJC5S
	68	8×15	0.34	0.85	360	ELXV630E□□680MH15D
	68	10×16	0.21	0.53	523	ELXV630E□□680MJ16S
	82	8×20	0.21	0.53	500	ELXV630E□□820MH20D
	120	10×20	0.16	0.40	650	ELXV630E□□121MJ20S
	150	10×25	0.13	0.33	780	ELXV630E□□151MJ25S
	180	10×30	0.10	0.25	960	ELXV630E□□181MJ30S
	220	12.5×20	0.11	0.28	870	ELXV630E□□221MK20S
	270	12.5×25	0.074	0.19	1,150	ELXV630E□□271MK25S
	390	12.5×30	0.068	0.17	1,280	ELXV630E□□391MK30S
	390	16×20	0.085	0.22	1,100	ELXV630E□□391ML20S
	470	12.5×35	0.063	0.16	1,390	ELXV630E□□471MK35S
	470	16×25	0.055	0.14	1,480	ELXV630E□□471ML25S
	560	12.5×40	0.051	0.13	1,530	ELXV630E□□561MK40S
	560	18×20	0.085	0.22	1,170	ELXV630E□□561MM20S
	680	16×30	0.046	0.12	1,720	ELXV630E□□681ML30S
	680	18×25	0.055	0.14	1,520	ELXV630E□□681MM25S
	820	16×35	0.040	0.10	1,910	ELXV630E□□821ML35S
	820	18×30	0.046	0.12	1,770	ELXV630E□□821MM30S
	1,000	16×40	0.036	0.09	2,070	ELXV630E□□102ML40S
	1,000	18×35	0.040	0.10	1,970	ELXV630E□□102MM35S
	1,200	18×40	0.036	0.09	2,130	ELXV630E□□122MM40S
80	8.2	5×11.5	1.9	5.1	100	ELXV800E□□8R2MEB5D
	18	6.3×11.5	1.1	3.0	150	ELXV800E□□180MFB5D
80	27	6.3×15	0.62	1.7	220	ELXV800E□□270MF15D
	33	8×12	0.53	1.5	275	ELXV800E□□330MH12D
	39	10×12.5	0.47	1.3	380	ELXV800E□□390MJC5S
	47	8×15	0.35	0.97	360	ELXV800E□□470MH15D
	56	8×20	0.27	0.74	490	ELXV800E□□560MH20D
	56	10×16	0.33	0.90	500	ELXV800E□□560MJ16S
	82	10×20	0.26	0.70	620	ELXV800E□□820MJ20S
	100	10×25	0.19	0.52	795	ELXV800E□□101MJ25S
	150	10×30	0.15	0.41	955	ELXV800E□□151MJ30S
	150	12.5×20	0.15	0.41	890	ELXV800E□□151MK20S
	180	12.5×25	0.11	0.30	1,040	ELXV800E□□181MK25S
	270	12.5×30	0.094	0.26	1,270	ELXV800E□□271MK30S
	270	16×20	0.11	0.30	1,240	ELXV800E□□271ML20S
	330	12.5×35	0.087	0.24	1,450	ELXV800E□□331MK35S
	330	16×25	0.081	0.22	1,440	ELXV800E□□331ML25S
	390	12.5×40	0.060	0.17	1,610	ELXV800E□□391MK40S
	390	18×20	0.085	0.23	1,450	ELXV800E□□391MM20S
	470	16×30	0.058	0.16	1,790	ELXV800E□□471ML30S
	470	18×25	0.070	0.19	1,650	ELXV800E□□471MM25S
	560	16×35	0.052	0.14	2,000	ELXV800E□□561ML35S
	680	16×40	0.041	0.11	2,200	ELXV800E□□681ML40S
	680	18×30	0.058	0.16	1,850	ELXV800E□□681MM30S
	820	18×35	0.052	0.14	1,990	ELXV800E□□821MM35S
	1,000	18×40	0.041	0.11	2,370	ELXV800E□□102MM40S
100	5.6	5×11.5	1.9	5.1	100	ELXV101E□□5R6MEB5D
	12	6.3×11.5	1.1	3.0	150	ELXV101E□□120MFB5D
	18	6.3×15	0.62	1.7	220	ELXV101E□□180MF15D
	22	8×12	0.53	1.5	275	ELXV101E□□220MH12D
	27	10×12.5	0.47	1.3	380	ELXV101E□□270MJC5S
	33	8×15	0.35	0.97	360	ELXV101E□□330MH15D
	33	10×16	0.33	0.90	500	ELXV101E□□330MJ16S
	39	8×20	0.27	0.74	490	ELXV101E□□390MH20D
	56	10×20	0.26	0.70	620	ELXV101E□□560MJ20S
	68	10×25	0.19	0.52	795	ELXV101E□□680MJ25S
	100	10×30	0.15	0.41	955	ELXV101E□□101MJ30S
	100	12.5×20	0.15	0.41	890	ELXV101E□□101MK20S
	120	12.5×25	0.11	0.30	1,040	ELXV101E□□121MK25S
	180	12.5×30	0.094	0.26	1,270	ELXV101E□□181MK30S
	180	16×20	0.11	0.30	1,240	ELXV101E□□181ML20S
	220	12.5×35	0.087	0.24	1,450	ELXV101E□□221MK35S
	220	16×25	0.081	0.22	1,440	ELXV101E□□221ML25S
	270	12.5×40	0.060	0.17	1,610	ELXV101E□□271MK40S
	270	18×20	0.085	0.23	1,450	ELXV101E□□271MM20S
	330	16×30	0.058	0.16	1,790	ELXV101E□□331ML30S
	330	18×25	0.070	0.19	1,650	ELXV101E□□331MM25S
	390	16×35	0.052	0.14	2,000	ELXV101E□□391ML35S
	390	18×30	0.058	0.16	1,850	ELXV101E□□391MM30S
	470	16×40	0.041	0.11	2,200	ELXV101E□□471ML40S
	560	18×35	0.052	0.14	1,990	ELXV101E□□561MM35S
	680	18×40	0.041	0.11	2,370	ELXV101E□□681MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Rated voltage (Vdc)	Case size φD (mm)	Frequency (Hz) 120	1k	10k	100k	Rated voltage (Vdc)	Case size φD (mm)	Frequency (Hz) 120	1k	10k	100k
6.3 & 10	5 to 8	0.65	0.83	0.95	1.00	35 & 50	5 to 8	0.40	0.66	0.85	1.00
	10 & 12.5	0.70	0.85	0.96	1.00		10 & 12.5	0.50	0.73	0.89	1.00
	16 & 18	0.85	0.92	0.97	1.00		16 & 18	0.60	0.81	0.94	1.00
16 & 25	5 to 8	0.55	0.76	0.91	1.00	63 to 100	5 to 8	0.20	0.55	0.80	1.00
	10 & 12.5	0.65	0.83	0.93	1.00		10 & 12.5	0.35	0.65	0.85	1.00
	16 & 18	0.70	0.87	0.96	1.00		16 & 18	0.50	0.75	0.90	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

400 to 450Vdc, long life, 105℃

KXL Series

- Ideal for low profile power supply applications
- Downsizing from KXJ series
- Rated voltage range : 400 to 450Vdc, Capacitance range : 15 to 150µF
- Endurance with ripple current : 10,000 to 12,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-40 to +105℃		
Rated Voltage Range	400 to 450Vdc		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I=0.04CV+100 (after 1 minute) I=0.02CV+25 (after 5 minutes) Where, I : Max. leakage current(µA), C : Nominal capacitance (µF), V : Rated voltage (V)		(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	400 to 450V	
	tan δ (Max.)	0.24	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	400 to 450V	
	Z(-25℃)/Z(+20℃)	6	
	Z(-40℃)/Z(+20℃)	10	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 12,000 hours (10,000 hours for 20L) at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦500% of the initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	14.5	16	18
φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5
φD'	φD+0.5 max.				
L'	L+2.0 max.				

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

400 to 450Vdc, long life, 105℃

KXL Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
400	18	10×20	0.24	220	EKXL401E□□180MJ20S
	22	10×25	0.24	250	EKXL401E□□220MJ25S
	27	12.5×20	0.24	300	EKXL401E□□270MK20S
	33	10×30	0.24	340	EKXL401E□□330MJ30S
	39	10×35	0.24	390	EKXL401E□□390MJ35S
	39	12.5×25	0.24	390	EKXL401E□□390MK25S
	39	14.5×20	0.24	370	EKXL401E□□390MU20S
	47	10×40	0.24	440	EKXL401E□□470MJ40S
	56	10×45	0.24	500	EKXL401E□□560MJ45S
	56	12.5×30	0.24	495	EKXL401E□□560MK30S
	56	14.5×25	0.24	495	EKXL401E□□560MU25S
	56	16×20	0.24	480	EKXL401E□□560ML20S
	68	12.5×35	0.24	570	EKXL401E□□680MK35S
	68	14.5×30	0.24	585	EKXL401E□□680MU30S
	68	16×25	0.24	570	EKXL401E□□680ML25S
	68	18×20	0.24	530	EKXL401E□□680MM20S
	82	12.5×40	0.24	650	EKXL401E□□820MK40S
	82	14.5×35	0.24	670	EKXL401E□□820MU35S
	100	12.5×50	0.24	760	EKXL401E□□101MK50S
	100	14.5×40	0.24	760	EKXL401E□□101MU40S
	100	16×30	0.24	720	EKXL401E□□101ML30S
	100	18×25	0.24	710	EKXL401E□□101MM25S
	120	14.5×45	0.24	840	EKXL401E□□121MU45S
	120	16×35	0.24	810	EKXL401E□□121ML35S
	120	18×30	0.24	840	EKXL401E□□121MM30S
	150	18×35	0.24	930	EKXL401E□□151MM35S
420	15	10×20	0.24	195	EKXL421E□□150MJ20S
	22	10×25	0.24	250	EKXL421E□□220MJ25S
	27	10×30	0.24	300	EKXL421E□□270MJ30S
	27	12.5×20	0.24	300	EKXL421E□□270MK20S
	33	10×35	0.24	350	EKXL421E□□330MJ35S
	33	12.5×25	0.24	350	EKXL421E□□330MK25S
	33	14.5×20	0.24	350	EKXL421E□□330MU20S
	39	10×40	0.24	400	EKXL421E□□390MJ40S
	47	10×45	0.24	460	EKXL421E□□470MJ45S
	47	12.5×30	0.24	440	EKXL421E□□470MK30S
	47	16×20	0.24	430	EKXL421E□□470ML20S
	56	10×50	0.24	520	EKXL421E□□560MJ50S
	56	12.5×35	0.24	510	EKXL421E□□560MK35S
	56	14.5×25	0.24	490	EKXL421E□□560MU25S
	68	12.5×40	0.24	580	EKXL421E□□680MK40S
	68	14.5×30	0.24	560	EKXL421E□□680MU30S
	68	16×25	0.24	560	EKXL421E□□680ML25S
	68	18×20	0.24	540	EKXL421E□□680MM20S
	82	12.5×45	0.24	660	EKXL421E□□820MK45S
	82	14.5×35	0.24	660	EKXL421E□□820MU35S
	82	16×30	0.24	650	EKXL421E□□820ML30S
	82	18×25	0.24	640	EKXL421E□□820MM25S
	100	12.5×50	0.24	750	EKXL421E□□101MK50S
	100	14.5×40	0.24	720	EKXL421E□□101MU40S
	100	16×35	0.24	730	EKXL421E□□101ML35S
	120	16×40	0.24	840	EKXL421E□□121ML40S
	120	18×30	0.24	800	EKXL421E□□121MM30S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
450	15	10×20	0.24	190	EKXL451E□□150MJ20S
	18	10×25	0.24	230	EKXL451E□□180MJ25S
	27	10×30	0.24	300	EKXL451E□□270MJ30S
	27	12.5×20	0.24	290	EKXL451E□□270MK20S
	33	10×35	0.24	350	EKXL451E□□330MJ35S
	33	12.5×25	0.24	360	EKXL451E□□330MK25S
	33	14.5×20	0.24	335	EKXL451E□□330MU20S
	39	10×40	0.24	400	EKXL451E□□390MJ40S
	39	16×20	0.24	400	EKXL451E□□390ML20S
	47	10×50	0.24	480	EKXL451E□□470MJ50S
	47	12.5×30	0.24	440	EKXL451E□□470MK30S
	47	14.5×25	0.24	450	EKXL451E□□470MU25S
	56	12.5×35	0.24	500	EKXL451E□□560MK35S
	56	14.5×30	0.24	540	EKXL451E□□560MU30S
	56	16×25	0.24	500	EKXL451E□□560ML25S
	56	18×20	0.24	500	EKXL451E□□560MM20S
	68	12.5×40	0.24	580	EKXL451E□□680MK40S
	68	14.5×35	0.24	620	EKXL451E□□680MU35S
	82	12.5×50	0.24	680	EKXL451E□□820MK50S
	82	14.5×40	0.24	670	EKXL451E□□820MU40S
	82	16×30	0.24	650	EKXL451E□□820ML30S
	82	18×25	0.24	650	EKXL451E□□820MM25S
	100	14.5×45	0.24	760	EKXL451E□□101MU45S
	100	16×35	0.24	730	EKXL451E□□101ML35S
	100	18×30	0.24	750	EKXL451E□□101MM30S
	120	18×35	0.24	860	EKXL451E□□121MM35S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
15 to 82	1.00	1.75	2.25	2.50
100 to 150	1.00	1.67	2.05	2.25

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 500Vdc, long life, 105℃

KXJ Series

- Downsized and Longer life from current KXG series
- Endurance with ripple current : 8,000 to 12,000 hours at 105℃
- Rated voltage range : 160 to 500V, Capacitance range : 6.8 to 680μF
- For electronic ballast circuits and other long life applications
- Non solvent resistant type
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

KXJ ↑ Downsized KXG

500V Lineup!

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	−40 to +105℃ (160 to 450Vdc) -25 to +105℃ (500Vdc)				
Rated Voltage Range	160 to 500Vdc				
Capacitance Tolerance	±20% (M)				(at 20℃, 120Hz)
Leakage Current		After 1 minute	After 5 minutes		
	CV≦1000	I=0.1CV+40	I=0.03CV+15		
	CV>1000	I=0.04CV+100	I=0.02CV+25		
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)				(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	160 to 250V	350 to 500V		
	tan δ (Max.)	0.20	0.24		(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	160 to 250V	350, 400V	420 to 500V	
	Z(−25℃)/Z(+20℃)	3	5	6	
	Z(−40℃)/Z(+20℃)	6	6	−	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied(the peak voltage shall not exceed the rated voltage) for the specified time at 105℃.				
	Rated voltage (Vdc)	160 to 450V	500V		
	Time	16L to 20L : 10,000hours, 25L to 50L : 12,000hours	φ10 : 8,000hours, φ12.5 to φ18 : 10.000hours		
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦500% of the initial specified value			

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	14.5	16	18
φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5
φD'	φD+0.5max.				
L'	L+1.5max.				

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E K X J □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 6.8μF:6R8,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 160V:161,400V:401)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 500Vdc, long life, 105℃

KXJ Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 120Hz)	Part No.
160	39	10×16	0.20	245	EKXJ161E□□390MJ16S
	56	10×20	0.20	315	EKXJ161E□□560MJ20S
	82	10×25	0.20	415	EKXJ161E□□820MJ25S
	82	10×30	0.20	445	EKXJ161E□□820MJ30S
	100	12.5×20	0.20	575	EKXJ161E□□101MK20S
	120	10×35	0.20	570	EKXJ161E□□121MJ35S
	120	14.5×20	0.20	675	EKXJ161E□□121MU20S
	150	10×40	0.20	665	EKXJ161E□□151MJ40S
	150	10×45	0.20	695	EKXJ161E□□151MJ45S
	150	12.5×25	0.20	765	EKXJ161E□□151MK25S
	180	10×50	0.20	785	EKXJ161E□□181MJ50S
	180	12.5×30	0.20	885	EKXJ161E□□181MK30S
	180	14.5×25	0.20	890	EKXJ161E□□181MU25S
	180	16×20	0.20	855	EKXJ161E□□181ML20S
	220	12.5×35	0.20	1,040	EKXJ161E□□221MK35S
	220	16×25	0.20	1,020	EKXJ161E□□221ML25S
	220	18×20	0.20	990	EKXJ161E□□221MM20S
	270	12.5×40	0.20	1,190	EKXJ161E□□271MK40S
	270	12.5×45	0.20	1,230	EKXJ161E□□271MK45S
	270	14.5×31.5	0.20	1,170	EKXJ161E□□271MUN3S
	270	14.5×35.5	0.20	1,210	EKXJ161E□□271MUP1S
	330	12.5×50	0.20	1,400	EKXJ161E□□331MK50S
	330	14.5×40	0.20	1,385	EKXJ161E□□331MU40S
	330	16×31.5	0.20	1,350	EKXJ161E□□331MLN3S
	330	18×25	0.20	1,290	EKXJ161E□□331MM25S
	390	14.5×45	0.20	1,545	EKXJ161E□□391MU45S
	390	16×35.5	0.20	1,500	EKXJ161E□□391MLP1S
	470	14.5×50	0.20	1,735	EKXJ161E□□471MU50S
	470	16×40	0.20	1,700	EKXJ161E□□471ML40S
	470	16×45	0.20	1,730	EKXJ161E□□471ML45S
	470	18×31.5	0.20	1,660	EKXJ161E□□471MMN3S
	470	18×35.5	0.20	1,715	EKXJ161E□□471MMP1S
	560	16×50	0.20	1,920	EKXJ161E□□561ML50S
	560	18×40	0.20	1,905	EKXJ161E□□561MM40S
	680	18×45	0.20	2,130	EKXJ161E□□681MM45S
	680	18×50	0.20	2,145	EKXJ161E□□681MM50S
200	27	10×16	0.20	200	EKXJ201E□□270MJ16S
	47	10×20	0.20	290	EKXJ201E□□470MJ20S
	56	10×25	0.20	345	EKXJ201E□□560MJ25S
	68	10×30	0.20	405	EKXJ201E□□680MJ30S
	82	12.5×20	0.20	520	EKXJ201E□□820MK20S
	100	10×35	0.20	520	EKXJ201E□□101MJ35S
	100	12.5×25	0.20	625	EKXJ201E□□101MK25S
	100	14.5×20	0.20	615	EKXJ201E□□101MU20S
	120	10×40	0.20	595	EKXJ201E□□121MJ40S
	120	10×45	0.20	620	EKXJ201E□□121MJ45S
	120	12.5×30	0.20	725	EKXJ201E□□121MK30S
	120	16×20	0.20	695	EKXJ201E□□121ML20S
	150	10×50	0.20	720	EKXJ201E□□151MJ50S
	150	12.5×35	0.20	860	EKXJ201E□□151MK35S
	150	14.5×25	0.20	810	EKXJ201E□□151MU25S
	180	14.5×31.5	0.20	955	EKXJ201E□□181MUN3S
	180	16×25	0.20	925	EKXJ201E□□181ML25S
	180	18×20	0.20	895	EKXJ201E□□181MM20S
	220	12.5×40	0.20	1,075	EKXJ201E□□221MK40S
	220	12.5×45	0.20	1,110	EKXJ201E□□221MK45S
	220	14.5×35.5	0.20	1,095	EKXJ201E□□221MUP1S
	220	18×25	0.20	1,050	EKXJ201E□□221MM25S
	270	12.5×50	0.20	1,265	EKXJ201E□□271MK50S
	270	14.5×40	0.20	1,250	EKXJ201E□□271MU40S
	270	14.5×45	0.20	1,290	EKXJ201E□□271MU45S
	270	16×31.5	0.20	1,220	EKXJ201E□□271MLN3S
	270	16×35.5	0.20	1,250	EKXJ201E□□271MLP1S
	330	14.5×50	0.20	1,450	EKXJ201E□□331MU50S
	330	16×40	0.20	1,425	EKXJ201E□□331ML40S
	330	18×31.5	0.20	1,395	EKXJ201E□□331MMN3S
	390	16×45	0.20	1,575	EKXJ201E□□391ML45S
	390	18×35.5	0.20	1,565	EKXJ201E□□391MMP1S
	470	16×50	0.20	1,755	EKXJ201E□□471ML50S
	470	18×40	0.20	1,745	EKXJ201E□□471MM40S
	470	18×45	0.20	1,770	EKXJ201E□□471MM45S
	560	18×50	0.20	1,945	EKXJ201E□□561MM50S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 120Hz)	Part No.
220	27	10×16	0.20	200	EKXJ221E□□270MJ16S
	39	10×20	0.20	265	EKXJ221E□□390MJ20S
	56	10×25	0.20	345	EKXJ221E□□560MJ25S
	56	10×30	0.20	370	EKXJ221E□□560MJ30S
	68	12.5×20	0.20	475	EKXJ221E□□680MK20S
	82	10×35	0.20	470	EKXJ221E□□820MJ35S
	82	14.5×20	0.20	555	EKXJ221E□□820MU20S
	100	10×40	0.20	545	EKXJ221E□□101MJ40S
	100	10×45	0.20	565	EKXJ221E□□101MJ45S
	100	12.5×25	0.20	625	EKXJ221E□□101MK25S
	120	10×50	0.20	645	EKXJ221E□□121MJ50S
	120	12.5×30	0.20	725	EKXJ221E□□121MK30S
	120	14.5×25	0.20	725	EKXJ221E□□121MU25S
	120	16×20	0.20	695	EKXJ221E□□121ML20S
	150	12.5×35	0.20	860	EKXJ221E□□151MK35S
	150	16×25	0.20	845	EKXJ221E□□151ML25S
	150	18×20	0.20	815	EKXJ221E□□151MM20S
	180	12.5×40	0.20	975	EKXJ221E□□181MK40S
	180	12.5×45	0.20	1,005	EKXJ221E□□181MK45S
	180	14.5×31.5	0.20	955	EKXJ221E□□181MUN3S
	220	12.5×50	0.20	1,145	EKXJ221E□□221MK50S
	220	14.5×35.5	0.20	1,095	EKXJ221E□□221MUP1S
	220	14.5×40	0.20	1,130	EKXJ221E□□221MU40S
	220	16×31.5	0.20	1,100	EKXJ221E□□221MLN3S
	220	18×25	0.20	1,050	EKXJ221E□□221MM25S
	270	14.5×45	0.20	1,285	EKXJ221E□□271MU45S
	270	14.5×50	0.20	1,315	EKXJ221E□□271MU50S
	270	16×35.5	0.20	1,245	EKXJ221E□□271MLP1S
	270	18×31.5	0.20	1,260	EKXJ221E□□271MMN3S
	330	16×40	0.20	1,425	EKXJ221E□□331ML40S
	330	16×45	0.20	1,450	EKXJ221E□□331ML45S
	330	18×35.5	0.20	1,440	EKXJ221E□□331MMP1S
	390	16×50	0.20	1,600	EKXJ221E□□391ML50S
	390	18×40	0.20	1,590	EKXJ221E□□391MM40S
	390	18×45	0.20	1,620	EKXJ221E□□391MM45S
	470	18×50	0.20	1,785	EKXJ221E□□471MM50S
250	22	10×16	0.20	185	EKXJ251E□□220MJ16S
	33	10×20	0.20	240	EKXJ251E□□330MJ20S
	47	10×25	0.20	315	EKXJ251E□□470MJ25S
	47	10×30	0.20	340	EKXJ251E□□470MJ30S
	56	12.5×20	0.20	430	EKXJ251E□□560MK20S
	68	10×35	0.20	430	EKXJ251E□□680MJ35S
	68	14.5×20	0.20	505	EKXJ251E□□680MU20S
	82	10×40	0.20	495	EKXJ251E□□820MJ40S
	82	10×45	0.20	515	EKXJ251E□□820MJ45S
	82	12.5×25	0.20	565	EKXJ251E□□820MK25S
	100	10×50	0.20	585	EKXJ251E□□101MJ50S
	100	12.5×30	0.20	660	EKXJ251E□□101MK30S
	100	14.5×25	0.20	665	EKXJ251E□□101MU25S
	100	16×20	0.20	635	EKXJ251E□□101ML20S
	120	12.5×35	0.20	770	EKXJ251E□□121MK35S
	120	16×25	0.20	755	EKXJ251E□□121ML25S
	120	18×20	0.20	730	EKXJ251E□□121MM20S
	150	12.5×40	0.20	890	EKXJ251E□□151MK40S
	150	12.5×45	0.20	920	EKXJ251E□□151MK45S
	150	14.5×31.5	0.20	870	EKXJ251E□□151MUN3S
	180	12.5×50	0.20	1,035	EKXJ251E□□181MK50S
	180	14.5×35.5	0.20	990	EKXJ251E□□181MUP1S
	180	14.5×40	0.20	1,020	EKXJ251E□□181MU40S
	180	16×31.5	0.20	995	EKXJ251E□□181MLN3S
	180	18×25	0.20	950	EKXJ251E□□181MM25S
	220	14.5×45	0.20	1,160	EKXJ251E□□221MU45S
	220	14.5×50	0.20	1,185	EKXJ251E□□221MU50S
	220	16×35.5	0.20	1,125	EKXJ251E□□221MLP1S
	220	18×31.5	0.20	1,135	EKXJ251E□□221MMN3S
	270	16×40	0.20	1,285	EKXJ251E□□271ML40S
	270	16×45	0.20	1,310	EKXJ251E□□271ML45S
	270	18×35.5	0.20	1,300	EKXJ251E□□271MMP1S
	330	16×50	0.20	1,475	EKXJ251E□□331ML50S
	330	18×40	0.20	1,460	EKXJ251E□□331MM40S
	330	18×45	0.20	1,485	EKXJ251E□□331MM45S
	390	18×50	0.20	1,625	EKXJ251E□□391MM50S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 500Vdc, long life, 105℃

KXJ Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 120Hz)	Part No.
350	12	10×16	0.24	135	EKXJ351E□□120MJ16S
	22	10×20	0.24	200	EKXJ351E□□220MJ20S
	27	10×25	0.24	240	EKXJ351E□□270MJ25S
	27	10×30	0.24	255	EKXJ351E□□270MJ30S
	33	12.5×20	0.24	330	EKXJ351E□□330MK20S
	39	10×35	0.24	325	EKXJ351E□□390MJ35S
	47	10×40	0.24	375	EKXJ351E□□470MJ40S
	47	12.5×25	0.24	425	EKXJ351E□□470MK25S
	47	14.5×20	0.24	420	EKXJ351E□□470MU20S
	56	10×45	0.24	425	EKXJ351E□□560MJ45S
	56	12.5×30	0.24	495	EKXJ351E□□560MK30S
	56	16×20	0.24	475	EKXJ351E□□560ML20S
	68	10×50	0.24	485	EKXJ351E□□680MJ50S
	68	12.5×35	0.24	580	EKXJ351E□□680MK35S
	68	14.5×25	0.24	545	EKXJ351E□□680MU25S
	68	18×20	0.24	550	EKXJ351E□□680MM20S
	82	12.5×40	0.24	655	EKXJ351E□□820MK40S
	82	14.5×31.5	0.24	645	EKXJ351E□□820MUN3S
	82	16×25	0.24	625	EKXJ351E□□820ML25S
	100	12.5×45	0.24	750	EKXJ351E□□101MK45S
	100	12.5×50	0.24	770	EKXJ351E□□101MK50S
	100	14.5×35.5	0.24	740	EKXJ351E□□101MUP1S
	100	16×31.5	0.24	740	EKXJ351E□□101MLN3S
	100	18×25	0.24	710	EKXJ351E□□101MM25S
	120	14.5×40	0.24	835	EKXJ351E□□121MU40S
	120	14.5×45	0.24	860	EKXJ351E□□121MU45S
	120	16×35.5	0.24	830	EKXJ351E□□121MLP1S
	150	14.5×50	0.24	980	EKXJ351E□□151MU50S
	150	16×40	0.24	960	EKXJ351E□□151ML40S
	150	16×45	0.24	975	EKXJ351E□□151ML45S
	150	18×31.5	0.24	940	EKXJ351E□□151MMN3S
	180	16×50	0.24	1,090	EKXJ351E□□181ML50S
	180	18×35.5	0.24	1,065	EKXJ351E□□181MMP1S
	180	18×40	0.24	1,080	EKXJ351E□□181MM40S
	220	18×45	0.24	1,210	EKXJ351E□□221MM45S
	220	18×50	0.24	1,220	EKXJ351E□□221MM50S
400	10	10×16	0.24	125	EKXJ401E□□100MJ16S
	18	10×20	0.24	180	EKXJ401E□□180MJ20S
	22	10×25	0.24	215	EKXJ401E□□220MJ25S
	27	10×30	0.24	255	EKXJ401E□□270MJ30S
	27	12.5×20	0.24	300	EKXJ401E□□270MK20S
	33	10×35	0.24	300	EKXJ401E□□330MJ35S
	39	10×40	0.24	340	EKXJ401E□□390MJ40S
	39	10×45	0.24	355	EKXJ401E□□390MJ45S
	39	12.5×25	0.24	390	EKXJ401E□□390MK25S
	39	14.5×20	0.24	385	EKXJ401E□□390MU20S
	47	12.5×30	0.24	455	EKXJ401E□□470MK30S
	47	16×20	0.24	435	EKXJ401E□□470ML20S
	56	10×50	0.24	440	EKXJ401E□□560MJ50S
	56	12.5×35	0.24	525	EKXJ401E□□560MK35S
	56	14.5×25	0.24	495	EKXJ401E□□560MU25S
	56	18×20	0.24	500	EKXJ401E□□560MM20S
	68	12.5×40	0.24	600	EKXJ401E□□680MK40S
	68	14.5×31.5	0.24	585	EKXJ401E□□680MUN3S
	68	16×25	0.24	570	EKXJ401E□□680ML25S
	82	12.5×45	0.24	680	EKXJ401E□□820MK45S
	82	12.5×50	0.24	700	EKXJ401E□□820MK50S
	82	14.5×35.5	0.24	670	EKXJ401E□□820MUP1S
	82	16×31.5	0.24	670	EKXJ401E□□820MLN3S
	82	18×25	0.24	640	EKXJ401E□□820MM25S
	100	14.5×40	0.24	760	EKXJ401E□□101MU40S
	100	14.5×45	0.24	785	EKXJ401E□□101MU45S
	100	16×35.5	0.24	760	EKXJ401E□□101MLP1S
	120	14.5×50	0.24	875	EKXJ401E□□121MU50S
	120	16×40	0.24	860	EKXJ401E□□121ML40S
	120	16×45	0.24	875	EKXJ401E□□121ML45S
	120	18×31.5	0.24	840	EKXJ401E□□121MMN3S
	120	18×35.5	0.24	870	EKXJ401E□□121MMP1S
	150	16×50	0.24	995	EKXJ401E□□151ML50S
	150	18×40	0.24	985	EKXJ401E□□151MM40S
	180	18×45	0.24	1,095	EKXJ401E□□181MM45S
	220	18×50	0.24	1,220	EKXJ401E□□221MM50S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 120Hz)	Part No.
420	6.8	10×16	0.24	105	EKXJ421E□□6R8MJ16S
	12	10×20	0.24	150	EKXJ421E□□120MJ20S
	15	10×25	0.24	185	EKXJ421E□□150MJ25S
	18	10×30	0.24	215	EKXJ421E□□180MJ30S
	22	12.5×20	0.24	285	EKXJ421E□□220MK20S
	27	10×35	0.24	275	EKXJ421E□□270MJ35S
	27	10×40	0.24	290	EKXJ421E□□270MJ40S
	27	12.5×25	0.24	340	EKXJ421E□□270MK25S
	27	14.5×20	0.24	335	EKXJ421E□□270MU20S
	33	10×45	0.24	335	EKXJ421E□□330MJ45S
	33	12.5×30	0.24	400	EKXJ421E□□330MK30S
	33	16×20	0.24	385	EKXJ421E□□330ML20S
	39	10×50	0.24	375	EKXJ421E□□390MJ50S
	39	14.5×25	0.24	435	EKXJ421E□□390MU25S
	47	12.5×35	0.24	505	EKXJ421E□□470MK35S
	47	16×25	0.24	500	EKXJ421E□□470ML25S
	47	18×20	0.24	480	EKXJ421E□□470MM20S
	56	12.5×40	0.24	570	EKXJ421E□□560MK40S
	56	12.5×45	0.24	590	EKXJ421E□□560MK45S
	56	14.5×31.5	0.24	560	EKXJ421E□□560MUN3S
	68	12.5×50	0.24	670	EKXJ421E□□680MK50S
	68	14.5×35.5	0.24	640	EKXJ421E□□680MUP1S
	68	14.5×40	0.24	660	EKXJ421E□□680MU40S
	68	16×31.5	0.24	645	EKXJ421E□□680MLN3S
	68	18×25	0.24	615	EKXJ421E□□680MM25S
	82	14.5×45	0.24	750	EKXJ421E□□820MU45S
	82	16×35.5	0.24	725	EKXJ421E□□820MLP1S
	82	18×31.5	0.24	730	EKXJ421E□□820MMN3S
	100	14.5×50	0.24	845	EKXJ421E□□101MU50S
	100	16×40	0.24	825	EKXJ421E□□101ML40S
	100	16×45	0.24	840	EKXJ421E□□101ML45S
	100	18×35.5	0.24	835	EKXJ421E□□101MMP1S
	120	16×50	0.24	935	EKXJ421E□□121ML50S
	120	18×40	0.24	930	EKXJ421E□□121MM40S
	120	18×45	0.24	945	EKXJ421E□□121MM45S
	150	18×50	0.24	1,060	EKXJ421E□□151MM50S
450	6.8	10×16	0.24	105	EKXJ451E□□6R8MJ16S
	12	10×20	0.24	150	EKXJ451E□□120MJ20S
	15	10×25	0.24	185	EKXJ451E□□150MJ25S
	18	10×30	0.24	215	EKXJ451E□□180MJ30S
	18	12.5×20	0.24	255	EKXJ451E□□180MK20S
	22	10×35	0.24	250	EKXJ451E□□220MJ35S
	27	10×40	0.24	290	EKXJ451E□□270MJ40S
	27	10×45	0.24	305	EKXJ451E□□270MJ45S
	27	12.5×25	0.24	340	EKXJ451E□□270MK25S
	27	14.5×20	0.24	335	EKXJ451E□□270MU20S
	33	12.5×30	0.24	400	EKXJ451E□□330MK30S
	33	14.5×25	0.24	400	EKXJ451E□□330MU25S
	33	16×20	0.24	385	EKXJ451E□□330ML20S
	39	10×50	0.24	375	EKXJ451E□□390MJ50S
	39	12.5×35	0.24	460	EKXJ451E□□390MK35S
	39	18×20	0.24	440	EKXJ451E□□390MM20S
	47	12.5×40	0.24	525	EKXJ451E□□470MK40S
	47	14.5×31.5	0.24	515	EKXJ451E□□470MUN3S
	47	16×25	0.24	500	EKXJ451E□□470ML25S
	56	12.5×45	0.24	590	EKXJ451E□□560MK45S
	56	14.5×35.5	0.24	580	EKXJ451E□□560MUP1S
	56	16×31.5	0.24	585	EKXJ451E□□560MLN3S
	56	18×25	0.24	560	EKXJ451E□□560MM25S
	68	12.5×50	0.24	670	EKXJ451E□□680MK50S
	68	14.5×40	0.24	660	EKXJ451E□□680MU40S
	68	14.5×45	0.24	680	EKXJ451E□□680MU45S
	68	16×35.5	0.24	660	EKXJ451E□□680MLP1S
	82	14.5×50	0.24	765	EKXJ451E□□820MU50S
	82	16×40	0.24	750	EKXJ451E□□820ML40S
	82	16×45	0.24	760	EKXJ451E□□820ML45S
	82	18×31.5	0.24	730	EKXJ451E□□820MMN3S
	100	16×50	0.24	855	EKXJ451E□□101ML50S
	100	18×35.5	0.24	835	EKXJ451E□□101MMP1S
	120	18×40	0.24	930	EKXJ451E□□121MM40S
	120	18×45	0.24	945	EKXJ451E□□121MM45S
	150	18×50	0.24	1,060	EKXJ451E□□151MM50S

□□ : Enter the appropriate lead forming or taping code.

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KXJ Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 120Hz)	Part No.
500	6.8	10×20	0.24	90	EKXJ501E□□6R8MJ20S
	8.2	10×25	0.24	110	EKXJ501E□□8R2MJ25S
	10	10×30	0.24	130	EKXJ501E□□100MJ30S
	12	12.5×20	0.24	135	EKXJ501E□□120MK20S
	15	10×35	0.24	170	EKXJ501E□□150MJ35S
	15	10×40	0.24	175	EKXJ501E□□150MJ40S
	15	12.5×25	0.24	165	EKXJ501E□□150MK25S
	18	10×45	0.24	190	EKXJ501E□□180MJ45S
	18	12.5×30	0.24	190	EKXJ501E□□180MK30S
	22	10×50	0.24	230	EKXJ501E□□220MJ50S
	22	12.5×35	0.24	220	EKXJ501E□□220MK35S
	27	12.5×40	0.24	260	EKXJ501E□□270MK40S
	33	12.5×45	0.24	285	EKXJ501E□□330MK45S
	39	12.5×50	0.24	330	EKXJ501E□□390MK50S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

(160 to 450Vdc)

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
6.8 to 82	1.00	1.75	2.25	2.50
100 to 680	1.00	1.67	2.05	2.25

(500Vdc)

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
6.8 to 22	1.00	1.78	2.30	2.59
27 to 39	1.00	1.75	2.25	2.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 450Vdc long life, 105℃

KXG Series

- For electronic ballast circuits and other long life applications
- Endurance with ripple current : 8,000 to 10,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

KXJ
↑
Downsized
KXG

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	-40 to +105℃ (160 to 400Vdc) -25 to+105℃ (450Vdc)				
Rated Voltage Range	160 to 450Vdc				
Capacitance Tolerance	±20% (M)				(at 20℃, 120Hz)
Leakage Current		After 1 minute	After 5 minutes		
	CV≦1,000	I=0.1CV+40	I=0.03CV+15		
	CV>1,000	I=0.04CV+100	I=0.02CV+25		
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)				(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	160 to 250V	350 to 450V		
	tan δ (Max.)	0.20	0.24		(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	160 to 250V	350 & 400V	450V	
	Z(-25℃)/Z(+20℃)	3	5	6	
	Z(-40℃)/Z(+20℃)	6	6	—	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 10,000 hours (8,000 hours for φ10) at 105℃.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦500% of the initial specified value			

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	16	18
φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E K X G □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 6.8μF:6R8,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 160V:161,450V:451)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
6.8 to 82	1.00	1.75	2.25	2.50
100 to 330	1.00	1.67	2.05	2.25

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 450Vdc long life, 105℃

KXG Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current(mArms/105℃) 120Hz	100kHz	Part No.
160	10	10 × 16	0.20	125	315	EKXG161E□□100MJ16S
	22	10 × 20	0.20	200	500	EKXG161E□□220MJ20S
	33	10 × 20	0.20	250	625	EKXG161E□□330MJ20S
	47	10 × 20	0.20	300	750	EKXG161E□□470MJ20S
	68	12.5 × 20	0.20	470	1,175	EKXG161E□□680MK20S
	82	12.5 × 20	0.20	510	1,275	EKXG161E□□820MK20S
	100	12.5 × 25	0.20	620	1,395	EKXG161E□□101MK25S
	100	16 × 20	0.20	630	1,420	EKXG161E□□101ML20S
	150	16 × 20	0.20	770	1,735	EKXG161E□□151ML20S
	220	16 × 25	0.20	1,020	2,295	EKXG161E□□221ML25S
	330	18 × 31.5	0.20	1,390	3,130	EKXG161E□□331MMN3S
200	10	10 × 16	0.20	125	315	EKXG201E□□100MJ16S
	22	10 × 20	0.20	200	500	EKXG201E□□220MJ20S
	33	10 × 20	0.20	260	650	EKXG201E□□330MJ20S
	47	12.5 × 20	0.20	390	975	EKXG201E□□470MK20S
	68	12.5 × 20	0.20	470	1,175	EKXG201E□□680MK20S
	82	16 × 20	0.20	550	1,375	EKXG201E□□820ML20S
	100	16 × 20	0.20	630	1,420	EKXG201E□□101ML20S
	150	16 × 25	0.20	840	1,890	EKXG201E□□151ML25S
	220	18 × 25	0.20	1,050	2,365	EKXG201E□□221MM25S
	330	18 × 35.5	0.20	1,430	3,220	EKXG201E□□331MMP1S
250	10	10 × 20	0.20	140	350	EKXG251E□□100MJ20S
	22	10 × 20	0.20	200	500	EKXG251E□□220MJ20S
	33	12.5 × 20	0.20	320	800	EKXG251E□□330MK20S
	47	12.5 × 20	0.20	390	975	EKXG251E□□470MK20S
	68	16 × 20	0.20	520	1,300	EKXG251E□□680ML20S
	82	16 × 20	0.20	550	1,375	EKXG251E□□820ML20S
	100	16 × 25	0.20	680	1,530	EKXG251E□□101ML25S
	150	18 × 25	0.20	860	1,935	EKXG251E□□151MM25S
	220	18 × 31.5	0.20	1,130	2,545	EKXG251E□□221MMN3S
350	6.8	10 × 16	0.24	110	275	EKXG351E□□6R8MJ16S
	10	10 × 20	0.24	140	350	EKXG351E□□100MJ20S
	22	12.5 × 20	0.24	260	650	EKXG351E□□220MK20S
	33	16 × 20	0.24	360	900	EKXG351E□□330ML20S
	47	16 × 20	0.24	430	1,075	EKXG351E□□470ML20S
	68	16 × 25	0.24	560	1,400	EKXG351E□□680ML25S
	68	18 × 20	0.24	550	1,375	EKXG351E□□680MM20S
	82	18 × 25	0.24	610	1,525	EKXG351E□□820MM25S
	100	18 × 25	0.24	700	1,575	EKXG351E□□101MM25S
	120	18 × 31.5	0.24	830	1,865	EKXG351E□□121MMN3S
	150	18 × 35.5	0.24	960	2,160	EKXG351E□□151MMP1S
400	6.8	10 × 16	0.24	110	275	EKXG401E□□6R8MJ16S
	10	10 × 20	0.24	140	350	EKXG401E□□100MJ20S
	15	12.5 × 20	0.24	220	550	EKXG401E□□150MK20S
	22	12.5 × 20	0.24	260	650	EKXG401E□□220MK20S
	33	16 × 20	0.24	360	900	EKXG401E□□330ML20S
	47	16 × 25	0.24	470	1,175	EKXG401E□□470ML25S
	47	18 × 20	0.24	450	1,125	EKXG401E□□470MM20S
	68	18 × 25	0.24	585	1,465	EKXG401E□□680MM25S
	82	18 × 25	0.24	610	1,525	EKXG401E□□820MM25S
	100	18 × 31.5	0.24	765	1,720	EKXG401E□□101MMN3S
	120	18 × 35.5	0.24	865	1,945	EKXG401E□□121MMP1S
	150	18 × 40	0.24	985	2,215	EKXG401E□□151MM40S
450	6.8	10 × 20	0.24	110	275	EKXG451E□□6R8MJ20S
	10	12.5 × 20	0.24	180	450	EKXG451E□□100MK20S
	15	12.5 × 25	0.24	240	600	EKXG451E□□150MK25S
	22	16 × 20	0.24	290	725	EKXG451E□□220ML20S
	33	16 × 25	0.24	390	975	EKXG451E□□330ML25S
	33	18 × 20	0.24	380	950	EKXG451E□□330MM20S
	47	18 × 25	0.24	480	1,200	EKXG451E□□470MM25S
	68	18 × 31.5	0.24	630	1,575	EKXG451E□□680MMN3S
	82	18 × 35.5	0.24	715	1,785	EKXG451E□□820MMP1S
	100	18 × 40	0.24	800	1,800	EKXG451E□□101MM40S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

400 to 450Vdc, long life, 105℃

KWA Series

- Ideal for low profile power supply applications
- Longer life form KHE series
- Rated voltage range : 400 to 450Vdc, Capacitance range : 27 to 120μF
- Endurance with ripple current : 5,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	-40 to +105℃				
Rated Voltage Range	400 to 450Vdc				
Capacitance Tolerance	±20% (M)				(at 20℃, 120Hz)
Leakage Current	I=0.04CV+100 (after 1 minute) I=0.02CV+25 (after 5 minutes) Where, I : Max. leakage current(μA), C : Nominal capacitance (μF), V : Rated voltage (V)				(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	400 to 450V			
	tan δ (Max.)	0.20			(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	400V	420V	450V	
	Z(-25℃)/Z(+20℃)	5	6	6	
	Z(-40℃)/Z(+20℃)	6	—	—	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦500% of the initial specified value			

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	14.5	16	18
φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5
φD'	φD+0.5 max.				
L'	L+2.0 max.				

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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KWA Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
400	33	10×30	0.20	320	EKWA401E□□330MJ30S
	39	10×35	0.20	370	EKWA401E□□390MJ35S
	47	10×40	0.20	420	EKWA401E□□470MJ40S
	56	10×45	0.20	480	EKWA401E□□560MJ45S
	56	12.5×30	0.20	460	EKWA401E□□560MK30S
	68	12.5×35	0.20	530	EKWA401E□□680MK35S
	82	12.5×40	0.20	610	EKWA401E□□820MK40S
	82	14.5×31.5	0.20	590	EKWA401E□□820MUN3S
	100	12.5×45	0.20	690	EKWA401E□□101MK45S
	100	14.5×40	0.20	700	EKWA401E□□101MU40S
	100	16×31.5	0.20	710	EKWA401E□□101MLN3S
	120	14.5×45	0.20	790	EKWA401E□□121MU45S
	120	16×35	0.20	800	EKWA401E□□121ML35S
	120	18×31.5	0.20	800	EKWA401E□□121MMN3S
420	33	10×30	0.20	320	EKWA421E□□330MJ30S
	39	10×35	0.20	370	EKWA421E□□390MJ35S
	47	10×40	0.20	420	EKWA421E□□470MJ40S
	56	10×50	0.20	500	EKWA421E□□560MJ50S
	56	12.5×30	0.20	460	EKWA421E□□560MK30S
	68	12.5×35	0.20	530	EKWA421E□□680MK35S
	68	14.5×31.5	0.20	530	EKWA421E□□680MUN3S
	82	12.5×40	0.20	610	EKWA421E□□820MK40S
	82	14.5×35	0.20	620	EKWA421E□□820MU35S
	100	12.5×50	0.20	680	EKWA421E□□101MK50S
	100	14.5×40	0.20	700	EKWA421E□□101MU40S
	100	16×31.5	0.20	710	EKWA421E□□101MLN3S
	120	14.5×45	0.20	790	EKWA421E□□121MU45S
	120	16×35	0.20	800	EKWA421E□□121ML35S
	120	18×31.5	0.20	800	EKWA421E□□121MMN3S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
450	27	10×30	0.20	290	EKWA451E□□270MJ30S
	33	10×35	0.20	340	EKWA451E□□330MJ35S
	39	10×40	0.20	380	EKWA451E□□390MJ40S
	47	10×45	0.20	440	EKWA451E□□470MJ45S
	47	12.5×30	0.20	420	EKWA451E□□470MK30S
	56	12.5×35	0.20	480	EKWA451E□□560MK35S
	68	12.5×40	0.20	550	EKWA451E□□680MK40S
	68	14.5×31.5	0.20	530	EKWA451E□□680MUN3S
	82	12.5×45	0.20	630	EKWA451E□□820MK45S
	82	14.5×35	0.20	620	EKWA451E□□820MU35S
	82	16×31.5	0.20	640	EKWA451E□□820MLN3S
	100	14.5×45	0.20	720	EKWA451E□□101MU45S
	100	16×35	0.20	730	EKWA451E□□101ML35S
	120	18×31.5	0.20	800	EKWA451E□□121MMN3S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
27 to 82	1.00	1.50	1.75	1.80
100 to 120	1.00	1.30	1.40	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

400 to 450Vdc, Downsized, 105℃

KHE Series

- Ideal for low profile power supply applications
- Downsize, high ripple design
- Rated voltage range : 400 to 450Vdc, Capacitance range : 27 to 120μF
- Endurance with ripple current : 2,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	-40 to +105℃				
Rated Voltage Range	400 to 450Vdc				
Capacitance Tolerance	±20% (M)				(at 20℃, 120Hz)
Leakage Current		After 1 minute	After 5 minutes		
	CV≦1,000	I=0.1CV+40	I=0.03CV+15		
	CV>1,000	I=0.04CV+100	I=0.02CV+25		
	Where, I : Max. leakage current(μA), C : Nominal capacitance (μF), V : Rated voltage (V)				(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	400V	420V	450V	
	tan δ (Max.)	0.15	0.20	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	400V	420V	450V	
	Z(-25℃)/Z(+20℃)	5	6	6	
	Z(-40℃)/Z(+20℃)	6	—	—	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦500% of the initial specified value			

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	14.5	16	18
φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5
φD'	φD+0.5 max.				
L'	L+2.0 max.				

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

400 to 450Vdc, Downsized, 105℃

KHE Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
400	33	10×30	0.15	335	EKHE401E□□330MJ30S
	39	10×35	0.15	385	EKHE401E□□390MJ35S
	47	10×40	0.15	445	EKHE401E□□470MJ40S
	56	10×45	0.15	505	EKHE401E□□560MJ45S
	56	12.5×30	0.15	480	EKHE401E□□560MK30S
	68	12.5×35	0.15	560	EKHE401E□□680MK35S
	82	12.5×40	0.15	640	EKHE401E□□820MK40S
	82	14.5×31.5	0.15	625	EKHE401E□□820MUN3S
	100	12.5×45	0.15	730	EKHE401E□□101MK45S
	100	14.5×35	0.15	715	EKHE401E□□101MU35S
	100	16×31.5	0.15	720	EKHE401E□□101MLN3S
	120	14.5×40	0.15	810	EKHE401E□□121MU40S
	120	16×35	0.15	810	EKHE401E□□121ML35S
	120	18×31.5	0.15	815	EKHE401E□□121MMN3S
420	33	10×30	0.20	335	EKHE421E□□330MJ30S
	39	10×35	0.20	385	EKHE421E□□390MJ35S
	47	10×40	0.20	445	EKHE421E□□470MJ40S
	56	10×50	0.20	520	EKHE421E□□560MJ50S
	56	12.5×30	0.20	480	EKHE421E□□560MK30S
	68	12.5×35	0.20	560	EKHE421E□□680MK35S
	82	12.5×40	0.20	640	EKHE421E□□820MK40S
	82	14.5×31.5	0.20	625	EKHE421E□□820MUN3S
	100	12.5×50	0.20	750	EKHE421E□□101MK50S
	100	14.5×40	0.20	740	EKHE421E□□101MU40S
	100	16×31.5	0.20	720	EKHE421E□□101MLN3S
	120	14.5×45	0.20	835	EKHE421E□□121MU45S
	120	16×35	0.20	810	EKHE421E□□121ML35S
	120	18×31.5	0.20	815	EKHE421E□□121MMN3S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
450	27	10×30	0.20	305	EKHE451E□□270MJ30S
	33	10×35	0.20	355	EKHE451E□□330MJ35S
	39	10×40	0.20	405	EKHE451E□□390MJ40S
	47	10×45	0.20	460	EKHE451E□□470MJ45S
	47	12.5×30	0.20	440	EKHE451E□□470MK30S
	56	12.5×35	0.20	505	EKHE451E□□560MK35S
	68	12.5×40	0.20	580	EKHE451E□□680MK40S
	68	14.5×31.5	0.20	570	EKHE451E□□680MUN3S
	82	12.5×45	0.20	660	EKHE451E□□820MK45S
	82	14.5×35	0.20	650	EKHE451E□□820MU35S
	82	16×31.5	0.20	655	EKHE451E□□820MLN3S
	100	14.5×40	0.20	740	EKHE451E□□101MU40S
	100	16×35	0.20	740	EKHE451E□□101ML35S
	120	18×31.5	0.20	815	EKHE451E□□121MMN3S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
27 to 82	1.00	1.50	1.75	1.80
100 to 120	1.00	1.30	1.40	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

200 to 450Vdc, Downsized, 105℃

PAG Series

- Downsize, high ripple design (φ10 to 18)
- Rated voltage range : 200 to 450Vdc, Capacitance range : 18 to 560μF
- Endurance with ripple current : 2,000 hours at 105℃
- Ideal for low profile power supply applications
- Non solvent resistant type
- RoHS2 Compliant

PAG
↑ Downsized Higher ripple
KMG

◆SPECIFICATIONS

Items	Characteristics					
Category Temperature Range	-40 to +105℃ (200, 400Vdc) -25 to+105℃ (420, 450Vdc)					
Rated Voltage Range	200 to 450Vdc					
Capacitance Tolerance	±20% (M)					(at 20℃, 120Hz)℃
Leakage Current		After 1 minute	After 5 minutes			
	CV≦1,000	I=0.1CV+40	I=0.03CV+15			
	CV>1,000	I=0.04CV+100	I=0.02CV+25			
	Where, I : Max. leakage current(μA), C : Nominal capacitance (μF), V : Rated voltage (V)					(at 20℃)℃
Dissipation Factor (tan δ)	Rated voltage (Vdc)	200V	400V	420V	450V	
	tan δ (Max.)	0.12	0.15	0.20	0.20	(at 20℃, 120Hz)℃
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	200V	400V	420V	450V	
	Z(-25℃)/Z(+20℃)	3	5	6	6	
	Z(-40℃)/Z(+20℃)	6	6	—	—	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.					
	Capacitance change	≦±20% of the initial value				
	D.F. (tan δ)	≦200% of the initial specified value				
	Leakage current	≦The initial specified value				
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.					
	Capacitance change	≦±20% of the initial value				
	D.F. (tan δ)	≦200% of the initial specified value				
	Leakage current	≦500% of the initial specified value				

◆DIMENSIONS [mm]

●Terminal Code : E

φ10 & φ12.5

φD	10	12.5	14.5	16	18
φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5
φD'	φD+0.5 max.				
L'	L+2.0 max.				

≧φ14.5

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E PAG □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 22μF:220,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 200V:201,450V:451)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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PAG Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
200	82	10×30	0.12	440	EPAG201E□□820MJ30S
	100	10×35	0.12	510	EPAG201E□□101MJ35S
	120	10×40	0.12	590	EPAG201E□□121MJ40S
	150	12.5×30	0.12	650	EPAG201E□□151MK30S
	180	12.5×35	0.12	750	EPAG201E□□181MK35S
	220	12.5×40	0.12	830	EPAG201E□□221MK40S
	220	14.5×30	0.12	830	EPAG201E□□221MU30S
	270	14.5×35	0.12	960	EPAG201E□□271MU35S
	270	16×30	0.12	960	EPAG201E□□271ML30S
	330	16×35	0.12	1,100	EPAG201E□□331ML35S
	330	18×30	0.12	1,100	EPAG201E□□331MM30S
	390	16×40	0.12	1,240	EPAG201E□□391ML40S
	390	18×35	0.12	1,240	EPAG201E□□391MM35S
	470	18×40	0.12	1,390	EPAG201E□□471MM40S
	560	18×45	0.12	1,560	EPAG201E□□561MM45S
400	27	10×30	0.15	260	EPAG401E□□270MJ30S
	33	10×35	0.15	300	EPAG401E□□330MJ35S
	39	10×40	0.15	340	EPAG401E□□390MJ40S
	47	12.5×30	0.15	370	EPAG401E□□470MK30S
	56	12.5×35	0.15	420	EPAG401E□□560MK35S
	68	12.5×40	0.15	480	EPAG401E□□680MK40S
	68	14.5×30	0.15	480	EPAG401E□□680MU30S
	82	14.5×35	0.15	530	EPAG401E□□820MU35S
	100	14.5×40	0.15	580	EPAG401E□□101MU40S
	100	16×30	0.15	580	EPAG401E□□101ML30S
	120	16×35	0.15	670	EPAG401E□□121ML35S
	120	18×30	0.15	670	EPAG401E□□121MM30S
	150	16×40	0.15	770	EPAG401E□□151ML40S
	150	18×35	0.15	770	EPAG401E□□151MM35S
	180	18×40	0.15	880	EPAG401E□□181MM40S
	220	18×45	0.15	1,000	EPAG401E□□221MM45S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
420	22	10×30	0.20	230	EPAG421E□□220MJ30S
	27	10×35	0.20	270	EPAG421E□□270MJ35S
	33	10×40	0.20	310	EPAG421E□□330MJ40S
	39	12.5×30	0.20	330	EPAG421E□□390MK30S
	47	12.5×35	0.20	390	EPAG421E□□470MK35S
	56	12.5×40	0.20	430	EPAG421E□□560MK40S
	56	14.5×30	0.20	430	EPAG421E□□560MU30S
	68	14.5×35	0.20	510	EPAG421E□□680MU35S
	68	16×30	0.20	510	EPAG421E□□680ML30S
	82	14.5×40	0.20	570	EPAG421E□□820MU40S
	82	16×35	0.20	570	EPAG421E□□820ML35S
	100	16×40	0.20	610	EPAG421E□□101ML40S
	100	18×30	0.20	610	EPAG421E□□101MM30S
	120	18×35	0.20	690	EPAG421E□□121MM35S
	150	18×40	0.20	790	EPAG421E□□151MM40S
450	18	10×30	0.20	210	EPAG451E□□180MJ30S
	22	10×35	0.20	240	EPAG451E□□220MJ35S
	27	10×40	0.20	280	EPAG451E□□270MJ40S
	33	12.5×30	0.20	310	EPAG451E□□330MK30S
	39	12.5×35	0.20	350	EPAG451E□□390MK35S
	47	12.5×40	0.20	390	EPAG451E□□470MK40S
	47	14.5×30	0.20	390	EPAG451E□□470MU30S
	56	14.5×35	0.20	440	EPAG451E□□560MU35S
	56	16×30	0.20	440	EPAG451E□□560ML30S
	68	14.5×40	0.20	500	EPAG451E□□680MU40S
	68	16×35	0.20	500	EPAG451E□□680ML35S
	82	16×40	0.20	550	EPAG451E□□820ML40S
	82	18×30	0.20	550	EPAG451E□□820MM30S
	100	18×35	0.20	650	EPAG451E□□101MM35S
	120	18×40	0.20	740	EPAG451E□□121MM40S
	150	18×45	0.20	810	EPAG451E□□151MM45S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
18 to 82	1.00	1.50	1.75	1.80
100 to 560	1.00	1.30	1.40	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Overvoltage resistant design, 105℃

KLJ Series

- Doesn't spark with DC over voltage
- Endurance with ripple current : 2,000 hours at 105℃
- Non solvent resistant type
- ESR value prescribed
- RoHS2 Compliant

Doesn't spark with DC over voltage!

KLJ
↑ Downsized
KLG

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	200 to 450V$_{dc}$
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.04CV+100 Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 1 minute)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 200V / 400V / 450V tan δ (Max.): 0.20 / 0.24 / 0.24 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc}): 200V / 400V / 450V Z(-25℃)/Z(+20℃): 4 / 6 / 6 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦500% of the initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	16	18
φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E K L J □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 4.7μF:4R7,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 200V:201,450V:451)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	300	1k	10k	50k	100k
4.7 to 10μF	1.00	1.35	1.75	2.30	2.50	2.70
15 to 47μF	1.00	1.25	1.50	1.75	1.80	1.85
56 to 330μF	1.00	1.15	1.30	1.40	1.50	1.60

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Overvoltage resistant design, 105℃

KLJ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Ωmax/20℃, 100kHz)	Rated ripple current (mArms/105℃, 120Hz)	Part No.
200	33	10×20	0.20	1.8	165	EKLJ201E□□330MJ20S
	39	10×25	0.20	1.4	200	EKLJ201E□□390MJ25S
	56	12.5×20	0.20	1.0	265	EKLJ201E□□560MK20S
	82	12.5×25	0.20	0.72	350	EKLJ201E□□820MK25S
	100	16×20	0.20	0.63	390	EKLJ201E□□101ML20S
	120	16×25	0.20	0.44	465	EKLJ201E□□121ML25S
	150	18×20	0.20	0.31	505	EKLJ201E□□151MM20S
	180	16×31.5	0.20	0.36	615	EKLJ201E□□181MLN3S
	180	18×25	0.20	0.30	585	EKLJ201E□□181MM25S
	220	16×35.5	0.20	0.30	695	EKLJ201E□□221MLP1S
	220	18×31.5	0.20	0.28	700	EKLJ201E□□221MMN3S
	270	18×35.5	0.20	0.24	805	EKLJ201E□□271MMP1S
	330	18×40	0.20	0.21	900	EKLJ201E□□331MM40S
400	4.7	10×12.5	0.24	8.4	36	EKLJ401E□□4R7MJC5S
	10	10×16	0.24	5.7	64	EKLJ401E□□100MJ16S
	15	10×20	0.24	4.0	105	EKLJ401E□□150MJ20S
	18	10×25	0.24	3.2	110	EKLJ401E□□180MJ25S
	22	12.5×20	0.24	2.7	165	EKLJ401E□□220MK20S
	27	12.5×25	0.24	1.9	200	EKLJ401E□□270MK25S
	33	16×20	0.24	1.5	225	EKLJ401E□□330ML20S
	39	18×20	0.24	1.2	255	EKLJ401E□□390MM20S
	39	18×25	0.24	0.72	270	EKLJ401E□□390MM25S
	47	16×25	0.24	1.1	290	EKLJ401E□□470ML25S
	47	18×20	0.24	1.2	280	EKLJ401E□□470MM20S
	56	16×31.5	0.24	0.84	340	EKLJ401E□□560MLN3S
	68	16×35.5	0.24	0.72	385	EKLJ401E□□680MLP1S
	68	18×25	0.24	0.88	360	EKLJ401E□□680MM25S
	82	16×40	0.24	0.65	435	EKLJ401E□□820ML40S
	82	18×31.5	0.24	0.64	425	EKLJ401E□□820MMN3S
	100	18×35.5	0.24	0.54	490	EKLJ401E□□101MMP1S
	120	18×40	0.24	0.49	540	EKLJ401E□□121MM40S
450	39	16×25	0.24	1.4	265	EKLJ451E□□390ML25S
	39	18×20	0.24	1.4	255	EKLJ451E□□390MM20S
	47	16×25	0.24	1.3	290	EKLJ451E□□470ML25S
	47	18×25	0.24	1.2	320	EKLJ451E□□470MM25S
	56	16×31.5	0.24	1.1	340	EKLJ451E□□560MLN3S
	68	16×35.5	0.24	0.86	420	EKLJ451E□□680MLP1S
	68	18×31.5	0.24	0.91	390	EKLJ451E□□680MMN3S
	82	16×40	0.24	0.79	435	EKLJ451E□□820ML40S
	82	18×31.5	0.24	0.78	425	EKLJ451E□□820MMN3S
	100	18×40	0.24	0.67	490	EKLJ451E□□101MM40S
	110	18×40	0.24	0.59	540	EKLJ451E□□111MM40S
	120	18×45	0.24	0.58	570	EKLJ451E□□121MM45S

□□ : Enter the appropriate lead forming or taping code.

◆DC OVERVOLTAGE TEST CONDITIONS

The vent will operate and the capacitor shall become an open circuit without burning materials when the following excess DC voltage is applied.

●Test DC voltage

Rated voltage	Nominal capacitance	Current limit	Test DC voltage
200V_{dc}	<330μF	4A	300/375V_{dc}
	330μF	5A	
400V_{dc}	<100μF	2A	500/600V_{dc}
	100μF≦C≦120μF	4A	
450V_{dc}	<100μF	2A	550/675V_{dc}
	100μF≦C≦120μF	4A	

●Test circuit

Constant DC voltage/current power supply

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 450Vdc long life, 105℃

KXF Series

- For LED light circuits and other long life applications
- Rated voltage range : 160 to 450 Vdc , Capacitance range : 5.6 to 68μF
- Endurance with ripple current : 15,000 to 20,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

KXF
↑ Longer life
KXE

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-40 to +105℃			
Rated Voltage Range	160 to 450Vdc			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	After 1 minute	After 5 minutes		
	I=0.04CV+100	I=0.02CV+25		
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	160 to 450V		
	tan δ (Max.)	0.24		(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	160 to 250V	400, 450V	
	Z(-25℃)/Z(+20℃)	3	6	
	Z(-40℃)/Z(+20℃)	8	10	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 20,000 hours (15,000 hours for φ10×12.5L) at 105℃.			
	Capacitance change	≦±30% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±30% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		
	Leakage current	≦500% of the initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10	12.5	16	18
φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
5.6 ～ 68	1.00	1.75	2.25	2.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 450Vdc long life, 105℃

KXF Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 120Hz)	Part No.
160	22	10×12.5	0.24	121	EKXF161E□□220MJC5S
	33	10×16	0.24	158	EKXF161E□□330MJ16S
200	18	10×12.5	0.24	113	EKXF201E□□180MJC5S
	27	10×16	0.24	149	EKXF201E□□270MJ16S
250	10	10×12.5	0.24	90	EKXF251E□□100MJC5S
	12	10×12.5	0.24	97	EKXF251E□□120MJC5S
	18	10×16	0.24	129	EKXF251E□□180MJ16S
400	5.6	10×12.5	0.24	64	EKXF401E□□5R6MJC5S
	8.2	10×16	0.24	88	EKXF401E□□8R2MJ16S
450	6.8	10×16	0.24	62	EKXF451E□□6R8MJ16S
	8.2	10×16	0.24	88	EKXF451E□□8R2MJ16S
	10	10×20	0.24	92	EKXF451E□□100MJ20S
	15	12.5×20	0.24	140	EKXF451E□□150MK20S
	22	12.5×25	0.24	240	EKXF451E□□220MK25S
	27	16×20	0.24	305	EKXF451E□□270ML20S
	33	16×25	0.24	392	EKXF451E□□330ML25S
	33	18×20	0.24	312	EKXF451E□□330MM20S
	47	18×25	0.24	480	EKXF451E□□470MM25S
	68	18×31.5	0.24	520	EKXF451E□□680MMN3S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 400Vdc long life, 105℃

KXE Series

- For LED light circuits and other long life applications
- Rated voltage range : 160 to 400 Vdc , Capacitance range : 1.0 to 33μF
- Endurance with ripple current : 10,000 to 12,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-40 to +105℃			
Rated Voltage Range	160 to 400Vdc			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current		After 1 minute	After 5 minutes	
	CV≦1,000	I=0.1CV+40	I=0.03CV+15	
	CV>1,000	I=0.04CV+100	I=0.02CV+25	
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	160 to 400V		
	tan δ (Max.)	0.24		(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	160 to 400V		
	Z(-25℃)/Z(+20℃)	4		
	Z(-40℃)/Z(+20℃)	6		(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 10,000 hours (12,000 hours for φ10×16L) at 105℃.			
	Capacitance change	≦±30% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±30% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		
	Leakage current	≦500% of the initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : E

(φ8 & φ10)
Gas escape end seal

φD	8	10
φd	0.6	0.6
F	3.5	5.0
φD'	φD+0.5max.	
L'	L+2.0max.	L+1.5max.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E KXE □□□ E □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 3.3μF:3R3,33μF:330)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 160V:161,400V:401)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0 to 33	1.00	1.75	2.25	2.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

160 to 400Vdc long life, 105℃

KXE Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current(mArms/105℃) 120Hz	Rated ripple current(mArms/105℃) 100kHz	Part No.
160	10	8×11.5	0.24	55	137	EKXE161E□□100MHB5D
	15	8×15	0.24	75	187	EKXE161E□□150MH15D
	15	10×12.5	0.24	80	200	EKXE161E□□150MJC5S
	22	10×12.5	0.24	95	237	EKXE161E□□220MJC5S
	27	10×16	0.24	105	262	EKXE161E□□270MJ16S
	33	10×16	0.24	130	325	EKXE161E□□330MJ16S
200	10	8×11.5	0.24	55	137	EKXE201E□□100MHB5D
	12	8×15	0.24	70	175	EKXE201E□□120MH15D
	12	10×12.5	0.24	70	175	EKXE201E□□120MJC5S
	15	10×16	0.24	90	225	EKXE201E□□150MJ16S
	18	10×12.5	0.24	85	212	EKXE201E□□180MJC5S
	27	10×16	0.24	120	300	EKXE201E□□270MJ16S
250	6.8	8×11.5	0.24	45	112	EKXE251E□□6R8MHB5D
	10	8×15	0.24	60	150	EKXE251E□□100MH15D
400	1.0	8×11.5	0.24	25	62	EKXE401E□□1R0MHB5D
	2.2	8×11.5	0.24	40	100	EKXE401E□□2R2MHB5D
	2.7	8×11.5	0.24	45	112	EKXE401E□□2R7MHB5D
	3.3	8×11.5	0.24	50	125	EKXE401E□□3R3MHB5D
	3.3	10×12.5	0.24	60	150	EKXE401E□□3R3MJC5S
	3.9	8×15	0.24	65	162	EKXE401E□□3R9MH15D
	4.7	10×16	0.24	90	225	EKXE401E□□4R7MJ16S
	5.6	10×16	0.24	100	250	EKXE401E□□5R6MJ16S
	6.8	10×12.5	0.24	85	212	EKXE401E□□6R8MJC5S
	6.8	10×16	0.24	115	287	EKXE401E□□6R8MJ16S

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life for φ5 to φ8 product, 105℃

LE Series

- Suitable for long life products
- Downsize and long life
- Endurance with ripple current : 10,000 hours at 105℃
- Case size range : φ5×11L to φ8×11.5L
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATION

Items	Characteristics
Category Temperature Range	-40 to +105℃
Rated Voltage Range	10 to 100V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 10V, 16V, 25V, 35V, 50V, 63V, 100V tan δ (Max.): 0.45, 0.35, 0.30, 0.22, 0.19, 0.17, 0.15 (at 20℃,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc}): 10V, 16V, 25V, 35V, 50V, 63V, 100V Z(-25℃)/Z(20℃): 8, 6, 4, 4, 3, 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 10,000 hours at 105℃. Capacitance change: ≦±25% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±25% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	5	6.3	8
φd	0.5	0.5	0.6
F	2.0	2.5	3.5
φD'	φD+0.5max.		
L'	L+1.5max.		

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E L E – □□□ E □□ □□□ M □□□ D

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 4.7μF:4R7, 10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 16V:160, 100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life for φ5 to φ8 product, 105℃

LE Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/105℃, 100kHz)	Part No.
10	100	5×11	0.45	130	ELE-100E□□101ME11D
	220	6.3×11	0.45	210	ELE-100E□□221MF11D
	330	8×11.5	0.45	330	ELE-100E□□331MHB5D
16	47	5×11	0.35	130	ELE-160E□□470ME11D
	100	6.3×11	0.35	210	ELE-160E□□101MF11D
	220	8×11.5	0.35	330	ELE-160E□□221MHB5D
25	33	5×11	0.30	130	ELE-250E□□330ME11D
	47	5×11	0.30	130	ELE-250E□□470ME11D
	100	6.3×11	0.30	210	ELE-250E□□101MF11D
35	33	5×11	0.22	130	ELE-350E□□330ME11D
	47	6.3×11	0.22	210	ELE-350E□□470MF11D
	100	8×11.5	0.22	330	ELE-350E□□101MHB5D
50	1.0	5×11	0.19	25	ELE-500E□□1R0ME11D
	2.2	5×11	0.19	35	ELE-500E□□2R2ME11D
	3.3	5×11	0.19	70	ELE-500E□□3R3ME11D
	4.7	5×11	0.19	80	ELE-500E□□4R7ME11D
	10	5×11	0.19	90	ELE-500E□□100ME11D
	22	5×11	0.19	110	ELE-500E□□220ME11D
	33	6.3×11	0.19	190	ELE-500E□□330MF11D
	47	6.3×11	0.19	190	ELE-500E□□470MF11D
	100	8×11.5	0.19	270	ELE-500E□□101MHB5D
63	10	5×11	0.17	80	ELE-630E□□100ME11D
	22	6.3×11	0.17	170	ELE-630E□□220MF11D
	33	6.3×11	0.17	170	ELE-630E□□330MF11D
	47	8×11.5	0.17	240	ELE-630E□□470MHB5D
100	1.0	5×11	0.15	40	ELE-101E□□1R0ME11D
	2.2	5×11	0.15	50	ELE-101E□□2R2ME11D
	3.3	5×11	0.15	60	ELE-101E□□3R3ME11D
	4.7	5×11	0.15	70	ELE-101E□□4R7ME11D
	10	6.3×11	0.15	150	ELE-101E□□100MF11D
	22	8×11.5	0.15	230	ELE-101E□□220MHB5D

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0 to 10	0.42	0.60	0.80	1.00
22 to 33	0.55	0.75	0.90	1.00
47 to 330	0.70	0.85	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life for φ4 to φ8 product, 105℃

FL Series

- Long life for φ4×5L to φ8×5L mm range
- Endurance with ripple current : 3,000 hours at 105℃
- Suitable for long life products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +105℃							
Rated Voltage Range	6.3 to 50V$_{dc}$							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.03CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$)	6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.50	0.40	0.35	0.30	0.25	0.25	(at 20℃, 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

* φ8×5L : Coating case

φD	4	5	6.3	8
φd	0.45	0.45	0.45	0.45
F	1.5	2.0	2.5	2.5
φD'	φD+0.5max.			
L'	L+1.0max.			

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life for φ4 to φ8 product, 105℃

FL Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
6.3	33	4×5	0.50	5.4	37	EFL-6R3E□□330MD05D
	47	4×7	0.50	4.5	44	EFL-6R3E□□470MD07D
	56	5×5	0.50	3.1	57	EFL-6R3E□□560ME05D
	82	5×7	0.50	2.5	70	EFL-6R3E□□820ME07D
	100	6.3×5	0.50	1.7	82	EFL-6R3E□□101MF05D
	150	6.3×7	0.50	1.3	116	EFL-6R3E□□151MF07D
	220	8×5	0.50	1.5	110	EFL-6R3E□□221MH05G
10	22	4×5	0.40	5.4	37	EFL-100E□□220MD05D
	33	4×7	0.40	4.5	44	EFL-100E□□330MD07D
	33	5×5	0.40	3.1	57	EFL-100E□□330ME05D
	47	5×7	0.40	2.5	70	EFL-100E□□470ME07D
	68	6.3×5	0.40	1.7	82	EFL-100E□□680MF05D
	100	6.3×7	0.40	1.3	116	EFL-100E□□101MF07D
	150	8×5	0.40	1.5	110	EFL-100E□□151MH05G
16	15	4×5	0.35	5.4	37	EFL-160E□□150MD05D
	22	4×7	0.35	4.5	44	EFL-160E□□220MD07D
	22	5×5	0.35	3.1	57	EFL-160E□□220ME05D
	33	5×7	0.35	2.5	70	EFL-160E□□330ME07D
	47	6.3×5	0.35	1.7	82	EFL-160E□□470MF05D
	68	6.3×7	0.35	1.3	116	EFL-160E□□680MF07D
	100	8×5	0.35	1.5	110	EFL-160E□□101MH05G
25	10	4×5	0.30	5.4	37	EFL-250E□□100MD05D
	15	4×7	0.30	4.5	44	EFL-250E□□150MD07D
	15	5×5	0.30	3.1	57	EFL-250E□□150ME05D
	22	5×7	0.30	2.5	70	EFL-250E□□220ME07D
	33	6.3×5	0.30	1.7	82	EFL-250E□□330MF05D
	56	6.3×7	0.30	1.3	116	EFL-250E□□560MF07D
	68	8×5	0.30	1.5	110	EFL-250E□□680MH05G
35	4.7	4×5	0.25	5.4	37	EFL-350E□□4R7MD05D
	6.8	4×7	0.25	4.5	44	EFL-350E□□6R8MD07D
	10	5×5	0.25	3.1	57	EFL-350E□□100ME05D
	10	5×7	0.25	2.5	70	EFL-350E□□100ME07D
	22	6.3×5	0.25	1.7	82	EFL-350E□□220MF05D
	22	6.3×7	0.25	1.3	116	EFL-350E□□220MF07D
	33	8×5	0.25	1.5	110	EFL-350E□□330MH05G
50	1.0	4×5	0.25	19	18	EFL-500E□□1R0MD05D
	2.2	4×5	0.25	14	22	EFL-500E□□2R2MD05D
	3.3	4×5	0.25	11	26	EFL-500E□□3R3MD05D
	4.7	4×7	0.25	9.0	30	EFL-500E□□4R7MD07D
	4.7	5×5	0.25	6.0	40	EFL-500E□□4R7ME05D
	6.8	5×7	0.25	4.8	50	EFL-500E□□6R8ME07D
	10	6.3×5	0.25	2.9	63	EFL-500E□□100MF05D
	15	6.3×7	0.25	2.2	90	EFL-500E□□150MF07D
	22	8×5	0.25	2.6	84	EFL-500E□□220MH05G

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
to 3.3	0.20	0.66	0.90	1.00
4.7 to 6.8	0.35	0.70	0.90	1.00
10 to 150	0.40	0.75	0.90	1.00
220	0.50	0.85	0.94	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life, Downsized, 125℃

GPA Series

- Guaranteed short time at 150℃
- Downsized, low impedance and high-ripple current version of GXE series
- Specified ESR after endurance test
- For high ripple current automotive applications. (Direct fuel injection and electric power steering etc.)
- Endurance with ripple current : 3,000 to 5,000 hours at 125℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +125℃							
Rated Voltage Range	25 to 100Vdc							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃, 1 minute)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.14	0.12	0.10	0.10	0.08	0.08	
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.							(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	25V	35V	50V	63V	80V	100V	
	Z(-25℃)/Z(+20℃)	2	2	2	2	2	2	
	Z(-40℃)/Z(+20℃)	4	4	4	4	4	4	(at 120Hz)
Endurance 1	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours (3,000 hours for 25L and less) at 125 ℃.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Endurance 2	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the test condition that the rated voltage is applied for 100 hours at 150℃ and DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 4,500 hours (2,500 hours for 25L and less) at 125℃.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : E

φD	12.5	14.5	16	18
φd	0.6	0.8	0.8	0.8
F	5.0	7.5	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life, Downsized, 125℃

GPA Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Initial) (Ω max./100kHz)		ESR (End of Life) (Ω max./100kHz)		Rated ripple current (mArms/125℃, 100kHz)	Part No.
				20℃	-40℃	20℃	-40℃		
25	1,200	12.5×20	0.14	0.044	0.22	0.18	2.2	1,820	EGPA250E□□122MK20S
	1,500	14.5×20	0.14	0.037	0.19	0.11	1.3	2,100	EGPA250E□□152MU20S
	1,800	12.5×25	0.14	0.033	0.17	0.13	1.6	2,400	EGPA250E□□182MK25S
	1,800	16×20	0.14	0.034	0.17	0.10	1.3	2,280	EGPA250E□□182ML20S
	2,200	12.5×30	0.16	0.029	0.13	0.11	1.3	2,560	EGPA250E□□222MK30S
	2,200	14.5×25	0.16	0.028	0.14	0.080	0.90	2,800	EGPA250E□□222MU25S
	2,700	12.5×35	0.16	0.024	0.11	0.090	0.80	2,970	EGPA250E□□272MK35S
	2,700	14.5×30	0.16	0.023	0.10	0.070	0.70	3,060	EGPA250E□□272MU30S
	2,700	16×25	0.16	0.026	0.13	0.080	1.1	3,100	EGPA250E□□272ML25S
	2,700	18×20	0.16	0.032	0.16	0.090	0.60	2,490	EGPA250E□□272MM20S
	3,300	12.5×40	0.18	0.021	0.095	0.080	0.50	3,600	EGPA250E□□332MK40S
	3,300	14.5×35	0.18	0.021	0.095	0.060	0.70	3,380	EGPA250E□□332MU35S
	3,300	16×30	0.18	0.023	0.10	0.070	0.90	3,160	EGPA250E□□332ML30S
	3,900	16×35	0.18	0.020	0.090	0.060	0.70	3,590	EGPA250E□□392ML35S
	3,900	18×25	0.18	0.024	0.12	0.070	0.50	3,200	EGPA250E□□392MM25S
	4,700	14.5×40	0.20	0.018	0.081	0.050	0.50	4,000	EGPA250E□□472MU40S
	4,700	18×30	0.20	0.022	0.099	0.080	0.60	3,390	EGPA250E□□472MM30S
	5,600	16×40	0.22	0.017	0.077	0.040	0.60	4,300	EGPA250E□□562ML40S
	5,600	18×35	0.22	0.019	0.086	0.070	0.50	4,200	EGPA250E□□562MM35S
	6,800	18×40	0.24	0.016	0.072	0.030	0.40	4,600	EGPA250E□□682MM40S
35	680	12.5×20	0.12	0.044	0.22	0.18	2.2	1,820	EGPA350E□□681MK20S
	1,000	12.5×25	0.12	0.033	0.17	0.13	1.6	2,400	EGPA350E□□102MK25S
	1,000	14.5×20	0.12	0.037	0.19	0.11	1.3	2,100	EGPA350E□□102MU20S
	1,200	12.5×30	0.12	0.029	0.13	0.11	1.3	2,560	EGPA350E□□122MK30S
	1,200	14.5×25	0.12	0.028	0.14	0.080	0.90	2,800	EGPA350E□□122MU25S
	1,200	16×20	0.12	0.034	0.17	0.10	1.3	2,280	EGPA350E□□122ML20S
	1,500	12.5×35	0.12	0.024	0.11	0.090	0.80	2,970	EGPA350E□□152MK35S
	1,500	14.5×30	0.12	0.023	0.10	0.070	0.70	3,060	EGPA350E□□152MU30S
	1,500	18×20	0.12	0.032	0.16	0.090	0.60	2,490	EGPA350E□□152MM20S
	1,800	12.5×40	0.12	0.021	0.095	0.080	0.50	3,600	EGPA350E□□182MK40S
	1,800	16×25	0.12	0.026	0.13	0.080	1.1	3,100	EGPA350E□□182ML25S
	2,200	14.5×35	0.14	0.021	0.095	0.060	0.70	3,380	EGPA350E□□222MU35S
	2,200	16×30	0.14	0.023	0.10	0.070	0.90	3,160	EGPA350E□□222ML30S
	2,200	18×25	0.14	0.024	0.12	0.070	0.50	3,200	EGPA350E□□222MM25S
	2,700	14.5×40	0.14	0.018	0.081	0.050	0.50	4,000	EGPA350E□□272MU40S
	2,700	16×35	0.14	0.020	0.090	0.060	0.70	3,590	EGPA350E□□272ML35S
	2,700	18×30	0.14	0.022	0.099	0.080	0.60	3,390	EGPA350E□□272MM30S
	3,300	16×40	0.16	0.017	0.077	0.040	0.60	4,300	EGPA350E□□332ML40S
	3,300	18×35	0.16	0.019	0.086	0.070	0.50	4,200	EGPA350E□□332MM35S
	4,700	18×40	0.18	0.016	0.072	0.030	0.40	4,600	EGPA350E□□472MM40S
50	470	12.5×20	0.10	0.065	0.33	0.18	2.2	1,500	EGPA500E□□471MK20S
	560	14.5×20	0.10	0.055	0.28	0.11	1.3	1,740	EGPA500E□□561MU20S
	680	12.5×25	0.10	0.048	0.24	0.13	1.6	1,900	EGPA500E□□681MK25S
	680	16×20	0.10	0.043	0.22	0.10	1.3	2,040	EGPA500E□□681ML20S
	820	12.5×30	0.10	0.041	0.18	0.11	1.3	2,150	EGPA500E□□821MK30S
	820	14.5×25	0.10	0.040	0.20	0.080	0.90	2,190	EGPA500E□□821MU25S
	1,000	12.5×35	0.10	0.034	0.15	0.090	0.80	2,510	EGPA500E□□102MK35S
	1,000	14.5×30	0.10	0.036	0.16	0.070	0.70	2,470	EGPA500E□□102MU30S
	1,000	16×25	0.10	0.031	0.16	0.080	1.1	2,620	EGPA500E□□102ML25S
	1,000	18×20	0.10	0.039	0.20	0.090	0.60	2,240	EGPA500E□□102MM20S
	1,200	12.5×40	0.10	0.028	0.13	0.080	0.50	2,870	EGPA500E□□122MK40S
	1,200	14.5×35	0.10	0.029	0.13	0.060	0.70	2,840	EGPA500E□□122MU35S
	1,200	16×30	0.10	0.027	0.13	0.070	0.90	2,940	EGPA500E□□122ML30S
	1,200	18×25	0.10	0.029	0.15	0.070	0.50	2,750	EGPA500E□□122MM25S
	1,500	16×35	0.10	0.023	0.10	0.060	0.70	3,300	EGPA500E□□152ML35S
	1,800	14.5×40	0.10	0.024	0.11	0.050	0.50	3,230	EGPA500E□□182MU40S
	1,800	18×30	0.10	0.026	0.12	0.080	0.60	3,140	EGPA500E□□182MM30S
	2,200	16×40	0.12	0.020	0.090	0.040	0.60	3,720	EGPA500E□□222ML40S
	2,200	18×35	0.12	0.022	0.10	0.070	0.50	3,510	EGPA500E□□222MM35S
	2,700	18×40	0.12	0.018	0.080	0.030	0.40	3,940	EGPA500E□□272MM40S

□□ : Enter the appropriate lead forming or taping code.

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GPA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Initial) (Ω max./100kHz)		ESR (End of Life) (Ω max./100kHz)		Rated ripple current (mArms/125℃,100kHz)	Part No.
				20℃	-40℃	20℃	-40℃		
63	470	16×20	0.10	0.085	0.58	0.19	3.0	1,790	EGPA630E□□471ML20S
	680	16×25	0.10	0.061	0.48	0.14	2.0	2,030	EGPA630E□□681ML25S
	680	18×20	0.10	0.070	0.49	0.19	3.0	1,910	EGPA630E□□681MM20S
	820	16×30	0.10	0.053	0.41	0.090	1.3	2,330	EGPA630E□□821ML30S
	1,000	16×35	0.10	0.044	0.33	0.070	0.90	2,580	EGPA630E□□102ML35S
	1,000	18×25	0.10	0.049	0.34	0.14	2.0	2,280	EGPA630E□□102MM25S
	1,200	16×40	0.10	0.036	0.26	0.060	0.80	2,900	EGPA630E□□122ML40S
	1,200	18×30	0.10	0.041	0.26	0.090	1.3	2,580	EGPA630E□□122MM30S
	1,500	18×35	0.10	0.035	0.21	0.070	0.90	2,890	EGPA630E□□152MM35S
	1,800	18×40	0.10	0.030	0.18	0.060	0.80	3,210	EGPA630E□□182MM40S
80	330	16×20	0.08	0.085	0.58	0.19	3.0	1,790	EGPA800E□□331ML20S
	470	16×25	0.08	0.061	0.48	0.14	2.0	2,030	EGPA800E□□471ML25S
	470	18×20	0.08	0.070	0.49	0.19	3.0	1,910	EGPA800E□□471MM20S
	560	16×30	0.08	0.053	0.41	0.090	1.3	2,330	EGPA800E□□561ML30S
	560	18×25	0.08	0.049	0.34	0.14	2.0	2,280	EGPA800E□□561MM25S
	680	16×35	0.08	0.044	0.33	0.070	0.90	2,580	EGPA800E□□681ML35S
	680	18×30	0.08	0.041	0.26	0.090	1.3	2,580	EGPA800E□□681MM30S
	820	16×40	0.08	0.036	0.26	0.060	0.80	2,900	EGPA800E□□821ML40S
	820	18×35	0.08	0.035	0.21	0.070	0.90	2,890	EGPA800E□□821MM35S
	1,200	18×40	0.08	0.030	0.18	0.060	0.80	3,210	EGPA800E□□122MM40S
100	200	16×20	0.08	0.11	0.88	0.25	3.9	1,580	EGPA101E□□201ML20S
	270	18×20	0.08	0.091	0.73	0.22	3.9	1,690	EGPA101E□□271MM20S
	300	16×25	0.08	0.079	0.72	0.18	2.7	1,990	EGPA101E□□301ML25S
	360	16×30	0.08	0.068	0.62	0.13	1.9	2,250	EGPA101E□□361ML30S
	390	18×25	0.08	0.064	0.50	0.15	2.7	2,110	EGPA101E□□391MM25S
	470	16×35	0.08	0.056	0.50	0.090	1.3	2,500	EGPA101E□□471ML35S
	510	18×30	0.08	0.054	0.39	0.13	1.9	2,410	EGPA101E□□511MM30S
	560	16×40	0.08	0.046	0.39	0.080	1.1	2,700	EGPA101E□□561ML40S
	620	18×35	0.08	0.044	0.32	0.090	1.3	2,690	EGPA101E□□621MM35S
	750	18×40	0.08	0.039	0.27	0.080	1.1	2,880	EGPA101E□□751MM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
200	0.40	0.82	0.93	1.00
270 to 560	0.50	0.85	0.94	1.00
620 to 1,800	0.60	0.87	0.95	1.00
2,200 to 3,900	0.75	0.90	0.95	1.00
4,700 to 6,800	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

Please contact us for lifetime estimation.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Vibration resistant structure, 125℃

GVA Series

- Structure of higher vibration by GPA series (acceleration 392m/s^2, 40G)
- Guaranteed short time at 150℃
- Designed for electric power steering and ECU(include engine control, direct fuel injection) etc.
- Rated voltage range : 25 to 100V, Capacitance range : 430 to 5,100µF
- Solvent resistant type
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

GPA → Vibration resistance → **GVA**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +125℃
Rated Voltage Range	25 to 100V$_{dc}$
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.03CV or 4µA, whichever is greater. Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20℃, 1 minute)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$): 25V, 35V, 50V, 63V, 80V, 100V tan δ (Max.): 0.14, 0.12, 0.10, 0.10, 0.08, 0.08 When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V$_{dc}$): 25V, 35V, 50V, 63V, 80V, 100V Z(-25℃)/Z(+20℃): 2, 2, 2, 2, 2, 2 Z(-40℃)/Z(+20℃): 4, 4, 4, 4, 4, 4 (at 120Hz)
Endurance 1	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 125 ℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Endurance 2	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the test condition that the rated voltage is applied for 100 hours at 150℃ and DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 4,500 hours at 125℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Vibration	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to vibration test (vibration profile shown below) at room temperature (15 to 35℃). Capacitance change: ≦±5% of the initial value D.F. (tan δ): ≦The initial specified value Leakage current: ≦The initial specified value Vibration profile Vibration frequency range: 10 to 2,000Hz Amplitude or Acceleration: 1.5mm peak to peak or 392m/s^2(40G), whichever is the less severe Sweep rate: 10 to 2,000 to 10Hz 0.5 octave/minute Direction and period of motion: 2 hours in each of 3 mutually perpendicular directions (total of 6hours) Fixation: Fix main body and Lead teminal using a fixture tool, please contact us for detail.

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	18
φd	0.8
F	7.5
φD'	φD+0.5max.
L'	L+1.5max.

* Please contact us about lead formings and mounting methods.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Vibration resistant structure, 125℃

GVA Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E GVA □□□ E □□ □□□ M □□□ H

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 560μF:561, 2,000μF:202)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 25V:250, 50V:500)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Ω max./100kHz)		Rated ripple current (mArms/125℃, 100kHz)	Part No.
				20℃	-40℃		
25	3,900	18×30	0.18	0.023	0.11	3,330	EGVA250E□□392MM30H
	5,100	18×35.5	0.22	0.019	0.086	3,750	EGVA250E□□512MMP1H
35	2,700	18×30	0.14	0.023	0.11	3,330	EGVA350E□□272MM30H
	3,600	18×35.5	0.16	0.019	0.086	3,750	EGVA350E□□362MMP1H
50	1,600	18×30	0.10	0.027	0.14	3,000	EGVA500E□□162MM30H
	2,000	18×35.5	0.12	0.022	0.10	3,450	EGVA500E□□202MMP1H
63	1,200	18×30	0.10	0.045	0.34	2,530	EGVA630E□□122MM30H
	1,500	18×35.5	0.10	0.036	0.26	2,870	EGVA630E□□152MMP1H
80	750	18×30	0.08	0.045	0.34	2,530	EGVA800E□□751MM30H
	910	18×35.5	0.08	0.036	0.26	2,870	EGVA800E□□911MMP1H
100	430	18×30	0.08	0.055	0.41	2,290	EGVA101E□□431MM30H
	560	18×35.5	0.08	0.044	0.32	2,620	EGVA101E□□561MMP1H

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
430 to 560	0.50	0.85	0.94	1.00
750 to 2,000	0.60	0.87	0.95	1.00
2,700 to 3,900	0.75	0.90	0.95	1.00
5,100	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

Please contact us for lifetime estimation.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple, 125℃

GXF Series

- Downsizing and high-ripple current version of GXE series
- For automobile modules and networking equipment and other high temperature applications
- Endurance with ripple current : 3,000 hours at 125℃
- Solvent resistant type except 160 to 400Vdc
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

GXE → Downsized Higher ripple current → GXF

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +125℃
Rated Voltage Range	25 to 400Vdc
Capacitance Tolerance	±20%(M) (20℃, 120Hz)
Leakage Current	25 to 100Vdc: I=0.03CV or 4μA, whichever is greater. 160 to 400Vdc: CV≦1,000 I=0.1CV+40; CV>1,000 I=0.04CV+100
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 1 minute)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 25V, 35V, 50V, 63V, 80V, 100V, 160 to 250V, 350 to 400V tan δ (Max.): 0.14, 0.12, 0.10, 0.10, 0.08, 0.08, 0.15, 0.20
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 25V, 35V, 50V, 63V, 80V, 100V, 160 to 250V, 350 to 400V Z(-25℃)/Z(+20℃): 2, 2, 2, 2, 2, 2, 3, 6 Z(-40℃)/Z(+20℃): 4, 4, 4, 4, 4, 4, 6, 12 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the 3,000 hours at 125℃.
	Rated Voltage: 25 to 100Vdc / 160 to 400Vdc Capacitance change: ≦±30% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦300% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours (500hours for 160 to 400Vdc) at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.
	Rated Voltage: 25 to 100Vdc / 160 to 400Vdc Capacitance change: ≦±30% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦300% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦500% of the initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

ΦD	10	12.5	14.5	16	18
Φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5
ΦD'	ΦD+0.5max.				
L'	L+1.5max.				

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E G X F □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex.,39μF:390,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 25V:250,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple, 125℃

GXF Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φDxL(mm)	ESR (Ωmax./100kHz) 20℃	ESR (Ωmax./100kHz) -40℃	Rated ripple current (mArms/125℃, 100kHz)	Part No.
25	510	10×12.5	0.14	2.1	900	EGXF250E□□511MJC5S
	750	10×16	0.094	1.5	1,300	EGXF250E□□751MJ16S
	910	12.5×15	0.082	1.1	1,220	EGXF250E□□911MK15S
	1,200	10×20	0.073	1.1	1,540	EGXF250E□□122MJ20S
	1,200	14.5×15	0.067	0.80	1,320	EGXF250E□□122MU15S
	1,500	10×25	0.042	0.24	1,880	EGXF250E□□152MJ25S
	1,600	16×15	0.063	0.76	1,430	EGXF250E□□162ML15S
	1,800	12.5×20	0.038	0.19	1,590	EGXF250E□□182MK20S
	2,000	10×30	0.033	0.19	2,150	EGXF250E□□202MJ30S
	2,200	14.5×20	0.030	0.17	1,780	EGXF250E□□222MU20S
	2,400	18×15	0.053	0.51	1,630	EGXF250E□□242MM15S
	2,700	12.5×25	0.030	0.14	2,280	EGXF250E□□272MK25S
	3,000	16×20	0.029	0.13	1,890	EGXF250E□□302ML20S
	3,300	12.5×30	0.025	0.10	2,760	EGXF250E□□332MK30S
	3,600	14.5×25	0.025	0.11	2,760	EGXF250E□□362MU25S
	4,300	12.5×35	0.022	0.080	3,120	EGXF250E□□432MK35S
	4,300	16×25	0.022	0.092	3,030	EGXF250E□□432ML25S
	4,300	18×20	0.028	0.10	1,930	EGXF250E□□432MM20S
	4,700	14.5×30	0.020	0.081	3,090	EGXF250E□□472MU30S
	5,100	12.5×40	0.019	0.068	3,610	EGXF250E□□512MK40S
	5,100	14.5×35	0.018	0.065	3,430	EGXF250E□□512MU35S
	5,100	16×30	0.018	0.071	3,330	EGXF250E□□512ML30S
	5,600	18×25	0.020	0.078	3,200	EGXF250E□□562MM25S
	6,800	14.5×40	0.016	0.054	3,820	EGXF250E□□682MU40S
	6,800	16×35	0.016	0.056	3,630	EGXF250E□□682ML35S
	7,500	18×30	0.016	0.060	3,480	EGXF250E□□752MM30S
	8,200	16×40	0.015	0.048	3,930	EGXF250E□□822ML40S
	9,100	18×35	0.015	0.049	3,750	EGXF250E□□912MM35S
	11,000	18×40	0.014	0.043	4,040	EGXF250E□□113MM40S
35	300	10×12.5	0.14	2.1	900	EGXF350E□□301MJC5S
	510	10×16	0.094	1.5	1,300	EGXF350E□□511MJ16S
	560	12.5×15	0.082	1.1	1,220	EGXF350E□□561MK15S
	680	10×20	0.073	1.1	1,540	EGXF350E□□681MJ20S
	750	14.5×15	0.067	0.80	1,320	EGXF350E□□751MU15S
	820	10×25	0.042	0.24	1,880	EGXF350E□□821MJ25S
	1,100	12.5×20	0.038	0.19	1,590	EGXF350E□□112MK20S
	1,100	16×15	0.063	0.76	1,430	EGXF350E□□112ML15S
	1,200	10×30	0.033	0.19	2,150	EGXF350E□□122MJ30S
	1,500	12.5×25	0.030	0.14	2,280	EGXF350E□□152MK25S
	1,500	14.5×20	0.030	0.17	1,780	EGXF350E□□152MU20S
	1,500	18×15	0.053	0.51	1,630	EGXF350E□□152MM15S
	2,000	12.5×30	0.025	0.10	2,760	EGXF350E□□202MK30S
	2,000	16×20	0.029	0.13	1,890	EGXF350E□□202ML20S
	2,200	14.5×25	0.025	0.11	2,760	EGXF350E□□222MU25S
	2,400	12.5×35	0.022	0.080	3,120	EGXF350E□□242MK35S
	2,400	16×25	0.022	0.092	3,030	EGXF350E□□242ML25S
	2,400	18×20	0.028	0.10	1,930	EGXF350E□□242MM20S
	2,700	12.5×40	0.019	0.068	3,610	EGXF350E□□272MK40S
	2,700	14.5×30	0.020	0.081	3,090	EGXF350E□□272MU30S
	3,000	14.5×35	0.018	0.065	3,430	EGXF350E□□302MU35S
	3,300	16×30	0.018	0.071	3,330	EGXF350E□□332ML30S
	3,300	18×25	0.020	0.078	3,200	EGXF350E□□332MM25S
	3,900	14.5×40	0.016	0.054	3,820	EGXF350E□□392MU40S
	4,300	16×35	0.016	0.056	3,630	EGXF350E□□432ML35S
	4,300	18×30	0.016	0.060	3,480	EGXF350E□□432MM30S
	4,700	16×40	0.015	0.048	3,930	EGXF350E□□472ML40S
	5,100	18×35	0.015	0.049	3,750	EGXF350E□□512MM35S
	6,200	18×40	0.014	0.043	4,040	EGXF350E□□622MM40S
50	160	10×12.5	0.24	3.6	730	EGXF500E□□161MJC5S
	240	10×16	0.16	2.5	1,080	EGXF500E□□241MJ16S
	270	12.5×15	0.14	1.8	1,020	EGXF500E□□271MK15S
	330	10×20	0.12	1.8	1,290	EGXF500E□□331MJ20S
	390	14.5×15	0.12	1.4	1,090	EGXF500E□□391MU15S
	430	10×25	0.055	0.31	1,740	EGXF500E□□431MJ25S
	510	12.5×20	0.049	0.24	1,410	EGXF500E□□511MK20S
	560	10×30	0.041	0.25	2,020	EGXF500E□□561MJ30S
	560	16×15	0.11	1.3	1,190	EGXF500E□□561ML15S
50	680	14.5×20	0.038	0.22	1,610	EGXF500E□□681MU20S
	750	12.5×25	0.038	0.18	2,030	EGXF500E□□751MK25S
	750	18×15	0.085	0.87	1,370	EGXF500E□□751MM15S
	910	16×20	0.037	0.17	1,740	EGXF500E□□911ML20S
	1,000	12.5×30	0.031	0.14	2,510	EGXF500E□□102MK30S
	1,000	14.5×25	0.031	0.14	2,480	EGXF500E□□102MU25S
	1,200	12.5×35	0.027	0.11	2,900	EGXF500E□□122MK35S
	1,200	18×20	0.036	0.14	1,830	EGXF500E□□122MM20S
	1,300	14.5×30	0.026	0.11	2,870	EGXF500E□□132MU30S
	1,300	16×25	0.027	0.13	2,690	EGXF500E□□132ML25S
	1,500	12.5×40	0.023	0.090	3,260	EGXF500E□□152MK40S
	1,500	14.5×35	0.023	0.085	3,160	EGXF500E□□152MU35S
	1,600	16×30	0.023	0.094	3,150	EGXF500E□□162ML30S
	1,800	18×25	0.025	0.11	2,900	EGXF500E□□182MM25S
	2,000	14.5×40	0.020	0.072	3,560	EGXF500E□□202MU40S
	2,000	16×35	0.020	0.074	3,470	EGXF500E□□202ML35S
	2,200	18×30	0.021	0.079	3,330	EGXF500E□□222MM30S
	2,400	16×40	0.018	0.063	3,800	EGXF500E□□242ML40S
	2,700	18×35	0.019	0.065	3,590	EGXF500E□□272MM35S
	3,300	18×40	0.017	0.058	3,850	EGXF500E□□332MM40S
63	390	12.5×20	0.097	0.75	1,310	EGXF630E□□391MK20S
	510	12.5×25	0.072	0.55	1,880	EGXF630E□□511MK25S
	510	14.5×20	0.072	0.59	1,510	EGXF630E□□511MU20S
	620	16×20	0.062	0.39	1,630	EGXF630E□□621ML20S
	680	12.5×30	0.052	0.37	2,410	EGXF630E□□681MK30S
	680	14.5×25	0.054	0.40	2,130	EGXF630E□□681MU25S
	820	12.5×35	0.044	0.29	2,760	EGXF630E□□821MK35S
	820	18×20	0.055	0.29	1,750	EGXF630E□□821MM20S
	910	14.5×30	0.042	0.30	2,700	EGXF630E□□911MU30S
	910	16×25	0.047	0.27	2,300	EGXF630E□□911ML25S
	1,000	12.5×40	0.038	0.26	3,080	EGXF630E□□102MK40S
	1,100	14.5×35	0.037	0.24	2,940	EGXF630E□□112MU35S
	1,100	16×30	0.037	0.23	2,940	EGXF630E□□112ML30S
	1,200	18×25	0.044	0.22	2,440	EGXF630E□□122MM25S
	1,300	14.5×40	0.032	0.20	3,350	EGXF630E□□132MU40S
	1,300	16×35	0.031	0.17	3,220	EGXF630E□□132ML35S
	1,500	18×30	0.037	0.18	3,100	EGXF630E□□152MM30S
	1,800	16×40	0.028	0.15	3,590	EGXF630E□□182ML40S
	2,000	18×35	0.028	0.13	3,450	EGXF630E□□202MM35S
	2,400	18×40	0.023	0.10	3,690	EGXF630E□□242MM40S
80	240	12.5×20	0.097	0.75	1,310	EGXF800E□□241MK20S
	330	12.5×25	0.072	0.55	1,880	EGXF800E□□331MK25S
	330	14.5×20	0.072	0.59	1,510	EGXF800E□□331MU20S
	390	16×20	0.062	0.39	1,630	EGXF800E□□391ML20S
	430	12.5×30	0.052	0.37	2,410	EGXF800E□□431MK30S
	470	14.5×25	0.054	0.40	2,130	EGXF800E□□471MU25S
	560	12.5×35	0.044	0.29	2,760	EGXF800E□□561MK35S
	560	16×25	0.047	0.27	2,300	EGXF800E□□561ML25S
	560	18×20	0.055	0.29	1,750	EGXF800E□□561MM20S
	620	12.5×40	0.038	0.26	3,080	EGXF800E□□621MK40S
	620	14.5×30	0.042	0.30	2,700	EGXF800E□□621MU30S
	680	14.5×35	0.037	0.24	2,940	EGXF800E□□681MU35S
	680	16×30	0.037	0.23	2,940	EGXF800E□□681ML30S
	750	18×25	0.044	0.22	2,440	EGXF800E□□751MM25S
	820	14.5×40	0.032	0.20	3,350	EGXF800E□□821MU40S
	910	16×35	0.031	0.17	3,220	EGXF800E□□911ML35S
	910	18×30	0.037	0.18	3,100	EGXF800E□□911MM30S
	1,100	16×40	0.028	0.15	3,590	EGXF800E□□112ML40S
	1,300	18×35	0.028	0.13	3,450	EGXF800E□□132MM35S
	1,500	18×40	0.023	0.10	3,690	EGXF800E□□152MM40S
100	130	12.5×20	0.12	0.94	1,210	EGXF101E□□131MK20S
	180	14.5×20	0.082	0.69	1,450	EGXF101E□□181MU20S
	200	12.5×25	0.082	0.70	1,800	EGXF101E□□201MK25S
	240	12.5×30	0.062	0.52	2,290	EGXF101E□□241MK30S
	240	16×20	0.071	0.53	1,580	EGXF101E□□241ML20S
	270	14.5×25	0.064	0.52	2,050	EGXF101E□□271MU25S
	330	12.5×35	0.051	0.38	2,680	EGXF101E□□331MK35S

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple, 125℃

GXF Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φDxL(mm)	ESR (Ωmax./100kHz) 20℃	ESR (Ωmax./100kHz) -40℃	Rated ripple current (mArms/125℃, 100kHz)	Part No.
100	330	16×25	0.057	0.39	2,190	EGXF101E□□331ML25S
	330	18×20	0.069	0.39	1,690	EGXF101E□□331MM20S
	360	14.5×30	0.050	0.40	2,620	EGXF101E□□361MU30S
	390	12.5×40	0.044	0.33	2,970	EGXF101E□□391MK40S
	390	14.5×35	0.044	0.33	2,850	EGXF101E□□391MU35S
	390	16×30	0.044	0.33	2,770	EGXF101E□□391ML30S
	430	18×25	0.054	0.32	2,310	EGXF101E□□431MM25S
	510	14.5×40	0.038	0.26	3,230	EGXF101E□□511MU40S
	510	16×35	0.037	0.26	3,010	EGXF101E□□511ML35S
	560	18×30	0.043	0.26	2,830	EGXF101E□□561MM30S
	620	16×40	0.032	0.21	3,320	EGXF101E□□621ML40S
	680	18×35	0.034	0.19	3,210	EGXF101E□□681MM35S
	820	18×40	0.029	0.16	3,410	EGXF101E□□821MM40S
160	51	10×20	—	—	900	EGXF161E□□510MJ20S
	62	10×25	—	—	1,200	EGXF161E□□620MJ25S
	75	12.5×20	—	—	1,220	EGXF161E□□750MK20S
	82	10×30	—	—	1,410	EGXF161E□□820MJ30S
	100	10×35	—	—	1,600	EGXF161E□□101MJ35S
	100	14.5×20	—	—	1,340	EGXF161E□□101MU20S
	110	12.5×25	—	—	1,510	EGXF161E□□111MK25S
	120	10×40	—	—	1,790	EGXF161E□□121MJ40S
	130	16×20	—	—	1,500	EGXF161E□□131ML20S
	150	12.5×30	—	—	1,770	EGXF161E□□151MK30S
	150	14.5×25	—	—	1,610	EGXF161E□□151MU25S
	180	12.5×35	—	—	1,970	EGXF161E□□181MK35S
	180	14.5×30	—	—	1,880	EGXF161E□□181MU30S
	180	18×20	—	—	1,730	EGXF161E□□181MM20S
	200	12.5×40	—	—	2,150	EGXF161E□□201MK40S
	200	16×25	—	—	1,850	EGXF161E□□201ML25S
	220	14.5×35	—	—	2,030	EGXF161E□□221MU35S
	240	18×25	—	—	2,050	EGXF161E□□241MM25S
	270	14.5×40	—	—	2,250	EGXF161E□□271MU40S
200	36	10×20	—	—	900	EGXF201E□□360MJ20S
	43	10×25	—	—	1,200	EGXF201E□□430MJ25S
	56	12.5×20	—	—	1,220	EGXF201E□□560MK20S
	62	10×30	—	—	1,410	EGXF201E□□620MJ30S
	75	10×35	—	—	1,600	EGXF201E□□750MJ35S
	75	14.5×20	—	—	1,340	EGXF201E□□750MU20S
	82	10×40	—	—	1,790	EGXF201E□□820MJ40S
	82	12.5×25	—	—	1,510	EGXF201E□□820MK25S
	100	12.5×30	—	—	1,770	EGXF201E□□101MK30S
	100	16×20	—	—	1,500	EGXF201E□□101ML20S
	110	14.5×25	—	—	1,610	EGXF201E□□111MU25S
	130	12.5×35	—	—	1,970	EGXF201E□□131MK35S
	130	14.5×30	—	—	1,880	EGXF201E□□131MU30S
	130	18×20	—	—	1,730	EGXF201E□□131MM20S
	150	12.5×40	—	—	2,150	EGXF201E□□151MK40S
	150	16×25	—	—	1,850	EGXF201E□□151ML25S
	160	14.5×35	—	—	2,030	EGXF201E□□161MU35S
	180	18×25	—	—	2,050	EGXF201E□□181MM25S
	200	14.5×40	—	—	2,250	EGXF201E□□201MU40S
250	24	10×20	—	—	900	EGXF251E□□240MJ20S
	30	10×25	—	—	1,200	EGXF251E□□300MJ25S
	36	12.5×20	—	—	1,220	EGXF251E□□360MK20S
250	39	10×30	—	—	1,410	EGXF251E□□390MJ30S
	47	10×35	—	—	1,600	EGXF251E□□470MJ35S
	51	12.5×25	—	—	1,510	EGXF251E□□510MK25S
	51	14.5×20	—	—	1,340	EGXF251E□□510MU20S
	56	10×40	—	—	1,790	EGXF251E□□560MJ40S
	62	16×20	—	—	1,500	EGXF251E□□620ML20S
	68	12.5×30	—	—	1,770	EGXF251E□□680MK30S
	68	14.5×25	—	—	1,610	EGXF251E□□680MU25S
	82	12.5×35	—	—	1,970	EGXF251E□□820MK35S
	82	18×20	—	—	1,730	EGXF251E□□820MM20S
	91	14.5×30	—	—	1,880	EGXF251E□□910MU30S
	91	16×25	—	—	1,850	EGXF251E□□910ML25S
	100	12.5×40	—	—	2,150	EGXF251E□□101MK40S
	100	14.5×35	—	—	2,030	EGXF251E□□101MU35S
	120	18×25	—	—	2,050	EGXF251E□□121MM25S
	130	14.5×40	—	—	2,250	EGXF251E□□131MU40S
350	16	10×20	—	—	460	EGXF351E□□160MJ20S
	20	10×25	—	—	610	EGXF351E□□200MJ25S
	24	12.5×20	—	—	680	EGXF351E□□240MK20S
	27	10×30	—	—	720	EGXF351E□□270MJ30S
	33	10×35	—	—	820	EGXF351E□□330MJ35S
	33	14.5×20	—	—	870	EGXF351E□□330MU20S
	36	10×40	—	—	940	EGXF351E□□360MJ40S
	36	12.5×25	—	—	980	EGXF351E□□360MK25S
	43	16×20	—	—	970	EGXF351E□□430ML20S
	47	12.5×30	—	—	1,210	EGXF351E□□470MK30S
	47	14.5×25	—	—	1,210	EGXF351E□□470MU25S
	56	12.5×35	—	—	1,330	EGXF351E□□560MK35S
	56	16×25	—	—	1,130	EGXF351E□□560ML25S
	56	18×20	—	—	1,060	EGXF351E□□560MM20S
	62	14.5×30	—	—	1,410	EGXF351E□□620MU30S
	68	12.5×40	—	—	1,450	EGXF351E□□680MK40S
	68	14.5×35	—	—	1,590	EGXF351E□□680MU35S
	75	18×25	—	—	1,200	EGXF351E□□750MM25S
	91	14.5×40	—	—	1,820	EGXF351E□□910MU40S
400	12	10×20	—	—	460	EGXF401E□□120MJ20S
	16	10×25	—	—	610	EGXF401E□□160MJ25S
	20	10×30	—	—	720	EGXF401E□□200MJ30S
	20	12.5×20	—	—	680	EGXF401E□□200MK20S
	24	10×35	—	—	820	EGXF401E□□240MJ35S
	24	14.5×20	—	—	870	EGXF401E□□240MU20S
	27	12.5×25	—	—	980	EGXF401E□□270MK25S
	30	10×40	—	—	940	EGXF401E□□300MJ40S
	33	16×20	—	—	970	EGXF401E□□330ML20S
	36	12.5×30	—	—	1,210	EGXF401E□□360MK30S
	36	14.5×25	—	—	1,210	EGXF401E□□360MU25S
	43	12.5×35	—	—	1,330	EGXF401E□□430MK35S
	43	18×20	—	—	1,060	EGXF401E□□430MM20S
	47	14.5×30	—	—	1,410	EGXF401E□□470MU30S
	47	16×25	—	—	1,130	EGXF401E□□470ML25S
	51	12.5×40	—	—	1,450	EGXF401E□□510MK40S
	56	14.5×35	—	—	1,590	EGXF401E□□560MU35S
	62	18×25	—	—	1,200	EGXF401E□□620MM25S
	68	14.5×40	—	—	1,820	EGXF401E□□680MU40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

(25 to 100V_{dc})

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
130 to 240	0.40	0.82	0.93	1.00
270 to 560	0.50	0.85	0.94	1.00
620 to 2,000	0.60	0.87	0.95	1.00
2,200 to 4,300	0.75	0.90	0.95	1.00
4,700 to 11,000	0.85	0.95	0.98	1.00

(160 to 400V_{dc})

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
12 to 33	0.15	0.30	0.45	0.65	0.95	1.00
36 to 270	0.25	0.35	0.50	0.70	0.96	1.00

Please contact us for lifetime estimation.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long Life, Downsized, 125℃

GXE Series

- For automobile modules and other high temperature applications
- Downsize, long life, low impedance and better low temperature characteristics
- Endurance with ripple current : 2,000 to 5,000 hours at 125℃
- Solvent resistant type except 63 to 450V (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

GXE → Downsized, Higher ripple current → GPA

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +125℃ (10 to 250V$_{dc}$) -25 to +125℃ (350 to 450V$_{dc}$)
Rated Voltage Range	10 to 450V$_{dc}$
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	10 to 100V$_{dc}$: I=0.03CV or 4μA, whichever is greater. 160 to 450V$_{dc}$: CV≦1,000 I=0.1CV+40; CV>1,000 I=0.04CV+100 Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, 1 minute)

Dissipation Factor (tan δ)

Rated voltage (V$_{dc}$)	10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	350 to 450V
tan δ (Max.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.20	0.24

When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)

Rated voltage (V$_{dc}$)	10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	350 to 450V
Z(-25℃)/Z(+20℃)	3	2	2	2	2	2	2	2	3	6
Z(-40℃)/Z(+20℃)	6	4	4	4	4	4	4	4	6	—

(at 120Hz)

Endurance

The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified time at 125℃.

	10 to 100V$_{dc}$	160 to 450V$_{dc}$
Time	φ8 : 2,000hours φ10 : 3,000hours φ12.5 & φ16 : 5,000hours	2,000hours
Capacitance change	≦±30% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦300% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours (500 hours for 350 to 450V$_{dc}$) at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.

	10 to 100V$_{dc}$	160 to 450V$_{dc}$
Capacitance change	≦±30% of the initial value	≦±20% of the initial value
D.F. (tan δ)	≦300% of the initial specified value	≦200% of the initial specified value
Leakage current	≦The initial specified value	≦500% of the initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	8	10	12.5	16
φd	0.6	0.6	0.6	0.8
F	3.5	5.0	5.0	7.5
φD'	φD+0.5max.			
L'	L+2.0max.			

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E G X E □□□ E □□ □□□ M □□□ □

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 4.7μF:4R7,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 10V:100,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long Life, Downsized, 125℃

GXE Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Impedance (Ω max./ 20℃, 100kHz)	Rated ripple current (mArms/ 125℃, Note1)	Part No.
10	220	8×12	0.32	340	EGXE100E□□221MH12D
	330	10×12.5	0.15	620	EGXE100E□□331MJC5S
	470	10×12.5	0.15	620	EGXE100E□□471MJC5S
	1,000	10×20	0.075	950	EGXE100E□□102MJ20S
	2,200	12.5×25	0.040	1,350	EGXE100E□□222MK25S
	3,300	16×25	0.031	1,620	EGXE100E□□332ML25S
	4,700	16×31.5	0.025	1,860	EGXE100E□□472MLN3S
16	100	8×12	0.32	340	EGXE160E□□101MH12D
	220	10×12.5	0.15	620	EGXE160E□□221MJC5S
	330	10×12.5	0.15	620	EGXE160E□□331MJC5S
	470	10×16	0.094	790	EGXE160E□□471MJ16S
	1,000	12.5×20	0.058	1,080	EGXE160E□□102MK20S
	2,200	16×25	0.031	1,620	EGXE160E□□222ML25S
	3,300	16×31.5	0.025	1,860	EGXE160E□□332MLN3S
25	100	8×12	0.32	340	EGXE250E□□101MH12D
	220	10×12.5	0.15	620	EGXE250E□□221MJC5S
	330	10×16	0.094	790	EGXE250E□□331MJ16S
	470	10×20	0.075	950	EGXE250E□□471MJ20S
	1,000	12.5×25	0.040	1,350	EGXE250E□□102MK25S
	2,200	16×31.5	0.025	1,860	EGXE250E□□222MLN3S
35	100	8×12	0.32	340	EGXE350E□□101MH12D
	100	10×12.5	0.15	620	EGXE350E□□101MJC5S
	220	10×16	0.094	790	EGXE350E□□221MJ16S
	330	10×20	0.075	950	EGXE350E□□331MJ20S
	470	12.5×20	0.058	1,080	EGXE350E□□471MK20S
	1,000	16×25	0.031	1,620	EGXE350E□□102ML25S
50	10	8×12	0.75	180	EGXE500E□□100MH12D
	22	8×12	0.50	250	EGXE500E□□220MH12D
	33	8×12	0.50	280	EGXE500E□□330MH12D
	47	8×12	0.50	280	EGXE500E□□470MH12D
	100	10×12.5	0.20	520	EGXE500E□□101MJC5S
	220	10×20	0.098	880	EGXE500E□□221MJ20S
	330	12.5×20	0.081	990	EGXE500E□□331MK20S
	470	12.5×25	0.059	1,150	EGXE500E□□471MK25S
	1,000	16×31.5	0.032	1,590	EGXE500E□□102MLN3S
63	33	8×12	1.5	150	EGXE630E□□330MH12D
	47	10×12.5	0.59	530	EGXE630E□□470MJC5S
	100	10×16	0.41	690	EGXE630E□□101MJ16S
	220	12.5×20	0.16	1,050	EGXE630E□□221MK20S
	330	12.5×25	0.12	1,290	EGXE630E□□331MK25S
	470	12.5×30	0.097	1,460	EGXE630E□□471MK30S
	1,000	16×31.5	0.059	1,850	EGXE630E□□102MLN3S
80	22	8×12	1.5	150	EGXE800E□□220MH12D
	33	10×12.5	0.80	480	EGXE800E□□330MJC5S
80	47	10×12.5	0.80	480	EGXE800E□□470MJC5S
	100	10×20	0.39	790	EGXE800E□□101MJ20S
	220	12.5×25	0.18	1,240	EGXE800E□□221MK25S
	330	12.5×30	0.16	1,390	EGXE800E□□331MK30S
	470	16×25	0.11	1,500	EGXE800E□□471ML25S
100	4.7	8×12	2.0	130	EGXE101E□□4R7MH12D
	10	8×12	1.5	150	EGXE101E□□100MH12D
	22	10×12.5	0.80	480	EGXE101E□□220MJC5S
	33	10×12.5	0.80	480	EGXE101E□□330MJC5S
	47	10×16	0.55	630	EGXE101E□□470MJ16S
	100	12.5×20	0.25	990	EGXE101E□□101MK20S
	220	16×25	0.11	1,500	EGXE101E□□221ML25S
	330	16×31.5	0.079	1,790	EGXE101E□□331MLN3S
160	22	10×20	–	115	EGXE161E□□220MJ20S
	33	10×25	–	154	EGXE161E□□330MJ25S
	47	12.5×20	–	187	EGXE161E□□470MK20S
	68	12.5×25	–	245	EGXE161E□□680MK25S
	100	16×25	–	329	EGXE161E□□101ML25S
	150	16×31.5	–	434	EGXE161E□□151MLN3S
200	10	10×20	–	78	EGXE201E□□100MJ20S
	22	10×25	–	126	EGXE201E□□220MJ25S
	33	12.5×20	–	157	EGXE201E□□330MK20S
	47	12.5×25	–	204	EGXE201E□□470MK25S
	68	16×20	–	250	EGXE201E□□680ML20S
	100	16×25	–	329	EGXE201E□□101ML25S
250	10	10×20	–	78	EGXE251E□□100MJ20S
	22	12.5×20	–	128	EGXE251E□□220MK20S
	33	12.5×25	–	171	EGXE251E□□330MK25S
	47	16×25	–	225	EGXE251E□□470ML25S
	68	16×31.5	–	292	EGXE251E□□680MLN3S
350	4.7	10×20	–	53	EGXE351E□□4R7MJ20S
	10	10×25	–	85	EGXE351E□□100MJ25S
	22	12.5×25	–	139	EGXE351E□□220MK25S
	33	16×25	–	189	EGXE351E□□330ML25S
	47	16×31.5	–	243	EGXE351E□□470MLN3S
400	4.7	10×20	–	53	EGXE401E□□4R7MJ20S
	10	10×25	–	86	EGXE401E□□100MJ25S
	22	12.5×30	–	142	EGXE401E□□220MK30S
	33	16×25	–	189	EGXE401E□□330ML25S
	47	16×31.5	–	243	EGXE401E□□470MLN3S
450	4.7	10×25	–	58	EGXE451E□□4R7MJ25S
	10	12.5×20	–	86	EGXE451E□□100MK20S
	22	16×25	–	154	EGXE451E□□220ML25S
	33	16×31.5	–	203	EGXE451E□□330MLN3S

□□ : Enter the appropriate lead forming or taping code.
(Note1) Ripple current frequency
10 to 100V = 100kHz
160 to 450V = 120Hz

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

(10 to 100V_{dc})

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
4.7 to 100	0.40	0.75	0.90	1.00
220 to 470	0.50	0.85	0.94	1.00
1,000	0.60	0.87	0.95	1.00
2,200 to 3,300	0.75	0.90	0.95	1.00
4,700	0.85	0.95	0.98	1.00

(160 to 450V_{dc})

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
4.7 to 33	0.75	1.00	1.25	1.50	1.75	1.80
47 to 150	0.80	1.00	1.15	1.30	1.40	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life, 125℃

GXL Series

GXL
↑ Longer life
GXE

- Long-Life version of GXE series
- For automobile modules and other high temperature applications
- Endurance with ripple current : 5,000 hours at 125℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics						
Category Temperature Range	-40 to +125℃						
Rated Voltage Range	10 to 50V$_{dc}$						
Capacitance Tolerance	±20% (M)						(at 20℃, 120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)						(at 20℃, 1 minute)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$)	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.20	0.16	0.14	0.12	0.10	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V$_{dc}$)	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	6	4	4	4	4	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 125℃.						
	Capacitance change	≦±30% of the initial value					
	D.F. (tan δ)	≦300% of the initial specified value					
	Leakage current	≦The initial specified value					
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.						
	Capacitance change	≦±30% of the initial value					
	D.F. (tan δ)	≦300% of the initial specified value					
	Leakage current	≦The initial specified value					

◆DIMENSIONS [mm]

●Terminal Code : E

φD	10
φd	0.6
F	5.0
φD'	φD+0.5max.
L'	L+1.5max.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E G X L □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 100μF:101, 1,000μF:102)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 10V:100, 50V:500)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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GXL Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Impedance (Ω max./20℃, 100kHz)	Rated ripple current (mArms/125℃, 100kHz)	Part No.
10	330	10 × 12.5	0.20	0.17	800	EGXL100E□□331MJC5S
	470	10 × 12.5	0.20	0.17	800	EGXL100E□□471MJC5S
	1,000	10 × 20	0.20	0.094	1,300	EGXL100E□□102MJ20S
16	220	10 × 12.5	0.16	0.17	800	EGXL160E□□221MJC5S
	330	10 × 12.5	0.16	0.17	800	EGXL160E□□331MJC5S
	470	10 × 16	0.16	0.12	1,050	EGXL160E□□471MJ16S
25	220	10 × 12.5	0.14	0.17	800	EGXL250E□□221MJC5S
	330	10 × 16	0.14	0.12	1,050	EGXL250E□□331MJ16S
	470	10 × 20	0.14	0.094	1,300	EGXL250E□□471MJ20S
35	100	10 × 12.5	0.12	0.17	800	EGXL350E□□101MJC5S
	220	10 × 16	0.12	0.12	1,050	EGXL350E□□221MJ16S
	330	10 × 20	0.12	0.094	1,300	EGXL350E□□331MJ20S
50	100	10 × 12.5	0.10	0.30	590	EGXL500E□□101MJC5S
	220	10 × 20	0.10	0.19	970	EGXL500E□□221MJ20S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
100	0.40	0.75	0.90	1.00
220 to 470	0.50	0.85	0.94	1.00
1,000	0.60	0.87	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life, High ripple, 135℃

GPD Series

- Guaranteed short time at 150℃
- Downsized and high-ripple current version of GPA series
- For automobile modules and other high temperature applications
- Endurance with ripple current : 2,000 to 3,000 hours at 125℃ to 135℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

GPA → Downsized, Higher ripple current → **GPD**

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +135℃
Rated Voltage Range	25 to 100V$_{dc}$
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃, 1 minute)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$): 25V, 35V, 50V, 63V, 80V, 100V tan δ (Max.): 0.14, 0.12, 0.10, 0.10, 0.08, 0.08 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V$_{dc}$): 25V, 35V, 50V, 63V, 80V, 100V Z(-25℃)/Z(+20℃): 2, 2, 2, 2, 2, 2 Z(-40℃)/Z(+20℃): 4, 4, 4, 4, 4, 4 (at 120Hz)
Endurance 1	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125℃ or 135℃. Time: 125℃ 3,000hours; 135℃ 25 to 50V$_{dc}$: 3,000hours; 63 to 100V$_{dc}$: 2,000hours Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Endurance 2	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the test condition that the rated voltage is applied for 100 hours at 150℃ and DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125℃ or 135℃. Time: 125℃ 2,500hours; 135℃ 25 to 50V$_{dc}$: 2,500hours; 63 to 100V$_{dc}$: 1,500hours Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	12.5	16	18
φd	0.6	0.8	0.8
F	5.0	7.5	7.5
φD'	φD+0.5max.		
L'	L+1.5max.		

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Long life, High ripple, 135℃

GPD Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Ω max./100kHz)		Rated ripple current (mArms/100kHz)		Part No.
				20℃	-40℃	125℃	135℃	
25	2,000	12.5 × 20	0.16	0.042	0.48	2,760	1,690	EGPD250E□□202MK20H
	3,000	12.5 × 25	0.18	0.033	0.30	3,480	2,010	EGPD250E□□302MK25H
	3,300	16 × 20	0.18	0.035	0.27	3,040	1,860	EGPD250E□□332ML20H
	3,600	12.5 × 30	0.18	0.028	0.24	4,490	2,900	EGPD250E□□362MK30H
	4,300	18 × 20	0.20	0.034	0.22	3,250	1,870	EGPD250E□□432MM20H
	4,700	12.5 × 35	0.20	0.025	0.21	5,140	3,190	EGPD250E□□472MK35H
	4,700	16 × 25	0.20	0.028	0.22	4,260	2,870	EGPD250E□□472ML25H
	5,100	12.5 × 40	0.22	0.024	0.19	5,810	3,470	EGPD250E□□512MK40H
	5,600	16 × 30	0.22	0.023	0.18	5,480	3,400	EGPD250E□□562ML30H
	6,200	18 × 25	0.24	0.027	0.19	4,500	2,900	EGPD250E□□622MM25H
	7,500	16 × 35	0.26	0.020	0.14	6,070	3,630	EGPD250E□□752ML35H
	7,500	18 × 30	0.26	0.022	0.16	5,600	3,470	EGPD250E□□752MM30H
	9,100	16 × 40	0.30	0.019	0.12	6,810	3,930	EGPD250E□□912ML40H
	10,000	18 × 35	0.32	0.019	0.12	6,280	3,750	EGPD250E□□103MM35H
	12,000	18 × 40	0.36	0.018	0.10	7,070	4,080	EGPD250E□□123MM40H
35	1,300	12.5 × 20	0.12	0.042	0.48	2,760	1,690	EGPD350E□□132MK20H
	1,800	12.5 × 25	0.12	0.033	0.30	3,480	2,010	EGPD350E□□182MK25H
	2,000	16 × 20	0.14	0.035	0.27	3,040	1,860	EGPD350E□□202ML20H
	2,200	12.5 × 30	0.14	0.028	0.24	4,490	2,900	EGPD350E□□222MK30H
	2,400	18 × 20	0.14	0.034	0.22	3,250	1,870	EGPD350E□□242MM20H
	2,700	12.5 × 35	0.14	0.025	0.21	5,140	3,190	EGPD350E□□272MK35H
	3,000	16 × 25	0.16	0.028	0.22	4,260	2,870	EGPD350E□□302ML25H
	3,300	12.5 × 40	0.16	0.024	0.19	5,810	3,470	EGPD350E□□332MK40H
	3,600	16 × 30	0.16	0.023	0.18	5,480	3,400	EGPD350E□□362ML30H
	3,900	18 × 25	0.16	0.027	0.19	4,500	2,900	EGPD350E□□392MM25H
	4,300	16 × 35	0.18	0.020	0.14	6,070	3,630	EGPD350E□□432ML35H
	4,700	18 × 30	0.18	0.022	0.16	5,600	3,470	EGPD350E□□472MM30H
	5,600	16 × 40	0.20	0.019	0.12	6,810	3,930	EGPD350E□□562ML40H
	6,200	18 × 35	0.22	0.019	0.12	6,280	3,750	EGPD350E□□622MM35H
	7,500	18 × 40	0.24	0.018	0.10	7,070	4,080	EGPD350E□□752MM40H
50	620	12.5 × 20	0.10	0.073	0.88	2,400	1,470	EGPD500E□□621MK20H
	820	12.5 × 25	0.10	0.058	0.67	3,350	2,260	EGPD500E□□821MK25H
	1,000	16 × 20	0.10	0.050	0.55	2,960	1,870	EGPD500E□□102ML20H
	1,100	12.5 × 30	0.10	0.048	0.52	4,220	2,520	EGPD500E□□112MK30H
	1,300	12.5 × 35	0.10	0.042	0.44	4,810	2,780	EGPD500E□□132MK35H
	1,300	16 × 25	0.10	0.042	0.44	4,040	2,500	EGPD500E□□132ML25H
	1,300	18 × 20	0.10	0.042	0.44	3,130	2,110	EGPD500E□□132MM20H
	1,600	12.5 × 40	0.10	0.037	0.36	5,240	3,020	EGPD500E□□162MK40H
	1,600	16 × 30	0.10	0.035	0.36	5,130	2,960	EGPD500E□□162ML30H
	1,800	18 × 25	0.10	0.033	0.32	4,230	2,530	EGPD500E□□182MM25H
	2,200	16 × 35	0.12	0.029	0.27	5,480	3,160	EGPD500E□□222ML35H
	2,400	18 × 30	0.12	0.028	0.25	5,240	3,020	EGPD500E□□242MM30H
	2,700	16 × 40	0.12	0.025	0.22	5,930	3,420	EGPD500E□□272ML40H
	3,000	18 × 35	0.14	0.024	0.20	5,870	3,390	EGPD500E□□302MM35H
	3,600	18 × 40	0.14	0.023	0.16	6,420	3,700	EGPD500E□□362MM40H
63	390	12.5 × 20	0.10	0.072	0.56	1,640	1,420	EGPD630E□□391MK20H
	560	12.5 × 25	0.10	0.052	0.39	2,520	2,050	EGPD630E□□561MK25H
	680	16 × 20	0.10	0.053	0.34	2,140	1,910	EGPD630E□□681ML20H
	750	12.5 × 30	0.10	0.042	0.30	3,110	2,630	EGPD630E□□751MK30H
	910	12.5 × 35	0.10	0.035	0.25	3,760	2,970	EGPD630E□□911MK35H
	910	18 × 20	0.10	0.044	0.26	2,350	2,100	EGPD630E□□911MM20H
	1,000	16 × 25	0.10	0.038	0.23	2,940	2,680	EGPD630E□□102ML25H
	1,100	12.5 × 40	0.10	0.031	0.22	4,610	3,260	EGPD630E□□112MK40H
	1,200	16 × 30	0.10	0.034	0.20	3,860	3,050	EGPD630E□□122ML30H
	1,300	18 × 25	0.10	0.033	0.19	3,080	2,810	EGPD630E□□132MM25H
	1,600	16 × 35	0.10	0.027	0.15	4,590	3,420	EGPD630E□□162ML35H
	1,600	18 × 30	0.10	0.028	0.15	4,080	3,220	EGPD630E□□162MM30H
	1,800	16 × 40	0.10	0.025	0.14	5,190	3,670	EGPD630E□□182ML40H
	2,200	18 × 35	0.12	0.022	0.12	5,220	3,690	EGPD630E□□222MM35H
	2,400	18 × 40	0.12	0.021	0.11	5,660	3,820	EGPD630E□□242MM40H

□□ : Enter the appropriate lead forming or taping code.
Please consult us for Dia 14.5mm products. Engineering bulletin is available for specifications.

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

GPD Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Ω max./100kHz)		Rated ripple current (mArms/100kHz)		Part No.
				20℃	-40℃	125℃	135℃	
80	270	12.5 × 20	0.08	0.072	0.56	1,640	1,420	EGPD800E□□271MK20H
	390	12.5 × 25	0.08	0.052	0.39	2,520	2,050	EGPD800E□□391MK25H
	470	16 × 20	0.08	0.053	0.34	2,140	1,910	EGPD800E□□471ML20H
	510	12.5 × 30	0.08	0.042	0.30	3,110	2,630	EGPD800E□□511MK30H
	620	12.5 × 35	0.08	0.035	0.25	3,760	2,970	EGPD800E□□621MK35H
	620	18 × 20	0.08	0.044	0.26	2,350	2,100	EGPD800E□□621MM20H
	680	16 × 25	0.08	0.038	0.23	2,940	2,680	EGPD800E□□681ML25H
	750	12.5 × 40	0.08	0.031	0.22	4,610	3,260	EGPD800E□□751MK40H
	750	16 × 30	0.08	0.034	0.20	3,860	3,050	EGPD800E□□751ML30H
	820	18 × 25	0.08	0.033	0.19	3,080	2,810	EGPD800E□□821MM25H
	1,000	16 × 35	0.08	0.027	0.15	4,590	3,420	EGPD800E□□102ML35H
	1,100	18 × 30	0.08	0.028	0.15	4,080	3,220	EGPD800E□□112MM30H
	1,300	16 × 40	0.08	0.025	0.14	5,190	3,670	EGPD800E□□132ML40H
	1,300	18 × 35	0.08	0.022	0.12	5,220	3,690	EGPD800E□□132MM35H
	1,600	18 × 40	0.08	0.021	0.11	5,660	3,820	EGPD800E□□162MM40H
100	160	12.5 × 20	0.08	0.090	0.75	1,580	1,410	EGPD101E□□161MK20H
	220	12.5 × 25	0.08	0.068	0.55	2,140	1,960	EGPD101E□□221MK25H
	270	16 × 20	0.08	0.067	0.47	2,050	1,670	EGPD101E□□271ML20H
	300	12.5 × 30	0.08	0.052	0.41	2,950	2,330	EGPD101E□□301MK30H
	360	12.5 × 35	0.08	0.045	0.35	3,530	2,630	EGPD101E□□361MK35H
	360	18 × 20	0.08	0.061	0.35	2,270	1,860	EGPD101E□□361MM20H
	390	16 × 25	0.08	0.048	0.33	2,790	2,360	EGPD101E□□391ML25H
	430	12.5 × 40	0.08	0.038	0.29	4,140	2,920	EGPD101E□□431MK40H
	470	16 × 30	0.08	0.041	0.27	3,440	2,720	EGPD101E□□471ML30H
	510	18 × 25	0.08	0.045	0.25	2,920	2,470	EGPD101E□□511MM25H
	560	16 × 35	0.08	0.036	0.23	4,190	2,960	EGPD101E□□561ML35H
	620	18 × 30	0.08	0.037	0.20	3,920	2,920	EGPD101E□□621MM30H
	750	16 × 40	0.08	0.028	0.18	5,020	3,380	EGPD101E□□751ML40H
	820	18 × 35	0.08	0.030	0.16	4,710	3,330	EGPD101E□□821MM35H
	910	18 × 40	0.08	0.026	0.14	5,280	3,560	EGPD101E□□911MM40H

□□ : Enter the appropriate lead forming or taping code.
Please consult us for Dia 14.5mm products. Engineering bulletin is available for specifications.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
160	0.40	0.75	0.90	1.00
220 to 620	0.50	0.85	0.94	1.00
680 to 2,000	0.60	0.87	0.95	1.00
2,200 to 4,300	0.75	0.90	0.95	1.00
4,700 to 12,000	0.85	0.95	0.98	1.00

Please contact us for lifetime estimation.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Vibration resistant structure, 135℃

GVD Series

- Structure of higher vibration resistance by GPD series (acceleration 392m/s^2, 40G)
- Guaranteed short time at 150℃
- Designed for electric power steering and ECU (include engine control, direct fuel injection) etc.
- Rated voltage range : 25 to 100V, Capacitance range : 510 to 8,200µF
- Solvent resistant type
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

GPD → Vibration resistance → **GVD**

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +135℃							
Rated Voltage Range	25 to 100V$_{dc}$							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.03CV or 4µA, whichever is greater. Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V)							(at 20℃, 1 minute)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$)	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.14	0.12	0.10	0.10	0.08	0.08	
	When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase.							(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V$_{dc}$)	25V	35V	50V	63V	80V	100V	
	Z(-25℃)/Z(+20℃)	2	2	2	2	2	2	
	Z(-40℃)/Z(+20℃)	4	4	4	4	4	4	(at 120Hz)
Endurance 1	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125℃ or 135℃.							
	Time	125℃ 25 to 100V$_{dc}$: 3,000hours 135℃ 25 to 50V$_{dc}$: 3,000hours 63 to 100V$_{dc}$: 2,000hours						
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Endurance 2	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the test condition that the rated voltage is applied for 100 hours at 150℃ and DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125℃ or 135℃.							
	Time	125℃ 25 to 100V$_{dc}$: 2,500hours 135℃ 25 to 50V$_{dc}$: 2,500hours 63 to 100V$_{dc}$: 1,500hours						
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tan δ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Vibration	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to vibration test (vibration profile shown below) at room temperature (15 to 35℃).							
	Capacitance change	≦±5% of the initial value						
	D.F. (tan δ)	≦The initial specified value						
	Leakage current	≦The initial specified value						
	Vibration profile							
	Vibration frequency range	10 to 2,000Hz						
	Amplitude or Acceleration	1.5mm peak to peak or 392m/s^2(40G), whichever is the less severe						
	Sweep rate	10 to 2,000 to 10Hz 0.5 octave/minute						
	Direction and period of motion	2 hours in each of 3 mutually perpendicular directions (total of 6hours)						
	Fixation	Fix main body and Lead teminal using a fixture tool, please contact us for detail.						

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	18
φd	0.8
F	7.5
φD'	φD+0.5max.
L'	L+1.5max.

* Please contact us about lead formings and mounting methods.

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Vibration resistant structure, 135℃

GVD Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E GVD □□□ E □□ □□□ M □□□ H

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 680μF:681, 8,200μF:822)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 25V:250, 50V:500)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	ESR (Ωmax/100kHz)		Rated ripple current (mArms/100kHz)		Part No.
				20℃	-40℃	125℃	135℃	
25	6,200	18×30	0.24	0.023	0.19	5,380	3,330	EGVD250E□□622MM30H
	8,200	18×35.5	0.28	0.019	0.13	6,110	3,750	EGVD250E□□822MMP1H
35	3,600	18×30	0.16	0.023	0.19	5,380	3,330	EGVD350E□□362MM30H
	4,700	18×35.5	0.18	0.019	0.13	6,110	3,750	EGVD350E□□472MMP1H
50	2,000	18×30	0.12	0.029	0.26	5,050	2,910	EGVD500E□□202MM30H
	2,400	18×35.5	0.12	0.024	0.20	5,760	3,330	EGVD500E□□242MMP1H
63	1,300	18×30	0.10	0.029	0.18	3,930	3,100	EGVD630E□□132MM30H
	1,800	18×35.5	0.10	0.024	0.14	4,920	3,520	EGVD630E□□182MMP1H
80	820	18×30	0.08	0.029	0.18	3,930	3,100	EGVD800E□□821MM30H
	1,200	18×35.5	0.08	0.024	0.14	4,920	3,520	EGVD800E□□122MMP1H
100	510	18×30	0.08	0.038	0.25	3,800	2,830	EGVD101E□□511MM30H
	680	18×35.5	0.08	0.030	0.19	4,550	3,210	EGVD101E□□681MMP1H

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
510	0.50	0.85	0.94	1.00
680 to 2,000	0.60	0.87	0.95	1.00
2,400 to 3,600	0.75	0.90	0.95	1.00
4,700 to 8,200	0.85	0.95	0.98	1.00

Please contact us for lifetime estimation.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

For airbag module, 105℃

LBK Series

- Downsizing of LBG series.
- For airbag application and power supply application
- High capacitance, low ESR and good low temperature behavior
- Endurance with ripple current : 5,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	25 & 35Vdc
Capacitance Range	2,500 to 14,000μF (at 20℃, 120Hz)
Capacitance Tolerance	0 to +30% (A) (at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 25V, 35V tan δ (Max.): 0.20, 0.16 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 25V, 35V Z(-55℃)/Z(+20℃): 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	16	18
φd	0.8	0.8
F	7.5	7.5
φD'	φD+0.5max.	
L'	L+1.5max.	

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E L B K □□□ E □□ □□□ A □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 3,500μF:352, 14,000μF:143)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 25V:250, 35V:350)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

For airbag module, 105℃

LBK Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L (mm)	tan δ	ESR (Ω max./100kHz)		Rated ripple current (mArms/105℃, 100kHz)	Part No.
				20℃	-40℃		
25	4,200	16 × 20	0.26	0.033	0.095	2,250	ELBK250E□□422AL20S
	5,300	18 × 20	0.28	0.029	0.082	2,500	ELBK250E□□532AM20S
	5,900	16 × 25	0.28	0.024	0.073	2,600	ELBK250E□□592AL25S
	7,500	18 × 25	0.32	0.022	0.063	2,800	ELBK250E□□752AM25S
	8,000	16 × 31.5	0.34	0.021	0.052	3,200	ELBK250E□□802ALN3S
	9,500	16 × 35.5	0.36	0.019	0.046	3,500	ELBK250E□□952ALP1S
	10,000	18 × 31.5	0.38	0.019	0.045	3,500	ELBK250E□□103AMN3S
	11,000	16 × 40	0.40	0.017	0.040	3,800	ELBK250E□□113AL40S
	11,000	18 × 35.5	0.40	0.017	0.040	3,700	ELBK250E□□113AMP1S
	14,000	18 × 40	0.46	0.015	0.035	4,000	ELBK250E□□143AM40S
35	2,500	16 × 20	0.18	0.033	0.095	2,250	ELBK350E□□252AL20S
	3,100	18 × 20	0.20	0.029	0.082	2,500	ELBK350E□□312AM20S
	3,500	16 × 25	0.20	0.024	0.073	2,600	ELBK350E□□352AL25S
	4,500	18 × 25	0.22	0.022	0.063	2,800	ELBK350E□□452AM25S
	4,700	16 × 31.5	0.22	0.021	0.052	3,200	ELBK350E□□472ALN3S
	5,600	16 × 35.5	0.24	0.019	0.046	3,500	ELBK350E□□562ALP1S
	6,000	18 × 31.5	0.26	0.019	0.045	3,500	ELBK350E□□602AMN3S
	6,600	16 × 40	0.26	0.017	0.040	3,800	ELBK350E□□662AL40S
	7,100	18 × 35.5	0.28	0.017	0.040	3,700	ELBK350E□□712AMP1S
	8,400	18 × 40	0.30	0.015	0.035	4,000	ELBK350E□□842AM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
2,500 to 3,500	0.75	0.90	0.95	1.00
4,200 to 14,000	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

For airbag module, 105℃

LBG Series

- For airbag application
- High capacitance, low impedance, and good low temperature behavior
- Endurance with ripple current : 5,000 hours at 105℃
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-55 to +105℃
Rated Voltage Range	25 & 35Vdc
Capacitance Range	1,000 to 11,000μF (at 20℃, 120Hz)
Capacitance Tolerance	0 to +30% (A) (at 20℃, 120Hz)
Leakage Current	I=0.01CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc): 25V, 35V tan δ (Max.): 0.20, 0.16 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 25V, 35V Z(-55℃)/Z(+20℃): 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

Gas escape end seal

φD	12.5	14.5	16	18
φd	0.6	0.8	0.8	0.8
F	5.0	7.5	7.5	7.5
φD'	φD+0.5max.			
L'	L+1.5max.			

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

For airbag module, 105℃

LBG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Impedance (Ω max./100kHz) 20℃	Impedance (Ω max./100kHz) -40℃	Rated ripple current (mArms/105℃, 100kHz)	Part No.
25	1,700	12.5 × 20	0.20	0.057	0.29	1,700	ELBG250E □□ 172AK20S
	2,400	12.5 × 25	0.22	0.045	0.23	2,000	ELBG250E □□ 242AK25S
	2,400	14.5 × 20	0.22	0.051	0.26	2,000	ELBG250E □□ 242AU20S
	2,800	12.5 × 30	0.22	0.039	0.20	2,300	ELBG250E □□ 282AK30S
	3,000	16 × 20	0.24	0.044	0.22	2,250	ELBG250E □□ 302AL20S
	3,400	14.5 × 25	0.24	0.041	0.21	2,400	ELBG250E □□ 342AU25S
	3,500	12.5 × 35	0.24	0.033	0.17	2,700	ELBG250E □□ 352AK35S
	4,200	16 × 25	0.26	0.033	0.17	2,600	ELBG250E □□ 422AL25S
	4,200	18 × 20	0.26	0.042	0.21	2,500	ELBG250E □□ 422AM20S
	4,500	12.5 × 40	0.26	0.027	0.14	3,100	ELBG250E □□ 452AK40S
	4,600	14.5 × 31.5	0.26	0.032	0.16	2,700	ELBG250E □□ 462AUN3S
	5,400	14.5 × 35.5	0.28	0.028	0.14	3,100	ELBG250E □□ 542AUP1S
	5,600	16 × 31.5	0.28	0.026	0.13	3,200	ELBG250E □□ 562ALN3S
	6,000	18 × 25	0.30	0.030	0.15	2,800	ELBG250E □□ 602AM25S
	6,400	14.5 × 40	0.30	0.025	0.13	3,400	ELBG250E □□ 642AU40S
	6,600	16 × 35.5	0.30	0.023	0.12	3,500	ELBG250E □□ 662ALP1S
	7,800	16 × 40	0.32	0.021	0.11	3,800	ELBG250E □□ 782AL40S
	7,900	18 × 31.5	0.32	0.024	0.12	3,500	ELBG250E □□ 792AMN3S
	9,200	18 × 35.5	0.36	0.022	0.11	3,700	ELBG250E □□ 922AMP1S
	11,000	18 × 40	0.40	0.020	0.10	4,000	ELBG250E □□ 113AM40S
35	1,000	12.5 × 20	0.16	0.057	0.29	1,700	ELBG350E □□ 102AK20S
	1,400	12.5 × 25	0.16	0.045	0.23	2,000	ELBG350E □□ 142AK25S
	1,400	14.5 × 20	0.16	0.051	0.26	2,000	ELBG350E □□ 142AU20S
	1,600	12.5 × 30	0.16	0.039	0.20	2,300	ELBG350E □□ 162AK30S
	1,800	16 × 20	0.16	0.044	0.22	2,250	ELBG350E □□ 182AL20S
	2,000	14.5 × 25	0.18	0.041	0.21	2,400	ELBG350E □□ 202AU25S
	2,100	12.5 × 35	0.18	0.033	0.17	2,700	ELBG350E □□ 212AK35S
	2,500	16 × 25	0.18	0.033	0.17	2,600	ELBG350E □□ 252AL25S
	2,500	18 × 20	0.18	0.042	0.21	2,500	ELBG350E □□ 252AM20S
	2,700	12.5 × 40	0.18	0.027	0.14	3,100	ELBG350E □□ 272AK40S
	2,800	14.5 × 31.5	0.18	0.032	0.16	2,700	ELBG350E □□ 282AUN3S
	3,200	14.5 × 35.5	0.20	0.028	0.14	3,100	ELBG350E □□ 322AUP1S
	3,400	16 × 31.5	0.20	0.026	0.13	3,200	ELBG350E □□ 342ALN3S
	3,600	18 × 25	0.20	0.030	0.15	2,800	ELBG350E □□ 362AM25S
	3,800	14.5 × 40	0.20	0.025	0.13	3,400	ELBG350E □□ 382AU40S
	4,000	16 × 35.5	0.22	0.023	0.12	3,500	ELBG350E □□ 402ALP1S
	4,700	16 × 40	0.22	0.021	0.11	3,800	ELBG350E □□ 472AL40S
	4,800	18 × 31.5	0.22	0.024	0.12	3,500	ELBG350E □□ 482AMN3S
	5,600	18 × 35.5	0.24	0.022	0.11	3,700	ELBG350E □□ 562AMP1S
	6,700	18 × 40	0.26	0.020	0.10	4,000	ELBG350E □□ 672AM40S

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1,000 to 2,000	0.60	0.87	0.95	1.00
2,100 to 3,800	0.75	0.90	0.95	1.00
4,000 to 11,000	0.85	0.95	0.98	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

For photo flash

PH Series

- The PH series capacitors are designed for photo flash
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics	
Category Temperature Range	-20 to +65℃	
Rated Voltage Range	300, 315, 330Vdc	
Capacitance Tolerance	-10 to +20% (V)	(at 20℃, 120Hz)
Leakage Current	I=1×C Where, I : Max. leakage current (μA), C : Nominal capacitance (μF)	(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.06max.	(at 20℃, 120Hz)
Charge and Discharge Characteristics	The following specifications shall be satisfied when the capacitors are restored to 20℃ after charge and discharge are repeated 5,000 times at room temperature (5 to 35℃). Discharge resistance or Xenon tube : 0.7 to 1.0Ω.	
	Capacitance change	≦±10% of the initial value
	D.F. (tan δ)	≦150% of the initial specified value
	Leakage current	≦150% of the initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 65℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.	
	Capacitance change	≦±10% of the initial value
	D.F. (tan δ)	≦150% of the initial specified value
	Leakage current	≦150% of the initial specified value

◆DIMENSIONS [mm]

●Terminal Code : E

φD	6.0 to 7.5	8.0 to 8.5	9.0 to 9.5	10.0 to 14.0	14.5 to 18.0
φd	0.5	0.6	0.6	0.6	0.8
F	2.5	3.5	4	5	7.5
φD'	φD+0.5max.				
L'	L+1.0max.				

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E P H – □□□ E □□ □□□ □□ □□ S

- Supplement code
- Size code (L code)
- Size code (φD code)
- Nominal capacitance code (ex. 50μF:500,100μF:101)
- Lead forming·taping code
- Terminal code
- Rated voltage code (ex. 315V:3B1,330V:331)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

●Size Code

φD code (14th, 15th)

φD(mm)	φD code	
	14th	15th
6.0	6	0
6.5	6	5
7.0	7	0
7.5	7	5
8.0	8	0
8.5	8	5
9.0	9	0
9.5	9	5
10.0	A	0
10.5	A	5
11.0	B	0
11.5	B	5
12.0	C	0
12.5	C	5
13.0	D	0
13.5	D	5
14.0	E	0
14.5	E	5
15.0	F	0
15.5	F	5
16.0	G	0
16.5	G	5
17.0	H	0
17.5	H	5
18.0	J	0

L code (16th, 17th)

L(mm)	L code	
	16th	17th
15.0	1	5
16.0	1	6
17.0	1	7
18.0	1	8
19.0	1	9
20.0	2	0
21.0	2	1
22.0	2	2
23.0	2	3
24.0	2	4
25.0	2	5
26.0	2	6
27.0	2	7
28.0	2	8
29.0	2	9
30.0	3	0
31.0	3	1
32.0	3	2
33.0	3	3
34.0	3	4
35.0	3	5
36.0	3	6
37.0	3	7
38.0	3	8
39.0	3	9
40.0	4	0
41.0	4	1
42.0	4	2
43.0	4	3
44.0	4	4
45.0	4	5

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PH Series

◆RATINGS (REFERENCE)

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
315	86	10×30	0.06	EPH-3B1E □□ 860A030S
	122	10×40	0.06	EPH-3B1E □□ 121A040S
	144	12.5×30	0.06	EPH-3B1E □□ 1E1C530S
	209	12.5×40	0.06	EPH-3B1E □□ 211C540S
330	80	10×30	0.06	EPH-331E □□ 800A030S
	114	10×40	0.06	EPH-331E □□ 1B1A040S
	137	12.5×30	0.06	EPH-331E □□ 1D1C530S
	194	12.5×40	0.06	EPH-331E □□ 1K1C540S

□□ : Enter the appropriate lead forming or taping code.

●Products of vents on the sealing rubber

DIMENSIONS[mm]

<In the case of diameter 10mm>

φD	10
V	(4.6)
f	(1.8)
F	5±0.5

Products of vent on rubber type, please make clearance about 1mm minimum between rubber and board. If it is difficult to make clearance 1mm minimum between rubber and board, please arrange gas escaping hole on the board (same position and 40% minimum diameter from the vent).
The products of dual vents on rubber, requires placement one or two gas escaping hole on the board.

●Products of a vent on the case

Please make the following open space over the vent so that the vent can operate correctly.

Case diameter	Clearance
φ6 to 16mm	2mm minimum
φ16.5mm and up	3mm minimum

Above part numbers are only reference.
Please consult with us about detail specifications (rated voltage, capacitance, case size, type of rubber, etc...).

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NIPPON CHEMI-CON

PART NUMBERING SYSTEM

Product code guide (Snap-in type)

(Example : KMS series, 400V-330μF, ϕ30×30L)

Please refer to the following table

For more details, refer to Product Guide.

Contents	Code
Polar	E

Series	Code
KMS	KMS

Type	Code
Snap-in	VS
Snap-in	VN
Flat terminal for PCB	LI
For Connector	LR
Horizontal	LC
Straight	VR

Tol.(%)	Code
±20	M

Sleeve material	Terminal plating material	Code
PET	Sn	S
Pb-free PVC		M

1	2 3 4	5 6 7	8 9	10	11 12 13	14	15 16 17	18
E	KMS	401	VS	N	331	M	R30	S
Category	Series code	Voltage code	Terminal code	Dummy terminal code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
6.3	6R3
10	100
25	250
100	101
250	251
315	3B1
⋮	⋮

Terminal #	Code
0	N
1	S
2	D
3	T

Cap.(μF)	Code
39	390
47	470
100	101
470	471
1,000	102
4,700	472
10,000	103
⋮	⋮

ϕD(mm)	Code
20	N
22	P
25.4	Q
30	R
35	A
40	B

L(mm)	Code
15	15
20	20
25	25
30	30
35	35
40	40
45	45
50	50
55	55
60	60

*Refer to the appendix (Part number) for codes not listed here.

Available terminals

[mm]

Terminal, Dummy code : VNN — D=ϕ22 toϕ35

Terminal, Dummy code : LIN — D=ϕ30 toϕ40

Terminal, Dummy code : VEN — D=ϕ30, ϕ35

Terminal, Dummy code : VRD — D=ϕ35, ϕ40

B : Positive, A, C : Dummy

Terminal, Dummy code : VND — D=ϕ35, ϕ40

B : Positive, A, C : Dummy

Terminal, Dummy code : LIS — D=ϕ50

A : Dummy

Horizontal mounting
Terminal, Dummy code : LCN — D=ϕ20×30 to 50L, ϕ22×30 to 50L

*1 Negative terminal : Mesh marking
*2 Use the dummy terminals for mechanical support only.
The dummy terminals must not be connected to any circuit trace on PC board, be sure to electrically isolate from the negative and the positive terminals.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 85℃

SMR Series

- Endurance with ripple current : 2,000 hours at 85℃
- Downsized and high ripple current from SMQ series
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +85℃			
Rated Voltage Range	400 to 450V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3$\sqrt{CV}$ Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	400 to 450V		
	Z(-25℃)/Z(+20℃)	8		(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃.			
	Capacitance change	≦±20% of the initial value		
	D. F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D. F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

SMR Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
400	150	22×25	0.15	1.30	ESMR401VSN151MP25S
	180	22×30	0.15	1.49	ESMR401VSN181MP30S
	220	22×35	0.15	1.69	ESMR401VSN221MP35S
	220	25.4×25	0.15	1.65	ESMR401VSN221MQ25S
	270	22×40	0.15	1.90	ESMR401VSN271MP40S
	270	25.4×30	0.15	1.88	ESMR401VSN271MQ30S
	330	22×45	0.15	2.15	ESMR401VSN331MP45S
	330	25.4×35	0.15	2.16	ESMR401VSN331MQ35S
	330	30×25	0.15	2.10	ESMR401VSN331MR25S
	390	22×50	0.15	2.40	ESMR401VSN391MP50S
	390	25.4×40	0.15	2.40	ESMR401VSN391MQ40S
	390	30×30	0.15	2.32	ESMR401VSN391MR30S
	390	35×25	0.15	2.05	ESMR401VSN391MA25S
	470	25.4×45	0.15	2.69	ESMR401VSN471MQ45S
	470	30×35	0.15	2.60	ESMR401VSN471MR35S
	470	35×30	0.15	2.28	ESMR401VSN471MA30S
	560	30×40	0.15	2.92	ESMR401VSN561MR40S
	560	35×30	0.15	2.48	ESMR401VSN561MA30S
	680	30×45	0.15	3.30	ESMR401VSN681MR45S
	680	35×35	0.15	2.79	ESMR401VSN681MA35S
	820	35×45	0.15	3.25	ESMR401VSN821MA45S
	1,000	35×50	0.15	3.66	ESMR401VSN102MA50S
420	120	22×25	0.20	1.15	ESMR421VSN121MP25S
	180	22×30	0.20	1.48	ESMR421VSN181MP30S
	180	25.4×25	0.20	1.51	ESMR421VSN181MQ25S
	220	22×35	0.20	1.68	ESMR421VSN221MP35S
	220	25.4×30	0.20	1.71	ESMR421VSN221MQ30S
	270	22×45	0.20	1.94	ESMR421VSN271MP45S
	270	25.4×35	0.20	1.99	ESMR421VSN271MQ35S
	270	30×25	0.20	1.87	ESMR421VSN271MR25S
	330	22×50	0.20	2.20	ESMR421VSN331MP50S
	330	25.4×40	0.20	2.24	ESMR421VSN331MQ40S
	330	30×30	0.20	2.08	ESMR421VSN331MR30S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
420	330	35×25	0.20	1.99	ESMR421VSN331MA25S
	390	25.4×45	0.20	2.47	ESMR421VSN391MQ45S
	390	30×35	0.20	2.32	ESMR421VSN391MR35S
	470	25.4×50	0.20	2.77	ESMR421VSN471MQ50S
	470	30×40	0.20	2.61	ESMR421VSN471MR40S
	470	35×30	0.20	2.41	ESMR421VSN471MA30S
	560	30×45	0.20	2.93	ESMR421VSN561MR45S
	560	35×35	0.20	2.67	ESMR421VSN561MA35S
	680	30×50	0.20	3.28	ESMR421VSN681MR50S
	680	35×40	0.20	3.11	ESMR421VSN681MA40S
	820	35×45	0.20	3.43	ESMR421VSN821MA45S
450	120	22×25	0.20	1.12	ESMR451VSN121MP25S
	150	22×30	0.20	1.32	ESMR451VSN151MP30S
	180	22×35	0.20	1.49	ESMR451VSN181MP35S
	180	25.4×25	0.20	1.42	ESMR451VSN181MQ25S
	220	22×40	0.20	1.67	ESMR451VSN221MP40S
	220	25.4×30	0.20	1.66	ESMR451VSN221MQ30S
	220	30×25	0.20	1.68	ESMR451VSN221MR25S
	270	22×45	0.20	1.88	ESMR451VSN271MP45S
	270	25.4×35	0.20	1.87	ESMR451VSN271MQ35S
	330	25.4×40	0.20	2.11	ESMR451VSN331MQ40S
	330	30×30	0.20	2.10	ESMR451VSN331MR30S
	330	35×25	0.20	2.10	ESMR451VSN331MA25S
	390	25.4×50	0.20	2.37	ESMR451VSN391MQ50S
	390	30×35	0.20	2.32	ESMR451VSN391MR35S
	390	35×30	0.20	2.32	ESMR451VSN391MA30S
	470	30×40	0.20	2.66	ESMR451VSN471MR40S
	470	35×35	0.20	2.54	ESMR451VSN471MA35S
	560	30×45	0.20	2.93	ESMR451VSN561MR45S
	560	35×40	0.20	2.87	ESMR451VSN561MA40S
	680	35×45	0.20	3.21	ESMR451VSN681MA45S
	820	35×50	0.20	3.60	ESMR451VSN821MA50S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
400 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 85℃

SMQ Series

- Endurance with ripple current : 2,000 hours at 85℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	-25 to +85℃				
Rated Voltage Range	160 to 450V_{dc}				
Capacitance Tolerance	±20% (M)				(at 20℃, 120Hz)
Leakage Current	I≦3$\sqrt{CV}$ Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)				(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	160 to 250V	315 to 400V	420 & 450V	
	tan δ (Max.)	0.15	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	160 to 250V	315 to 400V	420 & 450V	
	Z(-25℃)/Z(+20℃)	4	8	8	
					(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃.				
	Capacitance change	≦±20% of the initial value			
	D. F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±15% of the initial value			
	D. F. (tan δ)	≦150% of the initial specified value			
	Leakage current	≦The initial specified value			

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 85℃

SMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
160	560	22×25	0.15	2.25	ESMQ161VSN561MP25S
	680	22×30	0.15	2.50	ESMQ161VSN681MP30S
	820	22×35	0.15	2.75	ESMQ161VSN821MP35S
	1,000	22×40	0.15	3.00	ESMQ161VSN102MP40S
	1,000	25.4×30	0.15	3.00	ESMQ161VSN102MQ30S
	1,200	22×45	0.15	3.25	ESMQ161VSN122MP45S
	1,200	25.4×35	0.15	3.25	ESMQ161VSN122MQ35S
	1,200	30×25	0.15	3.25	ESMQ161VSN122MR25S
	1,500	22×50	0.15	3.73	ESMQ161VSN152MP50S
	1,500	25.4×40	0.15	3.73	ESMQ161VSN152MQ40S
	1,500	30×30	0.15	3.73	ESMQ161VSN152MR30S
	1,500	35×25	0.15	3.73	ESMQ161VSN152MA25S
	1,800	25.4×45	0.15	4.20	ESMQ161VSN182MQ45S
	1,800	30×35	0.15	4.20	ESMQ161VSN182MR35S
	1,800	35×30	0.15	4.20	ESMQ161VSN182MA30S
	2,200	30×40	0.15	4.78	ESMQ161VSN222MR40S
	2,200	35×35	0.15	4.78	ESMQ161VSN222MA35S
	2,700	35×40	0.15	5.45	ESMQ161VSN272MA40S
	3,300	35×45	0.15	5.75	ESMQ161VSN332MA45S
	3,900	35×50	0.15	6.00	ESMQ161VSN392MA50S
180	470	22×25	0.15	2.08	ESMQ181VSN471MP25S
	560	22×30	0.15	2.25	ESMQ181VSN561MP30S
	680	22×30	0.15	2.50	ESMQ181VSN681MP30S
	680	25.4×25	0.15	2.50	ESMQ181VSN681MQ25S
	820	22×35	0.15	2.75	ESMQ181VSN821MP35S
	820	25.4×30	0.15	2.75	ESMQ181VSN821MQ30S
	1,000	22×45	0.15	3.00	ESMQ181VSN102MP45S
	1,000	25.4×35	0.15	3.00	ESMQ181VSN102MQ35S
	1,000	30×25	0.15	3.00	ESMQ181VSN102MR25S
	1,200	22×50	0.15	3.31	ESMQ181VSN122MP50S
	1,200	25.4×40	0.15	3.31	ESMQ181VSN122MQ40S
	1,200	30×30	0.15	3.31	ESMQ181VSN122MR30S
	1,200	35×25	0.15	3.31	ESMQ181VSN122MA25S
	1,500	25.4×45	0.15	3.83	ESMQ181VSN152MQ45S
	1,500	30×35	0.15	3.83	ESMQ181VSN152MR35S
	1,500	35×30	0.15	3.83	ESMQ181VSN152MA30S
	1,800	25.4×50	0.15	4.32	ESMQ181VSN182MQ50S
	1,800	30×40	0.15	4.32	ESMQ181VSN182MR40S
	1,800	35×30	0.15	4.32	ESMQ181VSN182MA30S
	2,200	30×45	0.15	4.92	ESMQ181VSN222MR45S
	2,200	35×40	0.15	4.92	ESMQ181VSN222MA40S
	2,700	35×45	0.15	5.52	ESMQ181VSN272MA45S
	3,300	35×50	0.15	5.75	ESMQ181VSN332MA50S
200	390	22×25	0.15	1.68	ESMQ201VSN391MP25S
	470	22×30	0.15	1.85	ESMQ201VSN471MP30S
	560	22×30	0.15	2.43	ESMQ201VSN561MP30S
	560	25.4×25	0.15	2.43	ESMQ201VSN561MQ25S
	680	22×35	0.15	2.68	ESMQ201VSN681MP35S
	680	25.4×30	0.15	2.68	ESMQ201VSN681MQ30S
	820	22×40	0.15	2.93	ESMQ201VSN821MP40S
	820	25.4×30	0.15	2.93	ESMQ201VSN821MQ30S
	820	30×25	0.15	2.93	ESMQ201VSN821MR25S
	1,000	22×45	0.15	3.25	ESMQ201VSN102MP45S
	1,000	25.4×35	0.15	3.25	ESMQ201VSN102MQ35S
	1,000	30×30	0.15	3.25	ESMQ201VSN102MR30S
	1,000	35×25	0.15	3.25	ESMQ201VSN102MA25S
	1,200	25.4×40	0.15	3.50	ESMQ201VSN122MQ40S
	1,200	30×30	0.15	3.50	ESMQ201VSN122MR30S
	1,200	35×30	0.15	3.50	ESMQ201VSN122MA30S
	1,500	25.4×50	0.15	3.87	ESMQ201VSN152MQ50S
	1,500	30×35	0.15	3.87	ESMQ201VSN152MR35S
	1,500	35×30	0.15	3.87	ESMQ201VSN152MA30S
	1,800	30×45	0.15	4.32	ESMQ201VSN182MR45S
	1,800	35×35	0.15	4.32	ESMQ201VSN182MA35S
	2,200	30×50	0.15	4.92	ESMQ201VSN222MR50S
	2,200	35×40	0.15	4.92	ESMQ201VSN222MA40S
	2,700	35×50	0.15	5.45	ESMQ201VSN272MA50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
250	270	22×25	0.15	1.31	ESMQ251VSN271MP25S
	330	22×30	0.15	1.75	ESMQ251VSN331MP30S
	390	22×30	0.15	1.91	ESMQ251VSN391MP30S
	390	25.4×25	0.15	1.91	ESMQ251VSN391MQ25S
	470	22×35	0.15	2.11	ESMQ251VSN471MP35S
	470	25.4×30	0.15	2.11	ESMQ251VSN471MQ30S
	560	22×40	0.15	2.25	ESMQ251VSN561MP40S
	560	25.4×30	0.15	2.25	ESMQ251VSN561MQ30S
	560	30×25	0.15	2.25	ESMQ251VSN561MR25S
	680	22×45	0.15	2.50	ESMQ251VSN681MP45S
	680	25.4×35	0.15	2.50	ESMQ251VSN681MQ35S
	680	30×30	0.15	2.50	ESMQ251VSN681MR30S
	820	22×50	0.15	2.77	ESMQ251VSN821MP50S
	820	25.4×40	0.15	2.77	ESMQ251VSN821MQ40S
	820	30×30	0.15	2.77	ESMQ251VSN821MR30S
	820	35×25	0.15	2.77	ESMQ251VSN821MA25S
	1,000	25.4×45	0.15	3.32	ESMQ251VSN102MQ45S
	1,000	30×35	0.15	3.32	ESMQ251VSN102MR35S
	1,000	35×30	0.15	3.32	ESMQ251VSN102MA30S
	1,200	30×40	0.15	3.53	ESMQ251VSN122MR40S
	1,200	35×35	0.15	3.53	ESMQ251VSN122MA35S
	1,500	30×50	0.15	4.04	ESMQ251VSN152MR50S
	1,500	35×40	0.15	4.04	ESMQ251VSN152MA40S
	1,800	35×45	0.15	4.55	ESMQ251VSN182MA45S
315	180	22×25	0.15	1.21	ESMQ3B1VSN181MP25S
	220	22×30	0.15	1.41	ESMQ3B1VSN221MP30S
	270	22×30	0.15	1.60	ESMQ3B1VSN271MP30S
	330	22×40	0.15	1.82	ESMQ3B1VSN331MP40S
	330	25.4×30	0.15	1.82	ESMQ3B1VSN331MQ30S
	330	30×25	0.15	1.82	ESMQ3B1VSN331MR25S
	390	22×45	0.15	2.01	ESMQ3B1VSN391MP45S
	390	25.4×35	0.15	2.01	ESMQ3B1VSN391MQ35S
	390	30×30	0.15	2.01	ESMQ3B1VSN391MR30S
	470	22×50	0.15	2.27	ESMQ3B1VSN471MP50S
	470	25.4×40	0.15	2.27	ESMQ3B1VSN471MQ40S
	470	30×30	0.15	2.27	ESMQ3B1VSN471MR30S
	470	35×25	0.15	2.27	ESMQ3B1VSN471MA25S
	560	25.4×45	0.15	2.56	ESMQ3B1VSN561MQ45S
	560	30×35	0.15	2.56	ESMQ3B1VSN561MR35S
	560	35×30	0.15	2.56	ESMQ3B1VSN561MA30S
	680	30×40	0.15	2.87	ESMQ3B1VSN681MR40S
	680	35×35	0.15	2.87	ESMQ3B1VSN681MA35S
	820	30×45	0.15	3.25	ESMQ3B1VSN821MR45S
	820	35×40	0.15	3.25	ESMQ3B1VSN821MA40S
	1,000	30×50	0.15	3.63	ESMQ3B1VSN102MR50S
	1,000	35×45	0.15	3.63	ESMQ3B1VSN102MA45S
350	150	22×25	0.15	1.12	ESMQ351VSN151MP25S
	180	22×30	0.15	1.22	ESMQ351VSN181MP30S
	220	22×35	0.15	1.44	ESMQ351VSN221MP35S
	270	22×40	0.15	1.66	ESMQ351VSN271MP40S
	270	25.4×30	0.15	1.66	ESMQ351VSN271MQ30S
	330	22×45	0.15	1.88	ESMQ351VSN331MP45S
	330	25.4×35	0.15	1.88	ESMQ351VSN331MQ35S
	390	22×50	0.15	2.06	ESMQ351VSN391MP50S
	390	25.4×40	0.15	2.06	ESMQ351VSN391MQ40S
	390	30×30	0.15	2.06	ESMQ351VSN391MR30S
	390	35×25	0.15	2.06	ESMQ351VSN391MA25S
	470	25.4×45	0.15	2.40	ESMQ351VSN471MQ45S
	470	30×35	0.15	2.40	ESMQ351VSN471MR35S
	470	35×30	0.15	2.40	ESMQ351VSN471MA30S
	560	25.4×50	0.15	2.60	ESMQ351VSN561MQ50S
	560	30×40	0.15	2.60	ESMQ351VSN561MR40S
	560	35×30	0.15	2.60	ESMQ351VSN561MA30S
	680	30×45	0.15	2.96	ESMQ351VSN681MR45S
	680	35×35	0.15	2.96	ESMQ351VSN681MA35S
	820	30×50	0.15	3.25	ESMQ351VSN821MR50S
	820	35×45	0.15	3.25	ESMQ351VSN821MA45S

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SMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	1,000	35×50	0.15	3.54	ESMQ351VSN102MA50S
400	120	22×25	0.15	1.02	ESMQ401VSN121MP25S
	150	22×30	0.15	1.16	ESMQ401VSN151MP30S
	180	22×35	0.15	1.44	ESMQ401VSN181MP35S
	220	22×40	0.15	1.49	ESMQ401VSN221MP40S
	220	25.4×30	0.15	1.49	ESMQ401VSN221MQ30S
	270	22×45	0.15	1.67	ESMQ401VSN271MP45S
	270	25.4×35	0.15	1.67	ESMQ401VSN271MQ35S
	270	30×25	0.15	1.67	ESMQ401VSN271MR25S
	330	22×50	0.15	1.90	ESMQ401VSN331MP50S
	330	25.4×40	0.15	1.90	ESMQ401VSN331MQ40S
	330	30×30	0.15	1.90	ESMQ401VSN331MR30S
	330	35×25	0.15	1.90	ESMQ401VSN331MA25S
	390	25.4×45	0.15	2.13	ESMQ401VSN391MQ45S
	390	30×35	0.15	2.13	ESMQ401VSN391MR35S
	390	35×30	0.15	2.13	ESMQ401VSN391MA30S
	470	25.4×50	0.15	2.39	ESMQ401VSN471MQ50S
	470	30×40	0.15	2.39	ESMQ401VSN471MR40S
	470	35×30	0.15	2.39	ESMQ401VSN471MA30S
	560	30×45	0.15	2.69	ESMQ401VSN561MR45S
	560	35×35	0.15	2.69	ESMQ401VSN561MA35S
	680	30×50	0.15	2.96	ESMQ401VSN681MR50S
	680	35×40	0.15	2.96	ESMQ401VSN681MA40S
	820	35×45	0.15	3.25	ESMQ401VSN821MA45S
420	100	22×25	0.20	0.97	ESMQ421VSN101MP25S
	120	22×25	0.20	1.08	ESMQ421VSN121MP25S
	150	22×30	0.20	1.30	ESMQ421VSN151MP30S
	150	25.4×25	0.20	1.30	ESMQ421VSN151MQ25S
	180	22×35	0.20	1.48	ESMQ421VSN181MP35S
	180	25.4×30	0.20	1.48	ESMQ421VSN181MQ30S
	220	22×40	0.20	1.65	ESMQ421VSN221MP40S
	220	25.4×35	0.20	1.65	ESMQ421VSN221MQ35S
	220	30×25	0.20	1.65	ESMQ421VSN221MR25S
	270	22×50	0.20	1.94	ESMQ421VSN271MP50S
	270	25.4×35	0.20	1.94	ESMQ421VSN271MQ35S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
420	270	30×30	0.20	1.94	ESMQ421VSN271MR30S
	330	25.4×45	0.20	2.17	ESMQ421VSN331MQ45S
	330	30×35	0.20	2.17	ESMQ421VSN331MR35S
	330	35×30	0.20	2.17	ESMQ421VSN331MA30S
	390	25.4×50	0.20	2.27	ESMQ421VSN391MQ50S
	390	30×35	0.20	2.27	ESMQ421VSN391MR35S
	390	35×30	0.20	2.27	ESMQ421VSN391MA30S
	470	30×40	0.20	2.61	ESMQ421VSN471MR40S
	470	35×35	0.20	2.61	ESMQ421VSN471MA35S
	560	30×50	0.20	2.82	ESMQ421VSN561MR50S
	560	35×40	0.20	2.82	ESMQ421VSN561MA40S
	680	35×45	0.20	3.11	ESMQ421VSN681MA45S
450	82	22×25	0.20	0.83	ESMQ451VSN820MP25S
	100	22×25	0.20	0.93	ESMQ451VSN101MP25S
	120	22×30	0.20	1.04	ESMQ451VSN121MP30S
	150	22×35	0.20	1.19	ESMQ451VSN151MP35S
	150	25.4×25	0.20	1.19	ESMQ451VSN151MQ25S
	180	22×40	0.20	1.35	ESMQ451VSN181MP40S
	180	25.4×30	0.20	1.35	ESMQ451VSN181MQ30S
	220	22×45	0.20	1.55	ESMQ451VSN221MP45S
	220	25.4×40	0.20	1.55	ESMQ451VSN221MQ40S
	220	30×30	0.20	1.55	ESMQ451VSN221MR30S
	220	35×25	0.20	1.55	ESMQ451VSN221MA25S
	270	22×50	0.20	1.78	ESMQ451VSN271MP50S
	270	25.4×40	0.20	1.78	ESMQ451VSN271MQ40S
	270	30×30	0.20	1.78	ESMQ451VSN271MR30S
	330	25.4×50	0.20	2.01	ESMQ451VSN331MQ50S
	330	30×40	0.20	2.01	ESMQ451VSN331MR40S
	330	35×30	0.20	2.01	ESMQ451VSN331MA30S
	390	30×40	0.20	2.24	ESMQ451VSN391MR40S
	390	35×35	0.20	2.24	ESMQ451VSN391MA35S
	470	30×45	0.20	2.53	ESMQ451VSN471MR45S
	470	35×40	0.20	2.53	ESMQ451VSN471MA40S
	560	30×50	0.20	2.82	ESMQ451VSN561MR50S
	560	35×45	0.20	2.82	ESMQ451VSN561MA45S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMZ Series

- Downsized from KMW series
- Endurance with ripple current : 2,000 hours at 105℃
- Rated voltage range : 420 & 450Vdc, Capacitance range : 120 to 820μF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +105℃		
Rated Voltage Range	420 & 450Vdc		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	420 & 450V	
	tan δ (Max.)	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	420 & 450V	
	Z(-25℃)/Z(+20℃)	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ30) : Standard

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMZ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
420	150	22×25	0.20	0.87	EKMZ421VSN151MP25S
	180	22×30	0.20	1.00	EKMZ421VSN181MP30S
	180	25.4×25	0.20	1.02	EKMZ421VSN181MQ25S
	220	22×35	0.20	1.13	EKMZ421VSN221MP35S
	270	22×40	0.20	1.27	EKMZ421VSN271MP40S
	270	25.4×30	0.20	1.28	EKMZ421VSN271MQ30S
	270	30×25	0.20	1.28	EKMZ421VSN271MR25S
	330	22×45	0.20	1.44	EKMZ421VSN331MP45S
	330	25.4×35	0.20	1.48	EKMZ421VSN331MQ35S
	390	22×55	0.20	1.63	EKMZ421VSN391MP55S
	390	25.4×40	0.20	1.64	EKMZ421VSN391MQ40S
	390	30×30	0.20	1.55	EKMZ421VSN391MR30S
	470	25.4×50	0.20	1.86	EKMZ421VSN471MQ50S
	470	30×35	0.20	1.74	EKMZ421VSN471MR35S
	560	25.4×55	0.20	2.09	EKMZ421VSN561MQ55S
	560	30×40	0.20	1.96	EKMZ421VSN561MR40S
	680	30×50	0.20	2.25	EKMZ421VSN681MR50S
	820	30×55	0.20	2.52	EKMZ421VSN821MR55S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
450	120	22×25	0.20	0.78	EKMZ451VSN121MP25S
	180	22×30	0.20	1.00	EKMZ451VSN181MP30S
	180	25.4×25	0.20	1.02	EKMZ451VSN181MQ25S
	220	22×35	0.20	1.13	EKMZ451VSN221MP35S
	220	25.4×30	0.20	1.16	EKMZ451VSN221MQ30S
	270	22×45	0.20	1.30	EKMZ451VSN271MP45S
	270	25.4×35	0.20	1.34	EKMZ451VSN271MQ35S
	270	30×25	0.20	1.28	EKMZ451VSN271MR25S
	330	22×50	0.20	1.47	EKMZ451VSN331MP50S
	330	25.4×40	0.20	1.51	EKMZ451VSN331MQ40S
	330	30×30	0.20	1.43	EKMZ451VSN331MR30S
	390	22×55	0.20	1.63	EKMZ451VSN391MP55S
	390	25.4×45	0.20	1.67	EKMZ451VSN391MQ45S
	390	30×35	0.20	1.59	EKMZ451VSN391MR35S
	470	25.4×55	0.20	1.91	EKMZ451VSN471MQ55S
	470	30×40	0.20	1.79	EKMZ451VSN471MR40S
	560	25.4×60	0.20	2.13	EKMZ451VSN561MQ60S
	560	30×45	0.20	2.01	EKMZ451VSN561MR45S
	680	30×50	0.20	2.25	EKMZ451VSN681MR50S
	820	30×60	0.20	2.56	EKMZ451VSN821MR60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
Multipliers	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMW Series

- Downsized from KMR series
- Endurance with ripple current : 2,000 hours at 105℃
- Rated voltage range : 400 to 450Vdc, Capacitance range : 120 to 1,000µF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	400 to 450Vdc			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	400 to 450V		
	Z(-25℃)/Z(+20℃)	8		(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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KMW Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	150	22×25	0.15	0.91	EKMW401VSN151MP25S
	180	22×30	0.15	1.04	EKMW401VSN181MP30S
	220	22×35	0.15	1.18	EKMW401VSN221MP35S
	220	25.4×25	0.15	1.15	EKMW401VSN221MQ25S
	270	25.4×30	0.15	1.31	EKMW401VSN271MQ30S
	330	22×45	0.15	1.50	EKMW401VSN331MP45S
	330	25.4×35	0.15	1.51	EKMW401VSN331MQ35S
	330	30×25	0.15	1.46	EKMW401VSN331MR25S
	390	22×50	0.15	1.67	EKMW401VSN391MP50S
	390	25.4×40	0.15	1.67	EKMW401VSN391MQ40S
	390	30×30	0.15	1.61	EKMW401VSN391MR30S
	390	35×25	0.15	1.40	EKMW401VSN391MA25S
	470	25.4×45	0.15	1.87	EKMW401VSN471MQ45S
	470	30×35	0.15	1.81	EKMW401VSN471MR35S
	560	30×40	0.15	2.03	EKMW401VSN561MR40S
	560	35×30	0.15	1.70	EKMW401VSN561MA30S
	680	30×45	0.15	2.29	EKMW401VSN681MR45S
	680	30×50	0.15	2.33	EKMW401VSN681MR50S
	680	35×35	0.15	1.90	EKMW401VSN681MA35S
	820	35×40	0.15	2.16	EKMW401VSN821MA40S
	1,000	35×50	0.15	2.50	EKMW401VSN102MA50S
420	120	22×25	0.20	0.78	EKMW421VSN121MP25S
	150	22×30	0.20	0.91	EKMW421VSN151MP30S
	180	25.4×25	0.20	1.02	EKMW421VSN181MQ25S
	220	25.4×30	0.20	1.16	EKMW421VSN221MQ30S
	270	22×45	0.20	1.30	EKMW421VSN271MP45S
	270	25.4×35	0.20	1.34	EKMW421VSN271MQ35S
	270	30×25	0.20	1.28	EKMW421VSN271MR25S
	330	22×50	0.20	1.47	EKMW421VSN331MP50S
	330	25.4×40	0.20	1.51	EKMW421VSN331MQ40S
	330	30×30	0.20	1.43	EKMW421VSN331MR30S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
420	330	35×25	0.20	1.38	EKMW421VSN331MA25S
	390	25.4×45	0.20	1.67	EKMW421VSN391MQ45S
	390	25.4×50	0.20	1.70	EKMW421VSN391MQ50S
	390	30×35	0.20	1.59	EKMW421VSN391MR35S
	470	30×40	0.20	1.79	EKMW421VSN471MR40S
	470	35×30	0.20	1.67	EKMW421VSN471MA30S
	560	30×45	0.20	2.01	EKMW421VSN561MR45S
	560	35×35	0.20	1.85	EKMW421VSN561MA35S
	680	35×40	0.20	2.11	EKMW421VSN681MA40S
450	120	22×25	0.20	0.78	EKMW451VSN121MP25S
	150	22×30	0.20	0.91	EKMW451VSN151MP30S
	150	25.4×25	0.20	0.93	EKMW451VSN151MQ25S
	180	22×35	0.20	1.02	EKMW451VSN181MP35S
	180	25.4×30	0.20	1.05	EKMW451VSN181MQ30S
	220	22×40	0.20	1.15	EKMW451VSN221MP40S
	220	25.4×35	0.20	1.21	EKMW451VSN221MQ35S
	220	30×25	0.20	1.15	EKMW451VSN221MR25S
	270	22×50	0.20	1.36	EKMW451VSN271MP50S
	270	25.4×40	0.20	1.36	EKMW451VSN271MQ40S
	270	30×30	0.20	1.29	EKMW451VSN271MR30S
	330	25.4×45	0.20	1.54	EKMW451VSN331MQ45S
	330	30×35	0.20	1.46	EKMW451VSN331MR35S
	390	25.4×50	0.20	1.70	EKMW451VSN391MQ50S
	390	30×40	0.20	1.63	EKMW451VSN391MR40S
	390	35×30	0.20	1.52	EKMW451VSN391MA30S
	470	30×45	0.20	1.85	EKMW451VSN471MR45S
	470	35×35	0.20	1.77	EKMW451VSN471MA35S
	560	30×50	0.20	2.04	EKMW451VSN561MR50S
	560	35×40	0.20	2.02	EKMW451VSN561MA40S
	680	35×45	0.20	2.16	EKMW451VSN681MA45S
	820	35×50	0.20	2.42	EKMW451VSN821MA50S

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
400 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMR Series

- Downsized 5mm in height from current snap-ins KMQ series
- Max. 50% up ripple current than same case size of KMQ series
- Endurance with ripple current : 2,000 hours at 105℃
- Rated voltage range : 160 to 450Vdc, Capacitance range : 100 to 3,300µF
- For inverter control, switching power supplies
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	-25 to +105℃				
Rated Voltage Range	160 to 450Vdc				
Capacitance Tolerance	±20% (M)				(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V)				(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	160 to 250V	315 to 400V	420 & 450V	
	tan δ (Max.)	0.15	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	160 to 250V	315 to 400V	420 & 450V	
	Z(-25℃)/Z(+20℃)	4	8	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±15% of the initial value			
	D.F. (tan δ)	≦150% of the initial specified value			
	Leakage current	≦The initial specified value			

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMR Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/105℃,120Hz)	Part No.
160	560	22×25	1.58	EKMR161VSN561MP25S
	680	22×30	1.83	EKMR161VSN681MP30S
	820	22×35	2.06	EKMR161VSN821MP35S
	820	25.4×25	1.89	EKMR161VSN821MQ25S
	1,000	22×40	2.33	EKMR161VSN102MP40S
	1,000	25.4×30	2.15	EKMR161VSN102MQ30S
	1,000	30×25	1.90	EKMR161VSN102MR25S
	1,200	22×45	2.61	EKMR161VSN122MP45S
	1,200	22×50	2.69	EKMR161VSN122MP50S
	1,200	25.4×35	2.45	EKMR161VSN122MQ35S
	1,500	25.4×40	2.82	EKMR161VSN152MQ40S
	1,500	25.4×45	2.88	EKMR161VSN152MQ45S
	1,500	30×30	2.39	EKMR161VSN152MR30S
	1,500	35×25	2.17	EKMR161VSN152MA25S
	1,800	25.4×50	3.22	EKMR161VSN182MQ50S
	1,800	30×35	2.73	EKMR161VSN182MR35S
	1,800	30×40	2.82	EKMR161VSN182MR40S
	1,800	35×30	2.47	EKMR161VSN182MA30S
	2,200	30×45	3.23	EKMR161VSN222MR45S
	2,200	35×35	2.79	EKMR161VSN222MA35S
	2,700	30×50	3.66	EKMR161VSN272MR50S
	2,700	35×40	3.23	EKMR161VSN272MA40S
	3,300	35×45	3.68	EKMR161VSN332MA45S
180	470	22×25	1.45	EKMR181VSN471MP25S
	560	22×30	1.66	EKMR181VSN561MP30S
	680	22×35	1.87	EKMR181VSN681MP35S
	680	25.4×25	1.72	EKMR181VSN681MQ25S
	820	22×40	2.11	EKMR181VSN821MP40S
	820	25.4×30	1.94	EKMR181VSN821MQ30S
	1,000	22×45	2.38	EKMR181VSN102MP45S
	1,000	25.4×35	2.24	EKMR181VSN102MQ35S
	1,000	30×25	1.90	EKMR181VSN102MR25S
	1,200	22×50	2.69	EKMR181VSN122MP50S
	1,200	25.4×40	2.52	EKMR181VSN122MQ40S
	1,200	30×30	2.14	EKMR181VSN122MR30S
	1,200	35×25	1.94	EKMR181VSN122MA25S
	1,500	25.4×45	2.88	EKMR181VSN152MQ45S
	1,500	25.4×50	2.94	EKMR181VSN152MQ50S
	1,500	30×35	2.49	EKMR181VSN152MR35S
	1,800	30×40	2.82	EKMR181VSN182MR40S
	1,800	35×30	2.47	EKMR181VSN182MA30S
	2,200	30×45	3.23	EKMR181VSN222MR45S
	2,200	30×50	3.31	EKMR181VSN222MR50S
	2,200	35×35	2.79	EKMR181VSN222MA35S
	2,200	35×40	2.92	EKMR181VSN222MA40S
	2,700	35×45	3.33	EKMR181VSN272MA45S
200	560	22×30	1.66	EKMR201VSN561MP30S
	560	25.4×25	1.56	EKMR201VSN561MQ25S
	680	22×35	1.87	EKMR201VSN681MP35S
	680	25.4×30	1.77	EKMR201VSN681MQ30S
	820	22×40	2.11	EKMR201VSN821MP40S
	820	25.4×35	2.03	EKMR201VSN821MQ35S
	820	30×25	1.72	EKMR201VSN821MR25S
	1,000	22×50	2.45	EKMR201VSN102MP50S
	1,000	25.4×40	2.30	EKMR201VSN102MQ40S
	1,000	30×30	1.95	EKMR201VSN102MR30S
	1,200	25.4×45	2.58	EKMR201VSN122MQ45S
	1,200	30×35	2.23	EKMR201VSN122MR35S
	1,200	35×25	1.94	EKMR201VSN122MA25S
	1,500	25.4×50	2.94	EKMR201VSN152MQ50S
	1,500	30×40	2.58	EKMR201VSN152MR40S
	1,500	35×30	2.25	EKMR201VSN152MA30S
	1,800	30×45	2.92	EKMR201VSN182MR45S
	1,800	35×35	2.53	EKMR201VSN182MA35S
	2,200	30×50	3.31	EKMR201VSN222MR50S
	2,200	35×40	2.92	EKMR201VSN222MA40S
	2,700	35×45	3.33	EKMR201VSN272MA45S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/105℃,120Hz)	Part No.
250	330	22×25	1.21	EKMR251VSN331MP25S
	390	22×30	1.38	EKMR251VSN391MP30S
	470	22×35	1.56	EKMR251VSN471MP35S
	560	22×40	1.74	EKMR251VSN561MP40S
	560	25.4×30	1.61	EKMR251VSN561MQ30S
	560	30×25	1.42	EKMR251VSN561MR25S
	680	22×45	1.97	EKMR251VSN681MP45S
	680	25.4×35	1.85	EKMR251VSN681MQ35S
	820	25.4×40	2.08	EKMR251VSN821MQ40S
	820	25.4×45	2.13	EKMR251VSN821MQ45S
	820	30×30	1.77	EKMR251VSN821MR30S
	820	35×25	1.60	EKMR251VSN821MA25S
	1,000	25.4×50	2.40	EKMR251VSN102MQ50S
	1,000	30×35	2.03	EKMR251VSN102MR35S
	1,200	30×40	2.31	EKMR251VSN122MR40S
	1,200	30×45	2.38	EKMR251VSN122MR45S
	1,200	35×35	2.06	EKMR251VSN122MA35S
	1,500	30×50	2.73	EKMR251VSN152MR50S
	1,500	35×40	2.41	EKMR251VSN152MA40S
	1,800	35×45	2.72	EKMR251VSN182MA45S
	2,200	35×50	3.10	EKMR251VSN222MA50S
315	180	22×25	0.91	EKMR3B1VSN181MP25S
	220	22×30	1.06	EKMR3B1VSN221MP30S
	270	22×35	1.20	EKMR3B1VSN271MP35S
	270	25.4×25	1.15	EKMR3B1VSN271MQ25S
	330	22×40	1.37	EKMR3B1VSN331MP40S
	330	25.4×30	1.30	EKMR3B1VSN331MQ30S
	390	22×45	1.52	EKMR3B1VSN391MP45S
	390	25.4×35	1.48	EKMR3B1VSN391MQ35S
	390	30×25	1.39	EKMR3B1VSN391MR25S
	470	22×50	1.72	EKMR3B1VSN471MP50S
	470	25.4×40	1.67	EKMR3B1VSN471MQ40S
	470	30×30	1.57	EKMR3B1VSN471MR30S
	470	35×25	1.52	EKMR3B1VSN471MA25S
	560	25.4×45	1.86	EKMR3B1VSN561MQ45S
	560	30×35	1.78	EKMR3B1VSN561MR35S
	680	25.4×50	2.10	EKMR3B1VSN681MQ50S
	680	30×40	2.03	EKMR3B1VSN681MR40S
	680	35×30	1.90	EKMR3B1VSN681MA30S
	820	30×45	2.31	EKMR3B1VSN821MR45S
	820	35×35	2.13	EKMR3B1VSN821MA35S
	1,000	30×50	2.61	EKMR3B1VSN102MR50S
	1,000	35×40	2.46	EKMR3B1VSN102MA40S
	1,200	35×45	2.78	EKMR3B1VSN122MA45S
	1,200	35×50	2.86	EKMR3B1VSN122MA50S
350	150	22×25	0.84	EKMR351VSN151MP25S
	220	22×30	1.06	EKMR351VSN221MP30S
	220	25.4×25	1.04	EKMR351VSN221MQ25S
	270	22×35	1.20	EKMR351VSN271MP35S
	270	25.4×30	1.18	EKMR351VSN271MQ30S
	330	22×40	1.37	EKMR351VSN331MP40S
	330	22×45	1.40	EKMR351VSN331MP45S
	330	25.4×35	1.36	EKMR351VSN331MQ35S
	330	30×25	1.28	EKMR351VSN331MR25S
	390	22×50	1.56	EKMR351VSN391MP50S
	390	25.4×40	1.52	EKMR351VSN391MQ40S
	390	30×30	1.43	EKMR351VSN391MR30S
	390	35×25	1.38	EKMR351VSN391MA25S
	470	25.4×45	1.71	EKMR351VSN471MQ45S
	560	25.4×50	1.90	EKMR351VSN561MQ50S
	560	30×35	1.78	EKMR351VSN561MR35S
	560	30×40	1.84	EKMR351VSN561MR40S
	560	35×30	1.72	EKMR351VSN561MA30S
	680	30×45	2.10	EKMR351VSN681MR45S
	680	35×35	1.94	EKMR351VSN681MA35S
	820	30×50	2.36	EKMR351VSN821MR50S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMR Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/105℃, 120Hz)	Part No.
350	820	35×40	2.23	EKMR351VSN821MA40S
	1,000	35×45	2.54	EKMR351VSN102MA45S
	1,200	35×50	2.86	EKMR351VSN122MA50S
400	120	22×25	0.75	EKMR401VSN121MP25S
	180	22×30	0.96	EKMR401VSN181MP30S
	180	25.4×25	0.94	EKMR401VSN181MQ25S
	220	22×35	1.09	EKMR401VSN221MP35S
	220	25.4×30	1.07	EKMR401VSN221MQ30S
	270	22×40	1.24	EKMR401VSN271MP40S
	270	22×45	1.26	EKMR401VSN271MP45S
	270	25.4×35	1.23	EKMR401VSN271MQ35S
	270	30×25	1.16	EKMR401VSN271MR25S
	330	22×50	1.44	EKMR401VSN331MP50S
	330	25.4×40	1.40	EKMR401VSN331MQ40S
	330	30×30	1.31	EKMR401VSN331MR30S
	330	35×25	1.27	EKMR401VSN331MA25S
	390	25.4×45	1.55	EKMR401VSN391MQ45S
	390	30×35	1.49	EKMR401VSN391MR35S
	470	25.4×50	1.74	EKMR401VSN471MQ50S
	470	30×40	1.69	EKMR401VSN471MR40S
	470	35×30	1.58	EKMR401VSN471MA30S
	560	30×45	1.91	EKMR401VSN561MR45S
	560	35×35	1.76	EKMR401VSN561MA35S
	680	30×50	2.15	EKMR401VSN681MR50S
	680	35×40	2.03	EKMR401VSN681MA40S
	820	35×45	2.30	EKMR401VSN821MA45S
	820	35×50	2.37	EKMR401VSN821MA50S
	1,000	35×50	2.50	EKMR401VSN102MA50S
420	120	22×25	0.78	EKMR421VSN121MP25S
	150	22×30	0.91	EKMR421VSN151MP30S
	150	25.4×25	0.89	EKMR421VSN151MQ25S
	180	22×35	1.03	EKMR421VSN181MP35S
	180	25.4×30	1.00	EKMR421VSN181MQ30S
	220	22×40	1.16	EKMR421VSN221MP40S
	220	22×45	1.19	EKMR421VSN221MP45S
	220	25.4×35	1.16	EKMR421VSN221MQ35S
	220	30×25	1.11	EKMR421VSN221MR25S
	270	22×50	1.36	EKMR421VSN271MP50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/105℃, 120Hz)	Part No.
420	270	25.4×40	1.32	EKMR421VSN271MQ40S
	270	30×30	1.26	EKMR421VSN271MR30S
	270	35×25	1.26	EKMR421VSN271MA25S
	330	25.4×45	1.49	EKMR421VSN331MQ45S
	330	30×35	1.45	EKMR421VSN331MR35S
	390	25.4×50	1.66	EKMR421VSN391MQ50S
	390	30×40	1.63	EKMR421VSN391MR40S
	390	35×30	1.58	EKMR421VSN391MA30S
	470	30×45	1.85	EKMR421VSN471MR45S
	470	35×35	1.77	EKMR421VSN471MA35S
	560	30×50	2.07	EKMR421VSN561MR50S
	560	35×40	2.02	EKMR421VSN561MA40S
	680	35×45	2.29	EKMR421VSN681MA45S
	820	35×50	2.59	EKMR421VSN821MA50S
450	100	22×25	0.71	EKMR451VSN101MP25S
	120	22×30	0.82	EKMR451VSN121MP30S
	150	22×35	0.94	EKMR451VSN151MP35S
	150	25.4×25	0.89	EKMR451VSN151MQ25S
	180	22×40	1.05	EKMR451VSN181MP40S
	180	25.4×30	1.00	EKMR451VSN181MQ30S
	220	22×45	1.19	EKMR451VSN221MP45S
	220	25.4×35	1.16	EKMR451VSN221MQ35S
	220	30×25	1.11	EKMR451VSN221MR25S
	270	22×50	1.36	EKMR451VSN271MP50S
	270	25.4×40	1.32	EKMR451VSN271MQ40S
	270	25.4×45	1.35	EKMR451VSN271MQ45S
	270	30×30	1.26	EKMR451VSN271MR30S
	270	35×25	1.26	EKMR451VSN271MA25S
	330	25.4×50	1.52	EKMR451VSN331MQ50S
	330	30×35	1.45	EKMR451VSN331MR35S
	330	35×30	1.45	EKMR451VSN331MA30S
	390	30×40	1.63	EKMR451VSN391MR40S
	470	30×45	1.85	EKMR451VSN471MR45S
	470	30×50	1.90	EKMR451VSN471MR50S
	470	35×35	1.77	EKMR451VSN471MA35S
	560	35×40	2.02	EKMR451VSN561MA40S
	560	35×45	2.08	EKMR451VSN561MA45S
	680	35×50	2.36	EKMR451VSN681MA50S

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 105℃

KMQ Series

- Endurance with ripple current : 2,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

KMR
↑
Downsized
KMQ

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +105℃ (35&50V$_{dc}$), -25 to +105℃ (160 to 450V$_{dc}$)							
Rated Voltage Range	35&50V$_{dc}$, 160 to 450V$_{dc}$							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V$_{dc}$)	35V		50V		160 to 250V	315 to 400V	420 & 450V
	Nominal capacitance (μF)	10,000>C	C≧10,000	10,000>C	C≧10,000	—	—	—
	tan δ (Max.)	0.30	0.35	0.25	0.30	0.15	0.15	0.20 (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V$_{dc}$)	35&50V		160 to 250V		315 to 450V		
	Z(-25℃)/Z(+20℃)	4		4		8		
	Z(-40℃)/Z(+20℃)	10		—		—		(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tan δ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±15% of the initial value						
	D.F. (tan δ)	≦150% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 105℃

KMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
35	4,700	22×25	0.30	1.87	EKMQ350VSN472MP25S
	5,600	22×25	0.30	2.04	EKMQ350VSN562MP25S
	5,600	25.4×25	0.30	2.00	EKMQ350VSN562MQ25S
	6,800	22×30	0.30	2.36	EKMQ350VSN682MP30S
	6,800	25.4×25	0.30	2.21	EKMQ350VSN682MQ25S
	8,200	22×35	0.30	2.65	EKMQ350VSN822MP35S
	8,200	25.4×30	0.30	2.49	EKMQ350VSN822MQ30S
	8,200	30×25	0.30	2.62	EKMQ350VSN822MR25S
	10,000	22×40	0.35	3.00	EKMQ350VSN103MP40S
	10,000	25.4×35	0.35	2.88	EKMQ350VSN103MQ35S
	10,000	30×25	0.35	2.90	EKMQ350VSN103MR25S
	12,000	22×50	0.35	3.47	EKMQ350VSN123MP50S
	12,000	25.4×35	0.35	3.15	EKMQ350VSN123MQ35S
	12,000	30×30	0.35	3.25	EKMQ350VSN123MR30S
	12,000	35×25	0.35	3.20	EKMQ350VSN123MA25S
	15,000	25.4×40	0.35	3.61	EKMQ350VSN153MQ40S
	15,000	30×35	0.35	3.78	EKMQ350VSN153MR35S
	15,000	35×25	0.35	3.60	EKMQ350VSN153MA25S
	18,000	25.4×50	0.35	4.14	EKMQ350VSN183MQ50S
	18,000	30×40	0.35	4.30	EKMQ350VSN183MR40S
	18,000	35×30	0.35	4.10	EKMQ350VSN183MA30S
	22,000	30×50	0.35	5.00	EKMQ350VSN223MR50S
	22,000	35×35	0.35	4.64	EKMQ350VSN223MA35S
	27,000	35×40	0.35	5.37	EKMQ350VSN273MA40S
	33,000	35×50	0.35	6.00	EKMQ350VSN333MA50S
50	2,700	22×25	0.25	1.65	EKMQ500VSN272MP25S
	3,300	22×30	0.25	1.92	EKMQ500VSN332MP30S
	3,300	25.4×25	0.25	1.76	EKMQ500VSN332MQ25S
	3,900	22×30	0.25	2.08	EKMQ500VSN392MP30S
	3,900	25.4×25	0.25	2.04	EKMQ500VSN392MQ25S
	4,700	22×35	0.25	2.43	EKMQ500VSN472MP35S
	4,700	25.4×30	0.25	2.50	EKMQ500VSN472MQ30S
	4,700	30×25	0.25	2.29	EKMQ500VSN472MR25S
	5,600	22×40	0.25	2.63	EKMQ500VSN562MP40S
	5,600	25.4×35	0.25	2.61	EKMQ500VSN562MQ35S
	5,600	30×25	0.25	2.80	EKMQ500VSN562MR25S
	6,800	22×50	0.25	3.05	EKMQ500VSN682MP50S
	6,800	25.4×40	0.25	2.94	EKMQ500VSN682MQ40S
	6,800	30×30	0.25	3.30	EKMQ500VSN682MR30S
	6,800	35×25	0.25	2.77	EKMQ500VSN682MA25S
	8,200	25.4×45	0.25	3.60	EKMQ500VSN822MQ45S
	8,200	30×35	0.25	3.60	EKMQ500VSN822MR35S
	8,200	35×30	0.25	3.60	EKMQ500VSN822MA30S
	10,000	25.4×50	0.30	4.00	EKMQ500VSN103MQ50S
	10,000	30×40	0.30	4.00	EKMQ500VSN103MR40S
	10,000	35×30	0.30	4.00	EKMQ500VSN103MA30S
	12,000	30×50	0.30	4.29	EKMQ500VSN123MR50S
	12,000	35×35	0.30	4.37	EKMQ500VSN123MA35S
	15,000	35×40	0.30	4.50	EKMQ500VSN153MA40S
	18,000	35×50	0.30	5.30	EKMQ500VSN183MA50S
160	470	22×25	0.15	1.40	EKMQ161VSN471MP25S
	560	22×30	0.15	1.50	EKMQ161VSN561MP30S
	680	22×30	0.15	1.70	EKMQ161VSN681MP30S
	680	25.4×25	0.15	1.70	EKMQ161VSN681MQ25S
	820	22×35	0.15	2.00	EKMQ161VSN821MP35S
	820	25.4×30	0.15	2.00	EKMQ161VSN821MQ30S
	820	30×25	0.15	2.00	EKMQ161VSN821MR25S
	1,000	22×40	0.15	2.20	EKMQ161VSN102MP40S
	1,000	25.4×35	0.15	2.20	EKMQ161VSN102MQ35S
	1,000	30×25	0.15	2.20	EKMQ161VSN102MR25S
	1,200	25.4×40	0.15	2.30	EKMQ161VSN122MQ40S
	1,200	30×30	0.15	2.30	EKMQ161VSN122MR30S
	1,200	35×25	0.15	2.30	EKMQ161VSN122MA25S
	1,500	25.4×45	0.15	2.50	EKMQ161VSN152MQ45S
	1,500	30×35	0.15	2.50	EKMQ161VSN152MR35S
	1,500	35×30	0.15	2.50	EKMQ161VSN152MA30S
	1,800	25.4×50	0.15	2.70	EKMQ161VSN182MQ50S
160	1,800	30×40	0.15	2.70	EKMQ161VSN182MR40S
	1,800	35×30	0.15	2.70	EKMQ161VSN182MA30S
	2,200	30×45	0.15	2.90	EKMQ161VSN222MR45S
	2,200	35×35	0.15	2.90	EKMQ161VSN222MA35S
	2,700	30×50	0.15	3.10	EKMQ161VSN272MR50S
	2,700	35×40	0.15	3.10	EKMQ161VSN272MA40S
	3,300	35×50	0.15	3.30	EKMQ161VSN332MA50S
180	390	22×25	0.15	1.30	EKMQ181VSN391MP25S
	470	22×30	0.15	1.40	EKMQ181VSN471MP30S
	560	22×30	0.15	1.50	EKMQ181VSN561MP30S
	560	25.4×25	0.15	1.50	EKMQ181VSN561MQ25S
	680	22×35	0.15	1.70	EKMQ181VSN681MP35S
	680	25.4×30	0.15	1.70	EKMQ181VSN681MQ30S
	820	22×40	0.15	2.00	EKMQ181VSN821MP40S
	820	25.4×30	0.15	2.00	EKMQ181VSN821MQ30S
	820	30×25	0.15	2.00	EKMQ181VSN821MR25S
	1,000	22×45	0.15	2.20	EKMQ181VSN102MP45S
	1,000	25.4×40	0.15	2.20	EKMQ181VSN102MQ40S
	1,000	30×30	0.15	2.20	EKMQ181VSN102MR30S
	1,000	35×25	0.15	2.20	EKMQ181VSN102MA25S
	1,200	25.4×45	0.15	2.30	EKMQ181VSN122MQ45S
	1,200	30×35	0.15	2.30	EKMQ181VSN122MR35S
	1,200	35×30	0.15	2.30	EKMQ181VSN122MA30S
	1,500	25.4×50	0.15	2.50	EKMQ181VSN152MQ50S
	1,500	30×40	0.15	2.50	EKMQ181VSN152MR40S
	1,500	35×30	0.15	2.50	EKMQ181VSN152MA30S
	1,800	30×45	0.15	2.70	EKMQ181VSN182MR45S
	1,800	35×35	0.15	2.70	EKMQ181VSN182MA35S
	2,200	30×50	0.15	2.90	EKMQ181VSN222MR50S
	2,200	35×40	0.15	2.90	EKMQ181VSN222MA40S
	2,700	35×50	0.15	3.10	EKMQ181VSN272MA50S
200	390	22×25	0.15	1.31	EKMQ201VSN391MP25S
	470	22×30	0.15	1.45	EKMQ201VSN471MP30S
	560	22×30	0.15	1.67	EKMQ201VSN561MP30S
	560	25.4×25	0.15	1.67	EKMQ201VSN561MQ25S
	680	22×40	0.15	1.75	EKMQ201VSN681MP40S
	680	25.4×30	0.15	1.75	EKMQ201VSN681MQ30S
	820	22×45	0.15	2.04	EKMQ201VSN821MP45S
	820	25.4×35	0.15	2.04	EKMQ201VSN821MQ35S
	820	30×25	0.15	2.04	EKMQ201VSN821MR25S
	1,000	22×50	0.15	2.30	EKMQ201VSN102MP50S
	1,000	25.4×45	0.15	2.30	EKMQ201VSN102MQ45S
	1,000	30×30	0.15	2.30	EKMQ201VSN102MR30S
	1,000	35×25	0.15	2.30	EKMQ201VSN102MA25S
	1,200	25.4×50	0.15	2.65	EKMQ201VSN122MQ50S
	1,200	30×35	0.15	2.65	EKMQ201VSN122MR35S
	1,200	35×30	0.15	2.65	EKMQ201VSN122MA30S
	1,500	30×40	0.15	2.80	EKMQ201VSN152MR40S
	1,500	35×30	0.15	2.80	EKMQ201VSN152MA30S
	1,800	30×45	0.15	3.08	EKMQ201VSN182MR45S
	1,800	35×40	0.15	3.08	EKMQ201VSN182MA40S
	2,200	35×45	0.15	3.48	EKMQ201VSN222MA45S
250	220	22×25	0.15	1.00	EKMQ251VSN221MP25S
	270	22×25	0.15	1.10	EKMQ251VSN271MP25S
	330	22×30	0.15	1.20	EKMQ251VSN331MP30S
	330	25.4×25	0.15	1.20	EKMQ251VSN331MQ25S
	390	22×35	0.15	1.30	EKMQ251VSN391MP35S
	390	25.4×25	0.15	1.30	EKMQ251VSN391MQ25S
	470	22×40	0.15	1.40	EKMQ251VSN471MP40S
	470	25.4×30	0.15	1.40	EKMQ251VSN471MQ30S
	470	30×25	0.15	1.40	EKMQ251VSN471MR25S
	560	22×45	0.15	1.50	EKMQ251VSN561MP45S
	560	25.4×35	0.15	1.50	EKMQ251VSN561MQ35S
	560	30×25	0.15	1.50	EKMQ251VSN561MR25S
	680	22×50	0.15	1.70	EKMQ251VSN681MP50S
	680	25.4×40	0.15	1.70	EKMQ251VSN681MQ40S
	680	30×30	0.15	1.70	EKMQ251VSN681MR30S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 105℃

KMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
250	680	35×25	0.15	1.70	EKMQ251VSN681MA25S
	820	25.4×45	0.15	2.00	EKMQ251VSN821MQ45S
	820	30×35	0.15	2.00	EKMQ251VSN821MR35S
	820	35×30	0.15	2.00	EKMQ251VSN821MA30S
	1,000	30×40	0.15	2.20	EKMQ251VSN102MR40S
	1,000	35×30	0.15	2.20	EKMQ251VSN102MA30S
	1,200	30×45	0.15	2.30	EKMQ251VSN122MR45S
	1,200	35×35	0.15	2.30	EKMQ251VSN122MA35S
	1,500	35×45	0.15	2.50	EKMQ251VSN152MA45S
	1,800	35×50	0.15	2.70	EKMQ251VSN182MA50S
315	150	22×25	0.15	0.82	EKMQ3B1VSN151MP25S
	180	22×30	0.15	0.90	EKMQ3B1VSN181MP30S
	220	22×30	0.15	1.00	EKMQ3B1VSN221MP30S
	220	25.4×25	0.15	1.00	EKMQ3B1VSN221MQ25S
	270	22×35	0.15	1.10	EKMQ3B1VSN271MP35S
	270	25.4×30	0.15	1.10	EKMQ3B1VSN271MQ30S
	330	22×45	0.15	1.20	EKMQ3B1VSN331MP45S
	330	25.4×35	0.15	1.20	EKMQ3B1VSN331MQ35S
	330	30×25	0.15	1.20	EKMQ3B1VSN331MR25S
	390	22×45	0.15	1.30	EKMQ3B1VSN391MP45S
	390	25.4×40	0.15	1.30	EKMQ3B1VSN391MQ40S
	390	30×30	0.15	1.30	EKMQ3B1VSN391MR30S
	390	35×25	0.15	1.30	EKMQ3B1VSN391MA25S
	470	25.4×45	0.15	1.40	EKMQ3B1VSN471MQ45S
	470	30×35	0.15	1.40	EKMQ3B1VSN471MR35S
	470	35×25	0.15	1.40	EKMQ3B1VSN471MA25S
	560	25.4×50	0.15	1.50	EKMQ3B1VSN561MQ50S
	560	30×40	0.15	1.50	EKMQ3B1VSN561MR40S
	560	35×30	0.15	1.50	EKMQ3B1VSN561MA30S
	680	30×45	0.15	1.70	EKMQ3B1VSN681MR45S
	680	35×35	0.15	1.70	EKMQ3B1VSN681MA35S
	820	30×50	0.15	2.00	EKMQ3B1VSN821MR50S
	820	35×40	0.15	2.00	EKMQ3B1VSN821MA40S
	1,000	35×45	0.15	2.30	EKMQ3B1VSN102MA45S
350	120	22×25	0.15	0.75	EKMQ351VSN121MP25S
	150	22×30	0.15	0.82	EKMQ351VSN151MP30S
	180	22×30	0.15	0.90	EKMQ351VSN181MP30S
	180	25.4×25	0.15	0.90	EKMQ351VSN181MQ25S
	220	22×35	0.15	1.00	EKMQ351VSN221MP35S
	220	25.4×30	0.15	1.00	EKMQ351VSN221MQ30S
	270	22×40	0.15	1.10	EKMQ351VSN271MP40S
	270	25.4×30	0.15	1.10	EKMQ351VSN271MQ30S
	270	30×25	0.15	1.10	EKMQ351VSN271MR25S
	330	22×45	0.15	1.20	EKMQ351VSN331MP45S
	330	25.4×40	0.15	1.20	EKMQ351VSN331MQ40S
	330	30×30	0.15	1.20	EKMQ351VSN331MR30S
	390	25.4×45	0.15	1.30	EKMQ351VSN391MQ45S
	390	30×35	0.15	1.30	EKMQ351VSN391MR35S
	470	25.4×50	0.15	1.40	EKMQ351VSN471MQ50S
	470	30×35	0.15	1.40	EKMQ351VSN471MR35S
	470	35×30	0.15	1.40	EKMQ351VSN471MA30S
	560	30×45	0.15	1.50	EKMQ351VSN561MR45S
	560	35×35	0.15	1.50	EKMQ351VSN561MA35S
	680	30×50	0.15	1.70	EKMQ351VSN681MR50S
	680	35×40	0.15	1.70	EKMQ351VSN681MA40S
	820	35×45	0.15	1.90	EKMQ351VSN821MA45S
400	100	22×25	0.15	0.70	EKMQ401VSN101MP25S
	120	22×30	0.15	0.75	EKMQ401VSN121MP30S
	150	22×30	0.15	0.88	EKMQ401VSN151MP30S
	150	25.4×25	0.15	0.88	EKMQ401VSN151MQ25S
	180	22×35	0.15	0.95	EKMQ401VSN181MP35S
	180	25.4×30	0.15	0.95	EKMQ401VSN181MQ30S
	220	22×45	0.15	1.10	EKMQ401VSN221MP45S
	220	25.4×35	0.15	1.10	EKMQ401VSN221MQ35S
	220	30×25	0.15	1.10	EKMQ401VSN221MR25S
	270	22×50	0.15	1.22	EKMQ401VSN271MP50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	270	25.4×40	0.15	1.22	EKMQ401VSN271MQ40S
	270	30×30	0.15	1.22	EKMQ401VSN271MR30S
	270	35×25	0.15	1.22	EKMQ401VSN271MA25S
	330	25.4×45	0.15	1.44	EKMQ401VSN331MQ45S
	330	30×35	0.15	1.44	EKMQ401VSN331MR35S
	330	35×30	0.15	1.44	EKMQ401VSN331MA30S
	390	25.4×50	0.15	1.55	EKMQ401VSN391MQ50S
	390	30×40	0.15	1.55	EKMQ401VSN391MR40S
	390	35×30	0.15	1.55	EKMQ401VSN391MA30S
	470	30×45	0.15	1.68	EKMQ401VSN471MR45S
	470	35×35	0.15	1.68	EKMQ401VSN471MA35S
	560	30×50	0.15	1.90	EKMQ401VSN561MR50S
	560	35×40	0.15	1.90	EKMQ401VSN561MA40S
	680	35×45	0.15	2.12	EKMQ401VSN681MA45S
420	82	22×25	0.20	0.64	EKMQ421VSN820MP25S
	100	22×25	0.20	0.66	EKMQ421VSN101MP25S
	100	25.4×25	0.20	0.66	EKMQ421VSN101MQ25S
	120	22×30	0.20	0.81	EKMQ421VSN121MP30S
	120	25.4×25	0.20	0.81	EKMQ421VSN121MQ25S
	150	22×35	0.20	0.84	EKMQ421VSN151MP35S
	150	25.4×30	0.20	0.84	EKMQ421VSN151MQ30S
	150	30×25	0.20	0.84	EKMQ421VSN151MR25S
	180	22×40	0.20	0.91	EKMQ421VSN181MP40S
	180	25.4×30	0.20	0.91	EKMQ421VSN181MQ30S
	180	30×25	0.20	0.91	EKMQ421VSN181MR25S
	220	22×45	0.20	1.05	EKMQ421VSN221MP45S
	220	25.4×35	0.20	1.05	EKMQ421VSN221MQ35S
	220	30×30	0.20	1.05	EKMQ421VSN221MR30S
	220	35×25	0.20	1.05	EKMQ421VSN221MA25S
	270	25.4×40	0.20	1.25	EKMQ421VSN271MQ40S
	270	30×30	0.20	1.25	EKMQ421VSN271MR30S
	270	35×25	0.20	1.25	EKMQ421VSN271MA25S
	330	25.4×50	0.20	1.42	EKMQ421VSN331MQ50S
	330	30×35	0.20	1.42	EKMQ421VSN331MR35S
	330	35×30	0.20	1.42	EKMQ421VSN331MA30S
	390	30×40	0.20	1.61	EKMQ421VSN391MR40S
	390	35×35	0.20	1.61	EKMQ421VSN391MA35S
	470	30×45	0.20	1.86	EKMQ421VSN471MR45S
	470	35×40	0.20	1.86	EKMQ421VSN471MA40S
	560	35×45	0.20	2.10	EKMQ421VSN561MA45S
	680	35×50	0.20	2.20	EKMQ421VSN681MA50S
450	68	22×25	0.20	0.50	EKMQ451VSN680MP25S
	82	22×30	0.20	0.56	EKMQ451VSN820MP30S
	100	22×30	0.20	0.64	EKMQ451VSN101MP30S
	100	25.4×25	0.20	0.64	EKMQ451VSN101MQ25S
	120	22×35	0.20	0.72	EKMQ451VSN121MP35S
	120	25.4×30	0.20	0.72	EKMQ451VSN121MQ30S
	150	22×40	0.20	0.79	EKMQ451VSN151MP40S
	150	25.4×30	0.20	0.79	EKMQ451VSN151MQ30S
	150	30×25	0.20	0.79	EKMQ451VSN151MR25S
	180	22×45	0.20	0.87	EKMQ451VSN181MP45S
	180	25.4×40	0.20	0.87	EKMQ451VSN181MQ40S
	180	30×30	0.20	0.87	EKMQ451VSN181MR30S
	220	25.4×45	0.20	1.00	EKMQ451VSN221MQ45S
	220	30×30	0.20	1.00	EKMQ451VSN221MR30S
	220	35×25	0.20	1.00	EKMQ451VSN221MA25S
	270	25.4×50	0.20	1.19	EKMQ451VSN271MQ50S
	270	30×40	0.20	1.19	EKMQ451VSN271MR40S
	270	35×30	0.20	1.19	EKMQ451VSN271MA30S
	330	30×45	0.20	1.38	EKMQ451VSN331MR45S
	330	35×35	0.20	1.38	EKMQ451VSN331MA35S
	390	30×50	0.20	1.55	EKMQ451VSN391MR50S
	390	35×40	0.20	1.55	EKMQ451VSN391MA40S
	470	35×45	0.20	1.74	EKMQ451VSN471MA45S
	560	35×50	0.20	1.90	EKMQ451VSN561MA50S

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KMQ Series

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
35, 50Vdc	0.95	1.00	1.03	1.05	1.08	1.08
160 to 250Vdc	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450Vdc	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple snap-ins, 85℃

RLB Series

- Endurance with ripple current : 5,000 hours at 85℃
- High ripple current capability in a commercial frequency range
- High ripple current for inverter control like air conditioner
- Rated voltage range : 180 to 250Vdc, Capacitance range : 600 to 2,200μF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +85℃		
Rated Voltage Range	180 to 250V		
Capacitance Tolerance	±10% (K)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	180 to 250V	
	tan δ (Max.)	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	180 to 250V	
	Z(-25℃)/Z(+20℃)	4	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃.		
	Capacitance change	≦±20% of the initial value	
	D. F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D. F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : LI (φ30, φ35) : Standard

●Terminal Code : VS (φ30, φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

RLB Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
180	900	30×35	0.15	4.66	ERLB181LIN901KR35M
	1,100	30×40	0.15	5.17	ERLB181LIN112KR40M
	1,300	30×45	0.15	5.64	ERLB181LIN132KR45M
	1,500	30×50	0.15	6.07	ERLB181LIN152KR50M
	1,500	35×40	0.15	5.75	ERLB181LIN152KA40M
	1,700	30×55	0.15	6.63	ERLB181LIN172KR55M
	1,800	35×45	0.15	6.37	ERLB181LIN182KA45M
	2,000	35×50	0.15	6.84	ERLB181LIN202KA50M
200	900	30×35	0.15	4.66	ERLB201LIN901KR35M
	1,000	30×40	0.15	5.01	ERLB201LIN102KR40M
	1,200	30×45	0.15	5.51	ERLB201LIN122KR45M
	1,200	35×35	0.15	5.14	ERLB201LIN122KA35M
	1,400	30×50	0.15	5.95	ERLB201LIN142KR50M
	1,400	35×40	0.15	5.66	ERLB201LIN142KA40M
	1,500	30×55	0.15	6.36	ERLB201LIN152KR55M
	1,600	35×45	0.15	6.14	ERLB201LIN162KA45M
	1,900	35×50	0.15	6.82	ERLB201LIN192KA50M
	2,200	35×55	0.15	7.60	ERLB201LIN222KA55M
210	800	30×35	0.15	4.48	ERLB211LIN801KR35M
	900	30×40	0.15	4.86	ERLB211LIN901KR40M
	1,100	30×45	0.15	5.39	ERLB211LIN112KR45M
	1,100	35×35	0.15	5.06	ERLB211LIN112KA35M
	1,200	30×50	0.15	5.71	ERLB211LIN122KR50M
	1,300	35×40	0.15	5.65	ERLB211LIN132KA40M

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
210	1,400	30×55	0.15	6.31	ERLB211LIN142KR55M
	1,500	35×45	0.15	6.21	ERLB211LIN152KA45M
	1,700	35×50	0.15	6.82	ERLB211LIN172KA50M
	2,000	35×55	0.15	7.62	ERLB211LIN202KA55M
220	700	30×35	0.15	4.27	ERLB221LIN701KR35M
	900	30×40	0.15	4.85	ERLB221LIN901KR40M
	1,000	30×45	0.15	5.19	ERLB221LIN102KR45M
	1,000	35×35	0.15	4.87	ERLB221LIN102KA35M
	1,200	30×50	0.15	5.68	ERLB221LIN122KR50M
	1,200	35×40	0.15	5.44	ERLB221LIN122KA40M
	1,300	30×55	0.15	6.09	ERLB221LIN132KR55M
	1,400	35×45	0.15	5.96	ERLB221LIN142KA45M
	1,600	35×50	0.15	6.51	ERLB221LIN162KA50M
	1,800	35×55	0.15	7.10	ERLB221LIN182KA55M
250	600	30×35	0.15	4.03	ERLB251LIN601KR35M
	800	30×40	0.15	4.66	ERLB251LIN801KR40M
	900	30×45	0.15	5.01	ERLB251LIN901KR45M
	900	35×35	0.15	4.73	ERLB251LIN901KA35M
	1,000	30×50	0.15	5.32	ERLB251LIN102KR50M
	1,100	35×40	0.15	5.33	ERLB251LIN112KA40M
	1,200	30×55	0.15	5.96	ERLB251LIN122KR55M
	1,200	35×45	0.15	5.68	ERLB251LIN122KA45M
	1,400	35×50	0.15	6.25	ERLB251LIN142KA50M
	1,600	35×55	0.15	6.87	ERLB251LIN162KA55M

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
180 to 250V_{dc}	0.70	1.00	1.17	1.32	1.45	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple snap-ins, 85℃

RLA Series

- Endurance with ripple current : 3,000 hours at 85℃
- High ripple current capability in a commercial frequency range
- High ripple current for inverter control like air conditioner
- Rated voltage range : 180 to 250Vdc, Capacitance range : 600 to 2,200μF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +85℃		
Rated Voltage Range	180 to 250V		
Capacitance Tolerance	±10% (K)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	180 to 250V	
	tan δ (Max.)	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	180 to 250V	
	Z(-25℃)/Z(+20℃)	4	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 85℃.		
	Capacitance change	≦±20% of the initial value	
	D. F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D. F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : LI (φ30, φ35) : Standard

●Terminal Code : VS (φ30, φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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RLA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
180	900	30×35	0.15	4.66	ERLA181LIN901KR35M
	1,100	30×40	0.15	5.17	ERLA181LIN112KR40M
	1,300	30×45	0.15	5.64	ERLA181LIN132KR45M
	1,500	30×50	0.15	6.07	ERLA181LIN152KR50M
	1,500	35×40	0.15	5.75	ERLA181LIN152KA40M
	1,700	30×55	0.15	6.63	ERLA181LIN172KR55M
	1,800	35×45	0.15	6.37	ERLA181LIN182KA45M
	2,000	35×50	0.15	6.84	ERLA181LIN202KA50M
200	900	30×35	0.15	4.66	ERLA201LIN901KR35M
	1,000	30×40	0.15	5.01	ERLA201LIN102KR40M
	1,200	30×45	0.15	5.51	ERLA201LIN122KR45M
	1,200	35×35	0.15	5.14	ERLA201LIN122KA35M
	1,400	30×50	0.15	5.95	ERLA201LIN142KR50M
	1,400	35×40	0.15	5.66	ERLA201LIN142KA40M
	1,500	30×55	0.15	6.36	ERLA201LIN152KR55M
	1,600	35×45	0.15	6.14	ERLA201LIN162KA45M
	1,900	35×50	0.15	6.82	ERLA201LIN192KA50M
	2,200	35×55	0.15	7.60	ERLA201LIN222KA55M
210	800	30×35	0.15	4.48	ERLA211LIN801KR35M
	900	30×40	0.15	4.86	ERLA211LIN901KR40M
	1,100	30×45	0.15	5.39	ERLA211LIN112KR45M
	1,100	35×35	0.15	5.06	ERLA211LIN112KA35M
	1,200	30×50	0.15	5.71	ERLA211LIN122KR50M
	1,300	35×40	0.15	5.65	ERLA211LIN132KA40M

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
210	1,400	30×55	0.15	6.31	ERLA211LIN142KR55M
	1,500	35×45	0.15	6.21	ERLA211LIN152KA45M
	1,700	35×50	0.15	6.82	ERLA211LIN172KA50M
	2,000	35×55	0.15	7.62	ERLA211LIN202KA55M
220	700	30×35	0.15	4.27	ERLA221LIN701KR35M
	900	30×40	0.15	4.85	ERLA221LIN901KR40M
	1,000	30×45	0.15	5.19	ERLA221LIN102KR45M
	1,000	35×35	0.15	4.87	ERLA221LIN102KA35M
	1,200	30×50	0.15	5.68	ERLA221LIN122KR50M
	1,200	35×40	0.15	5.44	ERLA221LIN122KA40M
	1,300	30×55	0.15	6.09	ERLA221LIN132KR55M
	1,400	35×45	0.15	5.96	ERLA221LIN142KA45M
	1,600	35×50	0.15	6.51	ERLA221LIN162KA50M
	1,800	35×55	0.15	7.10	ERLA221LIN182KA55M
250	600	30×35	0.15	4.03	ERLA251LIN601KR35M
	800	30×40	0.15	4.66	ERLA251LIN801KR40M
	900	30×45	0.15	5.01	ERLA251LIN901KR45M
	900	35×35	0.15	4.73	ERLA251LIN901KA35M
	1,000	30×50	0.15	5.32	ERLA251LIN102KR50M
	1,100	35×40	0.15	5.33	ERLA251LIN112KA40M
	1,200	30×55	0.15	5.96	ERLA251LIN122KR55M
	1,200	35×45	0.15	5.68	ERLA251LIN122KA45M
	1,400	35×50	0.15	6.25	ERLA251LIN142KA50M
	1,600	35×55	0.15	6.87	ERLA251LIN162KA55M

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
180 to 250V_{dc}	0.70	1.00	1.17	1.32	1.45	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple snap-ins, 105℃

KLA Series

- Endurance with ripple current : 3,000 hours at 105℃
- High ripple current capability in a commercial frequency range
- High ripple current for inverter control like air conditioner
- Rated voltage range : 180 to 250Vdc, Capacitance range : 600 to 2,000µF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-40 to +105℃		
Rated Voltage Range	180 to 250V		
Capacitance Tolerance	±10% (K)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	180 to 250V	
	tan δ (Max.)	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	180 to 250V	
	Z(-40℃)/Z(+20℃)	4	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D. F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D. F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : LI (φ30, φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : VS (φ30, φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple snap-ins, 105℃

KLA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
180	900	30×35	0.15	3.76	EKLA181LIN901KR35M
	1,100	30×39	0.15	4.17	EKLA181LIN112KR39M
	1,300	30×45	0.15	4.55	EKLA181LIN132KR45M
	1,500	30×51	0.15	4.89	EKLA181LIN152KR51M
	1,500	35×39	0.15	4.64	EKLA181LIN152KA39M
	1,700	30×54	0.15	5.35	EKLA181LIN172KR54M
	1,800	35×45	0.15	5.14	EKLA181LIN182KA45M
	2,000	35×51	0.15	5.51	EKLA181LIN202KA51M
200	800	30×35	0.15	3.54	EKLA201LIN801KR35M
	1,000	30×39	0.15	4.04	EKLA201LIN102KR39M
	1,100	30×45	0.15	4.25	EKLA201LIN112KR45M
	1,100	35×35	0.15	3.97	EKLA201LIN112KA35M
	1,300	30×51	0.15	4.62	EKLA201LIN132KR51M
	1,400	35×39	0.15	4.56	EKLA201LIN142KA39M
	1,500	30×54	0.15	5.13	EKLA201LIN152KR54M
	1,600	35×45	0.15	4.95	EKLA201LIN162KA45M
	1,800	35×51	0.15	5.35	EKLA201LIN182KA51M
	2,000	35×54	0.15	5.84	EKLA201LIN202KA54M
210	700	30×35	0.15	3.38	EKLA211LIN701KR35M
	900	30×39	0.15	3.92	EKLA211LIN901KR39M
	1,000	35×35	0.15	3.89	EKLA211LIN102KA35M
	1,100	30×45	0.15	4.35	EKLA211LIN112KR45M
	1,200	30×51	0.15	4.60	EKLA211LIN122KR51M
	1,300	35×39	0.15	4.56	EKLA211LIN132KA39M

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 105℃, 120Hz)	Part No.
210	1,400	30×54	0.15	5.09	EKLA211LIN142KR54M
	1,500	35×45	0.15	5.01	EKLA211LIN152KA45M
	1,700	35×51	0.15	5.50	EKLA211LIN172KA51M
	1,900	35×54	0.15	5.99	EKLA211LIN192KA54M
220	700	30×35	0.15	3.44	EKLA221LIN701KR35M
	900	30×39	0.15	3.91	EKLA221LIN901KR39M
	1,000	30×45	0.15	4.18	EKLA221LIN102KR45M
	1,000	35×35	0.15	3.93	EKLA221LIN102KA35M
	1,200	30×51	0.15	4.58	EKLA221LIN122KR51M
	1,200	35×39	0.15	4.39	EKLA221LIN122KA39M
	1,300	30×54	0.15	4.91	EKLA221LIN132KR54M
	1,400	35×45	0.15	4.81	EKLA221LIN142KA45M
	1,600	35×51	0.15	5.25	EKLA221LIN162KA51M
	1,900	35×54	0.15	5.88	EKLA221LIN192KA54M
250	600	30×35	0.15	3.25	EKLA251LIN601KR35M
	700	30×39	0.15	3.51	EKLA251LIN701KR39M
	900	30×45	0.15	4.04	EKLA251LIN901KR45M
	900	35×35	0.15	3.81	EKLA251LIN901KA35M
	1,000	30×51	0.15	4.29	EKLA251LIN102KR51M
	1,000	35×39	0.15	4.10	EKLA251LIN102KA39M
	1,100	30×54	0.15	4.60	EKLA251LIN112KR54M
	1,200	35×45	0.15	4.58	EKLA251LIN122KA45M
	1,400	35×51	0.15	5.04	EKLA251LIN142KA51M
	1,600	35×54	0.15	5.54	EKLA251LIN162KA54M

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
180 to 250V_{dc}	0.70	1.00	1.17	1.32	1.45	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 85℃

SMM Series

- Longer life from SMQ series
- Endurance with ripple current : 3,000 hours at 85℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +85℃			
Rated Voltage Range	160 to 450V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3$\sqrt{CV}$ Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	160 to 400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	160 to 400V	420 & 450V	
	Z(-25℃)/Z(+20℃)	4	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 85℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 85℃

SMM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
160	270	22×20	0.15	1.30	ESMM161VSN271MP20S
	390	22×25	0.15	1.63	ESMM161VSN391MP25S
	390	25.4×20	0.15	1.62	ESMM161VSN391MQ20S
	470	22×30	0.15	1.86	ESMM161VSN471MP30S
	470	25.4×25	0.15	1.86	ESMM161VSN471MQ25S
	560	22×30	0.15	2.15	ESMM161VSN561MP30S
	560	25.4×25	0.15	2.15	ESMM161VSN561MQ25S
	560	30×20	0.15	2.05	ESMM161VSN561MR20S
	680	22×35	0.15	2.35	ESMM161VSN681MP35S
	680	25.4×30	0.15	2.33	ESMM161VSN681MQ30S
	680	30×25	0.15	2.33	ESMM161VSN681MR25S
	680	35×20	0.15	2.26	ESMM161VSN681MA20S
	820	22×40	0.15	2.68	ESMM161VSN821MP40S
	820	25.4×30	0.15	2.65	ESMM161VSN821MQ30S
	820	30×25	0.15	2.64	ESMM161VSN821MR25S
	820	35×20	0.15	2.49	ESMM161VSN821MA20S
	1,000	22×45	0.15	3.02	ESMM161VSN102MP45S
	1,000	25.4×35	0.15	3.00	ESMM161VSN102MQ35S
	1,000	30×30	0.15	2.96	ESMM161VSN102MR30S
	1,000	35×25	0.15	3.13	ESMM161VSN102MA25S
	1,200	22×50	0.15	3.47	ESMM161VSN122MP50S
	1,200	25.4×40	0.15	3.43	ESMM161VSN122MQ40S
	1,200	30×30	0.15	3.41	ESMM161VSN122MR30S
	1,200	35×25	0.15	3.40	ESMM161VSN122MA25S
	1,500	25.4×50	0.15	3.96	ESMM161VSN152MQ50S
	1,500	30×35	0.15	3.96	ESMM161VSN152MR35S
	1,500	35×30	0.15	3.94	ESMM161VSN152MA30S
	1,800	30×40	0.15	4.31	ESMM161VSN182MR40S
	1,800	35×35	0.15	4.28	ESMM161VSN182MA35S
	2,200	30×50	0.15	4.96	ESMM161VSN222MR50S
	2,200	35×40	0.15	4.96	ESMM161VSN222MA40S
	2,700	35×45	0.15	5.57	ESMM161VSN272MA45S
	3,300	35×50	0.15	6.21	ESMM161VSN332MA50S
180	220	22×20	0.15	1.18	ESMM181VSN221MP20S
	330	22×25	0.15	1.77	ESMM181VSN331MP25S
	330	25.4×20	0.15	1.49	ESMM181VSN331MQ20S
	390	22×25	0.15	1.84	ESMM181VSN391MP25S
	470	22×30	0.15	1.91	ESMM181VSN471MP30S
	470	25.4×25	0.15	2.08	ESMM181VSN471MQ25S
	470	30×20	0.15	1.88	ESMM181VSN471MR20S
	560	22×35	0.15	2.25	ESMM181VSN561MP35S
	560	25.4×25	0.15	2.25	ESMM181VSN561MQ25S
	680	22×35	0.15	2.48	ESMM181VSN681MP35S
	680	25.4×30	0.15	2.50	ESMM181VSN681MQ30S
	680	30×25	0.15	2.46	ESMM181VSN681MR25S
	680	35×20	0.15	2.26	ESMM181VSN681MA20S
	820	22×40	0.15	2.86	ESMM181VSN821MP40S
	820	25.4×35	0.15	2.75	ESMM181VSN821MQ35S
	820	30×25	0.15	2.69	ESMM181VSN821MR25S
	1,000	22×50	0.15	3.10	ESMM181VSN102MP50S
	1,000	25.4×40	0.15	3.06	ESMM181VSN102MQ40S
	1,000	30×30	0.15	3.10	ESMM181VSN102MR30S
	1,000	35×25	0.15	2.98	ESMM181VSN102MA25S
	1,200	25.4×45	0.15	3.63	ESMM181VSN122MQ45S
	1,200	30×35	0.15	3.55	ESMM181VSN122MR35S
	1,200	35×30	0.15	3.49	ESMM181VSN122MA30S
	1,500	30×40	0.15	4.10	ESMM181VSN152MR40S
	1,500	35×35	0.15	4.02	ESMM181VSN152MA35S
	1,800	30×45	0.15	4.55	ESMM181VSN182MR45S
	1,800	35×35	0.15	4.54	ESMM181VSN182MA35S
	2,200	35×40	0.15	4.83	ESMM181VSN222MA40S
	2,700	35×50	0.15	5.30	ESMM181VSN272MA50S
200	220	22×20	0.15	1.18	ESMM201VSN221MP20S
	270	22×25	0.15	1.37	ESMM201VSN271MP25S
	270	25.4×20	0.15	1.35	ESMM201VSN271MQ20S
	330	22×25	0.15	1.51	ESMM201VSN331MP25S
	330	25.4×20	0.15	1.49	ESMM201VSN331MQ20S
200	390	22×30	0.15	1.73	ESMM201VSN391MP30S
	390	25.4×25	0.15	1.71	ESMM201VSN391MQ25S
	390	30×20	0.15	1.71	ESMM201VSN391MR20S
	470	22×30	0.15	1.97	ESMM201VSN471MP30S
	470	25.4×25	0.15	1.95	ESMM201VSN471MQ25S
	470	30×20	0.15	1.88	ESMM201VSN471MR20S
	560	22×35	0.15	2.18	ESMM201VSN561MP35S
	560	25.4×30	0.15	2.15	ESMM201VSN561MQ30S
	560	30×25	0.15	2.15	ESMM201VSN561MR25S
	560	35×20	0.15	2.05	ESMM201VSN561MA20S
	680	22×40	0.15	2.48	ESMM201VSN681MP40S
	680	25.4×30	0.15	2.48	ESMM201VSN681MQ30S
	680	30×25	0.15	2.48	ESMM201VSN681MR25S
	680	35×20	0.15	2.36	ESMM201VSN681MA20S
	820	22×45	0.15	2.81	ESMM201VSN821MP45S
	820	25.4×35	0.15	2.79	ESMM201VSN821MQ35S
	820	30×30	0.15	2.80	ESMM201VSN821MR30S
	820	35×25	0.15	2.83	ESMM201VSN821MA25S
	1,000	22×50	0.15	3.28	ESMM201VSN102MP50S
	1,000	25.4×40	0.15	3.28	ESMM201VSN102MQ40S
	1,000	30×35	0.15	3.15	ESMM201VSN102MR35S
	1,000	35×30	0.15	3.26	ESMM201VSN102MA30S
	1,200	25.4×45	0.15	3.61	ESMM201VSN122MQ45S
	1,200	30×35	0.15	3.61	ESMM201VSN122MR35S
	1,200	35×30	0.15	3.57	ESMM201VSN122MA30S
	1,500	30×45	0.15	4.13	ESMM201VSN152MR45S
	1,500	35×35	0.15	4.06	ESMM201VSN152MA35S
	1,800	30×50	0.15	4.60	ESMM201VSN182MR50S
	1,800	35×40	0.15	4.59	ESMM201VSN182MA40S
	2,200	35×45	0.15	5.25	ESMM201VSN222MA45S
220	180	22×20	0.15	1.06	ESMM221VSN181MP20S
	270	22×25	0.15	1.47	ESMM221VSN271MP25S
	270	25.4×20	0.15	1.35	ESMM221VSN271MQ20S
	330	22×30	0.15	1.70	ESMM221VSN331MP30S
	330	25.4×25	0.15	1.69	ESMM221VSN331MQ25S
	330	30×20	0.15	1.58	ESMM221VSN331MR20S
	390	22×30	0.15	1.89	ESMM221VSN391MP30S
	390	25.4×25	0.15	1.84	ESMM221VSN391MQ25S
	390	30×20	0.15	1.71	ESMM221VSN391MR20S
	470	22×35	0.15	2.08	ESMM221VSN471MP35S
	470	25.4×30	0.15	2.08	ESMM221VSN471MQ30S
	470	30×25	0.15	2.12	ESMM221VSN471MR25S
	470	35×20	0.15	1.88	ESMM221VSN471MA20S
	560	22×40	0.15	2.33	ESMM221VSN561MP40S
	560	25.4×35	0.15	2.38	ESMM221VSN561MQ35S
	560	30×25	0.15	2.31	ESMM221VSN561MR25S
	560	35×20	0.15	2.14	ESMM221VSN561MA20S
	680	22×45	0.15	2.63	ESMM221VSN681MP45S
	680	25.4×35	0.15	2.68	ESMM221VSN681MQ35S
	680	30×30	0.15	2.62	ESMM221VSN681MR30S
	680	35×25	0.15	2.58	ESMM221VSN681MA25S
	820	25.4×45	0.15	3.01	ESMM221VSN821MQ45S
	820	30×35	0.15	2.99	ESMM221VSN821MR35S
	820	35×30	0.15	2.79	ESMM221VSN821MA30S
	1,000	25.4×50	0.15	3.40	ESMM221VSN102MQ50S
	1,000	30×35	0.15	3.42	ESMM221VSN102MR35S
	1,000	35×30	0.15	3.29	ESMM221VSN102MA30S
	1,200	30×40	0.15	3.88	ESMM221VSN122MR40S
	1,200	35×35	0.15	3.68	ESMM221VSN122MA35S
	1,500	30×50	0.15	4.44	ESMM221VSN152MR50S
	1,500	35×40	0.15	4.10	ESMM221VSN152MA40S
	1,800	35×45	0.15	4.52	ESMM221VSN182MA45S
250	150	22×20	0.15	0.97	ESMM251VSN151MP20S
	180	22×20	0.15	1.06	ESMM251VSN181MP20S
	220	22×25	0.15	1.24	ESMM251VSN221MP25S
	220	25.4×20	0.15	1.22	ESMM251VSN221MQ20S
	270	22×25	0.15	1.50	ESMM251VSN271MP25S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 85℃

SMM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
250	330	22×30	0.15	1.66	ESMM251VSN331MP30S
	330	25.4×25	0.15	1.61	ESMM251VSN331MQ25S
	330	30×20	0.15	1.58	ESMM251VSN331MR20S
	390	22×35	0.15	1.88	ESMM251VSN391MP35S
	390	25.4×30	0.15	1.88	ESMM251VSN391MQ30S
	390	30×25	0.15	1.86	ESMM251VSN391MR25S
	390	35×20	0.15	1.71	ESMM251VSN391MA20S
	470	22×35	0.15	2.15	ESMM251VSN471MP35S
	470	25.4×35	0.15	2.15	ESMM251VSN471MQ35S
	470	30×25	0.15	2.05	ESMM251VSN471MR25S
	470	35×20	0.15	1.88	ESMM251VSN471MA20S
	560	22×40	0.15	2.48	ESMM251VSN561MP40S
	560	25.4×35	0.15	2.35	ESMM251VSN561MQ35S
	560	30×25	0.15	2.35	ESMM251VSN561MR25S
	680	22×50	0.15	2.61	ESMM251VSN681MP50S
	680	25.4×40	0.15	2.67	ESMM251VSN681MQ40S
	680	30×30	0.15	2.71	ESMM251VSN681MR30S
	680	35×25	0.15	2.58	ESMM251VSN681MA25S
	820	25.4×45	0.15	3.01	ESMM251VSN821MQ45S
	820	30×35	0.15	2.98	ESMM251VSN821MR35S
	820	35×30	0.15	2.96	ESMM251VSN821MA30S
	1,000	30×40	0.15	3.56	ESMM251VSN102MR40S
	1,000	35×35	0.15	3.48	ESMM251VSN102MA35S
	1,200	30×45	0.15	3.99	ESMM251VSN122MR45S
	1,200	35×35	0.15	3.84	ESMM251VSN122MA35S
	1,500	35×40	0.15	4.33	ESMM251VSN152MA40S
	1,800	35×50	0.15	4.54	ESMM251VSN182MA50S
315	100	22×20	0.15	0.79	ESMM3B1VSN101MP20S
	120	25.4×20	0.15	0.90	ESMM3B1VSN121MQ20S
	150	22×25	0.15	1.06	ESMM3B1VSN151MP25S
	150	25.4×20	0.15	1.00	ESMM3B1VSN151MQ20S
	180	22×30	0.15	1.29	ESMM3B1VSN181MP30S
	180	25.4×25	0.15	1.38	ESMM3B1VSN181MQ25S
	180	30×20	0.15	1.16	ESMM3B1VSN181MR20S
	220	22×30	0.15	1.41	ESMM3B1VSN221MP30S
	220	25.4×25	0.15	1.47	ESMM3B1VSN221MQ25S
	220	30×20	0.15	1.28	ESMM3B1VSN221MR20S
	270	22×35	0.15	1.68	ESMM3B1VSN271MP35S
	270	25.4×30	0.15	1.70	ESMM3B1VSN271MQ30S
	270	30×25	0.15	1.55	ESMM3B1VSN271MR25S
	270	35×20	0.15	1.43	ESMM3B1VSN271MA20S
	330	22×40	0.15	1.91	ESMM3B1VSN331MP40S
	330	25.4×35	0.15	1.94	ESMM3B1VSN331MQ35S
	330	30×25	0.15	1.98	ESMM3B1VSN331MR25S
	390	22×45	0.15	2.07	ESMM3B1VSN391MP45S
	390	25.4×40	0.15	2.11	ESMM3B1VSN391MQ40S
	390	30×30	0.15	2.15	ESMM3B1VSN391MR30S
	390	35×25	0.15	1.95	ESMM3B1VSN391MA25S
	470	25.4×45	0.15	2.31	ESMM3B1VSN471MQ45S
	470	30×35	0.15	2.38	ESMM3B1VSN471MR35S
	470	35×30	0.15	2.46	ESMM3B1VSN471MA30S
	560	25.4×50	0.15	2.46	ESMM3B1VSN561MQ50S
	560	30×35	0.15	2.63	ESMM3B1VSN561MR35S
	560	35×30	0.15	2.69	ESMM3B1VSN561MA30S
	680	30×45	0.15	2.82	ESMM3B1VSN681MR45S
	680	35×35	0.15	3.05	ESMM3B1VSN681MA35S
	820	30×50	0.15	3.28	ESMM3B1VSN821MR50S
	820	35×40	0.15	3.45	ESMM3B1VSN821MA40S
	1,000	35×45	0.15	3.59	ESMM3B1VSN102MA45S
350	82	22×20	0.15	0.72	ESMM351VSN820MP20S
	120	22×25	0.15	1.04	ESMM351VSN121MP25S
	120	25.4×20	0.15	0.90	ESMM351VSN121MQ20S
	150	22×30	0.15	1.20	ESMM351VSN151MP30S
	150	25.4×25	0.15	1.22	ESMM351VSN151MQ25S
	150	30×20	0.15	1.06	ESMM351VSN151MR20S
	180	22×30	0.15	1.34	ESMM351VSN181MP30S
	180	25.4×25	0.15	1.37	ESMM351VSN181MQ25S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	180	30×20	0.15	1.16	ESMM351VSN181MR20S
	220	22×35	0.15	1.47	ESMM351VSN221MP35S
	220	25.4×30	0.15	1.53	ESMM351VSN221MQ30S
	220	30×25	0.15	1.54	ESMM351VSN221MR25S
	220	35×20	0.15	1.29	ESMM351VSN221MA20S
	270	22×40	0.15	1.70	ESMM351VSN271MP40S
	270	25.4×35	0.15	1.73	ESMM351VSN271MQ35S
	270	30×25	0.15	1.80	ESMM351VSN271MR25S
	270	35×20	0.15	1.49	ESMM351VSN271MA20S
	330	22×45	0.15	1.87	ESMM351VSN331MP45S
	330	25.4×35	0.15	1.97	ESMM351VSN331MQ35S
	330	30×30	0.15	2.03	ESMM351VSN331MR30S
	330	35×25	0.15	1.80	ESMM351VSN331MA25S
	390	25.4×40	0.15	2.14	ESMM351VSN391MQ40S
	390	30×35	0.15	2.23	ESMM351VSN391MR35S
	390	35×30	0.15	2.30	ESMM351VSN391MA30S
	470	25.4×50	0.15	2.55	ESMM351VSN471MQ50S
	470	30×35	0.15	2.53	ESMM351VSN471MR35S
	470	35×30	0.15	2.55	ESMM351VSN471MA30S
	560	30×40	0.15	2.73	ESMM351VSN561MR40S
	560	35×35	0.15	2.75	ESMM351VSN561MA35S
	680	30×50	0.15	3.15	ESMM351VSN681MR50S
	680	35×40	0.15	3.15	ESMM351VSN681MA40S
	820	35×45	0.15	3.47	ESMM351VSN821MA45S
	1,000	35×50	0.15	3.60	ESMM351VSN102MA50S
400	68	22×20	0.15	0.65	ESMM401VSN680MP20S
	82	22×25	0.15	0.84	ESMM401VSN820MP25S
	82	25.4×20	0.15	0.74	ESMM401VSN820MQ20S
	100	22×25	0.15	0.99	ESMM401VSN101MP25S
	100	25.4×20	0.15	0.82	ESMM401VSN101MQ20S
	120	22×30	0.15	1.09	ESMM401VSN121MP30S
	120	25.4×25	0.15	1.13	ESMM401VSN121MQ25S
	120	30×20	0.15	0.95	ESMM401VSN121MR20S
	150	22×35	0.15	1.24	ESMM401VSN151MP35S
	150	25.4×30	0.15	1.27	ESMM401VSN151MQ30S
	150	30×25	0.15	1.20	ESMM401VSN151MR25S
	180	22×40	0.15	1.41	ESMM401VSN181MP40S
	180	25.4×30	0.15	1.44	ESMM401VSN181MQ30S
	180	30×25	0.15	1.52	ESMM401VSN181MR25S
	180	35×20	0.15	1.16	ESMM401VSN181MA20S
	220	22×45	0.15	1.58	ESMM401VSN221MP45S
	220	25.4×35	0.15	1.64	ESMM401VSN221MQ35S
	220	30×30	0.15	1.66	ESMM401VSN221MR30S
	220	35×25	0.15	1.47	ESMM401VSN221MA25S
	270	22×50	0.15	1.65	ESMM401VSN271MP50S
	270	25.4×40	0.15	1.79	ESMM401VSN271MQ40S
	270	30×30	0.15	1.82	ESMM401VSN271MR30S
	270	35×25	0.15	1.63	ESMM401VSN271MA25S
	330	25.4×45	0.15	2.00	ESMM401VSN331MQ45S
	330	30×35	0.15	2.05	ESMM401VSN331MR35S
	330	35×30	0.15	2.05	ESMM401VSN331MA30S
	390	25.4×50	0.15	2.12	ESMM401VSN391MQ50S
	390	30×40	0.15	2.26	ESMM401VSN391MR40S
	390	35×35	0.15	2.28	ESMM401VSN391MA35S
	470	30×45	0.15	2.51	ESMM401VSN471MR45S
	470	35×35	0.15	2.54	ESMM401VSN471MA35S
	560	30×50	0.15	2.85	ESMM401VSN561MR50S
	560	35×40	0.15	2.85	ESMM401VSN561MA40S
	680	35×50	0.15	3.10	ESMM401VSN681MA50S
420	47	22×20	0.20	0.54	ESMM421VSN470MP20S
	56	22×20	0.20	0.59	ESMM421VSN560MP20S
	68	25.4×20	0.20	0.68	ESMM421VSN680MQ20S
	82	22×25	0.20	0.85	ESMM421VSN820MP25S
	82	25.4×20	0.20	0.74	ESMM421VSN820MQ20S
	100	22×30	0.20	0.97	ESMM421VSN101MP30S
	100	25.4×25	0.20	0.98	ESMM421VSN101MQ25S
	100	30×20	0.20	0.87	ESMM421VSN101MR20S

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SMM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
420	120	22×30	0.20	1.07	ESMM421VSN121MP30S
	120	25.4×25	0.20	1.08	ESMM421VSN121MQ25S
	120	30×20	0.20	0.95	ESMM421VSN121MR20S
	150	22×35	0.20	1.21	ESMM421VSN151MP35S
	150	25.4×30	0.20	1.26	ESMM421VSN151MQ30S
	150	30×25	0.20	1.30	ESMM421VSN151MR25S
	150	35×20	0.20	1.11	ESMM421VSN151MA20S
	180	22×40	0.20	1.33	ESMM421VSN181MP40S
	180	25.4×35	0.20	1.42	ESMM421VSN181MQ35S
	180	30×25	0.20	1.48	ESMM421VSN181MR25S
	180	35×20	0.20	1.16	ESMM421VSN181MA20S
	220	22×45	0.20	1.55	ESMM421VSN221MP45S
	220	25.4×35	0.20	1.58	ESMM421VSN221MQ35S
	220	30×30	0.20	1.65	ESMM421VSN221MR30S
	220	35×25	0.20	1.47	ESMM421VSN221MA25S
	270	25.4×40	0.20	1.74	ESMM421VSN271MQ40S
	270	30×35	0.20	1.90	ESMM421VSN271MR35S
	270	35×30	0.20	1.94	ESMM421VSN271MA30S
	330	25.4×50	0.20	2.20	ESMM421VSN331MQ50S
	330	30×35	0.20	1.98	ESMM421VSN331MR35S
	330	35×35	0.20	2.17	ESMM421VSN331MA35S
	390	30×40	0.20	2.22	ESMM421VSN391MR40S
	390	35×35	0.20	2.27	ESMM421VSN391MA35S
	470	30×45	0.20	2.50	ESMM421VSN471MR45S
	470	35×40	0.20	2.61	ESMM421VSN471MA40S
	560	35×45	0.20	2.95	ESMM421VSN561MA45S
	680	35×50	0.20	3.15	ESMM421VSN681MA50S
450	47	22×20	0.20	0.54	ESMM451VSN470MP20S
	56	22×20	0.20	0.59	ESMM451VSN560MP20S
	68	22×25	0.20	0.71	ESMM451VSN680MP25S
	68	25.4×20	0.20	0.68	ESMM451VSN680MQ20S
	82	22×25	0.20	0.86	ESMM451VSN820MP25S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
450	82	25.4×20	0.20	0.74	ESMM451VSN820MQ20S
	82	30×20	0.20	0.79	ESMM451VSN820MR20S
	100	22×30	0.20	0.95	ESMM451VSN101MP30S
	100	25.4×25	0.20	0.97	ESMM451VSN101MQ25S
	100	30×20	0.20	0.87	ESMM451VSN101MR20S
	120	22×35	0.20	1.07	ESMM451VSN121MP35S
	120	25.4×30	0.20	1.09	ESMM451VSN121MQ30S
	120	30×25	0.20	1.12	ESMM451VSN121MR25S
	120	35×20	0.20	0.99	ESMM451VSN121MA20S
	150	22×40	0.20	1.18	ESMM451VSN151MP40S
	150	25.4×30	0.20	1.25	ESMM451VSN151MQ30S
	150	30×25	0.20	1.29	ESMM451VSN151MR25S
	150	35×20	0.20	1.06	ESMM451VSN151MA20S
	180	22×45	0.20	1.32	ESMM451VSN181MP45S
	180	25.4×35	0.20	1.40	ESMM451VSN181MQ35S
	180	30×30	0.20	1.45	ESMM451VSN181MR30S
	180	35×25	0.20	1.33	ESMM451VSN181MA25S
	220	22×50	0.20	1.48	ESMM451VSN221MP50S
	220	25.4×40	0.20	1.59	ESMM451VSN221MQ40S
	220	30×30	0.20	1.64	ESMM451VSN221MR30S
	220	35×25	0.20	1.66	ESMM451VSN221MA25S
	270	25.4×45	0.20	1.73	ESMM451VSN271MQ45S
	270	30×35	0.20	1.89	ESMM451VSN271MR35S
	270	35×30	0.20	1.90	ESMM451VSN271MA30S
	330	25.4×50	0.20	2.12	ESMM451VSN331MQ50S
	330	30×40	0.20	2.12	ESMM451VSN331MR40S
	330	35×35	0.20	2.15	ESMM451VSN331MA35S
	390	30×45	0.20	2.35	ESMM451VSN391MR45S
	390	35×40	0.20	2.38	ESMM451VSN391MA40S
	470	30×50	0.20	2.65	ESMM451VSN471MR50S
	470	35×45	0.20	2.68	ESMM451VSN471MA45S
	560	35×50	0.20	2.88	ESMM451VSN561MA50S

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple snap-ins, 105℃

KMT Series

- Higher ripple current from KMS series
- Endurance with ripple current : 3,000 hours at 105℃
- Rated voltage range : 420, 450Vdc, Capacitance range : 82 to 680µF
- For inverter control, switching power supplies
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +105℃		
Rated Voltage Range	420, 450Vdc		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	420 & 450V	
	tan δ (Max.)	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	420 & 450V	
	Z(-25℃)/Z(+20℃)	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

High ripple snap-ins, 105℃

KMT Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
420	100	22×25	0.20	0.89	EKMT421VSN101MP25S
	120	22×30	0.20	1.06	EKMT421VSN121MP30S
	120	25.4×25	0.20	1.09	EKMT421VSN121MQ25S
	150	22×35	0.20	1.21	EKMT421VSN151MP35S
	180	22×40	0.20	1.34	EKMT421VSN181MP40S
	180	25.4×30	0.20	1.28	EKMT421VSN181MQ30S
	180	30×25	0.20	1.42	EKMT421VSN181MR25S
	220	22×45	0.20	1.47	EKMT421VSN221MP45S
	220	22×50	0.20	1.60	EKMT421VSN221MP50S
	220	25.4×35	0.20	1.47	EKMT421VSN221MQ35S
	220	30×30	0.20	1.64	EKMT421VSN221MR30S
	220	35×25	0.20	1.64	EKMT421VSN221MA25S
	270	25.4×40	0.20	1.63	EKMT421VSN271MQ40S
	270	25.4×45	0.20	1.79	EKMT421VSN271MQ45S
	270	30×35	0.20	1.87	EKMT421VSN271MR35S
	330	25.4×50	0.20	1.93	EKMT421VSN331MQ50S
	330	30×40	0.20	2.10	EKMT421VSN331MR40S
	330	35×30	0.20	2.05	EKMT421VSN331MA30S
	390	30×45	0.20	2.32	EKMT421VSN391MR45S
	390	35×35	0.20	2.32	EKMT421VSN391MA35S
	470	30×50	0.20	2.51	EKMT421VSN471MR50S
	470	35×40	0.20	2.62	EKMT421VSN471MA40S
	560	35×45	0.20	2.88	EKMT421VSN561MA45S
	680	35×50	0.20	3.10	EKMT421VSN681MA50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
450	82	22×25	0.20	0.81	EKMT451VSN820MP25S
	100	22×30	0.20	0.97	EKMT451VSN101MP30S
	100	25.4×25	0.20	1.04	EKMT451VSN101MQ25S
	120	22×35	0.20	1.08	EKMT451VSN121MP35S
	150	22×40	0.20	1.22	EKMT451VSN151MP40S
	150	25.4×35	0.20	1.31	EKMT451VSN151MQ35S
	150	30×25	0.20	1.31	EKMT451VSN151MR25S
	180	22×45	0.20	1.35	EKMT451VSN181MP45S
	180	22×50	0.20	1.42	EKMT451VSN181MP50S
	180	25.4×40	0.20	1.35	EKMT451VSN181MQ40S
	180	30×30	0.20	1.49	EKMT451VSN181MR30S
	180	35×25	0.20	1.60	EKMT451VSN181MA25S
	220	25.4×45	0.20	1.55	EKMT451VSN221MQ45S
	220	30×35	0.20	1.71	EKMT451VSN221MR35S
	270	25.4×50	0.20	1.74	EKMT451VSN271MQ50S
	270	30×40	0.20	1.90	EKMT451VSN271MR40S
	270	35×30	0.20	1.90	EKMT451VSN271MA30S
	330	30×45	0.20	2.20	EKMT451VSN331MR45S
	330	35×35	0.20	2.20	EKMT451VSN331MA35S
	390	30×50	0.20	2.40	EKMT451VSN391MR50S
	390	35×40	0.20	2.42	EKMT451VSN391MA40S
	470	35×45	0.20	2.67	EKMT451VSN471MA45S
	560	35×50	0.20	2.85	EKMT451VSN561MA50S

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
420, 450V_{dc}	0.68	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KHS Series

- For solar power generation
- Endurance with ripple current : 3,000 hours at 105℃
- Rated voltage range:450 to 500V, Capacitance range:68 to 1,000μF
- Non solvent resistant type
- RoHS2 Compliant

KHS
↑ Downsizing
KMS
↑ Downsizing
KMM

500V Lineup!

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +105℃		
Rated Voltage Range	450 to 500Vdc		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	450 to 500V	
	tan δ (Max.)	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	450 to 500V	
	Z(-25℃)/Z(+20℃)	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value (475, 500Vdc: ≦ 250%)	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KHS Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
450	100	22×25	0.20	0.71	EKHS451VSN101MP25S
	150	22×30	0.20	0.91	EKHS451VSN151MP30S
	180	22×35	0.20	1.02	EKHS451VSN181MP35S
	180	22×40	0.20	1.04	EKHS451VSN181MP40S
	180	25.4×25	0.20	1.02	EKHS451VSN181MQ25S
	220	22×45	0.20	1.17	EKHS451VSN221MP45S
	220	25.4×30	0.20	1.16	EKHS451VSN221MQ30S
	270	22×50	0.20	1.33	EKHS451VSN271MP50S
	270	25.4×35	0.20	1.34	EKHS451VSN271MQ35S
	270	30×25	0.20	1.28	EKHS451VSN271MR25S
	270	35×25	0.20	1.24	EKHS451VSN271MA25S
	330	22×60	0.20	1.54	EKHS451VSN331MP60S
	330	25.4×40	0.20	1.51	EKHS451VSN331MQ40S
	330	30×30	0.20	1.43	EKHS451VSN331MR30S
	390	25.4×45	0.20	1.67	EKHS451VSN391MQ45S
	390	30×35	0.20	1.59	EKHS451VSN391MR35S
	390	35×30	0.20	1.52	EKHS451VSN391MA30S
	470	25.4×50	0.20	1.86	EKHS451VSN471MQ50S
	470	30×40	0.20	1.79	EKHS451VSN471MR40S
	470	35×35	0.20	1.69	EKHS451VSN471MA35S
	560	25.4×60	0.20	2.09	EKHS451VSN561MQ60S
	560	30×45	0.20	2.01	EKHS451VSN561MR45S
	560	35×40	0.20	1.95	EKHS451VSN561MA40S
	680	30×50	0.20	2.25	EKHS451VSN681MR50S
	680	35×45	0.20	2.16	EKHS451VSN681MA45S
	680	35×50	0.20	2.22	EKHS451VSN681MA50S
	820	30×60	0.20	2.56	EKHS451VSN821MR60S
	820	35×55	0.20	2.47	EKHS451VSN821MA55S
	1,000	35×60	0.20	2.78	EKHS451VSN102MA60S
475	82	22×25	0.20	0.67	EKHS4H1VSN820MP25S
	100	22×30	0.20	0.78	EKHS4H1VSN101MP30S
	100	25.4×25	0.20	0.79	EKHS4H1VSN101MQ25S
	120	22×35	0.20	0.87	EKHS4H1VSN121MP35S
	120	25.4×30	0.20	0.89	EKHS4H1VSN121MQ30S
	150	22×40	0.20	0.99	EKHS4H1VSN151MP40S
	150	22×45	0.20	1.01	EKHS4H1VSN151MP45S
	150	30×25	0.20	1.01	EKHS4H1VSN151MR25S
	180	22×50	0.20	1.13	EKHS4H1VSN181MP50S
	180	25.4×35	0.20	1.14	EKHS4H1VSN181MQ35S
	180	25.4×40	0.20	1.16	EKHS4H1VSN181MQ40S
	180	30×30	0.20	1.11	EKHS4H1VSN181MR30S
	180	35×25	0.20	1.08	EKHS4H1VSN181MA25S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
475	220	22×60	0.20	1.31	EKHS4H1VSN221MP60S
	220	25.4×45	0.20	1.31	EKHS4H1VSN221MQ45S
	220	30×35	0.20	1.26	EKHS4H1VSN221MR35S
	270	25.4×50	0.20	1.47	EKHS4H1VSN271MQ50S
	270	30×40	0.20	1.44	EKHS4H1VSN271MR40S
	270	35×30	0.20	1.35	EKHS4H1VSN271MA30S
	330	25.4×60	0.20	1.67	EKHS4H1VSN331MQ60S
	330	30×45	0.20	1.63	EKHS4H1VSN331MR45S
	330	35×35	0.20	1.51	EKHS4H1VSN331MA35S
	390	30×50	0.20	1.80	EKHS4H1VSN391MR50S
	390	35×40	0.20	1.70	EKHS4H1VSN391MA40S
	470	30×60	0.20	2.05	EKHS4H1VSN471MR60S
	470	35×45	0.20	1.91	EKHS4H1VSN471MA45S
	560	35×50	0.20	2.13	EKHS4H1VSN561MA50S
	680	35×60	0.20	2.44	EKHS4H1VSN681MA60S
500	68	22×25	0.20	0.61	EKHS501VSN680MP25S
	82	22×30	0.20	0.70	EKHS501VSN820MP30S
	82	25.4×25	0.20	0.72	EKHS501VSN820MQ25S
	100	22×35	0.20	0.79	EKHS501VSN101MP35S
	120	22×40	0.20	0.89	EKHS501VSN121MP40S
	120	25.4×30	0.20	0.89	EKHS501VSN121MQ30S
	120	30×25	0.20	0.90	EKHS501VSN121MR25S
	150	22×45	0.20	1.01	EKHS501VSN151MP45S
	150	25.4×35	0.20	1.04	EKHS501VSN151MQ35S
	180	22×50	0.20	1.13	EKHS501VSN181MP50S
	180	25.4×40	0.20	1.16	EKHS501VSN181MQ40S
	180	25.4×45	0.20	1.18	EKHS501VSN181MQ45S
	180	30×30	0.20	1.11	EKHS501VSN181MR30S
	180	35×25	0.20	1.08	EKHS501VSN181MA25S
	220	22×60	0.20	1.31	EKHS501VSN221MP60S
	220	25.4×50	0.20	1.33	EKHS501VSN221MQ50S
	220	30×35	0.20	1.26	EKHS501VSN221MR35S
	220	35×30	0.20	1.22	EKHS501VSN221MA30S
	270	25.4×60	0.20	1.51	EKHS501VSN271MQ60S
	270	30×40	0.20	1.44	EKHS501VSN271MR40S
	270	30×45	0.20	1.47	EKHS501VSN271MR45S
	270	35×35	0.20	1.37	EKHS501VSN271MA35S
	330	30×50	0.20	1.66	EKHS501VSN331MR50S
	330	35×40	0.20	1.57	EKHS501VSN331MA40S
	390	30×60	0.20	1.87	EKHS501VSN391MR60S
	390	35×45	0.20	1.74	EKHS501VSN391MA45S
	470	35×50	0.20	1.95	EKHS501VSN471MA50S
	560	35×60	0.20	2.22	EKHS501VSN561MA60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43
475, 500V_{dc}	0.70	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMS Series Upgrade!

- For solar power generation
- Endurance with ripple current : 105℃ 3,000 hours
- Rated voltage range : 160 to 600V
- Capacitance range : 47 to 3,300μF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	160 to 600V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	160 to 400V	420 to 600V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	160 to 400V	420 to 600V	
	Z(-25℃)/Z(+20℃)	4	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value(600V_{dc} : ≦300%)		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMS Series Upgrade!

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
160	470	22×25	0.15	1.47	EKMS161VSN471MP25S
	680	22×30	0.15	1.86	EKMS161VSN681MP30S
	680	25.4×25	0.15	1.84	EKMS161VSN681MQ25S
	820	22×35	0.15	2.09	EKMS161VSN821MP35S
	820	25.4×30	0.15	2.08	EKMS161VSN821MQ30S
	1,000	22×40	0.15	2.35	EKMS161VSN102MP40S
	1,000	22×45	0.15	2.40	EKMS161VSN102MP45S
	1,000	25.4×35	0.15	2.40	EKMS161VSN102MQ35S
	1,000	30×25	0.15	2.50	EKMS161VSN102MR25S
	1,200	22×50	0.15	2.69	EKMS161VSN122MP50S
	1,200	25.4×40	0.15	2.68	EKMS161VSN122MQ40S
	1,200	30×30	0.15	2.77	EKMS161VSN122MR30S
	1,200	35×25	0.15	2.91	EKMS161VSN122MA25S
	1,500	25.4×45	0.15	3.05	EKMS161VSN152MQ45S
	1,500	30×35	0.15	3.17	EKMS161VSN152MR35S
	1,800	25.4×50	0.15	3.40	EKMS161VSN182MQ50S
	1,800	30×40	0.15	3.57	EKMS161VSN182MR40S
	1,800	35×30	0.15	3.62	EKMS161VSN182MA30S
	2,200	30×45	0.15	4.05	EKMS161VSN222MR45S
	2,200	35×35	0.15	4.07	EKMS161VSN222MA35S
	2,700	30×50	0.15	4.56	EKMS161VSN272MR50S
	2,700	35×40	0.15	4.67	EKMS161VSN272MA40S
	2,700	35×45	0.15	4.78	EKMS161VSN272MA45S
	3,300	35×50	0.15	5.40	EKMS161VSN332MA50S
180	390	22×25	0.15	1.34	EKMS181VSN391MP25S
	560	22×30	0.15	1.68	EKMS181VSN561MP30S
	560	25.4×25	0.15	1.67	EKMS181VSN561MQ25S
	680	22×35	0.15	1.90	EKMS181VSN681MP35S
	820	22×40	0.15	2.13	EKMS181VSN821MP40S
	820	25.4×30	0.15	2.08	EKMS181VSN821MQ30S
	820	30×25	0.15	2.26	EKMS181VSN821MR25S
	1,000	22×45	0.15	2.40	EKMS181VSN102MP45S
	1,000	22×50	0.15	2.45	EKMS181VSN102MP50S
	1,000	25.4×35	0.15	2.40	EKMS181VSN102MQ35S
	1,000	25.4×40	0.15	2.45	EKMS181VSN102MQ40S
	1,000	30×30	0.15	2.52	EKMS181VSN102MR30S
	1,200	25.4×45	0.15	2.73	EKMS181VSN122MQ45S
	1,200	30×35	0.15	2.83	EKMS181VSN122MR35S
	1,200	35×25	0.15	2.91	EKMS181VSN122MA25S
	1,500	25.4×50	0.15	3.10	EKMS181VSN152MQ50S
	1,500	30×40	0.15	3.26	EKMS181VSN152MR40S
	1,500	35×30	0.15	3.31	EKMS181VSN152MA30S
	1,800	30×45	0.15	3.66	EKMS181VSN182MR45S
	1,800	35×35	0.15	3.68	EKMS181VSN182MA35S
	2,200	30×50	0.15	4.11	EKMS181VSN222MR50S
	2,200	35×40	0.15	4.22	EKMS181VSN222MA40S
	2,700	35×45	0.15	4.78	EKMS181VSN272MA45S
	2,700	35×50	0.15	4.88	EKMS181VSN272MA50S
200	390	22×25	0.15	1.34	EKMS201VSN391MP25S
	470	22×30	0.15	1.54	EKMS201VSN471MP30S
	560	22×35	0.15	1.72	EKMS201VSN561MP35S
	560	25.4×25	0.15	1.67	EKMS201VSN561MQ25S
	680	22×40	0.15	1.94	EKMS201VSN681MP40S
	680	25.4×30	0.15	1.89	EKMS201VSN681MQ30S
	820	22×45	0.15	2.17	EKMS201VSN821MP45S
	820	25.4×35	0.15	2.17	EKMS201VSN821MQ35S
	820	30×25	0.15	2.26	EKMS201VSN821MR25S
	1,000	22×50	0.15	2.45	EKMS201VSN102MP50S
	1,000	25.4×40	0.15	2.45	EKMS201VSN102MQ40S
	1,000	30×30	0.15	2.52	EKMS201VSN102MR30S
	1,000	35×25	0.15	2.66	EKMS201VSN102MA25S
	1,200	25.4×45	0.15	2.73	EKMS201VSN122MQ45S
	1,200	25.4×50	0.15	2.78	EKMS201VSN122MQ50S
	1,200	30×35	0.15	2.83	EKMS201VSN122MR35S
	1,200	35×30	0.15	2.96	EKMS201VSN122MA30S
	1,500	30×40	0.15	3.26	EKMS201VSN152MR40S
	1,500	35×35	0.15	3.36	EKMS201VSN152MA35S
200	1,800	30×45	0.15	3.66	EKMS201VSN182MR45S
	1,800	30×50	0.15	3.72	EKMS201VSN182MR50S
	1,800	35×40	0.15	3.81	EKMS201VSN182MA40S
	2,200	35×45	0.15	4.32	EKMS201VSN222MA45S
	2,700	35×50	0.15	4.88	EKMS201VSN272MA50S
250	270	22×25	0.15	1.11	EKMS251VSN271MP25S
	330	22×30	0.15	1.29	EKMS251VSN331MP30S
	390	22×35	0.15	1.44	EKMS251VSN391MP35S
	390	25.4×25	0.15	1.40	EKMS251VSN391MQ25S
	470	22×40	0.15	1.61	EKMS251VSN471MP40S
	470	25.4×30	0.15	1.57	EKMS251VSN471MQ30S
	560	22×45	0.15	1.79	EKMS251VSN561MP45S
	560	25.4×35	0.15	1.79	EKMS251VSN561MQ35S
	560	30×25	0.15	1.87	EKMS251VSN561MR25S
	680	22×50	0.15	2.02	EKMS251VSN681MP50S
	680	25.4×40	0.15	2.02	EKMS251VSN681MQ40S
	680	30×30	0.15	2.08	EKMS251VSN681MR30S
	680	35×25	0.15	2.19	EKMS251VSN681MA25S
	820	25.4×45	0.15	2.26	EKMS251VSN821MQ45S
	820	30×35	0.15	2.34	EKMS251VSN821MR35S
	1,000	25.4×50	0.15	2.53	EKMS251VSN102MQ50S
	1,000	30×40	0.15	2.66	EKMS251VSN102MR40S
	1,000	35×30	0.15	2.70	EKMS251VSN102MA30S
	1,200	30×45	0.15	2.99	EKMS251VSN122MR45S
	1,200	30×50	0.15	3.04	EKMS251VSN122MR50S
	1,200	35×35	0.15	3.00	EKMS251VSN122MA35S
	1,500	35×40	0.15	3.48	EKMS251VSN152MA40S
	1,500	35×45	0.15	3.56	EKMS251VSN152MA45S
	1,800	35×50	0.15	3.98	EKMS251VSN182MA50S
315	180	22×25	0.15	0.95	EKMS3B1VSN181MP25S
	220	22×30	0.15	1.10	EKMS3B1VSN221MP30S
	220	25.4×25	0.15	1.10	EKMS3B1VSN221MQ25S
	270	22×35	0.15	1.24	EKMS3B1VSN271MP35S
	330	22×40	0.15	1.40	EKMS3B1VSN331MP40S
	330	25.4×30	0.15	1.38	EKMS3B1VSN331MQ30S
	330	30×25	0.15	1.43	EKMS3B1VSN331MR25S
	390	22×45	0.15	1.56	EKMS3B1VSN391MP45S
	390	22×50	0.15	1.59	EKMS3B1VSN391MP50S
	390	25.4×35	0.15	1.57	EKMS3B1VSN391MQ35S
	470	25.4×40	0.15	1.76	EKMS3B1VSN471MQ40S
	470	30×30	0.15	1.73	EKMS3B1VSN471MR30S
	470	35×25	0.15	1.82	EKMS3B1VSN471MA25S
	560	25.4×45	0.15	1.96	EKMS3B1VSN561MQ45S
	560	25.4×50	0.15	1.99	EKMS3B1VSN561MQ50S
	560	30×35	0.15	1.93	EKMS3B1VSN561MR35S
	560	35×30	0.15	2.02	EKMS3B1VSN561MA30S
	680	30×40	0.15	2.19	EKMS3B1VSN681MR40S
	680	35×35	0.15	2.26	EKMS3B1VSN681MA35S
	820	30×45	0.15	2.47	EKMS3B1VSN821MR45S
	820	30×50	0.15	2.51	EKMS3B1VSN821MR50S
	820	35×40	0.15	2.57	EKMS3B1VSN821MA40S
	1,000	35×45	0.15	2.91	EKMS3B1VSN102MA45S
	1,200	35×50	0.15	3.25	EKMS3B1VSN122MA50S
400	120	22×25	0.15	0.77	EKMS401VSN121MP25S
	150	22×30	0.15	0.90	EKMS401VSN151MP30S
	180	22×35	0.15	1.02	EKMS401VSN181MP35S
	180	25.4×25	0.15	0.99	EKMS401VSN181MQ25S
	220	22×40	0.15	1.15	EKMS401VSN221MP40S
	220	25.4×30	0.15	1.13	EKMS401VSN221MQ30S
	270	22×45	0.15	1.29	EKMS401VSN271MP45S
	270	25.4×35	0.15	1.30	EKMS401VSN271MQ35S
	270	30×25	0.15	1.29	EKMS401VSN271MR25S
	330	22×50	0.15	1.47	EKMS401VSN331MP50S
	330	25.4×40	0.15	1.47	EKMS401VSN331MQ40S
	330	30×30	0.15	1.45	EKMS401VSN331MR30S
	330	35×25	0.15	1.52	EKMS401VSN331MA25S
	390	25.4×45	0.15	1.63	EKMS401VSN391MQ45S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Downsized snap-ins, 105℃

KMS Series Upgrade!

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	390	25.4×50	0.15	1.66	EKMS401VSN391MQ50S
	390	30×35	0.15	1.61	EKMS401VSN391MR35S
	470	30×40	0.15	1.82	EKMS401VSN471MR40S
	470	35×30	0.15	1.85	EKMS401VSN471MA30S
	560	30×45	0.15	2.04	EKMS401VSN561MR45S
	560	30×50	0.15	2.07	EKMS401VSN561MR50S
	560	35×35	0.15	2.05	EKMS401VSN561MA35S
	680	35×40	0.15	2.34	EKMS401VSN681MA40S
	680	35×45	0.15	2.40	EKMS401VSN681MA45S
	820	35×50	0.15	2.69	EKMS401VSN821MA50S
420	100	22×25	0.20	0.70	EKMS421VSN101MP25S
	120	22×30	0.20	0.81	EKMS421VSN121MP30S
	120	25.4×25	0.20	0.81	EKMS421VSN121MQ25S
	150	22×35	0.20	0.93	EKMS421VSN151MP35S
	180	22×40	0.20	1.04	EKMS421VSN181MP40S
	180	25.4×30	0.20	1.02	EKMS421VSN181MQ30S
	180	30×25	0.20	1.06	EKMS421VSN181MR25S
	220	22×45	0.20	1.17	EKMS421VSN221MP45S
	220	22×50	0.20	1.20	EKMS421VSN221MP50S
	220	25.4×35	0.20	1.18	EKMS421VSN221MQ35S
	220	30×30	0.20	1.18	EKMS421VSN221MR30S
	270	25.4×40	0.20	1.33	EKMS421VSN271MQ40S
	270	25.4×45	0.20	1.36	EKMS421VSN271MQ45S
	270	35×25	0.20	1.38	EKMS421VSN271MA25S
	330	25.4×50	0.20	1.52	EKMS421VSN331MQ50S
	330	30×35	0.20	1.48	EKMS421VSN331MR35S
	330	30×40	0.20	1.52	EKMS421VSN331MR40S
	330	35×30	0.20	1.55	EKMS421VSN331MA30S
	390	30×45	0.20	1.70	EKMS421VSN391MR45S
	390	35×35	0.20	1.71	EKMS421VSN391MA35S
	470	30×50	0.20	1.90	EKMS421VSN471MR50S
	470	35×40	0.20	1.95	EKMS421VSN471MA40S
	560	35×45	0.20	2.17	EKMS421VSN561MA45S
	680	35×50	0.20	2.45	EKMS421VSN681MA50S
450	82	22×25	0.20	0.64	EKMS451VSN820MP25S
	120	22×30	0.20	0.81	EKMS451VSN121MP30S
	120	22×35	0.20	0.83	EKMS451VSN121MP35S
	120	25.4×25	0.20	0.81	EKMS451VSN121MQ25S
	150	22×40	0.20	0.94	EKMS451VSN151MP40S
	150	25.4×30	0.20	0.93	EKMS451VSN151MQ30S
	180	22×45	0.20	1.06	EKMS451VSN181MP45S
	180	25.4×35	0.20	1.06	EKMS451VSN181MQ35S
	180	30×25	0.20	1.06	EKMS451VSN181MR25S
	220	22×50	0.20	1.20	EKMS451VSN221MP50S
	220	25.4×40	0.20	1.20	EKMS451VSN221MQ40S
	220	30×30	0.20	1.18	EKMS451VSN221MR30S
	220	35×25	0.20	1.24	EKMS451VSN221MA25S
	270	25.4×45	0.20	1.36	EKMS451VSN271MQ45S
	270	25.4×50	0.20	1.38	EKMS451VSN271MQ50S
	270	30×35	0.20	1.34	EKMS451VSN271MR35S
	270	35×30	0.20	1.40	EKMS451VSN271MA30S
	330	30×40	0.20	1.52	EKMS451VSN331MR40S
	390	30×45	0.20	1.70	EKMS451VSN391MR45S
	390	30×50	0.20	1.73	EKMS451VSN391MR50S
	390	35×35	0.20	1.71	EKMS451VSN391MA35S
	470	35×40	0.20	1.95	EKMS451VSN471MA40S
	470	35×45	0.20	1.99	EKMS451VSN471MA45S
	560	35×50	0.20	2.22	EKMS451VSN561MA50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
500	47	22×25	0.20	0.51	EKMS501VSN470MP25S
	56	22×30	0.20	0.58	EKMS501VSN560MP30S
	68	25.4×25	0.20	0.65	EKMS501VSN680MQ25S
	82	22×35	0.20	0.72	EKMS501VSN820MP35S
	82	25.4×30	0.20	0.74	EKMS501VSN820MQ30S
	100	22×45	0.20	0.83	EKMS501VSN101MP45S
	100	30×25	0.20	0.82	EKMS501VSN101MR25S
	120	22×50	0.20	0.93	EKMS501VSN121MP50S
	120	25.4×35	0.20	0.93	EKMS501VSN121MQ35S
	120	30×30	0.20	0.91	EKMS501VSN121MR30S
	150	25.4×45	0.20	1.08	EKMS501VSN151MQ45S
	150	30×35	0.20	1.04	EKMS501VSN151MR35S
	150	35×25	0.20	0.99	EKMS501VSN151MA25S
	180	25.4×50	0.20	1.20	EKMS501VSN181MQ50S
	180	30×40	0.20	1.17	EKMS501VSN181MR40S
	180	35×30	0.20	1.10	EKMS501VSN181MA30S
	220	30×45	0.20	1.33	EKMS501VSN221MR45S
	220	35×35	0.20	1.23	EKMS501VSN221MA35S
	270	30×50	0.20	1.50	EKMS501VSN271MR50S
	270	35×40	0.20	1.42	EKMS501VSN271MA40S
	330	35×45	0.20	1.60	EKMS501VSN331MA45S
	390	35×50	0.20	1.78	EKMS501VSN391MA50S
	470	35×60	0.20	2.03	EKMS501VSN471MA60S
550	82	22×35	0.20	0.72	EKMS551VSN820MP35S
	82	25.4×30	0.20	0.74	EKMS551VSN820MQ30S
	100	22×45	0.20	0.83	EKMS551VSN101MP45S
	100	25.4×35	0.20	0.85	EKMS551VSN101MQ35S
	100	30×25	0.20	0.82	EKMS551VSN101MR25S
	120	22×50	0.20	0.93	EKMS551VSN121MP50S
	120	25.4×40	0.20	0.95	EKMS551VSN121MQ40S
	120	30×30	0.20	0.91	EKMS551VSN121MR30S
	120	35×25	0.20	0.88	EKMS551VSN121MA25S
	150	25.4×45	0.20	1.08	EKMS551VSN151MQ45S
	150	30×35	0.20	1.04	EKMS551VSN151MR35S
	180	25.4×50	0.20	1.20	EKMS551VSN181MQ50S
	180	30×40	0.20	1.17	EKMS551VSN181MR40S
	180	35×30	0.20	1.10	EKMS551VSN181MA30S
	220	30×45	0.20	1.33	EKMS551VSN221MR45S
	220	35×35	0.20	1.23	EKMS551VSN221MA35S
	270	30×50	0.20	1.50	EKMS551VSN271MR50S
	270	35×40	0.20	1.42	EKMS551VSN271MA40S
	330	35×45	0.20	1.60	EKMS551VSN331MA45S
	330	35×50	0.20	1.64	EKMS551VSN331MA50S
	470	35×60	0.20	2.03	EKMS551VSN471MA60S
600	100	30×30	0.20	0.83	EKMS601VSN101MR30S
	100	35×25	0.20	0.85	EKMS601VSN101MA25S
	120	30×35	0.20	0.93	EKMS601VSN121MR35S
	150	30×40	0.20	1.07	EKMS601VSN151MR40S
	150	35×30	0.20	1.06	EKMS601VSN151MA30S
	180	30×45	0.20	1.20	EKMS601VSN181MR45S
	180	30×50	0.20	1.22	EKMS601VSN181MR50S
	180	35×35	0.20	1.18	EKMS601VSN181MA35S
	220	30×60	0.20	1.40	EKMS601VSN221MR60S
	220	35×40	0.20	1.35	EKMS601VSN221MA40S
	220	35×45	0.20	1.38	EKMS601VSN221MA45S
	270	35×50	0.20	1.56	EKMS601VSN271MA50S
	330	35×60	0.20	1.79	EKMS601VSN331MA60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43
500 to 600V_{dc}	0.70	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

KMM Series

- Longer life from KMQ series
- Endurance with ripple current : 2,000 to 3,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	160 to 450V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3$\sqrt{CV}$ Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	160 to 400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	160 to 400V	420 & 450V	
	Z(-25℃)/Z(+20℃)	4	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage)for 3,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ35)

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

KMM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
160	220	22×20	0.15	0.81	EKMM161VSN221MP20S
	270	25.4×20	0.15	0.98	EKMM161VSN271MQ20S
	330	22×25	0.15	1.20	EKMM161VSN331MP25S
	330	25.4×20	0.15	1.02	EKMM161VSN331MQ20S
	390	22×25	0.15	1.30	EKMM161VSN391MP25S
	390	25.4×25	0.15	1.26	EKMM161VSN391MQ25S
	390	30×20	0.15	1.25	EKMM161VSN391MR20S
	470	22×30	0.15	1.55	EKMM161VSN471MP30S
	470	25.4×25	0.15	1.55	EKMM161VSN471MQ25S
	470	30×20	0.15	1.30	EKMM161VSN471MR20S
	560	22×35	0.15	1.67	EKMM161VSN561MP35S
	560	25.4×30	0.15	1.67	EKMM161VSN561MQ30S
	560	30×25	0.15	1.67	EKMM161VSN561MR25S
	560	35×20	0.15	1.46	EKMM161VSN561MA20S
	680	22×40	0.15	1.82	EKMM161VSN681MP40S
	680	25.4×30	0.15	1.82	EKMM161VSN681MQ30S
	680	30×25	0.15	1.82	EKMM161VSN681MR25S
	680	35×20	0.15	1.51	EKMM161VSN681MA20S
	820	22×45	0.15	2.04	EKMM161VSN821MP45S
	820	25.4×35	0.15	2.04	EKMM161VSN821MQ35S
	820	30×30	0.15	2.04	EKMM161VSN821MR30S
	820	35×25	0.15	2.04	EKMM161VSN821MA25S
	1,000	22×50	0.15	2.25	EKMM161VSN102MP50S
	1,000	25.4×40	0.15	2.25	EKMM161VSN102MQ40S
	1,000	30×30	0.15	2.25	EKMM161VSN102MR30S
	1,000	35×25	0.15	2.25	EKMM161VSN102MA25S
	1,200	25.4×45	0.15	2.49	EKMM161VSN122MQ45S
	1,200	30×35	0.15	2.49	EKMM161VSN122MR35S
	1,200	35×30	0.15	2.49	EKMM161VSN122MA30S
	1,500	25.4×60	0.15	2.97	EKMM161VSN152MQ60S
	1,500	30×40	0.15	2.84	EKMM161VSN152MR40S
	1,500	35×30	0.15	2.84	EKMM161VSN152MA30S
	1,800	30×45	0.15	3.32	EKMM161VSN182MR45S
	1,800	35×35	0.15	3.00	EKMM161VSN182MA35S
	2,200	30×60	0.15	3.86	EKMM161VSN222MR60S
	2,200	35×45	0.15	3.50	EKMM161VSN222MA45S
	2,700	35×50	0.15	4.00	EKMM161VSN272MA50S
	3,300	35×60	0.15	4.63	EKMM161VSN332MA60S
180	180	22×20	0.15	0.80	EKMM181VSN181MP20S
	220	25.4×20	0.15	0.90	EKMM181VSN221MQ20S
	270	22×25	0.15	1.00	EKMM181VSN271MP25S
	270	25.4×20	0.15	0.95	EKMM181VSN271MQ20S
	330	22×25	0.15	1.20	EKMM181VSN331MP25S
	330	25.4×25	0.15	1.16	EKMM181VSN331MQ25S
	330	30×20	0.15	1.15	EKMM181VSN331MR20S
	390	22×30	0.15	1.35	EKMM181VSN391MP30S
	390	25.4×25	0.15	1.35	EKMM181VSN391MQ25S
	390	30×20	0.15	1.20	EKMM181VSN391MR20S
	470	22×35	0.15	1.50	EKMM181VSN471MP35S
	470	25.4×30	0.15	1.50	EKMM181VSN471MQ30S
	470	30×25	0.15	1.50	EKMM181VSN471MR25S
	470	35×20	0.15	1.36	EKMM181VSN471MA20S
	560	22×40	0.15	1.67	EKMM181VSN561MP40S
	560	25.4×30	0.15	1.67	EKMM181VSN561MQ30S
	560	30×25	0.15	1.67	EKMM181VSN561MR25S
	560	35×20	0.15	1.43	EKMM181VSN561MA20S
	680	22×45	0.15	1.78	EKMM181VSN681MP45S
	680	25.4×35	0.15	1.78	EKMM181VSN681MQ35S
	680	30×30	0.15	1.78	EKMM181VSN681MR30S
	680	35×25	0.15	1.83	EKMM181VSN681MA25S
	820	22×50	0.15	2.04	EKMM181VSN821MP50S
	820	25.4×40	0.15	2.04	EKMM181VSN821MQ40S
	820	30×30	0.15	2.04	EKMM181VSN821MR30S
	820	35×25	0.15	2.04	EKMM181VSN821MA25S
	1,000	25.4×45	0.15	2.30	EKMM181VSN102MQ45S
	1,000	30×35	0.15	2.30	EKMM181VSN102MR35S
	1,000	35×30	0.15	2.30	EKMM181VSN102MA30S
180	1,200	25.4×50	0.15	2.55	EKMM181VSN122MQ50S
	1,200	30×40	0.15	2.55	EKMM181VSN122MR40S
	1,200	35×30	0.15	2.55	EKMM181VSN122MA30S
	1,500	30×45	0.15	2.90	EKMM181VSN152MR45S
	1,500	35×35	0.15	2.90	EKMM181VSN152MA35S
	1,800	30×60	0.15	3.49	EKMM181VSN182MR60S
	1,800	35×40	0.15	3.30	EKMM181VSN182MA40S
	2,200	35×50	0.15	3.65	EKMM181VSN222MA50S
	2,700	35×60	0.15	4.19	EKMM181VSN272MA60S
200	150	22×20	0.15	0.73	EKMM201VSN151MP20S
	180	22×20	0.15	0.80	EKMM201VSN181MP20S
	220	25.4×20	0.15	0.85	EKMM201VSN221MQ20S
	270	22×25	0.15	1.10	EKMM201VSN271MP25S
	270	30×20	0.15	1.05	EKMM201VSN271MR20S
	330	22×30	0.15	1.25	EKMM201VSN331MP30S
	330	25.4×25	0.15	1.25	EKMM201VSN331MQ25S
	330	30×20	0.15	1.10	EKMM201VSN331MR20S
	390	22×30	0.15	1.35	EKMM201VSN391MP30S
	390	25.4×25	0.15	1.35	EKMM201VSN391MQ25S
	390	35×20	0.15	1.30	EKMM201VSN391MA20S
	470	22×35	0.15	1.50	EKMM201VSN471MP35S
	470	25.4×30	0.15	1.50	EKMM201VSN471MQ30S
	470	30×25	0.15	1.50	EKMM201VSN471MR25S
	470	35×20	0.15	1.41	EKMM201VSN471MA20S
	560	22×40	0.15	1.67	EKMM201VSN561MP40S
	560	25.4×30	0.15	1.67	EKMM201VSN561MQ30S
	560	30×25	0.15	1.67	EKMM201VSN561MR25S
	680	22×45	0.15	1.78	EKMM201VSN681MP45S
	680	25.4×35	0.15	1.78	EKMM201VSN681MQ35S
	680	30×30	0.15	1.78	EKMM201VSN681MR30S
	680	35×25	0.15	1.78	EKMM201VSN681MA25S
	820	25.4×45	0.15	2.04	EKMM201VSN821MQ45S
	820	30×30	0.15	2.04	EKMM201VSN821MR30S
	820	35×25	0.15	2.04	EKMM201VSN821MA25S
	1,000	25.4×50	0.15	2.30	EKMM201VSN102MQ50S
	1,000	30×35	0.15	2.30	EKMM201VSN102MR35S
	1,000	35×30	0.15	2.30	EKMM201VSN102MA30S
	1,200	25.4×60	0.15	2.66	EKMM201VSN122MQ60S
	1,200	30×40	0.15	2.65	EKMM201VSN122MR40S
	1,200	35×35	0.15	2.65	EKMM201VSN122MA35S
	1,500	30×50	0.15	3.08	EKMM201VSN152MR50S
	1,500	35×40	0.15	3.08	EKMM201VSN152MA40S
	1,800	30×60	0.15	3.49	EKMM201VSN182MR60S
	1,800	35×45	0.15	3.48	EKMM201VSN182MA45S
	2,200	35×50	0.15	3.78	EKMM201VSN222MA50S
220	150	22×20	0.15	0.67	EKMM221VSN151MP20S
	180	25.4×20	0.15	0.76	EKMM221VSN181MQ20S
	220	22×25	0.15	1.00	EKMM221VSN221MP25S
	220	25.4×20	0.15	0.84	EKMM221VSN221MQ20S
	270	22×30	0.15	1.15	EKMM221VSN271MP30S
	270	25.4×25	0.15	1.08	EKMM221VSN271MQ25S
	270	30×20	0.15	0.98	EKMM221VSN271MR20S
	330	22×35	0.15	1.25	EKMM221VSN331MP35S
	330	25.4×25	0.15	1.25	EKMM221VSN331MQ25S
	330	35×20	0.15	1.13	EKMM221VSN331MA20S
	390	22×35	0.15	1.40	EKMM221VSN391MP35S
	390	25.4×30	0.15	1.40	EKMM221VSN391MQ30S
	390	30×25	0.15	1.36	EKMM221VSN391MR25S
	390	35×20	0.15	1.23	EKMM221VSN391MA20S
	470	22×40	0.15	1.51	EKMM221VSN471MP40S
	470	25.4×35	0.15	1.54	EKMM221VSN471MQ35S
	470	30×25	0.15	1.50	EKMM221VSN471MR25S
	560	22×45	0.15	1.70	EKMM221VSN561MP45S
	560	25.4×40	0.15	1.72	EKMM221VSN561MQ40S
	560	30×30	0.15	1.70	EKMM221VSN561MR30S
	560	35×25	0.15	1.71	EKMM221VSN561MA25S
	680	25.4×45	0.15	1.94	EKMM221VSN681MQ45S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

KMM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
220	680	30×35	0.15	1.93	EKMM221VSN681MR35S
	680	35×25	0.15	1.89	EKMM221VSN681MA25S
	820	25.4×50	0.15	2.18	EKMM221VSN821MQ50S
	820	30×40	0.15	2.19	EKMM221VSN821MR40S
	820	35×30	0.15	2.16	EKMM221VSN821MA30S
	1,000	25.4×60	0.15	2.54	EKMM221VSN102MQ60S
	1,000	30×45	0.15	2.50	EKMM221VSN102MR45S
	1,000	35×35	0.15	2.44	EKMM221VSN102MA35S
	1,200	30×50	0.15	2.81	EKMM221VSN122MR50S
	1,200	35×40	0.15	2.79	EKMM221VSN122MA40S
	1,500	30×60	0.15	3.30	EKMM221VSN152MR60S
	1,500	35×45	0.15	3.22	EKMM221VSN152MA45S
	1,800	35×50	0.15	3.63	EKMM221VSN182MA50S
	2,200	35×60	0.15	4.23	EKMM221VSN222MA60S
250	120	22×20	0.15	0.60	EKMM251VSN121MP20S
	150	25.4×20	0.15	0.74	EKMM251VSN151MQ20S
	180	22×25	0.15	0.78	EKMM251VSN181MP25S
	180	25.4×20	0.15	0.75	EKMM251VSN181MQ20S
	220	22×25	0.15	1.00	EKMM251VSN221MP25S
	220	25.4×25	0.15	0.95	EKMM251VSN221MQ25S
	220	30×20	0.15	0.95	EKMM251VSN221MR20S
	270	22×30	0.15	1.18	EKMM251VSN271MP30S
	270	25.4×25	0.15	1.18	EKMM251VSN271MQ25S
	270	30×20	0.15	1.00	EKMM251VSN271MR20S
	330	22×35	0.15	1.30	EKMM251VSN331MP35S
	330	25.4×30	0.15	1.30	EKMM251VSN331MQ30S
	330	30×25	0.15	1.30	EKMM251VSN331MR25S
	330	35×20	0.15	1.16	EKMM251VSN331MA20S
	390	22×40	0.15	1.49	EKMM251VSN391MP40S
	390	25.4×35	0.15	1.49	EKMM251VSN391MQ35S
	390	30×25	0.15	1.49	EKMM251VSN391MR25S
	470	22×45	0.15	1.65	EKMM251VSN471MP45S
	470	25.4×35	0.15	1.65	EKMM251VSN471MQ35S
	470	30×30	0.15	1.65	EKMM251VSN471MR30S
	470	35×25	0.15	1.65	EKMM251VSN471MA25S
	560	22×50	0.15	1.67	EKMM251VSN561MP50S
	560	25.4×40	0.15	1.80	EKMM251VSN561MQ40S
	560	30×30	0.15	1.80	EKMM251VSN561MR30S
	560	35×25	0.15	1.80	EKMM251VSN561MA25S
	680	25.4×50	0.15	2.00	EKMM251VSN681MQ50S
	680	30×35	0.15	2.00	EKMM251VSN681MR35S
	680	35×30	0.15	2.00	EKMM251VSN681MA30S
	820	25.4×60	0.15	2.20	EKMM251VSN821MQ60S
	820	30×40	0.15	2.30	EKMM251VSN821MR40S
	820	35×35	0.15	2.30	EKMM251VSN821MA35S
	1,000	30×50	0.15	2.47	EKMM251VSN102MR50S
	1,000	35×40	0.15	2.47	EKMM251VSN102MA40S
	1,200	30×60	0.15	2.85	EKMM251VSN122MR60S
	1,200	35×45	0.15	2.60	EKMM251VSN122MA45S
	1,500	35×50	0.15	3.00	EKMM251VSN152MA50S
	1,800	35×60	0.15	3.42	EKMM251VSN182MA60S
315	68	22×20	0.15	0.45	EKMM3B1VSN680MP20S
	82	22×20	0.15	0.47	EKMM3B1VSN820MP20S
	100	22×25	0.15	0.61	EKMM3B1VSN101MP25S
	100	25.4×20	0.15	0.56	EKMM3B1VSN101MQ20S
	120	22×25	0.15	0.75	EKMM3B1VSN121MP25S
	120	25.4×20	0.15	0.62	EKMM3B1VSN121MQ20S
	120	30×20	0.15	0.65	EKMM3B1VSN121MR20S
	150	22×30	0.15	0.82	EKMM3B1VSN151MP30S
	150	25.4×25	0.15	0.82	EKMM3B1VSN151MQ25S
	150	30×20	0.15	0.70	EKMM3B1VSN151MR20S
	150	35×20	0.15	0.76	EKMM3B1VSN151MA20S
	180	22×35	0.15	0.92	EKMM3B1VSN181MP35S
	180	25.4×25	0.15	0.92	EKMM3B1VSN181MQ25S
	180	30×25	0.15	0.90	EKMM3B1VSN181MR25S
	180	35×20	0.15	0.85	EKMM3B1VSN181MA20S
	220	22×40	0.15	1.04	EKMM3B1VSN221MP40S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
315	220	25.4×30	0.15	1.04	EKMM3B1VSN221MQ30S
	220	30×25	0.15	1.04	EKMM3B1VSN221MR25S
	220	35×20	0.15	0.90	EKMM3B1VSN221MA20S
	270	22×45	0.15	1.16	EKMM3B1VSN271MP45S
	270	25.4×35	0.15	1.16	EKMM3B1VSN271MQ35S
	270	30×25	0.15	1.16	EKMM3B1VSN271MR25S
	270	35×25	0.15	1.15	EKMM3B1VSN271MA25S
	330	22×50	0.15	1.33	EKMM3B1VSN331MP50S
	330	25.4×40	0.15	1.33	EKMM3B1VSN331MQ40S
	330	30×30	0.15	1.33	EKMM3B1VSN331MR30S
	330	35×25	0.15	1.33	EKMM3B1VSN331MA25S
	390	25.4×45	0.15	1.47	EKMM3B1VSN391MQ45S
	390	30×35	0.15	1.47	EKMM3B1VSN391MR35S
	390	35×30	0.15	1.47	EKMM3B1VSN391MA30S
	470	25.4×50	0.15	1.70	EKMM3B1VSN471MQ50S
	470	30×40	0.15	1.70	EKMM3B1VSN471MR40S
	470	35×30	0.15	1.70	EKMM3B1VSN471MA30S
	560	30×45	0.15	2.05	EKMM3B1VSN561MR45S
	560	35×35	0.15	2.05	EKMM3B1VSN561MA35S
	680	30×50	0.15	2.17	EKMM3B1VSN681MR50S
	680	35×40	0.15	2.17	EKMM3B1VSN681MA40S
	820	35×45	0.15	2.20	EKMM3B1VSN821MA45S
	1,000	35×60	0.15	2.55	EKMM3B1VSN102MA60S
350	56	22×20	0.15	0.41	EKMM351VSN560MP20S
	68	25.4×20	0.15	0.46	EKMM351VSN680MQ20S
	82	22×25	0.15	0.55	EKMM351VSN820MP25S
	82	25.4×20	0.15	0.51	EKMM351VSN820MQ20S
	100	22×25	0.15	0.69	EKMM351VSN101MP25S
	100	30×20	0.15	0.60	EKMM351VSN101MR20S
	120	22×30	0.15	0.75	EKMM351VSN121MP30S
	120	25.4×25	0.15	0.75	EKMM351VSN121MQ25S
	120	30×20	0.15	0.65	EKMM351VSN121MR20S
	150	22×35	0.15	0.82	EKMM351VSN151MP35S
	150	25.4×30	0.15	0.83	EKMM351VSN151MQ30S
	150	30×25	0.15	0.82	EKMM351VSN151MR25S
	150	35×20	0.15	0.76	EKMM351VSN151MA20S
	180	22×40	0.15	0.92	EKMM351VSN181MP40S
	180	25.4×30	0.15	0.92	EKMM351VSN181MQ30S
	180	30×25	0.15	0.90	EKMM351VSN181MR25S
	220	22×45	0.15	1.05	EKMM351VSN221MP45S
	220	25.4×35	0.15	1.04	EKMM351VSN221MQ35S
	220	30×30	0.15	1.02	EKMM351VSN221MR30S
	220	35×25	0.15	1.04	EKMM351VSN221MA25S
	270	22×50	0.15	1.16	EKMM351VSN271MP50S
	270	25.4×40	0.15	1.18	EKMM351VSN271MQ40S
	270	30×30	0.15	1.17	EKMM351VSN271MR30S
	270	35×25	0.15	1.20	EKMM351VSN271MA25S
	330	25.4×45	0.15	1.29	EKMM351VSN331MQ45S
	330	30×35	0.15	1.34	EKMM351VSN331MR35S
	330	35×30	0.15	1.22	EKMM351VSN331MA30S
	390	25.4×50	0.15	1.51	EKMM351VSN391MQ50S
	390	30×40	0.15	1.51	EKMM351VSN391MR40S
	390	35×35	0.15	1.47	EKMM351VSN391MA35S
	470	25.4×60	0.15	1.66	EKMM351VSN471MQ60S
	470	30×45	0.15	1.65	EKMM351VSN471MR45S
	470	35×35	0.15	1.69	EKMM351VSN471MA35S
	560	30×50	0.15	1.85	EKMM351VSN561MR50S
	560	35×40	0.15	1.90	EKMM351VSN561MA40S
	680	30×60	0.15	2.15	EKMM351VSN681MR60S
	680	35×50	0.15	1.99	EKMM351VSN681MA50S
	820	35×60	0.15	2.31	EKMM351VSN821MA60S
400	47	22×20	0.15	0.37	EKMM401VSN470MP20S
	56	25.4×20	0.15	0.42	EKMM401VSN560MQ20S
	68	22×25	0.15	0.50	EKMM401VSN680MP25S
	68	25.4×20	0.15	0.46	EKMM401VSN680MQ20S
	82	22×25	0.15	0.64	EKMM401VSN820MP25S
	82	30×20	0.15	0.55	EKMM401VSN820MR20S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

KMM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	100	22×30	0.15	0.70	EKMM401VSN101MP30S
	100	25.4×25	0.15	0.70	EKMM401VSN101MQ25S
	100	30×20	0.15	0.60	EKMM401VSN101MR20S
	120	22×35	0.15	0.75	EKMM401VSN121MP35S
	120	25.4×25	0.15	0.75	EKMM401VSN121MQ25S
	120	30×25	0.15	0.73	EKMM401VSN121MR25S
	120	35×20	0.15	0.75	EKMM401VSN121MA20S
	150	22×40	0.15	0.88	EKMM401VSN151MP40S
	150	25.4×30	0.15	0.88	EKMM401VSN151MQ30S
	150	30×25	0.15	0.88	EKMM401VSN151MR25S
	150	35×20	0.15	0.80	EKMM401VSN151MA20S
	180	22×45	0.15	0.98	EKMM401VSN181MP45S
	180	25.4×35	0.15	0.98	EKMM401VSN181MQ35S
	180	30×30	0.15	0.98	EKMM401VSN181MR30S
	180	35×25	0.15	0.98	EKMM401VSN181MA25S
	220	22×50	0.15	1.10	EKMM401VSN221MP50S
	220	25.4×40	0.15	1.10	EKMM401VSN221MQ40S
	220	30×30	0.15	1.10	EKMM401VSN221MR30S
	220	35×25	0.15	1.10	EKMM401VSN221MA25S
	270	25.4×45	0.15	1.22	EKMM401VSN271MQ45S
	270	30×35	0.15	1.22	EKMM401VSN271MR35S
	270	35×30	0.15	1.22	EKMM401VSN271MA30S
	330	25.4×50	0.15	1.44	EKMM401VSN331MQ50S
	330	30×40	0.15	1.44	EKMM401VSN331MR40S
	330	35×30	0.15	1.44	EKMM401VSN331MA30S
	390	25.4×60	0.15	1.51	EKMM401VSN391MQ60S
	390	30×45	0.15	1.60	EKMM401VSN391MR45S
	390	35×35	0.15	1.60	EKMM401VSN391MA35S
	470	30×50	0.15	1.90	EKMM401VSN471MR50S
	470	35×40	0.15	1.90	EKMM401VSN471MA40S
	560	30×60	0.15	2.10	EKMM401VSN561MR60S
	560	35×45	0.15	2.12	EKMM401VSN561MA45S
	680	35×60	0.15	2.27	EKMM401VSN681MA60S
420	47	22×20	0.20	0.37	EKMM421VSN470MP20S
	56	25.4×20	0.20	0.42	EKMM421VSN560MQ20S
	68	22×25	0.20	0.50	EKMM421VSN680MP25S
	68	25.4×20	0.20	0.46	EKMM421VSN680MQ20S
	82	22×25	0.20	0.64	EKMM421VSN820MP25S
	82	25.4×25	0.20	0.58	EKMM421VSN820MQ25S
	82	30×20	0.20	0.53	EKMM421VSN820MR20S
	100	22×30	0.20	0.70	EKMM421VSN101MP30S
	100	25.4×25	0.20	0.70	EKMM421VSN101MQ25S
	100	30×20	0.20	0.59	EKMM421VSN101MR20S
	120	22×35	0.20	0.75	EKMM421VSN121MP35S
	120	25.4×30	0.20	0.75	EKMM421VSN121MQ30S
	120	30×25	0.20	0.73	EKMM421VSN121MR25S
	120	35×20	0.20	0.67	EKMM421VSN121MA20S
	150	22×40	0.20	0.88	EKMM421VSN151MP40S
	150	25.4×35	0.20	0.88	EKMM421VSN151MQ35S
	150	30×25	0.20	0.88	EKMM421VSN151MR25S
	180	22×45	0.20	0.95	EKMM421VSN181MP45S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
420	180	25.4×35	0.20	0.95	EKMM421VSN181MQ35S
	180	30×30	0.20	0.95	EKMM421VSN181MR30S
	180	35×25	0.20	0.94	EKMM421VSN181MA25S
	220	22×50	0.20	1.10	EKMM421VSN221MP50S
	220	25.4×45	0.20	1.10	EKMM421VSN221MQ45S
	220	30×35	0.20	1.10	EKMM421VSN221MR35S
	220	35×25	0.20	1.10	EKMM421VSN221MA25S
	270	25.4×50	0.20	1.22	EKMM421VSN271MQ50S
	270	30×40	0.20	1.22	EKMM421VSN271MR40S
	270	35×30	0.20	1.22	EKMM421VSN271MA30S
	330	25.4×60	0.20	1.41	EKMM421VSN331MQ60S
	330	30×45	0.20	1.45	EKMM421VSN331MR45S
	330	35×35	0.20	1.45	EKMM421VSN331MA35S
	390	30×50	0.20	1.55	EKMM421VSN391MR50S
	390	35×40	0.20	1.55	EKMM421VSN391MA40S
	470	30×60	0.20	1.79	EKMM421VSN471MR60S
	470	35×45	0.20	1.90	EKMM421VSN471MA45S
	560	35×50	0.20	2.15	EKMM421VSN561MA50S
	680	35×60	0.20	2.27	EKMM421VSN681MA60S
450	56	22×25	0.20	0.40	EKMM451VSN560MP25S
	68	22×30	0.20	0.53	EKMM451VSN680MP30S
	68	25.4×25	0.20	0.50	EKMM451VSN680MQ25S
	82	22×30	0.20	0.64	EKMM451VSN820MP30S
	82	25.4×25	0.20	0.64	EKMM451VSN820MQ25S
	100	22×35	0.20	0.69	EKMM451VSN101MP35S
	100	25.4×30	0.20	0.69	EKMM451VSN101MQ30S
	100	30×25	0.20	0.64	EKMM451VSN101MR25S
	120	22×40	0.20	0.80	EKMM451VSN121MP40S
	120	25.4×30	0.20	0.80	EKMM451VSN121MQ30S
	120	30×25	0.20	0.80	EKMM451VSN121MR25S
	120	35×25	0.20	0.73	EKMM451VSN121MA25S
	150	22×45	0.20	0.88	EKMM451VSN151MP45S
	150	25.4×35	0.20	0.88	EKMM451VSN151MQ35S
	150	30×30	0.20	0.88	EKMM451VSN151MR30S
	150	35×25	0.20	0.75	EKMM451VSN151MA25S
	180	22×50	0.20	1.00	EKMM451VSN181MP50S
	180	25.4×40	0.20	1.00	EKMM451VSN181MQ40S
	180	30×30	0.20	1.00	EKMM451VSN181MR30S
	220	25.4×45	0.20	1.12	EKMM451VSN221MQ45S
	220	30×35	0.20	1.12	EKMM451VSN221MR35S
	220	35×30	0.20	1.12	EKMM451VSN221MA30S
	270	25.4×60	0.20	1.18	EKMM451VSN271MQ60S
	270	30×40	0.20	1.28	EKMM451VSN271MR40S
	270	35×35	0.20	1.28	EKMM451VSN271MA35S
	330	30×50	0.20	1.45	EKMM451VSN331MR50S
	330	35×40	0.20	1.45	EKMM451VSN331MA40S
	390	30×60	0.20	1.51	EKMM451VSN391MR60S
	390	35×40	0.20	1.55	EKMM451VSN391MA40S
	470	35×50	0.20	1.85	EKMM451VSN471MA50S
	560	35×60	0.20	1.91	EKMM451VSN561MA60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 85℃

SMH Series

- Endurance with ripple current : 2,000 hours at 85℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPACIFICATIONS

Items	Characteristics										
Category Temperature Range	-40 to +85℃										
Rated Voltage Range	6.3 to 100Vdc										
Capacitance Tolerance	±20% (M)										(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 3mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)										(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.15	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	Z(-25℃)/Z(+20℃)	4	4	4	3	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	15	15	15	10	8	6	6	5	5	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃.										
	Capacitance change	≦±20% of the initial value									
	D.F. (tan δ)	≦200% of the initial specified value									
	Leakage current	≦The initial specified value									
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.										
	Capacitance change	≦±20% of the initial value									
	D.F. (tan δ)	≦150% of the initial specified value									
	Leakage current	≦The initial specified value									

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 85℃

SMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
6.3	15,000	22×25	0.60	2.44	ESMH6R3VSN153MP25S
	18,000	22×30	0.60	2.67	ESMH6R3VSN183MP30S
	18,000	25.4×25	0.60	2.70	ESMH6R3VSN183MQ25S
	22,000	22×30	0.60	3.06	ESMH6R3VSN223MP30S
	22,000	25.4×25	0.60	3.07	ESMH6R3VSN223MQ25S
	27,000	22×35	0.60	3.49	ESMH6R3VSN273MP35S
	27,000	25.4×30	0.60	3.52	ESMH6R3VSN273MQ30S
	27,000	30×25	0.60	3.57	ESMH6R3VSN273MR25S
	33,000	22×40	0.60	3.97	ESMH6R3VSN333MP40S
	33,000	25.4×35	0.60	4.02	ESMH6R3VSN333MQ35S
	33,000	30×25	0.60	3.95	ESMH6R3VSN333MR25S
	39,000	22×50	0.60	4.55	ESMH6R3VSN393MP50S
	39,000	25.4×40	0.60	4.50	ESMH6R3VSN393MQ40S
	39,000	30×30	0.60	4.45	ESMH6R3VSN393MR30S
	39,000	35×25	0.60	4.51	ESMH6R3VSN393MA25S
	47,000	25.4×45	0.60	5.09	ESMH6R3VSN473MQ45S
	47,000	30×35	0.60	5.06	ESMH6R3VSN473MR35S
	47,000	35×30	0.60	5.01	ESMH6R3VSN473MA30S
	56,000	25.4×50	0.60	5.71	ESMH6R3VSN563MQ50S
	56,000	30×40	0.60	5.70	ESMH6R3VSN563MR40S
	56,000	35×30	0.60	5.77	ESMH6R3VSN563MA30S
	68,000	30×45	0.60	6.48	ESMH6R3VSN683MR45S
	68,000	35×35	0.60	6.42	ESMH6R3VSN683MA35S
	82,000	30×50	0.60	7.32	ESMH6R3VSN823MR50S
	82,000	35×40	0.60	7.29	ESMH6R3VSN823MA40S
	100,000	35×45	0.60	8.31	ESMH6R3VSN104MA45S
10	12,000	22×25	0.50	2.39	ESMH100VSN123MP25S
	15,000	22×30	0.50	2.76	ESMH100VSN153MP30S
	15,000	25.4×25	0.50	2.77	ESMH100VSN153MQ25S
	18,000	22×35	0.50	3.12	ESMH100VSN183MP35S
	18,000	25.4×25	0.50	3.04	ESMH100VSN183MQ25S
	22,000	22×40	0.50	3.55	ESMH100VSN223MP40S
	22,000	25.4×30	0.50	3.48	ESMH100VSN223MQ30S
	22,000	30×25	0.50	3.53	ESMH100VSN223MR25S
	27,000	22×45	0.50	4.04	ESMH100VSN273MP45S
	27,000	25.4×35	0.50	3.98	ESMH100VSN273MQ35S
	27,000	30×30	0.50	3.73	ESMH100VSN273MR30S
	27,000	35×25	0.50	3.73	ESMH100VSN273MA25S
	33,000	22×50	0.50	4.58	ESMH100VSN333MP50S
	33,000	25.4×40	0.50	4.54	ESMH100VSN333MQ40S
	33,000	30×30	0.50	4.13	ESMH100VSN333MR30S
	33,000	35×25	0.50	4.13	ESMH100VSN333MA25S
	39,000	25.4×45	0.50	5.08	ESMH100VSN393MQ45S
	39,000	30×35	0.50	5.05	ESMH100VSN393MR35S
	39,000	35×30	0.50	4.80	ESMH100VSN393MA30S
	47,000	25.4×50	0.50	5.73	ESMH100VSN473MQ50S
	47,000	30×40	0.50	5.72	ESMH100VSN473MR40S
	47,000	35×30	0.50	5.27	ESMH100VSN473MA30S
	56,000	30×45	0.50	6.44	ESMH100VSN563MR45S
	56,000	35×35	0.50	6.38	ESMH100VSN563MA35S
	68,000	30×50	0.50	7.27	ESMH100VSN683MR50S
	68,000	35×40	0.50	7.27	ESMH100VSN683MA40S
	82,000	35×50	0.50	8.49	ESMH100VSN823MA50S
16	8,200	22×25	0.40	2.51	ESMH160VSN822MP25S
	10,000	22×25	0.40	2.77	ESMH160VSN103MP25S
	12,000	22×30	0.40	2.86	ESMH160VSN123MP30S
	12,000	25.4×25	0.40	2.95	ESMH160VSN123MQ25S
	15,000	22×35	0.40	3.29	ESMH160VSN153MP35S
	15,000	25.4×30	0.40	3.46	ESMH160VSN153MQ30S
	15,000	30×25	0.40	3.66	ESMH160VSN153MR25S
	18,000	22×40	0.40	3.72	ESMH160VSN183MP40S
	18,000	25.4×35	0.40	3.98	ESMH160VSN183MQ35S
	18,000	30×25	0.40	4.00	ESMH160VSN183MR25S
	22,000	22×50	0.40	4.37	ESMH160VSN223MP50S
	22,000	25.4×40	0.40	4.26	ESMH160VSN223MQ40S
	22,000	30×30	0.40	4.21	ESMH160VSN223MR30S
	22,000	35×25	0.40	4.15	ESMH160VSN223MA25S
16	27,000	25.4×45	0.40	4.72	ESMH160VSN273MQ45S
	27,000	30×35	0.40	4.82	ESMH160VSN273MR35S
	27,000	35×30	0.40	4.65	ESMH160VSN273MA30S
	33,000	25.4×50	0.40	5.33	ESMH160VSN333MQ50S
	33,000	30×40	0.40	5.36	ESMH160VSN333MR40S
	33,000	35×30	0.40	5.15	ESMH160VSN333MA30S
	39,000	30×45	0.40	6.01	ESMH160VSN393MR45S
	39,000	35×35	0.40	5.95	ESMH160VSN393MA35S
	47,000	30×50	0.40	6.79	ESMH160VSN473MR50S
	47,000	35×40	0.40	6.76	ESMH160VSN473MA40S
	56,000	35×45	0.40	7.62	ESMH160VSN563MA45S
	68,000	35×50	0.40	8.63	ESMH160VSN683MA50S
25	5,600	22×25	0.30	2.21	ESMH250VSN562MP25S
	6,800	22×30	0.30	2.40	ESMH250VSN682MP30S
	6,800	25.4×25	0.30	2.56	ESMH250VSN682MQ25S
	8,200	22×35	0.30	2.72	ESMH250VSN822MP35S
	8,200	25.4×25	0.30	2.80	ESMH250VSN822MQ25S
	10,000	22×40	0.30	3.09	ESMH250VSN103MP40S
	10,000	25.4×30	0.30	3.12	ESMH250VSN103MQ30S
	10,000	30×25	0.30	3.21	ESMH250VSN103MR25S
	12,000	22×45	0.30	3.48	ESMH250VSN123MP45S
	12,000	25.4×35	0.30	3.43	ESMH250VSN123MQ35S
	12,000	30×30	0.30	3.86	ESMH250VSN123MR30S
	12,000	35×25	0.30	3.54	ESMH250VSN123MA25S
	15,000	22×50	0.30	4.00	ESMH250VSN153MP50S
	15,000	25.4×40	0.30	3.95	ESMH250VSN153MQ40S
	15,000	30×30	0.30	4.00	ESMH250VSN153MR30S
	15,000	35×25	0.30	3.95	ESMH250VSN153MA25S
	18,000	25.4×45	0.30	4.45	ESMH250VSN183MQ45S
	18,000	30×35	0.30	4.46	ESMH250VSN183MR35S
	18,000	35×30	0.30	4.63	ESMH250VSN183MA30S
	22,000	25.4×50	0.30	5.02	ESMH250VSN223MQ50S
	22,000	30×45	0.30	5.21	ESMH250VSN223MR45S
	22,000	35×35	0.30	5.16	ESMH250VSN223MA35S
	27,000	30×50	0.30	5.94	ESMH250VSN273MR50S
	27,000	35×40	0.30	5.92	ESMH250VSN273MA40S
	33,000	35×45	0.30	6.75	ESMH250VSN333MA45S
	39,000	35×50	0.30	7.56	ESMH250VSN393MA50S
35	3,900	22×25	0.25	2.22	ESMH350VSN392MP25S
	4,700	22×30	0.25	2.41	ESMH350VSN472MP30S
	4,700	25.4×25	0.25	2.42	ESMH350VSN472MQ25S
	5,600	22×35	0.25	2.75	ESMH350VSN562MP35S
	5,600	25.4×25	0.25	2.64	ESMH350VSN562MQ25S
	6,800	22×40	0.25	2.80	ESMH350VSN682MP40S
	6,800	25.4×30	0.25	2.74	ESMH350VSN682MQ30S
	6,800	30×25	0.25	2.97	ESMH350VSN682MR25S
	8,200	22×45	0.25	3.47	ESMH350VSN822MP45S
	8,200	25.4×35	0.25	3.10	ESMH350VSN822MQ35S
	8,200	30×30	0.25	3.13	ESMH350VSN822MR30S
	8,200	35×25	0.25	2.73	ESMH350VSN822MA25S
	10,000	22×50	0.25	3.57	ESMH350VSN103MP50S
	10,000	25.4×40	0.25	3.53	ESMH350VSN103MQ40S
	10,000	30×30	0.25	3.46	ESMH350VSN103MR30S
	10,000	35×25	0.25	3.02	ESMH350VSN103MA25S
	12,000	25.4×45	0.25	3.98	ESMH350VSN123MQ45S
	12,000	30×35	0.25	4.01	ESMH350VSN123MR35S
	12,000	35×30	0.25	4.42	ESMH350VSN123MA30S
	15,000	25.4×50	0.25	4.54	ESMH350VSN153MQ50S
	15,000	30×40	0.25	4.52	ESMH350VSN153MR40S
	15,000	35×35	0.25	5.01	ESMH350VSN153MA35S
	18,000	30×45	0.25	4.71	ESMH350VSN183MR45S
	18,000	35×40	0.25	5.54	ESMH350VSN183MA40S
	22,000	30×50	0.25	5.33	ESMH350VSN223MR50S
	22,000	35×45	0.25	6.04	ESMH350VSN223MA45S
	27,000	35×50	0.25	6.89	ESMH350VSN273MA50S
50	2,200	22×25	0.20	1.91	ESMH500VSN222MP25S
	3,300	22×30	0.20	2.37	ESMH500VSN332MP30S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 85℃

SMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
50	3,300	25.4×25	0.20	2.38	ESMH500VSN332MQ25S
	3,900	22×35	0.20	2.65	ESMH500VSN392MP35S
	3,900	25.4×30	0.20	2.68	ESMH500VSN392MQ30S
	3,900	30×25	0.20	2.55	ESMH500VSN392MR25S
	4,700	22×40	0.20	2.99	ESMH500VSN472MP40S
	4,700	25.4×35	0.20	3.03	ESMH500VSN472MQ35S
	4,700	30×25	0.20	2.81	ESMH500VSN472MR25S
	5,600	22×45	0.20	3.36	ESMH500VSN562MP45S
	5,600	25.4×35	0.20	3.31	ESMH500VSN562MQ35S
	5,600	30×30	0.20	3.37	ESMH500VSN562MR30S
	5,600	35×25	0.20	3.42	ESMH500VSN562MA25S
	6,800	22×50	0.20	3.81	ESMH500VSN682MP50S
	6,800	25.4×40	0.20	3.81	ESMH500VSN682MQ40S
	6,800	30×35	0.20	3.85	ESMH500VSN682MR35S
	6,800	35×30	0.20	3.85	ESMH500VSN682MA30S
	8,200	25.4×50	0.20	4.37	ESMH500VSN822MQ50S
	8,200	30×40	0.20	4.36	ESMH500VSN822MR40S
	8,200	35×30	0.20	4.41	ESMH500VSN822MA30S
	10,000	30×45	0.20	4.97	ESMH500VSN103MR45S
	10,000	35×35	0.20	4.92	ESMH500VSN103MA35S
	12,000	30×50	0.20	5.60	ESMH500VSN123MR50S
	12,000	35×40	0.20	5.58	ESMH500VSN123MA40S
	15,000	35×45	0.20	6.44	ESMH500VSN153MA45S
	18,000	35×50	0.20	6.71	ESMH500VSN183MA50S
63	1,800	22×25	0.15	1.82	ESMH630VSN182MP25S
	2,200	22×30	0.15	2.31	ESMH630VSN222MP30S
	2,200	25.4×25	0.15	2.30	ESMH630VSN222MQ25S
	2,700	22×35	0.15	2.40	ESMH630VSN272MP35S
	2,700	25.4×25	0.15	2.40	ESMH630VSN272MQ25S
	3,300	22×35	0.15	2.62	ESMH630VSN332MP35S
	3,300	25.4×30	0.15	2.64	ESMH630VSN332MQ30S
	3,300	30×25	0.15	2.78	ESMH630VSN332MR25S
	3,900	22×40	0.15	2.93	ESMH630VSN392MP40S
	3,900	25.4×35	0.15	2.97	ESMH630VSN392MQ35S
	3,900	30×30	0.15	3.00	ESMH630VSN392MR30S
	3,900	35×25	0.15	3.00	ESMH630VSN392MA25S
	4,700	22×50	0.15	3.39	ESMH630VSN472MP50S
	4,700	25.4×40	0.15	3.36	ESMH630VSN472MQ40S
	4,700	30×30	0.15	3.32	ESMH630VSN472MR30S
	4,700	35×25	0.15	3.36	ESMH630VSN472MA25S
	5,600	25.4×45	0.15	3.77	ESMH630VSN562MQ45S
	5,600	30×35	0.15	3.75	ESMH630VSN562MR35S
	5,600	35×30	0.15	3.76	ESMH630VSN562MA30S
	6,800	25.4×50	0.15	4.27	ESMH630VSN682MQ50S
	6,800	30×40	0.15	4.27	ESMH630VSN682MR40S
	6,800	35×30	0.15	4.15	ESMH630VSN682MA30S
	8,200	30×45	0.15	4.83	ESMH630VSN822MR45S
	8,200	35×35	0.15	4.79	ESMH630VSN822MA35S
	10,000	30×50	0.15	5.49	ESMH630VSN103MR50S
	10,000	35×40	0.15	5.47	ESMH630VSN103MA40S
	12,000	35×45	0.15	6.19	ESMH630VSN123MA45S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
80	1,200	22×25	0.15	1.69	ESMH800VSN122MP25S
	1,500	22×25	0.15	1.88	ESMH800VSN152MP25S
	1,800	22×30	0.15	2.14	ESMH800VSN182MP30S
	1,800	25.4×25	0.15	2.26	ESMH800VSN182MQ25S
	2,200	22×35	0.15	2.44	ESMH800VSN222MP35S
	2,200	25.4×30	0.15	2.46	ESMH800VSN222MQ30S
	2,200	30×25	0.15	2.49	ESMH800VSN222MR25S
	2,700	22×40	0.15	2.78	ESMH800VSN272MP40S
	2,700	25.4×35	0.15	2.81	ESMH800VSN272MQ35S
	2,700	30×25	0.15	2.75	ESMH800VSN272MR25S
	3,300	22×45	0.15	3.16	ESMH800VSN332MP45S
	3,300	25.4×40	0.15	3.21	ESMH800VSN332MQ40S
	3,300	30×30	0.15	3.17	ESMH800VSN332MR30S
	3,300	35×25	0.15	3.21	ESMH800VSN332MA25S
	3,900	22×50	0.15	3.52	ESMH800VSN392MP50S
	3,900	25.4×45	0.15	3.59	ESMH800VSN392MQ45S
	3,900	30×35	0.15	3.57	ESMH800VSN392MR35S
	3,900	35×25	0.15	3.50	ESMH800VSN392MA25S
	4,700	25.4×50	0.15	4.05	ESMH800VSN472MQ50S
	4,700	30×40	0.15	4.05	ESMH800VSN472MR40S
	4,700	35×30	0.15	4.09	ESMH800VSN472MA30S
	5,600	30×45	0.15	4.55	ESMH800VSN562MR45S
	5,600	35×35	0.15	4.51	ESMH800VSN562MA35S
	6,800	30×50	0.15	5.16	ESMH800VSN682MR50S
	6,800	35×40	0.15	5.14	ESMH800VSN682MA40S
	8,200	35×45	0.15	5.83	ESMH800VSN822MA45S
	10,000	35×50	0.15	6.63	ESMH800VSN103MA50S
100	820	22×25	0.15	1.86	ESMH101VSN821MP25S
	1,200	22×30	0.15	2.09	ESMH101VSN122MP30S
	1,200	25.4×25	0.15	2.10	ESMH101VSN122MQ25S
	1,500	22×35	0.15	2.41	ESMH101VSN152MP35S
	1,500	25.4×30	0.15	2.43	ESMH101VSN152MQ30S
	1,500	30×25	0.15	2.46	ESMH101VSN152MR25S
	1,800	22×40	0.15	2.71	ESMH101VSN182MP40S
	1,800	25.4×35	0.15	2.75	ESMH101VSN182MQ35S
	1,800	30×25	0.15	2.72	ESMH101VSN182MR25S
	2,200	22×45	0.15	3.08	ESMH101VSN222MP45S
	2,200	25.4×40	0.15	3.13	ESMH101VSN222MQ40S
	2,200	30×30	0.15	3.09	ESMH101VSN222MR30S
	2,200	35×25	0.15	3.14	ESMH101VSN222MA25S
	2,700	22×50	0.15	3.53	ESMH101VSN272MP50S
	2,700	25.4×45	0.15	3.57	ESMH101VSN272MQ45S
	2,700	30×35	0.15	3.55	ESMH101VSN272MR35S
	2,700	35×30	0.15	3.71	ESMH101VSN272MA30S
	3,300	25.4×50	0.15	4.06	ESMH101VSN332MQ50S
	3,300	30×40	0.15	4.05	ESMH101VSN332MR40S
	3,300	35×30	0.15	4.05	ESMH101VSN332MA30S
	3,900	30×45	0.15	4.54	ESMH101VSN392MR45S
	3,900	35×35	0.15	4.49	ESMH101VSN392MA35S
	4,700	30×50	0.15	5.13	ESMH101VSN472MR50S
	4,700	35×40	0.15	5.11	ESMH101VSN472MA40S
	5,600	35×45	0.15	5.75	ESMH101VSN562MA45S
	6,800	35×50	0.15	6.50	ESMH101VSN682MA50S

*For the rated voltage≧160V_{dc}, please use SMQ series

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
6.3 to 50V_{dc}	0.95	1.00	1.03	1.05	1.08	1.08
63 to 100V_{dc}	0.92	1.00	1.07	1.13	1.19	1.20

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 105℃

KMH Series

- Endurance with ripple current : 2,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics										
Category Temperature Range	-40 to +105℃										
Rated Voltage Range	6.3 to 100Vdc										
Capacitance Tolerance	±20% (M)										(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 3mA, whichever is smaller Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)										(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.15	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	Z(-25℃)/Z(+20℃)	4	4	4	3	3	2	2	2	2	
	Z(-45℃)/Z(+20℃)	15	15	15	10	8	6	6	5	5	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃										
	Capacitance change	≦±20% of the initial value									
	D.F. (tan δ)	≦200% of the initial specified value									
	Leakage current	≦The initial specified value									
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.										
	Capacitance change	≦±20% of the initial value									
	D.F. (tan δ)	≦150% of the initial specified value									
	Leakage current	≦The initial specified value									

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 105℃

KMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
6.3	12,000	22×25	0.60	1.54	EKMH6R3VSN123MP25S
	15,000	22×25	0.60	1.72	EKMH6R3VSN153MP25S
	18,000	22×30	0.60	1.95	EKMH6R3VSN183MP30S
	18,000	25.4×25	0.60	1.96	EKMH6R3VSN183MQ25S
	22,000	22×35	0.60	2.23	EKMH6R3VSN223MP35S
	22,000	25.4×30	0.60	2.25	EKMH6R3VSN223MQ30S
	22,000	30×25	0.60	2.28	EKMH6R3VSN223MR25S
	27,000	22×40	0.60	2.54	EKMH6R3VSN273MP40S
	27,000	25.4×35	0.60	2.57	EKMH6R3VSN273MQ35S
	27,000	30×25	0.60	2.52	EKMH6R3VSN273MR25S
	33,000	22×45	0.60	2.88	EKMH6R3VSN333MP45S
	33,000	25.4×40	0.60	2.93	EKMH6R3VSN333MQ40S
	33,000	30×30	0.60	2.89	EKMH6R3VSN333MR30S
	33,000	35×25	0.60	2.93	EKMH6R3VSN333MA25S
	39,000	25.4×40	0.60	3.18	EKMH6R3VSN393MQ40S
	39,000	30×35	0.60	3.26	EKMH6R3VSN393MR35S
	39,000	35×30	0.60	3.40	EKMH6R3VSN393MA30S
	47,000	25.4×50	0.60	3.69	EKMH6R3VSN473MQ50S
	47,000	30×40	0.60	3.69	EKMH6R3VSN473MR40S
	47,000	35×30	0.60	3.73	EKMH6R3VSN473MA30S
	56,000	30×45	0.60	4.16	EKMH6R3VSN563MR45S
	56,000	35×35	0.60	4.12	EKMH6R3VSN563MA35S
	68,000	30×50	0.60	4.71	EKMH6R3VSN683MR50S
	68,000	35×40	0.60	4.69	EKMH6R3VSN683MA40S
	82,000	35×45	0.60	5.32	EKMH6R3VSN823MA45S
10	10,000	22×25	0.50	1.55	EKMH100VSN103MP25S
	12,000	22×30	0.50	1.77	EKMH100VSN123MP30S
	15,000	22×30	0.50	1.97	EKMH100VSN153MP30S
	15,000	25.4×25	0.50	1.96	EKMH100VSN153MQ25S
	18,000	22×35	0.50	2.21	EKMH100VSN183MP35S
	18,000	25.4×30	0.50	2.23	EKMH100VSN183MQ30S
	22,000	22×40	0.50	2.51	EKMH100VSN223MP40S
	22,000	25.4×35	0.50	2.54	EKMH100VSN223MQ35S
	22,000	30×25	0.50	2.40	EKMH100VSN223MR25S
	27,000	22×50	0.50	2.93	EKMH100VSN273MP50S
	27,000	25.4×40	0.50	2.90	EKMH100VSN273MQ40S
	27,000	30×30	0.50	2.87	EKMH100VSN273MR30S
	27,000	35×25	0.50	2.73	EKMH100VSN273MA25S
	33,000	25.4×45	0.50	3.30	EKMH100VSN333MQ45S
	33,000	30×35	0.50	3.28	EKMH100VSN333MR35S
	33,000	35×30	0.50	3.16	EKMH100VSN333MA30S
	39,000	25.4×50	0.50	3.68	EKMH100VSN393MQ50S
	39,000	30×40	0.50	3.69	EKMH100VSN393MR40S
	39,000	35×30	0.50	3.43	EKMH100VSN393MA30S
	47,000	30×45	0.50	4.17	EKMH100VSN473MR45S
	47,000	35×35	0.50	3.76	EKMH100VSN473MA35S
	56,000	30×50	0.50	4.68	EKMH100VSN563MR50S
	56,000	35×40	0.50	4.67	EKMH100VSN563MA40S
	68,000	35×50	0.50	5.46	EKMH100VSN683MA50S
16	6,800	22×25	0.40	1.57	EKMH160VSN682MP25S
	10,000	22×30	0.40	1.97	EKMH160VSN103MP30S
	10,000	25.4×25	0.40	1.97	EKMH160VSN103MQ25S
	12,000	22×35	0.40	2.22	EKMH160VSN123MP35S
	12,000	25.4×30	0.40	2.24	EKMH160VSN123MQ30S
	12,000	30×25	0.40	2.45	EKMH160VSN123MR25S
	15,000	22×40	0.40	2.55	EKMH160VSN153MP40S
	15,000	25.4×35	0.40	2.58	EKMH160VSN153MQ35S
	15,000	30×25	0.40	2.52	EKMH160VSN153MR25S
	18,000	22×45	0.40	2.87	EKMH160VSN183MP45S
	18,000	25.4×40	0.40	2.92	EKMH160VSN183MQ40S
	18,000	30×30	0.40	2.88	EKMH160VSN183MR30S
	18,000	35×25	0.40	2.92	EKMH160VSN183MA25S
	22,000	25.4×45	0.40	3.32	EKMH160VSN223MQ45S
	22,000	30×35	0.40	3.29	EKMH160VSN223MR35S
	22,000	35×25	0.40	3.23	EKMH160VSN223MA25S
	27,000	25.4×50	0.40	3.78	EKMH160VSN273MQ50S
	27,000	30×40	0.40	3.77	EKMH160VSN273MR40S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
16	27,000	35×30	0.40	3.45	EKMH160VSN273MA30S
	33,000	30×45	0.40	4.30	EKMH160VSN333MR45S
	33,000	35×35	0.40	4.26	EKMH160VSN333MA35S
	39,000	30×50	0.40	4.81	EKMH160VSN393MR50S
	39,000	35×40	0.40	4.79	EKMH160VSN393MA40S
	47,000	35×45	0.40	5.43	EKMH160VSN473MA45S
25	4,700	22×25	0.30	1.50	EKMH250VSN472MP25S
	5,600	22×25	0.30	1.63	EKMH250VSN562MP25S
	6,800	22×30	0.30	1.86	EKMH250VSN682MP30S
	6,800	25.4×25	0.30	1.87	EKMH250VSN682MQ25S
	8,200	22×35	0.30	2.11	EKMH250VSN822MP35S
	8,200	25.4×30	0.30	2.12	EKMH250VSN822MQ30S
	8,200	30×25	0.30	2.15	EKMH250VSN822MR25S
	10,000	22×40	0.30	2.39	EKMH250VSN103MP40S
	10,000	25.4×35	0.30	2.42	EKMH250VSN103MQ35S
	10,000	30×25	0.30	2.37	EKMH250VSN103MR25S
	12,000	22×45	0.30	2.69	EKMH250VSN123MP45S
	12,000	25.4×40	0.30	2.74	EKMH250VSN123MQ40S
	12,000	30×30	0.30	2.70	EKMH250VSN123MR30S
	12,000	35×25	0.30	2.74	EKMH250VSN123MA25S
	15,000	25.4×45	0.30	3.15	EKMH250VSN153MQ45S
	15,000	30×35	0.30	3.13	EKMH250VSN153MR35S
	15,000	35×30	0.30	3.27	EKMH250VSN153MA30S
	18,000	25.4×50	0.30	3.54	EKMH250VSN183MQ50S
	18,000	30×40	0.30	3.54	EKMH250VSN183MR40S
	18,000	35×30	0.30	3.58	EKMH250VSN183MA30S
	22,000	30×45	0.30	4.04	EKMH250VSN223MR45S
	22,000	35×35	0.30	3.64	EKMH250VSN223MA35S
	27,000	35×45	0.30	4.73	EKMH250VSN273MA45S
	33,000	35×50	0.30	5.39	EKMH250VSN333MA50S
35	3,300	22×25	0.25	1.40	EKMH350VSN332MP25S
	3,900	22×30	0.25	1.57	EKMH350VSN392MP30S
	4,700	22×30	0.25	1.72	EKMH350VSN472MP30S
	4,700	25.4×25	0.25	1.80	EKMH350VSN472MQ25S
	5,600	22×35	0.25	1.95	EKMH350VSN562MP35S
	5,600	25.4×30	0.25	1.96	EKMH350VSN562MQ30S
	5,600	30×25	0.25	1.99	EKMH350VSN562MR25S
	6,800	22×40	0.25	2.20	EKMH350VSN682MP40S
	6,800	25.4×35	0.25	2.23	EKMH350VSN682MQ35S
	6,800	30×25	0.25	2.19	EKMH350VSN682MR25S
	8,200	22×50	0.25	2.55	EKMH350VSN822MP50S
	8,200	25.4×40	0.25	2.53	EKMH350VSN822MQ40S
	8,200	30×30	0.25	2.75	EKMH350VSN822MR30S
	8,200	35×25	0.25	2.75	EKMH350VSN822MA25S
	10,000	25.4×45	0.25	2.87	EKMH350VSN103MQ45S
	10,000	30×35	0.25	2.90	EKMH350VSN103MR35S
	10,000	35×30	0.25	2.91	EKMH350VSN103MA30S
	12,000	25.4×50	0.25	3.24	EKMH350VSN123MQ50S
	12,000	30×40	0.25	3.23	EKMH350VSN123MR40S
	12,000	35×30	0.25	2.99	EKMH350VSN123MA30S
	15,000	30×45	0.25	3.72	EKMH350VSN153MR45S
	15,000	35×35	0.25	3.67	EKMH350VSN153MA35S
	18,000	35×40	0.25	4.37	EKMH350VSN183MA40S
	22,000	35×50	0.25	4.92	EKMH350VSN223MA50S
50	1,800	22×25	0.20	1.33	EKMH500VSN182MP25S
	2,700	22×30	0.20	1.69	EKMH500VSN272MP30S
	2,700	25.4×25	0.20	1.70	EKMH500VSN272MQ25S
	3,300	22×35	0.20	1.93	EKMH500VSN332MP35S
	3,300	25.4×30	0.20	1.85	EKMH500VSN332MQ30S
	3,900	22×40	0.20	2.16	EKMH500VSN392MP40S
	3,900	25.4×35	0.20	2.18	EKMH500VSN392MQ35S
	3,900	30×25	0.20	1.95	EKMH500VSN392MR25S
	4,700	22×45	0.20	2.43	EKMH500VSN472MP45S
	4,700	25.4×35	0.20	2.39	EKMH500VSN472MQ35S
	4,700	30×30	0.20	2.25	EKMH500VSN472MR30S
	4,700	35×25	0.20	2.48	EKMH500VSN472MA25S
	5,600	22×50	0.20	2.75	EKMH500VSN562MP50S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard snap-ins, 105℃

KMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
50	5,600	25.4×40	0.20	2.70	EKMH500VSN562MQ40S
	5,600	30×35	0.20	2.76	EKMH500VSN562MR35S
	5,600	35×25	0.20	2.70	EKMH500VSN562MA25S
	6,800	25.4×50	0.20	3.30	EKMH500VSN682MQ50S
	6,800	30×40	0.20	3.30	EKMH500VSN682MR40S
	6,800	35×30	0.20	3.25	EKMH500VSN682MA30S
	8,200	30×45	0.20	3.60	EKMH500VSN822MR45S
	8,200	35×35	0.20	3.55	EKMH500VSN822MA35S
	10,000	30×50	0.20	4.04	EKMH500VSN103MR50S
	10,000	35×40	0.20	4.03	EKMH500VSN103MA40S
	12,000	35×45	0.20	4.55	EKMH500VSN123MA45S
63	1,200	22×25	0.15	1.19	EKMH630VSN122MP25S
	1,500	22×25	0.15	1.33	EKMH630VSN152MP25S
	1,800	22×30	0.15	1.51	EKMH630VSN182MP30S
	1,800	25.4×25	0.15	1.52	EKMH630VSN182MQ25S
	2,200	22×35	0.15	1.73	EKMH630VSN222MP35S
	2,200	25.4×30	0.15	1.74	EKMH630VSN222MQ30S
	2,700	22×40	0.15	1.97	EKMH630VSN272MP40S
	2,700	25.4×35	0.15	1.99	EKMH630VSN272MQ35S
	2,700	30×25	0.15	1.76	EKMH630VSN272MR25S
	3,300	22×50	0.15	2.29	EKMH630VSN332MP50S
	3,300	25.4×40	0.15	2.27	EKMH630VSN332MQ40S
	3,300	30×30	0.15	2.24	EKMH630VSN332MR30S
	3,300	35×25	0.15	2.06	EKMH630VSN332MA25S
	3,900	25.4×45	0.15	2.54	EKMH630VSN392MQ45S
	3,900	30×35	0.15	2.55	EKMH630VSN392MR35S
	3,900	35×25	0.15	2.24	EKMH630VSN392MA25S
	4,700	25.4×50	0.15	2.86	EKMH630VSN472MQ50S
	4,700	30×40	0.15	2.86	EKMH630VSN472MR40S
	4,700	35×30	0.15	2.79	EKMH630VSN472MA30S
	5,600	30×45	0.15	3.22	EKMH630VSN562MR45S
	5,600	35×35	0.15	3.19	EKMH630VSN562MA35S
	6,800	30×50	0.15	3.65	EKMH630VSN682MR50S
	6,800	35×40	0.15	3.64	EKMH630VSN682MA40S
	8,200	35×45	0.15	3.90	EKMH630VSN822MA45S
	10,000	35×50	0.15	4.40	EKMH630VSN103MA50S
80	820	22×25	0.15	1.11	EKMH800VSN821MP25S
	1,000	22×25	0.15	1.22	EKMH800VSN102MP25S
	1,200	22×30	0.15	1.38	EKMH800VSN122MP30S
	1,200	25.4×25	0.15	1.39	EKMH800VSN122MQ25S
	1,500	22×35	0.15	1.59	EKMH800VSN152MP35S
	1,500	25.4×30	0.15	1.61	EKMH800VSN152MQ30S
	1,800	22×40	0.15	1.80	EKMH800VSN182MP40S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
80	1,800	25.4×30	0.15	1.76	EKMH800VSN182MQ30S
	1,800	30×25	0.15	1.65	EKMH800VSN182MR25S
	2,200	22×45	0.15	2.04	EKMH800VSN222MP45S
	2,200	25.4×35	0.15	2.01	EKMH800VSN222MQ35S
	2,200	30×30	0.15	2.05	EKMH800VSN222MR30S
	2,200	35×25	0.15	2.07	EKMH800VSN222MA25S
	2,700	25.4×45	0.15	2.36	EKMH800VSN272MQ45S
	2,700	30×35	0.15	2.35	EKMH800VSN272MR35S
	2,700	35×25	0.15	2.29	EKMH800VSN272MA25S
	3,300	25.4×50	0.15	2.68	EKMH800VSN332MQ50S
	3,300	30×40	0.15	2.68	EKMH800VSN332MR40S
	3,300	35×30	0.15	2.45	EKMH800VSN332MA30S
	3,900	30×45	0.15	3.00	EKMH800VSN392MR45S
	3,900	35×35	0.15	2.98	EKMH800VSN392MA35S
	4,700	30×50	0.15	3.39	EKMH800VSN472MR50S
	4,700	35×40	0.15	3.38	EKMH800VSN472MA40S
	5,600	35×45	0.15	3.80	EKMH800VSN562MA45S
	6,800	35×50	0.15	3.90	EKMH800VSN682MA50S
100	560	22×25	0.15	1.05	EKMH101VSN561MP25S
	820	22×30	0.15	1.32	EKMH101VSN821MP30S
	820	25.4×25	0.15	1.33	EKMH101VSN821MQ25S
	1,000	22×35	0.15	1.50	EKMH101VSN102MP35S
	1,000	25.4×30	0.15	1.51	EKMH101VSN102MQ30S
	1,200	22×40	0.15	1.69	EKMH101VSN122MP40S
	1,200	25.4×35	0.15	1.71	EKMH101VSN122MQ35S
	1,200	30×25	0.15	1.68	EKMH101VSN122MR25S
	1,500	22×45	0.15	1.94	EKMH101VSN152MP45S
	1,500	25.4×40	0.15	1.98	EKMH101VSN152MQ40S
	1,500	30×30	0.15	1.95	EKMH101VSN152MR30S
	1,500	35×25	0.15	1.98	EKMH101VSN152MA25S
	1,800	25.4×45	0.15	2.23	EKMH101VSN182MQ45S
	1,800	30×35	0.15	2.50	EKMH101VSN182MR35S
	1,800	35×25	0.15	2.17	EKMH101VSN182MA25S
	2,200	25.4×50	0.15	2.53	EKMH101VSN222MQ50S
	2,200	30×40	0.15	2.70	EKMH101VSN222MR40S
	2,200	35×30	0.15	2.50	EKMH101VSN222MA30S
	2,700	30×45	0.15	2.88	EKMH101VSN272MR45S
	2,700	35×35	0.15	2.86	EKMH101VSN272MA35S
	3,300	30×50	0.15	3.28	EKMH101VSN332MR50S
	3,300	35×40	0.15	3.27	EKMH101VSN332MA40S
	3,900	35×45	0.15	3.67	EKMH101VSN392MA45S
	4,700	35×50	0.15	3.80	EKMH101VSN472MA50S

*For the rated voltage≧160V_{dc}, please use KMR and KMQ series.

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
6.3 to 50V_{dc}	0.95	1.00	1.03	1.05	1.08	1.08
63 to 100V_{dc}	0.92	1.00	1.07	1.13	1.19	1.20

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

TXH Series

- Endurance with ripple current : 10,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	200 to 450V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	200 to 400V	450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	200 to 400V	450V	
	Z (-25℃)/Z (+20℃)	4	8	
				(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 10,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ30 to φ40) : Standard

*φD=40mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35, φ40)

**φD=40mm : 4.0±1

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E TXH □□□ VS N □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 470μF:471, 1,000μF:102)
- Dummy terminal code
- Terminal code (VS, LI)
- Voltage code (ex. 200V:201 , 450V:451)
- Series code
- Category

Please refer to "Product code guide (snap-in type)"

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TXH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
200	560	30×30	0.15	1.50	ETXH201VSN561MR30S
	680	30×35	0.15	1.70	ETXH201VSN681MR35S
	820	30×40	0.15	2.00	ETXH201VSN821MR40S
	820	35×30	0.15	2.00	ETXH201VSN821MA30S
	1,000	30×45	0.15	2.20	ETXH201VSN102MR45S
	1,000	35×35	0.15	2.20	ETXH201VSN102MA35S
	1,000	40×30	0.15	2.17	ETXH201VSN102MB30S
	1,200	35×40	0.15	2.40	ETXH201VSN122MA40S
	1,200	40×35	0.15	2.45	ETXH201VSN122MB35S
	1,500	35×50	0.15	2.81	ETXH201VSN152MA50S
	1,500	40×40	0.15	2.79	ETXH201VSN152MB40S
	1,800	40×50	0.15	3.24	ETXH201VSN182MB50S
250	390	30×30	0.15	1.30	ETXH251VSN391MR30S
	470	30×35	0.15	1.42	ETXH251VSN471MR35S
	560	35×30	0.15	1.58	ETXH251VSN561MA30S
	680	30×45	0.15	1.80	ETXH251VSN681MR45S
	680	35×35	0.15	1.76	ETXH251VSN681MA35S
	820	30×50	0.15	2.03	ETXH251VSN821MR50S
	820	35×40	0.15	2.01	ETXH251VSN821MA40S
	820	40×30	0.15	1.96	ETXH251VSN821MB30S
	1,000	35×45	0.15	2.30	ETXH251VSN102MA45S
	1,000	40×35	0.15	2.27	ETXH251VSN102MB35S
	1,200	35×50	0.15	2.55	ETXH251VSN122MA50S
	1,200	40×40	0.15	2.53	ETXH251VSN122MB40S
	1,500	40×50	0.15	2.96	ETXH251VSN152MB50S
	1,800	40×60	0.15	3.39	ETXH251VSN182MB60S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	220	30×35	0.15	1.00	ETXH401VSN221MR35S
	270	30×40	0.15	1.15	ETXH401VSN271MR40S
	270	35×30	0.15	1.13	ETXH401VSN271MA30S
	330	30×45	0.15	1.29	ETXH401VSN331MR45S
	330	35×35	0.15	1.26	ETXH401VSN331MA35S
	330	40×30	0.15	1.28	ETXH401VSN331MB30S
	390	30×50	0.15	1.44	ETXH401VSN391MR50S
	390	35×40	0.15	1.43	ETXH401VSN391MA40S
	470	35×45	0.15	1.60	ETXH401VSN471MA45S
	470	40×35	0.15	1.58	ETXH401VSN471MB35S
	560	35×50	0.15	1.79	ETXH401VSN561MA50S
	560	40×40	0.15	1.78	ETXH401VSN561MB40S
	680	40×50	0.15	2.05	ETXH401VSN681MB50S
	820	40×60	0.15	2.36	ETXH401VSN821MB60S
450	220	30×40	0.20	1.04	ETXH451VSN221MR40S
	220	35×30	0.20	1.02	ETXH451VSN221MA30S
	270	30×45	0.20	1.19	ETXH451VSN271MR45S
	270	35×35	0.20	1.16	ETXH451VSN271MA35S
	330	30×50	0.20	1.33	ETXH451VSN331MR50S
	330	35×40	0.20	1.32	ETXH451VSN331MA40S
	390	35×45	0.20	1.48	ETXH451VSN391MA45S
	470	35×50	0.20	1.64	ETXH451VSN471MA50S
	560	40×60	0.20	1.98	ETXH451VSN561MB60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
200, 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
400, 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXM Series

- Endurance with ripple current : 7,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	160 to 450Vdc			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	160 to 400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	160 to 400V	420 & 450V	
	Z (-25℃)/Z (+20℃)	4	8	
				(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 7,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦250% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
160	330	22×25	0.15	1.11	ELXM161VSN331MP25S
	390	22×30	0.15	1.26	ELXM161VSN391MP30S
	470	22×30	0.15	1.39	ELXM161VSN471MP30S
	470	25.4×25	0.15	1.38	ELXM161VSN471MQ25S
	560	22×35	0.15	1.55	ELXM161VSN561MP35S
	560	25.4×30	0.15	1.55	ELXM161VSN561MQ30S
	680	22×40	0.15	1.75	ELXM161VSN681MP40S
	680	25.4×35	0.15	1.78	ELXM161VSN681MQ35S
	680	30×25	0.15	1.74	ELXM161VSN681MR25S
	820	22×50	0.15	1.97	ELXM161VSN821MP50S
	820	25.4×40	0.15	2.01	ELXM161VSN821MQ40S
	820	30×30	0.15	1.96	ELXM161VSN821MR30S
	1,000	25.4×45	0.15	2.27	ELXM161VSN102MQ45S
	1,000	30×35	0.15	2.26	ELXM161VSN102MR35S
	1,200	25.4×50	0.15	2.54	ELXM161VSN122MQ50S
	1,200	30×40	0.15	2.56	ELXM161VSN122MR40S
	1,200	35×30	0.15	2.52	ELXM161VSN122MA30S
	1,500	30×45	0.15	2.96	ELXM161VSN152MR45S
	1,500	35×35	0.15	2.89	ELXM161VSN152MA35S
	1,800	30×50	0.15	3.32	ELXM161VSN182MR50S
	1,800	35×40	0.15	3.30	ELXM161VSN182MA40S
	2,200	35×50	0.15	3.87	ELXM161VSN222MA50S
180	270	22×25	0.15	1.00	ELXM181VSN271MP25S
	330	22×30	0.15	1.16	ELXM181VSN331MP30S
	390	22×30	0.15	1.26	ELXM181VSN391MP30S
	390	25.4×25	0.15	1.26	ELXM181VSN391MQ25S
	470	22×35	0.15	1.42	ELXM181VSN471MP35S
	470	25.4×30	0.15	1.42	ELXM181VSN471MQ30S
	560	22×40	0.15	1.59	ELXM181VSN561MP40S
	560	25.4×30	0.15	1.55	ELXM181VSN561MQ30S
	560	30×25	0.15	1.58	ELXM181VSN561MR25S
	680	22×45	0.15	1.79	ELXM181VSN681MP45S
	680	25.4×35	0.15	1.78	ELXM181VSN681MQ35S
	680	30×30	0.15	1.79	ELXM181VSN681MR30S
	820	25.4×40	0.15	2.01	ELXM181VSN821MQ40S
	820	30×35	0.15	2.04	ELXM181VSN821MR35S
	1,000	25.4×50	0.15	2.32	ELXM181VSN102MQ50S
	1,000	30×35	0.15	2.26	ELXM181VSN102MR35S
	1,000	35×30	0.15	2.30	ELXM181VSN102MA30S
	1,200	30×45	0.15	2.65	ELXM181VSN122MR45S
	1,200	35×35	0.15	2.58	ELXM181VSN122MA35S
	1,500	30×50	0.15	3.03	ELXM181VSN152MR50S
	1,500	35×40	0.15	3.01	ELXM181VSN152MA40S
	1,800	35×45	0.15	3.41	ELXM181VSN182MA45S
	2,200	35×50	0.15	3.87	ELXM181VSN222MA50S
200	220	22×25	0.15	0.90	ELXM201VSN221MP25S
	270	22×30	0.15	1.05	ELXM201VSN271MP30S
	330	22×30	0.15	1.16	ELXM201VSN331MP30S
	330	25.4×25	0.15	1.16	ELXM201VSN331MQ25S
	390	22×35	0.15	1.29	ELXM201VSN391MP35S
	390	25.4×30	0.15	1.29	ELXM201VSN391MQ30S
	470	22×40	0.15	1.46	ELXM201VSN471MP40S
	470	25.4×30	0.15	1.42	ELXM201VSN471MQ30S
	470	30×25	0.15	1.45	ELXM201VSN471MR25S
	560	22×45	0.15	1.63	ELXM201VSN561MP45S
	560	25.4×35	0.15	1.62	ELXM201VSN561MQ35S
	560	30×30	0.15	1.62	ELXM201VSN561MR30S
	680	25.4×40	0.15	1.83	ELXM201VSN681MQ40S
	680	30×30	0.15	1.79	ELXM201VSN681MR30S
	820	25.4×45	0.15	2.06	ELXM201VSN821MQ45S
	820	30×35	0.15	2.04	ELXM201VSN821MR35S
	1,000	30×45	0.15	2.42	ELXM201VSN102MR45S
	1,000	35×30	0.15	2.30	ELXM201VSN102MA30S
	1,200	30×50	0.15	2.71	ELXM201VSN122MR50S
	1,200	35×40	0.15	2.70	ELXM201VSN122MA40S
	1,500	35×45	0.15	3.11	ELXM201VSN152MA45S
	1,800	35×50	0.15	3.50	ELXM201VSN182MA50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
220	220	22×25	0.15	0.90	ELXM221VSN221MP25S
	270	22×30	0.15	1.05	ELXM221VSN271MP30S
	330	22×35	0.15	1.19	ELXM221VSN331MP35S
	330	25.4×25	0.15	1.16	ELXM221VSN331MQ25S
	390	22×40	0.15	1.33	ELXM221VSN391MP40S
	390	25.4×30	0.15	1.29	ELXM221VSN391MQ30S
	470	22×45	0.15	1.49	ELXM221VSN471MP45S
	470	25.4×35	0.15	1.48	ELXM221VSN471MQ35S
	470	30×25	0.15	1.45	ELXM221VSN471MR25S
	560	22×50	0.15	1.63	ELXM221VSN561MP50S
	560	25.4×40	0.15	1.71	ELXM221VSN561MQ40S
	560	30×30	0.15	1.62	ELXM221VSN561MR30S
	680	25.4×45	0.15	1.87	ELXM221VSN681MQ45S
	680	30×35	0.15	1.86	ELXM221VSN681MR35S
	820	25.4×50	0.15	2.10	ELXM221VSN821MQ50S
	820	30×40	0.15	2.12	ELXM221VSN821MR40S
	820	35×30	0.15	2.08	ELXM221VSN821MA30S
	1,000	30×50	0.15	2.48	ELXM221VSN102MR50S
	1,000	35×40	0.15	2.46	ELXM221VSN102MA40S
	1,200	35×45	0.15	2.78	ELXM221VSN122MA45S
	1,500	35×50	0.15	3.20	ELXM221VSN152MA50S
250	180	22×25	0.15	0.82	ELXM251VSN181MP25S
	220	22×30	0.15	0.95	ELXM251VSN221MP30S
	270	22×35	0.15	1.08	ELXM251VSN271MP35S
	270	25.4×25	0.15	1.05	ELXM251VSN271MQ25S
	330	22×40	0.15	1.22	ELXM251VSN331MP40S
	330	25.4×30	0.15	1.19	ELXM251VSN331MQ30S
	390	22×45	0.15	1.36	ELXM251VSN391MP45S
	390	25.4×35	0.15	1.35	ELXM251VSN391MQ35S
	390	30×25	0.15	1.32	ELXM251VSN391MR25S
	470	22×50	0.15	1.49	ELXM251VSN471MP50S
	470	25.4×40	0.15	1.52	ELXM251VSN471MQ40S
	470	30×30	0.15	1.49	ELXM251VSN471MR30S
	560	25.4×45	0.15	1.70	ELXM251VSN561MQ45S
	560	30×35	0.15	1.69	ELXM251VSN561MR35S
	680	25.4×50	0.15	1.91	ELXM251VSN681MQ50S
	680	30×40	0.15	1.93	ELXM251VSN681MR40S
	680	35×30	0.15	1.90	ELXM251VSN681MA30S
	820	30×45	0.15	2.19	ELXM251VSN821MR45S
	820	35×35	0.15	2.13	ELXM251VSN821MA35S
	1,000	35×40	0.15	2.46	ELXM251VSN102MA40S
	1,200	35×50	0.15	2.86	ELXM251VSN122MA50S
315	100	22×25	0.15	0.67	ELXM3B1VSN101MP25S
	120	22×30	0.15	0.77	ELXM3B1VSN121MP30S
	150	22×30	0.15	0.86	ELXM3B1VSN151MP30S
	150	25.4×25	0.15	0.85	ELXM3B1VSN151MQ25S
	180	22×35	0.15	0.96	ELXM3B1VSN181MP35S
	180	25.4×30	0.15	0.96	ELXM3B1VSN181MQ30S
	220	22×40	0.15	1.09	ELXM3B1VSN221MP40S
	220	25.4×30	0.15	1.06	ELXM3B1VSN221MQ30S
	220	30×25	0.15	1.08	ELXM3B1VSN221MR25S
	270	22×45	0.15	1.24	ELXM3B1VSN271MP45S
	270	25.4×35	0.15	1.23	ELXM3B1VSN271MQ35S
	270	30×30	0.15	1.23	ELXM3B1VSN271MR30S
	330	25.4×40	0.15	1.40	ELXM3B1VSN331MQ40S
	330	30×35	0.15	1.42	ELXM3B1VSN331MR35S
	330	35×30	0.15	1.45	ELXM3B1VSN331MA30S
	390	25.4×50	0.15	1.59	ELXM3B1VSN391MQ50S
	390	30×35	0.15	1.54	ELXM3B1VSN391MR35S
	390	35×30	0.15	1.57	ELXM3B1VSN391MA30S
	470	30×45	0.15	1.81	ELXM3B1VSN471MR45S
	470	35×35	0.15	1.77	ELXM3B1VSN471MA35S
	560	30×50	0.15	2.03	ELXM3B1VSN561MR50S
	560	35×40	0.15	2.02	ELXM3B1VSN561MA40S
	680	35×45	0.15	2.29	ELXM3B1VSN681MA45S
	820	35×50	0.15	2.59	ELXM3B1VSN821MA50S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXM Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
350	100	22×25	0.15	0.67	ELXM351VSN101MP25S
	120	22×30	0.15	0.77	ELXM351VSN121MP30S
	120	25.4×25	0.15	0.76	ELXM351VSN121MQ25S
	150	22×35	0.15	0.88	ELXM351VSN151MP35S
	150	25.4×30	0.15	0.88	ELXM351VSN151MQ30S
	180	22×40	0.15	0.99	ELXM351VSN181MP40S
	180	25.4×30	0.15	0.96	ELXM351VSN181MQ30S
	180	30×25	0.15	0.98	ELXM351VSN181MR25S
	220	22×45	0.15	1.12	ELXM351VSN221MP45S
	220	25.4×35	0.15	1.11	ELXM351VSN221MQ35S
	220	30×30	0.15	1.11	ELXM351VSN221MR30S
	270	25.4×40	0.15	1.26	ELXM351VSN271MQ40S
	270	30×35	0.15	1.28	ELXM351VSN271MR35S
	330	25.4×45	0.15	1.40	ELXM351VSN331MQ45S
	330	30×35	0.15	1.42	ELXM351VSN331MR35S
	330	35×30	0.15	1.45	ELXM351VSN331MA30S
	390	30×40	0.15	1.60	ELXM351VSN391MR40S
	390	35×35	0.15	1.61	ELXM351VSN391MA35S
	470	30×50	0.15	1.86	ELXM351VSN471MR50S
	470	35×40	0.15	1.85	ELXM351VSN471MA40S
	560	35×40	0.15	2.02	ELXM351VSN561MA40S
	680	35×50	0.15	2.36	ELXM351VSN681MA50S
400	68	22×25	0.15	0.55	ELXM401VSN680MP25S
	82	22×30	0.15	0.63	ELXM401VSN820MP30S
	100	22×30	0.15	0.70	ELXM401VSN101MP30S
	100	25.4×25	0.15	0.70	ELXM401VSN101MQ25S
	120	22×35	0.15	0.79	ELXM401VSN121MP35S
	120	25.4×30	0.15	0.79	ELXM401VSN121MQ30S
	150	22×40	0.15	0.90	ELXM401VSN151MP40S
	150	25.4×30	0.15	0.88	ELXM401VSN151MQ30S
	150	30×25	0.15	0.90	ELXM401VSN151MR25S
	180	22×45	0.15	0.99	ELXM401VSN181MP45S
	180	25.4×35	0.15	1.01	ELXM401VSN181MQ35S
	180	30×30	0.15	1.01	ELXM401VSN181MR30S
	220	25.4×40	0.15	1.14	ELXM401VSN221MQ40S
	220	30×35	0.15	1.16	ELXM401VSN221MR35S
	270	25.4×50	0.15	1.32	ELXM401VSN271MQ50S
	270	30×40	0.15	1.33	ELXM401VSN271MR40S
	270	35×30	0.15	1.31	ELXM401VSN271MA30S
	330	30×45	0.15	1.52	ELXM401VSN331MR45S
	330	35×35	0.15	1.48	ELXM401VSN331MA35S
	390	30×50	0.15	1.69	ELXM401VSN391MR50S
	390	35×40	0.15	1.68	ELXM401VSN391MA40S
	470	35×45	0.15	1.91	ELXM401VSN471MA45S
	560	35×50	0.15	2.14	ELXM401VSN561MA50S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
420	56	22×25	0.20	0.50	ELXM421VSN560MP25S
	68	22×30	0.20	0.58	ELXM421VSN680MP30S
	82	22×30	0.20	0.63	ELXM421VSN820MP30S
	82	25.4×25	0.20	0.63	ELXM421VSN820MQ25S
	100	22×35	0.20	0.72	ELXM421VSN101MP35S
	100	25.4×30	0.20	0.72	ELXM421VSN101MQ30S
	120	22×40	0.20	0.81	ELXM421VSN121MP40S
	120	25.4×30	0.20	0.79	ELXM421VSN121MQ30S
	120	30×25	0.20	0.80	ELXM421VSN121MR25S
	150	22×45	0.20	0.92	ELXM421VSN151MP45S
	150	25.4×35	0.20	0.92	ELXM421VSN151MQ35S
	150	30×30	0.20	0.92	ELXM421VSN151MR30S
	180	25.4×40	0.20	1.03	ELXM421VSN181MQ40S
	180	30×35	0.20	1.05	ELXM421VSN181MR35S
	220	25.4×50	0.20	1.19	ELXM421VSN221MQ50S
	220	30×35	0.20	1.16	ELXM421VSN221MR35S
	220	35×30	0.20	1.18	ELXM421VSN221MA30S
	270	30×45	0.20	1.38	ELXM421VSN271MR45S
	270	35×35	0.20	1.34	ELXM421VSN271MA35S
	330	30×50	0.20	1.56	ELXM421VSN331MR50S
	330	35×40	0.20	1.55	ELXM421VSN331MA40S
	390	35×45	0.20	1.74	ELXM421VSN391MA45S
	470	35×50	0.20	1.96	ELXM421VSN471MA50S
450	47	22×25	0.20	0.46	ELXM451VSN470MP25S
	56	22×30	0.20	0.52	ELXM451VSN560MP30S
	68	22×30	0.20	0.58	ELXM451VSN680MP30S
	68	25.4×25	0.20	0.58	ELXM451VSN680MQ25S
	82	22×35	0.20	0.65	ELXM451VSN820MP35S
	82	25.4×30	0.20	0.65	ELXM451VSN820MQ30S
	100	22×40	0.20	0.74	ELXM451VSN101MP40S
	100	25.4×30	0.20	0.72	ELXM451VSN101MQ30S
	100	30×25	0.20	0.73	ELXM451VSN101MR25S
	120	22×45	0.20	0.83	ELXM451VSN121MP45S
	120	25.4×35	0.20	0.82	ELXM451VSN121MQ35S
	120	30×30	0.20	0.82	ELXM451VSN121MR30S
	150	25.4×40	0.20	0.94	ELXM451VSN151MQ40S
	150	30×35	0.20	0.96	ELXM451VSN151MR35S
	180	25.4×45	0.20	1.06	ELXM451VSN181MQ45S
	180	30×35	0.20	1.05	ELXM451VSN181MR35S
	180	35×30	0.20	1.07	ELXM451VSN181MA30S
	220	30×40	0.20	1.20	ELXM451VSN221MR40S
	220	35×35	0.20	1.21	ELXM451VSN221MA35S
	270	30×50	0.20	1.41	ELXM451VSN271MR50S
	270	35×40	0.20	1.40	ELXM451VSN271MA40S
	330	35×45	0.20	1.60	ELXM451VSN331MA45S
	390	35×50	0.20	1.79	ELXM451VSN391MA50S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LHS Series

- For solar power generation
- Endurance with ripple current : 5,000 hours at 105℃
- Rated voltage range : 450 to 500V
- For inverter control, switching power supplies
- Non solvent resistant type
- RoHS2 Compliant

LHS
↑ Downsizing
LXS
↑ Longer life
KMS

500V Lineup!

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +105℃		
Rated Voltage Range	450 to 500V_{dc}		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	450 to 500V	
	tan δ (Max.)	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	450 to 500V	
	Z(-25℃)/Z(+20℃)	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value (475, 500V_{dc} : ≦ 250%)	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ30, φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LHS Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
450	100	22×25	0.20	0.71	ELHS451VSN101MP25S
	120	22×30	0.20	0.81	ELHS451VSN121MP30S
	150	22×35	0.20	0.93	ELHS451VSN151MP35S
	150	25.4×25	0.20	0.93	ELHS451VSN151MQ25S
	180	22×40	0.20	1.04	ELHS451VSN181MP40S
	180	25.4×30	0.20	1.05	ELHS451VSN181MQ30S
	220	22×45	0.20	1.17	ELHS451VSN221MP45S
	220	25.4×35	0.20	1.21	ELHS451VSN221MQ35S
	220	30×25	0.20	1.15	ELHS451VSN221MR25S
	270	22×50	0.20	1.33	ELHS451VSN271MP50S
	270	25.4×40	0.20	1.36	ELHS451VSN271MQ40S
	270	30×30	0.20	1.29	ELHS451VSN271MR30S
	270	35×25	0.20	1.25	ELHS451VSN271MA25S
	330	22×60	0.20	1.54	ELHS451VSN331MP60S
	330	25.4×45	0.20	1.54	ELHS451VSN331MQ45S
	330	25.4×50	0.20	1.56	ELHS451VSN331MQ50S
	330	30×35	0.20	1.46	ELHS451VSN331MR35S
	330	35×30	0.20	1.41	ELHS451VSN331MA30S
	390	25.4×60	0.20	1.74	ELHS451VSN391MQ60S
	390	30×40	0.20	1.63	ELHS451VSN391MR40S
	470	30×45	0.20	1.84	ELHS451VSN471MR45S
	470	30×50	0.20	1.87	ELHS451VSN471MR50S
	470	35×35	0.20	1.71	ELHS451VSN471MA35S
	560	35×40	0.20	1.95	ELHS451VSN561MA40S
	560	35×45	0.20	1.99	ELHS451VSN561MA45S
	680	30×60	0.20	2.33	ELHS451VSN681MR60S
	680	35×50	0.20	2.22	ELHS451VSN681MA50S
	820	35×60	0.20	2.52	ELHS451VSN821MA60S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
475	150	30×25	0.20	1.01	ELHS4H1VSN151MR25S
	180	30×30	0.20	1.11	ELHS4H1VSN181MR30S
	180	35×25	0.20	1.08	ELHS4H1VSN181MA25S
	220	30×35	0.20	1.26	ELHS4H1VSN221MR35S
	270	30×40	0.20	1.44	ELHS4H1VSN271MR40S
	270	35×30	0.20	1.35	ELHS4H1VSN271MA30S
	330	30×45	0.20	1.63	ELHS4H1VSN331MR45S
	330	35×35	0.20	1.51	ELHS4H1VSN331MA35S
	390	30×50	0.20	1.80	ELHS4H1VSN391MR50S
	390	35×40	0.20	1.70	ELHS4H1VSN391MA40S
	470	30×60	0.20	2.05	ELHS4H1VSN471MR60S
	470	35×45	0.20	1.91	ELHS4H1VSN471MA45S
	470	35×50	0.20	1.95	ELHS4H1VSN471MA50S
	560	35×60	0.20	2.21	ELHS4H1VSN561MA60S
500	120	30×25	0.20	0.90	ELHS501VSN121MR25S
	150	30×30	0.20	1.02	ELHS501VSN151MR30S
	150	35×25	0.20	0.99	ELHS501VSN151MA25S
	180	30×35	0.20	1.14	ELHS501VSN181MR35S
	220	30×40	0.20	1.30	ELHS501VSN221MR40S
	220	35×30	0.20	1.22	ELHS501VSN221MA30S
	270	30×45	0.20	1.47	ELHS501VSN271MR45S
	270	35×35	0.20	1.37	ELHS501VSN271MA35S
	330	30×50	0.20	1.66	ELHS501VSN331MR50S
	330	35×40	0.20	1.57	ELHS501VSN331MA40S
	390	30×60	0.20	1.87	ELHS501VSN391MR60S
	390	35×45	0.20	1.74	ELHS501VSN391MA45S
	470	35×50	0.20	1.95	ELHS501VSN471MA50S
	560	35×60	0.20	2.21	ELHS501VSN561MA60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43
475, 500V_{dc}	0.70	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXS Series *Upgrade!*

- For solar power generation
- Endurance with ripple current : 5,000 hours at 105℃
- Rated voltage range : 160 to 600V
- Downsized from LXQ series
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	160 to 600V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	160 to 400V	420 to 600V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	160 to 400V	420 to 600V	
	Z(-25℃)/Z(+20℃)	4	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value (500V_{dc} : ≦ 250%, 550, 600V_{dc} : ≦ 300%)		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ30, φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXS Series Upgrade!

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
160	470	22×25	0.15	1.47	ELXS161VSN471MP25S
	680	22×30	0.15	1.86	ELXS161VSN681MP30S
	680	25.4×25	0.15	1.84	ELXS161VSN681MQ25S
	820	22×35	0.15	2.09	ELXS161VSN821MP35S
	820	25.4×30	0.15	2.08	ELXS161VSN821MQ30S
	1,000	22×40	0.15	2.35	ELXS161VSN102MP40S
	1,000	22×45	0.15	2.40	ELXS161VSN102MP45S
	1,000	25.4×35	0.15	2.40	ELXS161VSN102MQ35S
	1,000	30×25	0.15	2.50	ELXS161VSN102MR25S
	1,200	22×50	0.15	2.69	ELXS161VSN122MP50S
	1,200	25.4×40	0.15	2.68	ELXS161VSN122MQ40S
	1,200	30×30	0.15	2.77	ELXS161VSN122MR30S
	1,200	35×25	0.15	2.91	ELXS161VSN122MA25S
	1,500	25.4×45	0.15	3.05	ELXS161VSN152MQ45S
	1,500	30×35	0.15	3.17	ELXS161VSN152MR35S
	1,800	25.4×50	0.15	3.40	ELXS161VSN182MQ50S
	1,800	30×40	0.15	3.57	ELXS161VSN182MR40S
	1,800	35×30	0.15	3.62	ELXS161VSN182MA30S
	2,200	30×45	0.15	4.05	ELXS161VSN222MR45S
	2,200	30×50	0.15	4.11	ELXS161VSN222MR50S
	2,200	35×35	0.15	4.07	ELXS161VSN222MA35S
	2,700	35×40	0.15	4.67	ELXS161VSN272MA40S
	2,700	35×45	0.15	4.78	ELXS161VSN272MA45S
	3,300	35×50	0.15	5.40	ELXS161VSN332MA50S
180	390	22×25	0.15	1.34	ELXS181VSN391MP25S
	560	22×30	0.15	1.68	ELXS181VSN561MP30S
	560	25.4×25	0.15	1.67	ELXS181VSN561MQ25S
	680	22×35	0.15	1.90	ELXS181VSN681MP35S
	820	22×40	0.15	2.13	ELXS181VSN821MP40S
	820	25.4×30	0.15	2.08	ELXS181VSN821MQ30S
	820	25.4×35	0.15	2.17	ELXS181VSN821MQ35S
	820	30×25	0.15	2.26	ELXS181VSN821MR25S
	1,000	22×45	0.15	2.40	ELXS181VSN102MP45S
	1,000	22×50	0.15	2.45	ELXS181VSN102MP50S
	1,000	25.4×40	0.15	2.45	ELXS181VSN102MQ40S
	1,000	30×30	0.15	2.52	ELXS181VSN102MR30S
	1,000	35×25	0.15	2.66	ELXS181VSN102MA25S
	1,200	25.4×45	0.15	2.73	ELXS181VSN122MQ45S
	1,200	30×35	0.15	2.83	ELXS181VSN122MR35S
	1,500	25.4×50	0.15	3.10	ELXS181VSN152MQ50S
	1,500	30×40	0.15	3.26	ELXS181VSN152MR40S
	1,500	35×30	0.15	3.31	ELXS181VSN152MA30S
	1,800	30×45	0.15	3.66	ELXS181VSN182MR45S
	1,800	35×35	0.15	3.68	ELXS181VSN182MA35S
	2,200	30×50	0.15	4.11	ELXS181VSN222MR50S
	2,200	35×40	0.15	4.22	ELXS181VSN222MA40S
	2,200	35×45	0.15	4.32	ELXS181VSN222MA45S
	2,700	35×50	0.15	4.88	ELXS181VSN272MA50S
200	390	22×25	0.15	1.34	ELXS201VSN391MP25S
	470	22×30	0.15	1.54	ELXS201VSN471MP30S
	560	22×35	0.15	1.72	ELXS201VSN561MP35S
	560	25.4×25	0.15	1.67	ELXS201VSN561MQ25S
	680	22×40	0.15	1.94	ELXS201VSN681MP40S
	680	25.4×30	0.15	1.89	ELXS201VSN681MQ30S
	680	30×25	0.15	2.06	ELXS201VSN681MR25S
	820	22×45	0.15	2.17	ELXS201VSN821MP45S
	820	25.4×35	0.15	2.17	ELXS201VSN821MQ35S
	1,000	22×50	0.15	2.45	ELXS201VSN102MP50S
	1,000	25.4×40	0.15	2.45	ELXS201VSN102MQ40S
	1,000	30×30	0.15	2.52	ELXS201VSN102MR30S
	1,000	35×25	0.15	2.66	ELXS201VSN102MA25S
	1,200	25.4×45	0.15	2.73	ELXS201VSN122MQ45S
	1,200	25.4×50	0.15	2.78	ELXS201VSN122MQ50S
	1,200	30×35	0.15	2.83	ELXS201VSN122MR35S
	1,200	35×30	0.15	2.96	ELXS201VSN122MA30S
	1,500	30×40	0.15	3.26	ELXS201VSN152MR40S
	1,500	30×45	0.15	3.34	ELXS201VSN152MR45S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
200	1,500	35×35	0.15	3.36	ELXS201VSN152MA35S
	1,800	30×50	0.15	3.72	ELXS201VSN182MR50S
	1,800	35×40	0.15	3.81	ELXS201VSN182MA40S
	2,200	35×45	0.15	4.32	ELXS201VSN222MA45S
	2,700	35×50	0.15	4.88	ELXS201VSN272MA50S
250	270	22×25	0.15	1.11	ELXS251VSN271MP25S
	330	22×30	0.15	1.29	ELXS251VSN331MP30S
	390	22×35	0.15	1.44	ELXS251VSN391MP35S
	390	25.4×25	0.15	1.40	ELXS251VSN391MQ25S
	470	22×40	0.15	1.61	ELXS251VSN471MP40S
	470	25.4×30	0.15	1.57	ELXS251VSN471MQ30S
	560	22×45	0.15	1.79	ELXS251VSN561MP45S
	560	25.4×35	0.15	1.79	ELXS251VSN561MQ35S
	560	30×25	0.15	1.87	ELXS251VSN561MR25S
	680	22×50	0.15	2.02	ELXS251VSN681MP50S
	680	25.4×40	0.15	2.02	ELXS251VSN681MQ40S
	680	30×30	0.15	2.08	ELXS251VSN681MR30S
	680	35×25	0.15	2.19	ELXS251VSN681MA25S
	820	25.4×45	0.15	2.26	ELXS251VSN821MQ45S
	820	25.4×50	0.15	2.29	ELXS251VSN821MQ50S
	820	30×35	0.15	2.34	ELXS251VSN821MR35S
	820	35×30	0.15	2.45	ELXS251VSN821MA30S
	1,000	30×40	0.15	2.66	ELXS251VSN102MR40S
	1,200	30×45	0.15	2.99	ELXS251VSN122MR45S
	1,200	30×50	0.15	3.04	ELXS251VSN122MR50S
	1,200	35×35	0.15	3.00	ELXS251VSN122MA35S
	1,200	35×40	0.15	3.11	ELXS251VSN122MA40S
	1,500	35×45	0.15	3.56	ELXS251VSN152MA45S
	1,800	35×50	0.15	3.98	ELXS251VSN182MA50S
315	180	22×25	0.15	0.95	ELXS3B1VSN181MP25S
	220	22×30	0.15	1.10	ELXS3B1VSN221MP30S
	220	25.4×25	0.15	1.10	ELXS3B1VSN221MQ25S
	270	22×35	0.15	1.24	ELXS3B1VSN271MP35S
	270	25.4×30	0.15	1.25	ELXS3B1VSN271MQ30S
	330	22×40	0.15	1.40	ELXS3B1VSN331MP40S
	330	30×25	0.15	1.43	ELXS3B1VSN331MR25S
	390	22×45	0.15	1.56	ELXS3B1VSN391MP45S
	390	22×50	0.15	1.59	ELXS3B1VSN391MP50S
	390	25.4×35	0.15	1.57	ELXS3B1VSN391MQ35S
	470	25.4×40	0.15	1.76	ELXS3B1VSN471MQ40S
	470	25.4×45	0.15	1.79	ELXS3B1VSN471MQ45S
	470	30×30	0.15	1.73	ELXS3B1VSN471MR30S
	470	35×25	0.15	1.82	ELXS3B1VSN471MA25S
	560	25.4×50	0.15	1.99	ELXS3B1VSN561MQ50S
	560	30×35	0.15	1.93	ELXS3B1VSN561MR35S
	560	35×30	0.15	2.02	ELXS3B1VSN561MA30S
	680	30×40	0.15	2.19	ELXS3B1VSN681MR40S
	680	30×45	0.15	2.25	ELXS3B1VSN681MR45S
	680	35×35	0.15	2.26	ELXS3B1VSN681MA35S
	820	30×50	0.15	2.51	ELXS3B1VSN821MR50S
	820	35×40	0.15	2.57	ELXS3B1VSN821MA40S
	1,000	35×45	0.15	2.91	ELXS3B1VSN102MA45S
	1,200	35×50	0.15	3.25	ELXS3B1VSN122MA50S
400	120	22×25	0.15	0.77	ELXS401VSN121MP25S
	150	22×30	0.15	0.90	ELXS401VSN151MP30S
	180	22×35	0.15	1.02	ELXS401VSN181MP35S
	180	25.4×25	0.15	0.99	ELXS401VSN181MQ25S
	220	22×40	0.15	1.15	ELXS401VSN221MP40S
	220	25.4×30	0.15	1.13	ELXS401VSN221MQ30S
	220	30×25	0.15	1.17	ELXS401VSN221MR25S
	270	22×45	0.15	1.29	ELXS401VSN271MP45S
	270	22×50	0.15	1.32	ELXS401VSN271MP50S
	270	25.4×35	0.15	1.30	ELXS401VSN271MQ35S
	330	25.4×40	0.15	1.47	ELXS401VSN331MQ40S
	330	30×30	0.15	1.45	ELXS401VSN331MR30S
	330	35×25	0.15	1.52	ELXS401VSN331MA25S
	390	25.4×45	0.15	1.63	ELXS401VSN391MQ45S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXS Series (Upgrade!)

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	390	25.4 × 50	0.15	1.66	ELXS401VSN391MQ50S
	390	30 × 35	0.15	1.61	ELXS401VSN391MR35S
	390	35 × 30	0.15	1.68	ELXS401VSN391MA30S
	470	30 × 40	0.15	1.82	ELXS401VSN471MR40S
	470	35 × 35	0.15	1.88	ELXS401VSN471MA35S
	560	30 × 45	0.15	2.04	ELXS401VSN561MR45S
	560	30 × 50	0.15	2.07	ELXS401VSN561MR50S
	560	35 × 40	0.15	2.13	ELXS401VSN561MA40S
	680	35 × 45	0.15	2.40	ELXS401VSN681MA45S
	820	35 × 50	0.15	2.69	ELXS401VSN821MA50S
420	100	22 × 25	0.20	0.70	ELXS421VSN101MP25S
	120	22 × 30	0.20	0.81	ELXS421VSN121MP30S
	120	25.4 × 25	0.20	0.81	ELXS421VSN121MQ25S
	150	22 × 35	0.20	0.93	ELXS421VSN151MP35S
	180	22 × 40	0.20	1.04	ELXS421VSN181MP40S
	180	25.4 × 30	0.20	1.02	ELXS421VSN181MQ30S
	180	30 × 25	0.20	1.06	ELXS421VSN181MR25S
	220	22 × 45	0.20	1.17	ELXS421VSN221MP45S
	220	22 × 50	0.20	1.20	ELXS421VSN221MP50S
	220	25.4 × 35	0.20	1.18	ELXS421VSN221MQ35S
	270	25.4 × 40	0.20	1.33	ELXS421VSN271MQ40S
	270	25.4 × 45	0.20	1.36	ELXS421VSN271MQ45S
	270	30 × 30	0.20	1.31	ELXS421VSN271MR30S
	270	35 × 25	0.20	1.38	ELXS421VSN271MA25S
	330	25.4 × 50	0.20	1.52	ELXS421VSN331MQ50S
	330	30 × 35	0.20	1.48	ELXS421VSN331MR35S
	330	35 × 30	0.20	1.55	ELXS421VSN331MA30S
	390	30 × 40	0.20	1.66	ELXS421VSN391MR40S
	390	30 × 45	0.20	1.70	ELXS421VSN391MR45S
	390	35 × 35	0.20	1.71	ELXS421VSN391MA35S
	470	30 × 50	0.20	1.90	ELXS421VSN471MR50S
	470	35 × 40	0.20	1.95	ELXS421VSN471MA40S
	560	35 × 45	0.20	2.17	ELXS421VSN561MA45S
	680	35 × 50	0.20	2.45	ELXS421VSN681MA50S
450	82	22 × 25	0.20	0.64	ELXS451VSN820MP25S
	120	22 × 30	0.20	0.81	ELXS451VSN121MP30S
	120	22 × 35	0.20	0.83	ELXS451VSN121MP35S
	120	25.4 × 25	0.20	0.81	ELXS451VSN121MQ25S
	150	22 × 40	0.20	0.94	ELXS451VSN151MP40S
	150	25.4 × 30	0.20	0.93	ELXS451VSN151MQ30S
	180	22 × 45	0.20	1.06	ELXS451VSN181MP45S
	180	25.4 × 35	0.20	1.06	ELXS451VSN181MQ35S
	180	30 × 25	0.20	1.06	ELXS451VSN181MR25S
	220	22 × 50	0.20	1.20	ELXS451VSN221MP50S
	220	25.4 × 40	0.20	1.20	ELXS451VSN221MQ40S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
450	220	30 × 30	0.20	1.18	ELXS451VSN221MR30S
	220	35 × 25	0.20	1.24	ELXS451VSN221MA25S
	270	25.4 × 45	0.20	1.36	ELXS451VSN271MQ45S
	270	25.4 × 50	0.20	1.38	ELXS451VSN271MQ50S
	270	30 × 35	0.20	1.34	ELXS451VSN271MR35S
	270	35 × 30	0.20	1.40	ELXS451VSN271MA30S
	330	30 × 40	0.20	1.52	ELXS451VSN331MR40S
	390	30 × 45	0.20	1.70	ELXS451VSN391MR45S
	390	30 × 50	0.20	1.73	ELXS451VSN391MR50S
	390	35 × 35	0.20	1.71	ELXS451VSN391MA35S
	470	35 × 40	0.20	1.95	ELXS451VSN471MA40S
	470	35 × 45	0.20	1.99	ELXS451VSN471MA45S
	560	35 × 50	0.20	2.22	ELXS451VSN561MA50S
500	100	30 × 25	0.20	0.82	ELXS501VSN101MR25S
	120	30 × 30	0.20	0.91	ELXS501VSN121MR30S
	120	35 × 25	0.20	0.88	ELXS501VSN121MA25S
	150	30 × 35	0.20	1.04	ELXS501VSN151MR35S
	180	30 × 40	0.20	1.17	ELXS501VSN181MR40S
	180	35 × 30	0.20	1.10	ELXS501VSN181MA30S
	220	30 × 45	0.20	1.33	ELXS501VSN221MR45S
	220	35 × 35	0.20	1.23	ELXS501VSN221MA35S
	270	30 × 50	0.20	1.50	ELXS501VSN271MR50S
	270	35 × 40	0.20	1.42	ELXS501VSN271MA40S
	330	35 × 45	0.20	1.60	ELXS501VSN331MA45S
	390	35 × 50	0.20	1.78	ELXS501VSN391MA50S
	470	35 × 60	0.20	2.03	ELXS501VSN471MA60S
550	120	30 × 30	0.20	0.91	ELXS551VSN121MR30S
	150	30 × 35	0.20	1.04	ELXS551VSN151MR35S
	180	30 × 40	0.20	1.17	ELXS551VSN181MR40S
	180	35 × 30	0.20	1.10	ELXS551VSN181MA30S
	220	30 × 50	0.20	1.35	ELXS551VSN221MR50S
	220	35 × 40	0.20	1.28	ELXS551VSN221MA40S
	270	35 × 45	0.20	1.45	ELXS551VSN271MA45S
	330	35 × 50	0.20	1.64	ELXS551VSN331MA50S
	390	35 × 60	0.20	1.85	ELXS551VSN391MA60S
600	120	30 × 40	0.20	0.96	ELXS601VSN121MR40S
	120	35 × 30	0.20	0.95	ELXS601VSN121MA30S
	150	30 × 45	0.20	1.10	ELXS601VSN151MR45S
	150	35 × 35	0.20	1.07	ELXS601VSN151MA35S
	180	30 × 50	0.20	1.22	ELXS601VSN181MR50S
	180	35 × 40	0.20	1.22	ELXS601VSN181MA40S
	220	30 × 60	0.20	1.40	ELXS601VSN221MR60S
	220	35 × 45	0.20	1.38	ELXS601VSN221MA45S
	270	35 × 50	0.20	1.56	ELXS601VSN271MA50S
	330	35 × 60	0.20	1.79	ELXS601VSN331MA60S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43
500 to 600V_{dc}	0.70	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXQ Series

- Endurance with ripple current : 5,000 hours at 105℃
- Downsized and higher ripple version of LXG series
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	160 to 450V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3$\sqrt{CV}$ Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	160 to 400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	160 to 400V	420 & 450V	
	Z(-25℃)/Z(+20℃)	4	8	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ30, φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E L X Q □□□ V S N □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 330μF:331, 2,200μF:222)
- Dummy terminal code
- Terminal code (VS, LI)
- Voltage code (ex. 160V:161, 315V:3B1, 450V:451)
- Series code
- Category

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
160	390	22×25	0.15	1.32	ELXQ161VSN391MP25S
	560	22×30	0.15	1.66	ELXQ161VSN561MP30S
	560	25.4×25	0.15	1.68	ELXQ161VSN561MQ25S
	680	22×35	0.15	1.87	ELXQ161VSN681MP35S
	680	25.4×30	0.15	1.88	ELXQ161VSN681MQ30S
	680	30×25	0.15	1.96	ELXQ161VSN681MR25S
	820	22×40	0.15	2.09	ELXQ161VSN821MP40S
	1,000	22×45	0.15	2.36	ELXQ161VSN102MP45S
	1,000	22×50	0.15	2.41	ELXQ161VSN102MP50S
	1,000	25.4×35	0.15	2.38	ELXQ161VSN102MQ35S
	1,000	30×30	0.15	2.40	ELXQ161VSN102MR30S
	1,000	35×25	0.15	2.55	ELXQ161VSN102MA25S
	1,200	25.4×40	0.15	2.66	ELXQ161VSN122MQ40S
	1,200	25.4×45	0.15	2.71	ELXQ161VSN122MQ45S
	1,200	30×35	0.15	2.69	ELXQ161VSN122MR35S
	1,200	30×40	0.15	2.77	ELXQ161VSN122MR40S
	1,200	35×30	0.15	2.86	ELXQ161VSN122MA30S
	1,500	25.4×50	0.15	3.08	ELXQ161VSN152MQ50S
	1,500	30×45	0.15	3.17	ELXQ161VSN152MR45S
	1,500	35×35	0.15	3.22	ELXQ161VSN152MA35S
	1,800	30×50	0.15	3.53	ELXQ161VSN182MR50S
	1,800	35×40	0.15	3.66	ELXQ161VSN182MA40S
	2,200	35×45	0.15	4.14	ELXQ161VSN222MA45S
	2,700	35×50	0.15	4.68	ELXQ161VSN272MA50S
180	330	22×25	0.15	1.21	ELXQ181VSN331MP25S
	470	22×30	0.15	1.52	ELXQ181VSN471MP30S
	470	25.4×25	0.15	1.52	ELXQ181VSN471MQ25S
	560	22×35	0.15	1.70	ELXQ181VSN561MP35S
	560	30×25	0.15	1.78	ELXQ181VSN561MR25S
	680	22×40	0.15	1.91	ELXQ181VSN681MP40S
	680	25.4×30	0.15	1.88	ELXQ181VSN681MQ30S
	820	22×45	0.15	1.99	ELXQ181VSN821MP45S
	820	25.4×35	0.15	2.16	ELXQ181VSN821MQ35S
	820	30×30	0.15	2.17	ELXQ181VSN821MR30S
	820	35×25	0.15	2.31	ELXQ181VSN821MA25S
	1,000	22×50	0.15	2.25	ELXQ181VSN102MP50S
	1,000	25.4×40	0.15	2.43	ELXQ181VSN102MQ40S
	1,000	25.4×45	0.15	2.47	ELXQ181VSN102MQ45S
	1,000	30×35	0.15	2.46	ELXQ181VSN102MR35S
	1,200	25.4×50	0.15	2.75	ELXQ181VSN122MQ50S
	1,200	30×40	0.15	2.77	ELXQ181VSN122MR40S
	1,200	35×30	0.15	2.86	ELXQ181VSN122MA30S
	1,500	30×45	0.15	3.17	ELXQ181VSN152MR45S
	1,500	30×50	0.15	3.22	ELXQ181VSN152MR50S
	1,500	35×35	0.15	3.22	ELXQ181VSN152MA35S
	1,800	35×40	0.15	3.66	ELXQ181VSN182MA40S
	1,800	35×45	0.15	3.74	ELXQ181VSN182MA45S
	2,200	35×50	0.15	4.22	ELXQ181VSN222MA50S
200	270	22×25	0.15	1.10	ELXQ201VSN271MP25S
	390	22×30	0.15	1.38	ELXQ201VSN391MP30S
	390	25.4×25	0.15	1.39	ELXQ201VSN391MQ25S
	470	22×35	0.15	1.55	ELXQ201VSN471MP35S
	560	22×40	0.15	1.73	ELXQ201VSN561MP40S
	560	25.4×30	0.15	1.71	ELXQ201VSN561MQ30S
	560	30×25	0.15	1.78	ELXQ201VSN561MR25S
	680	22×45	0.15	1.81	ELXQ201VSN681MP45S
	680	25.4×35	0.15	1.87	ELXQ201VSN681MQ35S
	680	30×30	0.15	1.98	ELXQ201VSN681MR30S
	680	35×25	0.15	2.10	ELXQ201VSN681MA25S
	820	22×50	0.15	2.18	ELXQ201VSN821MP50S
	820	25.4×40	0.15	2.09	ELXQ201VSN821MQ40S
	820	30×35	0.15	2.22	ELXQ201VSN821MR35S
	1,000	25.4×45	0.15	2.35	ELXQ201VSN102MQ45S
	1,000	25.4×50	0.15	2.39	ELXQ201VSN102MQ50S
	1,000	30×40	0.15	2.53	ELXQ201VSN102MR40S
	1,000	35×30	0.15	2.61	ELXQ201VSN102MA30S
	1,200	30×45	0.15	2.84	ELXQ201VSN122MR45S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
200	1,200	30×50	0.15	2.88	ELXQ201VSN122MR50S
	1,200	35×35	0.15	2.88	ELXQ201VSN122MA35S
	1,500	35×40	0.15	3.34	ELXQ201VSN152MA40S
	1,800	35×45	0.15	3.74	ELXQ201VSN182MA45S
	1,800	35×50	0.15	3.82	ELXQ201VSN182MA50S
220	270	22×25	0.15	1.10	ELXQ221VSN271MP25S
	330	22×30	0.15	1.19	ELXQ221VSN331MP30S
	390	25.4×25	0.15	1.39	ELXQ221VSN391MQ25S
	470	22×35	0.15	1.55	ELXQ221VSN471MP35S
	470	25.4×30	0.15	1.56	ELXQ221VSN471MQ30S
	470	30×25	0.15	1.63	ELXQ221VSN471MR25S
	560	22×40	0.15	1.73	ELXQ221VSN561MP40S
	560	30×30	0.15	1.79	ELXQ221VSN561MR30S
	680	22×45	0.15	1.94	ELXQ221VSN681MP45S
	680	22×50	0.15	1.99	ELXQ221VSN681MP50S
	680	25.4×35	0.15	1.96	ELXQ221VSN681MQ35S
	680	30×35	0.15	2.02	ELXQ221VSN681MR35S
	680	35×25	0.15	2.10	ELXQ221VSN681MA25S
	820	25.4×40	0.15	2.20	ELXQ221VSN821MQ40S
	820	25.4×45	0.15	2.24	ELXQ221VSN821MQ45S
	820	30×40	0.15	2.29	ELXQ221VSN821MR40S
	820	35×30	0.15	2.36	ELXQ221VSN821MA30S
	1,000	25.4×50	0.15	2.51	ELXQ221VSN102MQ50S
	1,000	30×45	0.15	2.59	ELXQ221VSN102MR45S
	1,000	35×35	0.15	2.63	ELXQ221VSN102MA35S
	1,200	30×50	0.15	2.88	ELXQ221VSN122MR50S
	1,200	35×40	0.15	2.98	ELXQ221VSN122MA40S
	1,500	35×45	0.15	3.41	ELXQ221VSN152MA45S
	1,800	35×50	0.15	3.82	ELXQ221VSN182MA50S
250	220	22×25	0.15	1.01	ELXQ251VSN221MP25S
	270	22×30	0.15	1.20	ELXQ251VSN271MP30S
	330	25.4×25	0.15	1.32	ELXQ251VSN331MQ25S
	390	22×35	0.15	1.44	ELXQ251VSN391MP35S
	390	25.4×30	0.15	1.43	ELXQ251VSN391MQ30S
	390	30×25	0.15	1.51	ELXQ251VSN391MR25S
	470	22×40	0.15	1.62	ELXQ251VSN471MP40S
	560	22×45	0.15	1.80	ELXQ251VSN561MP45S
	560	22×50	0.15	1.84	ELXQ251VSN561MP50S
	560	25.4×35	0.15	1.78	ELXQ251VSN561MQ35S
	560	30×30	0.15	1.83	ELXQ251VSN561MR30S
	560	35×25	0.15	1.91	ELXQ251VSN561MA25S
	680	25.4×40	0.15	2.00	ELXQ251VSN681MQ40S
	680	25.4×45	0.15	2.04	ELXQ251VSN681MQ45S
	680	30×35	0.15	2.06	ELXQ251VSN681MR35S
	680	35×30	0.15	2.15	ELXQ251VSN681MA30S
	820	25.4×50	0.15	2.28	ELXQ251VSN821MQ50S
	820	30×40	0.15	2.33	ELXQ251VSN821MR40S
	820	30×45	0.15	2.39	ELXQ251VSN821MR45S
	820	35×35	0.15	2.38	ELXQ251VSN821MA35S
	1,000	30×50	0.15	2.68	ELXQ251VSN102MR50S
	1,000	35×40	0.15	2.72	ELXQ251VSN102MA40S
	1,200	35×45	0.15	3.05	ELXQ251VSN122MA45S
	1,500	35×50	0.15	3.49	ELXQ251VSN152MA50S
315	150	22×25	0.15	0.80	ELXQ3B1VSN151MP25S
	180	22×30	0.15	0.92	ELXQ3B1VSN181MP30S
	180	25.4×25	0.15	0.94	ELXQ3B1VSN181MQ25S
	220	22×35	0.15	1.04	ELXQ3B1VSN221MP35S
	220	30×25	0.15	1.17	ELXQ3B1VSN221MR25S
	270	22×40	0.15	1.18	ELXQ3B1VSN271MP40S
	270	25.4×30	0.15	1.19	ELXQ3B1VSN271MQ30S
	330	22×45	0.15	1.33	ELXQ3B1VSN331MP45S
	330	25.4×35	0.15	1.37	ELXQ3B1VSN331MQ35S
	330	30×30	0.15	1.40	ELXQ3B1VSN331MR30S
	330	35×25	0.15	1.49	ELXQ3B1VSN331MA25S
	390	22×50	0.15	1.48	ELXQ3B1VSN391MP50S
	390	25.4×40	0.15	1.52	ELXQ3B1VSN391MQ40S
	470	25.4×45	0.15	1.70	ELXQ3B1VSN471MQ45S

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
315	470	30×35	0.15	1.71	ELXQ3B1VSN471MR35S
	470	35×30	0.15	1.82	ELXQ3B1VSN471MA30S
	560	25.4×50	0.15	1.88	ELXQ3B1VSN561MQ50S
	560	30×40	0.15	1.92	ELXQ3B1VSN561MR40S
	560	30×45	0.15	1.97	ELXQ3B1VSN561MR45S
	560	35×35	0.15	2.00	ELXQ3B1VSN561MA35S
	680	30×50	0.15	2.21	ELXQ3B1VSN681MR50S
	680	35×40	0.15	2.29	ELXQ3B1VSN681MA40S
	820	35×45	0.15	2.57	ELXQ3B1VSN821MA45S
	1,000	35×50	0.15	2.89	ELXQ3B1VSN102MA50S
350	120	22×25	0.15	0.72	ELXQ351VSN121MP25S
	150	22×30	0.15	0.84	ELXQ351VSN151MP30S
	180	25.4×25	0.15	0.94	ELXQ351VSN181MQ25S
	220	22×35	0.15	1.04	ELXQ351VSN221MP35S
	220	22×40	0.15	1.06	ELXQ351VSN221MP40S
	220	25.4×30	0.15	1.07	ELXQ351VSN221MQ30S
	220	30×25	0.15	1.13	ELXQ351VSN221MR25S
	270	22×45	0.15	1.20	ELXQ351VSN271MP45S
	270	25.4×35	0.15	1.24	ELXQ351VSN271MQ35S
	270	30×30	0.15	1.27	ELXQ351VSN271MR30S
	270	35×25	0.15	1.35	ELXQ351VSN271MA25S
	330	22×50	0.15	1.36	ELXQ351VSN331MP50S
	330	25.4×40	0.15	1.39	ELXQ351VSN331MQ40S
	330	30×35	0.15	1.43	ELXQ351VSN331MR35S
	390	25.4×45	0.15	1.55	ELXQ351VSN391MQ45S
	390	30×40	0.15	1.60	ELXQ351VSN391MR40S
	390	35×30	0.15	1.66	ELXQ351VSN391MA30S
	470	25.4×50	0.15	1.72	ELXQ351VSN471MQ50S
	470	30×45	0.15	1.81	ELXQ351VSN471MR45S
	470	35×35	0.15	1.83	ELXQ351VSN471MA35S
	560	30×50	0.15	2.00	ELXQ351VSN561MR50S
	560	35×40	0.15	2.07	ELXQ351VSN561MA40S
	680	35×45	0.15	2.34	ELXQ351VSN681MA45S
	820	35×50	0.15	2.62	ELXQ351VSN821MA50S
400	100	22×25	0.15	0.66	ELXQ401VSN101MP25S
	120	22×30	0.15	0.75	ELXQ401VSN121MP30S
	150	22×35	0.15	0.86	ELXQ401VSN151MP35S
	150	25.4×25	0.15	0.86	ELXQ401VSN151MQ25S
	180	22×40	0.15	0.96	ELXQ401VSN181MP40S
	180	25.4×30	0.15	0.97	ELXQ401VSN181MQ30S
	180	30×25	0.15	1.02	ELXQ401VSN181MR25S
	220	22×45	0.15	1.09	ELXQ401VSN221MP45S
	220	25.4×35	0.15	1.12	ELXQ401VSN221MQ35S
	220	35×25	0.15	1.22	ELXQ401VSN221MA25S
	270	22×50	0.15	1.23	ELXQ401VSN271MP50S
	270	25.4×40	0.15	1.26	ELXQ401VSN271MQ40S
	270	25.4×45	0.15	1.29	ELXQ401VSN271MQ45S
	270	30×30	0.15	1.27	ELXQ401VSN271MR30S
	330	25.4×50	0.15	1.44	ELXQ401VSN331MQ50S
	330	30×35	0.15	1.43	ELXQ401VSN331MR35S
	330	35×30	0.15	1.52	ELXQ401VSN331MA30S
	390	30×40	0.15	1.60	ELXQ401VSN391MR40S
	390	35×35	0.15	1.67	ELXQ401VSN391MA35S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	470	30×45	0.15	1.81	ELXQ401VSN471MR45S
	470	30×50	0.15	1.84	ELXQ401VSN471MR50S
	470	35×40	0.15	1.90	ELXQ401VSN471MA40S
	560	35×45	0.15	2.12	ELXQ401VSN561MA45S
	680	35×50	0.15	2.39	ELXQ401VSN681MA50S
420	100	22×25	0.20	0.66	ELXQ421VSN101MP25S
	120	22×30	0.20	0.75	ELXQ421VSN121MP30S
	120	25.4×25	0.20	0.77	ELXQ421VSN121MQ25S
	150	22×35	0.20	0.86	ELXQ421VSN151MP35S
	180	22×40	0.20	0.96	ELXQ421VSN181MP40S
	180	22×45	0.20	0.98	ELXQ421VSN181MP45S
	180	25.4×30	0.20	0.97	ELXQ421VSN181MQ30S
	180	25.4×35	0.20	1.01	ELXQ421VSN181MQ35S
	180	30×25	0.20	1.02	ELXQ421VSN181MR25S
	220	22×50	0.20	1.11	ELXQ421VSN221MP50S
	220	25.4×40	0.20	1.14	ELXQ421VSN221MQ40S
	220	30×30	0.20	1.14	ELXQ421VSN221MR30S
	220	35×25	0.20	1.22	ELXQ421VSN221MA25S
	270	25.4×45	0.20	1.29	ELXQ421VSN271MQ45S
	270	30×35	0.20	1.30	ELXQ421VSN271MR35S
	270	35×30	0.20	1.38	ELXQ421VSN271MA30S
	330	25.4×50	0.20	1.44	ELXQ421VSN331MQ50S
	330	30×40	0.20	1.48	ELXQ421VSN331MR40S
	330	35×35	0.20	1.54	ELXQ421VSN331MA35S
	390	30×45	0.20	1.64	ELXQ421VSN391MR45S
	390	35×40	0.20	1.73	ELXQ421VSN391MA40S
	470	30×50	0.20	1.84	ELXQ421VSN471MR50S
	470	35×45	0.20	1.94	ELXQ421VSN471MA45S
	560	35×50	0.20	2.17	ELXQ421VSN561MA50S
450	82	22×25	0.20	0.59	ELXQ451VSN820MP25S
	100	22×30	0.20	0.69	ELXQ451VSN101MP30S
	100	25.4×25	0.20	0.70	ELXQ451VSN101MQ25S
	120	22×35	0.20	0.77	ELXQ451VSN121MP35S
	150	22×40	0.20	0.88	ELXQ451VSN151MP40S
	150	22×45	0.20	0.90	ELXQ451VSN151MP45S
	150	25.4×30	0.20	0.88	ELXQ451VSN151MQ30S
	150	25.4×35	0.20	0.92	ELXQ451VSN151MQ35S
	150	30×25	0.20	0.93	ELXQ451VSN151MR25S
	180	22×50	0.20	1.01	ELXQ451VSN181MP50S
	180	25.4×40	0.20	1.03	ELXQ451VSN181MQ40S
	180	30×30	0.20	1.03	ELXQ451VSN181MR30S
	180	35×25	0.20	1.10	ELXQ451VSN181MA25S
	220	25.4×45	0.20	1.16	ELXQ451VSN221MQ45S
	220	30×35	0.20	1.17	ELXQ451VSN221MR35S
	220	35×30	0.20	1.24	ELXQ451VSN221MA30S
	270	25.4×50	0.20	1.31	ELXQ451VSN271MQ50S
	270	30×40	0.20	1.33	ELXQ451VSN271MR40S
	270	35×35	0.20	1.39	ELXQ451VSN271MA35S
	330	30×45	0.20	1.51	ELXQ451VSN331MR45S
	390	30×50	0.20	1.67	ELXQ451VSN391MR50S
	390	35×40	0.20	1.73	ELXQ451VSN391MA40S
	390	35×45	0.20	1.77	ELXQ451VSN391MA45S
	470	35×50	0.20	1.98	ELXQ451VSN471MA50S

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V_{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V_{dc}	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXG Series

- Endurance with ripple current : 5,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics								
Category Temperature Range	-40 to +105℃								
Rated Voltage Range	10 to 100Vdc								
Capacitance Tolerance	±20% (M)								(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 3mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)								(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	10V	16V	25V	35V	50V	63V	80 & 100V	
	tan δ (Max.)	0.60	0.45	0.30	0.25	0.20	0.15	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Capacitance change : Capacitance at the lowest operating temperature shall not be less than 70% of the 20℃ value.								
	Rated voltage (Vdc)	10V	16V	25V	35V	50V	63V	80 & 100V	
	Z(-25℃)/Z(+20℃)	4	4	3	3	2	2	2	
	Z(-40℃)/Z(+20℃)	15	15	10	8	6	6	5	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃.								
	Capacitance change	≦±25% of the initial value							
	D.F. (tan δ)	≦250% of the initial specified value							
	Leakage current	≦The initial specified value							
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.								
	Capacitance change	≦±20% of the initial value							
	D.F. (tan δ)	≦150% of the initial specified value							
	Leakage current	≦The initial specified value							

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35)

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
10 to 50Vdc	0.95	1.00	1.03	1.05	1.08	1.08
63 to 100Vdc	0.92	1.00	1.07	1.13	1.19	1.20

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Long life snap-ins, 105℃

LXG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
10	6,800	22×25	0.60	1.30	ELXG100VSN682MP25S
	10,000	22×30	0.60	1.65	ELXG100VSN103MP30S
	10,000	25.4×25	0.60	1.64	ELXG100VSN103MQ25S
	12,000	22×35	0.60	1.85	ELXG100VSN123MP35S
	12,000	25.4×30	0.60	1.85	ELXG100VSN123MQ30S
	12,000	30×25	0.60	1.89	ELXG100VSN123MR25S
	15,000	22×40	0.60	2.12	ELXG100VSN153MP40S
	15,000	25.4×35	0.60	2.16	ELXG100VSN153MQ35S
	18,000	22×50	0.60	2.45	ELXG100VSN183MP50S
	18,000	25.4×40	0.60	2.43	ELXG100VSN183MQ40S
	18,000	30×30	0.60	2.37	ELXG100VSN183MR30S
	18,000	35×25	0.60	2.42	ELXG100VSN183MA25S
	22,000	30×35	0.60	2.73	ELXG100VSN223MR35S
	22,000	35×30	0.60	2.79	ELXG100VSN223MA30S
	27,000	25.4×50	0.60	3.11	ELXG100VSN273MQ50S
	27,000	30×40	0.60	3.13	ELXG100VSN273MR40S
	33,000	35×35	0.60	3.49	ELXG100VSN333MA35S
	39,000	30×50	0.60	3.99	ELXG100VSN393MR50S
	39,000	35×40	0.60	3.96	ELXG100VSN393MA40S
	47,000	35×50	0.60	4.62	ELXG100VSN473MA50S
16	5,600	22×25	0.45	1.44	ELXG160VSN562MP25S
	6,800	22×30	0.45	1.66	ELXG160VSN682MP30S
	6,800	25.4×25	0.45	1.66	ELXG160VSN682MQ25S
	8,200	22×35	0.45	1.87	ELXG160VSN822MP35S
	10,000	22×40	0.45	2.12	ELXG160VSN103MP40S
	10,000	25.4×30	0.45	2.07	ELXG160VSN103MQ30S
	10,000	30×25	0.45	2.11	ELXG160VSN103MR25S
	12,000	25.4×35	0.45	2.37	ELXG160VSN123MQ35S
	12,000	30×30	0.45	2.37	ELXG160VSN123MR30S
	12,000	35×25	0.45	2.42	ELXG160VSN123MA25S
	15,000	22×50	0.45	2.74	ELXG160VSN153MP50S
	15,000	25.4×40	0.45	2.71	ELXG160VSN153MQ40S
	18,000	25.4×50	0.45	3.11	ELXG160VSN183MQ50S
	18,000	30×35	0.45	3.02	ELXG160VSN183MR35S
	18,000	35×30	0.45	3.09	ELXG160VSN183MA30S
	22,000	30×40	0.45	3.46	ELXG160VSN223MR40S
	22,000	35×35	0.45	3.49	ELXG160VSN223MA35S
	27,000	30×50	0.45	4.07	ELXG160VSN273MR50S
	27,000	35×40	0.45	4.04	ELXG160VSN273MA40S
	39,000	35×50	0.45	5.16	ELXG160VSN393MA50S
25	3,900	22×25	0.30	1.31	ELXG250VSN392MP25S
	4,700	22×30	0.30	1.51	ELXG250VSN472MP30S
	4,700	25.4×25	0.30	1.51	ELXG250VSN472MQ25S
	5,600	22×35	0.30	1.70	ELXG250VSN562MP35S
	6,800	22×40	0.30	1.92	ELXG250VSN682MP40S
	6,800	25.4×30	0.30	1.87	ELXG250VSN682MQ30S
	6,800	30×25	0.30	1.90	ELXG250VSN682MR25S
	8,200	25.4×35	0.30	2.14	ELXG250VSN822MQ35S
	8,200	30×30	0.30	2.15	ELXG250VSN822MR30S
	8,200	35×25	0.30	2.19	ELXG250VSN822MA25S
	10,000	22×50	0.30	2.45	ELXG250VSN103MP50S
	10,000	25.4×40	0.30	2.43	ELXG250VSN103MQ40S
	12,000	25.4×50	0.30	2.78	ELXG250VSN123MQ50S
	12,000	30×35	0.30	2.70	ELXG250VSN123MR35S
	12,000	35×30	0.30	2.76	ELXG250VSN123MA30S
	15,000	30×40	0.30	3.13	ELXG250VSN153MR40S
	15,000	35×35	0.30	3.16	ELXG250VSN153MA35S
	18,000	30×50	0.30	3.64	ELXG250VSN183MR50S
	18,000	35×40	0.30	3.61	ELXG250VSN183MA40S
	27,000	35×50	0.30	4.70	ELXG250VSN273MA50S
35	2,200	22×25	0.25	1.10	ELXG350VSN222MP25S
	3,300	22×30	0.25	1.42	ELXG350VSN332MP30S
	3,300	25.4×25	0.25	1.41	ELXG350VSN332MQ25S
	3,900	22×35	0.25	1.58	ELXG350VSN392MP35S
	3,900	25.4×30	0.25	1.58	ELXG350VSN392MQ30S
	4,700	22×40	0.25	1.78	ELXG350VSN472MP40S
	4,700	30×25	0.25	1.77	ELXG350VSN472MR25S
35	5,600	25.4×35	0.25	1.98	ELXG350VSN562MQ35S
	5,600	30×30	0.25	1.98	ELXG350VSN562MR30S
	5,600	35×25	0.25	2.03	ELXG350VSN562MA25S
	6,800	22×50	0.25	2.26	ELXG350VSN682MP50S
	6,800	25.4×40	0.25	2.24	ELXG350VSN682MQ40S
	8,200	25.4×50	0.25	2.57	ELXG350VSN822MQ50S
	8,200	30×35	0.25	2.50	ELXG350VSN822MR35S
	8,200	35×30	0.25	2.55	ELXG350VSN822MA30S
	10,000	30×40	0.25	2.86	ELXG350VSN103MR40S
	10,000	35×35	0.25	2.88	ELXG350VSN103MA35S
	12,000	30×50	0.25	3.32	ELXG350VSN123MR50S
	12,000	35×40	0.25	3.30	ELXG350VSN123MA40S
	18,000	35×50	0.25	4.29	ELXG350VSN183MA50S
50	1,500	22×25	0.20	1.02	ELXG500VSN152MP25S
	1,800	22×30	0.20	1.17	ELXG500VSN182MP30S
	1,800	25.4×25	0.20	1.17	ELXG500VSN182MQ25S
	2,200	22×35	0.20	1.33	ELXG500VSN222MP35S
	2,700	22×40	0.20	1.51	ELXG500VSN272MP40S
	2,700	25.4×30	0.20	1.47	ELXG500VSN272MQ30S
	2,700	30×25	0.20	1.50	ELXG500VSN272MR25S
	3,300	25.4×35	0.20	1.70	ELXG500VSN332MQ35S
	3,300	30×30	0.20	1.70	ELXG500VSN332MR30S
	3,300	35×25	0.20	1.74	ELXG500VSN332MA25S
	3,900	22×50	0.20	1.91	ELXG500VSN392MP50S
	3,900	25.4×40	0.20	1.89	ELXG500VSN392MQ40S
	4,700	30×35	0.20	2.11	ELXG500VSN472MR35S
	4,700	35×30	0.20	2.16	ELXG500VSN472MA30S
	5,600	25.4×50	0.20	2.38	ELXG500VSN562MQ50S
	5,600	30×40	0.20	2.39	ELXG500VSN562MR40S
	5,600	35×35	0.20	2.41	ELXG500VSN562MA35S
	6,800	30×50	0.20	2.79	ELXG500VSN682MR50S
	6,800	35×40	0.20	2.78	ELXG500VSN682MA40S
	10,000	35×50	0.20	3.57	ELXG500VSN103MA50S
63	1,000	22×25	0.15	1.00	ELXG630VSN102MP25S
	1,200	22×30	0.15	1.15	ELXG630VSN122MP30S
	1,200	25.4×25	0.15	1.15	ELXG630VSN122MQ25S
	1,500	22×35	0.15	1.32	ELXG630VSN152MP35S
	1,800	22×40	0.15	1.49	ELXG630VSN182MP40S
	1,800	25.4×30	0.15	1.45	ELXG630VSN182MQ30S
	1,800	30×25	0.15	1.48	ELXG630VSN182MR25S
	2,200	25.4×35	0.15	1.67	ELXG630VSN222MQ35S
	2,200	30×30	0.15	1.68	ELXG630VSN222MR30S
	2,200	35×25	0.15	1.71	ELXG630VSN222MA25S
	2,700	22×50	0.15	1.92	ELXG630VSN272MP50S
	2,700	25.4×40	0.15	1.90	ELXG630VSN272MQ40S
	2,700	30×35	0.15	1.93	ELXG630VSN272MR35S
	3,300	25.4×50	0.15	2.20	ELXG630VSN332MQ50S
	3,300	35×30	0.15	2.18	ELXG630VSN332MA30S
	3,900	30×40	0.15	2.41	ELXG630VSN392MR40S
	3,900	35×35	0.15	2.43	ELXG630VSN392MA35S
	4,700	30×50	0.15	2.80	ELXG630VSN472MR50S
	4,700	35×40	0.15	2.78	ELXG630VSN472MA40S
	6,800	35×50	0.15	3.55	ELXG630VSN682MA50S
80	680	22×25	0.15	0.97	ELXG800VSN681MP25S
	820	22×30	0.15	1.12	ELXG800VSN821MP30S
	1,000	22×35	0.15	1.27	ELXG800VSN102MP35S
	1,000	25.4×25	0.15	1.23	ELXG800VSN102MQ25S
	1,200	22×40	0.15	1.42	ELXG800VSN122MP40S
	1,200	25.4×30	0.15	1.39	ELXG800VSN122MQ30S
	1,200	30×25	0.15	1.41	ELXG800VSN122MR25S
	1,500	25.4×35	0.15	1.62	ELXG800VSN152MQ35S
	1,800	22×50	0.15	1.84	ELXG800VSN182MP50S
	1,800	25.4×40	0.15	1.82	ELXG800VSN182MQ40S
	1,800	30×30	0.15	1.78	ELXG800VSN182MR30S
	1,800	35×25	0.15	1.82	ELXG800VSN182MA25S
	2,200	25.4×50	0.15	2.11	ELXG800VSN222MQ50S
	2,200	30×35	0.15	2.05	ELXG800VSN222MR35S

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LXG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
80	2,200	35×30	0.15	2.09	ELXG800VSN222MA30S
	2,700	30×40	0.15	2.35	ELXG800VSN272MR40S
	2,700	35×35	0.15	2.37	ELXG800VSN272MA35S
	3,300	30×50	0.15	2.75	ELXG800VSN332MR50S
	3,300	35×40	0.15	2.73	ELXG800VSN332MA40S
	4,700	35×50	0.15	3.46	ELXG800VSN472MA50S
100	390	22×25	0.15	0.78	ELXG101VSN391MP25S
	560	22×30	0.15	0.99	ELXG101VSN561MP30S
	560	25.4×25	0.15	0.98	ELXG101VSN561MQ25S
	680	22×35	0.15	1.12	ELXG101VSN681MP35S
	820	22×40	0.15	1.26	ELXG101VSN821MP40S
	820	25.4×30	0.15	1.23	ELXG101VSN821MQ30S
	820	30×25	0.15	1.25	ELXG101VSN821MR25S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
100	1,000	25.4×35	0.15	1.41	ELXG101VSN102MQ35S
	1,000	30×30	0.15	1.42	ELXG101VSN102MR30S
	1,000	35×25	0.15	1.45	ELXG101VSN102MA25S
	1,200	22×50	0.15	1.60	ELXG101VSN122MP50S
	1,200	25.4×40	0.15	1.59	ELXG101VSN122MQ40S
	1,200	30×35	0.15	1.61	ELXG101VSN122MR35S
	1,500	25.4×50	0.15	1.86	ELXG101VSN152MQ50S
	1,500	30×40	0.15	1.87	ELXG101VSN152MR40S
	1,500	35×30	0.15	1.85	ELXG101VSN152MA30S
	1,800	35×35	0.15	2.07	ELXG101VSN182MA35S
	2,200	30×50	0.15	2.40	ELXG101VSN222MR50S
	2,200	35×40	0.15	2.39	ELXG101VSN222MA40S
	2,700	35×50	0.15	2.81	ELXG101VSN272MA50S

◆MAXIMUM IMPEDANCE [mΩ/20℃, 30kHz]

Case size φD×L(mm) \ V_{dc}	10 to 63	80	100
22×25	120	150	
22×30	100	120	
22×35	80	95	
22×40	70	80	
22×50	50	60	
25.4×25	90	110	
25.4×30	70	85	
25.4×35	60	70	
25.4×40	50	60	
25.4×50	40	45	
30×25	70	80	
30×30	50	60	
30×35	40	50	
30×40	35	40	
30×50	25	30	
35×25	65	70	
35×30	45	50	
35×35	38	40	
35×40	30	30	
35×50	23	25	

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Overvoltage resistant design, 105℃

CHA Series

- Doesn't spark with DC over voltage
- Downsized from current KLG series
- Endurance with ripple current : 2,000 hours at 105℃
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +105℃		
Rated Voltage Range	200 to 450V_{dc}		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	$I \leqq 3\sqrt{CV}$ Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V_{dc})		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	200V_{dc} : 0.15 max. (0.20 max. for φD=35mm) 400V_{dc} : 0.15 max.		(at 20℃, 120Hz)
Low Temperature Characteristics (Max.Impedance Ratio)	Rated Voltage (V_{dc})	200 to 450V	
	Z(-25℃) / Z(+20℃)	4	
			(at 120Hz)
ESL	50nH max.		(at 20℃, 1MHz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35)

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

◆RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Rated Voltage(V_{dc}) \ Frequency(Hz)	50	120	300	1k	10k	50k
200, 250	0.81	1.00	1.17	1.32	1.45	1.50
400, 450	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Overvoltage resistant design, 105℃

CHA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
200	180	22×20	0.15	0.82	ECHA201VSN181MP20S
	220	22×20	0.15	0.90	ECHA201VSN221MP20S
	270	22×25	0.15	1.02	ECHA201VSN271MP25S
	330	22×30	0.15	1.20	ECHA201VSN331MP30S
	330	25.4×25	0.15	1.20	ECHA201VSN331MQ25S
	390	22×30	0.15	1.35	ECHA201VSN391MP30S
	390	25.4×25	0.15	1.35	ECHA201VSN391MQ25S
	470	22×35	0.15	1.45	ECHA201VSN471MP35S
	470	25.4×30	0.15	1.45	ECHA201VSN471MQ30S
	470	30×25	0.15	1.47	ECHA201VSN471MR25S
	560	22×40	0.15	1.62	ECHA201VSN561MP40S
	560	25.4×30	0.15	1.60	ECHA201VSN561MQ30S
	560	30×25	0.15	1.60	ECHA201VSN561MR25S
	680	25.4×35	0.15	1.82	ECHA201VSN681MQ35S
	680	30×30	0.15	1.81	ECHA201VSN681MR30S
	680	35×25	0.20	1.86	ECHA201VSN681MA25S
	820	25.4×45	0.15	2.11	ECHA201VSN821MQ45S
	820	30×35	0.15	2.11	ECHA201VSN821MR35S
	820	35×25	0.20	2.11	ECHA201VSN821MA25S
	1,000	30×35	0.15	2.40	ECHA201VSN102MR35S
	1,000	35×30	0.20	2.40	ECHA201VSN102MA30S
	1,200	30×45	0.15	2.69	ECHA201VSN122MR45S
	1,200	35×35	0.20	2.65	ECHA201VSN122MA35S
	1,500	35×45	0.20	2.96	ECHA201VSN152MA45S
250	120	22×20	0.15	0.68	ECHA251VSN121MP20S
	180	22×25	0.15	0.87	ECHA251VSN181MP25S
	180	25.4×20	0.15	0.93	ECHA251VSN181MQ20S
	220	22×30	0.15	1.00	ECHA251VSN221MP30S
	270	22×35	0.15	1.14	ECHA251VSN271MP35S
	270	25.4×25	0.15	1.13	ECHA251VSN271MQ25S
	270	30×20	0.15	1.25	ECHA251VSN271MR20S
	330	22×40	0.15	1.28	ECHA251VSN331MP40S
	330	25.4×30	0.15	1.29	ECHA251VSN331MQ30S
	390	22×45	0.15	1.42	ECHA251VSN391MP45S
	390	25.4×35	0.15	1.46	ECHA251VSN391MQ35S
	390	30×25	0.15	1.52	ECHA251VSN391MR25S
	390	35×20	0.20	1.62	ECHA251VSN391MA20S
	470	25.4×40	0.15	1.64	ECHA251VSN471MQ40S
	470	30×30	0.15	1.67	ECHA251VSN471MR30S
	560	25.4×45	0.15	1.82	ECHA251VSN561MQ45S
	560	30×35	0.15	1.87	ECHA251VSN561MR35S
	560	35×25	0.20	1.99	ECHA251VSN561MA25S
	680	30×40	0.15	2.12	ECHA251VSN681MR40S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
250	680	35×30	0.20	2.19	ECHA251VSN681MA30S
	820	30×45	0.15	2.39	ECHA251VSN821MR45S
	820	35×35	0.20	2.42	ECHA251VSN821MA35S
400	56	22×20	0.15	0.45	ECHA401VSN560MP20S
	68	22×20	0.15	0.51	ECHA401VSN680MP20S
	82	22×25	0.15	0.58	ECHA401VSN820MP25S
	100	22×25	0.15	0.66	ECHA401VSN101MP25S
	100	25.4×25	0.15	0.66	ECHA401VSN101MQ25S
	120	22×30	0.15	0.76	ECHA401VSN121MP30S
	120	25.4×25	0.15	0.76	ECHA401VSN121MQ25S
	150	22×35	0.15	0.85	ECHA401VSN151MP35S
	150	25.4×30	0.15	0.85	ECHA401VSN151MQ30S
	150	30×25	0.15	0.85	ECHA401VSN151MR25S
	180	22×40	0.15	0.94	ECHA401VSN181MP40S
	180	25.4×35	0.15	0.95	ECHA401VSN181MQ35S
	180	30×25	0.15	0.95	ECHA401VSN181MR25S
	220	25.4×35	0.15	1.24	ECHA401VSN221MQ35S
	220	30×30	0.15	1.24	ECHA401VSN221MR30S
	220	35×25	0.15	1.24	ECHA401VSN221MA25S
	270	25.4×45	0.15	1.30	ECHA401VSN271MQ45S
	270	30×35	0.15	1.30	ECHA401VSN271MR35S
	270	35×25	0.15	1.30	ECHA401VSN271MA25S
	330	30×35	0.15	1.45	ECHA401VSN331MR35S
	330	30×40	0.15	1.47	ECHA401VSN331MR40S
	330	35×30	0.15	1.47	ECHA401VSN331MA30S
	390	30×40	0.15	1.60	ECHA401VSN391MR40S
	390	35×35	0.15	1.61	ECHA401VSN391MA35S
	470	35×40	0.15	1.84	ECHA401VSN471MA40S
450	82	25.4×25	0.20	0.61	ECHA451VSN820MQ25S
	120	25.4×30	0.20	0.76	ECHA451VSN121MQ30S
	120	30×25	0.20	0.77	ECHA451VSN121MR25S
	150	25.4×35	0.20	0.88	ECHA451VSN151MQ35S
	180	25.4×40	0.20	0.99	ECHA451VSN181MQ40S
	180	30×30	0.20	0.97	ECHA451VSN181MR30S
	180	30×35	0.20	1.00	ECHA451VSN181MR35S
	220	30×35	0.20	1.30	ECHA451VSN221MR35S
	220	35×25	0.20	1.20	ECHA451VSN221MA25S
	270	30×35	0.20	1.22	ECHA451VSN271MR35S
	270	30×40	0.20	1.28	ECHA451VSN271MR40S
	270	35×30	0.20	1.30	ECHA451VSN271MA30S
	330	35×35	0.20	1.40	ECHA451VSN331MA35S
	390	35×40	0.20	1.60	ECHA451VSN391MA40S
	420	35×50	0.20	1.56	ECHA451VSN421MA50S

◆DC OVERVOLTAGE TEST CONDITIONS

The vent will operate and the capacitor shall become an open circuit without burning materials when the following test DC voltage is applied.

●Test DC voltage

Rated Voltage	Nominal Capacitance	Current Limit	Test Voltage
200V_{dc}	<330μF	4A	300/375V_{dc}
	330μF≦C<470μF	5A	
	≧470μF	7A	
250V_{dc}	<330μF	4A	350/450V_{dc}
	330μF≦C<470μF	5A	
	≧470μF	7A	
400V_{dc}	<100μF	2A	500/600V_{dc}
	100μF≦C<220μF	4A	
	≧220μF	7A	
450V_{dc}	<100μF	2A	550/675V_{dc}
	100μF≦C<220μF	4A	
	≧220μF	7A	

●Test Circuit

Constant DC voltage/current power supply

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Snap-ins, 105℃

KMV Series

- For frequently change of regenerative voltage from AC servo amplifier and inverter control
- Ideal use to power supply, specially power source with turn on and off frequently and highly voltage fluctuation
- Improved the resistance for charge and discharge from same dimension of KMQ series
- Endurance with ripple current : 3,000 hours at 105℃
- Rated voltage range : 350 to 450Vdc, Capacitance 82 to 1,200μF
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +105℃			
Rated Voltage Range	350 to 450Vdc			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I≦3√CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	350 & 400V	420 & 450V	
	tan δ (Max.)	0.15	0.20	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	350 to 450V		
	Z(-25℃)/Z(+20℃)	8		(at 120Hz)
Charge and Discharge	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to charge and discharge test with the voltage waveform shown below at room temperature (15 to 35℃).			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
	Frequency	6Hz		
	Number of cycles	50 million times		
	Voltage waveform			
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦200% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.			
	Capacitance change	≦±15% of the initial value		
	D.F. (tan δ)	≦150% of the initial specified value		
	Leakage current	≦The initial specified value		

*Please consult with us about charge and discharge conditions.

◆DIMENSIONS [mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ35)

No plastic disk is the standard design.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Snap-ins, 105℃

KMV Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E KMV □□□ VS N □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 270μF:271, 1,200μF:122)
- Dummy terminal code
- Terminal code (VS, LI)
- Voltage code (ex. 350V:351, 400V:401)
- Series code
- Category

Please refer to "Product code guide (snap-in type)"

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/ 105℃, 120Hz)	Max. charge current and Max.discharge current (Arms/ 6Hz)	Part No.
350	120	22×25	0.74	0.42	EKMV351VSN121MP25S
	150	22×30	0.87	0.49	EKMV351VSN151MP30S
	180	25.4×25	0.92	0.54	EKMV351VSN181MQ25S
	220	22×35	1.08	0.60	EKMV351VSN221MP35S
	220	22×40	1.10	0.62	EKMV351VSN221MP40S
	220	25.4×30	1.05	0.61	EKMV351VSN221MQ30S
	270	22×45	1.24	0.71	EKMV351VSN271MP45S
	270	25.4×35	1.21	0.70	EKMV351VSN271MQ35S
	270	30×25	1.15	0.68	EKMV351VSN271MR25S
	330	22×50	1.41	0.80	EKMV351VSN331MP50S
	330	25.4×40	1.37	0.80	EKMV351VSN331MQ40S
	330	30×30	1.29	0.77	EKMV351VSN331MR30S
	330	35×25	1.31	0.78	EKMV351VSN331MA25S
	390	25.4×45	1.51	0.89	EKMV351VSN391MQ45S
	390	30×35	1.44	0.88	EKMV351VSN391MR35S
	470	25.4×50	1.69	0.99	EKMV351VSN471MQ50S
	470	30×40	1.62	1.00	EKMV351VSN471MR40S
	470	35×30	1.61	0.97	EKMV351VSN471MA30S
	560	30×45	1.82	1.12	EKMV351VSN561MR45S
	560	35×35	1.77	1.08	EKMV351VSN561MA35S
	680	30×50	2.04	1.27	EKMV351VSN681MR50S
	680	35×40	2.02	1.25	EKMV351VSN681MA40S
	820	35×45	2.27	1.41	EKMV351VSN821MA45S
	820	35×50	2.32	1.46	EKMV351VSN821MA50S
	1,200	35×60	2.88	1.84	EKMV351VSN122MA60S
400	100	22×25	0.69	0.38	EKMV401VSN101MP25S
	120	22×30	0.79	0.44	EKMV401VSN121MP30S
	150	25.4×25	0.87	0.49	EKMV401VSN151MQ25S
	180	22×35	0.99	0.55	EKMV401VSN181MP35S
	180	22×40	1.01	0.56	EKMV401VSN181MP40S
	180	25.4×30	0.98	0.55	EKMV401VSN181MQ30S
	220	22×45	1.14	0.64	EKMV401VSN221MP45S
	220	25.4×35	1.13	0.63	EKMV401VSN221MQ35S
	220	30×25	1.10	0.61	EKMV401VSN221MR25S
	270	22×50	1.30	0.73	EKMV401VSN271MP50S
	270	25.4×40	1.28	0.72	EKMV401VSN271MQ40S
	270	30×30	1.22	0.70	EKMV401VSN271MR30S
	270	35×25	1.26	0.71	EKMV401VSN271MA25S
	330	25.4×45	1.44	0.82	EKMV401VSN331MQ45S
	330	30×35	1.38	0.81	EKMV401VSN331MR35S
	390	25.4×50	1.59	0.91	EKMV401VSN391MQ50S
	390	30×40	1.55	0.91	EKMV401VSN391MR40S
	390	35×30	1.55	0.89	EKMV401VSN391MA30S
	470	30×45	1.74	1.03	EKMV401VSN471MR45S
	470	35×35	1.71	1.00	EKMV401VSN471MA35S
	560	30×50	1.93	1.15	EKMV401VSN561MR50S
	560	35×40	1.94	1.14	EKMV401VSN561MA40S
	680	35×45	2.19	1.29	EKMV401VSN681MA45S
	820	35×50	2.45	1.44	EKMV401VSN821MA50S
	1,000	35×60	2.79	1.70	EKMV401VSN102MA60S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/ 105℃, 120Hz)	Max. charge current and Max.discharge current (Arms/ 6Hz)	Part No.
420	82	22×25	0.64	0.34	EKMV421VSN820MP25S
	120	22×30	0.81	0.44	EKMV421VSN121MP30S
	120	25.4×25	0.81	0.44	EKMV421VSN121MQ25S
	150	22×35	0.93	0.50	EKMV421VSN151MP35S
	150	25.4×30	0.93	0.50	EKMV421VSN151MQ30S
	180	22×40	1.04	0.56	EKMV421VSN181MP40S
	180	22×45	1.06	0.58	EKMV421VSN181MP45S
	180	25.4×35	1.06	0.58	EKMV421VSN181MQ35S
	180	30×25	1.02	0.56	EKMV421VSN181MR25S
	220	22×50	1.20	0.66	EKMV421VSN221MP50S
	220	25.4×40	1.20	0.65	EKMV421VSN221MQ40S
	220	30×30	1.14	0.63	EKMV421VSN221MR30S
	270	25.4×45	1.36	0.74	EKMV421VSN271MQ45S
	270	30×35	1.29	0.73	EKMV421VSN271MR35S
	270	35×25	1.26	0.71	EKMV421VSN271MA25S
	330	25.4×50	1.52	0.83	EKMV421VSN331MQ50S
	330	30×40	1.47	0.84	EKMV421VSN331MR40S
	330	35×30	1.42	0.82	EKMV421VSN331MA30S
	390	30×45	1.64	0.94	EKMV421VSN391MR45S
	390	35×35	1.56	0.91	EKMV421VSN391MA35S
	470	30×50	1.83	1.06	EKMV421VSN471MR50S
	470	35×40	1.78	1.05	EKMV421VSN471MA40S
	560	35×45	1.98	1.18	EKMV421VSN561MA45S
	680	35×50	2.23	1.34	EKMV421VSN681MA50S
	820	35×60	2.52	1.55	EKMV421VSN821MA60S
450	82	22×25	0.64	0.34	EKMV451VSN820MP25S
	100	22×30	0.72	0.40	EKMV451VSN101MP30S
	100	25.4×25	0.72	0.40	EKMV451VSN101MQ25S
	120	22×35	0.81	0.45	EKMV451VSN121MP35S
	150	22×40	0.93	0.51	EKMV451VSN151MP40S
	150	25.4×30	0.91	0.50	EKMV451VSN151MQ30S
	150	30×25	0.90	0.51	EKMV451VSN151MR25S
	180	22×45	1.03	0.58	EKMV451VSN181MP45S
	180	22×50	1.06	0.59	EKMV451VSN181MP50S
	180	25.4×35	1.04	0.57	EKMV451VSN181MQ35S
	220	25.4×40	1.18	0.65	EKMV451VSN221MQ40S
	220	25.4×45	1.20	0.67	EKMV451VSN221MQ45S
	220	30×30	1.10	0.63	EKMV451VSN221MR30S
	220	35×25	1.12	0.64	EKMV451VSN221MA25S
	270	25.4×50	1.35	0.75	EKMV451VSN271MQ50S
	270	30×35	1.25	0.73	EKMV451VSN271MR35S
	270	35×30	1.27	0.74	EKMV451VSN271MA30S
	330	30×40	1.42	0.84	EKMV451VSN331MR40S
	330	30×45	1.46	0.87	EKMV451VSN331MR45S
	330	35×35	1.41	0.84	EKMV451VSN331MA35S
	390	30×50	1.61	0.97	EKMV451VSN391MR50S
	390	35×40	1.59	0.96	EKMV451VSN391MA40S
	470	35×45	1.79	1.08	EKMV451VSN471MA45S
	560	35×50	2.00	1.22	EKMV451VSN561MA50S
	680	35×60	2.26	1.42	EKMV451VSN681MA60S

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KMV Series

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
Coefficient	0.77	1.00	1.16	1.30	1.41	1.43

The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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PART NUMBERING SYSTEM

Product code guide (Screw mount terminal type)

(Example : KMH series, 400V-3,300μF, φ63.5×120L, Without mounting clamp)

Please refer to the following table

Contents	Code
Polar	E

Series	Code
KMH	KMH

Type	Code
Screw terminal	LG

Tol.(%)	Code
±20	M

Sleeve Material	Plastic disk Material	Code
Pb-free PVC	PPE	U

1	2 3 4	5 6 7	8 9	10	11 12 13	14	15 16 17	18
E	KMH	401	LG	N	332	M	DC0	U
Category	Series code	Voltage code	Terminal code	Mounting clamp code	Capacitance code	Capacitance tolerance	Size code	Supplement code

Voltage(V)	Code
10	100
25	250
100	101
250	251
315	3B1
525	5C1
⋮	⋮

Type	Code
	B
	C
Without clamp	N

Cap.(μF)	Code
100	101
470	471
1,000	102
4,700	472
10,000	103
47,000	473
100,000	104
⋮	⋮

φD(mm)	Code
35	A
50	C
63.5	D
76.2	E
89	F
100	G

L(mm)	Code
50	50
55	55
60	60
65	65
75	75
80	80
85	85
90	90
95	95
96	96
100	A0
105	A5
110	B0
115	B5
120	C0
125	C5
130	D0
140	E0
145	E5
155	F5
170	H0
190	K0
210	M0
220	N0
250	R0
270	T0

*Refer to the appendix (Part number) for codes not listed here.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard screw terminals, 85℃

SME Series

- Endurance with ripple current : 2,000 hours at 85℃
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃ (10 to 100V_{dc})
Rated Voltage Range	10 to 100V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Shall not exceed the values shown in the STANDARD RATINGS (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ35 to φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	H	F
35	58.0	44.0	48.0	3.5	12.7
50	78.0	64.0	68.0	4.5	22.4
63.5	90.0	76.0	80.0	4.5	28.0
76.2	104.5	90.0	93.5	4.5	31.5

●Mounting Clamp Code : C

φD	E	K	J	F
50	32.5	37.0	14.0	22.4
63.5	38.1	43.5	14.0	28.0
76.2	44.5	50.0	14.0	31.5
89	50.8	56.5	16.0	31.5

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E S M E □□□ L G □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 6,800μF:682, 39,000μF:393)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 10V:100, 100V:101)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Standard screw terminals, 85℃

SME Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
10	39,000	35 × 50	0.60	4.70	ESME100LGB393MA50U
	82,000	35 × 80	0.60	7.40	ESME100LGB823MA80U
	100,000	35 × 100	0.70	8.00	ESME100LGB104MAA0U
	120,000	35 × 120	0.70	9.40	ESME100LGB124MAC0U
	150,000	50 × 80	0.90	9.80	ESME100LGC154MC80U
	220,000	50 × 100	1.00	12.1	ESME100LGC224MCA0U
	270,000	50 × 120	1.20	13.6	ESME100LGC274MCC0U
	390,000	63.5 × 100	1.50	15.3	ESME100LGC394MDA0U
	470,000	63.5 × 120	2.00	16.0	ESME100LGC474MDC0U
	560,000	76.2 × 100	2.50	17.3	ESME100LGC564MEA0U
	680,000	76.2 × 120	3.00	18.7	ESME100LGC684MEC0U
16	27,000	35 × 50	0.45	4.20	ESME160LGB273MA50U
	56,000	35 × 80	0.60	6.50	ESME160LGB563MA80U
	82,000	35 × 100	0.70	8.00	ESME160LGB823MAA0U
	100,000	35 × 120	0.70	9.60	ESME160LGB104MAC0U
	120,000	50 × 80	0.80	9.60	ESME160LGC124MC80U
	150,000	50 × 100	0.90	11.2	ESME160LGC154MCA0U
	220,000	50 × 120	1.00	14.2	ESME160LGC224MCC0U
	270,000	63.5 × 100	1.20	15.3	ESME160LGC274MDA0U
	330,000	63.5 × 120	1.30	17.1	ESME160LGC334MDC0U
	390,000	76.2 × 100	1.60	18.0	ESME160LGC394MEA0U
	470,000	76.2 × 120	1.80	19.3	ESME160LGC474MEC0U
	560,000	76.2 × 140	2.00	20.7	ESME160LGC564MEE0U
25	18,000	35 × 50	0.35	4.00	ESME250LGB183MA50U
	39,000	35 × 80	0.40	6.20	ESME250LGB393MA80U
	47,000	35 × 100	0.40	7.40	ESME250LGB473MAA0U
	56,000	35 × 120	0.45	8.30	ESME250LGB563MAC0U
	82,000	50 × 80	0.50	9.70	ESME250LGC823MC80U
	100,000	50 × 100	0.60	10.8	ESME250LGC104MCA0U
	120,000	50 × 120	0.60	12.8	ESME250LGC124MCC0U
	180,000	63.5 × 100	0.75	14.7	ESME250LGC184MDA0U
	220,000	63.5 × 120	0.80	16.8	ESME250LGC224MDC0U
	270,000	76.2 × 100	0.90	18.3	ESME250LGC274MEA0U
	330,000	76.2 × 120	1.00	20.7	ESME250LGC334MEC0U
	390,000	76.2 × 140	1.20	22.1	ESME250LGC394MEE0U
	560,000	89 × 140	1.50	25.8	ESME250LGC564MFE0U
35	15,000	35 × 50	0.30	3.90	ESME350LGB153MA50U
	33,000	35 × 80	0.40	6.00	ESME350LGB333MA80U
	39,000	35 × 100	0.40	7.00	ESME350LGB393MAA0U
	47,000	35 × 120	0.45	8.00	ESME350LGB473MAC0U
	68,000	50 × 80	0.50	9.00	ESME350LGC683MC80U
	82,000	50 × 100	0.55	10.3	ESME350LGC823MCA0U
	120,000	50 × 120	0.60	12.8	ESME350LGC124MCC0U
	150,000	63.5 × 100	0.70	14.0	ESME350LGC154MDA0U
	180,000	63.5 × 120	0.70	16.6	ESME350LGC184MDC0U
	220,000	76.2 × 100	0.75	17.3	ESME350LGC224MEA0U
	270,000	76.2 × 120	0.80	19.8	ESME350LGC274MEC0U
	330,000	76.2 × 140	0.90	22.5	ESME350LGC334MEE0U
	470,000	89 × 140	1.00	28.3	ESME350LGC474MFE0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
50	10,000	35 × 50	0.25	4.10	ESME500LGB103MA50U
	18,000	35 × 80	0.25	5.20	ESME500LGB183MA80U
	22,000	35 × 100	0.30	5.90	ESME500LGB223MAA0U
	27,000	35 × 120	0.35	6.60	ESME500LGB273MAC0U
	39,000	50 × 80	0.40	7.40	ESME500LGC393MC80U
	56,000	50 × 100	0.40	9.80	ESME500LGC563MCA0U
	68,000	50 × 120	0.45	11.1	ESME500LGC683MCC0U
	82,000	63.5 × 100	0.50	12.2	ESME500LGC823MDA0U
	120,000	63.5 × 120	0.50	16.0	ESME500LGC124MDC0U
	150,000	76.2 × 120	0.60	18.1	ESME500LGC154MEC0U
	180,000	76.2 × 140	0.70	19.5	ESME500LGC184MEE0U
	270,000	89 × 140	0.80	24.6	ESME500LGC274MFE0U
63	5,600	35 × 50	0.20	3.00	ESME630LGB562MA50U
	10,000	35 × 80	0.25	4.00	ESME630LGB103MA80U
	15,000	35 × 100	0.25	5.30	ESME630LGB153MAA0U
	18,000	35 × 120	0.25	6.20	ESME630LGB183MAC0U
	22,000	50 × 80	0.30	6.50	ESME630LGC223MC80U
	33,000	50 × 100	0.35	8.10	ESME630LGC333MCA0U
	39,000	50 × 120	0.35	9.60	ESME630LGC393MCC0U
	47,000	63.5 × 100	0.40	10.2	ESME630LGC473MDA0U
	68,000	63.5 × 120	0.40	13.3	ESME630LGC683MDC0U
	100,000	76.2 × 120	0.45	17.1	ESME630LGC104MEC0U
	120,000	76.2 × 140	0.50	19.0	ESME630LGC124MEE0U
	150,000	89 × 140	0.55	22.0	ESME630LGC154MFE0U
80	3,300	35 × 50	0.15	2.50	ESME800LGB332MA50U
	6,800	35 × 80	0.20	3.70	ESME800LGB682MA80U
	10,000	35 × 100	0.20	4.90	ESME800LGB103MAA0U
	12,000	35 × 120	0.20	5.40	ESME800LGB123MAC0U
	15,000	50 × 80	0.25	6.00	ESME800LGC153MC80U
	22,000	50 × 100	0.30	7.10	ESME800LGC223MCA0U
	27,000	50 × 120	0.30	8.60	ESME800LGC273MCC0U
	33,000	63.5 × 100	0.35	9.30	ESME800LGC333MDA0U
	47,000	63.5 × 120	0.35	12.0	ESME800LGC473MDC0U
	68,000	76.2 × 120	0.35	15.4	ESME800LGC683MEC0U
	82,000	76.2 × 140	0.35	18.1	ESME800LGC823MEE0U
	100,000	89 × 140	0.40	21.0	ESME800LGC104MFE0U
100	2,200	35 × 50	0.10	2.50	ESME101LGB222MA50U
	4,700	35 × 80	0.15	3.40	ESME101LGB472MA80U
	6,800	35 × 100	0.15	4.20	ESME101LGB682MAA0U
	8,200	35 × 120	0.15	5.00	ESME101LGB822MAC0U
	10,000	50 × 80	0.20	5.20	ESME101LGC103MC80U
	18,000	50 × 120	0.20	8.10	ESME101LGC183MCC0U
	22,000	63.5 × 100	0.25	8.60	ESME101LGC223MDA0U
	27,000	63.5 × 120	0.25	10.3	ESME101LGC273MDC0U
	33,000	76.2 × 100	0.25	11.1	ESME101LGC333MEA0U
	39,000	76.2 × 120	0.25	12.4	ESME101LGC393MEC0U
	47,000	76.2 × 140	0.25	14.3	ESME101LGC473MEE0U
	68,000	89 × 140	0.30	18.0	ESME101LGC683MFE0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Rated voltage (V_{dc})	Case diameter (mm)	Frequency (Hz)					
		50	120	300	1k	10k	50k
10 to 50	φ35 to φ89	0.95	1.00	1.03	1.05	1.09	1.12
63 & 80	φ35	0.90	1.00	1.06	1.10	1.18	1.22
	φ50 to φ89	0.95	1.00	1.03	1.05	1.09	1.12
100	φ35	0.82	1.00	1.12	1.22	1.30	1.33
	φ50	0.90	1.00	1.06	1.10	1.18	1.22
	φ63.5 to φ89	0.95	1.00	1.03	1.05	1.09	1.12

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Standard screw terminals, 105℃

KMQ Series

- Endurance with ripple current : 2,000 hours at 105℃
- Downsized and high ripple current from KMH series
- RoHS2 Compliant

KMQ
Downsized
Higher ripple
KMH

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	315 to 450V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Shall not exceed the values shown in the STANDARD RATINGS (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ35 to φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	H	F
35	58.0	44.0	48.0	3.5	12.7
50	78.0	64.0	68.0	4.5	22.4
63.5	90.0	76.0	80.0	4.5	28.0
76.2	104.5	90.0	93.5	4.5	31.5

●Mounting Clamp Code : C

φD	E	K	J	F
50	32.5	37.0	14.0	22.4
63.5	38.1	43.5	14.0	28.0
76.2	44.5	50.0	14.0	31.5
89	50.8	56.5	16.0	31.5

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E KMQ □□□ LG □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 470μF:471, 1,800μF:182)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 315V:3B1, 450V:451)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Standard screw terminals, 105℃

KMQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
315	560	35 × 55	0.10	2.4	EKMQ3B1LGB561MA55U
	680	35 × 65	0.15	2.9	EKMQ3B1LGB681MA65U
	820	35 × 75	0.15	3.3	EKMQ3B1LGB821MA75U
	1,000	35 × 80	0.15	3.8	EKMQ3B1LGB102MA80U
	1,200	35 × 100	0.15	4.5	EKMQ3B1LGB122MAA0U
	1,500	50 × 70	0.15	5.4	EKMQ3B1LGC152MC70U
	1,800	50 × 75	0.15	6.0	EKMQ3B1LGC182MC75U
	2,200	50 × 90	0.15	7.2	EKMQ3B1LGC222MC90U
	2,700	50 × 100	0.15	8.4	EKMQ3B1LGC272MCA0U
	3,300	63.5 × 85	0.15	9.9	EKMQ3B1LGC332MD85U
	3,900	63.5 × 96	0.15	11.3	EKMQ3B1LGC392MD96U
	4,700	76.2 × 85	0.15	13.1	EKMQ3B1LGC472ME85U
	5,600	76.2 × 96	0.15	15.0	EKMQ3B1LGC562ME96U
	6,800	76.2 × 110	0.15	17.6	EKMQ3B1LGC682MEB0U
	8,200	89 × 100	0.15	17.2	EKMQ3B1LGC822MFA0U
	10,000	89 × 115	0.15	20.1	EKMQ3B1LGC103MFB5U
350	470	35 × 55	0.10	2.2	EKMQ351LGB471MA55U
	560	35 × 60	0.10	2.5	EKMQ351LGB561MA60U
	680	35 × 70	0.15	2.9	EKMQ351LGB681MA70U
	820	35 × 80	0.15	3.4	EKMQ351LGB821MA80U
	1,000	35 × 90	0.15	4.0	EKMQ351LGB102MA90U
	1,200	50 × 65	0.15	4.6	EKMQ351LGC122MC65U
	1,500	50 × 75	0.15	5.5	EKMQ351LGC152MC75U
	1,800	50 × 85	0.15	6.4	EKMQ351LGC182MC85U
	2,200	50 × 100	0.15	7.6	EKMQ351LGC222MCA0U
	2,700	63.5 × 85	0.15	9.0	EKMQ351LGC272MD85U
	3,900	76.2 × 80	0.15	11.7	EKMQ351LGC392ME80U
	5,600	76.2 × 105	0.15	15.6	EKMQ351LGC562MEA5U
	6,800	76.2 × 125	0.15	18.6	EKMQ351LGC682MEC5U
	8,200	89 × 115	0.15	18.2	EKMQ351LGC822MFB5U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	390	35 × 55	0.10	2.0	EKMQ401LGB391MA55U
	470	35 × 60	0.10	2.3	EKMQ401LGB471MA60U
	560	35 × 70	0.15	2.7	EKMQ401LGB561MA70U
	680	35 × 80	0.15	3.1	EKMQ401LGB681MA80U
	820	35 × 90	0.15	3.6	EKMQ401LGB821MA90U
	1,000	50 × 65	0.15	4.2	EKMQ401LGC102MC65U
	1,200	50 × 75	0.15	4.9	EKMQ401LGC122MC75U
	1,500	50 × 85	0.15	5.8	EKMQ401LGC152MC85U
	2,200	63.5 × 85	0.15	8.1	EKMQ401LGC222MD85U
	3,300	63.5 × 105	0.15	10.8	EKMQ401LGC332MDA5U
	4,700	76.2 × 105	0.15	14.3	EKMQ401LGC472MEA5U
	5,600	89 × 96	0.15	13.9	EKMQ401LGC562MF96U
	6,800	89 × 115	0.15	16.6	EKMQ401LGC682MFB5U
	8,200	89 × 130	0.15	19.2	EKMQ401LGC822MFD0U
450	330	35 × 55	0.10	1.8	EKMQ451LGB331MA55U
	390	35 × 65	0.10	2.2	EKMQ451LGB391MA65U
	470	35 × 75	0.10	2.5	EKMQ451LGB471MA75U
	560	35 × 80	0.15	2.8	EKMQ451LGB561MA80U
	680	35 × 100	0.15	3.5	EKMQ451LGB681MAA0U
	820	35 × 110	0.15	4.1	EKMQ451LGB821MAB0U
	1,000	50 × 80	0.15	4.6	EKMQ451LGC102MC80U
	1,200	50 × 90	0.15	5.3	EKMQ451LGC122MC90U
	1,500	50 × 105	0.15	6.4	EKMQ451LGC152MCA5U
	2,200	63.5 × 96	0.15	8.5	EKMQ451LGC222MD96U
	3,300	63.5 × 130	0.15	11.9	EKMQ451LGC332MDD0U
	4,700	76.2 × 130	0.15	15.7	EKMQ451LGC472MED0U
	5,600	76.2 × 155	0.15	18.5	EKMQ451LGC562MEF5U
	5,600	89 × 120	0.15	15.3	EKMQ451LGC562MFC0U
	6,800	89 × 140	0.15	18.0	EKMQ451LGC682MFE0U
	8,200	89 × 170	0.15	21.6	EKMQ451LGC822MFH0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
φ35, 50	0.70	1.00	1.30	1.70	1.80
φ63.5 to 89	0.80	1.00	1.10	1.15	1.15

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Standard screw terminals, 105℃

KMH Series

- Endurance with ripple current : 2,000 hours at 105℃
- RoHS2 Compliant

KMH
105℃
SME

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃ (10 to 100V$_{dc}$) -25 to +105℃ (160 to 400V$_{dc}$)
Rated Voltage Range	10 to 400V$_{dc}$
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Shall not exceed the values shown in the STANDARD RATINGS (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change 10 to 100V$_{dc}$: C(-40℃)/C(+20℃)≧0.6 160 to 400V$_{dc}$: C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V$_{dc}$, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V$_{ac}$ is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ35 to φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	H	F
35	58.0	44.0	48.0	3.5	12.7
50	78.0	64.0	68.0	4.5	22.4
63.5	90.0	76.0	80.0	4.5	28.0
76.2	104.5	90.0	93.5	4.5	31.5

●Mounting Clamp Code : C

φD	E	K	J	F
50	32.5	37.0	14.0	22.4
63.5	38.1	43.5	14.0	28.0
76.2	44.5	50.0	14.0	31.5
89	50.8	56.5	16.0	31.5

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E KMH □□□ LG □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 180μF:181, 1,000μF:102)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 10V:100, 100V:101, 315V:3B1)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Standard screw terminals, 105℃

KMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
10	27,000	35 × 50	0.45	4.90	EKMH100LGB273MA50U
	33,000	35 × 50	0.50	5.10	EKMH100LGB333MA50U
	39,000	35 × 60	0.50	5.90	EKMH100LGB393MA60U
	47,000	35 × 80	0.50	7.10	EKMH100LGB473MA80U
	56,000	35 × 80	0.60	7.10	EKMH100LGB563MA80U
	68,000	35 × 100	0.60	8.50	EKMH100LGB683MAA0U
	82,000	35 × 100	0.65	8.90	EKMH100LGB823MAA0U
	100,000	35 × 120	0.65	10.7	EKMH100LGB104MAC0U
	120,000	50 × 80	0.75	11.0	EKMH100LGC124MC80U
	150,000	50 × 100	0.80	13.2	EKMH100LGC154MCA0U
	180,000	50 × 120	0.80	15.7	EKMH100LGC184MCC0U
	220,000	50 × 120	0.85	16.8	EKMH100LGC224MCC0U
	270,000	63.5 × 120	1.00	19.6	EKMH100LGC274MDC0U
	330,000	63.5 × 120	1.20	19.7	EKMH100LGC334MDC0U
	390,000	76.2 × 120	1.50	21.3	EKMH100LGC394MEC0U
	470,000	76.2 × 120	1.80	21.4	EKMH100LGC474MEC0U
	560,000	76.2 × 140	2.00	23.6	EKMH100LGC564MEE0U
	680,000	89 × 140	2.40	26.0	EKMH100LGC684MFE0U
16	18,000	35 × 50	0.40	4.20	EKMH160LGB183MA50U
	22,000	35 × 50	0.40	4.70	EKMH160LGB223MA50U
	27,000	35 × 60	0.40	5.50	EKMH160LGB273MA60U
	33,000	35 × 60	0.45	5.70	EKMH160LGB333MA60U
	39,000	35 × 80	0.45	6.80	EKMH160LGB393MA80U
	47,000	35 × 80	0.50	7.10	EKMH160LGB473MA80U
	56,000	35 × 100	0.50	8.40	EKMH160LGB563MAA0U
	68,000	35 × 100	0.55	8.80	EKMH160LGB683MAA0U
	82,000	50 × 80	0.55	10.7	EKMH160LGC823MC80U
	100,000	50 × 80	0.65	10.8	EKMH160LGC104MC80U
	120,000	50 × 100	0.65	13.1	EKMH160LGC124MCA0U
	150,000	50 × 120	0.70	15.3	EKMH160LGC154MCC0U
	180,000	50 × 120	0.80	15.7	EKMH160LGC184MCC0U
	220,000	63.5 × 120	0.85	19.2	EKMH160LGC224MDC0U
	270,000	63.5 × 120	1.00	19.6	EKMH160LGC274MDC0U
	330,000	76.2 × 120	1.30	21.1	EKMH160LGC334MEC0U
	390,000	76.2 × 120	1.50	21.3	EKMH160LGC394MEC0U
	470,000	76.2 × 140	1.60	24.2	EKMH160LGC474MEE0U
	560,000	89 × 140	2.00	28.1	EKMH160LGC564MFE0U
	680,000	89 × 140	2.40	28.5	EKMH160LGC684MFE0U
25	12,000	35 × 50	0.35	3.70	EKMH250LGB123MA50U
	15,000	35 × 50	0.35	4.10	EKMH250LGB153MA50U
	18,000	35 × 60	0.35	4.80	EKMH250LGB183MA60U
	22,000	35 × 60	0.35	5.30	EKMH250LGB223MA60U
	27,000	35 × 80	0.35	6.40	EKMH250LGB273MA80U
	33,000	35 × 80	0.40	6.70	EKMH250LGB333MA80U
	39,000	35 × 100	0.40	7.80	EKMH250LGB393MAA0U
	47,000	35 × 120	0.40	9.30	EKMH250LGB473MAC0U
	56,000	50 × 80	0.45	9.70	EKMH250LGC563MC80U
	68,000	50 × 100	0.45	11.2	EKMH250LGC683MCA0U
	82,000	50 × 100	0.50	11.2	EKMH250LGC823MCA0U
	100,000	50 × 120	0.50	14.8	EKMH250LGC104MCC0U
	120,000	63.5 × 100	0.65	14.9	EKMH250LGC124MDA0U
	150,000	63.5 × 120	0.65	17.9	EKMH250LGC154MDC0U
	180,000	63.5 × 120	0.80	17.9	EKMH250LGC184MDC0U
	220,000	76.2 × 120	0.85	21.3	EKMH250LGC224MEC0U
	270,000	76.2 × 120	1.00	21.7	EKMH250LGC274MEC0U
	330,000	76.2 × 140	1.20	23.4	EKMH250LGC334MEE0U
	390,000	89 × 140	1.50	24.9	EKMH250LGC394MFE0U
35	8,200	35 × 50	0.30	3.30	EKMH350LGB822MA50U
	10,000	35 × 50	0.30	3.60	EKMH350LGB103MA50U
	12,000	35 × 60	0.30	4.20	EKMH350LGB123MA60U
	15,000	35 × 60	0.30	4.70	EKMH350LGB153MA60U
	18,000	35 × 80	0.30	5.70	EKMH350LGB183MA80U
	22,000	35 × 80	0.30	6.30	EKMH350LGB223MA80U
	27,000	35 × 100	0.30	7.50	EKMH350LGB273MAA0U
	33,000	35 × 120	0.30	9.00	EKMH350LGB333MAC0U
	39,000	50 × 80	0.35	9.20	EKMH350LGC393MC80U
	47,000	50 × 100	0.35	11.2	EKMH350LGC473MCA0U
35	56,000	50 × 100	0.40	11.4	EKMH350LGC563MCA0U
	68,000	50 × 120	0.40	13.6	EKMH350LGC683MCC0U
	82,000	63.5 × 100	0.45	14.8	EKMH350LGC823MDA0U
	100,000	63.5 × 120	0.45	17.6	EKMH350LGC104MDC0U
	120,000	63.5 × 120	0.55	17.6	EKMH350LGC124MDC0U
	150,000	76.2 × 120	0.65	19.8	EKMH350LGC154MEC0U
	180,000	76.2 × 120	0.80	19.8	EKMH350LGC184MEC0U
	220,000	76.2 × 140	0.80	23.4	EKMH350LGC224MEE0U
	270,000	89 × 140	1.00	25.5	EKMH350LGC274MFE0U
50	3,900	35 × 50	0.20	2.80	EKMH500LGB392MA50U
	4,700	35 × 50	0.20	3.10	EKMH500LGB472MA50U
	5,600	35 × 50	0.20	3.30	EKMH500LGB562MA50U
	6,800	35 × 50	0.25	3.30	EKMH500LGB682MA50U
	8,200	35 × 60	0.25	3.80	EKMH500LGB822MA60U
	10,000	35 × 80	0.25	4.60	EKMH500LGB103MA80U
	12,000	35 × 80	0.25	5.10	EKMH500LGB123MA80U
	15,000	35 × 80	0.25	5.70	EKMH500LGB153MA80U
	18,000	35 × 100	0.25	6.70	EKMH500LGB183MAA0U
	22,000	35 × 120	0.25	8.10	EKMH500LGB223MAC0U
	27,000	50 × 80	0.25	9.10	EKMH500LGC273MC80U
	33,000	50 × 100	0.25	11.1	EKMH500LGC333MCA0U
	39,000	50 × 120	0.25	13.1	EKMH500LGC393MCC0U
	47,000	50 × 120	0.30	13.9	EKMH500LGC473MCC0U
	56,000	63.5 × 100	0.35	13.9	EKMH500LGC563MDA0U
	68,000	63.5 × 120	0.35	16.6	EKMH500LGC683MDC0U
	82,000	76.2 × 120	0.40	18.9	EKMH500LGC823MEC0U
	100,000	76.2 × 120	0.45	19.5	EKMH500LGC104MEC0U
	120,000	76.2 × 120	0.55	19.5	EKMH500LGC124MEC0U
	150,000	89 × 140	0.60	23.9	EKMH500LGC154MFE0U
	180,000	89 × 140	0.75	23.9	EKMH500LGC184MFE0U
63	2,700	35 × 50	0.20	2.30	EKMH630LGB272MA50U
	3,300	35 × 50	0.20	2.50	EKMH630LGB332MA50U
	3,900	35 × 50	0.20	2.80	EKMH630LGB392MA50U
	4,700	35 × 50	0.20	3.10	EKMH630LGB472MA50U
	5,600	35 × 60	0.20	3.50	EKMH630LGB562MA60U
	6,800	35 × 60	0.20	3.90	EKMH630LGB682MA60U
	8,200	35 × 80	0.20	4.70	EKMH630LGB822MA80U
	10,000	35 × 80	0.25	4.70	EKMH630LGB103MA80U
	12,000	35 × 100	0.25	5.50	EKMH630LGB123MAA0U
	15,000	35 × 120	0.25	6.60	EKMH630LGB153MAC0U
	18,000	50 × 80	0.25	7.40	EKMH630LGC183MC80U
	22,000	50 × 100	0.25	9.00	EKMH630LGC223MCA0U
	27,000	50 × 120	0.25	10.9	EKMH630LGC273MCC0U
	33,000	50 × 120	0.25	12.0	EKMH630LGC333MCC0U
	39,000	63.5 × 100	0.30	12.5	EKMH630LGC393MDA0U
	47,000	63.5 × 120	0.30	14.9	EKMH630LGC473MDC0U
	56,000	63.5 × 120	0.30	16.3	EKMH630LGC563MDC0U
	68,000	76.2 × 120	0.35	18.4	EKMH630LGC683MEC0U
	82,000	76.2 × 140	0.40	20.0	EKMH630LGC823MEE0U
	100,000	76.2 × 140	0.50	20.0	EKMH630LGC104MEE0U
	120,000	89 × 140	0.60	21.8	EKMH630LGC124MFE0U
80	2,200	35 × 50	0.15	2.40	EKMH800LGB222MA50U
	2,700	35 × 50	0.15	2.70	EKMH800LGB272MA50U
	3,300	35 × 50	0.15	3.00	EKMH800LGB332MA50U
	3,900	35 × 60	0.15	3.40	EKMH800LGB392MA60U
	4,700	35 × 60	0.15	3.70	EKMH800LGB472MA60U
	5,600	35 × 80	0.15	4.50	EKMH800LGB562MA80U
	6,800	35 × 80	0.15	4.90	EKMH800LGB682MA80U
	8,200	35 × 100	0.20	5.10	EKMH800LGB822MAA0U
	10,000	35 × 120	0.20	6.10	EKMH800LGB103MAC0U
	12,000	50 × 80	0.20	6.70	EKMH800LGC123MC80U
	15,000	50 × 100	0.20	8.30	EKMH800LGC153MCA0U
	18,000	50 × 120	0.20	9.90	EKMH800LGC183MCC0U
	22,000	50 × 120	0.20	11.0	EKMH800LGC223MCC0U
	27,000	63.5 × 100	0.25	11.4	EKMH800LGC273MDA0U
	33,000	76.2 × 100	0.25	13.9	EKMH800LGC333MEA0U
	39,000	76.2 × 100	0.30	13.9	EKMH800LGC393MEA0U

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Standard screw terminals, 105℃

KMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
80	47,000	76.2 × 120	0.30	16.5	EKMH800LGC473MEC0U
	56,000	76.2 × 120	0.30	18.1	EKMH800LGC563MEC0U
	68,000	76.2 × 140	0.35	19.7	EKMH800LGC683MEE0U
	82,000	89 × 140	0.40	22.1	EKMH800LGC823MFE0U
100	1,800	35 × 50	0.10	2.70	EKMH101LGB182MA50U
	2,200	35 × 50	0.10	3.00	EKMH101LGB222MA50U
	2,700	35 × 60	0.10	3.50	EKMH101LGB272MA60U
	3,300	35 × 80	0.10	4.20	EKMH101LGB332MA80U
	3,900	35 × 80	0.12	4.20	EKMH101LGB392MA80U
	4,700	35 × 100	0.12	5.00	EKMH101LGB472MAA0U
	5,600	35 × 100	0.12	5.40	EKMH101LGB562MAA0U
	6,800	35 × 120	0.15	5.80	EKMH101LGB682MAC0U
	8,200	50 × 80	0.15	6.40	EKMH101LGC822MC80U
	10,000	50 × 100	0.15	7.80	EKMH101LGC103MCA0U
	12,000	50 × 120	0.15	9.30	EKMH101LGC123MCC0U
	15,000	50 × 120	0.15	10.4	EKMH101LGC153MCC0U
	18,000	63.5 × 100	0.20	10.4	EKMH101LGC183MDA0U
	22,000	63.5 × 120	0.20	12.5	EKMH101LGC223MDC0U
	27,000	76.2 × 120	0.25	13.7	EKMH101LGC273MEC0U
	33,000	76.2 × 120	0.25	15.2	EKMH101LGC333MEC0U
	39,000	76.2 × 140	0.30	16.1	EKMH101LGC393MEE0U
	47,000	89 × 140	0.30	19.3	EKMH101LGC473MFE0U
	56,000	89 × 140	0.30	21.1	EKMH101LGC563MFE0U
160	560	35 × 50	0.15	1.20	EKMH161LGB561MA50U
	680	35 × 50	0.15	1.30	EKMH161LGB681MA50U
	820	35 × 50	0.15	1.40	EKMH161LGB821MA50U
	1,000	35 × 50	0.15	1.60	EKMH161LGB102MA50U
	1,200	35 × 60	0.15	1.90	EKMH161LGB122MA60U
	1,500	35 × 60	0.15	2.10	EKMH161LGB152MA60U
	1,800	35 × 80	0.15	2.50	EKMH161LGB182MA80U
	2,200	35 × 80	0.15	2.80	EKMH161LGB222MA80U
	2,700	35 × 100	0.15	3.30	EKMH161LGB272MAA0U
	3,300	35 × 120	0.15	3.80	EKMH161LGB332MAC0U
	3,900	50 × 80	0.20	3.80	EKMH161LGC392MC80U
	4,700	50 × 100	0.20	4.60	EKMH161LGC472MCA0U
	5,600	50 × 100	0.20	5.10	EKMH161LGC562MCA0U
	6,800	50 × 120	0.20	6.10	EKMH161LGC682MCC0U
	8,200	63.5 × 100	0.20	7.00	EKMH161LGC822MDA0U
	10,000	63.5 × 120	0.20	8.40	EKMH161LGC103MDC0U
	12,000	76.2 × 100	0.20	9.40	EKMH161LGC123MEA0U
	15,000	76.2 × 120	0.20	11.4	EKMH161LGC153MEC0U
	18,000	76.2 × 140	0.20	13.4	EKMH161LGC183MEE0U
	22,000	89 × 140	0.25	14.5	EKMH161LGC223MFE0U
	27,000	89 × 140	0.25	16.0	EKMH161LGC273MFE0U
200	330	35 × 50	0.15	0.90	EKMH201LGB331MA50U
	390	35 × 50	0.15	1.00	EKMH201LGB391MA50U
	470	35 × 50	0.15	1.10	EKMH201LGB471MA50U
	560	35 × 50	0.15	1.20	EKMH201LGB561MA50U
	680	35 × 50	0.15	1.30	EKMH201LGB681MA50U
	820	35 × 50	0.15	1.40	EKMH201LGB821MA50U
	1,000	35 × 60	0.15	1.70	EKMH201LGB102MA60U
	1,200	35 × 60	0.15	1.90	EKMH201LGB122MA60U
	1,500	35 × 80	0.15	2.30	EKMH201LGB152MA80U
	1,800	35 × 80	0.15	2.50	EKMH201LGB182MA80U
	2,200	35 × 100	0.15	3.00	EKMH201LGB222MAA0U
	2,700	35 × 120	0.15	3.60	EKMH201LGB272MAC0U
	3,300	50 × 80	0.15	4.10	EKMH201LGC332MC80U
	3,900	50 × 100	0.15	4.90	EKMH201LGC392MCA0U
	4,700	63.5 × 100	0.20	5.30	EKMH201LGC472MDA0U
	5,600	63.5 × 100	0.20	5.80	EKMH201LGC562MDA0U
	6,800	63.5 × 120	0.20	6.90	EKMH201LGC682MDC0U
	8,200	63.5 × 120	0.20	7.60	EKMH201LGC822MDC0U
	10,000	76.2 × 120	0.20	9.30	EKMH201LGC103MEC0U
	12,000	76.2 × 120	0.20	10.2	EKMH201LGC123MEC0U
	15,000	76.2 × 140	0.20	12.2	EKMH201LGC153MEE0U
	18,000	89 × 140	0.25	13.1	EKMH201LGC183MFE0U
250	270	35 × 50	0.15	0.80	EKMH251LGB271MA50U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
250	330	35 × 50	0.15	0.90	EKMH251LGB331MA50U
	390	35 × 50	0.15	1.00	EKMH251LGB391MA50U
	470	35 × 50	0.15	1.10	EKMH251LGB471MA50U
	560	35 × 50	0.15	1.20	EKMH251LGB561MA50U
	680	35 × 60	0.15	1.40	EKMH251LGB681MA60U
	820	35 × 80	0.15	1.60	EKMH251LGB821MA80U
	1,000	35 × 80	0.20	1.60	EKMH251LGB102MA80U
	1,200	35 × 80	0.20	1.80	EKMH251LGB122MA80U
	1,500	35 × 100	0.20	2.10	EKMH251LGB152MAA0U
	1,800	35 × 120	0.20	2.50	EKMH251LGB182MAC0U
	2,200	50 × 80	0.20	2.90	EKMH251LGC222MC80U
	2,700	50 × 100	0.20	3.50	EKMH251LGC272MCA0U
	3,300	50 × 120	0.20	4.20	EKMH251LGC332MCC0U
	3,900	50 × 120	0.20	4.60	EKMH251LGC392MCC0U
	4,700	63.5 × 120	0.20	5.70	EKMH251LGC472MDC0U
	5,600	63.5 × 120	0.20	6.30	EKMH251LGC562MDC0U
	6,800	76.2 × 120	0.20	7.70	EKMH251LGC682MEC0U
	8,200	76.2 × 120	0.20	8.40	EKMH251LGC822MEC0U
	10,000	76.2 × 140	0.20	10.0	EKMH251LGC103MEE0U
	12,000	89 × 140	0.20	11.9	EKMH251LGC123MFE0U
315	180	35 × 50	0.10	0.80	EKMH3B1LGB181MA50U
	220	35 × 50	0.10	0.90	EKMH3B1LGB221MA50U
	270	35 × 50	0.10	1.00	EKMH3B1LGB271MA50U
	330	35 × 50	0.10	1.10	EKMH3B1LGB331MA50U
	390	35 × 50	0.10	1.20	EKMH3B1LGB391MA50U
	470	35 × 60	0.10	1.40	EKMH3B1LGB471MA60U
	560	35 × 60	0.10	1.50	EKMH3B1LGB561MA60U
	680	35 × 80	0.10	1.70	EKMH3B1LGB681MA80U
	820	35 × 80	0.15	1.70	EKMH3B1LGB821MA80U
	1,000	35 × 100	0.15	2.00	EKMH3B1LGB102MAA0U
	1,200	35 × 120	0.15	2.40	EKMH3B1LGB122MAC0U
	1,500	50 × 80	0.15	2.70	EKMH3B1LGC152MC80U
	1,800	50 × 100	0.15	3.30	EKMH3B1LGC182MCA0U
	2,200	50 × 120	0.15	4.00	EKMH3B1LGC222MCC0U
	2,700	50 × 120	0.15	4.40	EKMH3B1LGC272MCC0U
	3,300	63.5 × 100	0.15	5.10	EKMH3B1LGC332MDA0U
	3,900	63.5 × 120	0.15	6.00	EKMH3B1LGC392MDC0U
	4,700	76.2 × 100	0.15	6.80	EKMH3B1LGC472MEA0U
	5,600	76.2 × 120	0.15	8.00	EKMH3B1LGC562MEC0U
	6,800	76.2 × 130	0.15	9.20	EKMH3B1LGC682MED0U
	8,200	89 × 140	0.15	11.4	EKMH3B1LGC822MFE0U
	10,000	89 × 140	0.15	12.6	EKMH3B1LGC103MFE0U
350	180	35 × 50	0.10	0.80	EKMH351LGB181MA50U
	220	35 × 50	0.10	0.90	EKMH351LGB221MA50U
	270	35 × 50	0.10	1.00	EKMH351LGB271MA50U
	330	35 × 50	0.10	1.10	EKMH351LGB331MA50U
	390	35 × 60	0.10	1.30	EKMH351LGB391MA60U
	470	35 × 60	0.10	1.40	EKMH351LGB471MA60U
	560	35 × 80	0.10	1.60	EKMH351LGB561MA80U
	680	35 × 80	0.15	1.60	EKMH351LGB681MA80U
	820	35 × 100	0.15	1.80	EKMH351LGB821MAA0U
	1,000	35 × 120	0.15	2.20	EKMH351LGB102MAC0U
	1,200	50 × 80	0.15	2.40	EKMH351LGC122MC80U
	1,500	50 × 100	0.15	3.00	EKMH351LGC152MCA0U
	1,800	50 × 120	0.15	3.60	EKMH351LGC182MCC0U
	2,200	50 × 120	0.15	4.00	EKMH351LGC222MCC0U
	2,700	63.5 × 100	0.15	4.60	EKMH351LGC272MDA0U
	3,900	76.2 × 120	0.15	6.70	EKMH351LGC392MEC0U
	5,600	76.2 × 130	0.15	8.30	EKMH351LGC562MED0U
	6,800	76.2 × 140	0.15	9.50	EKMH351LGC682MEE0U
	8,200	89 × 140	0.15	11.4	EKMH351LGC822MFE0U
400	180	35 × 50	0.10	0.80	EKMH401LGB181MA50U
	220	35 × 50	0.10	0.90	EKMH401LGB221MA50U
	270	35 × 50	0.10	1.00	EKMH401LGB271MA50U
	330	35 × 60	0.10	1.20	EKMH401LGB331MA60U
	390	35 × 60	0.10	1.30	EKMH401LGB391MA60U
	470	35 × 80	0.10	1.40	EKMH401LGB471MA80U

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Standard screw terminals, 105℃

KMH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	560	35 × 80	0.15	1.40	EKMH401LGB561MA80U
	680	35 × 100	0.15	1.70	EKMH401LGB681MAA0U
	820	35 × 120	0.15	2.00	EKMH401LGB821MAC0U
	1,000	50 × 80	0.15	2.20	EKMH401LGC102MC80U
	1,200	50 × 100	0.15	2.70	EKMH401LGC122MCA0U
	1,500	50 × 120	0.15	3.30	EKMH401LGC152MCC0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	2,200	63.5 × 100	0.15	4.20	EKMH401LGC222MDA0U
	3,300	63.5 × 120	0.15	5.50	EKMH401LGC332MDC0U
	4,700	76.2 × 130	0.15	7.60	EKMH401LGC472MED0U
	5,600	89 × 140	0.15	9.40	EKMH401LGC562MFE0U
	6,800	89 × 140	0.15	10.4	EKMH401LGC682MFE0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Rated voltage (V_{dc})	Case diameter (mm)	Frequency (Hz)					
		50	120	300	1k	10k	50k
10 to 50	φ35 to φ89	0.95	1.00	1.03	1.05	1.09	1.12
63 & 80	φ35	0.90	1.00	1.06	1.10	1.18	1.22
	φ50 to φ89	0.95	1.00	1.03	1.05	1.09	1.12
100	φ35	0.82	1.00	1.12	1.22	1.30	1.33
	φ50	0.90	1.00	1.06	1.10	1.18	1.22
	φ63.5 to φ89	0.95	1.00	1.03	1.05	1.09	1.12
160 to 250	φ35	0.80	1.00	1.19	1.34	1.46	1.52
	φ50 & φ63.5	0.81	1.00	1.14	1.26	1.36	1.41
	φ76.2 & φ89	0.82	1.00	1.12	1.22	1.30	1.33
315 to 400	φ35 to φ89	0.80	1.00	1.19	1.34	1.46	1.52

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise.
When long life performance is required in actual use, the rms ripple current has to be reduced.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWH Series

- Downsized and high ripple current from RWF series
- Endurance with ripple current : 5,000 hours at 85℃
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +85℃		
Rated Voltage Range	350 to 450V_{dc}		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max.		(at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7		(at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.		
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.		
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	
Useful life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 8,000 hours at 85℃.		
	Capacitance change	≦±30% of the initial value	
	D.F. (tan δ)	≦300% of the initial specified value	
	Leakage current	≦The initial specified value	
	Failure rate	≦1%	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦200% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ63.5, φ76.2 : G=6
φ89 : G=4

●Mounting Clamp Code : B

φD	A	B	W	F
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	4,700	63.5 × 105	0.25	16.3	ERWH351LGC472MDA5U
	5,600	63.5 × 125	0.25	19.2	ERWH351LGC562MDC5U
	6,800	63.5 × 145	0.25	22.6	ERWH351LGC682MDE5U
	6,800	76.2 × 105	0.25	21.7	ERWH351LGC682MEA5U
	8,200	63.5 × 165	0.25	26.3	ERWH351LGC822MDG5U
	8,200	76.2 × 120	0.25	25.2	ERWH351LGC822MEC0U
	10,000	76.2 × 140	0.25	29.8	ERWH351LGC103MEE0U
	12,000	76.2 × 165	0.25	35.1	ERWH351LGC123MEG5U
	15,000	89 × 155	0.25	37.5	ERWH351LGC153MFF5U
	18,000	89 × 180	0.25	43.8	ERWH351LGC183MFJ0U
400	3,900	63.5 × 100	0.25	14.5	ERWH401LGC392MDA0U
	4,700	63.5 × 120	0.25	17.2	ERWH401LGC472MDC0U
	5,600	63.5 × 135	0.25	19.8	ERWH401LGC562MDD5U
	5,600	76.2 × 105	0.25	19.7	ERWH401LGC562MEA5U
	6,800	63.5 × 160	0.25	23.5	ERWH401LGC682MDG0U
	6,800	76.2 × 115	0.25	22.5	ERWH401LGC682MEB5U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
400	8,200	76.2 × 135	0.25	26.5	ERWH401LGC822MED5U
	10,000	76.2 × 160	0.25	31.6	ERWH401LGC103MEG0U
	10,000	89 × 130	0.25	28.3	ERWH401LGC103MFD0U
	12,000	89 × 150	0.25	33.0	ERWH401LGC123MFF0U
	15,000	89 × 180	0.25	39.9	ERWH401LGC153MFJ0U
450	3,300	63.5 × 105	0.25	13.6	ERWH451LGC332MDA5U
	3,900	63.5 × 125	0.25	16.0	ERWH451LGC392MDC5U
	4,700	63.5 × 145	0.25	18.7	ERWH451LGC472MDE5U
	4,700	76.2 × 105	0.25	18.0	ERWH451LGC472MEA5U
	5,600	63.5 × 165	0.25	21.7	ERWH451LGC562MDG5U
	5,600	76.2 × 120	0.25	20.8	ERWH451LGC562MEC0U
	6,800	76.2 × 140	0.25	24.5	ERWH451LGC682MEE0U
	8,200	76.2 × 165	0.25	29.0	ERWH451LGC822MEG5U
	8,200	89 × 135	0.25	26.1	ERWH451LGC822MFD5U
	10,000	89 × 155	0.25	30.5	ERWH451LGC103MFF5U
	12,000	89 × 190	0.25	36.6	ERWH451LGC123MFK0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1.4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RWH series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

◆USEFUL LIFE

Useful life depending on the ambient temperature Tx under ripple current operating conditions

Io : Rated ripple current (Arms/85℃ ,120Hz)
Ix : Operating ripple current (Arms/120Hz)

◆Warning !

Useful life shall indicate the end of the life time without exceeding the specified failure rate. It's generally known that Aluminum Electrolytic Capacitors have wear-out failure mode with gradual deteriorate of the electrical parameters and should have large number of the failure rate at the end of life. The useful life time is specified by a certain failure rate.
It's not a guaranteed specification.

Generally the maximum life time is 15 years (131,000hours) considering sealing material deteriorate. When a longer life time is required for your application, please consult us.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWF Series

- High ripple capability
- Endurance with ripple current : 5,000 hours at 85℃
- Wide range of case sizes from φ50 to φ100
- RoHS2 Compliant

RWH ← RWF → RWE
Downsized, Higher ripple current — Longer life

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +85℃
Rated Voltage Range	350 to 450V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ50 & φ63.5 : G=6
φ76.2 & φ89 : G=5
φ100 : G=10

●Mounting Clamp Code : B

φD	A	B	W	F
50	78.0	64.0	68.0	22.4
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	M	F	J
50	32.5	37.0	4.5	22.4	14.0
63.5	38.1	43.5	4.5	28.0	14.0
76.2	44.5	50.0	4.5	31.5	14.0
89	50.8	56.5	4.5	31.5	16.0
100	56.5	63.4	5.5	41.5	18.0

<Screw specifications>
to φ89 Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm

φ100 Cross-recessed head (phillips) screw : M8×1.25×16
Spring washer,Washer
Maximum screw tightening torque :6.31Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E RWF □□□ LG □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 6,800μF:682, 12,000μF:123)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 350V:351, 400V:401)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWF Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	1,200	50 × 60	0.25	4.90	ERWF351LGC122MC60U
	1,800	50 × 75	0.25	6.50	ERWF351LGC182MC75U
	2,200	50 × 85	0.25	7.50	ERWF351LGC222MC85U
	2,200	50 × 96	0.25	7.70	ERWF351LGC222MC96U
	2,700	50 × 115	0.25	9.30	ERWF351LGC272MCB5U
	3,300	50 × 130	0.25	10.8	ERWF351LGC332MCD0U
	3,900	63.5 × 115	0.25	12.1	ERWF351LGC392MDB5U
	4,700	63.5 × 130	0.25	14.0	ERWF351LGC472MDD0U
	5,600	63.5 × 155	0.25	16.6	ERWF351LGC562MDF5U
	5,600	76.2 × 115	0.25	16.1	ERWF351LGC562MEB5U
	6,800	63.5 × 190	0.25	20.0	ERWF351LGC682MDK0U
	6,800	76.2 × 130	0.25	18.6	ERWF351LGC682MED0U
	8,200	76.2 × 155	0.25	22.2	ERWF351LGC822MEF5U
	10,000	76.2 × 170	0.25	25.2	ERWF351LGC103MEH0U
	12,000	89 × 155	0.25	29.1	ERWF351LGC123MFF5U
	15,000	89 × 190	0.25	35.7	ERWF351LGC153MFK0U
	18,000	100 × 190	0.25	36.9	ERWF351LGC183MGK0U
	22,000	100 × 250	0.25	46.1	ERWF351LGC223MGR0U
400	1,000	50 × 60	0.25	4.40	ERWF401LGC102MC60U
	1,500	50 × 75	0.25	5.90	ERWF401LGC152MC75U
	1,800	50 × 85	0.25	6.80	ERWF401LGC182MC85U
	1,800	50 × 96	0.25	7.00	ERWF401LGC182MC96U
	2,200	50 × 105	0.25	8.00	ERWF401LGC222MCA5U
	2,700	50 × 130	0.25	9.80	ERWF401LGC272MCD0U
	3,300	63.5 × 115	0.25	11.1	ERWF401LGC332MDB5U
	3,900	63.5 × 130	0.25	12.7	ERWF401LGC392MDD0U
	4,700	63.5 × 155	0.25	15.2	ERWF401LGC472MDF5U
	4,700	76.2 × 115	0.25	14.7	ERWF401LGC472MEB5U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
400	5,600	63.5 × 190	0.25	18.2	ERWF401LGC562MDK0U
	5,600	76.2 × 130	0.25	16.9	ERWF401LGC562MED0U
	6,800	76.2 × 155	0.25	20.2	ERWF401LGC682MEF5U
	8,200	76.2 × 170	0.25	22.8	ERWF401LGC822MEH0U
	10,000	89 × 155	0.25	26.6	ERWF401LGC103MFF5U
	12,000	89 × 170	0.25	30.0	ERWF401LGC123MFH0U
	15,000	100 × 190	0.25	33.7	ERWF401LGC153MGK0U
	18,000	100 × 220	0.25	37.4	ERWF401LGC183MGN0U
450	820	50 × 60	0.25	4.00	ERWF451LGC821MC60U
	1,000	50 × 75	0.25	4.80	ERWF451LGC102MC75U
	1,200	50 × 85	0.25	5.60	ERWF451LGC122MC85U
	1,200	50 × 96	0.25	5.70	ERWF451LGC122MC96U
	1,500	50 × 96	0.25	6.30	ERWF451LGC152MC96U
	1,800	50 × 115	0.25	7.60	ERWF451LGC182MCB5U
	2,200	50 × 130	0.25	8.80	ERWF451LGC222MCD0U
	2,700	63.5 × 115	0.25	10.1	ERWF451LGC272MDB5U
	3,300	63.5 × 130	0.25	11.7	ERWF451LGC332MDD0U
	3,900	63.5 × 155	0.25	13.8	ERWF451LGC392MDF5U
	3,900	76.2 × 115	0.25	13.4	ERWF451LGC392MEB5U
	4,700	63.5 × 190	0.25	16.7	ERWF451LGC472MDK0U
	4,700	76.2 × 130	0.25	15.5	ERWF451LGC472MED0U
	5,600	76.2 × 155	0.25	18.3	ERWF451LGC562MEF5U
	6,800	76.2 × 170	0.25	20.7	ERWF451LGC682MEH0U
	8,200	89 × 155	0.25	24.1	ERWF451LGC822MFF5U
	10,000	89 × 170	0.25	27.8	ERWF451LGC103MFH0U
	12,000	100 × 190	0.25	29.3	ERWF451LGC123MGK0U
	15,000	100 × 250	0.25	37.0	ERWF451LGC153MGR0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1.4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RWF series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWR Series

- Downsized and high ripple current from RWQ series
- Endurance with ripple current : 2,000 hours at 85℃
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-25 to +85℃		
Rated Voltage Range	350 to 450V_{dc}		
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max.		(at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7		(at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.		
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.		
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦300% of the initial specified value	
	Leakage current	≦The initial specified value	
Useful life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃.		
	Capacitance change	≦±30% of the initial value	
	D.F. (tan δ)	≦300% of the initial specified value	
	Leakage current	≦The initial specified value	
	Failure rate	≦1%	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±20% of the initial value	
	D.F. (tan δ)	≦300% of the initial specified value	
	Leakage current	≦The initial specified value	

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ63.5, φ76.2 : G=6
φ89 : G=4

●Mounting Clamp Code : B

φD	A	B	W	F
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWR Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	3,900	63.5 × 100	0.25	13.7	ERWR351LGC392MDA0U
	4,700	63.5 × 100	0.25	15.1	ERWR351LGC472MDA0U
	5,600	63.5 × 115	0.25	17.5	ERWR351LGC562MDB5U
	5,600	76.2 × 100	0.25	18.2	ERWR351LGC562MEA0U
	6,800	76.2 × 100	0.25	20.1	ERWR351LGC682MEA0U
	8,200	76.2 × 115	0.25	23.4	ERWR351LGC822MEB5U
	10,000	76.2 × 135	0.25	27.7	ERWR351LGC103MED5U
	12,000	89 × 125	0.25	28.9	ERWR351LGC123MFC5U
	15,000	89 × 150	0.25	34.9	ERWR351LGC153MFF0U
400	3,300	63.5 × 100	0.25	12.6	ERWR401LGC332MDA0U
	3,900	63.5 × 100	0.25	13.7	ERWR401LGC392MDA0U
	4,700	63.5 × 115	0.25	16.0	ERWR401LGC472MDB5U
	4,700	76.2 × 100	0.25	16.7	ERWR401LGC472MEA0U
	5,600	63.5 × 130	0.25	18.4	ERWR401LGC562MDD0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
400	6,800	76.2 × 110	0.25	20.9	ERWR401LGC682MEB0U
	8,200	76.2 × 130	0.25	24.7	ERWR401LGC822MED0U
	10,000	89 × 125	0.25	26.4	ERWR401LGC103MFC5U
	12,000	89 × 145	0.25	30.8	ERWR401LGC123MFE5U
450	2,700	63.5 × 100	0.25	11.4	ERWR451LGC272MDA0U
	3,300	63.5 × 105	0.25	12.9	ERWR451LGC332MDA5U
	3,900	63.5 × 115	0.25	14.6	ERWR451LGC392MDB5U
	3,900	76.2 × 100	0.25	15.2	ERWR451LGC392MEA0U
	4,700	63.5 × 135	0.25	17.2	ERWR451LGC472MDD5U
	4,700	76.2 × 105	0.25	17.0	ERWR451LGC472MEA5U
	5,600	76.2 × 115	0.25	19.3	ERWR451LGC562MEB5U
	6,800	76.2 × 135	0.25	22.8	ERWR451LGC682MED5U
	8,200	89 × 125	0.25	23.9	ERWR451LGC822MFC5U
	10,000	89 × 150	0.25	28.5	ERWR451LGC103MFF0U

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1.4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RWR series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

◆USEFUL LIFE

Useful life depending on the ambient temperature Tx under ripple current operating conditions

Io : Rated ripple current (Arms/85℃ ,120Hz)
Ix : Operating ripple current (Arms/120Hz)

◆Warning !

Useful life shall indicate the end of the life time without exceeding the specified failure rate. It's generally known that Aluminum Electrolytic Capacitors have wear-out failure mode with gradual deteriorate of the electrical parameters and should have large number of the failure rate at the end of life. The useful life time is specified by a certain failure rate.
It's not a guaranteed specification.

Generally the maximum life time is 15 years (131,000hours) considering sealing material deteriorate. When a longer life time is required for your application, please consult us.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWQ Series

- Downsized and high ripple current from RWE series
- Endurance with ripple current : 2,000 hours at 85℃
- RoHS2 Compliant

RWQ
↑ Downsized
RWE

◆SPECIFICATIONS

Items	Characteristics			
Category Temperature Range	-25 to +85℃			
Rated Voltage Range	350 to 550V_{dc}			
Capacitance Tolerance	±20% (M)			(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V_{dc})			(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max.			(at 20℃, 120Hz)
Low Temperature Characteristics	Rated voltage (V_{dc})	350 to 450V	500 to 550V	
	C(-25℃) / C(+20℃)	≧0.7	≧0.6	(at 120Hz)
Insulation Resistance	When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.			
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.			
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		
	Leakage current	≦The initial specified value		
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied.Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JISC 5101-4.			
	Capacitance change	≦±20% of the initial value		
	D.F. (tan δ)	≦300% of the initial specified value		
	Leakage current	≦The initial specified value		

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ50 & φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	F
50	78.0	64.0	68.0	22.4
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
50	32.5	37.0	22.4	14.0
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E RWQ □□□ LG □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 6,800μF:682, 12,000μF:123)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 350V:351, 400V:401, 550V:551)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWQ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	1,500	50 × 65	0.25	5.09	ERWQ351LGC152MC65U
	1,800	50 × 75	0.25	5.93	ERWQ351LGC182MC75U
	2,200	50 × 96	0.25	7.30	ERWQ351LGC222MC96U
	2,700	50 × 115	0.25	8.76	ERWQ351LGC272MCB5U
	3,300	63.5 × 85	0.25	9.71	ERWQ351LGC332MD85U
	3,900	50 × 130	0.25	11.1	ERWQ351LGC392MCD0U
	3,900	63.5 × 96	0.25	11.1	ERWQ351LGC392MD96U
	4,700	63.5 × 115	0.25	13.2	ERWQ351LGC472MDB5U
	5,600	63.5 × 130	0.25	15.2	ERWQ351LGC562MDD0U
	5,600	76.2 × 96	0.25	14.3	ERWQ351LGC562ME96U
	6,800	76.2 × 115	0.25	17.0	ERWQ351LGC682MEB5U
	8,200	76.2 × 130	0.25	19.6	ERWQ351LGC822MED0U
	10,000	76.2 × 155	0.25	23.4	ERWQ351LGC103MEF5U
	12,000	89 × 130	0.25	24.1	ERWQ351LGC123MFD0U
	15,000	89 × 155	0.25	29.1	ERWQ351LGC153MFF5U
400	1,200	50 × 65	0.25	4.55	ERWQ401LGC122MC65U
	1,500	50 × 75	0.25	5.41	ERWQ401LGC152MC75U
	1,800	50 × 85	0.25	6.26	ERWQ401LGC182MC85U
	2,200	50 × 96	0.25	7.30	ERWQ401LGC222MC96U
	2,700	50 × 115	0.25	8.76	ERWQ401LGC272MCB5U
	3,300	63.5 × 96	0.25	10.2	ERWQ401LGC332MD96U
	3,900	63.5 × 115	0.25	12.0	ERWQ401LGC392MDB5U
	4,700	63.5 × 130	0.25	13.9	ERWQ401LGC472MDD0U
	4,700	76.2 × 96	0.25	13.1	ERWQ401LGC472ME96U
	5,600	63.5 × 155	0.25	16.5	ERWQ401LGC562MDF5U
	6,800	76.2 × 115	0.25	17.0	ERWQ401LGC682MEB5U
	8,200	76.2 × 155	0.25	21.2	ERWQ401LGC822MEF5U
	10,000	89 × 130	0.25	22.0	ERWQ401LGC103MFD0U
	12,000	89 × 155	0.25	26.0	ERWQ401LGC123MFF5U
450	1,000	50 × 70	0.25	3.87	ERWQ451LGC102MC70U
	1,200	50 × 75	0.25	4.36	ERWQ451LGC122MC75U
	1,500	50 × 90	0.25	5.28	ERWQ451LGC152MC90U
	1,800	50 × 96	0.25	5.95	ERWQ451LGC182MC96U
	2,200	50 × 130	0.25	7.54	ERWQ451LGC222MCD0U
	2,700	63.5 × 96	0.25	8.34	ERWQ451LGC272MD96U
	3,300	63.5 × 115	0.25	9.97	ERWQ451LGC332MDB5U
	3,900	63.5 × 130	0.25	11.4	ERWQ451LGC392MDD0U
	3,900	76.2 × 96	0.25	11.1	ERWQ451LGC392ME96U
	4,700	63.5 × 155	0.25	13.6	ERWQ451LGC472MDF5U
	4,700	76.2 × 115	0.25	13.2	ERWQ451LGC472MEB5U
	5,600	76.2 × 130	0.25	15.2	ERWQ451LGC562MED0U
	6,800	76.2 × 155	0.25	18.1	ERWQ451LGC682MEF5U
	8,200	89 × 130	0.25	19.2	ERWQ451LGC822MFD0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
500	470	50 × 60	0.25	2.17	ERWQ501LGC471MC60U
	680	50 × 65	0.25	2.70	ERWQ501LGC681MC65U
	820	50 × 75	0.25	3.15	ERWQ501LGC821MC75U
	1,000	50 × 85	0.25	3.67	ERWQ501LGC102MC85U
	1,200	50 × 96	0.25	4.22	ERWQ501LGC122MC96U
	1,500	50 × 115	0.25	5.14	ERWQ501LGC152MCB5U
	1,500	63.5 × 96	0.25	5.42	ERWQ501LGC152MD96U
	1,800	50 × 130	0.25	5.95	ERWQ501LGC182MCD0U
	1,800	63.5 × 96	0.25	5.94	ERWQ501LGC182MD96U
	2,200	63.5 × 115	0.25	7.10	ERWQ501LGC222MDB5U
	2,200	76.2 × 96	0.25	7.30	ERWQ501LGC222ME96U
	2,700	63.5 × 130	0.25	8.31	ERWQ501LGC272MDD0U
	3,300	76.2 × 115	0.25	9.65	ERWQ501LGC332MEB5U
	3,900	76.2 × 130	0.25	11.1	ERWQ501LGC392MED0U
	4,700	76.2 × 155	0.25	13.1	ERWQ501LGC472MEF5U
	6,800	89 × 155	0.25	15.9	ERWQ501LGC682MFF5U
550	390	50 × 60	0.25	1.98	ERWQ551LGC391MC60U
	560	50 × 65	0.25	2.45	ERWQ551LGC561MC65U
	680	50 × 75	0.25	2.87	ERWQ551LGC681MC75U
	820	50 × 85	0.25	3.32	ERWQ551LGC821MC85U
	1,200	50 × 115	0.25	4.60	ERWQ551LGC122MCB5U
	1,500	63.5 × 96	0.25	5.42	ERWQ551LGC152MD96U
	1,800	76.2 × 80	0.25	6.12	ERWQ551LGC182ME80U
	2,200	76.2 × 96	0.25	7.30	ERWQ551LGC222ME96U
	2,700	76.2 × 115	0.25	8.73	ERWQ551LGC272MEB5U
	3,300	76.2 × 130	0.25	10.2	ERWQ551LGC332MED0U
	5,600	89 × 155	0.25	14.5	ERWQ551LGC562MFF5U

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1.4

Note : The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RWQ series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For the details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWE Series

- Rated voltage range : 350 to 550Vdc
- Endurance with ripple current : 85℃ 2,000 hours
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +85℃
Rated Voltage Range	350 to 550Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change: Rated Voltage (Vdc) 350 to 450V / 500 & 550V; C(-25℃)/C(+20℃) ≧0.7 / ≧0.6 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500Vdc, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000Vac is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ35 to φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	H	F
35	58.0	44.0	48.0	3.5	12.7
50	78.0	64.0	68.0	4.5	22.4
63.5	90.0	76.0	80.0	4.5	28.0
76.2	104.5	90.0	93.5	4.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
50	32.5	37.0	22.4	14.0
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWE Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	390	35 × 50	0.25	1.90	ERWE351LGB391MA50U
	680	35 × 80	0.25	2.90	ERWE351LGB681MA80U
	1,000	35 × 100	0.25	3.80	ERWE351LGB102MAA0U
	1,200	35 × 120	0.25	4.20	ERWE351LGB122MAC0U
	1,500	50 × 75	0.25	4.70	ERWE351LGC152MC75U
	2,200	50 × 96	0.25	6.30	ERWE351LGC222MC96U
	3,300	50 × 130	0.25	8.80	ERWE351LGC332MCD0U
	3,300	63.5 × 96	0.25	8.80	ERWE351LGC332MD96U
	3,900	63.5 × 115	0.25	10.3	ERWE351LGC392MDB5U
	4,700	63.5 × 130	0.25	12.0	ERWE351LGC472MDD0U
	4,700	76.2 × 96	0.25	11.7	ERWE351LGC472ME96U
	5,600	76.2 × 115	0.25	12.6	ERWE351LGC562MEB5U
	6,800	76.2 × 130	0.25	15.9	ERWE351LGC682MED0U
	8,200	76.2 × 155	0.25	19.0	ERWE351LGC822MEF5U
	12,000	89 × 155	0.25	22.5	ERWE351LGC123MFF5U
400	330	35 × 50	0.25	1.70	ERWE401LGB331MA50U
	560	35 × 80	0.25	2.70	ERWE401LGB561MA80U
	820	35 × 100	0.25	3.40	ERWE401LGB821MAA0U
	1,000	35 × 120	0.25	3.90	ERWE401LGB102MAC0U
	1,200	50 × 75	0.25	4.20	ERWE401LGC122MC75U
	1,800	50 × 96	0.25	5.70	ERWE401LGC182MC96U
	2,200	50 × 130	0.25	7.20	ERWE401LGC222MCD0U
	2,700	63.5 × 96	0.25	7.90	ERWE401LGC272MD96U
	3,300	63.5 × 115	0.25	9.50	ERWE401LGC332MDB5U
	3,900	63.5 × 130	0.25	10.9	ERWE401LGC392MDD0U
	3,900	76.2 × 96	0.25	10.6	ERWE401LGC392ME96U
	4,700	76.2 × 115	0.25	12.6	ERWE401LGC472MEB5U
	5,600	76.2 × 130	0.25	14.5	ERWE401LGC562MED0U
	6,800	76.2 × 155	0.25	17.3	ERWE401LGC682MEF5U
	10,000	89 × 155	0.25	20.5	ERWE401LGC103MFF5U
450	270	35 × 50	0.25	1.60	ERWE451LGB271MA50U
	470	35 × 80	0.25	2.40	ERWE451LGB471MA80U
	680	35 × 100	0.25	3.10	ERWE451LGB681MAA0U
	820	35 × 120	0.25	3.50	ERWE451LGB821MAC0U
	1,000	50 × 75	0.25	3.90	ERWE451LGC102MC75U
	1,200	50 × 96	0.25	4.70	ERWE451LGC122MC96U
	1,500	50 × 115	0.25	5.60	ERWE451LGC152MCB5U
	1,800	50 × 130	0.25	6.50	ERWE451LGC182MCD0U
	2,200	63.5 × 96	0.25	7.20	ERWE451LGC222MD96U
450	2,700	63.5 × 115	0.25	8.60	ERWE451LGC272MDB5U
	3,300	63.5 × 130	0.25	10.0	ERWE451LGC332MDD0U
	3,300	76.2 × 96	0.25	9.80	ERWE451LGC332ME96U
	3,900	76.2 × 115	0.25	11.5	ERWE451LGC392MEB5U
	4,700	76.2 × 130	0.25	13.3	ERWE451LGC472MED0U
	5,600	76.2 × 155	0.25	15.7	ERWE451LGC562MEF5U
	8,200	89 × 155	0.25	18.6	ERWE451LGC822MFF5U
500	120	35 × 50	0.25	0.70	ERWE501LGB121MA50U
	270	35 × 80	0.25	1.20	ERWE501LGB271MA80U
	330	35 × 100	0.25	1.40	ERWE501LGB331MAA0U
	390	35 × 120	0.25	1.70	ERWE501LGB391MAC0U
	470	50 × 75	0.25	1.80	ERWE501LGC471MC75U
	680	50 × 96	0.25	2.50	ERWE501LGC681MC96U
	820	50 × 115	0.25	2.90	ERWE501LGC821MCB5U
	1,000	50 × 130	0.25	3.40	ERWE501LGC102MCD0U
	1,000	63.5 × 96	0.25	3.40	ERWE501LGC102MD96U
	1,500	63.5 × 115	0.25	4.50	ERWE501LGC152MDB5U
	1,500	76.2 × 96	0.25	4.60	ERWE501LGC152ME96U
	1,800	63.5 × 130	0.25	5.20	ERWE501LGC182MDD0U
	2,200	76.2 × 115	0.25	6.10	ERWE501LGC222MEB5U
	2,700	76.2 × 155	0.25	7.70	ERWE501LGC272MEF5U
	3,900	89 × 155	0.25	10.1	ERWE501LGC392MFF5U
550	100	35 × 50	0.25	0.60	ERWE551LGB101MA50U
	180	35 × 80	0.25	1.00	ERWE551LGB181MA80U
	270	35 × 100	0.25	1.30	ERWE551LGB271MAA0U
	330	35 × 120	0.25	1.60	ERWE551LGB331MAC0U
	390	50 × 75	0.25	1.70	ERWE551LGC391MC75U
	560	50 × 96	0.25	2.10	ERWE551LGC561MC96U
	560	63.5 × 96	0.25	2.50	ERWE551LGC561MD96U
	680	50 × 115	0.25	2.70	ERWE551LGC681MCB5U
	680	63.5 × 115	0.25	3.00	ERWE551LGC681MDB5U
	820	50 × 130	0.25	3.10	ERWE551LGC821MCD0U
	820	63.5 × 130	0.25	3.50	ERWE551LGC821MDD0U
	1,200	76.2 × 96	0.25	4.20	ERWE551LGC122ME96U
	1,500	76.2 × 115	0.25	5.00	ERWE551LGC152MEB5U
	1,800	76.2 × 130	0.25	5.80	ERWE551LGC182MED0U
	2,200	76.2 × 155	0.25	7.00	ERWE551LGC222MEF5U
	3,300	89 × 155	0.25	9.30	ERWE551LGC332MFF5U

◆RATED RIPPLE CURRENT MULTIPLIERS

❍Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1.4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RWE series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWL Series

- High ripple capability
- For train systems and high power consuming inverter circuits
- Endurance with ripple current : 20,000 hours at 85℃
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +85℃
Rated Voltage Range	350 to 450V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 20,000 hours at 85℃. Capacitance change: ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦300% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	F
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RWL Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
350	3,300	63.5 × 115	0.25	11.1	ERWL351LGC332MDB5U
	3,900	63.5 × 130	0.25	12.8	ERWL351LGC392MDD0U
	4,700	63.5 × 155	0.25	15.2	ERWL351LGC472MDF5U
	4,700	76.2 × 115	0.25	14.7	ERWL351LGC472MEB5U
	5,600	63.5 × 170	0.25	17.3	ERWL351LGC562MDH0U
	5,600	76.2 × 130	0.25	16.9	ERWL351LGC562MED0U
	6,800	63.5 × 190	0.25	20.0	ERWL351LGC682MDK0U
	6,800	76.2 × 155	0.25	20.2	ERWL351LGC682MEF5U
	8,200	76.2 × 170	0.25	23.1	ERWL351LGC822MEH0U
	10,000	89 × 155	0.25	26.6	ERWL351LGC103MFF5U
	12,000	89 × 190	0.25	32.0	ERWL351LGC123MFK0U
400	2,700	63.5 × 115	0.25	10.1	ERWL401LGC272MDB5U
	3,300	63.5 × 130	0.25	11.7	ERWL401LGC332MDD0U
	3,900	63.5 × 155	0.25	13.8	ERWL401LGC392MDF5U
	3,900	76.2 × 115	0.25	14.7	ERWL401LGC392MEB5U
	4,700	63.5 × 170	0.25	15.8	ERWL401LGC472MDH0U
	4,700	76.2 × 130	0.25	15.5	ERWL401LGC472MED0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 120Hz)	Part No.
400	5,600	63.5 × 190	0.25	18.2	ERWL401LGC562MDK0U
	5,600	76.2 × 155	0.25	18.3	ERWL401LGC562MEF5U
	6,800	76.2 × 170	0.25	21.0	ERWL401LGC682MEH0U
	8,200	89 × 155	0.25	24.1	ERWL401LGC822MFF5U
	10,000	89 × 190	0.25	29.1	ERWL401LGC103MFK0U
450	2,200	63.5 × 115	0.25	9.10	ERWL451LGC222MDB5U
	2,700	63.5 × 130	0.25	10.6	ERWL451LGC272MDD0U
	2,700	76.2 × 115	0.25	11.2	ERWL451LGC272MEB5U
	3,300	63.5 × 155	0.25	12.7	ERWL451LGC332MDF5U
	3,300	76.2 × 130	0.25	13.0	ERWL451LGC332MED0U
	3,900	63.5 × 170	0.25	14.4	ERWL451LGC392MDH0U
	4,700	76.2 × 155	0.25	16.7	ERWL451LGC472MEF5U
	5,600	76.2 × 190	0.25	20.1	ERWL451LGC562MEK0U
	5,600	89 × 155	0.25	19.9	ERWL451LGC562MFF5U
	6,800	89 × 170	0.25	23.0	ERWL451LGC682MFH0U
	8,200	89 × 190	0.25	26.4	ERWL451LGC822MFK0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1 .4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for RWL series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RHB Series

- Realized higher voltage than RWE series. (575 to 700V_{dc})
- Endurance with ripple current : 2,000 hours at 85℃
- Suitable for X-ray and welder power supply where high energy is required
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +85℃
Rated Voltage Range	575 to 700V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.6 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	F
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifications>
to φ89 Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E R H B □□□ L G □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1,000μF:102, 3,300μF:332)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 575V:5H1, 700V:701)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RHB Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
575	1,000	63.5×70	0.25	3.80	ERHB5H1LGC102MD70U
	1,200	63.5×80	0.25	4.40	ERHB5H1LGC122MD80U
	1,500	63.5×95	0.25	5.30	ERHB5H1LGC152MD95U
	1,500	76.2×70	0.25	5.20	ERHB5H1LGC152ME70U
	1,800	63.5×100	0.25	5.90	ERHB5H1LGC182MDA0U
	1,800	76.2×80	0.25	6.00	ERHB5H1LGC182ME80U
	2,200	63.5×120	0.25	7.10	ERHB5H1LGC222MDC0U
	2,200	76.2×95	0.25	7.20	ERHB5H1LGC222ME95U
	2,700	76.2×105	0.25	8.30	ERHB5H1LGC272MEA5U
	2,700	89×85	0.25	7.00	ERHB5H1LGC272MF85U
	3,300	76.2×120	0.25	9.70	ERHB5H1LGC332MEC0U
	3,300	89×100	0.25	8.30	ERHB5H1LGC332MFA0U
	3,900	89×105	0.25	9.10	ERHB5H1LGC392MFA5U
	4,700	89×130	0.25	11.1	ERHB5H1LGC472MFD0U
	5,600	89×145	0.25	12.7	ERHB5H1LGC562MFE5U
630	1,000	63.5×85	0.25	4.10	ERHB631LGC102MD85U
	1,200	63.5×95	0.25	4.80	ERHB631LGC122MD95U
	1,500	63.5×115	0.25	5.80	ERHB631LGC152MDB5U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
630	1,500	76.2×85	0.25	5.60	ERHB631LGC152ME85U
	1,800	63.5×125	0.25	6.60	ERHB631LGC182MDC5U
	1,800	76.2×95	0.25	6.40	ERHB631LGC182ME95U
	1,800	89×85	0.25	5.70	ERHB631LGC182MF85U
	2,200	76.2×115	0.25	7.80	ERHB631LGC222MEB5U
	2,200	89×90	0.25	6.50	ERHB631LGC222MF90U
	2,700	76.2×130	0.25	9.10	ERHB631LGC272MED0U
	2,700	89×100	0.25	7.40	ERHB631LGC272MFA0U
	3,300	89×120	0.25	9.00	ERHB631LGC332MFC0U
700	1,000	63.5×115	0.25	4.70	ERHB701LGC102MDB5U
	1,200	63.5×125	0.25	5.40	ERHB701LGC122MDC5U
	1,500	76.2×115	0.25	6.40	ERHB701LGC152MEB5U
	1,800	76.2×125	0.25	7.20	ERHB701LGC182MEC5U
	1,800	89×105	0.25	6.20	ERHB701LGC182MFA5U
	2,200	76.2×155	0.25	8.80	ERHB701LGC222MEF5U
	2,200	89×115	0.25	7.10	ERHB701LGC222MFB5U
	2,700	89×135	0.25	8.50	ERHB701LGC272MFD5U
	3,300	89×155	0.25	9.90	ERHB701LGC332MFF5U

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.2	1.3	1.4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RHA series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RHA Series

- Realized higher voltage than RWF series (500 to 650Vdc)
- Endurance with ripple current : 5,000 hours at 85℃
- Suitable for high voltage inverter
- RoHS2 compliant

RHA
↑ Higher voltage
RWF

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +85℃
Rated Voltage Range	500 to 650Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.6 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500Vdc, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000Vac is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ50 & φ63.5 : G=6
φ76.2 & φ89 : G=5
φ100 : G=10

●Mounting Clamp Code : B

φD	A	B	W	F
50	78.0	64.0	68.0	22.4
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	M	F	J
50	32.5	37.0	4.5	22.4	14.0
63.5	38.1	43.5	4.5	28.0	14.0
76.2	44.5	50.0	4.5	31.5	14.0
89	50.8	56.5	4.5	31.5	16.0
100	56.5	63.4	5.5	41.5	18.0

<Screw specifications>
to φ89 Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm

φ100 Cross-recessed head (phillips) screw : M8×1.25×16
Spring washer,Washer
Maximum screw tightening torque :6.31Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E R H A □□□ L G □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 6,800μF:682, 12,000μF:123)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 500V:501, 650V:651)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

RHA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
500	1,200	50×95	0.25	5.90	ERHA501LGC122MC95U
	1,500	50×115	0.25	7.20	ERHA501LGC152MCB5U
	1,800	50×130	0.25	8.30	ERHA501LGC182MCD0U
	2,200	50×150	0.25	9.80	ERHA501LGC222MCF0U
	2,700	63.5×120	0.25	11.2	ERHA501LGC272MDC0U
	3,300	63.5×140	0.25	13.3	ERHA501LGC332MDE0U
	3,900	63.5×170	0.25	15.7	ERHA501LGC392MDH0U
	3,900	76.2×130	0.25	15.4	ERHA501LGC392MED0U
	4,700	76.2×150	0.25	18.1	ERHA501LGC472MEF0U
	5,600	76.2×170	0.25	20.8	ERHA501LGC562MEH0U
	5,600	89×130	0.25	17.1	ERHA501LGC562MFD0U
	6,800	89×150	0.25	20.0	ERHA501LGC682MFF0U
	8,200	89×190	0.25	24.4	ERHA501LGC822MFK0U
	10,000	89×210	0.25	28.2	ERHA501LGC103MFM0U
	12,000	100×210	0.25	32.9	ERHA501LGC123MGM0U
	15,000	100×250	0.25	39.8	ERHA501LGC153MGR0U
550	1,000	50×95	0.25	5.40	ERHA551LGC102MC95U
	1,200	50×110	0.25	6.30	ERHA551LGC122MCB0U
	1,500	50×130	0.25	7.60	ERHA551LGC152MCD0U
	1,800	63.5×105	0.25	8.60	ERHA551LGC182MDA5U
	2,200	63.5×120	0.25	10.1	ERHA551LGC222MDC0U
	2,700	63.5×150	0.25	12.4	ERHA551LGC272MDF0U
	2,700	76.2×105	0.25	11.7	ERHA551LGC272MEA5U
	3,300	63.5×170	0.25	14.5	ERHA551LGC332MDH0U
	3,300	76.2×130	0.25	14.2	ERHA551LGC332MED0U
	3,900	76.2×140	0.25	15.9	ERHA551LGC392MEE0U
	4,700	76.2×170	0.25	19.1	ERHA551LGC472MEH0U
	4,700	89×130	0.25	15.6	ERHA551LGC472MFD0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
550	5,600	89×150	0.25	18.2	ERHA551LGC562MFF0U
	6,800	89×170	0.25	21.1	ERHA551LGC682MFH0U
	8,200	100×170	0.25	24.8	ERHA551LGC822MGH0U
	10,000	100×200	0.25	29.4	ERHA551LGC103MGL0U
600	1,200	63.5×95	0.25	6.70	ERHA601LGC122MD95U
	1,500	63.5×110	0.25	8.00	ERHA601LGC152MDB0U
	1,800	63.5×125	0.25	9.30	ERHA601LGC182MDC5U
	1,800	76.2×95	0.25	9.10	ERHA601LGC182ME95U
	2,200	63.5×145	0.25	11.0	ERHA601LGC222MDE5U
	2,200	76.2×110	0.25	10.8	ERHA601LGC222MEB0U
	2,700	63.5×170	0.25	13.1	ERHA601LGC272MDH0U
	2,700	76.2×125	0.25	12.6	ERHA601LGC272MEC5U
	3,300	76.2×145	0.25	14.9	ERHA601LGC332MEE5U
	3,900	76.2×170	0.25	17.3	ERHA601LGC392MEH0U
	3,900	89×130	0.25	14.2	ERHA601LGC392MFD0U
	4,700	76.2×190	0.25	20.0	ERHA601LGC472MEK0U
	4,700	89×150	0.25	16.6	ERHA601LGC472MFF0U
	5,600	89×170	0.25	19.1	ERHA601LGC562MFH0U
650	1,000	63.5×100	0.25	6.30	ERHA651LGC102MDA0U
	1,200	63.5×110	0.25	7.20	ERHA651LGC122MDB0U
	1,500	63.5×130	0.25	8.60	ERHA651LGC152MDD0U
	1,800	63.5×150	0.25	10.1	ERHA651LGC182MDF0U
	2,200	63.5×170	0.25	11.7	ERHA651LGC222MDH0U
	2,700	76.2×150	0.25	13.6	ERHA651LGC272MEF0U
	3,300	76.2×170	0.25	15.8	ERHA651LGC332MEH0U
	3,900	89×155	0.25	15.3	ERHA651LGC392MFF5U
	4,700	89×190	0.25	18.4	ERHA651LGC472MFK0U

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.2	1.3	1.4

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RHA series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

FTP Series

- Ideal for inverter smoothing capacitors such as Electric Vehicles, Hybrid Cars, etc.
- Endurance with ripple current : 5,000 hours at 85℃
- Rated voltage range : 63 to 450Vdc
- Lower profile offers drastic space saving compared with conventional cylindrical type
- Superior heat radiation realizes higher ripple current
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃ (63～100Vdc),-25 to +85℃ (350～450Vdc)
Rated Voltage Range	63 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change 63 to 100Vdc : C(-40℃)/C(+20℃)≧0.6 350 to 450Vdc : C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

●Size Code : L

●Size Code : R

* Polyolefin is available upon request.

<Screw specifications>
Plus hexagon-headed screw: M5×0.8
Maximum screw tightening torque: 3.23Nm

◆PART NUMBERING SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
E	F	T	P				L	G	N				M				U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 270μF:271, 10,000μF:103)
- Mounting clamp code
- Terminal code
- Voltage code (ex. 63V:630, 100V:101, 450V:451)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

◆SIZE CODE

Code	Case size H×W×L (mm)
L50	26×70×50
L75	26×70×75
L95	26×70×95
R50	35×64×50
R75	35×64×75
R95	35×64×95

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminal, 85℃

FTP Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size H×W×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 10kHz)	Part No.
63	6,000	26×70×50	0.25	14.0	EFTP630LGN602ML50U
	12,000	26×70×75	0.25	19.0	EFTP630LGN123ML75U
	17,000	26×70×95	0.25	22.0	EFTP630LGN173ML95U
	7,400	35×64×50	0.25	16.1	EFTP630LGN742MR50U
	15,000	35×64×75	0.25	21.7	EFTP630LGN153MR75U
	21,000	35×64×95	0.25	25.3	EFTP630LGN213MR95U
80	4,300	26×70×50	0.25	14.0	EFTP800LGN432ML50U
	8,600	26×70×75	0.25	19.0	EFTP800LGN862ML75U
	12,000	26×70×95	0.25	22.0	EFTP800LGN123ML95U
	5,300	35×64×50	0.25	16.1	EFTP800LGN532MR50U
	10,000	35×64×75	0.25	21.7	EFTP800LGN103MR75U
	15,000	35×64×95	0.25	25.3	EFTP800LGN153MR95U
100	2,900	26×70×50	0.25	14.0	EFTP101LGN292ML50U
	5,700	26×70×75	0.25	19.0	EFTP101LGN572ML75U
	8,100	26×70×95	0.25	22.0	EFTP101LGN812ML95U
	3,600	35×64×50	0.25	16.1	EFTP101LGN362MR50U
	7,100	35×64×75	0.25	21.7	EFTP101LGN712MR75U
	10,000	35×64×95	0.25	25.3	EFTP101LGN103MR95U

WV (V_{dc})	Cap (μF)	Case size H×W×L(mm)	tan δ	Rated ripple current (Arms/ 85℃, 10kHz)	Part No.
350	400	26×70×50	0.25	10.6	EFTP351LGN401ML50U
	800	26×70×75	0.25	15.7	EFTP351LGN801ML75U
	1,100	26×70×95	0.25	18.7	EFTP351LGN112ML95U
	490	35×64×50	0.25	11.9	EFTP351LGN491MR50U
	970	35×64×75	0.25	17.6	EFTP351LGN971MR75U
	1,400	35×64×95	0.25	21.0	EFTP351LGN142MR95U
400	330	26×70×50	0.25	10.6	EFTP401LGN331ML50U
	660	26×70×75	0.25	15.7	EFTP401LGN661ML75U
	930	26×70×95	0.25	18.7	EFTP401LGN931ML95U
	400	35×64×50	0.25	11.9	EFTP401LGN401MR50U
	800	35×64×75	0.25	17.6	EFTP401LGN801MR75U
	1,100	35×64×95	0.25	21.0	EFTP401LGN112MR95U
450	270	26×70×50	0.25	10.1	EFTP451LGN271ML50U
	540	26×70×75	0.25	15.0	EFTP451LGN541ML75U
	760	26×70×95	0.25	18.0	EFTP451LGN761ML95U
	330	35×64×50	0.25	11.4	EFTP451LGN331MR50U
	660	35×64×75	0.25	16.7	EFTP451LGN661MR75U
	930	35×64×95	0.25	20.1	EFTP451LGN931MR95U

◆Improvement of space factor and heat radiation

Dead spaces are found in the conventional cylindrical shape. But lower profile offers reduced dead space, and makes the equipment smaller in size. Moreover, the internal element of the lower profile capacitor is in greater contact with the can. This greatly improves the heat dissipation compared with the cylindrical shape.

Cylindrical shape

FTP series

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS long life screw terminals ,105℃

LXA Series

- Rated voltage range up to 525Vdc
- Endurance with ripple current : 5,000 hours at 105℃ (2,000 hours for 500Vdc & 525Vdc)
- RoHS2 Compliant

LXA
↑ Long life
KMH

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +105℃ (10 to 100Vdc) -25 to +105℃ (160 to 525Vdc)
Rated Voltage Range	10 to 525Vdc
Capacitance Tolerance	-10 to +50% (T) (10 to 250Vdc) ±20% (M) (350 to 525Vdc) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	See STANDARD RATINGS (10 to 250Vdc) 0.20max. (350 to 525Vdc) (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-40℃)/C(+20℃)≧0.6(10 to 100Vdc) C(-25℃)/C(+20℃)≧0.7(160 to 250Vdc) C(-25℃)/C(+20℃)≧0.65(350 to 525Vdc) (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500Vdc, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000Vac is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours (2,000 hours for 500 & 525Vdc products) at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Rated voltage: 10 to 250Vdc / 350 to 525Vdc Capacitance change: ≦±15% of the initial value / ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value / ≦200% of the initial specified value Leakage current: ≦The initial specified value / ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φD	G	
	10 to 250Vdc	350 to 525Vdc
~φ63.5	6	6
φ76.2	5	6
φ89	5	4

●Mounting Clamp Code : B

φD	A	B	W	H	F
35	58	44	48	3.5	12.7
50	78	64	68	4.5	22.4
63.5	90	76	80	4.5	28.0
76.2	104.5	90	93.5	4.5	31.5

●Mounting Clamp Code : C

φD	E	K	J	F
50	32.5	37.0	14.0	22.4
63.5	38.1	43.5	14.0	28.0
76.2	44.5	50.0	14.0	31.5
89	50.8	56.5	16.0	31.5

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
E L X A □□□ L G □ □□□ □ □□□ U

- Supplement code
- Size code
- Capacitance tolerance code (ex. M, T)
- Capacitance code (ex. 390μF:391, 3,300μF:332)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 10V:100, 100V:101, 525V:5C1)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS long life screw terminals ,105℃

LXA Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
10	27,000	35 × 80	0.45	4.30	ELXA100LGB273TA80U
	33,000	35 × 80	0.45	4.70	ELXA100LGB333TA80U
	39,000	35 × 80	0.45	5.30	ELXA100LGB393TA80U
	47,000	35 × 100	0.45	6.10	ELXA100LGB473TAA0U
	56,000	35 × 100	0.50	6.20	ELXA100LGB563TAA0U
	68,000	35 × 120	0.60	6.80	ELXA100LGB683TAC0U
	82,000	50 × 80	0.60	7.80	ELXA100LGC823TC80U
	100,000	50 × 100	0.70	8.50	ELXA100LGC104TCA0U
	120,000	50 × 100	0.70	9.50	ELXA100LGC124TCA0U
	150,000	63.5 × 100	0.80	11.0	ELXA100LGC154TDA0U
	180,000	63.5 × 100	0.80	12.1	ELXA100LGC184TDA0U
	220,000	76.2 × 100	1.00	13.2	ELXA100LGC224TEA0U
	270,000	76.2 × 120	1.20	14.4	ELXA100LGC274TEC0U
	330,000	76.2 × 140	1.20	17.0	ELXA100LGC334TEE0U
	390,000	89 × 140	1.40	18.6	ELXA100LGC394TFE0U
16	15,000	35 × 50	0.45	2.90	ELXA160LGB153TA50U
	18,000	35 × 80	0.45	3.50	ELXA160LGB183TA80U
	22,000	35 × 80	0.45	3.90	ELXA160LGB223TA80U
	27,000	35 × 80	0.45	4.30	ELXA160LGB273TA80U
	33,000	35 × 100	0.50	4.80	ELXA160LGB333TAA0U
	39,000	35 × 100	0.50	5.30	ELXA160LGB393TAA0U
	47,000	35 × 120	0.50	6.20	ELXA160LGB473TAC0U
	56,000	50 × 80	0.60	6.30	ELXA160LGC563TC80U
	68,000	50 × 100	0.60	7.60	ELXA160LGC683TCA0U
	82,000	50 × 120	0.70	8.30	ELXA160LGC823TCC0U
	100,000	50 × 120	0.70	9.20	ELXA160LGC104TCC0U
	120,000	63.5 × 100	0.80	9.90	ELXA160LGC124TDA0U
	150,000	76.2 × 100	0.80	12.3	ELXA160LGC154TEA0U
	180,000	76.2 × 120	0.80	14.5	ELXA160LGC184TEC0U
	220,000	76.2 × 140	1.00	15.2	ELXA160LGC224TEE0U
	270,000	89 × 140	1.20	16.8	ELXA160LGC274TFE0U
25	12,000	35 × 80	0.35	3.30	ELXA250LGB123TA80U
	15,000	35 × 80	0.35	3.70	ELXA250LGB153TA80U
	18,000	35 × 80	0.35	4.00	ELXA250LGB183TA80U
	22,000	35 × 80	0.35	4.50	ELXA250LGB223TA80U
	27,000	35 × 100	0.40	5.00	ELXA250LGB273TAA0U
	33,000	35 × 120	0.40	5.90	ELXA250LGB333TAC0U
	39,000	50 × 80	0.40	6.50	ELXA250LGC393TC80U
	47,000	50 × 100	0.40	7.90	ELXA250LGC473TCA0U
	56,000	50 × 120	0.40	8.80	ELXA250LGC563TCC0U
	68,000	50 × 120	0.50	9.10	ELXA250LGC683TCC0U
	82,000	63.5 × 100	0.50	10.6	ELXA250LGC823TDA0U
	100,000	63.5 × 120	0.60	11.4	ELXA250LGC104TDC0U
	120,000	76.2 × 100	0.60	12.8	ELXA250LGC124TEA0U
	150,000	76.2 × 120	0.75	13.7	ELXA250LGC154TEC0U
	180,000	76.2 × 140	0.75	16.1	ELXA250LGC184TEE0U
	220,000	89 × 140	1.00	16.6	ELXA250LGC224TFE0U
35	8,200	35 × 80	0.30	3.00	ELXA350LGB822TA80U
	10,000	35 × 80	0.30	3.30	ELXA350LGB103TA80U
	12,000	35 × 80	0.30	3.60	ELXA350LGB123TA80U
	15,000	35 × 80	0.30	4.10	ELXA350LGB153TA80U
	18,000	35 × 100	0.30	4.80	ELXA350LGB183TAA0U
	22,000	35 × 120	0.35	5.20	ELXA350LGB223TAC0U
	27,000	50 × 80	0.40	5.90	ELXA350LGC273TC80U
	33,000	50 × 100	0.40	6.60	ELXA350LGC333TCA0U
	39,000	50 × 120	0.40	7.80	ELXA350LGC393TCC0U
	47,000	50 × 120	0.45	8.00	ELXA350LGC473TCC0U
	56,000	63.5 × 100	0.45	9.20	ELXA350LGC563TDA0U
	68,000	63.5 × 120	0.45	11.0	ELXA350LGC683TDC0U
	82,000	76.2 × 120	0.50	12.7	ELXA350LGC823TEC0U
	100,000	76.2 × 140	0.60	13.5	ELXA350LGC104TEE0U
	120,000	89 × 140	0.60	16.1	ELXA350LGC124TFE0U
50	3,900	35 × 50	0.20	2.00	ELXA500LGB392TA50U
	4,700	35 × 50	0.25	2.20	ELXA500LGB472TA50U
	5,600	35 × 80	0.25	2.80	ELXA500LGB562TA80U
	6,800	35 × 80	0.25	3.00	ELXA500LGB682TA80U
	8,200	35 × 80	0.25	3.30	ELXA500LGB822TA80U

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
50	10,000	35 × 80	0.25	3.70	ELXA500LGB103TA80U
	12,000	35 × 100	0.25	4.40	ELXA500LGB123TAA0U
	15,000	35 × 120	0.30	4.70	ELXA500LGB153TAC0U
	18,000	50 × 80	0.35	4.80	ELXA500LGC183TC80U
	22,000	50 × 100	0.35	5.90	ELXA500LGC223TCA0U
	27,000	50 × 120	0.35	7.00	ELXA500LGC273TCC0U
	33,000	63.5 × 100	0.40	7.60	ELXA500LGC333TDA0U
	39,000	63.5 × 120	0.40	8.90	ELXA500LGC393TDC0U
	47,000	63.5 × 120	0.40	9.80	ELXA500LGC473TDC0U
	56,000	76.2 × 120	0.40	11.9	ELXA500LGC563TEC0U
	68,000	76.2 × 140	0.45	13.1	ELXA500LGC683TEE0U
	82,000	89 × 140	0.50	14.8	ELXA500LGC823TFE0U
63	2,700	35 × 50	0.15	1.90	ELXA630LGB272TA50U
	3,300	35 × 50	0.15	2.10	ELXA630LGB332TA50U
	3,900	35 × 80	0.20	2.70	ELXA630LGB392TA80U
	4,700	35 × 80	0.20	2.90	ELXA630LGB472TA80U
	5,600	35 × 80	0.20	3.20	ELXA630LGB562TA80U
	6,800	35 × 80	0.20	3.50	ELXA630LGB682TA80U
	8,200	35 × 100	0.20	4.20	ELXA630LGB822TAA0U
	10,000	35 × 120	0.25	4.30	ELXA630LGB103TAC0U
	12,000	50 × 80	0.25	4.80	ELXA630LGC123TC80U
	15,000	50 × 100	0.25	5.90	ELXA630LGC153TCA0U
	18,000	50 × 120	0.25	6.30	ELXA630LGC183TCC0U
	22,000	50 × 120	0.30	6.70	ELXA630LGC223TCC0U
	27,000	63.5 × 120	0.30	8.80	ELXA630LGC273TDC0U
	33,000	76.2 × 100	0.30	10.0	ELXA630LGC333TEA0U
	39,000	76.2 × 120	0.35	10.7	ELXA630LGC393TEC0U
	47,000	76.2 × 140	0.35	12.5	ELXA630LGC473TEE0U
	56,000	89 × 140	0.40	13.8	ELXA630LGC563TFE0U
80	2,200	35 × 50	0.15	1.90	ELXA800LGB222TA50U
	2,700	35 × 80	0.15	2.20	ELXA800LGB272TA80U
	3,300	35 × 80	0.15	2.50	ELXA800LGB332TA80U
	3,900	35 × 80	0.15	2.90	ELXA800LGB392TA80U
	4,700	35 × 100	0.15	3.10	ELXA800LGB472TAA0U
	5,600	35 × 100	0.15	3.50	ELXA800LGB562TAA0U
	6,800	35 × 120	0.20	4.10	ELXA800LGB682TAC0U
	8,200	50 × 80	0.20	4.80	ELXA800LGC822TC80U
	10,000	50 × 100	0.20	5.60	ELXA800LGC103TCA0U
	12,000	50 × 100	0.20	6.10	ELXA800LGC123TCA0U
	15,000	50 × 120	0.20	7.40	ELXA800LGC153TCC0U
	18,000	63.5 × 120	0.25	8.00	ELXA800LGC183TDC0U
	22,000	76.2 × 100	0.25	9.10	ELXA800LGC223TEA0U
	27,000	76.2 × 120	0.30	9.70	ELXA800LGC273TEC0U
	33,000	76.2 × 140	0.30	11.5	ELXA800LGC333TEE0U
	39,000	89 × 140	0.35	12.5	ELXA800LGC393TFE0U
100	1,200	35 × 50	0.15	1.40	ELXA101LGB122TA50U
	1,500	35 × 80	0.15	1.60	ELXA101LGB152TA80U
	1,800	35 × 80	0.15	1.80	ELXA101LGB182TA80U
	2,200	35 × 80	0.15	2.00	ELXA101LGB222TA80U
	2,700	35 × 80	0.15	2.40	ELXA101LGB272TA80U
	3,300	35 × 100	0.15	2.80	ELXA101LGB332TAA0U
	3,900	35 × 120	0.15	3.10	ELXA101LGB392TAC0U
	4,700	50 × 80	0.15	3.60	ELXA101LGC472TC80U
	5,600	50 × 100	0.15	4.30	ELXA101LGC562TCA0U
	6,800	50 × 120	0.15	5.00	ELXA101LGC682TCC0U
	8,200	50 × 120	0.15	5.50	ELXA101LGC822TCC0U
	10,000	63.5 × 100	0.15	6.40	ELXA101LGC103TDA0U
	12,000	63.5 × 120	0.20	6.60	ELXA101LGC123TDC0U
	15,000	76.2 × 100	0.20	7.50	ELXA101LGC153TEA0U
	18,000	76.2 × 120	0.25	8.00	ELXA101LGC183TEC0U
	22,000	76.2 × 140	0.25	9.40	ELXA101LGC223TEE0U
	27,000	89 × 140	0.30	10.4	ELXA101LGC273TFE0U
160	680	35 × 50	0.15	1.10	ELXA161LGB681TA50U
	820	35 × 80	0.15	1.20	ELXA161LGB821TA80U
	1,000	35 × 80	0.15	1.30	ELXA161LGB102TA80U
	1,200	35 × 80	0.15	1.50	ELXA161LGB122TA80U
	1,500	35 × 80	0.15	1.70	ELXA161LGB152TA80U

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS long life screw terminals ,105℃

LXA Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
160	1,800	35 × 100	0.15	2.00	ELXA161LGB182TAA0U
	2,200	35 × 120	0.15	2.30	ELXA161LGB222TAC0U
	2,700	35 × 120	0.15	2.70	ELXA161LGB272TAC0U
	3,300	50 × 100	0.15	3.30	ELXA161LGC332TCA0U
	3,900	50 × 120	0.15	3.80	ELXA161LGC392TCC0U
	4,700	50 × 120	0.15	4.20	ELXA161LGC472TCC0U
	5,600	50 × 120	0.15	4.70	ELXA161LGC562TCC0U
	6,800	63.5 × 120	0.15	5.70	ELXA161LGC682TDC0U
	8,200	76.2 × 100	0.20	6.40	ELXA161LGC822TEA0U
	10,000	76.2 × 120	0.20	6.60	ELXA161LGC103TEC0U
	12,000	76.2 × 140	0.20	7.80	ELXA161LGC123TEE0U
	15,000	89 × 140	0.20	9.50	ELXA161LGC153TFE0U
200	470	35 × 50	0.15	0.90	ELXA201LGB471TA50U
	560	35 × 80	0.15	1.00	ELXA201LGB561TA80U
	680	35 × 80	0.15	1.10	ELXA201LGB681TA80U
	820	35 × 80	0.15	1.30	ELXA201LGB821TA80U
	1,000	35 × 100	0.15	1.50	ELXA201LGB102TAA0U
	1,200	35 × 120	0.15	1.70	ELXA201LGB122TAC0U
	1,500	35 × 120	0.15	1.90	ELXA201LGB152TAC0U
	1,800	50 × 80	0.15	2.20	ELXA201LGC182TC80U
	2,200	50 × 100	0.15	2.70	ELXA201LGC222TCA0U
	2,700	50 × 120	0.15	3.20	ELXA201LGC272TCC0U
	3,300	50 × 120	0.15	3.50	ELXA201LGC332TCC0U
	3,900	63.5 × 100	0.15	4.00	ELXA201LGC392TDA0U
	4,700	63.5 × 120	0.15	4.70	ELXA201LGC472TDC0U
	5,600	76.2 × 100	0.15	5.30	ELXA201LGC562TEA0U
	6,800	76.2 × 120	0.15	6.30	ELXA201LGC682TEC0U
	8,200	76.2 × 140	0.20	6.40	ELXA201LGC822TEE0U
	10,000	89 × 140	0.20	7.70	ELXA201LGC103TFE0U
250	330	35 × 50	0.15	0.70	ELXA251LGB331TA50U
	390	35 × 80	0.15	0.80	ELXA251LGB391TA80U
	470	35 × 80	0.15	0.90	ELXA251LGB471TA80U
	560	35 × 80	0.15	1.00	ELXA251LGB561TA80U
	680	35 × 100	0.15	1.20	ELXA251LGB681TAA0U
	820	35 × 100	0.15	1.40	ELXA251LGB821TAA0U
	1,000	35 × 120	0.15	1.60	ELXA251LGB102TAC0U
	1,200	50 × 80	0.15	1.80	ELXA251LGC122TC80U
	1,500	50 × 100	0.15	2.20	ELXA251LGC152TCA0U
	1,800	50 × 120	0.15	2.60	ELXA251LGC182TCC0U
	2,200	50 × 120	0.15	2.80	ELXA251LGC222TCC0U
	2,700	63.5 × 100	0.15	3.30	ELXA251LGC272TDA0U
	3,300	63.5 × 120	0.15	4.00	ELXA251LGC332TDC0U
	3,900	76.2 × 100	0.15	4.40	ELXA251LGC392TEA0U
	4,700	76.2 × 120	0.15	5.20	ELXA251LGC472TEC0U
	5,600	76.2 × 140	0.15	6.10	ELXA251LGC562TEE0U
	6,800	89 × 140	0.15	7.40	ELXA251LGC682TFE0U
350	820	50 × 60	0.20	3.30	ELXA351LGC821MC60U
	1,500	50 × 85	0.20	5.20	ELXA351LGC152MC85U
	2,200	50 × 105	0.20	7.00	ELXA351LGC222MCA5U
	2,700	50 × 125	0.20	8.40	ELXA351LGC272MCC5U
	2,700	63.5 × 85	0.20	8.10	ELXA351LGC272MD85U
	3,300	50 × 145	0.20	9.90	ELXA351LGC332MCE5U
	3,300	63.5 × 105	0.20	9.80	ELXA351LGC332MDA5U
	3,900	63.5 × 125	0.20	11.5	ELXA351LGC392MDC5U
	3,900	76.2 × 85	0.20	10.8	ELXA351LGC392ME85U
	5,600	63.5 × 145	0.20	14.7	ELXA351LGC562MDE5U
	6,800	76.2 × 125	0.20	16.8	ELXA351LGC682MEC5U
	8,200	76.2 × 145	0.20	19.6	ELXA351LGC822MEE5U
	8,200	89 × 125	0.20	18.9	ELXA351LGC822MFC5U
	10,000	76.2 × 190	0.20	23.0	ELXA351LGC103MEK0U
	10,000	89 × 145	0.20	22.2	ELXA351LGC103MFE5U
	15,000	89 × 190	0.20	30.6	ELXA351LGC153MFK0U
	22,000	89 × 270	0.20	43.5	ELXA351LGC223MFT0U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	680	50 × 60	0.20	3.00	ELXA401LGC681MC60U
	1,200	50 × 85	0.20	4.70	ELXA401LGC122MC85U
	1,800	50 × 105	0.20	6.30	ELXA401LGC182MCA5U
	2,200	50 × 125	0.20	7.50	ELXA401LGC222MCC5U
	2,200	63.5 × 85	0.20	7.30	ELXA401LGC222MD85U
	2,700	50 × 145	0.20	8.90	ELXA401LGC272MCE5U
	2,700	63.5 × 105	0.20	8.80	ELXA401LGC272MDA5U
	3,300	63.5 × 125	0.20	10.5	ELXA401LGC332MDC5U
	3,300	76.2 × 85	0.20	9.90	ELXA401LGC332ME85U
	4,700	63.5 × 145	0.20	13.4	ELXA401LGC472MDE5U
	4,700	76.2 × 125	0.20	13.9	ELXA401LGC472MEC5U
	6,800	76.2 × 145	0.20	17.9	ELXA401LGC682MEE5U
	6,800	89 × 125	0.20	17.2	ELXA401LGC682MFC5U
	8,200	76.2 × 190	0.20	20.8	ELXA401LGC822MEK0U
	8,200	89 × 145	0.20	20.1	ELXA401LGC822MFE5U
	12,000	89 × 190	0.20	27.4	ELXA401LGC123MFK0U
	18,000	89 × 270	0.20	39.4	ELXA401LGC183MFT0U
450	560	50 × 60	0.20	2.60	ELXA451LGC561MC60U
	1,000	50 × 85	0.20	4.00	ELXA451LGC102MC85U
	1,200	50 × 105	0.20	4.80	ELXA451LGC122MCA5U
	1,800	50 × 125	0.20	6.40	ELXA451LGC182MCC5U
	1,800	63.5 × 85	0.20	6.20	ELXA451LGC182MD85U
	2,200	50 × 145	0.20	7.60	ELXA451LGC222MCE5U
	2,200	63.5 × 105	0.20	7.50	ELXA451LGC222MDA5U
	2,700	63.5 × 125	0.20	8.90	ELXA451LGC272MDC5U
	2,700	76.2 × 85	0.20	8.40	ELXA451LGC272ME85U
	3,300	63.5 × 145	0.20	10.6	ELXA451LGC332MDE5U
	3,300	76.2 × 105	0.20	10.2	ELXA451LGC332MEA5U
	3,900	76.2 × 125	0.20	11.9	ELXA451LGC392MEC5U
	4,700	76.2 × 145	0.20	14.0	ELXA451LGC472MEE5U
	5,600	89 × 125	0.20	14.2	ELXA451LGC562MFC5U
	6,800	76.2 × 190	0.20	17.3	ELXA451LGC682MEK0U
	6,800	89 × 145	0.20	16.7	ELXA451LGC682MFE5U
	10,000	89 × 190	0.20	22.8	ELXA451LGC103MFK0U
	15,000	89 × 270	0.20	32.8	ELXA451LGC153MFT0U
500	470	50 × 60	0.20	2.40	ELXA501LGC471MC60U
	820	50 × 85	0.20	3.60	ELXA501LGC821MC85U
	1,000	50 × 105	0.20	4.40	ELXA501LGC102MCA5U
	1,200	50 × 125	0.20	5.20	ELXA501LGC122MCC5U
	1,200	63.5 × 85	0.20	5.00	ELXA501LGC122MD85U
	1,500	50 × 145	0.20	6.30	ELXA501LGC152MCE5U
	1,800	63.5 × 105	0.20	6.80	ELXA501LGC182MDA5U
	2,700	63.5 × 145	0.20	9.60	ELXA501LGC272MDE5U
	2,700	76.2 × 105	0.20	9.20	ELXA501LGC272MEA5U
	3,900	76.2 × 145	0.20	12.7	ELXA501LGC392MEE5U
	3,900	89 × 125	0.20	11.9	ELXA501LGC392MFC5U
	6,800	89 × 190	0.20	18.8	ELXA501LGC682MFK0U
	10,000	89 × 270	0.20	26.8	ELXA501LGC103MFT0U
525	390	50 × 60	0.20	2.20	ELXA5C1LGC391MC60U
	680	50 × 85	0.20	3.30	ELXA5C1LGC681MC85U
	1,000	50 × 125	0.20	4.80	ELXA5C1LGC102MCC5U
	1,500	63.5 × 105	0.20	6.20	ELXA5C1LGC152MDA5U
	1,800	63.5 × 125	0.20	7.30	ELXA5C1LGC182MDC5U
	2,200	63.5 × 145	0.20	8.60	ELXA5C1LGC222MDE5U
	2,200	76.2 × 105	0.20	8.30	ELXA5C1LGC222MEA5U
	2,700	76.2 × 125	0.20	9.90	ELXA5C1LGC272MEC5U
	3,300	76.2 × 145	0.20	11.7	ELXA5C1LGC332MEE5U
	4,700	76.2 × 190	0.20	14.4	ELXA5C1LGC472MEK0U
	4,700	89 × 145	0.20	13.9	ELXA5C1LGC472MFE5U
	5,600	89 × 190	0.20	17.1	ELXA5C1LGC562MFK0U

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LXA Series

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multiplirs

Frequency (Hz)	50	120	300	1k	3k	10k	50k
10 to 50Vdc	0.95	1.00	1.03	1.05	—	1.09	1.12
63 to 80Vdc	0.90	1.00	1.06	1.10	—	1.18	1.22
100 to 250Vdc	0.80	1.00	1.12	1.22	—	1.30	1.33
350 to 525Vdc	0.80	1.00	1.20	1.50	1.60	—	—

Note : The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is requested in actual use, the rms ripple current has to be reduced. Also, for the LXA series capacitors (350 to 525Vdc products), using them at operating voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminals ,105℃

LXR Series

- Higher ripple capability than LXA series
- Endurance with ripple current : 5,000 hours at 105℃
- RoHS2 Compliant

LXR
↑ Higher ripple
LXA

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +105℃
Rated Voltage Range	350 to 450V_{dc}
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.15max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C (-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V_{dc}, the insulation resistance shall not be less than than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000V_{ac} is applied for 1 minute between the terminals that are connected to each other and to the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦200% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ63.5 & φ76.2 : G=6
φ89 : G=4
φ100 : G=10

●Mounting Clamp Code : B

φD	A	B	W	F
63.5	90	76	80	28.0
76.2	104.5	90	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	M	F	J
63.5	38.1	43.5	4.5	28.0	14.0
76.2	44.5	50.0	4.5	31.5	14.0
89	50.8	56.5	4.5	31.5	16.0
100	56.5	63.4	5.5	41.5	18.0

<Screw specifications>
to φ89 Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm

φ100 Cross-recessed head (Phillips) screw : M8×1.25×16
Spring washer,Washer
Maximum screw tightening torque :6.31Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (screw-mount terminal type)"

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NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS Inverter-use screw terminals ,105℃

LXR Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
350	3,300	63.5 × 115	0.15	14.4	ELXR351LGC332MDB5U
	3,900	63.5 × 130	0.15	16.6	ELXR351LGC392MDD0U
	4,700	63.5 × 155	0.15	19.8	ELXR351LGC472MDF5U
	4,700	76.2 × 115	0.15	19.1	ELXR351LGC472MEB5U
	5,600	63.5 × 170	0.15	22.5	ELXR351LGC562MDH0U
	5,600	76.2 × 130	0.15	21.9	ELXR351LGC562MED0U
	6,800	76.2 × 155	0.15	26.2	ELXR351LGC682MEF5U
	8,200	76.2 × 170	0.15	30.0	ELXR351LGC822MEH0U
	8,200	89 × 155	0.15	29.2	ELXR351LGC822MFF5U
	10,000	89 × 170	0.15	33.7	ELXR351LGC103MFH0U
	12,000	100 × 190	0.15	37.8	ELXR351LGC123MGK0U
	15,000	100 × 250	0.15	47.7	ELXR351LGC153MGR0U
400	2,700	63.5 × 115	0.15	13.1	ELXR401LGC272MDB5U
	3,300	63.5 × 130	0.15	15.2	ELXR401LGC332MDD0U
	3,900	63.5 × 155	0.15	17.9	ELXR401LGC392MDF5U
	3,900	76.2 × 115	0.15	18.2	ELXR401LGC392MEB5U
	4,700	63.5 × 170	0.15	20.5	ELXR401LGC472MDH0U
	4,700	76.2 × 130	0.15	20.1	ELXR401LGC472MED0U
	5,600	76.2 × 155	0.15	23.8	ELXR401LGC562MEF5U

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/ 105℃, 120Hz)	Part No.
400	6,800	76.2 × 170	0.15	27.3	ELXR401LGC682MEH0U
	6,800	89 × 155	0.15	26.6	ELXR401LGC682MFF5U
	8,200	89 × 170	0.15	30.5	ELXR401LGC822MFH0U
	10,000	100 × 190	0.15	34.5	ELXR401LGC103MGK0U
	12,000	100 × 220	0.15	40.2	ELXR401LGC123MGN0U
450	2,200	63.5 × 115	0.15	11.8	ELXR451LGC222MDB5U
	2,700	63.5 × 130	0.15	13.7	ELXR451LGC272MDD0U
	2,700	76.2 × 115	0.15	14.5	ELXR451LGC272MEB5U
	3,300	63.5 × 155	0.15	16.5	ELXR451LGC332MDF5U
	3,300	76.2 × 130	0.15	16.9	ELXR451LGC332MED0U
	3,900	63.5 × 170	0.15	18.7	ELXR451LGC392MDH0U
	4,700	76.2 × 155	0.15	21.7	ELXR451LGC472MEF5U
	5,600	76.2 × 190	0.15	26.1	ELXR451LGC562MEK0U
	5,600	89 × 155	0.15	24.1	ELXR451LGC562MFF5U
	6,800	89 × 170	0.15	27.8	ELXR451LGC682MFH0U
	8,200	89 × 190	0.15	32.0	ELXR451LGC822MFK0U
	10,000	100 × 220	0.15	36.8	ELXR451LGC103MGN0U
	12,000	100 × 250	0.15	42.7	ELXR451LGC123MGR0U

◆RATED RIPPLE CURRENT MULTIPLIERS

◉Frequency Multipliers

Frequency (Hz)	120	300	1k	3k
Coefficient	1.0	1.1	1.3	1.4

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the LXR series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For details, please contact a representative of Nippon Chemi-Con.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Screw terminals, 85℃

RWV Series

- For frequently change of regenerative voltage from AC servo amplifier and inverter control
- Improved the resistance for charge and discharge from same dimension of RWF series
- Endurance with ripple current : 5,000 hours at 85℃
- Rated voltage range : 350 to 450Vdc, Capacitance 820 to 18,000µF
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-25 to +85℃
Rated Voltage Range	350 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	I=0.02CV or 5mA, whichever is smaller. Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	0.25 max. (at 20℃, 120Hz)
Low Temperature Characteristics	Capacitance change C(-25℃)/C(+20℃)≧0.7 (at 120Hz)
Insulation Resistance	When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500Vdc, the insulation resistance shall not be less than 100MΩ.
Insulation Withstanding Voltage	When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage.
Charge and Discharge	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to charge and discharge test with the voltage waveform shown below at room temperature (15 to 35℃).
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦200% of the initial specified value
	Leakage current: ≦The initial specified value
	Frequency: 3Hz
	Number of cycles: 50 million times
	Voltage waveform:
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 85℃.
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦200% of the initial specified value
	Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.
	Capacitance change: ≦±20% of the initial value
	D.F. (tan δ): ≦200% of the initial specified value
	Leakage current: ≦The initial specified value

◆DIMENSIONS (Screw-Mount) [mm]

●Terminal Code : LG

φ50 & φ63.5 : G=6
φ76.2 & φ89 : G=5

●Mounting Clamp Code : B

φD	A	B	W	F
50	78.0	64.0	68.0	22.4
63.5	90.0	76.0	80.0	28.0
76.2	104.5	90.0	93.5	31.5

●Mounting Clamp Code : C

φD	E	K	F	J
50	32.5	37.0	22.4	14.0
63.5	38.1	43.5	28.0	14.0
76.2	44.5	50.0	31.5	14.0
89	50.8	56.5	31.5	16.0

<Screw specifcations>
Plus hexagon-headed screw :M5×0.8×10
Maximum screw tightening torque :3.23Nm
* The screw and the mounting clamp are separately supplied and not attached to the product.

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Return Group Chart

NIPPON CHEMI-CON

LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Screw terminals, 85℃

RWV Series

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E RWV □□□ LG □ □□□ M □□□ U

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 5,600μF:562, 12,000μF:123)
- Mounting clamp code (N, B, C)
- Terminal code
- Voltage code (ex. 350V:351, 400V:401)
- Series code
- Category

Please refer to "Product code guide (screw-mount terminal type)"

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	Rated ripple current (Arms/ 85℃, 120Hz)	Max. charge current and Max.discharge current (Arms/ 3Hz)	Part No.
350	1,200	50 × 60	4.70	1.56	ERWV351LGC122MC60U
	1,500	50 × 70	5.50	1.83	ERWV351LGC152MC70U
	1,800	50 × 80	6.40	2.13	ERWV351LGC182MC80U
	2,200	50 × 96	7.60	2.53	ERWV351LGC222MC96U
	2,700	50 × 105	8.80	2.94	ERWV351LGC272MCA5U
	2,700	50 × 115	9.20	3.06	ERWV351LGC272MCB5U
	3,300	50 × 130	10.8	3.58	ERWV351LGC332MCD0U
	4,700	63.5 × 115	13.2	4.61	ERWV351LGC472MDB5U
	5,600	63.5 × 130	15.2	5.30	ERWV351LGC562MDD0U
	5,600	76.2 × 105	15.2	5.36	ERWV351LGC562MEA5U
	6,800	63.5 × 155	18.1	6.32	ERWV351LGC682MDF5U
	8,200	63.5 × 170	20.7	7.25	ERWV351LGC822MDH0U
	8,200	76.2 × 130	20.2	6.57	ERWV351LGC822MED0U
	10,000	76.2 × 155	24.2	8.47	ERWV351LGC103MEF5U
	10,000	89 × 115	23.1	8.10	ERWV351LGC103MFB5U
	12,000	76.2 × 170	27.6	9.66	ERWV351LGC123MEH0U
	12,000	89 × 130	26.6	9.33	ERWV351LGC123MFD0U
	15,000	89 × 155	32.1	11.2	ERWV351LGC153MFF5U
	15,000	89 × 170	33.5	11.7	ERWV351LGC153MFH0U
	18,000	89 × 190	38.5	13.5	ERWV351LGC183MFK0U
375	1,000	50 × 60	4.30	1.42	ERWV3H1LGC102MC60U
	1,200	50 × 70	4.90	1.64	ERWV3H1LGC122MC70U
	1,500	50 × 80	5.80	1.94	ERWV3H1LGC152MC80U
	2,200	50 × 96	7.60	2.54	ERWV3H1LGC222MC96U
	2,200	50 × 105	8.00	2.65	ERWV3H1LGC222MCA5U
	2,700	50 × 115	9.20	3.06	ERWV3H1LGC272MCB5U
	3,300	50 × 130	10.8	3.58	ERWV3H1LGC332MCD0U
	4,700	63.5 × 115	13.2	4.61	ERWV3H1LGC472MDB5U
	5,600	63.5 × 130	15.2	5.30	ERWV3H1LGC562MDD0U
	5,600	76.2 × 105	15.2	5.36	ERWV3H1LGC562MEA5U
	6,800	63.5 × 155	18.1	6.32	ERWV3H1LGC682MDF5U
	6,800	63.5 × 170	18.9	6.60	ERWV3H1LGC682MDH0U
	8,200	76.2 × 130	20.2	7.09	ERWV3H1LGC822MED0U
	8,200	89 × 115	20.9	7.35	ERWV3H1LGC822MFB5U
	10,000	76.2 × 155	24.2	8.48	ERWV3H1LGC103MEF5U
	10,000	76.2 × 170	25.2	8.85	ERWV3H1LGC103MEH0U
	10,000	89 × 130	24.3	8.54	ERWV3H1LGC103MFD0U
	12,000	89 × 155	28.7	10.0	ERWV3H1LGC123MFF5U
	15,000	89 × 170	33.5	11.7	ERWV3H1LGC153MFH0U
	15,000	89 × 190	35.2	12.3	ERWV3H1LGC153MFK0U
400	1,000	50 × 60	4.30	1.42	ERWV401LGC102MC60U
	1,200	50 × 70	4.90	1.64	ERWV401LGC122MC70U
	1,500	50 × 80	5.80	1.95	ERWV401LGC152MC80U
	1,800	50 × 96	6.90	2.29	ERWV401LGC182MC96U
	2,200	50 × 105	8.00	2.65	ERWV401LGC222MCA5U
	2,200	50 × 115	8.30	2.77	ERWV401LGC222MCB5U
	2,700	50 × 130	9.80	3.23	ERWV401LGC272MCD0U
	3,900	63.5 × 115	12.0	4.21	ERWV401LGC392MDB5U
	4,700	63.5 × 130	13.9	4.86	ERWV401LGC472MDD0U
	5,600	63.5 × 155	16.4	5.75	ERWV401LGC562MDF5U
400	5,600	63.5 × 170	17.1	5.99	ERWV401LGC562MDH0U
	5,600	76.2 × 105	15.2	5.35	ERWV401LGC562MEA5U
	6,800	76.2 × 130	18.4	6.47	ERWV401LGC682MED0U
	8,200	76.2 × 155	21.9	7.68	ERWV401LGC822MEF5U
	8,200	76.2 × 170	22.8	8.02	ERWV401LGC822MEH0U
	8,200	89 × 115	20.9	7.35	ERWV401LGC822MFB5U
	10,000	89 × 130	24.3	8.26	ERWV401LGC103MFD0U
	12,000	89 × 155	28.7	10.0	ERWV401LGC123MFF5U
	12,000	89 × 170	29.9	10.5	ERWV401LGC123MFH0U
	15,000	89 × 190	35.2	12.3	ERWV401LGC153MFK0U
420	820	50 × 60	3.80	1.29	ERWV421LGC821MC60U
	1,000	50 × 70	4.40	1.50	ERWV421LGC102MC70U
	1,200	50 × 80	5.20	1.75	ERWV421LGC122MC80U
	1,800	50 × 96	6.80	2.30	ERWV421LGC182MC96U
	1,800	50 × 105	7.10	2.40	ERWV421LGC182MCA5U
	2,200	50 × 115	8.20	2.77	ERWV421LGC222MCB5U
	2,700	50 × 130	9.60	3.25	ERWV421LGC272MCD0U
	3,300	63.5 × 115	11.0	3.87	ERWV421LGC332MDB5U
	3,900	63.5 × 130	12.7	4.44	ERWV421LGC392MDD0U
	4,700	63.5 × 155	15.0	5.28	ERWV421LGC472MDF5U
	4,700	76.2 × 105	13.9	4.92	ERWV421LGC472MEA5U
	5,600	63.5 × 170	17.1	6.02	ERWV421LGC562MDH0U
	5,600	76.2 × 130	16.6	5.90	ERWV421LGC562MED0U
	6,800	76.2 × 155	19.8	7.02	ERWV421LGC682MEF5U
	6,800	89 × 115	19.0	6.73	ERWV421LGC682MFB5U
	8,200	76.2 × 170	22.7	8.04	ERWV421LGC822MEH0U
	8,200	89 × 130	22.0	7.78	ERWV421LGC822MFD0U
	10,000	89 × 155	26.2	9.24	ERWV421LGC103MFF5U
	12,000	89 × 170	29.9	10.5	ERWV421LGC123MFH0U
	12,000	89 × 190	31.5	11.0	ERWV421LGC123MFK0U
450	820	50 × 60	3.80	1.29	ERWV451LGC821MC60U
	1,000	50 × 70	4.40	1.50	ERWV451LGC102MC70U
	1,200	50 × 80	5.20	1.74	ERWV451LGC122MC80U
	1,500	50 × 96	6.20	2.10	ERWV451LGC152MC96U
	1,800	50 × 105	7.10	2.41	ERWV451LGC182MCA5U
	1,800	50 × 115	7.40	2.51	ERWV451LGC182MCB5U
	2,200	50 × 130	8.70	2.93	ERWV451LGC222MCD0U
	3,300	63.5 × 115	11.0	3.88	ERWV451LGC332MDB5U
	3,900	63.5 × 130	12.7	4.44	ERWV451LGC392MDD0U
	3,900	76.2 × 105	13.2	4.49	ERWV451LGC392MEA5U
	4,700	63.5 × 155	15.0	5.27	ERWV451LGC472MDF5U
	4,700	63.5 × 170	15.6	5.50	ERWV451LGC472MDH0U
	5,600	76.2 × 130	16.6	5.88	ERWV451LGC562MED0U
	6,800	76.2 × 155	19.8	7.04	ERWV451LGC682MEF5U
	6,800	89 × 115	19.0	6.72	ERWV451LGC682MFB5U
	8,200	76.2 × 170	22.7	7.97	ERWV451LGC822MEH0U
	8,200	89 × 130	22.0	7.72	ERWV451LGC822MFD0U
	10,000	89 × 155	26.2	9.22	ERWV451LGC103MFF5U
	10,000	89 × 170	27.3	9.66	ERWV451LGC103MFH0U
	12,000	89 × 190	31.5	11.1	ERWV451LGC123MFK0U

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RWV Series

◆RATED RIPPLE CURRENT MULTIPLIERS

◎Frequency Multipliers

Frequency (Hz)	50	120	300	1k	3k
Coefficient	0.8	1.0	1.1	1.3	1.4

Note : The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5 to 10℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced. Also, for the RWV series capacitors, using them at operating voltage less than their rated voltage can extend their lifetime. For the details, please contact a representative of Nippon Chemi-Con.

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U37F Series

UNITED CHEMI-CON

- Large Can
- Screw Terminals
- General Purpose U37 Grade
- High Ripple
- 350 to 500VDC Ratings
- RoHS Compliant
- 5,000 Hours Lifetime at +85°C
- Up to 150,000 Hours Useful Life

The U37F series is a general purpose, screw mount U37 grade series specifically designed to provide the ripple current capability and long life required for high reliability inverter applications.The U37F has an endurance rating of 5,000 hours at +85°C with the rated ripple current applied. The useful life can exceed 150,000 hours at +40°C and 1.5x the ripple current. These capacitors are available in a variety of high current English or Metric thread terminals. Mounting options include a three-footed clamp or bottom threaded stud. Custom designs are also available.

Summary of Specifications

- **Screw terminals: high and low post, English and Metric thread.**
- **Capacitance range: 1,500 to 22,000μF.**
- **Voltage range: 350 to 500VDC.**
- **Category temperature range: −40°C to +85°C.**
- **Leakage current: 0.02CV(μA) or 5mA, whichever is smaller, after 5 minutes at +25°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size (D×L): D = 50mm (2.000") to 89mm (3.500"); L = 92mm (3.625") to 219mm (8.625").**
- **Rated lifetime: 5,000 hours at +85°C with rated ripple current applied.**

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U37F Series

U37F Specifications - Screw Terminals

Item	Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	350 to 500VDC
Capacitance Range	1,500 to 22,000μF at +25°C, 120Hz
Capacitance Tolerance	±20% (M) at +25°C, 120Hz
Leakage Current	I = 0.02CV (μA) or 5mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)
Rated Ripple Current Multipliers	Ambient Temperature (°C) +45°C: 2.82; +65°C: 1.73; +85°C: 1.00 Frequency (Hz) DC Rated Voltage: 350-500V; 50Hz: 0.80; 120Hz: 1.00; 300Hz: 1.20; 1kHz: 1.30; 3kHz: 1.40; 10kHz: 1.41 To determine maximum ripple current at a specified temperature and frequency, use the appropriate multiplier shown.
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 5,000 hours at +85°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: ≤ 20% from initial measurement ESR change : ≤ 200% of initial specified limit Leakage current : ≤ initial specified limit
Useful Life	With specified standard voltage and ripple current applied, typical life as function of ambient temperature is listed below. +85°C: 6,500 hours max. +65°C: 23,800 hours max. +45°C: 124,700 hours max. Capacitance change: ≤ 30% from initial measurement ESR change : ≤ 300% of initial specified limit Leakage current : ≤ initial specified limit
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 500 hours at +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: ≤ 20% from initial measurement ESR change : ≤ 200% of initial specified limit Leakage current : ≤ initial specified limit
Vibration Rating	10-55Hz, 10g sinusoidal in three axes, 2 hours per axis.
Maximum Tightening Torque	Terminal Code: HP; HL; CD; CP; CH; CA; CS Thread Size: 10-32 NF-2B; M5x0.8-6H; ¼-28 NF-2B; M6x1-6H 3 Threads Engaged: 2.0 N·m (18.0 in·lb); 4.0 N·m (35.0 in·lb) 6 Threads Engaged: 2.8 N·m (25.0 in·lb); 6.2 N·m (55.0 in·lb)
Typical Inductance (nH) at 1MHz	Case Diameter (mm) / Terminal Code: HP; HL; CD; CP; CH; CA; CS Ø50.8: —; —; NA; NA; NA; NA; NA Ø63.5: —; —; —; —; —; —; — Ø76.2: 30; 30; 25; 20; 25; 20; 25 Ø89.0: 30; 30; 25; 20; 25; 20; 25
Custom Designs	Custom CV values per case size and termination type may be available upon request. Contact appropriate representative with specific requirements.

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U37F Series

U37F Useful Life

Useful Life: 6,500 Hours at +85°C

The life expectancy of a capacitor is shown as a function of ambient temperature and ripple current load.

Diagram of Dimensions - Screw Terminals

Large Can/Screw Terminals

Unit: mm (inches)

Case Dimensions and Standard Box Quantities

Case Size Code	ØD +2.0 (0.080)	L ±1.0 (0.040)	F ±0.25 (0.010)	Standard Box Quantity
CB7 CD0	50.8 (2.000)	117 (4.625) 130 (5.125)	22.2 (0.875)	49
D92 DA5 DB7 DD0 DE3	63.5 (2.500)	92 (3.625) 105 (4.125) 117 (4.625) 130 (5.125) 143 (5.625)	28.6 (1.125)	20
E92 EA5 EB7 EE3 EJ1 EM9	76.2 (3.000)	92 (3.625) 105 (4.125) 117 (4.625) 143 (5.625) 181 (7.125) 219 (8.625)	31.8 (1.250)	16 9
F92 FA5 FB7 FE3 FF5 FK0 FM9	89.0 (3.500)	92 (3.625) 105 (4.125) 117 (4.625) 143 (5.625) 155 (6.125) 190 (7.500) 219 (8.625)	31.8 (1.250)	5

Note:
In some cases, the color of the sleeve may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

Terminal Specifications

Terminal Code	Available Case Diameter		Thread Size	Minimum Thread Depth	J ±0.5 (0.020)	H ±2.0 (0.080)	ØS ±0.25 (0.010)	ØT ±0.25 (0.010)
	ØD Code	ØD mm (inches)						
HP	C	50.8 (2.000)	10-32 NF-2B	9.5 (0.375)	6.4 (0.250)	L+J	8.0 (0.313)	11.1 (0.438)
HL	C	50.8 (2.000)	M5x0.8-6H	9.5 (0.375)	6.4 (0.250)	L+J	8.0 (0.313)	11.1 (0.438)
CD	D–E	63.5 – 76.2 (2.500 – 3.000)	M5x0.8-6H	8.5 (0.335)	5.0 (0.200)	L+J	13.0 (0.512)	18.8 (0.740)
CP	D–F	63.5 – 89.0 (2.500 – 3.500)	¼-28 NF-2B	8.7 (0.344)	2.4 (0.093)	L+J	17.5 (0.689)	—
CH	D–F	63.5 – 89.0 (2.500 – 3.500)	¼-28 NF-2B	11.9 (0.468)	6.4 (0.250)	L+J	17.5 (0.689)	—
CA	D–F	63.5 – 89.0 (2.500 – 3.500)	M6x1-6H	8.7 (0.344)	2.4 (0.093)	L+J	17.5 (0.689)	—
CS	D–F	63.5 – 89.0 (2.500 – 3.500)	M6x1-6H	11.9 (0.468)	6.4 (0.250)	L+J	17.5 (0.689)	—

Mounting Hardware is optional. Refer to hardware specifications on the following page.

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U37F Series

Mounting Hardware - Screw Terminals

Type C: Three-Footed Clamp

Unit: mm (inches)

Hardware: Screw, washer and hexagon nut included with each clamp.

Type C: Clamp Dimensions

Mounting Code	Case ØD	A ±1.0 (0.040)	B ±1.0 (0.040)	G ±1.0 (0.040)	J ±0.5 (0.020)	K ±0.5 (0.020)	R ±1.0 (0.040)	S ±1.0 (0.040)	T ±0.5 (0.020)
C	50.8 (2.000)	31.8 (1.250)	36.5 (1.437)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	0.8 (0.032)
C	63.5 (2.500)	38.1 (1.500)	42.9 (1.689)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	0.8 (0.032)
C	76.2 (3.000)	44.5 (1.750)	49.2 (1.937)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	1.0 (0.040)
C	89.0 (3.500)	50.8 (2.000)	56.5 (2.224)	16.0 (0.630)	4.5 (0.177)	8.0 (0.313)	21.0 (0.827)	9.0 (0.354)	1.0 (0.040)

Type S: Stud Mounting

Mounting Nut - Order Separately

The insulated plastic mounting nut is not included with stud mount capacitor orders. It must be ordered separately. See available part numbers below.

Type S: Stud Dimensions

Mounting Code	P ±1.0 (0.040)	T Thread Size
S	16.0 (0.630)	M12

Mounting Nut Dimensions

Part Number	ØK ±2.0 (0.080)	M ±1.0 (0.040)	N ±1.0 (0.040)	ØQ ±1.0 (0.040)	R ±1.0 (0.040)
50-8D	30.0 (1.181)	19.0 (0.748)	18.0 (0.709)	22.0 (0.866)	1.40 (0.055)
50-8E	38.0 (1.496)	19.0 (0.748)	18.0 (0.709)	30.0 (1.181)	1.40 (0.055)

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U37F Series

Part Numbering System for U37F Series

When ordering, always specify complete 18-field global part number.

18 Fields

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
E	3	7	F	4	0	1	C	P	N	1	0	3	M	E	J	1	U

9 Supplement Code. Field 18.
U = PVC insulation with end disk.
C = PET insulation with end disk (Ø50.8mm only).
S = Polyolefin insulation with end disk.

8 Case Size. Fields 15, 16 and 17.
The single letter diameter code is inserted in field 15.
C = Ø50.8mm (Ø2.000")
D = Ø63.5mm (Ø2.500")
E = Ø76.2mm (Ø3.000")
F = Ø89.0mm (Ø3.500")

The double character length code is inserted in fields 16 and 17. For lengths ≤99mm, insert the actual length rounded to nearest millimeter. For lengths of 100mm or more, insert the appropriate alpha numeric code as indicated below.
92 = 92mm (3.625")
A5 = 105mm (4.125")
B7 = 117mm (4.625")
D0 = 130mm (5.125")
E3 = 143mm (5.625")
F5 = 155mm (6.125")
J1 = 181mm (7.125")
K0 = 190mm (7.500")
M9 = 219mm (8.625")

7 Capacitance Tolerance. Field 14.
M = ±20%

6 Capacitance. Fields 11, 12 and 13.
Expressed in Microfarads. The first two digits are significant figures inserted in fields 11 and 12, and the third digit inserted in field 13 indicates the number of zeros for capacitance of 10μF or more. R indicates the decimal point for capacitance less than 10μF (e.g. 1R0 = 1.0μF; 100 = 10μF; 101 = 100μF; 102 = 1,000μF; 103 = 10,000μF).

5 Mounting Hardware. Field 10.
N = None.
C = Three-footed clamp.
S = Stud mount. *The mounting nut is not included with stud mount orders. It must be ordered separately.*

4 Terminal Type. Fields 8 and 9.
HP = High post 10-32 NF-2B screw thread.
HL = High post M5x0.8 screw thread.
CD = M5x0.8 screw thread.
CP = Low post 1/4-28 NF-2B screw thread.
CH = High post 1/4-28 NF-2B screw thread.
CA = Low post M6x1 screw thread.
CS = High post M6x1 screw thread.

3 DC Rated Voltage. Fields 5, 6 and 7.
Expressed in Volts. The first two digits are significant figures inserted in fields 5 and 6, and the third digit inserted in field 7 indicates the number of zeros for rated voltage of 10VDC or more. R indicates the decimal point for rated voltage less than 10VDC (e.g. 4R0 = 4.0VDC; 400 = 40VDC; 401 = 400VDC).

2 Series Name. Fields 2, 3 and 4.
Enter the 3-letter/digit series name in fields 2, 3 and 4. If the series name is only 2 letters/digits, place a dash in field 4. For a series name with more than 3 letters/digits, refer to the individual series for the appropriate 3-field series name.

1 Capacitor Type. Field 1.
Aluminum Electrolytic Capacitor (Polar).

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U37F Series

Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D×L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C		
						120Hz	300Hz	>3kHz
350 Volts 400 Volts Surge	3,300	E37F351HPN332MCB7U	50 × 117	CB7	28	10.8	12.9	15.1
	3,900	E37F351HPN392MCD0U	50 × 130	CD0	23	12.2	14.6	17.0
	3,300	E37F351CPN332MD92U	63.5 × 92	D92	28	11.2	13.4	15.6
	3,900	E37F351CPN392MDA5U	63.5 × 105	DA5	23	12.7	15.2	17.7
	4,700	E37F351CPN472MDB7U	63.5 × 117	DB7	19	14.5	17.4	20.3
	5,600	E37F351CPN562MDD0U	63.5 × 130	DD0	16	16.4	19.7	22.9
	5,600	E37F351CPN562MDE3U	63.5 × 143	DE3	16	17.0	20.4	23.7
	4,700	E37F351CPN472ME92U	76.2 × 92	E92	20	14.5	17.4	20.2
	5,600	E37F351CPN562MEA5U	76.2 × 105	EA5	17	16.5	19.8	23.1
	6,800	E37F351CPN682MEB7U	76.2 × 117	EB7	14	18.9	22.6	26.4
	8,200	E37F351CPN822MEE3U	76.2 × 143	EE3	12	22.2	26.7	31.1
	12,000	E37F351CPN123MEJ1U	76.2 × 181	EJ1	8	29.4	35.2	41.1
	15,000	E37F351CPN153MEM9U	76.2 × 219	EM9	6	35.4	42.5	49.6
	6,800	E37F351CPN682MF92U	89 × 92	F92	14	19.1	22.9	26.7
	8,200	E37F351CPN822MFA5U	89 × 105	FA5	12	21.8	26.2	30.5
	10,000	E37F351CPN103MFB7U	89 × 117	FB7	10	25.0	30.0	35.0
	12,000	E37F351CPN123MFE3U	89 × 143	FE3	8	29.3	35.2	41.1
	15,000	E37F351CPN153MFF5U	89 × 155	FF5	6	33.8	40.5	47.3
	18,000	E37F351CPN183MFK0U	89 × 190	FK0	5	40.0	47.9	55.9
	22,000	E37F351CPN223MFM9U	89 × 219	FM9	4	46.7	56.0	65.4
400 Volts 450 Volts Surge	2,700	E37F401HPN272MCB7U	50 × 117	CB7	30	10.4	12.5	14.6
	3,300	E37F401HPN332MCD0U	50 × 130	CD0	26	11.6	13.9	16.2
	2,700	E37F401CPN272MD92U	63.5 × 92	D92	30	10.7	12.9	15.0
	3,300	E37F401CPN332MDA5U	63.5 × 105	DA5	25	12.3	14.7	17.2
	3,900	E37F401CPN392MDB7U	63.5 × 117	DB7	21	13.8	16.5	19.3
	4,700	E37F401CPN472MDD0U	63.5 × 130	DD0	19	15.3	18.3	21.4
	4,700	E37F401CPN472MDE3U	63.5 × 143	DE3	17	16.8	20.1	23.5
	3,900	E37F401CPN392ME92U	76.2 × 92	E92	21	14.3	17.2	20.0
	5,600	E37F401CPN562MEA5U	76.2 × 105	EA5	17	16.4	19.6	22.9
	5,600	E37F401CPN562MEB7U	76.2 × 117	EB7	15	18.4	22.0	25.7
	8,200	E37F401CPN822MEE3U	76.2 × 143	EE3	12	22.3	26.8	31.3
	10,000	E37F401CPN103MEJ1U	76.2 × 181	EJ1	9	28.2	33.8	39.5
	12,000	E37F401CPN123MEM9U	76.2 × 219	EM9	7	34.0	40.8	47.6
	5,600	E37F401CPN562MF92U	89 × 92	F92	15	18.6	22.3	26.1
	6,800	E37F401CPN682MFA5U	89 × 105	FA5	12	21.2	25.5	29.7
	8,200	E37F401CPN822MFB7U	89 × 117	FB7	11	23.8	28.6	33.4
	10,000	E37F401CPN103MFE3U	89 × 143	FE3	8	28.9	34.7	40.5
	12,000	E37F401CPN123MFF5U	89 × 155	FF5	7	31.4	37.7	44.0
	15,000	E37F401CPN153MFK0U	89 × 190	FK0	6	38.3	45.9	53.6
	18,000	E37F401CPN183MFM9U	89 × 219	FM9	5	43.9	52.7	61.5
420 Volts 470 Volts Surge	2,700	E37F421HPN272MCB7U	50 × 117	CB7	34	9.8	11.7	13.7
	3,300	E37F421HPN332MCD0U	50 × 130	CD0	28	11.2	13.4	15.7
	2,700	E37F421CPN272MD92U	63.5 × 92	D92	34	10.1	12.1	14.1
	3,300	E37F421CPN332MDA5U	63.5 × 105	DA5	28	11.7	14.0	16.3
	3,900	E37F421CPN392MDB7U	63.5 × 117	DB7	23	13.2	15.8	18.5
	3,900	E37F421CPN392MDD0U	63.5 × 130	DD0	23	13.7	16.4	19.1
	4,700	E37F421CPN472MDE3U	63.5 × 143	DE3	19	15.5	18.6	21.8
	3,900	E37F421CPN392ME92U	76.2 × 92	E92	24	13.2	15.8	18.4
	4,700	E37F421CPN472MEA5U	76.2 × 105	EA5	20	15.1	18.1	21.1
	5,600	E37F421CPN562MEB7U	76.2 × 117	EB7	17	17.1	20.5	24.0
	6,800	E37F421CPN682MEE3U	76.2 × 143	EE3	14	20.2	24.3	28.3
	10,000	E37F421CPN103MEJ1U	76.2 × 181	EJ1	10	26.8	32.2	37.5
	12,000	E37F421CPN123MEM9U	76.2 × 219	EM9	8	31.7	38.0	44.4
	5,600	E37F421CPN562MF92U	89 × 92	F92	17	17.3	20.8	24.2
	6,800	E37F421CPN682MFA5U	89 × 105	FA5	14	19.9	23.8	27.8

†For terminal, mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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U37F Series

Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D×L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C		
						120Hz	300Hz	>3kHz
420 Volts 470 Volts Surge	8,200	E37F421CPN822MFB7U	89 × 117	FB7	12	22.7	27.2	31.7
	10,000	E37F421CPN103MFE3U	89 × 143	FE3	10	26.8	32.1	37.5
	12,000	E37F421CPN123MFF5U	89 × 155	FF5	8	30.3	36.3	42.4
	15,000	E37F421CPN153MFK0U	89 × 190	FK0	6	36.5	43.8	51.1
	18,000	E37F421CPN183MFM9U	89 × 219	FM9	5	42.2	50.7	59.1
450 Volts 500 Volts Surge	2,700	E37F451HPN272MCB7U	50 × 117	CB7	34	9.8	11.7	13.7
	2,700	E37F451HPN272MCD0U	50 × 130	CD0	34	10.1	12.1	14.2
	2,200	E37F451CPN222MD92U	63.5 × 92	D92	42	9.1	10.9	12.8
	2,700	E37F451CPN272MDA5U	63.5 × 105	DA5	34	10.5	12.7	14.8
	3,300	E37F451CPN332MDB7U	63.5 × 117	DB7	28	12.1	14.6	17.0
	3,900	E37F451CPN392MDD0U	63.5 × 130	DD0	23	13.7	16.4	19.1
	4,700	E37F451CPN472MDE3U	63.5 × 143	DE3	19	15.5	18.6	21.8
	3,900	E37F451CPN392ME92U	76.2 × 92	E92	24	13.2	15.8	18.4
	4,700	E37F451CPN472MEA5U	76.2 × 105	EA5	20	15.1	18.1	21.1
	5,600	E37F451CPN562MEB7U	76.2 × 117	EB7	17	17.1	20.5	24.0
	6,800	E37F451CPN682MEE3U	76.2 × 143	EE3	14	20.2	24.3	28.3
	8,200	E37F451CPN822MEJ1U	76.2 × 181	EJ1	12	24.3	29.1	34.0
	12,000	E37F451CPN123MEM9U	76.2 × 219	EM9	8	31.7	38.0	44.4
	5,600	E37F451CPN562MF92U	89 × 92	F92	17	17.3	20.8	24.2
	6,800	E37F451CPN682MFA5U	89 × 105	FA5	14	19.9	23.8	27.8
	6,800	E37F451CPN682MFB7U	89 × 117	FB7	14	20.6	24.8	28.9
	8,200	E37F451CPN822MFE3U	89 × 143	FE3	12	24.3	29.1	34.0
	12,000	E37F451CPN123MFF5U	89 × 155	FF5	8	30.2	36.3	42.3
	15,000	E37F451CPN153MFK0U	89 × 190	FK0	6	36.5	43.8	51.1
	15,000	E37F451CPN153MFM9U	89 × 219	FM9	6	38.6	46.3	54.0
500 Volts 550 Volts Surge	1,500	E37F501HPN152MCB7U	50 × 117	CB7	63	7.2	8.6	10.1
	1,800	E37F501HPN182MCD0U	50 × 130	CD0	55	8.0	9.6	11.2
	1,800	E37F501CPN182MD92U	63.5 × 92	D92	52	8.2	9.8	11.5
	2,200	E37F501CPN222MDA5U	63.5 × 105	DA5	43	9.4	11.2	13.1
	2,700	E37F501CPN272MDB7U	63.5 × 117	DB7	37	10.5	12.6	14.7
	3,300	E37F501CPN332MDD0U	63.5 × 130	DD0	32	11.7	14.0	16.3
	3,300	E37F501CPN332MDE3U	63.5 × 143	DE3	29	12.8	15.4	17.9
	2,700	E37F501CPN272ME92U	76.2 × 92	E92	36	10.9	13.1	15.3
	3,300	E37F501CPN332MEA5U	76.2 × 105	EA5	30	12.5	15.0	17.5
	3,900	E37F501CPN392MEB7U	76.2 × 117	EB7	25	14.0	16.8	19.6
	5,600	E37F501CPN562MEE3U	76.2 × 143	EE3	20	17.1	20.5	23.9
	6,800	E37F501CPN682MEJ1U	76.2 × 181	EJ1	15	21.5	25.8	30.1
	8,200	E37F501CPN822MEM9U	76.2 × 219	EM9	12	26.0	31.2	36.3
	3,900	E37F501CPN392MF92U	89 × 92	F92	25	14.2	17.1	19.9
	4,700	E37F501CPN472MFA5U	89 × 105	FA5	21	16.2	19.5	22.7
	5,600	E37F501CPN562MFB7U	89 × 117	FB7	18	18.2	21.8	25.5
	6,800	E37F501CPN682MFE3U	89 × 143	FE3	14	22.1	26.5	30.9
	8,200	E37F501CPN822MFF5U	89 × 155	FF5	13	24.0	28.8	33.6
	10,000	E37F501CPN103MFK0U	89 × 190	FK0	10	29.2	35.1	40.9
	12,000	E37F501CPN123MFM9U	89 × 219	FM9	8	33.5	40.2	46.9

†For terminal, mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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U37L Series

UNITED CHEMI-CON

- Large Can
- Screw Terminals
- General Purpose U37 Grade
- High Ripple
- 350 to 500VDC Ratings
- RoHS Compliant
- 10,000 Hours Lifetime at +85°C
- Up to 175,000 Hours Useful Life

The U37L series is a longer life version of the U37 grade series and is specifically designed to provide the ripple current capability and long life required for high reliability inverter applications. The U37L has an endurance rating of 10,000 hours at +85°C with the rated ripple current applied. The useful life can exceed 175,000 hours at +40°C and 2x the ripple current. These capacitors are available in a variety of high current English or Metric thread terminals. Mounting options include a three-footed clamp or bottom threaded stud. Custom designs are also available.

Summary of Specifications

- **Screw terminals: high and low post, English and Metric thread.**
- **Capacitance range: 1,500 to 18,000μF.**
- **Voltage range: 350 to 500VDC.**
- **Category temperature range: −40°C to +85°C.**
- **Leakage current: 0.02CV(μA) or 5mA, whichever is smaller, after 5 minutes at +25°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size (D×L): D = 50mm (2.000") to 89mm (3.500"); L = 92mm (3.625") to 219mm (8.625").**
- **Rated lifetime: 10,000 hours at +85°C with rated ripple current applied.**

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U37L Series

U37L Specifications - Screw Terminals

Item	Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	350 to 500VDC
Capacitance Range	1,500 to 18,000μF at +25°C, 120Hz
Capacitance Tolerance	±20% (M) at +25°C, 120Hz
Leakage Current	I = 0.02CV (μA) or 5mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)
Rated Ripple Current Multipliers	Ambient Temperature (°C) +45°C: 2.82; +65°C: 1.73; +85°C: 1.00 Frequency (Hz) DC Rated Voltage 350-500V: 50Hz 0.80; 120Hz 1.00; 300Hz 1.20; 1kHz 1.30; 3kHz 1.40; 10kHz 1.41 To determine maximum ripple current at a specified temperature and frequency, use the appropriate multiplier shown.
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 10,000 hours at +85°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: ≤ 20% from initial measurement ESR change : ≤ 200% of initial specified limit Leakage current : ≤ initial specified limit
Useful Life	With specified standard voltage and ripple current applied, typical life as function of ambient temperature is listed below. +85°C: 13,000 hours max. +65°C: 47,700 hours max. +45°C: 175,000 hours max. Capacitance change: ≤ 30% from initial measurement ESR change : ≤ 300% of initial specified limit Leakage current : ≤ initial specified limit
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 500 hours at +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: ≤ 20% from initial measurement ESR change : ≤ 200% of initial specified limit Leakage current : ≤ initial specified limit
Vibration Rating	10-55Hz, 10g sinusoidal in three axes, 2 hours per axis.
Maximum Tightening Torque	Terminal Code: HP; HL; CD; CP; CH; CA; CS Thread Size: 10-32 NF-2B; M5x0.8-6H; ¼-28 NF-2B; M6x1-6H 3 Threads Engaged: 2.0 N·m (18.0 in·lb); 4.0 N·m (35.0 in·lb) 6 Threads Engaged: 2.8 N·m (25.0 in·lb); 6.2 N·m (55.0 in·lb)
Typical Inductance (nH) at 1MHz	Case Diameter (mm) / Terminal Code: HP; HL; CD; CP; CH; CA; CS Ø50.8: —; —; NA; NA; NA; NA; NA Ø63.5: —; —; —; —; —; —; — Ø76.2: 30; 30; 25; 20; 25; 20; 25 Ø89.0: 30; 30; 25; 20; 25; 20; 25
Custom Designs	Custom CV values per case size and termination type may be available upon request. Contact appropriate representative with specific requirements.

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U37L Series

U37L Useful Life

Useful Life: 13,000 Hours at +85°C
The life expectancy of a capacitor is shown as a function of ambient temperature and ripple current load.

Diagram of Dimensions - Screw Terminals

Large Can/Screw Terminals

Unit: mm (inches)

Case Dimensions and Standard Box Quantities

Case Size Code	ØD +2.0 (0.080)	L ±1.0 (0.040)	F ±0.25 (0.010)	Standard Box Quantity
CB7 CD0	50.8 (2.000)	117 (4.625) 130 (5.125)	22.2 (0.875)	49
D92 DA5 DB7 DD0 DE3	63.5 (2.500)	92 (3.625) 105 (4.125) 117 (4.625) 130 (5.125) 143 (5.625)	28.6 (1.125)	20
E92 EA5 EB7 EE3 EJ1 EM9	76.2 (3.000)	92 (3.625) 105 (4.125) 117 (4.625) 143 (5.625) 181 (7.125) 219 (8.625)	31.8 (1.250)	16 9
F92 FA5 FB7 FE3 FF5 FK0 FM9	89.0 (3.500)	92 (3.625) 105 (4.125) 117 (4.625) 143 (5.625) 155 (6.125) 190 (7.500) 219 (8.625)	31.8 (1.250)	5

Note:
In some cases, the color of the sleeve may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

Terminal Specifications

Terminal Code	Available Case Diameter		Thread Size	Minimum Thread Depth	J ±0.5 (0.020)	H ±2.0 (0.080)	ØS ±0.25 (0.010)	ØT ±0.25 (0.010)
	ØD Code	ØD mm (inches)						
HP	C	50.8 (2.000)	10-32 NF-2B	9.5 (0.375)	6.4 (0.250)	L+J	8.0 (0.313)	11.1 (0.438)
HL	C	50.8 (2.000)	M5x0.8-6H	9.5 (0.375)	6.4 (0.250)	L+J	8.0 (0.313)	11.1 (0.438)
CD	D−E	63.5 – 76.2 (2.500 – 3.000)	M5x0.8-6H	8.5 (0.335)	5.0 (0.200)	L+J	13.0 (0.512)	18.8 (0.740)
CP	D−F	63.5 – 89.0 (2.500 – 3.500)	¼-28 NF-2B	8.7 (0.344)	2.4 (0.093)	L+J	17.5 (0.689)	—
CH	D−F	63.5 – 89.0 (2.500 – 3.500)	¼-28 NF-2B	11.9 (0.468)	6.4 (0.250)	L+J	17.5 (0.689)	—
CA	D−F	63.5 – 89.0 (2.500 – 3.500)	M6x1-6H	8.7 (0.344)	2.4 (0.093)	L+J	17.5 (0.689)	—
CS	D−F	63.5 – 89.0 (2.500 – 3.500)	M6x1-6H	11.9 (0.468)	6.4 (0.250)	L+J	17.5 (0.689)	—

Mounting Hardware is optional. Refer to hardware specifications on the following page.

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U37L Series

Mounting Hardware - Screw Terminals

Type C: Three-Footed Clamp

Unit: mm (inches)

Hardware: Screw, washer and hexagon nut included with each clamp.

Type C: Clamp Dimensions

Mounting Code	Case ØD	A ±1.0 (0.040)	B ±1.0 (0.040)	G ±1.0 (0.040)	J ±0.5 (0.020)	K ±0.5 (0.020)	R ±1.0 (0.040)	S ±1.0 (0.040)	T ±0.5 (0.020)
C	50.8 (2.000)	31.8 (1.250)	36.5 (1.437)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	0.8 (0.032)
C	63.5 (2.500)	38.1 (1.500)	42.9 (1.689)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	0.8 (0.032)
C	76.2 (3.000)	44.5 (1.750)	49.2 (1.937)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	1.0 (0.040)
C	89.0 (3.500)	50.8 (2.000)	56.5 (2.224)	16.0 (0.630)	4.5 (0.177)	8.0 (0.313)	21.0 (0.827)	9.0 (0.354)	1.0 (0.040)

Type S: Stud Mounting

Mounting Nut - Order Separately

The insulated plastic mounting nut is not included with stud mount capacitor orders. It must be ordered separately. See available part numbers below.

Type S: Stud Dimensions

Mounting Code	P ±1.0 (0.040)	T Thread Size
S	16.0 (0.630)	M12

Mounting Nut Dimensions

Part Number	ØK ±2.0 (0.080)	M ±1.0 (0.040)	N ±1.0 (0.040)	ØQ ±1.0 (0.040)	R ±1.0 (0.040)
50-8D	30.0 (1.181)	19.0 (0.748)	18.0 (0.709)	22.0 (0.866)	1.40 (0.055)
50-8E	38.0 (1.496)	19.0 (0.748)	18.0 (0.709)	30.0 (1.181)	1.40 (0.055)

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U37L Series

Part Numbering System for U37L Series

When ordering, always specify complete 18-field global part number.

18 Fields

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
E	3	7	L	4	0	1	C	P	S	3	3	2	M	D	A	5	U

9 Supplement Code. Field 18.
U = PVC insulation with end disk.
C = PET insulation with end disk (Ø50.8mm only).
S = Polyolefin insulation with end disk.

8 Case Size. Fields 15, 16 and 17.
The single letter diameter code is inserted in field 15.
C = Ø50.8mm (Ø2.000")
D = Ø63.5mm (Ø2.500")
E = Ø76.2mm (Ø3.000")
F = Ø89.0mm (Ø3.500")

The double character length code is inserted in fields 16 and 17. For lengths ≤99mm, insert the actual length rounded to nearest millimeter. For lengths of 100mm or more, insert the appropriate alpha numeric code as indicated below.
92 = 92mm (3.625")
A5 = 105mm (4.125")
B7 = 117mm (4.625")
D0 = 130mm (5.125")
E3 = 143mm (5.625")
F5 = 155mm (6.125")
J1 = 181mm (7.125")
K0 = 190mm (7.500")
M9 = 219mm (8.625")

7 Capacitance Tolerance. Field 14.
M = ±20%

6 Capacitance. Fields 11, 12 and 13.
Expressed in Microfarads. The first two digits are significant figures inserted in fields 11 and 12, and the third digit inserted in field 13 indicates the number of zeros for capacitance of 10μF or more. R indicates the decimal point for capacitance less than 10μF (e.g. 3R3 = 3.3μF; 330 = 33μF; 331 = 330μF; 332 = 3,300μF; 333 = 33,000μF).

5 Mounting Hardware. Field 10.
N = None.
C = Three-footed clamp.
S = Stud mount. *The mounting nut is not included with stud mount orders. It must be ordered separately.*

4 Terminal Type. Fields 8 and 9.
HP = High post 10-32 NF-2B screw thread.
HL = High post M5x0.8 screw thread.
CD = M5x0.8 screw thread.
CP = Low post 1/4-28 NF-2B screw thread.
CH = High post 1/4-28 NF-2B screw thread.
CA = Low post M6x1 screw thread.
CS = High post M6x1 screw thread.

3 DC Rated Voltage. Fields 5, 6 and 7.
Expressed in Volts. The first two digits are significant figures inserted in fields 5 and 6, and the third digit inserted in field 7 indicates the number of zeros for rated voltage of 10VDC or more. R indicates the decimal point for rated voltage less than 10VDC (e.g. 4R0 = 4.0VDC; 400 = 40VDC; 401 = 400VDC).

2 Series Name. Fields 2, 3 and 4.
Enter the 3-letter/digit series name in fields 2, 3 and 4. If the series name is only 2 letters/digits, place a dash in field 4. For a series name with more than 3 letters/digits, refer to the individual series for the appropriate 3-field series name.

1 Capacitor Type. Field 1.
Aluminum Electrolytic Capacitor (Polar).

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						120Hz	300Hz	>3kHz
350 Volts 400 Volts Surge	3,300	E37L351HPN332MCB7U	50 × 117	CB7	29	10.6	12.7	14.8
	3,300	E37L351HPN332MCD0U	50 × 130	CD0	29	11.0	13.1	15.3
	3,300	E37L351CPN332MD92U	63.5 × 92	D92	30	10.7	12.8	15.0
	3,900	E37L351CPN392MDA5U	63.5 × 105	DA5	26	12.2	14.6	17.0
	3,900	E37L351CPN392MDB7U	63.5 × 117	DB7	26	12.6	15.2	17.7
	4,700	E37L351CPN472MDD0U	63.5 × 130	DD0	21	14.4	17.3	20.2
	5,600	E37L351CPN562MDE3U	63.5 × 143	DE3	18	16.3	19.5	22.8
	4,700	E37L351CPN472ME92U	76.2 × 92	E92	22	13.9	16.7	19.5
	5,600	E37L351CPN562MEA5U	76.2 × 105	EA5	18	15.8	19.0	22.1
	6,800	E37L351CPN682MEB7U	76.2 × 117	EB7	15	18.1	21.7	25.4
	8,200	E37L351CPN822MEE3U	76.2 × 143	EE3	13	21.3	25.6	29.9
	12,000	E37L351CPN123MEJ1U	76.2 × 181	EJ1	9	28.2	33.9	39.5
	15,000	E37L351CPN153MEM9U	76.2 × 219	EM9	7	34.0	40.8	47.6
	6,800	E37L351CPN682MF92U	89 × 92	F92	15	18.3	22.0	25.6
	8,200	E37L351CPN822MFA5U	89 × 105	FA5	13	21.0	25.2	29.3
	8,200	E37L351CPN822MFB7U	89 × 117	FB7	13	21.8	26.1	30.5
	12,000	E37L351CPN123MFE3U	89 × 143	FE3	9	28.2	33.8	39.5
	12,000	E37L351CPN123MFF5U	89 × 155	FF5	9	29.0	34.8	40.6
	15,000	E37L351CPN153MFK0U	89 × 190	FK0	7	35.0	42.0	49.1
	18,000	E37L351CPN183MFM9U	89 × 219	FM9	6	41.1	49.4	57.6
400 Volts 450 Volts Surge	2,700	E37L401HPN272MCB7U	50 × 117	CB7	35	9.5	11.5	13.4
	3,300	E37L401HPN332MCD0U	50 × 130	CD0	29	11.0	13.1	15.3
	2,700	E37L401CPN272MD92U	63.5 × 92	D92	37	9.7	11.6	13.6
	3,300	E37L401CPN332MDA5U	63.5 × 105	DA5	30	11.2	13.4	15.7
	3,900	E37L401CPN392MDB7U	63.5 × 117	DB7	26	12.6	15.2	17.7
	3,900	E37L401CPN392MDD0U	63.5 × 130	DD0	26	13.1	15.7	18.4
	4,700	E37L401CPN472MDE3U	63.5 × 143	DE3	21	14.9	17.9	20.9
	3,900	E37L401CPN392ME92U	76.2 × 92	E92	27	12.7	15.2	17.7
	4,700	E37L401CPN472MEA5U	76.2 × 105	EA5	22	14.5	17.4	20.3
	5,600	E37L401CPN562MEB7U	76.2 × 117	EB7	18	16.4	19.7	23.0
	6,800	E37L401CPN682MEE3U	76.2 × 143	EE3	15	19.4	23.3	27.2
	10,000	E37L401CPN103MEJ1U	76.2 × 181	EJ1	10	25.8	30.9	36.1
	12,000	E37L401CPN123MEM9U	76.2 × 219	EM9	9	30.4	36.5	42.6
	5,600	E37L401CPN562MF92U	89 × 92	F92	18	16.6	20.0	23.3
	6,800	E37L401CPN682MFA5U	89 × 105	FA5	15	19.1	22.9	26.7
	8,200	E37L401CPN822MFB7U	89 × 117	FB7	13	21.8	26.1	30.5
	10,000	E37L401CPN103MFE3U	89 × 143	FE3	10	25.7	30.9	36.0
	12,000	E37L401CPN123MFF5U	89 × 155	FF5	9	29.0	34.8	40.6
	15,000	E37L401CPN153MFK0U	89 × 190	FK0	7	35.0	42.0	49.1
	18,000	E37L401CPN183MFM9U	89 × 219	FM9	6	40.6	48.7	56.8
420 Volts 470 Volts Surge	2,700	E37L421HPN272MCB7U	50 × 117	CB7	35	9.5	11.5	13.4
	2,900	E37L421HPN292MCD0U	50 × 130	CD0	33	10.3	12.3	14.4
	2,200	E37L421CPN222MD92U	63.5 × 92	D92	45	8.7	10.5	12.2
	2,700	E37L421CPN272MDA5U	63.5 × 105	DA5	37	10.1	12.1	14.2
	3,300	E37L421CPN332MDB7U	63.5 × 117	DB7	30	11.6	14.0	16.3
	3,900	E37L421CPN392MDD0U	63.5 × 130	DD0	26	13.1	15.7	18.4
	4,700	E37L421CPN472MDE3U	63.5 × 143	DE3	21	14.9	17.9	20.9
	3,900	E37L421CPN392ME92U	76.2 × 92	E92	27	12.7	15.2	17.7
	4,700	E37L421CPN472MEA5U	76.2 × 105	EA5	22	14.5	17.4	20.3
	5,600	E37L421CPN562MEB7U	76.2 × 117	EB7	18	16.4	19.7	23.0
	6,800	E37L421CPN682MEE3U	76.2 × 143	EE3	15	19.4	23.3	27.2
	8,200	E37L421CPN822MEJ1U	76.2 × 181	EJ1	13	23.3	28.0	32.7
	12,000	E37L421CPN123MEM9U	76.2 × 219	EM9	9	30.4	36.5	42.6
	5,600	E37L421CPN562MF92U	89 × 92	F92	18	16.6	20.0	23.3
	6,800	E37L421CPN682MFA5U	89 × 105	FA5	15	19.1	22.9	26.7

†For terminal, mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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U37L Series

Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D×L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C		
						120Hz	300Hz	>3kHz
420 Volts 470 Volts Surge	6,800	E37L421CPN682MFB7U	89 × 117	FB7	15	19.8	23.8	27.8
	10,000	E37L421CPN103MFE3U	89 × 143	FE3	10	25.7	30.9	36.0
	10,000	E37L421CPN103MFF5U	89 × 155	FF5	10	26.5	31.8	37.1
	12,000	E37L421CPN123MFK0U	89 × 190	FK0	9	31.3	37.6	43.9
	15,000	E37L421CPN153MFM9U	89 × 219	FM9	7	37.0	44.5	51.9
450 Volts 500 Volts Surge	2,200	E37L451HPN222MCB7U	50 × 117	CB7	43	8.6	10.3	12.1
	2,200	E37L451HPN222MCD0U	50 × 130	CD0	43	8.9	10.7	12.5
	2,200	E37L451CPN222MD92U	63.5 × 92	D92	45	8.7	10.5	12.2
	2,200	E37L451CPN222MDA5U	63.5 × 105	DA5	45	9.1	11.0	12.8
	2,700	E37L451CPN272MDB7U	63.5 × 117	DB7	37	10.5	12.6	14.7
	3,300	E37L451CPN332MDD0U	63.5 × 130	DD0	30	12.1	14.5	16.9
	3,900	E37L451CPN392MDE3U	63.5 × 143	DE3	26	13.6	16.3	19.0
	3,300	E37L451CPN332ME92U	76.2 × 92	E92	31	11.6	14.0	16.3
	3,900	E37L451CPN392MEA5U	76.2 × 105	EA5	27	13.2	15.8	18.5
	4,700	E37L451CPN472MEB7U	76.2 × 117	EB7	22	15.1	18.1	21.1
	5,600	E37L451CPN562MEE3U	76.2 × 143	EE3	18	17.6	21.2	24.7
	6,800	E37L451CPN682MEJ1U	76.2 × 181	EJ1	15	21.2	25.5	29.7
	10,000	E37L451CPN103MEM9U	76.2 × 219	EM9	10	27.8	33.3	38.9
	4,700	E37L451CPN472MF92U	89 × 92	F92	22	15.2	18.3	21.3
	5,600	E37L451CPN562MFA5U	89 × 105	FA5	18	17.3	20.8	24.2
	5,600	E37L451CPN562MFB7U	89 × 117	FB7	18	18.0	21.6	25.2
	8,200	E37L451CPN822MFE3U	89 × 143	FE3	13	23.3	28.0	32.6
	8,200	E37L451CPN822MFF5U	89 × 155	FF5	13	24.0	28.8	33.6
	12,000	E37L451CPN123MFK0U	89 × 190	FK0	9	31.3	37.6	43.9
	12,000	E37L451CPN123MFM9U	89 × 219	FM9	9	33.1	39.8	46.4
500 Volts 550 Volts Surge	1,500	E37L501HPN152MCB7U	50 × 117	CB7	64	7.1	8.5	10.0
	1,500	E37L501HPN152MCD0U	50 × 130	CD0	64	7.4	8.9	10.3
	1,800	E37L501CPN182MD92U	63.5 × 92	D92	55	7.9	9.5	11.1
	2,200	E37L501CPN222MDA5U	63.5 × 105	DA5	45	9.1	11.0	12.8
	2,200	E37L501CPN222MDB7U	63.5 × 117	DB7	45	9.5	11.4	13.3
	2,700	E37L501CPN272MDD0U	63.5 × 130	DD0	37	10.9	13.1	15.3
	2,700	E37L501CPN272MDE3U	63.5 × 143	DE3	37	11.3	13.6	15.8
	2,700	E37L501CPN272ME92U	76.2 × 92	E92	38	10.5	12.6	14.7
	3,300	E37L501CPN332MEA5U	76.2 × 105	EA5	31	12.1	14.6	17.0
	3,300	E37L501CPN332MEB7U	76.2 × 117	EB7	31	12.6	15.2	17.7
	4,700	E37L501CPN472MEE3U	76.2 × 143	EE3	22	16.2	19.4	22.6
	5,600	E37L501CPN562MEJ1U	76.2 × 181	EJ1	18	19.3	23.1	27.0
	8,200	E37L501CPN822MEM9U	76.2 × 219	EM9	13	25.2	30.2	35.2
	3,900	E37L501CPN392MF92U	89 × 92	F92	27	13.9	16.6	19.4
	3,900	E37L501CPN392MFA5U	89 × 105	FA5	27	14.5	17.3	20.2
	4,700	E37L501CPN472MFB7U	89 × 117	FB7	22	16.5	19.8	23.1
	6,800	E37L501CPN682MFE3U	89 × 143	FE3	15	21.2	25.5	29.7
	6,800	E37L501CPN682MFF5U	89 × 155	FF5	15	21.9	26.2	30.6
	8,200	E37L501CPN822MFK0U	89 × 190	FK0	12	26.7	32.0	37.4
	10,000	E37L501CPN103MFM9U	89 × 219	FM9	9	33.1	39.8	46.4

†For terminal, mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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U37X Series

UNITED CHEMI-CON

- Large Can
- Screw Terminals
- General Purpose U37 Grade
- High Ripple
- 350 to 500VDC Ratings
- RoHS Compliant
- 15,000 Hours Lifetime at +85°C
- Up to 175,000 Hours Useful Life

The U37X series is the longest life version of the U37 grade series and is specifically designed to provide the ripple current capability and long life required for high reliability inverter applications. The U37X has an endurance rating of 15,000 hours at +85°C with the rated ripple current applied. The useful life can exceed 175,000 hours at +40°C and 2.1x the ripple current. These capacitors are available in a variety of high current English or Metric thread terminals. Mounting options include a three-footed clamp or bottom threaded stud. Custom designs are also available.

Summary of Specifications

- **Screw terminals: high and low post, English and Metric thread.**
- **Capacitance range: 1,200 to 18,000μF.**
- **Voltage range: 350 to 500VDC.**
- **Category temperature range: −40°C to +85°C.**
- **Leakage current: 0.02CV(μA) or 5mA, whichever is smaller, after 5 minutes at +25°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size (D×L): D = 50mm (2.000") to 89mm (3.500"); L = 92mm (3.625") to 219mm (8.625").**
- **Rated lifetime: 15,000 hours at +85°C with rated ripple current applied.**

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U37X Series

U37X Specifications - Screw Terminals

Item	Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	350 to 500VDC
Capacitance Range	1,200 to 18,000μF at +25°C, 120Hz
Capacitance Tolerance	±20% (M) at +25°C, 120Hz
Leakage Current	I = 0.02CV (μA) or 5mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)
Rated Ripple Current Multipliers	Ambient Temperature (°C) +45°C: 2.82; +65°C: 1.73; +85°C: 1.00 Frequency (Hz) DC Rated Voltage: 350-500V; 50Hz: 0.80; 120Hz: 1.00; 300Hz: 1.20; 1kHz: 1.30; 3kHz: 1.40; 10kHz: 1.41 To determine maximum ripple current at a specified temperature and frequency, use the appropriate multiplier shown.
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 15,000 hours at +85°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: ≤ 20% from initial measurement ESR change : ≤ 200% of initial specified limit Leakage current : ≤ initial specified limit
Useful Life	With specified standard voltage and ripple current applied, typical life as function of ambient temperature is listed below. +85°C: 20,000 hours max. +65°C: 71,600 hours max. +45°C: 175,000 hours max. Capacitance change: ≤ 30% from initial measurement ESR change : ≤ 300% of initial specified limit Leakage current : ≤ initial specified limit
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 500 hours at +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: ≤ 20% from initial measurement ESR change : ≤ 200% of initial specified limit Leakage current : ≤ initial specified limit
Vibration Rating	10-55Hz, 10g sinusoidal in three axes, 2 hours per axis.
Maximum Tightening Torque	Terminal Code: HP; HL; CD; CP; CH; CA; CS Thread Size: 10-32 NF-2B; M5x0.8-6H; ¼-28 NF-2B; M6x1-6H 3 Threads Engaged: 2.0 N·m (18.0 in·lb); 4.0 N·m (35.0 in·lb) 6 Threads Engaged: 2.8 N·m (25.0 in·lb); 6.2 N·m (55.0 in·lb)
Typical Inductance (nH) at 1MHz	Case Diameter (mm) / Terminal Code: HP; HL; CD; CP; CH; CA; CS Ø50.8: —; —; NA; NA; NA; NA; NA Ø63.5: —; —; —; —; —; —; — Ø76.2: 30; 30; 25; 20; 25; 20; 25 Ø89.0: 30; 30; 25; 20; 25; 20; 25
Custom Designs	Custom CV values per case size and termination type may be available upon request. Contact appropriate representative with specific requirements.

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U37X Series

U37X Useful Life

Useful Life: 20,000 Hours at +85°C
The life expectancy of a capacitor is shown as a function of ambient temperature and ripple current load.

Diagram of Dimensions - Screw Terminals

Large Can/Screw Terminals

Unit: mm (inches)

Case Dimensions and Standard Box Quantities

Case Size Code	ØD +2.0 (0.080)	L ±1.0 (0.040)	F ±0.25 (0.010)	Standard Box Quantity
CB7 CD0	50.8 (2.000)	117 (4.625) 130 (5.125)	22.2 (0.875)	49
D92 DA5 DB7 DD0 DE3	63.5 (2.500)	92 (3.625) 105 (4.125) 117 (4.625) 130 (5.125) 143 (5.625)	28.6 (1.125)	20
E92 EA5 EB7 EE3 EJ1 EM9	76.2 (3.000)	92 (3.625) 105 (4.125) 117 (4.625) 143 (5.625) 181 (7.125) 219 (8.625)	31.8 (1.250)	16 9
F92 FA5 FB7 FE3 FF5 FK0 FM9	89.0 (3.500)	92 (3.625) 105 (4.125) 117 (4.625) 143 (5.625) 155 (6.125) 190 (7.500) 219 (8.625)	31.8 (1.250)	5

Note:
In some cases, the color of the sleeve may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

Terminal Specifications

Terminal Code	Available Case Diameter		Thread Size	Minimum Thread Depth	J ±0.5 (0.020)	H ±2.0 (0.080)	ØS ±0.25 (0.010)	ØT ±0.25 (0.010)
	ØD Code	ØD mm (inches)						
HP	C	50.8 (2.000)	10-32 NF-2B	9.5 (0.375)	6.4 (0.250)	L+J	8.0 (0.313)	11.1 (0.438)
HL	C	50.8 (2.000)	M5x0.8-6H	9.5 (0.375)	6.4 (0.250)	L+J	8.0 (0.313)	11.1 (0.438)
CD	D–E	63.5 – 76.2 (2.500 – 3.000)	M5x0.8-6H	8.5 (0.335)	5.0 (0.200)	L+J	13.0 (0.512)	18.8 (0.740)
CP	D–F	63.5 – 89.0 (2.500 – 3.500)	¼-28 NF-2B	8.7 (0.344)	2.4 (0.093)	L+J	17.5 (0.689)	—
CH	D–F	63.5 – 89.0 (2.500 – 3.500)	¼-28 NF-2B	11.9 (0.468)	6.4 (0.250)	L+J	17.5 (0.689)	—
CA	D–F	63.5 – 89.0 (2.500 – 3.500)	M6x1-6H	8.7 (0.344)	2.4 (0.093)	L+J	17.5 (0.689)	—
CS	D–F	63.5 – 89.0 (2.500 – 3.500)	M6x1-6H	11.9 (0.468)	6.4 (0.250)	L+J	17.5 (0.689)	—

Mounting Hardware is optional. Refer to hardware specifications on the following page.

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U37X Series

Mounting Hardware - Screw Terminals

Type C: Three-Footed Clamp

Unit: mm (inches)

Hardware: Screw, washer and hexagon nut included with each clamp.

Type C: Clamp Dimensions

Mounting Code	Case ØD	A ±1.0 (0.040)	B ±1.0 (0.040)	G ±1.0 (0.040)	J ±0.5 (0.020)	K ±0.5 (0.020)	R ±1.0 (0.040)	S ±1.0 (0.040)	T ±0.5 (0.020)
C	50.8 (2.000)	31.8 (1.250)	36.5 (1.437)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	0.8 (0.032)
C	63.5 (2.500)	38.1 (1.500)	42.9 (1.689)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	0.8 (0.032)
C	76.2 (3.000)	44.5 (1.750)	49.2 (1.937)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	1.0 (0.040)
C	89.0 (3.500)	50.8 (2.000)	56.5 (2.224)	16.0 (0.630)	4.5 (0.177)	8.0 (0.313)	21.0 (0.827)	9.0 (0.354)	1.0 (0.040)

Type S: Stud Mounting

Mounting Nut - Order Separately

The insulated plastic mounting nut is not included with stud mount capacitor orders. It must be ordered separately. See available part numbers below.

Type S: Stud Dimensions

Mounting Code	P ±1.0 (0.040)	T Thread Size
S	16.0 (0.630)	M12

Mounting Nut Dimensions

Part Number	ØK ±2.0 (0.080)	M ±1.0 (0.040)	N ±1.0 (0.040)	ØQ ±1.0 (0.040)	R ±1.0 (0.040)
50-8D	30.0 (1.181)	19.0 (0.748)	18.0 (0.709)	22.0 (0.866)	1.40 (0.055)
50-8E	38.0 (1.496)	19.0 (0.748)	18.0 (0.709)	30.0 (1.181)	1.40 (0.055)

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U37X Series

Part Numbering System for U37X Series

When ordering, always specify complete 18-field global part number.

18 Fields

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
E	3	7	X	4	0	1	C	P	N	4	7	2	M	E	A	5	U

9 Supplement Code. Field 18.
U = PVC insulation with end disk.
C = PET insulation with end disk (Ø50.8mm only).
S = Polyolefin insulation with end disk.

8 Case Size. Fields 15, 16 and 17.
The single letter diameter code is inserted in field 15.
C = Ø50.8mm (Ø2.000")
D = Ø63.5mm (Ø2.500")
E = Ø76.2mm (Ø3.000")
F = Ø89.0mm (Ø3.500")

The double character length code is inserted in fields 16 and 17. For lengths ≤99mm, insert the actual length rounded to nearest millimeter. For lengths of 100mm or more, insert the appropriate alpha numeric code as indicated below.
92 = 92mm (3.625")
A5 = 105mm (4.125")
B7 = 117mm (4.625")
D0 = 130mm (5.125")
E3 = 143mm (5.625")
F5 = 155mm (6.125")
J1 = 181mm (7.125")
K0 = 190mm (7.500")
M9 = 219mm (8.625")

7 Capacitance Tolerance. Field 14.
M = ±20%

6 Capacitance. Fields 11, 12 and 13.
Expressed in Microfarads. The first two digits are significant figures inserted in fields 11 and 12, and the third digit inserted in field 13 indicates the number of zeros for capacitance of 10μF or more. R indicates the decimal point for capacitance less than 10μF (e.g. 4R7 = 4.7μF; 470 = 47μF; 471 = 470μF; 472 = 4,700μF; 473 = 47,000μF).

5 Mounting Hardware. Field 10.
N = None.
C = Three-footed clamp.
S = Stud mount. *The mounting nut is not included with stud mount orders. It must be ordered separately.*

4 Terminal Type. Fields 8 and 9.
HP = High post 10-32 NF-2B screw thread.
HL = High post M5x0.8 screw thread.
CD = M5x0.8 screw thread.
CP = Low post 1/4-28 NF-2B screw thread.
CH = High post 1/4-28 NF-2B screw thread.
CA = Low post M6x1 screw thread.
CS = High post M6x1 screw thread.

3 DC Rated Voltage. Fields 5, 6 and 7.
Expressed in Volts. The first two digits are significant figures inserted in fields 5 and 6, and the third digit inserted in field 7 indicates the number of zeros for rated voltage of 10VDC or more. R indicates the decimal point for rated voltage less than 10VDC (e.g. 4R0 = 4.0VDC; 400 = 40VDC; 401 = 400VDC).

2 Series Name. Fields 2, 3 and 4.
Enter the 3-letter/digit series name in fields 2, 3 and 4. If the series name is only 2 letters/digits, place a dash in field 4. For a series name with more than 3 letters/digits, refer to the individual series for the appropriate 3-field series name.

1 Capacitor Type. Field 1.
Aluminum Electrolytic Capacitor (Polar).

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U37X Series

Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D×L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C		
						120Hz	300Hz	>3kHz
350 Volts 400 Volts Surge	2,700	E37X351HPN272MCB7U	50 × 117	CB7	35	9.6	11.5	13.4
	3,300	E37X351HPN332MCD0U	50 × 130	CD0	31	10.6	12.8	14.9
	2,700	E37X351CPN272MD92U	63.5 × 92	D92	37	9.7	11.6	13.5
	3,300	E37X351CPN332MDA5U	63.5 × 105	DA5	31	11.1	13.3	15.5
	3,900	E37X351CPN392MDB7U	63.5 × 117	DB7	26	12.4	14.9	17.4
	4,700	E37X351CPN472MDD0U	63.5 × 130	DD0	23	13.8	16.5	19.3
	4,700	E37X351CPN472MDE3U	63.5 × 143	DE3	21	15.1	18.1	21.2
	3,900	E37X351CPN392ME92U	76.2 × 92	E92	26	12.7	15.2	17.8
	4,700	E37X351CPN472MEA5U	76.2 × 105	EA5	22	14.5	17.4	20.3
	5,600	E37X351CPN562MEB7U	76.2 × 117	EB7	19	16.3	19.5	22.8
	8,200	E37X351CPN822MEE3U	76.2 × 143	EE3	15	19.8	23.7	27.7
	10,000	E37X351CPN103MEJ1U	76.2 × 181	EJ1	11	25.0	30.0	35.0
	12,000	E37X351CPN123MEM9U	76.2 × 219	EM9	9	30.1	36.1	42.2
	5,600	E37X351CPN562MF92U	89 × 92	F92	19	16.2	19.4	22.7
	6,800	E37X351CPN682MFA5U	89 × 105	FA5	16	18.5	22.2	25.9
	8,200	E37X351CPN822MFB7U	89 × 117	FB7	14	20.7	24.9	29.0
	12,000	E37X351CPN123MFE3U	89 × 143	FE3	11	25.2	30.2	35.2
	12,000	E37X351CPN123MFF5U	89 × 155	FF5	10	27.3	32.8	38.2
	15,000	E37X351CPN153MFK0U	89 × 190	FK0	8	33.3	40.0	46.6
	18,000	E37X351CPN183MFM9U	89 × 219	FM9	6	38.2	45.8	53.5
400 Volts 450 Volts Surge	2,700	E37X401HPN272MCB7U	50 × 117	CB7	41	8.9	10.7	12.5
	2,700	E37X401HPN272MCD0U	50 × 130	CD0	35	9.9	11.9	13.9
	2,700	E37X401CPN272MD92U	63.5 × 92	D92	43	9.0	10.8	12.6
	2,700	E37X401CPN272MDA5U	63.5 × 105	DA5	36	10.3	12.3	14.4
	3,300	E37X401CPN332MDB7U	63.5 × 117	DB7	31	11.6	13.9	16.2
	3,900	E37X401CPN392MDD0U	63.5 × 130	DD0	27	12.8	15.4	18.0
	3,900	E37X401CPN392MDE3U	63.5 × 143	DE3	24	14.1	16.9	19.7
	3,900	E37X401CPN392ME92U	76.2 × 92	E92	30	11.8	14.2	16.5
	4,700	E37X401CPN472MEA5U	76.2 × 105	EA5	25	13.5	16.2	18.9
	5,600	E37X401CPN562MEB7U	76.2 × 117	EB7	22	15.2	18.2	21.2
	6,800	E37X401CPN682MEE3U	76.2 × 143	EE3	17	18.4	22.1	25.8
	8,200	E37X401CPN822MEJ1U	76.2 × 181	EJ1	13	23.3	27.9	32.6
	12,000	E37X401CPN123MEM9U	76.2 × 219	EM9	10	28.0	33.6	39.3
	5,600	E37X401CPN562MF92U	89 × 92	F92	22	15.1	18.1	21.1
	6,800	E37X401CPN682MFA5U	89 × 105	FA5	19	17.2	20.6	24.1
	6,800	E37X401CPN682MFB7U	89 × 117	FB7	16	19.3	23.2	27.0
	10,000	E37X401CPN103MFE3U	89 × 143	FE3	12	23.4	28.1	32.8
	10,000	E37X401CPN103MFF5U	89 × 155	FF5	11	25.4	30.5	35.6
	12,000	E37X401CPN123MFK0U	89 × 190	FK0	9	31.0	37.2	43.4
	15,000	E37X401CPN153MFM9U	89 × 219	FM9	7	35.6	42.7	49.8
420 Volts 470 Volts Surge	2,200	E37X421HPN222MCB7U	50 × 117	CB7	44	8.5	10.2	11.9
	2,700	E37X421HPN272MCD0U	50 × 130	CD0	39	9.4	11.3	13.2
	2,200	E37X421CPN222MD92U	63.5 × 92	D92	47	8.6	10.3	12.0
	2,700	E37X421CPN272MDA5U	63.5 × 105	DA5	39	9.8	11.8	13.8
	3,300	E37X421CPN332MDB7U	63.5 × 117	DB7	33	11.0	13.3	15.5
	3,900	E37X421CPN392MDD0U	63.5 × 130	DD0	29	12.2	14.7	17.1
	3,900	E37X421CPN392MDE3U	63.5 × 143	DE3	26	13.4	16.1	18.8
	3,300	E37X421CPN332ME92U	76.2 × 92	E92	33	11.3	13.5	15.8
	3,900	E37X421CPN392MEA5U	76.2 × 105	EA5	28	12.9	15.5	18.0
	4,700	E37X421CPN472MEB7U	76.2 × 117	EB7	24	14.5	17.4	20.3
	5,600	E37X421CPN562MEE3U	76.2 × 143	EE3	19	17.6	21.1	24.6
	8,200	E37X421CPN822MEJ1U	76.2 × 181	EJ1	14	22.2	26.6	31.1
	10,000	E37X421CPN103MEM9U	76.2 × 219	EM9	11	26.8	32.1	37.5
	4,700	E37X421CPN472MF92U	89 × 92	F92	25	14.4	17.3	20.2
	5,600	E37X421CPN562MFA5U	89 × 105	FA5	21	16.4	19.7	23.0

†For terminal, mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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U37X Series

Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D×L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C		
						120Hz	300Hz	>3kHz
420 Volts 470 Volts Surge	6,800	E37X421CPN682MFB7U	89 × 117	FB7	18	18.4	22.1	25.8
	8,200	E37X421CPN822MFE3U	89 × 143	FE3	14	22.4	26.8	31.3
	10,000	E37X421CPN103MFF5U	89 × 155	FF5	12	24.3	29.1	34.0
	12,000	E37X421CPN123MFK0U	89 × 190	FK0	10	29.6	35.5	41.4
	15,000	E37X421CPN153MFM9U	89 × 219	FM9	8	34.0	40.7	47.5
450 Volts 500 Volts Surge	1,800	E37X451HPN182MCB7U	50 × 117	CB7	51	8.0	9.6	11.2
	2,200	E37X451HPN222MCD0U	50 × 130	CD0	44	8.9	10.6	12.4
	2,200	E37X451CPN222MD92U	63.5 × 92	D92	53	8.1	9.7	11.3
	2,200	E37X451CPN222MDA5U	63.5 × 105	DA5	44	9.2	11.1	12.9
	2,700	E37X451CPN272MDB7U	63.5 × 117	DB7	38	10.4	12.4	14.5
	3,300	E37X451CPN332MDD0U	63.5 × 130	DD0	33	11.5	13.8	16.1
	3,900	E37X451CPN392MDE3U	63.5 × 143	DE3	30	12.6	15.1	17.6
	3,300	E37X451CPN332ME92U	76.2 × 92	E92	38	10.6	12.7	14.8
	3,900	E37X451CPN392MEA5U	76.2 × 105	EA5	32	12.1	14.5	16.9
	3,900	E37X451CPN392MEB7U	76.2 × 117	EB7	27	13.6	16.3	19.0
	5,600	E37X451CPN562MEE3U	76.2 × 143	EE3	21	16.5	19.8	23.1
	6,800	E37X451CPN682MEJ1U	76.2 × 181	EJ1	16	20.8	25.0	29.2
	8,200	E37X451CPN822MEM9U	76.2 × 219	EM9	13	25.1	30.1	35.2
	3,900	E37X451CPN392MF92U	89 × 92	F92	28	13.5	16.2	18.9
	4,700	E37X451CPN472MFA5U	89 × 105	FA5	23	15.4	18.5	21.6
	5,600	E37X451CPN562MFB7U	89 × 117	FB7	20	17.3	20.7	24.2
	8,200	E37X451CPN822MFE3U	89 × 143	FE3	16	21.0	25.2	29.4
	8,200	E37X451CPN822MFF5U	89 × 155	FF5	14	22.8	27.3	31.9
	10,000	E37X451CPN103MFK0U	89 × 190	FK0	11	27.8	33.3	38.9
	12,000	E37X451CPN123MFM9U	89 × 219	FM9	9	32.2	38.6	45.0
500 Volts 550 Volts Surge	1,200	E37X501HPN122MCB7U	50 × 117	CB7	78	6.4	7.7	9.0
	1,500	E37X501HPN152MCD0U	50 × 130	CD0	68	7.2	8.6	10.0
	1,500	E37X501CPN152MD92U	63.5 × 92	D92	67	7.2	8.6	10.1
	1,800	E37X501CPN182MDA5U	63.5 × 105	DA5	56	8.2	9.9	11.5
	2,200	E37X501CPN222MDB7U	63.5 × 117	DB7	48	9.3	11.1	13.0
	2,700	E37X501CPN272MDD0U	63.5 × 130	DD0	42	10.3	12.3	14.4
	2,700	E37X501CPN272MDE3U	63.5 × 143	DE3	37	11.3	13.5	15.8
	2,200	E37X501CPN222ME92U	76.2 × 92	E92	48	9.5	11.3	13.2
	2,700	E37X501CPN272MEA5U	76.2 × 105	EA5	40	10.8	13.0	15.1
	3,300	E37X501CPN332MEB7U	76.2 × 117	EB7	34	12.1	14.6	17.0
	3,900	E37X501CPN392MEE3U	76.2 × 143	EE3	26	14.8	17.7	20.7
	5,600	E37X501CPN562MEJ1U	76.2 × 181	EJ1	20	18.6	22.3	26.1
	6,800	E37X501CPN682MEM9U	76.2 × 219	EM9	16	22.5	26.9	31.4
	3,300	E37X501CPN332MF92U	89 × 92	F92	35	12.1	14.5	16.9
	3,900	E37X501CPN392MFA5U	89 × 105	FA5	29	13.8	16.5	19.3
	4,700	E37X501CPN472MFB7U	89 × 117	FB7	25	15.5	18.5	21.6
	5,600	E37X501CPN562MFE3U	89 × 143	FE3	19	18.8	22.5	26.3
	6,800	E37X501CPN682MFF5U	89 × 155	FF5	18	20.4	24.4	28.5
	8,200	E37X501CPN822MFK0U	89 × 190	FK0	14	24.8	29.8	34.8
	10,000	E37X501CPN103MFM9U	89 × 219	FM9	12	28.5	34.2	39.9

†For terminal, mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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UTOR Series

UNITED CHEMI-CON

- Large Can Toroidal Design
- Lowest Thermal Resistance
- Optimum Cooling Capability
- New Lower Profile Sizes
- New Heat-Sink Mounting Kit
- RoHS Compliant (Pb-Free)

The UTOR series now offers higher capacitance and ripple current per case size. The upgrade allows the inverter designer to significantly reduce the size, weight, and cost of the capacitor bank. Toroidal geometry is ideal for cooling by either forced air or by heat-sink with the use of a new mounting kit option. The heat-sink kit option provides optimum thermal transfer while maintaining electrical isolation. These capacitors have an endurance rating of 5,000 hours at 105℃ or 20,000 hours at 85℃ with the rated ripple current applied. The UTOR series represents the optimum cost per amp of ripple current for a screw terminal mounted electrolytic capacitor.

Summary of Specifications

- **Screw terminals, high ripple Metric thread.**
- **Capacitance range: 680 to 10,000μF.**
- **Voltage range: 350 to 500VDC.**
- **Operating temperature range: −40°C to +105°C.**
- **Leakage current: 0.02CV(μA) or 5mA, whichever is smaller, after 5 minutes at +25°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size (D×L): D = 76mm (3.000”); L = 54mm (2.125”) to 168mm (6.625”).**
- **Rated lifetime: 5,000 hours at +105°C with rated ripple current applied.**

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UTOR Series

UTOR Specifications - Screw Terminals

Item	Characteristics
Category Temperature Range	−40 to +105°C
Rated Voltage Range	350 to 500VDC
Capacitance Range	680 to 10,000μF at +25°C, 120Hz
Capacitance Tolerance	±20% (M) at +25°C, 120Hz
Leakage Current	I = 0.02CV (μA) or 5mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)
Rated Ripple Current Multipliers	Ambient Temperature (°C)

+45°C	+65°C	+85°C	+105°C
2.45	2.12	1.73	1.00

Cooling

Mounting Type	Air Velocity		
	Static	1.0m/s	2.0m/s
Clamp Mount	1.00	1.20	1.30
Heat-Sink (air cooled)	1.20	1.45	1.55
Heat-Sink (fluid cooled)	1.35	1.65	1.75

Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 5,000 hours at +105°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change : ≤±20% of initial measured value ESR change : ≤ 200% of initial specified value Leakage current : ≤ initial specified value
Shelf Test	The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 1,000 hours at +105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change : ≤±20% of initial measured value ESR change : ≤ 200% of initial specified value Leakage current : ≤ initial specified value
Vibration Rating	10-55Hz, 10g sinusoidal in three axis, 2 hours per axis.
Maximum Tightening Torque	

Terminal Code	Thread Size	3 Threads Engaged		6 Threads Engaged	
		in·lb	N·m	in·lb	N·m
CT	M5x0.8	18.0	2.0	28.5	3.2

Typical Inductance	25nH at 1MHz
Custom Designs	Custom CV values per case size may be available upon request. Contact appropriate representative with specific requirements.

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UTOR Series

Diagram of Dimensions - Screw Terminals

Toroidal Large Can/Screw Terminals

Unit: mm and inches

Terminal Specifications in Millimeters

Terminal Code	Thread Size	Minimum Thread Depth	J ±0.50	øS ±0.25	øT ±0.25
CT	M5x0.8	10.5	7.0	13.0	18.5

Terminal Specifications in Inches

Terminal Code	Thread Size	Minimum Thread Depth	J ±0.020	øS ±0.010	øT ±0.010
CT	M5x0.8	0.413	0.276	0.512	0.728

Case Dimensions in Millimeters

øA ±0.20	øA' ±0.30	B ±0.5	F ±0.25
16.3	18.9	9.5	31.8

Case Size Code	øD +2.0	L +2.0	H ±1.0
E54	76	54	61
E67	76	67	74
E79	76	79	86
E92	76	92	99
EA5	76	105	112
EB7	76	117	124
ED0	76	130	137
EE3	76	143	150
EF5	76	155	162
EG8	76	168	175

Case Dimensions in Inches

øA ±0.008	øA' ±0.012	B ±0.020	F ±0.010
0.642	0.744	0.374	1.250

Case Size Code	øD +0.080	L +0.080	H ±0.040
E54	3.000	2.125	2.402
E67	3.000	2.625	2.913
E79	3.000	3.125	3.386
E92	3.000	3.625	3.898
EA5	3.000	4.125	4.409
EB7	3.000	4.625	4.882
ED0	3.000	5.125	5.394
EE3	3.000	5.625	5.906
EF5	3.000	6.125	6.378
EG8	3.000	6.625	6.890

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UTOR Series

Mounting Hardware - Screw Terminals

Type C: Three-Footed Clamp

Unit: mm (inches)

Hardware: Screw, washer and hexagon nut included with each clamp.

Type C: Clamp Specifications

Mounting Code	Case ØD	A ±1.0 (0.040)	B ±1.0 (0.040)	G ±1.0 (0.040)	J ±0.5 (0.020)	K ±0.5 (0.020)	R ±1.0 (0.040)	S ±1.0 (0.040)	T ±0.5 (0.020)
C	76.2 (3.000)	44.5 (1.750)	49.2 (1.937)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	1.0 (0.040)

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UTOR Series

Mounting Hardware - Screw Terminals

Type H: Heat Sink Mounting Kit

Unit: mm (inches)

Type H: Heat Sink Mounting Kit Dimensions

Mounting Code	Case Size Code	T ±0.2 (0.008)	T1 ±0.5 (0.020)
H	E54	35 (1.378)	58 (2.280)
H	E67	35 (1.378)	71 (2.780)
H	E79	60 (2.362)	83 (3.280)
H	E92	60 (2.362)	96 (3.780)
H	EA5	60 (2.362)	109 (4.280)
H	EB7	60 (2.362)	121 (4.780)
H	ED0	111 (4.370)	134 (5.280)
H	EE3	111 (4.370)	147 (5.780)
H	EF5	111 (4.370)	160 (6.280)
H	EG8	111 (4.370)	172 (6.780)

Dimension	Millimeters	Inches
E	18.6 Max.	0.732 Max.
F	0.56±0.05	0.022±0.002
G	2.00±0.13	0.080±0.005
J	8.00±0.13	0.315±0.005
øK	15.24±0.20	0.600±0.008
M	6.76±0.13	0.266±0.005
N	5.49±0.13	0.216±0.005

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UTOR Series

Part Numbering System for UTOR Series

When ordering, always specify complete 18-field global part number.

18 Fields

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
E	T	O	R	4	0	1	C	T	N	3	9	2	M	E	A	5	U

9 Supplement Code. Field 18.
U = PVC insulation with end disk.
C = PET insulation with end disk.
F = Coated can.

8 Case Size. Fields 15, 16 and 17.
The single letter diameter code is inserted in field 15.
E = Ø76.2mm (Ø3.000")

The double character length code is inserted in fields 16 and 17. For lengths ≤99mm, insert the actual length rounded to nearest millimeter. For lengths of 100mm or more, insert the appropriate alpha numeric code as indicated below.
54 = 54mm (2.125")
67 = 67mm (2.625")
79 = 79mm (3.125")
92 = 92mm (3.625")
A5 = 105mm (4.125")
B7 = 117mm (4.625")
D0 = 130mm (5.125")
E3 = 143mm (5.625")
F5 = 155mm (6.125")
G8 = 168mm (6.625")

7 Capacitance Tolerance. Field 14.
M = ±20%

6 Capacitance. Fields 11, 12 and 13.
Expressed in Microfarads. The first two digits are significant figures inserted in fields 11 and 12, and the third digit inserted in field 13 indicates the number of zeros for capacitance of 10μF or more. R indicates the decimal point for capacitance less than 10μF (e.g. 3R9 = 3.9μF; 390 = 39μF; 391 = 390μF; 392 = 3,900μF; 393 = 39,000μF).

5 Mounting Hardware. Field 10.
N = None.
C = Three-footed clamp.
H = Heat sink kit.

4 Terminal Type. Fields 8 and 9.
CT = M5x0.8 screw thread.

3 DC Rated Voltage. Fields 5, 6 and 7.
Expressed in Volts. The first two digits are significant figures inserted in fields 5 and 6, and the third digit inserted in field 7 indicates the number of zeros for rated voltage of 10VDC or more. R indicates the decimal point for rated voltage less than 10VDC (e.g. 4R0 = 4.0VDC; 400 = 40VDC; 401 = 400VDC).

2 Series Name. Fields 2, 3 and 4.
Enter the 3-letter/digit series name in fields 2, 3 and 4. If the series name is only 2 letters/digits, place a dash in field 4. For a series name with more than 3 letters/digits, refer to the individual series for the appropriate 3-field series name.

1 Capacitor Type. Field 1.
Aluminum Electrolytic Capacitor (Polar).

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UTOR Series

Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D×L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C,120Hz	Rated Ripple Current (A rms) at +105°C		
						120Hz	300Hz	>3kHz
350 Volts 400 Volts Surge	1,800	ETOR351CTN182ME54U	76 × 54	E54	44	11.8	14.1	16.5
	2,700	ETOR351CTN272ME67U	76 × 67	E67	30	15.4	18.5	21.6
	3,300	ETOR351CTN332ME79U	76 × 79	E79	24	17.1	20.5	23.9
	4,700	ETOR351CTN472ME92U	76 × 92	E92	17	21.6	26.0	30.3
	5,600	ETOR351CTN562MEA5U	76 × 105	EA5	14	24.9	29.9	34.9
	6,800	ETOR351CTN682MED0U	76 × 130	ED0	12	30.2	36.2	42.2
	8,200	ETOR351CTN822MEE3U	76 × 143	EE3	10	34.5	41.4	48.3
	10,000	ETOR351CTN103MEG8U	76 × 168	EG8	8	41.0	49.2	57.4
400 Volts 450 Volts Surge	1,500	ETOR401CTN152ME54U	76 × 54	E54	53	10.7	12.9	15.0
	2,200	ETOR401CTN222ME67U	76 × 67	E67	36	13.9	16.7	19.5
	2,700	ETOR401CTN272ME79U	76 × 79	E79	30	15.4	18.5	21.6
	3,300	ETOR401CTN332ME92U	76 × 92	E92	24	18.1	21.8	25.4
	3,900	ETOR401CTN392MEA5U	76 × 105	EA5	21	20.8	25.0	29.1
	4,700	ETOR401CTN472MEB7U	76 × 117	EB7	17	24.0	28.8	33.6
	5,600	ETOR401CTN562MED0U	76 × 130	ED0	14	27.4	32.9	38.3
	6,800	ETOR401CTN682MEE3U	76 × 143	EE3	12	31.4	37.7	44.0
	8,200	ETOR401CTN822MEG8U	76 × 168	EG8	10	37.1	44.5	52.0
420 Volts 470 Volts Surge	1,200	ETOR421CTN122ME54U	76 × 54	E54	89	9.3	11.1	13.0
	1,800	ETOR421CTN182ME67U	76 × 67	E67	59	12.2	14.6	17.1
	2,200	ETOR421CTN222ME79U	76 × 79	E79	40	14.9	17.9	20.9
	3,300	ETOR421CTN332ME92U	76 × 92	E92	32	17.5	21.0	24.5
	3,900	ETOR421CTN392MEA5U	76 × 105	EA5	27	20.1	24.1	28.2
	4,700	ETOR421CTN472MED0U	76 × 130	ED0	23	24.2	29.1	33.9
	5,600	ETOR421CTN562MEE3U	76 × 143	EE3	19	27.6	33.1	38.6
	6,800	ETOR421CTN682MEG8U	76 × 168	EG8	16	32.7	39.2	45.7
450 Volts 500 Volts Surge	1,000	ETOR451CTN102ME54U	76 × 54	E54	89	9.3	11.1	13.0
	1,500	ETOR451CTN152ME67U	76 × 67	E67	59	12.2	14.6	17.1
	2,200	ETOR451CTN222ME79U	76 × 79	E79	48	13.5	16.2	18.9
	2,700	ETOR451CTN272ME92U	76 × 92	E92	40	15.9	19.0	22.2
	3,300	ETOR451CTN332MEA5U	76 × 105	EA5	32	18.5	22.2	25.9
	3,900	ETOR451CTN392MEB7U	76 × 117	EB7	27	21.1	25.3	29.6
	4,700	ETOR451CTN472MED0U	76 × 130	ED0	23	24.2	29.1	33.9
	5,600	ETOR451CTN562MEF5U	76 × 155	EF5	19	28.6	34.3	40.1
500 Volts 550 Volts Surge	680	ETOR501CTN681ME54U	76 × 54	E54	206	6.5	7.8	9.1
	1,000	ETOR501CTN102ME67U	76 × 67	E67	140	8.4	10.1	11.8
	1,500	ETOR501CTN152ME79U	76 × 79	E79	93	10.3	12.4	14.4
	1,800	ETOR501CTN182ME92U	76 × 92	E92	78	12.0	14.4	16.8
	2,200	ETOR501CTN222MEA5U	76 × 105	EA5	64	14.0	16.8	19.6
	2,700	ETOR501CTN272MEB7U	76 × 117	EB7	52	16.3	19.5	22.8
	3,300	ETOR501CTN332MEE3U	76 × 143	EE3	42	19.6	23.5	27.4
	3,900	ETOR501CTN392MEG8U	76 × 168	EG8	36	22.1	26.5	31.0

†For mounting and construction options, refer to the part numbering system for descriptions and codes.
*** Refer to diagram of dimensions for detailed case size specifications.**

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Return Group Chart

NIPPON CHEMI-CON MELODY **Aluminum Electrolytic Capacitors for Audio** Surface Mount, 85℃

Alchip™-MAR Series

- Suitable for small and low profile product such as the car audio and electronics
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics								
Category Temperature Range	-40 to +85℃								
Rated Voltage Range	6.3 to 50Vdc								
Capacitance Tolerance	±20%(M)								(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)								(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)		6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	D55 to F55	0.30	0.24	0.20	0.16	0.14	0.12	
		H63 to JA0	0.40	0.30	0.26	0.16	0.14	0.12	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)		6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)		4	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)		12	8	6	4	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 85℃.								
	Capacitance change		≦±20% of the initial value						
	D.F. (tan δ)		≦200% of the initial specified value						
	Leakage current		≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.								
	Capacitance change		≦±20% of the initial value						
	D.F. (tan δ)		≦200% of the initial specified value						
	Leakage current		≦The initial specified value						

◆DIMENSIONS[mm]

●Terminal Code : A

Note : L±0.5 for H63 to JA0

Size code	D	L	A	B	C	W	P
D55	4	5.2	4.3	4.3	5.1	0.5 to 0.8	1.0
E55	5	5.2	5.3	5.3	5.9	0.5 to 0.8	1.4
F55	6.3	5.2	6.6	6.6	7.2	0.5 to 0.8	1.9
H63	8	6.3	8.3	8.3	9.0	0.5 to 0.8	2.3
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 16V47μF

●Rated voltage symbol

Rated voltage(Vdc)	Symbol
6.3	j
10	A
16	C
25	E
35	V
50	H

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E MAR □□□ A RA □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0, 100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3, 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

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Alchip™-MAR Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size Code	tan δ	Part No.
6.3	22	D55	0.30	EMAR6R3ARA220MD55G
	33	E55	0.30	EMAR6R3ARA330ME55G
	47	E55	0.30	EMAR6R3ARA470ME55G
	100	F55	0.30	EMAR6R3ARA101MF55G
	220	H63	0.40	EMAR6R3ARA221MH63G
	330	H63	0.40	EMAR6R3ARA331MH63G
	470	HA0	0.40	EMAR6R3ARA471MHA0G
	1,000	JA0	0.40	EMAR6R3ARA102MJA0G
10	10	D55	0.24	EMAR100ARA100MD55G
	22	E55	0.24	EMAR100ARA220ME55G
	33	E55	0.24	EMAR100ARA330ME55G
	47	F55	0.24	EMAR100ARA470MF55G
	100	F55	0.24	EMAR100ARA101MF55G
	220	H63	0.30	EMAR100ARA221MH63G
	330	HA0	0.30	EMAR100ARA331MHA0G
	470	JA0	0.30	EMAR100ARA471MJA0G
16	4.7	D55	0.20	EMAR160ARA4R7MD55G
	10	D55	0.20	EMAR160ARA100MD55G
	22	E55	0.20	EMAR160ARA220ME55G
	33	F55	0.20	EMAR160ARA330MF55G
	47	F55	0.20	EMAR160ARA470MF55G
	100	H63	0.26	EMAR160ARA101MH63G
	220	HA0	0.26	EMAR160ARA221MHA0G
	330	HA0	0.26	EMAR160ARA331MHA0G
	470	JA0	0.26	EMAR160ARA471MJA0G

WV (V_{dc})	Cap (μF)	Size Code	tan δ	Part No.
25	4.7	D55	0.16	EMAR250ARA4R7MD55G
	10	E55	0.16	EMAR250ARA100ME55G
	22	F55	0.16	EMAR250ARA220MF55G
	33	F55	0.16	EMAR250ARA330MF55G
	47	H63	0.16	EMAR250ARA470MH63G
	100	H63	0.16	EMAR250ARA101MH63G
	220	HA0	0.16	EMAR250ARA221MHA0G
	330	JA0	0.16	EMAR250ARA331MJA0G
35	3.3	D55	0.14	EMAR350ARA3R3MD55G
	4.7	D55	0.14	EMAR350ARA4R7MD55G
	10	E55	0.14	EMAR350ARA100ME55G
	22	F55	0.14	EMAR350ARA220MF55G
	33	H63	0.14	EMAR350ARA330MH63G
	47	H63	0.14	EMAR350ARA470MH63G
	100	HA0	0.14	EMAR350ARA101MHA0G
	220	JA0	0.14	EMAR350ARA221MJA0G
50	1.0	D55	0.12	EMAR500ARA1R0MD55G
	2.2	D55	0.12	EMAR500ARA2R2MD55G
	3.3	D55	0.12	EMAR500ARA3R3MD55G
	4.7	E55	0.12	EMAR500ARA4R7ME55G
	10	F55	0.12	EMAR500ARA100MF55G
	22	H63	0.12	EMAR500ARA220MH63G
	33	H63	0.12	EMAR500ARA330MH63G
	47	HA0	0.12	EMAR500ARA470MHA0G
	100	JA0	0.12	EMAR500ARA101MJA0G

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Return Group Chart

NIPPON CHEMI-CON MELODY **Aluminum Electrolytic Capacitors for Audio** Surface Mount, 105℃

Alchip™-MAK Series

- Suitable for small and low profile product such as the car audio and electronics
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	-40 to +105℃							
Rated Voltage Range	6.3 to 50Vdc							
Capacitance Tolerance	±20%(M)							(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	0.30	0.26	0.22	0.16	0.13	0.12	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	
	Z(-40℃)/Z(+20℃)	8	5	4	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 105℃.							
	Size code	D55 to F55		H63 to JA0				
	Capacitance change	≦±30% of the initial value		≦±20% of the initial value				
	D.F. (tan δ)	≦200% of the initial specified value		≦200% of the initial specified value				
	Leakage current	≦The initial specified value		≦The initial specified value				
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Size code	D55 to F55		H63 to JA0				
	Capacitance change	≦±30% of the initial value		≦±20% of the initial value				
	D.F. (tan δ)	≦200% of the initial specified value		≦200% of the initial specified value				
	Leakage current	≦The initial specified value		≦The initial specified value				

◆DIMENSIONS[mm]

●Terminal Code : A

Note : L±0.5 for H63 to JA0

Size code	D	L	A	B	C	W	P
D55	4	5.2	4.3	4.3	5.1	0.5 to 0.8	1.0
E55	5	5.2	5.3	5.3	5.9	0.5 to 0.8	1.4
F55	6.3	5.2	6.6	6.6	7.2	0.5 to 0.8	1.9
H63	8	6.3	8.3	8.3	9.0	0.5 to 0.8	2.3
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆MARKING

EX) 10V100μF

●Rated voltage symbol

Rated voltage(Vdc)	Symbol
6.3	j
10	A
16	C
25	E
35	V
50	H

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E MAK □□□ A RA □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0, 100μF:101)
- Taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3, 35V:350, 50V:500)
- Series code
- Category

Please refer to "Product code guide (surface mount type)"

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NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio Surface Mount, 105℃

Alchip™-MAK Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Size Code	tan δ	Part No.
6.3	22	D55	0.30	EMAK6R3ARA220MD55G
	33	E55	0.30	EMAK6R3ARA330ME55G
	47	E55	0.30	EMAK6R3ARA470ME55G
	100	F55	0.30	EMAK6R3ARA101MF55G
	220	H63	0.30	EMAK6R3ARA221MH63G
	330	H63	0.30	EMAK6R3ARA331MH63G
	470	HA0	0.30	EMAK6R3ARA471MHA0G
	1,000	JA0	0.30	EMAK6R3ARA102MJA0G
10	22	E55	0.26	EMAK100ARA220ME55G
	33	E55	0.26	EMAK100ARA330ME55G
	47	F55	0.26	EMAK100ARA470MF55G
	100	F55	0.26	EMAK100ARA101MF55G
	220	H63	0.26	EMAK100ARA221MH63G
	330	HA0	0.26	EMAK100ARA331MHA0G
	470	JA0	0.26	EMAK100ARA471MJA0G
16	10	D55	0.22	EMAK160ARA100MD55G
	22	E55	0.22	EMAK160ARA220ME55G
	47	F55	0.22	EMAK160ARA470MF55G
	100	H63	0.22	EMAK160ARA101MH63G
	220	HA0	0.22	EMAK160ARA221MHA0G
	330	HA0	0.22	EMAK160ARA331MHA0G
	470	JA0	0.22	EMAK160ARA471MJA0G

WV (V_{dc})	Cap (μF)	Size Code	tan δ	Part No.
25	4.7	D55	0.16	EMAK250ARA4R7MD55G
	10	E55	0.16	EMAK250ARA100ME55G
	22	F55	0.16	EMAK250ARA220MF55G
	33	F55	0.16	EMAK250ARA330MF55G
	47	H63	0.16	EMAK250ARA470MH63G
	100	HA0	0.16	EMAK250ARA101MHA0G
	330	JA0	0.16	EMAK250ARA331MJA0G
35	4.7	D55	0.13	EMAK350ARA4R7MD55G
	10	E55	0.13	EMAK350ARA100ME55G
	22	F55	0.13	EMAK350ARA220MF55G
	33	H63	0.13	EMAK350ARA330MH63G
	47	HA0	0.13	EMAK350ARA470MHA0G
	100	JA0	0.13	EMAK350ARA101MJA0G
	220	JA0	0.13	EMAK350ARA221MJA0G
50	1.0	D55	0.12	EMAK500ARA1R0MD55G
	2.2	D55	0.12	EMAK500ARA2R2MD55G
	3.3	D55	0.12	EMAK500ARA3R3MD55G
	4.7	E55	0.12	EMAK500ARA4R7ME55G
	10	F55	0.12	EMAK500ARA100MF55G
	22	H63	0.12	EMAK500ARA220MH63G
	33	HA0	0.12	EMAK500ARA330MHA0G
	47	HA0	0.12	EMAK500ARA470MHA0G
	100	JA0	0.12	EMAK500ARA101MJA0G

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Return Group Chart

NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio 5mm 7mm height, 85℃

ARI Series

- Suitable for small and low profile product such as the car audio and electronics
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃
Rated Voltage Range	6.3 to 50V_{dc}
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)

Dissipation Factor (tan δ)	Rated voltage (V_{dc})		6.3V	10V	16V	25V	35V	50V	
	tan δ (Max.)	5L	0.27	0.23	0.18	0.16	0.14	0.12	
		7L	0.35	0.27	0.22	0.20	0.17	0.15	(at 20℃, 120Hz)

Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	
	Z(-25℃)／Z(+20℃)	4	3	2	2	2	2	
	Z(-40℃)／Z(+20℃)	10	8	6	4	3	3	(at 120Hz)

Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 85℃.	
	Capacitance change	≦±20% of the initial value
	D.F. (tan δ)	≦200% of the initial specified value
	Leakage current	≦The initial specified value

Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.	
	Capacitance change	≦±20% of the initial value
	D.F. (tan δ)	≦200% of the initial specified value
	Leakage current	≦The initial specified value

◆DIMENSIONS[mm]

●Terminal Code : E

φD (L)	4	5	6.3	8	
				(5L)	(7L)
F	1.5	2.0	2.5	2.5	3.5
φd	0.45	0.45	0.45	0.45	
φD'	φD+0.5 max.				
L'	L+1.0 max.				

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E A R I □□□ E □□ □□□ M □□□ G

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex.1.0μF:1R0,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,50V:500)
- Series code
- CategoryS

Please refer to "Product code guide (radial lead type)"

◆MARKING

EX) 16V47μF

●Rated voltage symbol

Rated voltage(V_{dc})	Symbol
6.3	j
10	A
16	C
25	E
35	V
50	H

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NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio 5mm 7mm height, 85℃

ARI Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
6.3	22	4×5	0.27	EARI6R3E□□220MD05G
	22	4×7	0.35	EARI6R3E□□220MD07G
	47	5×5	0.27	EARI6R3E□□470ME05G
	47	5×7	0.35	EARI6R3E□□470ME07G
	220	6.3×7	0.35	EARI6R3E□□221MF07G
	330	8×5	0.27	EARI6R3E□□331MH05G
10	33	5×5	0.23	EARI100E□□330ME05G
	33	5×7	0.27	EARI100E□□330ME07G
	100	6.3×5	0.23	EARI100E□□101MF05G
	220	8×5	0.23	EARI100E□□221MH05G
16	10	4×5	0.18	EARI160E□□100MD05G
	10	4×7	0.22	EARI160E□□100MD07G
	22	5×5	0.18	EARI160E□□220ME05G
	22	5×7	0.22	EARI160E□□220ME07G
	47	6.3×7	0.22	EARI160E□□470MF07G
	100	6.3×7	0.22	EARI160E□□101MF07G
25	33	6.3×5	0.16	EARI250E□□330MF05G
	33	6.3×7	0.20	EARI250E□□330MF07G
	47	6.3×5	0.16	EARI250E□□470MF05G
	100	8×5	0.16	EARI250E□□101MH05G

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
35	4.7	4×5	0.14	EARI350E□□4R7MD05G
	4.7	4×7	0.17	EARI350E□□4R7MD07G
	10	5×5	0.14	EARI350E□□100ME05G
	10	5×7	0.17	EARI350E□□100ME07G
	22	6.3×5	0.14	EARI350E□□220MF05G
	22	6.3×7	0.17	EARI350E□□220MF07G
	33	8×5	0.14	EARI350E□□330MH05G
50	1.0	4×5	0.12	EARI500E□□1R0MD05G
	1.0	4×7	0.15	EARI500E□□1R0MD07G
	2.2	4×5	0.12	EARI500E□□2R2MD05G
	2.2	4×7	0.15	EARI500E□□2R2MD07G
	3.3	4×5	0.12	EARI500E□□3R3MD05G
	3.3	4×7	0.15	EARI500E□□3R3MD07G
	4.7	5×5	0.12	EARI500E□□4R7ME05G
	4.7	5×7	0.15	EARI500E□□4R7ME07G
	10	6.3×5	0.12	EARI500E□□100MF05G
	10	6.3×7	0.15	EARI500E□□100MF07G
	22	8×5	0.12	EARI500E□□220MH05G

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

Aluminum Electrolytic Capacitors for Audio

Standard, Downsized, 85℃

ASG Series

- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics									
Category Temperature Range	-40 to +85℃									
Rated Voltage Range	6.3 to 100V_{dc}									
Capacitance Tolerance	±20%(M)									(at 20℃, 120Hz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)									(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	63V	100V	
	tan δ (Max.)	0.34	0.24	0.20	0.16	0.14	0.12	0.10	0.08	
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.									(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	6.3V	10V	16V	25V	35V	50V	63V	100V	
	Z(-25℃)／Z(+20℃)	5	4	3	2	2	2	2	2	
	Z(-40℃)／Z(+20℃)	12	10	8	5	4	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 85℃.									
	Capacitance change	≦±20% of the initial value								
	D.F. (tan δ)	≦200% of the initial specified value								
	Leakage current	≦The initial specified value								
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.									
	Capacitance change	≦±20% of the initial value								
	D.F. (tan δ)	≦200% of the initial specified value								
	Leakage current	≦The initial specified value								

◆DIMENSIONS[mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5 max.						
L'	L+1.5 max.						

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E ASG □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

Aluminum Electrolytic Capacitors for Audio

Standard, Downsized, 85℃

ASG Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
6.3	330	6.3×11	0.34	EASG6R3E□□331MF11S
	470	6.3×11	0.34	EASG6R3E□□471MF11S
	1,000	8×11.5	0.34	EASG6R3E□□102MHB5S
	2,200	10×20	0.36	EASG6R3E□□222MJ20S
	3,300	10×20	0.38	EASG6R3E□□332MJ20S
	4,700	12.5×20	0.40	EASG6R3E□□472MK20S
	6,800	12.5×25	0.44	EASG6R3E□□682MK25S
	10,000	16×25	0.52	EASG6R3E□□103ML25S
	15,000	16×35.5	0.62	EASG6R3E□□153MLP1S
	22,000	18×40	0.76	EASG6R3E□□223MM40S
10	220	5×11	0.24	EASG100E□□221ME11S
	330	6.3×11	0.24	EASG100E□□331MF11S
	470	6.3×11	0.24	EASG100E□□471MF11S
	1,000	10×12.5	0.24	EASG100E□□102MJC5S
	2,200	10×20	0.26	EASG100E□□222MJ20S
	3,300	12.5×20	0.28	EASG100E□□332MK20S
	4,700	12.5×25	0.30	EASG100E□□472MK25S
	6,800	16×25	0.34	EASG100E□□682ML25S
	10,000	16×35.5	0.42	EASG100E□□103MLP1S
	15,000	18×35.5	0.52	EASG100E□□153MMP1S
16	100	5×11	0.20	EASG160E□□101ME11S
	220	6.3×11	0.20	EASG160E□□221MF11S
	330	8×11.5	0.20	EASG160E□□331MHB5S
	470	8×11.5	0.20	EASG160E□□471MHB5S
	1,000	10×16	0.20	EASG160E□□102MJ16S
	2,200	12.5×20	0.22	EASG160E□□222MK20S
	3,300	12.5×25	0.24	EASG160E□□332MK25S
	4,700	16×25	0.26	EASG160E□□472ML25S
	6,800	16×31.5	0.30	EASG160E□□682MLN3S
	10,000	18×35.5	0.38	EASG160E□□103MMP1S
25	47	5×11	0.16	EASG250E□□470ME11S
	100	6.3×11	0.16	EASG250E□□101MF11S
	220	8×11.5	0.16	EASG250E□□221MHB5S
	330	8×11.5	0.16	EASG250E□□331MHB5S
	470	10×12.5	0.16	EASG250E□□471MJC5S
	1,000	10×20	0.16	EASG250E□□102MJ20S
	2,200	12.5×25	0.18	EASG250E□□222MK25S
	3,300	16×25	0.20	EASG250E□□332ML25S
	4,700	16×31.5	0.22	EASG250E□□472MLN3S
	6,800	18×35.5	0.26	EASG250E□□682MMP1S
35	47	5×11	0.14	EASG350E□□470ME11S
	100	6.3×11	0.14	EASG350E□□101MF11S
	220	8×11.5	0.14	EASG350E□□221MHB5S
	330	10×12.5	0.14	EASG350E□□331MJC5S
	470	10×16	0.14	EASG350E□□471MJ16S
	1,000	12.5×20	0.14	EASG350E□□102MK20S
	2,200	16×25	0.16	EASG350E□□222ML25S
	3,300	16×35.5	0.18	EASG350E□□332MLP1S
	4,700	18×35.5	0.20	EASG350E□□472MMP1S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
50	1.0	5×11	0.12	EASG500E□□1R0ME11S
	2.2	5×11	0.12	EASG500E□□2R2ME11S
	3.3	5×11	0.12	EASG500E□□3R3ME11S
	4.7	5×11	0.12	EASG500E□□4R7ME11S
	10	5×11	0.12	EASG500E□□100ME11S
	22	5×11	0.12	EASG500E□□220ME11S
	33	5×11	0.12	EASG500E□□330ME11S
	47	6.3×11	0.12	EASG500E□□470MF11S
	100	8×11.5	0.12	EASG500E□□101MHB5S
	220	10×12.5	0.12	EASG500E□□221MJC5S
	330	10×16	0.12	EASG500E□□331MJ16S
	470	10×20	0.12	EASG500E□□471MJ20S
	1,000	12.5×25	0.12	EASG500E□□102MK25S
	2,200	16×35.5	0.14	EASG500E□□222MLP1S
	3,300	18×35.5	0.16	EASG500E□□332MMP1S
63	10	5×11	0.10	EASG630E□□100ME11S
	22	5×11	0.10	EASG630E□□220ME11S
	33	6.3×11	0.10	EASG630E□□330MF11S
	47	6.3×11	0.10	EASG630E□□470MF11S
	100	10×12.5	0.10	EASG630E□□101MJC5S
	220	10×16	0.10	EASG630E□□221MJ16S
	330	10×20	0.10	EASG630E□□331MJ20S
	470	12.5×20	0.10	EASG630E□□471MK20S
	1,000	16×25	0.10	EASG630E□□102ML25S
	2,200	18×35.5	0.12	EASG630E□□222MMP1S
100	1.0	5×11	0.08	EASG101E□□1R0ME11S
	2.2	5×11	0.08	EASG101E□□2R2ME11S
	3.3	5×11	0.08	EASG101E□□3R3ME11S
	4.7	5×11	0.08	EASG101E□□4R7ME11S
	10	6.3×11	0.08	EASG101E□□100MF11S
	22	8×11.5	0.08	EASG101E□□220MHB5S
	33	8×11.5	0.08	EASG101E□□330MHB5S
	47	10×12.5	0.08	EASG101E□□470MJC5S
	100	10×20	0.08	EASG101E□□101MJ20S
	220	12.5×25	0.08	EASG101E□□221MK25S
	330	12.5×25	0.08	EASG101E□□331MK25S
	470	16×25	0.08	EASG101E□□471ML25S
	1,000	18×40	0.08	EASG101E□□102MM40S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio Standard, 85℃

AVH Series

- The oxide free copper lead wire and electrolyte on audio purpose are employed
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +85℃
Rated Voltage Range	6.3 to 100V_{dc}
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)
Leakage Current	I=0.03CV or 4μA, whichever is greater. (at 20℃ after 1 minute) I=0.01CV or 3μA, whichever is greater. (at 20℃ after 2 minutes) Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)
Dissipation Factor (tan δ)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 80V, 100V tan δ (Max.): 0.24, 0.20, 0.16, 0.14, 0.12, 0.10, 0.09, 0.08, 0.07 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc}): 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 80V, 100V Z(-25℃)／Z(+20℃): 4, 3, 2, 2, 2, 2, 2, 2, 2 Z(-40℃)／Z(+20℃): 10, 8, 6, 4, 3, 3, 3, 3, 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 85℃. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value Leakage current: ≦The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. Capacitance change: ≦±20% of the initial value D.F. (tan δ): ≦150% of the initial specified value Leakage current: ≦The initial specified value

◆DIMENSIONS[mm]

●Terminal Code : E

φD	5	6.3	8	10	12.5	16	18
φd	0.6	0.6	0.6	0.8	0.8	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5 max.						
L'	L+1.5 max.					L+2.0 max.	

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E A V H □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0,10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 6.3V:6R3,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio Standard, 85℃

AVH Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
6.3	470	10×12.5	0.24	EAVH6R3E□□471MJC5S
	1,000	10×20	0.24	EAVH6R3E□□102MJ20S
	2,200	12.5×25	0.26	EAVH6R3E□□222MK25S
	3,300	16×25	0.28	EAVH6R3E□□332ML25S
	4,700	16×31.5	0.30	EAVH6R3E□□472MLN3S
	6,800	16×35.5	0.34	EAVH6R3E□□682MLP1S
	10,000	18×40	0.42	EAVH6R3E□□103MM40S
10	47	5×11	0.20	EAVH100E□□470ME11S
	100	6.3×11	0.20	EAVH100E□□101MF11S
	220	8×11.5	0.20	EAVH100E□□221MHB5S
	330	10×12.5	0.20	EAVH100E□□331MJC5S
	470	10×16	0.20	EAVH100E□□471MJ16S
	1,000	12.5×20	0.20	EAVH100E□□102MK20S
	2,200	16×25	0.22	EAVH100E□□222ML25S
	3,300	16×31.5	0.24	EAVH100E□□332MLN3S
	4,700	16×35.5	0.26	EAVH100E□□472MLP1S
	6,800	18×40	0.30	EAVH100E□□682MM40S
16	33	5×11	0.16	EAVH160E□□330ME11S
	100	8×11.5	0.16	EAVH160E□□101MHB5S
	220	10×12.5	0.16	EAVH160E□□221MJC5S
	330	10×16	0.16	EAVH160E□□331MJ16S
	470	10×20	0.16	EAVH160E□□471MJ20S
	1,000	12.5×25	0.16	EAVH160E□□102MK25S
	2,200	16×25	0.18	EAVH160E□□222ML25S
	3,300	16×35.5	0.20	EAVH160E□□332MLP1S
	4,700	18×35.5	0.22	EAVH160E□□472MMP1S
25	22	5×11	0.14	EAVH250E□□220ME11S
	47	6.3×11	0.14	EAVH250E□□470MF11S
	100	8×11.5	0.14	EAVH250E□□101MHB5S
	220	10×16	0.14	EAVH250E□□221MJ16S
	330	10×20	0.14	EAVH250E□□331MJ20S
	470	12.5×20	0.14	EAVH250E□□471MK20S
	1,000	16×25	0.14	EAVH250E□□102ML25S
	2,200	16×35.5	0.16	EAVH250E□□222MLP1S
	3,300	18×40	0.18	EAVH250E□□332MM40S
35	33	6.3×11	0.12	EAVH350E□□330MF11S
	100	10×12.5	0.12	EAVH350E□□101MJC5S
	220	10×20	0.12	EAVH350E□□221MJ20S
	470	12.5×25	0.12	EAVH350E□□471MK25S
	1,000	16×25	0.12	EAVH350E□□102ML25S
	2,200	18×35.5	0.14	EAVH350E□□222MMP1S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
50	1.0	5×11	0.10	EAVH500E□□1R0ME11S
	2.2	5×11	0.10	EAVH500E□□2R2ME11S
	3.3	5×11	0.10	EAVH500E□□3R3ME11S
	4.7	5×11	0.10	EAVH500E□□4R7ME11S
	10	5×11	0.10	EAVH500E□□100ME11S
	22	6.3×11	0.10	EAVH500E□□220MF11S
	33	8×11.5	0.10	EAVH500E□□330MHB5S
	47	8×11.5	0.10	EAVH500E□□470MHB5S
	100	10×16	0.10	EAVH500E□□101MJ16S
	220	12.5×20	0.10	EAVH500E□□221MK20S
	330	12.5×20	0.10	EAVH500E□□331MK20S
	470	16×25	0.10	EAVH500E□□471ML25S
	1,000	16×31.5	0.10	EAVH500E□□102MLN3S
63	2.2	5×11	0.09	EAVH630E□□2R2ME11S
	3.3	5×11	0.09	EAVH630E□□3R3ME11S
	4.7	5×11	0.09	EAVH630E□□4R7ME11S
	10	6.3×11	0.09	EAVH630E□□100MF11S
	22	8×11.5	0.09	EAVH630E□□220MHB5S
	33	8×11.5	0.09	EAVH630E□□330MHB5S
	47	10×12.5	0.09	EAVH630E□□470MJC5S
	100	10×20	0.09	EAVH630E□□101MJ20S
	220	12.5×20	0.09	EAVH630E□□221MK20S
	330	12.5×25	0.09	EAVH630E□□331MK25S
	470	16×25	0.09	EAVH630E□□471ML25S
	1,000	18×35.5	0.09	EAVH630E□□102MMP1S
80	47	10×16	0.08	EAVH800E□□470MJ16S
	220	12.5×25	0.08	EAVH800E□□221MK25S
	330	16×31.5	0.08	EAVH800E□□331MLN3S
	470	16×35.5	0.08	EAVH800E□□471MLP1S
100	1.0	5×11	0.07	EAVH101E□□1R0ME11S
	2.2	5×11	0.07	EAVH101E□□2R2ME11S
	3.3	5×11	0.07	EAVH101E□□3R3ME11S
	4.7	6.3×11	0.07	EAVH101E□□4R7MF11S
	10	8×11.5	0.07	EAVH101E□□100MHB5S
	22	10×12.5	0.07	EAVH101E□□220MJC5S
	33	10×16	0.07	EAVH101E□□330MJ16S
	47	10×20	0.07	EAVH101E□□470MJ20S
	100	12.5×20	0.07	EAVH101E□□101MK20S
	220	16×25	0.07	EAVH101E□□221ML25S
	330	16×31.5	0.07	EAVH101E□□331MLN3S
	470	18×35.5	0.07	EAVH101E□□471MMP1S

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

Aluminum Electrolytic Capacitors for Audio

High grade, 85℃

AWJ Series

- Please consult with us when you need "Bi-polar" type
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics						
Category Temperature Range	-40 to +85℃						
Rated Voltage Range	16 to 100V_{dc}						
Capacitance Tolerance	±20%(M)						(at 20℃, 120Hz)
Leakage Current	I =0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)						(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	Rated voltage (V_{dc})	16V	25V	50V	80V	100V	
	tan δ (Max.)	0.16	0.14	0.10	0.08	0.07	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V_{dc})	16V	25V	50V	80V	100V	
	Z(-25℃)／Z(+20℃)	2	2	2	2	2	
	Z(-40℃)／Z(+20℃)	6	4	3	3	3	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 85℃.						
	Capacitance change	≦±20% of the initial value					
	D.F. (tan δ)	≦150% of the initial specified value					
	Leakage current	≦The initial specified value					
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.						
	Capacitance change	≦±20% of the initial value					
	D.F. (tan δ)	≦150% of the initial specified value					
	Leakage current	≦The initial specified value					

◆DIMENSIONS[mm]

●Terminal Code：E

φD	10	12.5	16	18
φd	0.8	0.8	0.8	0.8
F	5.0		7.5	
φD'	φD+0.5 max.			
L'	L+1.5 max.		L+2.0 max.	

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

E AWJ □□□ E □□ □□□ M □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 10μF:100,100μF:101)
- Lead forming·taping code
- Terminal code
- Voltage code (ex. 16V:160,100V:101)
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

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NIPPON CHEMI-CON

Aluminum Electrolytic Capacitors for Audio

High grade, 85℃

AWJ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
16	220	10×20	0.16	EAWJ160E□□221MJ20S
	330	12.5×20	0.16	EAWJ160E□□331MK20S
	470	12.5×25	0.16	EAWJ160E□□471MK25S
	1,000	16×31.5	0.16	EAWJ160E□□102MLN3S
25	100	10×16	0.14	EAWJ250E□□101MJ16S
	220	12.5×20	0.14	EAWJ250E□□221MK20S
	330	12.5×25	0.14	EAWJ250E□□331MK25S
	470	16×25	0.14	EAWJ250E□□471ML25S
	1,000	16×35.5	0.14	EAWJ250E□□102MLP1S
50	22	10×16	0.10	EAWJ500E□□220MJ16S
	33	10×16	0.10	EAWJ500E□□330MJ16S
	47	10×16	0.10	EAWJ500E□□470MJ16S
	100	12.5×20	0.10	EAWJ500E□□101MK20S
	220	16×25	0.10	EAWJ500E□□221ML25S
	330	16×31.5	0.10	EAWJ500E□□331MLN3S
	470	16×35.5	0.10	EAWJ500E□□471MLP1S
	1,000	18×45	0.10	EAWJ500E□□102MM45S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
80	22	10×16	0.08	EAWJ800E□□220MJ16S
	33	10×20	0.08	EAWJ800E□□330MJ20S
	47	10×20	0.08	EAWJ800E□□470MJ20S
	100	12.5×25	0.08	EAWJ800E□□101MK25S
	220	16×31.5	0.08	EAWJ800E□□221MLN3S
	330	16×35.5	0.08	EAWJ800E□□331MLP1S
	470	18×40	0.08	EAWJ800E□□471MM40S
100	10	10×16	0.07	EAWJ101E□□100MJ16S
	22	10×20	0.07	EAWJ101E□□220MJ20S
	33	12.5×20	0.07	EAWJ101E□□330MK20S
	47	12.5×25	0.07	EAWJ101E□□470MK25S
	100	16×25	0.07	EAWJ101E□□101ML25S
	220	18×35.5	0.07	EAWJ101E□□221MMP1S
	330	18×45	0.07	EAWJ101E□□331MM45S

□□ : Enter the appropriate lead forming or taping code.

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Return Group Chart

NIPPON CHEMI-CON

Aluminum Electrolytic Capacitors for Audio

For Speaker Network, 85℃

SNX-BP Series

- Standard product for the speaker network which downsized conventional products
- Suitable for high-output speaker network
- Nominal capacitance range : 1 to 56μF,Rated voltage range : 63V
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics		
Category Temperature Range	-40 to +85℃		
Rated Voltage Range	63Vdc		
Rated Capacitance Range	1.0 to 56μF		(at 20℃, 1kHz)
Capacitance Tolerance	±10%(K)		(at 20℃, 1kHz)
Leakage Current	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)		(at 20℃ after 2 minutes)
Dissipation Factor (tan δ)	0.11 max.		(at 20℃, 1kHz)
Low Temperature Characteristics (Max. Impedance Ratio)	Z(-25℃)／Z(+20℃)≦2 Z(-40℃)／Z(+20℃)≦4		(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 85℃, however the polarization shall be reversed every 250 hours.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	(at 20℃, 1kHz)
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.		
	Capacitance change	≦±15% of the initial value	
	D.F. (tan δ)	≦150% of the initial specified value	
	Leakage current	≦The initial specified value	(at 20℃, 1kHz)

◆DIMENSIONS[mm]

●Terminal Code : E

Gas escape end seal

φD	8	10	12.5	16	18
φd	0.6	0.8	0.8	0.8	0.8
F	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5 max.				
L'	L+1.5 max.				

◆PART NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

B S N X □□□ E □□ □□□ K □□□ S

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 1.0μF:1R0,10μF:100)
- Lead forming·taping code
- Terminal code
- Voltage code
- Series code
- Category

Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 1kHz)	Part No.
63	1.0	8×11.5	0.11	44	BSNX630E□□1R0KHB5S
	1.2	8×11.5	0.11	48	BSNX630E□□1R2KHB5S
	1.5	8×11.5	0.11	54	BSNX630E□□1R5KHB5S
	1.8	8×11.5	0.11	59	BSNX630E□□1R8KHB5S
	2.2	8×11.5	0.11	65	BSNX630E□□2R2KHB5S
	2.7	8×11.5	0.11	72	BSNX630E□□2R7KHB5S
	3.3	10×16	0.11	104	BSNX630E□□3R3KJ16S
	3.9	10×16	0.11	113	BSNX630E□□3R9KJ16S
	4.7	10×16	0.11	124	BSNX630E□□4R7KJ16S
	5.6	10×20	0.11	146	BSNX630E□□5R6KJ20S
	6.8	10×20	0.11	161	BSNX630E□□6R8KJ20S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 1kHz)	Part No.
63	8.2	12.5×20	0.11	197	BSNX630E□□8R2KK20S
	10	12.5×25	0.11	236	BSNX630E□□100KK25S
	12	12.5×25	0.11	259	BSNX630E□□120KK25S
	15	12.5×25	0.11	290	BSNX630E□□150KK25S
	18	16×25	0.11	351	BSNX630E□□180KL25S
	22	16×25	0.11	388	BSNX630E□□220KL25S
	27	16×35.5	0.11	474	BSNX630E□□270KLP1S
	33	16×35.5	0.11	524	BSNX630E□□330KLP1S
	39	18×35.5	0.11	594	BSNX630E□□390KMP1S
	47	18×35.5	0.11	652	BSNX630E□□470KMP1S
	56	18×40	0.11	723	BSNX630E□□560KM40S

□□ : Enter the appropriate lead forming or taping code.

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NIPPON CHEMI-CON MELODY **Aluminum Electrolytic Capacitors for Audio** Snap-ins, 85℃

AJ Series

- The high-quality sound design that realized relaxed rich representation
- Suitable for AV receiver/Amplifier for the home theater use.
- Non solvent resistant type
- RoHS2 Compliant

◆SPECIFICATIONS

Items	Characteristics				
Category Temperature Range	-40 to +85℃				
Rated Voltage Range	25 to 125Vdc				
Capacitance Tolerance	±20%(M)				(at 20℃, 120Hz)
Leakage Current	I=0.02CV or 3mA, whichever is smaller. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)				(at 20℃ after 5 minutes)
Dissipation Factor (tan δ)	Rated voltage (Vdc)	25V	35 to 63V	71 to 125V	
	tan δ (Max.)	0.35	0.30	0.25	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	25V	35 to 63V	71 to 125V	
	Z(-25℃)／Z(+20℃)	4	3	4	
	Z(-40℃)／Z(+20℃)	15	10	15	(at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 1,000 hours at 85℃.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 85℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.				
	Capacitance change	≦±20% of the initial value			
	D.F. (tan δ)	≦200% of the initial specified value			
	Leakage current	≦The initial specified value			

◆DIMENSIONS[mm]

●Terminal Code : VS (φ22 to φ35) : Standard

●Terminal Code : LI (φ35)

*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

◆PART NUMBERING SYSTEM

Please refer to "Product code guide (snap-in type)"

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NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio Snap-ins, 85℃

AJ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
25	3,300	22×25	0.35	EAJ-250VSN332MP25S
	3,900	22×25	0.35	EAJ-250VSN392MP25S
	4,700	22×30	0.35	EAJ-250VSN472MP30S
	5,600	22×30	0.35	EAJ-250VSN562MP30S
	6,800	22×35	0.35	EAJ-250VSN682MP35S
	6,800	25.4×30	0.35	EAJ-250VSN682MQ30S
	6,800	30×25	0.35	EAJ-250VSN682MR25S
	8,200	22×40	0.35	EAJ-250VSN822MP40S
	8,200	25.4×35	0.35	EAJ-250VSN822MQ35S
	8,200	30×30	0.35	EAJ-250VSN822MR30S
	10,000	22×45	0.35	EAJ-250VSN103MP45S
	10,000	25.4×40	0.35	EAJ-250VSN103MQ40S
	10,000	30×30	0.35	EAJ-250VSN103MR30S
	10,000	35×25	0.35	EAJ-250VSN103MA25S
	12,000	22×50	0.35	EAJ-250VSN123MP50S
	12,000	25.4×45	0.35	EAJ-250VSN123MQ45S
	12,000	30×35	0.35	EAJ-250VSN123MR35S
	12,000	35×30	0.35	EAJ-250VSN123MA30S
	15,000	25.4×50	0.35	EAJ-250VSN153MQ50S
	15,000	30×40	0.35	EAJ-250VSN153MR40S
	15,000	35×35	0.35	EAJ-250VSN153MA35S
	18,000	25.4×60	0.35	EAJ-250VSN183MQ60S
	18,000	30×45	0.35	EAJ-250VSN183MR45S
	18,000	35×35	0.35	EAJ-250VSN183MA35S
	22,000	30×50	0.35	EAJ-250VSN223MR50S
	22,000	35×40	0.35	EAJ-250VSN223MA40S
	27,000	30×55	0.35	EAJ-250VSN273MR55S
	27,000	35×50	0.35	EAJ-250VSN273MA50S
	33,000	35×55	0.35	EAJ-250VSN333MA55S
	39,000	35×60	0.35	EAJ-250VSN393MA60S
35	2,200	22×25	0.30	EAJ-350VSN222MP25S
	2,700	22×25	0.30	EAJ-350VSN272MP25S
	3,300	22×30	0.30	EAJ-350VSN332MP30S
	3,300	25.4×25	0.30	EAJ-350VSN332MQ25S
	3,900	22×35	0.30	EAJ-350VSN392MP35S
	3,900	25.4×25	0.30	EAJ-350VSN392MQ25S
	4,700	22×35	0.30	EAJ-350VSN472MP35S
	4,700	25.4×30	0.30	EAJ-350VSN472MQ30S
	5,600	22×40	0.30	EAJ-350VSN562MP40S
	5,600	25.4×35	0.30	EAJ-350VSN562MQ35S
	5,600	30×30	0.30	EAJ-350VSN562MR30S
	6,800	22×45	0.30	EAJ-350VSN682MP45S
	6,800	25.4×40	0.30	EAJ-350VSN682MQ40S
	6,800	30×30	0.30	EAJ-350VSN682MR30S
	8,200	25.4×45	0.30	EAJ-350VSN822MQ45S
	8,200	30×35	0.30	EAJ-350VSN822MR35S
	8,200	35×30	0.30	EAJ-350VSN822MA30S
	10,000	25.4×50	0.30	EAJ-350VSN103MQ50S
	10,000	30×40	0.30	EAJ-350VSN103MR40S
	10,000	35×35	0.30	EAJ-350VSN103MA35S
	12,000	25.4×55	0.30	EAJ-350VSN123MQ55S
	12,000	30×45	0.30	EAJ-350VSN123MR45S
	12,000	35×35	0.30	EAJ-350VSN123MA35S
	15,000	30×50	0.30	EAJ-350VSN153MR50S
	15,000	35×40	0.30	EAJ-350VSN153MA40S
	18,000	30×55	0.30	EAJ-350VSN183MR55S
	18,000	35×45	0.30	EAJ-350VSN183MA45S
	22,000	35×55	0.30	EAJ-350VSN223MA55S
42	1,800	22×25	0.30	EAJ-420VSN182MP25S
	2,200	22×25	0.30	EAJ-420VSN222MP25S
	2,700	22×30	0.30	EAJ-420VSN272MP30S
	2,700	25.4×25	0.30	EAJ-420VSN272MQ25S
	3,300	22×35	0.30	EAJ-420VSN332MP35S
	3,300	25.4×30	0.30	EAJ-420VSN332MQ30S
	3,900	22×40	0.30	EAJ-420VSN392MP40S
	3,900	25.4×30	0.30	EAJ-420VSN392MQ30S
	3,900	30×25	0.30	EAJ-420VSN392MR25S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
42	4,700	22×45	0.30	EAJ-420VSN472MP45S
	4,700	25.4×35	0.30	EAJ-420VSN472MQ35S
	4,700	30×30	0.30	EAJ-420VSN472MR30S
	4,700	35×25	0.30	EAJ-420VSN472MA25S
	5,600	22×50	0.30	EAJ-420VSN562MP50S
	5,600	25.4×40	0.30	EAJ-420VSN562MQ40S
	5,600	30×35	0.30	EAJ-420VSN562MR35S
	5,600	35×25	0.30	EAJ-420VSN562MA25S
	6,800	25.4×50	0.30	EAJ-420VSN682MQ50S
	6,800	30×40	0.30	EAJ-420VSN682MR40S
	6,800	35×30	0.30	EAJ-420VSN682MA30S
	8,200	25.4×60	0.30	EAJ-420VSN822MQ60S
	8,200	30×45	0.30	EAJ-420VSN822MR45S
	8,200	35×35	0.30	EAJ-420VSN822MA35S
	10,000	30×50	0.30	EAJ-420VSN103MR50S
	10,000	35×40	0.30	EAJ-420VSN103MA40S
	12,000	30×50	0.30	EAJ-420VSN123MR50S
	12,000	35×45	0.30	EAJ-420VSN123MA45S
	15,000	35×50	0.30	EAJ-420VSN153MA50S
	18,000	35×60	0.30	EAJ-420VSN183MA60S
56	1,000	22×25	0.30	EAJ-560VSN102MP25S
	1,200	22×30	0.30	EAJ-560VSN122MP30S
	1,500	22×30	0.30	EAJ-560VSN152MP30S
	1,800	22×35	0.30	EAJ-560VSN182MP35S
	2,200	22×35	0.30	EAJ-560VSN222MP35S
	2,200	25.4×30	0.30	EAJ-560VSN222MQ30S
	2,700	22×40	0.30	EAJ-560VSN272MP40S
	2,700	25.4×35	0.30	EAJ-560VSN272MQ35S
	3,300	22×45	0.30	EAJ-560VSN332MP45S
	3,300	25.4×40	0.30	EAJ-560VSN332MQ40S
	3,300	30×30	0.30	EAJ-560VSN332MR30S
	3,900	22×50	0.30	EAJ-560VSN392MP50S
	3,900	25.4×40	0.30	EAJ-560VSN392MQ40S
	3,900	30×35	0.30	EAJ-560VSN392MR35S
	3,900	35×30	0.30	EAJ-560VSN392MA30S
	4,700	25.4×45	0.30	EAJ-560VSN472MQ45S
	4,700	30×40	0.30	EAJ-560VSN472MR40S
	4,700	35×30	0.30	EAJ-560VSN472MA30S
	5,600	25.4×55	0.30	EAJ-560VSN562MQ55S
	5,600	30×45	0.30	EAJ-560VSN562MR45S
	5,600	35×35	0.30	EAJ-560VSN562MA35S
	6,800	25.4×60	0.30	EAJ-560VSN682MQ60S
	6,800	30×50	0.30	EAJ-560VSN682MR50S
	6,800	35×40	0.30	EAJ-560VSN682MA40S
	8,200	30×55	0.30	EAJ-560VSN822MR55S
	8,200	35×45	0.30	EAJ-560VSN822MA45S
	10,000	30×60	0.30	EAJ-560VSN103MR60S
	10,000	35×50	0.30	EAJ-560VSN103MA50S
	12,000	30×60	0.30	EAJ-560VSN123MR60S
	12,000	35×55	0.30	EAJ-560VSN123MA55S
	15,000	35×60	0.30	EAJ-560VSN153MA60S
63	1,000	22×25	0.30	EAJ-630VSN102MP25S
	1,200	22×30	0.30	EAJ-630VSN122MP30S
	1,500	22×30	0.30	EAJ-630VSN152MP30S
	1,800	22×35	0.30	EAJ-630VSN182MP35S
	1,800	25.4×30	0.30	EAJ-630VSN182MQ30S
	2,200	22×40	0.30	EAJ-630VSN222MP40S
	2,200	25.4×35	0.30	EAJ-630VSN222MQ35S
	2,200	30×30	0.30	EAJ-630VSN222MR30S
	2,700	22×45	0.30	EAJ-630VSN272MP45S
	2,700	25.4×40	0.30	EAJ-630VSN272MQ40S
	2,700	30×30	0.30	EAJ-630VSN272MR30S
	3,300	25.4×45	0.30	EAJ-630VSN332MQ45S
	3,300	30×35	0.30	EAJ-630VSN332MR35S
	3,300	35×30	0.30	EAJ-630VSN332MA30S
	3,900	25.4×50	0.30	EAJ-630VSN392MQ50S
	3,900	30×40	0.30	EAJ-630VSN392MR40S

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NIPPON CHEMI-CON MELODY Aluminum Electrolytic Capacitors for Audio Snap-ins, 85℃

AJ Series

◆STANDARD RATINGS

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
63	3,900	35×30	0.30	EAJ-630VSN392MA30S
	4,700	25.4×55	0.30	EAJ-630VSN472MQ55S
	4,700	30×45	0.30	EAJ-630VSN472MR45S
	4,700	35×35	0.30	EAJ-630VSN472MA35S
	5,600	25.4×60	0.30	EAJ-630VSN562MQ60S
	5,600	30×50	0.30	EAJ-630VSN562MR50S
	5,600	35×40	0.30	EAJ-630VSN562MA40S
	6,800	25.4×60	0.30	EAJ-630VSN682MQ60S
	6,800	30×55	0.30	EAJ-630VSN682MR55S
	6,800	35×45	0.30	EAJ-630VSN682MA45S
	8,200	30×60	0.30	EAJ-630VSN822MR60S
	8,200	35×50	0.30	EAJ-630VSN822MA50S
	10,000	35×55	0.30	EAJ-630VSN103MA55S
	12,000	35×60	0.30	EAJ-630VSN123MA60S
71	1,000	22×30	0.25	EAJ-710VSN102MP30S
	1,200	22×30	0.25	EAJ-710VSN122MP30S
	1,500	22×35	0.25	EAJ-710VSN152MP35S
	1,500	25.4×30	0.25	EAJ-710VSN152MQ30S
	1,800	22×40	0.25	EAJ-710VSN182MP40S
	1,800	25.4×35	0.25	EAJ-710VSN182MQ35S
	1,800	30×30	0.25	EAJ-710VSN182MR30S
	2,200	22×45	0.25	EAJ-710VSN222MP45S
	2,200	25.4×40	0.25	EAJ-710VSN222MQ40S
	2,200	30×30	0.25	EAJ-710VSN222MR30S
	2,700	25.4×45	0.25	EAJ-710VSN272MQ45S
	2,700	30×35	0.25	EAJ-710VSN272MR35S
	2,700	35×30	0.25	EAJ-710VSN272MA30S
	3,300	25.4×50	0.25	EAJ-710VSN332MQ50S
	3,300	30×40	0.25	EAJ-710VSN332MR40S
	3,300	35×30	0.25	EAJ-710VSN332MA30S
	3,900	25.4×55	0.25	EAJ-710VSN392MQ55S
	3,900	30×45	0.25	EAJ-710VSN392MR45S
	3,900	35×35	0.25	EAJ-710VSN392MA35S
	4,700	25.4×60	0.25	EAJ-710VSN472MQ60S
	4,700	30×50	0.25	EAJ-710VSN472MR50S
	4,700	35×40	0.25	EAJ-710VSN472MA40S
	5,600	25.4×60	0.25	EAJ-710VSN562MQ60S
	5,600	30×55	0.25	EAJ-710VSN562MR55S
	5,600	35×45	0.25	EAJ-710VSN562MA45S
	6,800	30×60	0.25	EAJ-710VSN682MR60S
	6,800	35×50	0.25	EAJ-710VSN682MA50S
	8,200	35×55	0.25	EAJ-710VSN822MA55S
	10,000	35×60	0.25	EAJ-710VSN103MA60S
80	820	22×30	0.25	EAJ-800VSN821MP30S
	1,000	22×30	0.25	EAJ-800VSN102MP30S
	1,200	22×35	0.25	EAJ-800VSN122MP35S
	1,200	25.4×30	0.25	EAJ-800VSN122MQ30S
	1,500	22×40	0.25	EAJ-800VSN152MP40S
	1,500	25.4×35	0.25	EAJ-800VSN152MQ35S
	1,500	30×25	0.25	EAJ-800VSN152MR25S
	1,800	22×45	0.25	EAJ-800VSN182MP45S
	1,800	25.4×35	0.25	EAJ-800VSN182MQ35S
	1,800	30×30	0.25	EAJ-800VSN182MR30S
	2,200	22×50	0.25	EAJ-800VSN222MP50S
	2,200	25.4×40	0.25	EAJ-800VSN222MQ40S
	2,200	30×35	0.25	EAJ-800VSN222MR35S
	2,200	35×30	0.25	EAJ-800VSN222MA30S
	2,700	25.4×50	0.25	EAJ-800VSN272MQ50S
	2,700	30×40	0.25	EAJ-800VSN272MR40S
	2,700	35×30	0.25	EAJ-800VSN272MA30S

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Part No.
80	3,300	25.4×55	0.25	EAJ-800VSN332MQ55S
	3,300	30×45	0.25	EAJ-800VSN332MR45S
	3,300	35×35	0.25	EAJ-800VSN332MA35S
	3,900	25.4×55	0.25	EAJ-800VSN392MQ55S
	3,900	30×50	0.25	EAJ-800VSN392MR50S
	3,900	35×40	0.25	EAJ-800VSN392MA40S
	4,700	30×55	0.25	EAJ-800VSN472MR55S
	4,700	35×45	0.25	EAJ-800VSN472MA45S
	5,600	30×60	0.25	EAJ-800VSN562MR60S
	5,600	35×50	0.25	EAJ-800VSN562MA50S
	6,800	35×55	0.25	EAJ-800VSN682MA55S
	8,200	35×60	0.25	EAJ-800VSN822MA60S
100	470	22×25	0.25	EAJ-101VSN471MP25S
	560	22×30	0.25	EAJ-101VSN561MP30S
	820	22×35	0.25	EAJ-101VSN821MP35S
	820	25.4×30	0.25	EAJ-101VSN821MQ30S
	1,000	22×40	0.25	EAJ-101VSN102MP40S
	1,000	25.4×35	0.25	EAJ-101VSN102MQ35S
	1,200	22×45	0.25	EAJ-101VSN122MP45S
	1,200	25.4×40	0.25	EAJ-101VSN122MQ40S
	1,200	30×30	0.25	EAJ-101VSN122MR30S
	1,500	22×50	0.25	EAJ-101VSN152MP50S
	1,500	25.4×45	0.25	EAJ-101VSN152MQ45S
	1,500	30×35	0.25	EAJ-101VSN152MR35S
	1,500	35×30	0.25	EAJ-101VSN152MA30S
	1,800	25.4×50	0.25	EAJ-101VSN182MQ50S
	1,800	30×40	0.25	EAJ-101VSN182MR40S
	1,800	35×30	0.25	EAJ-101VSN182MA30S
	2,200	25.4×55	0.25	EAJ-101VSN222MQ55S
	2,200	30×45	0.25	EAJ-101VSN222MR45S
	2,200	35×35	0.25	EAJ-101VSN222MA35S
	2,700	25.4×60	0.25	EAJ-101VSN272MQ60S
	2,700	30×50	0.25	EAJ-101VSN272MR50S
	2,700	35×40	0.25	EAJ-101VSN272MA40S
	3,300	30×55	0.25	EAJ-101VSN332MR55S
	3,300	35×45	0.25	EAJ-101VSN332MA45S
	3,900	35×50	0.25	EAJ-101VSN392MA50S
	4,700	35×55	0.25	EAJ-101VSN472MA55S
	5,600	35×60	0.25	EAJ-101VSN562MA60S
125	470	22×30	0.25	EAJ-1C1VSN471MP30S
	560	22×35	0.25	EAJ-1C1VSN561MP35S
	820	22×40	0.25	EAJ-1C1VSN821MP40S
	820	25.4×35	0.25	EAJ-1C1VSN821MQ35S
	1,000	22×45	0.25	EAJ-1C1VSN102MP45S
	1,000	25.4×40	0.25	EAJ-1C1VSN102MQ40S
	1,000	30×30	0.25	EAJ-1C1VSN102MR30S
	1,200	25.4×45	0.25	EAJ-1C1VSN122MQ45S
	1,200	30×35	0.25	EAJ-1C1VSN122MR35S
	1,500	25.4×50	0.25	EAJ-1C1VSN152MQ50S
	1,500	30×40	0.25	EAJ-1C1VSN152MR40S
	1,500	35×35	0.25	EAJ-1C1VSN152MA35S
	1,800	25.4×55	0.25	EAJ-1C1VSN182MQ55S
	1,800	30×45	0.25	EAJ-1C1VSN182MR45S
	1,800	35×35	0.25	EAJ-1C1VSN182MA35S
	2,200	30×50	0.25	EAJ-1C1VSN222MR50S
	2,200	35×40	0.25	EAJ-1C1VSN222MA40S
	2,700	30×60	0.25	EAJ-1C1VSN272MR60S
	2,700	35×50	0.25	EAJ-1C1VSN272MA50S
	3,300	35×55	0.25	EAJ-1C1VSN332MA55S
	3,900	35×60	0.25	EAJ-1C1VSN392MA60S

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Return Group Chart

Technical Note

Judicious Use of Aluminum Electrolytic Capacitors

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1. Overview of Aluminum Electrolytic Capacitors

1-1 Basic Model of Aluminum Electrolytic Capacitors

Capacitors are passive components. Among the various kinds of capacitors, aluminum electrolytic capacitors offer larger CV product per case size and lower cost than the others.
In principles of capacitor, its fundamental model is shown in Fig. 1 and its capacitance (C) is expressed by Equation (1) below:

$$C = 8.854 \times 10^{-12} \frac{\varepsilon S}{d} \text{ (F)} \quad \cdots\cdots (1)$$

ε : Dielectric constant
S : Surface area of dielectric (m^2)
d : Thickness of dielectric (m)

Equation (1) shows that the capacitance (C) increases as the dielectric constant (ε) and/or its surface area (S) increases and/or the dielectric thickness (d) decreases.
An aluminum electrolytic capacitor comprises a dielectric layer of aluminum oxide (Al_2O_3), the dielectric constant (ε) of which is 8 to 10. This value is not significantly larger than those of other types of capacitors.
However, by extending the surface area (S) of the aluminum foil electrode by means of etching, and by electrochemically forming a thinner but highly voltage-withstandable layer of oxide layer dielectric, the aluminum electrolytic capacitor can offer a larger CV product per case size than other types of capacitors.
A basic model of aluminum electrolytic capacitor is shown in Fig. 2.
An aluminum electrolytic capacitor comprises:

Anode …Aluminum foil
Dielectric…Electrochemically formed oxide layer (Al_2O_3) on the anode
Cathode …A true cathode is electrolytic solution (electrolyte).

Other component materials include a paper separator that holds electrolyte in place and another aluminum foil that functions as a draw-out electrode coming into contact with the true cathode (electrolyte).
In general, an aluminum electrolytic capacitor is asymmetrical in structure and polarized. The other capacitor type known as a bi-polar (non-polar) comprises the anodic aluminum foils for both electrodes.

Fig-1 Basic model of capacitor

C_A、C_C : Capacitance due to anode and cathodes foils
D_A、D_C : Diode effects due to oxide layer on anode and cathode foils
L_A、L_C : Inductance due to anode and cathode terminals
R : Resistance of electrolyte and separator
R_A、R_C : Internal resistance of oxide layer on anode and cathode foils

Fig-2 Basic model and equivalent circuit of aluminum electrolytic capacitor

1-2 Structure of Aluminum Electrolytic Capacitor

The aluminum electrolytic capacitor has, as shown in Fig. 3, a roll of anode foil, paper separator, cathode foil and electrode terminals (internal and external terminals) with the electrolyte impregnated, which is sealed in an aluminum can case with a sealing material.
The terminal draw-out structure, sealing material and structure differ depending on the type of the capacitor.
Figure 4 shows typical examples.

Fig-3 Basic model of element

Fig-4 Construction of Aluminum Electrolytic Capacitors

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1-3 Features of Capacitor Materials

Aluminum, which is main material in an aluminum electrolytic capacitor, forms an oxide layer (Al_2O_3) on its surface when the aluminum is set as anode and charged with electricity in electrolyte.
The aluminum foil with an oxide layer formed thereon, as shown in Fig. 5, is capable of rectifying electriccurrent in electrolyte. Such a metal is called a valve metal.

Fig-5 V-I characteristics of aluminum oxide

<Anode aluminum foil>
First, the foil material is electromechanically etched in a chloride solution to extend the surface area of the foil.
Secondly, for the foil to form an aluminum oxide layer (Al_2O_3) as a dielectric, more than the rated voltage is applied to the foil in a solution such as ammonium borate. This dielectric layer is as dense and thin as 1.1 - 1.5 nm/volt and showing a high insulation resistance (10^8 - 10^9 Ω/m).
The thickness of the oxide layer determines the withstand voltage according to their direct proportional relationship. For the etching pits to be shaped to the intended thickness of the oxide layer, the pit patterns have been designed to have efficient surface area extension depending on the intended withstand voltage (see Fig. 6)

<Cathode aluminum foil>
An etching process is performed to the cathode aluminum foil as well as the anode foil. However, the formation process for oxide layer is generally not performed. Therefore, the surface of the cathode foil only has an oxide layer (Al_2O_3) that has spontaneously formed, which gives a withstand voltage of about 0.5 volt.

Low Voltage Foil

(Fracture surface of AC etched foil)

High Voltage Foil

(Fracture surface of DC etched foil) Replica

Fig-6 Cross section of aluminum etched foil (SEM)

<Electrolyte>
The electrolyte, an ion-conductive liquid functions as a true cathode coming into contact with the dielectric layer on the surface of the anode foil. The cathode foil serves as a collector electrode to connect the true cathode with the external circuit. Electrolyte is an essential material that controls the performance of the capacitor (temperature characteristics, frequency characteristics, service life, etc.).

<Paper separator >
The separator maintains uniform distribution of the electrolyte and keeps the anode-to-cathode foil distance unchanged.

<Can case and sealing materials>
An aluminum can case and seal materials mainly consisting of rubber are used for the purpose of keeping airtightness.

1-4 Manufacturing Process

① Etching (for extending the surface area)

This etching process serves to extend the surface area of the aluminum foil. This is an AC or DCcurrent-employed electrochemical process for etching the foil surface in a chloride solution.

Etching Model

② Formation (for forming a dielectric)

This is a process for forming a dielectric layer (Al_2O_3), which is normally performed on the anode aluminum foil.

Forming Model

③ Slitting

This is a process for slitting aluminum foils (both the anode and cathode) and paper separators to the specified product size.

Slitting Model

④ Winding

This is a process for rolling a set of anode and cathode foils into a cylindrical form with a paper separator inserted between them. During this process, an inner terminal (called a tab) is attached to each of the aluminum foils. The roll made at this process is called a capacitor element.

⑤ Impregnation

This is a process for impregnating the element with electrolyte as a true cathode. The electrolyte also functions to repair the dielectric layer.

Impregnation

⑥ Sealing

This process seals the element using the aluminum can case and sealing materials (rubber,rubber-lined cover, etc.) for keeping the case airtight.

⑦ Aging (reforming)

The process of applying voltage to a post-sealed capacitor at high temperature is called “aging”. This serves to repair defective dielectrics that have been made on the foil during the slitting or winding process.

⑧ 100% inspection and packaging

After the aging, all products shall undergo testing for checking their electrical characteristics with chip termination, lead reforming, taping etc. finished, and then be packaged.

⑨ Outgoing inspections

Outgoing inspections are performed as per standard inspection procedures.

⑩ Shipment

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2 . Basic Performance

2-1 Basic Electrical Characteristics

2-1-1 Capacitance

The larger the surface area of an electrode is, the higher the capacitance (capacity for storing electricity) is. For aluminum electrolytic capacitors, the capacitance is measured under the standard measuring conditions of 20°C and a 120Hz AC signal of about 0.5V. Generally, as the temperature rises, the capacitance increases; as the temperature decreases, the capacitance decreases (Fig. 7). With a higher frequency, the capacitance is smaller; with a lower frequency, the capacitance is larger (Fig. 8).

2-1-2 Tan δ (also called tangent of loss angle or dissipation factor)

(Fig. 9) is a simplified model of the equivalent circuit shown in (Fig. 2). For an ideal capacitor with an equivalent series resistance of R = 0, the tan δ shown in (Fig. 10) is zero. For an aluminum electrolytic capacitor, the equivalent series resistance (R) is not zero due to the presence of resistance of the electrolyte and paper separator and other contact resistances. 1/ωC and R are correlated as shown in (Fig. 10) and Equation (2).

Fig-9 Simplified equivalent circuit

Fig-10 Dissipation Factor (tan δ)

$$\tan\delta = \frac{R}{1/\omega C} = \omega CR \quad \text{.....} \quad (2)$$

ω : 2πf

π=Circular constant、f : Frequency(f = 120Hz)

2-1-3 Leakage Current (LC)

As a feature of an aluminum electrolytic capacitor, when DC voltage is applied to it, the oxide layer that acts as a dielectric in the electrolyte allows a small amount of electric current to flow in it. The small amount of current is called a leakage current (LC). An ideal capacitor does not allow the leakage current to flow (this is not the case for charging current).

The leakage current (LC) changes with time as shown in (Fig. 12). Note that LC, decreasing with time, will reach a steady-state value. Therefore, the specifications of LC are defined as a value measured several minutes after the beginning of the application of the rated voltage at 20°C. As the temperature rises, the LC increases; as the temperature decreases, the LC decreases (Fig.13). As the applied voltage decreases, the LC decreases.

Fig-7 Temperature Characteristics of Capacitance

Fig-8 Frequency Characteristics of Capacitance

Fig-11 Temperature Characteristics of tan δ

Fig-12 Leakage Current vs. Time

Fig-13 Temperature Characteristics of Leakage Current

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2-2 Frequency Characteristics of Impedance

When a capacitor is applied with a voltage with the frequency changed, the impedance (Z), a factor of preventing the AC current changes as shown in (Fig. 14). This is the impedance-frequency characteristics of the capacitor.

(Fig. 9) is a simplified model of an equivalent circuit of an aluminum electrolyte capacitor. (Fig. 14) shows dotted lines representing a breakdown of the impedance-frequency characteristic curve into components (C, R and L). As can be seen in this figure, the impedance-frequency characteristics are a composition of C, R and L frequency characteristics.

The value $1/\omega C$ shows the pure capacitive reactance graphically presented by a straight line going downward at an angle of 45°, and ωL shows the pure inductive reactance graphically presented by a straight line going upward at 45°. R shows the equivalent series resistance (ESR). At a range of lower frequencies, the R curve goes downward due to the dielectric loss frequency-dependence. At a range of higher frequencies, the R curve tends to be almost flat since resistance of electrolyte and paper separator is dominant and independent on frequency. Equation (3) shows this tendency.

$$Z=\sqrt{R^2+\left(\omega L-\frac{1}{\omega C}\right)^2} \quad \text{.....} \quad (3)$$

Because the impedance characteristics of an aluminum electrolyte capacitor depend on resistance of the electrolyte and paper separator, the Z value at the self-resonant frequency tends to be relatively higher, as shown by the solid line in (Fig. 15). The resistance of the electrolyte varies depending on temperature: as the temperature rises, the impedance decreases; and as the temperature decreases, the impedance increases, as shown in (Fig. 16).

Fig-14 Factor of Impedance Frequency

Fig-15 Frequency Characteristics of each Capacitors Impedance

Ex. 35V470μF Radial Lead Type

Fig-16 Temperature and Frequency Characteristics of Impedance・ESR

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3. Reliability

For designing the device with aluminum electrolytic capacitors, a failure rate and useful life are necessary to be considered for their reliability. The failure rate of aluminum electrolytic capacitors is approximated by the bathtub curve shown in (Fig.17).

Fig-17 Bathtub curve

ⓐ Early failure period

At the comparatively early periods of use, devices/components fail by deficiencies in design or manufacturing process or incompatibility with operation conditions. For aluminum electrolytic capacitors, these defectives are removed by debugging at one of manufacturing processes before shipments.

ⓑ Random failure period

Failure is stable low in occurrence and appears unrelated to their served term. Aluminum electrolytic capacitors are low in catastrophic failures in this period compared with semi-conductors and solid tantalum capacitors.

ⓒ Wear-out failure period

In this period, the failure rate increases with the served time. For aluminum electrolytic capacitors, since they were completed in manufacturing, the electrolyte impregnated has gradually evaporated and diffused out of the capacitors through the rubber seal materials with time, which leads to decrease in the capacitance and/or increase tanδ. When any of these values changes beyond the allowable range of specifications, the capacitors are defined as "fell into the wear-out failure". The served term until the capacitors fall into the wear-out failure period is called a useful life.

Aluminum electrolytic capacitors have two categories of failures: catastrophic failure and wear-out failure.

<Catastrophic failure>

This is a failure mode that completely destroys the function of the capacitor such as short circuit and open circuit failure.

<Wear-out failure>

This is a failure mode where the electrical parameters of the capacitor gradually deteriorate and fail. The criteria for determining if this failure has occurred depend on the purpose of a device. For each series of capacitors, the following electrical parameters have been defined as criteria in the specifications of Endurance in the catalogs or product specifications:

- Change in capacitance
- Tan δ
- Leakage current

Failure rates are often measured in units of % per 1000 hours (10^{-5}/hour). For higher reliability devices designed with a smaller failure rate, units of Failure In Time (FIT) (10^{-9}/hour) is used.

Aluminum electrolytic capacitors are considered as components of wear-out failure mode, the electrical characteristics of which gradually deteriorate and their failure rate increases with time. In general, the failure rate in FIT is determined by total component-hours (product of the number of tested components and test hours).

Due to the definition of FIT, the same FIT rate can be calculated in both cases of testing on the large number of tested components and also testing for long test periods of time. However, these cases mean differently for aluminum electrolytic capacitors. Using the failure rate is not suited to express the reliability of aluminum electrolytic capacitors, but the electrical characteristics based lifetime in hour should be considered to express the reliability.

Also, there are MTBF (Mean Time Between Failures) and MTTF (Mean Time To Failure) to express reliability. The latter is applicable for aluminum electrolytic capacitors because they are categorized into a group of non-repairable systems, equipment and devices for which MTTF is applicable.

4. Failure Modes

Failure modes depend on the application conditions that lead to fail. (Fig. 18).

Fig-18 Failure Modes

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5 . Lifetime of Aluminum Electrolytic Capacitors

The lifetime of aluminum electrolytic capacitors is largely dependent on the application conditions. Environmental factors include temperature, humidity, atmospheric pressure and vibrations. Electrical factors include operating voltage, ripple current and charge-discharge. Where the capacitors are used in a normal filtering circuit, ambient temperature and heating due to the ripple current are crucial factors for determining the lifetime of the capacitors. These factors are included to the lifetime specifications titled "Endurance" on the catalogs or product specifications.
For applications subject to high humidity and/or continuous vibrations, or subject to frequent charge and discharge operations, the endurance of individual conditions should be considered.

5-1 Ambient Temperature Effect on Lifetime

The lifetime of aluminum electrolytic capacitors is affected mainly by the loss of electrolyte as the result of diffusion through the rubber seal materials, which leads to a decrease in capacitance and increase in tanδ.
The relationship of temperature to the diffusion of electrolyte follows the Arrhenius' Law (Equations (4) and (5)):

$$k = Ae^{\frac{-E}{RT}} \quad \text{.....(4)}$$

$$\ln k = \left(\frac{-E}{RT}\right) + \ln A \quad \text{.....(5)}$$

k : Reaction rate constant
A : Frequency factor
E : Activation energy
R : Gas constant (8.31J/deg)
T : Absolute temperature (K)

Applying Equation (5) to the lifetime of the capacitors brings Equation (6), which is converted to Equation (7):

$$\log\left(\frac{Lx}{Lo}\right) = \frac{E}{2.303R}\left(\frac{1}{Tx} - \frac{1}{To}\right) \text{.....(6)}$$

$$\log Lx = \frac{E}{2.303R}\left(\frac{1}{Tx} - \frac{1}{To}\right) + \log Lo \quad \text{.....(7)}$$

Practical estimation of the lifetime has been using Equation (8) as an approximation:

$$Lx = Lo \cdot Bt^{(To-Tx)/10} \quad \text{.....(8)}$$

Lo : Specified lifetime (hour) with the rated voltage applied (or the rated ripple current superimposed to a DC voltage) at the upper limit of the category temperature. Refer to the lifetime specifications of individual products.
Lx : Estimated life on actual usage (hour)
To : Maximum Category Temperature (℃)
Tx : Actual Ambient Temperature (℃)
Bt : Temperature acceleration factor

Where, the temperature acceleration factor (BT) is approximately 2 over an ambient temperature range from 60°C to 95°C, which means that the lifetime is approximately halved for every 10°C rise in ambient temperature. However, according to the Arrhenius Equation (6), the reciprocal of T is directly proportional to the logarithm of lifetime, which means that, strictly speaking, there is the temperature range where the theory of lifetime reducing by half at every 10°C rise is not applied. (Fig. 19).

Especially for capacitors whose maximum operating temperature is a 105°C or higher, the temperature acceleration factor (BT) needs to be modified depending on temperature ranges of the lifetime estimation.
For details, please consult us.

For lifetime estimation at a lower-temperature range, evaluation test data have not been obtained, and for evaluating long term endurance, it is necessary to take into account some additional factors such as deterioration of the rubber seal materials as well as the diffusion of electrolyte. Accordingly, in Equation (8), Tx should be 40°C at the lowest for the lifetime calculation purpose, and also the estimated lifetime (Lx) should be 15 years at the longest.

Fig-19 Estimated result by Law of 10℃ 2 times and Law of Arrhenius

5-2 Applying Voltage Effect on Lifetime

Where a capacitor is used at lower than the rated voltage, the lifetime may not be adversely affected, which means that the effect of the applying voltage is negligibly small, while the effect of the ambient temperature and heat generation due to ripple current is significant.

(Fig-20)

Fig-20 Endurance (measured by each apply voltage, result curves are overlapped)
Note: Due to the very small effect of the applying voltages, the plots cannot be distinguished from one another.

However, for capacitors of larger size and higher rated voltage contain a larger volume of electrolyte, difference in applying voltages can affect degradation of the oxide layer, other than the diffusion of electrolyte.
Therefore, for screw mount terminal type capacitors with the rated voltage of 350Vdc or higher, the lifetime estimation includes the effect of applying a lower voltage than the rated voltage (derating voltage).

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5-3 Ripple Current Effect on Lifetime

Since an aluminum electrolytic capacitor has a larger tanδ than other types of capacitors, the capacitor produces more internal heat when a ripple current flows through it. The temperature rise due to this heat may significantly affect the lifetime of the capacitor. This is the reason why ripple current ratings are specified for capacitors.

5-3-1 Heat Generation due to Ripple Current

Power consumption by the ripple current can be expressed as follows:

$$W = I_R^2 R + VI_L \quad \cdots\cdots (9)$$

W : Internal power dissipation
I_R : Ripple Current
R : Internal Resistance (Equivalent Series Resistance)
V : Applied voltage
I_L : Leakage Current

Leakage current I_L at the maximum operating temperature can be 5 to 10 times higher than the values-measured at 20°C. However, considering $I_R >> I_L$, the above equation can be simplified as Equation (10).

$$W \fallingdotseq I_R^2 R \quad \cdots\cdots (10)$$

To obtain the temperature at which equilibrium is achieved between heat generation and dissipation, derive Equation (11).

$$I_R^2 R = \beta A \Delta T \quad \cdots\cdots (11)$$

β : Radiation Constant
A : Surface area of can case (m^2)
ΔT : Temperature-rise due to the Ripple Current (℃)

$$A = \frac{\pi}{4} D (D + 4L)$$

D : Can Diameter (m)
L : Can Length (m)

From the above equation, the internal temperature rise (ΔT) is given by Equation (12):

$$\Delta T = \frac{I_R^2 R}{\beta A} \quad \cdots\cdots (12)$$

Also, for a ripple frequency of 120Hz, Equation (12) for calculating ΔT is rewritten as Equation (13):

$$\Delta T = \frac{I_R^2 R}{\beta A} = \frac{I_R^2 \tan\delta}{\beta A \omega C} \quad \cdots\cdots (13)$$

Where $R = \frac{\tan\delta}{\omega C}$

$\tan\delta$: Dissipation Factor at 120Hz
ω : $2\pi f$ (f = 120Hz)
C : Capacitance at 120Hz (F)

An approximate value of ripple current-caused ΔT can be calculated using Equation (14):

$$\Delta T = (Ix/Io)^2 \times \Delta To \quad \cdots\cdots (14)$$

Io : Rated ripple current (Arms), frequency compensated, at the upper limit of the category temperature range
Ix : Operating ripple current (Arms) actually flowing in the capacitor
ΔTo : Rise in internal temperature due to the rated ripple current (℃): different for each product series. Please consult us.

There are some product families that can accept a higher ripple current than the rated value providing that ambient temperature Tx is lower than the upper limit of the category temperature range. However, in this case, remember that the lifetime decreases due to the higher ΔT due to the ripple current. Be sure that ΔT does not exceed the specified limit that has been determined as a function of ambient temperature. Note that the core temperature limit of the element is shown by [Tx + ΔT limit].

Examples of ΔT limits at some ambient temperatures are shown below.

Ambient Temp Tx	85℃ less or equal	105℃
Limit value of ΔT	15℃	5℃

Each product family has a different ΔT limit. For details, consult us.

5-3-2 Ripple Current and Frequency

The ripple current rating is specified normally by the effective value (r.m.s value) of 120Hz or 100kHz sine wave. However, since the equivalent series resistance (ESR) of a capacitor is frequency-dependent, the allowable ripple current depends on the frequency. Where the operating ripple current consists of a mains power frequency element and switching frequency element(s) like switching mode power supplies do, the internal power loss is expressed by Equation (15):

$$W = I_{f1}^2 R_{f1} + I_{f2}^2 R_{f2} + \ldots\ldots I_{fn}^2 R_{fn} \quad \cdots\cdots (15)$$

W : Power consumption
I_{f1}、I_{f2}、…I_{fn} : Ripple current (Arms) at frequency f1…fn
R_{f1}、R_{f2}、…R_{fn} : ESR (Ω) at f1…fn

Given a frequency compensation factor (Frequency Multiplier) = F_{fn} and reference frequency for the ripple current = fo, $R_{fn} = R_{fo}/F_{fn}^2$ is obtained. Therefore, the ripple current at any frequency can be converted into its r.m.s. value at the reference frequency (I_{fo}) using Equation (16):

$$I_{fo} = \sqrt{(I_{f1}/F_{f1})^2 + (I_{f2}/F_{f2})^2 + \ldots\ldots (I_{fn}/F_{fn})^2} \quad \cdots\cdots (16)$$

I_{fo} : Reference ripple current (Arms), i.e., that at the reference frequency
F_{f1}、F_{f2}、…F_{fn} : Frequency compensation factor (Frequency Multiplier) at frequency f1…fn (Refer to the catalogs)

Note that the ESR depends on the temperature and the value of β depends on the installation conditions of the capacitor on the board. To determine more accurate values of ΔT, they can be actually measured using a thermocouple.

5-3-3 Lifetime Estimation

Equations (17) through (19) can be used for estimating the lifetime of a non-solid aluminum electrolytic capacitor based on the ambient temperature, the rise of internal temperature due to ripple current, and operating voltage applied.

For a capacitor whose Endurance specifications are defined by only "the DC rated voltage".

$$Lx = Lo \times 2^{\frac{To-Tx}{10}} \times 2^{\frac{-\Delta T}{5}} \quad \cdots\cdots (17)$$

For a capacitor whose Endurance specifications are defined by "the rated ripple current with a DC voltage superimposed".

$$Lx = Lr \times 2^{\frac{To-Tx}{10}} \times 2^{\frac{\Delta To-\Delta T}{5}} \quad \cdots\cdots (18)$$

For a screw terminal type capacitor with the rated voltage of 350Vdc or higher

$$Lx = Lr \times 2^{\frac{To+5-Tx-25}{10}} \times 2^{\frac{25-\Delta T}{A}} \times Kv \quad \cdots\cdots (19)$$

Lo : Specified lifetime (hour) at the upper limit of the category temperature range and at the rated voltage
Lr : Specified lifetime (hour) at the upper limit of the category temperature range and at the rated ripple current superimposed to a DC voltage
Lx : Estimation of actual lifetime (hour)
To : Upper limit of the category temperature range (℃)
Tx : Actual ambient temperature of the capacitor (℃) Use 40℃ if the actual ambient temperature is below it.
ΔT : Rise of internal temperature due to actual ripple current (℃)
*ΔTo : Rise of internal temperature due to the rated ripple current (℃)
*A : This factor depends on the ripple frequency and internal temperature rise.
Kv : Derating voltage factor

For the values marked with * , consult us.

Please consult us about lifetime equations for the series of the category temperature 125℃ or more.

Subject series : MHS, MVH, MHL, MHB, MHJ, MHK, GPA, GVA, GXF, GXE, GXL, GPD, GVD.

Note that the calculation results above are not considered as a guaranteed value. When designing the lifetime of a device, please select a capacitor that has an extra margin against the device lifetime requirements. Also, where the estimation result calculated exceeds 15 years, please consider 15 years to be a maximum. If 15 years or more may be required as an expected lifetime, please consult us.

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5-4 Charge and Discharge Operation Effect on Lifetime

Applying a voltage to an aluminum electrolytic capacitor makes the electric charges accumulate on the anode foil dielectric. Discharging the electricity through a discharging resistance makes the electric charges move to the cathode foil and cause chemical reactions between the cathode aluminum and electrolyte, thereby forming a dielectric oxide layer.

When this charge and discharge is repeatedly operated, the chemical reactions proceed to further form the oxide layer on the cathode foil, causing the capacitance of the cathode foil to reduce and thereby reducing the capacitance of the capacitor. Moreover, the chemical reactions bring heat and gases. Depending on the charge and discharge conditions, the internal pressure may increase, the pressure relief vent may open or the capacitor may have destructive failures. Consult us for using a capacitor with the following applications:

- Frequently repeating power on/off.
- Repeating rapid charge and discharge operations at a short interval cycle.
- Repeating charge and discharge operations with a large voltage drop.

$$Q = C_A V_1$$

C_A : Capacitance of Anode Foil
C_C : Capacitance of Cathode Foil
V_1 : Voltage of Power Supply
V_2 : Applied Voltage to Cathode Foil

Fig-21 Charge Condition at Charge

Fig-22 Charge Condition at Discharge
(Disconnect V1 and Discharged condition)

$$Q = C_A V_2 + C_C V_2$$

then $C_A V_1 = C_A V_2 + C_C V_2$

$$V_2 = \frac{C_A V_1}{C_A + C_C} \quad \cdots\cdots (20)$$

Figures 23 through 25 show some test data of special-design capacitors for charge and discharge application, compared with general-purpose capacitors.

Fig-23 Rapid charge and discharge characteristics
(Effects of Frequency)

Fig-24 Rapid charge and discharge characteristics
(Effects of Applied Voltage)

Fig-25 Rapid charge and discharge characteristics
(Effects of Ambient Temperature)

5-5 Inrush Current

For the power supply inrush current that can occur on the start-up of a power supply or on the charge of a welding machine lasts only milliseconds, but its magnitude may reach 10 to 1,000 times more than the normal current. Usually, a single, non-repeated inrush current produces a negligibly small amount of heat, so it does not matter.

However, frequently repeating inrush currents may heat up the element inside a capacitor more than the allowable limit and/or overheat the external terminal connections or the connections between the internal lead and foil electrode.

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5-6 Abnormal Voltage Effect on Lifetime

Applying abnormal voltage can increase the internal pressure with heat and gases produced, causing the pressure relief vent to open or the capacitor to have destructive failures.

5-6-1 Overvoltage

Applying a voltage higher than the rated voltage will cause chemical reactions (formation of dielectric) to occur on the anode foil with the leakage current rapidly increasing, which produces heat and gases and thereby increases the internal pressure.
The reactions are accelerated by the voltage, current density and ambient temperature, causing the pressure relief vent to open or the capacitor to have destructive failures. It may also accompany a reduction in capacitance and an increase in tan δ as well as an increase in the leakage current, which can lead to internal short-circuiting failure. An example of capacitor overvoltage characteristics is shown in Fig. 26.

Fig-26 Applied overvoltage characteristic at 105℃

5-6-2 Reverse Voltage

Applying a reverse voltage will cause chemical reactions (formation of dielectric) to occur on the cathode foil, and, as is the case with overvoltage, the leakage current will rapidly increase with heat and gases generating and thus the internal pressure increases.
The reactions are accelerated by the voltage, current density and ambient temperature. It may also accompany a reduction in capacitance and an increase in tan δ as well as an increase in the leakage current. An example of capacitor reverse-voltage characteristics is shown in Fig. 27.
A reverse voltage of as small as 1V can cause the capacitance to decrease. A reverse voltage of 2 to 3V can shorten lifetime due to a reduction in capacitance, increase in tan δ , and/or increase in leakage current. A reverse voltage of even higher value can open the pressure relief vent or lead to destructive failures (Fig. 27).

Fig-27 Applied Reverse voltage characteristic at 105℃

5-6-3 Do not Use Aluminum Electrolytic Capacitors in an AC Circuit

Using an aluminum electrolytic capacitor in an AC circuit will result in the same situation as that with a positive potential being applied to the cathode (like a reverse voltage) and with an excessively large ripple current flowing in the capacitor, which may increase the internal pressure due to the generation of heat and gases, open the pressure relief vent, leak the electrolyte with the rubber seal bung expelled or cause the capacitor to blow up or catch fire in the worst case. If the capacitor blows up, it may scatter flammable materials such as electrolyte and element-supporting wax materials, which can lead to short-circuiting of the device. Therefore, do not use aluminum electrolytic capacitors in any of the AC circuits.

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6.Effect of Halogens

Aluminum electrolytic capacitors are sensitive to contamination of halogen ions (especially to chlorine and bromine ions) though the degree of the effect depends on the properties of the electrolyte and/or sealing materials used in the capacitors.
For using a halide-containing flux, solvent (cleaning agent, adhesive or coating materials) or fumigant, the halide may penetrate into the capacitor through the rubber seal materials and cause the following corrosion reactions to occur. These reactions can lead to an increase in leakage current, opening of the pressure relief vent, and/or open-circuit failure in the capacitor. The reactions are accelerated as the voltage and/or temperature rises.

[Corrosion reactions]

a) Decomposition of halides

$RX + H_2O \rightarrow ROH + H^+ + X^-$ ..... (21)

b) Corrosion reactions

$Al_2O_3 + 6H^+ + 6X^- \rightarrow 2AlX_3 + 3H_2O$ ..... (22)

$Al + 3X^- \rightarrow AlX_3 + 3e^-$ ..... (23)

$\Downarrow$

$2AlX_3 + 6H_2O \rightarrow 2Al(OH)_3 + 6H^+ + 6X^-$ ..... (24)

RX : Halogenated compound

X- : Halogen ions (Cl^-, F^-, Br^-)

Halides that penetrated the element inside a capacitor make contact with the electrolyte, by which the halides are hydrolyzed and release halogen ions as shown on Reaction (21). The halogen ions then attack aluminum by anodic half-cell reaction, producing AlX_3 (Reaction 22 and 23).
AlX_3 is then hydrolyzed, which is decomposed to aluminum hydroxide and the halogen ions (Reaction (24)). The halogen ions reproduced are repeatedly used and reproduced by the reactions of (22) ~ (24), and then the corrosion develops endlessly.
Shown below are precautions for use of flux, cleaning agents, adhesive, coating materials and fumigant.

6-1 Effect of Flux

Usually flux products contain an activator of ionic halide system, which has been associated with the corrosion issues of capacitors, and nowadays non-ionic halide system type flux products have been increasingly available on the market. Some of the latter flux type have been classified into the so called "non-halogen flux" or "halogen-free flux", and parts of the "non-halogen" or "halogen-free" flux products may contain a large amount of non-ionic halides, which can also adversely affect the capacitors.

6-2 Cleaning Agents

Where cleaning the solvent resistance type of aluminum electrolytic capacitors, confirm the following conditions:

a. Control the contamination (the conductivity, pH, specific gravity, water content, etc.) of the cleaning agents.
b. After the cleaning, do not leave the capacitors (assembly boards) in an environment of cleaning agent-rich or in a closed container. Sufficiently evaporate the residual cleaning agent from the assembly boards and the capacitors by forced hot air at temperatures less than the upper limit of category temperature range for more than 10 minutes.
In general, aluminum electrolytic capacitors are sensitive to contamination of halogen ions (particularly to chlorine ions). Depending on the properties of the electrolyte and rubber seal materials used in a capacitor, the halogen ions lead up to catastrophic failures on the capacitor. Where the inside of a capacitor has been contaminated with more than a certain amount of halogen ions and the capacitor is in use, the corrosion reaction of aluminum occurs. The corrosion causes the capacitor to have a significant increase in leakage current with heat produced, open the pressure relief vent and become open circuit mode failure.
Due to global environmental issues (greenhouse effects and other environmental destruction by depletion of the ozone layer), the conventional cleaning solvents of CFC 113, Trichloroethylene and 1,1,1-trichloroethylene were replaced by substitutes.

6-2-1 Alcohol Cleaning Agents

①Fatty-alcohol cleaning agents (New type of solvent)
Pine Alpha ST-100S (Arakawa Chemical)
Clean Through 750H, 750K, 750L, and 710M (Kao)
Technocare FRW-14 through 17 (GE Toshiba Silicones)
② IPA (Isopropyl alcohol)

[Compatible capacitor products]

Terminal Shape	Subject Series
Surface Mount Type	All Series
Radial Lead Type	All Series
Snap-in Type	All Series (Less and equal 100V_{dc})

[Cleaning conditions]
Either of Immersion or ultrasonic cleaning, for a maximum of 10 minutes at a maximum liquid temperature of 60°C.

[Precautions]

a. Make sure that the markings on a capacitor are not rubbed against any other component or the PC board during cleaning. Note that shower cleaning can cause the markings on the capacitor to be washed off.
b. Depending on the cleaning method, the markings may be erased or blur.
c. A drying process following a water cleaning or rinsing process may cause the outer sleeve materials of a capacitor to swell or shrink.
d. After using a weak-alkaline cleaning agent (e.g. Clean Through 750H), rinse with water to make sure that no alkaline residue is left on the capacitor.
e. Control a flux concentration in a cleaning agent within 2 wt%.
f. IPS (Isopropyl Alcohol), if containing xylene or other solvent to improve its cleanability, may swell the rubber seal materials.
g. Depending on the type of cleaning agent or conditions, note that the outer sleeve of a capacitor may lose a gloss or whiten in appearance.

6-2-2 HCFC (Freon-225), as Alternative CFCs

AK225AES (Asahi Glass)

[Cleaning conditions]
Solvent resistant type capacitors, which were originally developed to intend to resist Freon TE or Freon TES, are also capable of withstanding either of immersion or ultrasonic cleaning, for a maximum of 5 minutes (or 2 minutes for KRE series or 3 minutes for SRM series). However, in view of global environmental issues, HCFCs has not been recommended.

[Compatible capacitor products]

Terminal Shape	Subject Series
Surface Mount Type	MVA(~63V_{dc}), MVE(~63V_{dc}), MZR, MZJ, MZA, MVY(6.3 ~ 63V_{dc}), MZF, MZE ,MZK, MLA, MLF, MLE, MLK, MVL, MVJ, MHS, MVH(~50V_{dc}), MHL, MHB, MHJ, MHK
Radial Lead Type	SRM, KRE, KMA, SRG, KRG, KMQ(~100V_{dc}),SMG(~250V_{dc}), KMG(~250V_{dc}), LZA, LXZ, LXY, LXV, LE, FL, GPA, GVA, GXF, GXE(~50V_{dc}), GXL, GPD, GVD, LBK, LBG

When a capacitor is mounted closely flush on the PC board, a residual cleaning agent may be left in the gap between the body of the capacitor and PC board surface. Dry out the residue with a forced hot air of 50 to 85°C for 10 minutes or more.

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6-2-3 Other Solvents

To avoid capacitor failures, do not use the following cleaning agents:

- Halogenated system: causes capacitor failures due to corrosion.
- Alkali system: corrodes (dissolves) the aluminum can case.
- Terpene and petroleum system: deteriorates the rubber seal materials.
- Xylene: deteriorates the rubber seal materials as well.
- Acetone: erases the markings printed on a capacitor.

6-3 Adhesive and Coating Materials

To use adhesives and/or coating materials for aluminum electrolytic capacitors, make sure of the following conditions:

a. Do not use any of adhesive or coating materials containing halogenated solvents.
b. No flux residue nor stain is left between the rubber seal of a capacitor and PC board.
c. Dry the capacitor to remove residual cleaning agents before applying adhesive and coating materials. Do not cover up the entire surface of the rubber seal of the capacitor with adhesive and coating materials.
d. Improper heating and/or curing conditions for adhesives and coating materials may cause the sleeve to swell or shrink. Please consult us for proper conditions.
e. For a non-solid aluminum electrolytic capacitor, covering up the entire surface of the rubber seal with resin mold materials will obstruct the normal diffusion of internal hydrogen gas from the capacitor and result in serious failures. Also, where the adhesive and coating materials contain a large amount of halogen ions, the halogen ions will contaminate the inside of the capacitor through the rubber seal materials, which cause the capacitor to become a failure.
f. The outer sleeve of a capacitor may lose a gloss or whiten in appearance depending on solvent materials that the adhesive or coating materials contains.
g. Some adhesives or coating materials contain organic solvent such as Xylene. Xylene can deteriorate the rubber seal materials, which cause the flux ingredients to penetrate into the capacitor.

6-4 Effect of Fumigation

In exporting or importing electronic devices, they may be exposed to fumigation with halide such as methyl bromide. Where aluminum electrolytic capacitors exposed to halide such as methyl bromide, the capacitors will be damaged with the corrosion reaction with the halogen ions.
For the export and import, Nippon Chemi-Con considers using some packaging method and so forth that the fumigation is not required to. For customers to export or import electronic devices, semi-assembly products or capacitor components, confirm if they will be exposed to fumigation and also consider final condition of packaging. (Note that either cardboard or vinyl package has a risk of fumigation gas penetration.)

7. Recovery Voltage

Where a capacitor is once charged and discharged with both of the terminals short-circuiting and then left the terminals open for a while, a voltage across the capacitor spontaneously increases again. This is called "recovery voltage phenomenon". The mechanism for this phenomenon can be interpreted as follows:
When charged with a voltage, the dielectric produces some electrical changes within, and then the inside of the dielectric is electrified with the opposite polarities (dielectric polarization).
The dielectric polarization occurs in both ways of proceeding rapidly and slowly. When a charged capacitor was discharged until the voltage across the capacitor disappears, and then being left the terminals open, the slow polarization will discharge within the capacitor and appear as recovery voltage.
(Fig. 28).

The recovery voltage changes with time as sown in Fig. 29. Its peak will appear 10 to 20 days after the terminals are opened, with gradual weakening thereafter. Larger sized capacitors (screw terminal type and snap-in type) may produce larger recovery voltage.
With a recovery voltage residing in a capacitor, carelessly short-circuiting the terminals can cause sparks to occur, which may scare workers and/or damage low-voltage operating components such as CPU's and memories in the device circuit. To avoid this trouble, discharge the capacitor through 100 - 1kΩ resistors before use. Also, Nippon Chemi-Con may provide some solutions with some packaging method for it. Please consult us.

Fig-28 Model of Recovery Voltage

Fig-29 Change of Recovery Voltage

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8. Storage

Some characteristics of an aluminum electrolytic capacitor are temperature-dependent. The higher the temperature is, the more deteriorated the capacitor will be. An increase in temperature accelerates the increase in leakage current and tanδ and the decrease in capacitance. Leaving a capacitor exposed to high humidity for long hours may lead to discoloration of the lead wires and terminals, and poor solderability. To store aluminum electrolytic capacitors, keep them at normal temperature and humidity without exposure to direct sunlight.

Leaving them exposed to high temperatures (higher than the normal ambient temperature) for long periods of time may lead to chemical reactions between the anode oxide layer and electrolyte, which drop the withstanding voltage and increase leakage current. If this is the case, applying the rated voltage to the capacitor will lead to dielectric breakdown due to the heat produced with the large leakage current, which finally causes the pressure relief vent to open.

Capacitors that have been stored for long periods of time should be subjected to a voltage treatment process (see Note 1) which will reform the dielectric (Al_2O_3) by electrolyte and return the leakage current to the initial level. Leakage current increase during storage will vary with the withstanding voltage of a capacitor. In general, the higher the rated voltage, the larger increased the leakage current tends to be. Also, since storing for long period of time may shorten the lifetime of the capacitors, consider storage conditions according to the requirements of device life expectancy.

(Note 1) In the voltage treatment process, connecting resistor (around 1kΩ) in series with the capacitor, applied the rated voltage and then be kept the rated voltage for 30 to 60 minutes.

Fig-30 Temperature Characteristics of Storage

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9. Tips for Selecting Capacitors Appropriate for Individual Applications

Aluminum electrolytic capacitors are used mainly for the filtering application of power supplies. Select appropriate capacitors for the specific requirements of each application, referring to the following examples for typical applications:

9-1 Input Filtering Capacitors for Switching Mode Power Supplies

An input filtering capacitor functions to smooth 50-120 Hz waveforms that come from a rectifying circuit, the waveforms of which are superimposed with the ripples with the switching frequency from the switching stage where the capacitor supplies the electric power. Therefore, the capacitor must be capable of managing both ripple currents with each frequency. The ESR of a capacitor is frequency-dependent, so that a ripple current of different frequency produces a different thermal energy in the capacitor.
For PFC power supplies or lighting ballasts, capacitors are subjected to ripple current whose frequency is several dozens of kHz to 100kHz. Therefore, to select capacitors, take their impedance characteristics into consideration.

●Recommended input filtering capacitors for SMPS

Characteristics / Type	85℃		105℃		
	Standard	Longer Life	Standard	Compact	Longer Life
Radial Lead	—	—	KMQ	PAG	KXJ
Snap-in	SMQ	SMM	KMQ	KMS,KMR	LXS,LXM

9-2 Output Filtering Capacitors for Switching Mode Power Supplies

In the output filtering, a capacitor must be capable of managing a ripple current with the frequency as high as around 100 kHz. Therefore, Nippon Chemi-Con provides excellent product lineups with low impedance characteristic at high frequencies, including high temperature and long-life versions, which can be chosen according to the application purpose.
The 125˚C maximum temperature series capacitors have a shorter lifetime than the “Long Life” series of 105˚C max. temperature though the electrical characteristics are highly stable. The “wide temperature range” series has two subseries that differ by the applicable temperature range: -55 to 105˚C and -40 to 125˚C . The “Long Life” series capacitors have been designed for specializing lower impedance and also longer lifetime. Compared to the “wide temperature range” series, the Long Life series can serve longer with the lower impedance, though the maximum operating temperature is limited to 105˚C and the electrical characteristics are large in change over the temperature range.

●Recommended output filtering capacitors for SMPS

Characteristics / Type	105℃		125℃
	Standard	Low Z	High Temp
Wide Temp Range	LXY	LXZ	GXE
Longer Life	KY	KZM,KZN	—

9-3 Filtering Capacitors for Inverter Main Circuits

These capacitors are used in a similar way to those for the input of the switching mode power supplies. Additionally, please understand the following precautions:

For the filtering circuit for 400Vac line, two capacitors of each a rated voltage 350 to 400Vdc can be used with being connected in series. In the series connection, voltages across the individual capacitors during charging depend on their individual capacitance values. After completion of the charging, the voltages come to depend on their leakage current values as the voltage distribution to the individual capacitors inversely corresponds to their leakage current values. For the voltage not to exceed the rated value after the charging is completed, balancing resistors should be connected in parallel with each capacitor. For guidance on choosing balancing resistors, please consult us.
Where capacitors connected in series are frequently charged and discharged, individual charging voltages depend on the variations in their capacitance values. Therefore, keeping the voltage balance will be difficult even if balancing resistors are employed. For servo amplifiers and other application where the voltage fluctuates frequently due to regeneration, use capacitor families that have been especially designed for intensive charge and discharge operations, or consult us for individual designs.

●Recommended capacitors for inverter main circuits

Characteristics / Type	85℃		105℃	
	Standard	Longer Life	Standard	Longer Life
Snap-in	SMQ	SMM	KMQ	LXS,LXM
Screw Mount	RWE	RWF,RWH	KMH	LXA,LXR

●Recommended capacitors for servo amplifiers

Characteristics / Type	85℃	105℃
	Standard	High Temp
Snap-in	—	KMV
Screw Mount	RWV	—

9-4 Capacitors for Control Circuits

These capacitors are relatively small in capacitance, and therefore the case size is also small. However, the smaller the case size, the shorter the lifetime of a capacitor. Moreover, if a capacitor is located near a heat source, the capacitor’ s lifetime may be shortened. Consider selecting an adequate capacitor in lifetime balancing with other capacitors.

●Recommended capacitors for control circuits

Characteristics / Type	105℃	
	5L、7L	11L
Radial Lead	FL	KY,KYB,LE

9-5 Photoflash Capacitors

These capacitors are specially designed so that much higher energy-volumetric efficiency can be obtained. Therefore, these capacitors are limited in application. Note that they cannot substitute filtering capacitors. Detailed specifications of these capacitors should be determined specifically for each photoflash application through discussions with a customer.

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Return Group Chart

Reliability Test Data

MVL Series

●105℃ Endurance

MVH Series

●125℃ Endurance

MVY Series

●Impedance/ESR vs Frequency

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NIPPON CHEMI-CON

RELIABILITY TEST DATA

KZE Series

●105℃ Endurance with Rated Ripple Current

●105℃ Shelf Life

●Impedance-Frequency Characteristics

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RELIABILITY TEST DATA

LXZ Series

●105℃ Endurance with Rated Ripple Current

●Impedance-Frequency Characteristics

LXY Series

●105℃ Endurance with Rated Ripple Current

●Impedance-Frequency Characteristics

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LXV Series

○ LXV 10V 820μF φ5×11.5L
● LXV 25V 220μF φ8×15L
▲ LXV 35V 560μF φ12.5×20L

●105℃ Endurance with Rated Ripple Current

●105℃ Shelf Life

●Temperature Characteristics

●Impedance-Frequency Characteristics

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RELIABILITY TEST DATA

GXE Series

●125℃ Endurance with Rated Ripple Current

●Impedance-Frequency Characteristics

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SMM Series

●85℃ Endurance with Rated Ripple Current

KMM Series

●105℃ Endurance with Rated Ripple Current

LXG Series

●105℃ Endurance with Rated Ripple Current

LXH Series

●105℃ Endurance with Rated Ripple Current

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RWE/RWF/RWL Series

RWE/RWF series

●85℃ Endurance with Rated Ripple Current

RWL series

●85℃ Endurance with Rated Ripple Current

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Return Group Chart

Appendix

Appendix (Part number)

◆Capacitance code

* How to use the table

	1st
2nd	Cap. Value

Capacitance value part

2nd	1st								
	1	2	3	4	5	6	7	8	9
0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0
A	10.5	20.5	30.5	40.5	50.5	60.5	70.5	80.5	90.5
1	11.0	21.0	31.0	41.0	51.0	61.0	71.0	81.0	91.0
B	11.5	21.5	31.5	41.5	51.5	61.5	71.5	81.5	91.5
2	12.0	22.0	32.0	42.0	52.0	62.0	72.0	82.0	92.0
C	12.5	22.5	32.5	42.5	52.5	62.5	72.5	82.5	92.5
3	13.0	23.0	33.0	43.0	53.0	63.0	73.0	83.0	93.0
D	13.5	23.5	33.5	43.5	53.5	63.5	73.5	83.5	93.5
4	14.0	24.0	34.0	44.0	54.0	64.0	74.0	84.0	94.0
E	14.5	24.5	34.5	44.5	54.5	64.5	74.5	84.5	94.5
5	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	95.0
F	15.5	25.5	35.5	45.5	55.5	65.5	75.5	85.5	95.5
6	16.0	26.0	36.0	46.0	56.0	66.0	76.0	86.0	96.0
G	16.5	26.5	36.5	46.5	56.5	66.5	76.5	86.5	96.5
7	17.0	27.0	37.0	47.0	57.0	67.0	77.0	87.0	97.0
H	17.5	27.5	37.5	47.5	57.5	67.5	77.5	87.5	97.5
8	18.0	28.0	38.0	48.0	58.0	68.0	78.0	88.0	98.0
J	18.5	28.5	38.5	48.5	58.5	68.5	78.5	88.5	98.5
9	19.0	29.0	39.0	49.0	59.0	69.0	79.0	89.0	99.0
K	19.5	29.5	39.5	49.5	59.5	69.5	79.5	89.5	99.5

For less than 10μF, a decimal point position is displayed with R.
For 10μF or more, capacitance code is set to the first 2 digits and index (1digit).
Treatment of fraction (Refer to the table)

Example of conversion

Real cap.	The first 2 digits	Treatment of fraction	Code		
			11th	12th	13th
10.0μF →	10.0 →	10.0 →	1	0	0
10.1μF →	10.1 →	10.0 →	1	0	0
10.2μF →	10.2 →	10.0 →	1	0	0
10.3μF →	10.3 →	10.5 →	1	A	0
10.4μF →	10.4 →	10.5 →	1	A	0
10.5μF →	10.5 →	10.5 →	1	A	0
10.6μF →	10.6 →	10.5 →	1	A	0
10.7μF →	10.7 →	10.5 →	1	A	0
10.8μF →	10.8 →	11.0 →	1	1	0
10.9μF →	10.9 →	11.0 →	1	1	0
11.0μF →	11.0 →	11.0 →	1	1	0
132μF →	13.2 →	13.0 →	1	3	1
133μF →	13.3 →	13.5 →	1	D	1
167μF →	16.7 →	16.5 →	1	G	1
168μF →	16.8 →	17.0 →	1	7	1
1110μF →	11.1 →	11.0 →	1	1	2
1340μF →	13.4 →	13.5 →	1	D	2
13200μF →	13.2 →	13.0 →	1	3	3
13600μF →	13.6 →	13.5 →	1	D	3
270000μF →	27.0 →	27.0 →	2	7	4

◆Case length (Radial lead type)

Case length [mm]	16th	17th
0.0	–	–
0.1	0	B
0.2	0	C
0.3	0	D
0.4	0	E
0.5	0	F
0.6	0	G
0.7	0	H
0.8	0	J
0.9	0	K

Case length [mm]	16th	17th
1.0	0	1
1.1	1	B
1.2	1	C
1.3	1	D
1.4	1	E
1.5	1	F
1.6	1	G
1.7	1	H
1.8	1	J
1.9	1	K

Case length [mm]	16th	17th
2.0	0	2
2.1	2	B
2.2	2	C
2.3	2	D
2.4	2	E
2.5	2	F
2.6	2	G
2.7	2	H
2.8	2	J
2.9	2	K

Case length [mm]	16th	17th
3.0	0	3
3.1	3	B
3.2	3	C
3.3	3	D
3.4	3	E
3.5	3	F
3.6	3	G
3.7	3	H
3.8	3	J
3.9	3	K

Case length [mm]	16th	17th
4.0	0	4
4.1	4	B
4.2	4	C
4.3	4	D
4.4	4	E
4.5	4	F
4.6	4	G
4.7	4	H
4.8	4	J
4.9	4	K

Case length [mm]	16th	17th
5.0	0	5
5.1	5	B
5.2	5	C
5.3	5	D
5.4	5	E
5.5	5	F
5.6	5	G
5.7	5	H
5.8	5	J
5.9	5	K

Case length [mm]	16th	17th
6.0	0	6
6.1	6	B
6.2	6	C
6.3	6	D
6.4	6	E
6.5	6	F
6.6	6	G
6.7	6	H
6.8	6	J
6.9	6	K

Case length [mm]	16th	17th
7.0	0	7
7.1	7	B
7.2	7	C
7.3	7	D
7.4	7	E
7.5	7	F
7.6	7	G
7.7	7	H
7.8	7	J
7.9	7	K

Case length [mm]	16th	17th
8.0	0	8
8.1	8	B
8.2	8	C
8.3	8	D
8.4	8	E
8.5	8	F
8.6	8	G
8.7	8	H
8.8	8	J
8.9	8	K

Case length [mm]	16th	17th
9.0	0	9
9.1	9	B
9.2	9	C
9.3	9	D
9.4	9	E
9.5	9	F
9.6	9	G
9.7	9	H
9.8	9	J
9.9	9	K

Case length [mm]	16th	17th
10.0	1	0
10.1	A	1
10.2	A	2
10.3	A	3
10.4	A	4
10.5	A	5
10.6	A	6
10.7	A	7
10.8	A	8
10.9	A	9

Case length [mm]	16th	17th
11.0	1	1
11.1	B	1
11.2	B	2
11.3	B	3
11.4	B	4
11.5	B	5
11.6	B	6
11.7	B	7
11.8	B	8
11.9	B	9

Case length [mm]	16th	17th
12.0	1	2
12.1	C	1
12.2	C	2
12.3	C	3
12.4	C	4
12.5	C	5
12.6	C	6
12.7	C	7
12.8	C	8
12.9	C	9

Case length [mm]	16th	17th
13.0	1	3
13.1	D	1
13.2	D	2
13.3	D	3
13.4	D	4
13.5	D	5
13.6	D	6
13.7	D	7
13.8	D	8
13.9	D	9

Case length [mm]	16th	17th
14.0	1	4
14.1	E	1
14.2	E	2
14.3	E	3
14.4	E	4
14.5	E	5
14.6	E	6
14.7	E	7
14.8	E	8
14.9	E	9

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Return Group Chart

PART NUMBERING SYSTEM

Case length [mm]	16th	17th
15.0	1	5
15.1	F	1
15.2	F	2
15.3	F	3
15.4	F	4
15.5	F	5
15.6	F	6
15.7	F	7
15.8	F	8
15.9	F	9

Case length [mm]	16th	17th
16.0	1	6
16.1	G	1
16.2	G	2
16.3	G	3
16.4	G	4
16.5	G	5
16.6	G	6
16.7	G	7
16.8	G	8
16.9	G	9

Case length [mm]	16th	17th
17.0	1	7
17.1	H	1
17.2	H	2
17.3	H	3
17.4	H	4
17.5	H	5
17.6	H	6
17.7	H	7
17.8	H	8
17.9	H	9

Case length [mm]	16th	17th
18.0	1	8
18.1	J	1
18.2	J	2
18.3	J	3
18.4	J	4
18.5	J	5
18.6	J	6
18.7	J	7
18.8	J	8
18.9	J	9

Case length [mm]	16th	17th
19.0	1	9
19.1	K	1
19.2	K	2
19.3	K	3
19.4	K	4
19.5	K	5
19.6	K	6
19.7	K	7
19.8	K	8
19.9	K	9

Case length [mm]	16th	17th
20.0	2	0
20.5	L	1
21.0	2	1
21.5	L	3
22.0	2	2
22.5	L	5
23.0	2	3
23.5	L	7
24.0	2	4
24.5	L	9
25.0	2	5
25.5	M	1
26.0	2	6
26.5	M	3
27.0	2	7
27.5	M	5
28.0	2	8
28.5	M	7
29.0	2	9
29.5	M	9

Case length [mm]	16th	17th
30.0	3	0
30.5	N	1
31.0	3	1
31.5	N	3
32.0	3	2
32.5	N	5
33.0	3	3
33.5	N	7
34.0	3	4
34.5	N	9
35.0	3	5
35.5	P	1
36.0	3	6
36.5	P	3
37.0	3	7
37.5	P	5
38.0	3	8
38.5	P	7
39.0	3	9
39.5	P	9

Case length [mm]	16th	17th
40.0	4	0
40.5	Q	1
41.0	4	1
41.5	Q	3
42.0	4	2
42.5	Q	5
43.0	4	3
43.5	Q	7
44.0	4	4
44.5	Q	9
45.0	4	5
45.5	R	1
46.0	4	6
46.5	R	3
47.0	4	7
47.5	R	5
48.0	4	8
48.5	R	7
49.0	4	9
49.5	R	9

Case length [mm]	16th	17th
50.0	5	0
50.5	S	1
51.0	5	1
51.5	S	3
52.0	5	2
52.5	S	5
53.0	5	3
53.5	S	7
54.0	5	4
54.5	S	9
55.0	5	5
55.5	T	1
56.0	5	6
56.5	T	3
57.0	5	7
57.5	T	5
58.0	5	8
58.5	T	7
59.0	5	9
59.5	T	9

Case length [mm]	16th	17th
60.0	6	0
60.5	U	1
61.0	6	1
61.5	U	3
62.0	6	2
62.5	U	5
63.0	6	3
63.5	U	7
64.0	6	4
64.5	U	9
65.0	6	5
65.5	V	1
66.0	6	6
66.5	V	3
67.0	6	7
67.5	V	5
68.0	6	8
68.5	V	7
69.0	6	9
69.5	V	9

Case length [mm]	16th	17th
70.0	7	0
70.5	W	1
71.0	7	1
71.5	W	3
72.0	7	2
72.5	W	5
73.0	7	3
73.5	W	7
74.0	7	4
74.5	W	9
75.0	7	5
75.5	X	1
76.0	7	6
76.5	X	3
77.0	7	7
77.5	X	5
78.0	7	8
78.5	X	7
79.0	7	9
79.5	X	9

Case length [mm]	16th	17th
80.0	8	0
80.5	Y	1
81.0	8	1
81.5	Y	3
82.0	8	2
82.5	Y	5
83.0	8	3
83.5	Y	7
84.0	8	4
84.5	Y	9
85.0	8	5
85.5	Z	1
86.0	8	6
86.5	Z	3
87.0	8	7
87.5	Z	5
88.0	8	8
88.5	Z	7
89.0	8	9
89.5	Z	9

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Return Group Chart

NIPPON CHEMI-CON

PART NUMBERING SYSTEM

◆Case length (Snap-in type / Screw mount terminal type)

Case length [mm]	16th	17th
20	2	0
21	2	1
22	2	2
23	2	3
24	2	4
25	2	5
26	2	6
27	2	7
28	2	8
29	2	9

Case length [mm]	16th	17th
30	3	0
31	3	1
32	3	2
33	3	3
34	3	4
35	3	5
36	3	6
37	3	7
38	3	8
39	3	9

Case length [mm]	16th	17th
40	4	0
41	4	1
42	4	2
43	4	3
44	4	4
45	4	5
46	4	6
47	4	7
48	4	8
49	4	9

Case length [mm]	16th	17th
50	5	0
51	5	1
52	5	2
53	5	3
54	5	4
55	5	5
56	5	6
57	5	7
58	5	8
59	5	9

Case length [mm]	16th	17th
60	6	0
61	6	1
62	6	2
63	6	3
64	6	4
65	6	5
66	6	6
67	6	7
68	6	8
69	6	9

Case length [mm]	16th	17th
70	7	0
71	7	1
72	7	2
73	7	3
74	7	4
75	7	5
76	7	6
77	7	7
78	7	8
79	7	9

Case length [mm]	16th	17th
80	8	0
81	8	1
82	8	2
83	8	3
84	8	4
85	8	5
86	8	6
87	8	7
88	8	8
89	8	9

Case length [mm]	16th	17th
90	9	0
91	9	1
92	9	2
93	9	3
94	9	4
95	9	5
96	9	6
97	9	7
98	9	8
99	9	9

Case length [mm]	16th	17th
100	A	0
101	A	1
102	A	2
103	A	3
104	A	4
105	A	5
106	A	6
107	A	7
108	A	8
109	A	9

Case length [mm]	16th	17th
110	B	0
111	B	1
112	B	2
113	B	3
114	B	4
115	B	5
116	B	6
117	B	7
118	B	8
119	B	9

Case length [mm]	16th	17th
120	C	0
121	C	1
122	C	2
123	C	3
124	C	4
125	C	5
126	C	6
127	C	7
128	C	8
129	C	9

Case length [mm]	16th	17th
130	D	0
131	D	1
132	D	2
133	D	3
134	D	4
135	D	5
136	D	6
137	D	7
138	D	8
139	D	9

Case length [mm]	16th	17th
140	E	0
141	E	1
142	E	2
143	E	3
144	E	4
145	E	5
146	E	6
147	E	7
148	E	8
149	E	9

Case length [mm]	16th	17th
150	F	0
151	F	1
152	F	2
153	F	3
154	F	4
155	F	5
156	F	6
157	F	7
158	F	8
159	F	9

Case length [mm]	16th	17th
160	G	0
161	G	1
162	G	2
163	G	3
164	G	4
165	G	5
166	G	6
167	G	7
168	G	8
169	G	9

Case length [mm]	16th	17th
170	H	0
171	H	1
172	H	2
173	H	3
174	H	4
175	H	5
176	H	6
177	H	7
178	H	8
179	H	9

Case length [mm]	16th	17th
180	J	0
181	J	1
182	J	2
183	J	3
184	J	4
185	J	5
186	J	6
187	J	7
188	J	8
189	J	9

Case length [mm]	16th	17th
190	K	0
191	K	1
192	K	2
193	K	3
194	K	4
195	K	5
196	K	6
197	K	7
198	K	8
199	K	9

Case length [mm]	16th	17th
200	L	0
201	L	1
202	L	2
203	L	3
204	L	4
205	L	5
206	L	6
207	L	7
208	L	8
209	L	9

Case length [mm]	16th	17th
210	M	0
211	M	1
212	M	2
213	M	3
214	M	4
215	M	5
216	M	6
217	M	7
218	M	8
219	M	9

Case length [mm]	16th	17th
220	N	0
221	N	1
222	N	2
223	N	3
224	N	4
225	N	5
226	N	6
227	N	7
228	N	8
229	N	9

Case length [mm]	16th	17th
230	P	0
231	P	1
232	P	2
233	P	3
234	P	4
235	P	5
236	P	6
237	P	7
238	P	8
239	P	9

Case length [mm]	16th	17th
240	Q	0
241	Q	1
242	Q	2
243	Q	3
244	Q	4
245	Q	5
246	Q	6
247	Q	7
248	Q	8
249	Q	9

Case length [mm]	16th	17th
250	R	0
251	R	1
252	R	2
253	R	3
254	R	4
255	R	5
256	R	6
257	R	7
258	R	8
259	R	9

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PART NUMBERING SYSTEM

◆Supplement code

Conductive Polymer Aluminum Solid Capacitors (Chip and Radial lead type)
Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (Chip and Radial lead type)
Aluminum Electrolytic Capacitors (Chip type)

	Terminal plating material	
	Sn	Sn-Bi
Coating case	S	G

Aluminum Electrolytic Capacitors (Radial lead and Snap-in type)

		Terminal plating material	
		Sn	Sn-Bi
Outer sleeve	PET	S	D
	Coating case	H	G
	Polyolefin	L	–
	Pb-free PVC	M	–

* Standard design of "environmental friendly" snap-in are not equipped with a plastic disk on the top of the can case.
We also produce snap-in type with "Plastic disk (PPE), PVC sleeve and Sn terminal plating".
In this case, supplement code ((PPE) the 18th digit) is "U". When the material of the plastic disk is PVC, the code is "T".

Aluminum Electrolytic Capacitors (Screw mount terminal type)

		Plastic disk material	
		PPE	PVC
Outer sleeve	Pb-free PVC	U	M
	Polyolefin	S	–
	PET	–	C

* Supplement code (the 18th digit) is also "S" when "Outer sleeve material: Polyolefin, Plastic disk material: PET".

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