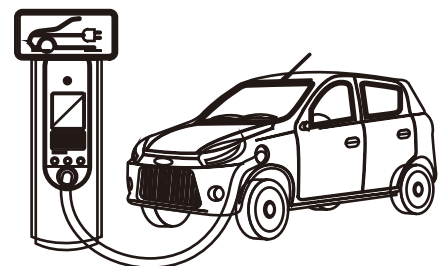
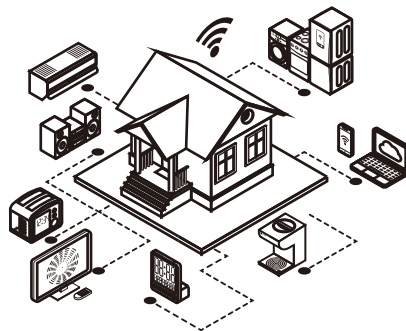


Su'scon

2025-2026 ALUMINUM ELECTROLYTIC CAPACITORS

- CONDUCTIVE POLYMER SOLID CAPACITOR
- CONDUCTIVE POLYMER HYBRID CAPACITORS
- SMD / RADIAL / SNAP-IN / SCREW TYPE E-CAP





蘇輝雄 董事長
Johnson Su, CEO

Su'scon 冠坤電子於 1978 年設立，創辦人蘇輝雄先生，其秉持不斷的研發、延攬高科技人才、精進技術持續改進創新求變、永續經營理念，讓冠坤逐步蛻變走向國際市場，提供客戶全方位的服務！

Established in 1978 by founder Mr. Johnson Su, Kuan Kun (Su'scon) has progressively evolved to access international markets through relentless research and development, attracting high-tech talents, and acquiring technology for continuous improvement and innovation. This commitment to perpetual business operation has enabled Su'scon to offer comprehensive services to its customers.

冠坤鋁質電容包括各類型電解電容、固態電容、半固態電容，產品廣泛應用在汽車電子、通訊、工業自動化、AI 應用、消費性電子、智慧家電、再生能源等。

Su'scon aluminum capacitors include various types of electrolytic capacitors, polymer capacitors, and hybrid capacitors, which are extensively used in automotive, telecom, industry, AI applications, consumer electronics, smart appliances, renewable energy.

**POWERING
TOMORROW**

追求國際一流電容器大廠地位



冠坤擁有高效率的自動化生產工廠、提供客戶優質的產品與滿意的服務，並且透過全球經銷網的服務供貨到全球市場。

Su'scon possesses highly efficient automated production facilities, provides customers with high-quality products and satisfactory services, and supplies to the global market through its worldwide distribution network.

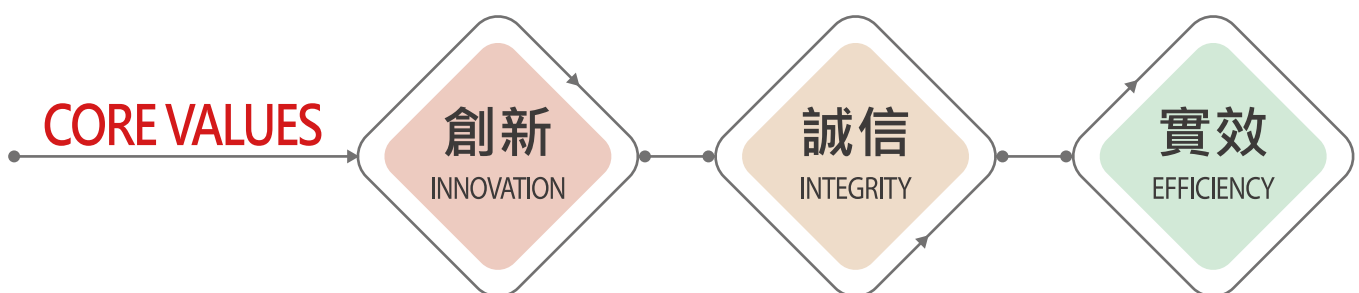


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Conductive Polymer Type

Polymer Hybrid Capacitors
Polymer Solid Capacitors

Surface Mount Type

Standard & Miniature

High Reliability

Radial Lead Type

Low Impedance

Non-Polarized & special

Anhydrous

Large Can Type

Products Series Table

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

	Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 Compliant
Radial Type	SPA	Low ESR	16~125	10~560	-55 to +105	5,000~10,000	17	●
	SPB	High temperature, Low ESR	16~50	15~560	-55 to +125	2,000~4,000	19	●
	SPT	High temperature, 135°C, Low ESR	25~63	10~330	-55 to +135	1,000~2,000	21	●
SMD Type	SVA	Low ESR	16~125	10~560	-55 to +105	5,000~10,000	23	●
	SVV	High temperature, Low ESR, Anti-vibration	16~125	10~560	-55 to +105	5,000~10,000	25	●
	SVB	High temperature, Low ESR	16~125	10~560	-55 to +125	2,000~4,000	27	●
	SVG	High temperature, Low ESR, Anti-vibration	16~125	15~560	-55 to +125	2,000~4,000	29	●
	SVT	High temperature, 135°C	25~63	10~330	-55 to +135	1,000~2,000	31	●
	SVH	High temperature, 135°C, Anti-vibration	25~63	10~330	-55 to +135	1,000~2,000	33	●

Conductive Polymer Aluminum Solid Capacitors

	Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 Compliant
Radial Type	EA	Standard	2.5~25	6.8~2,700	-55 to +105	2,000	37	
	EC	Ultra impedance, High ripple current	2.5~16	100~2,700	-55 to +105	2,000	40	
	EL	Long life	2.5~63	10~2,200	-55 to +105	5,000	43	●
	EH	High voltage standard, High ripple current	35~100	12~470	-55 to +105	2,000	46	
	ET	High temperature, Low ESR	4~50	10~2,500	-55 to +125	1,000	48	●
	EP	High temperature, Long Life	6.3~35	56~1,800	-55 to +125	2,000	50	●
	PC	Ultra impedance, High ripple current	2.5~63	6.8~2,700	-55 to +105	15,000	52	
	PL	Long life, Low ESR	2.5~50	10~2,200	-55 to +105	20,000	55	
SMD Type	VA	Standard	2.5~25	22~2,700	-55 to +105	2,000	57	
	VC	Low impedance, High ripple current	2.5~16	68~2,700	-55 to +105	2,000	60	
	VH	Low ESR, High voltage, High ripple current	35~100	12~220	-55 to +105	2,000	62	
	VL	Long life, Low ESR, High ripple current	4~50	10~2,200	-55 to +105	5,000	64	●
	VT	High temperature, Low ESR	4~50	10~2,200	-55 to +125	1,000	66	●
	VP	High temperature, Long Life	6.3~35	56~1,800	-55 to +125	2,000	68	●
	PV	Ultra impedance, High ripple current	2.5~63	12~2,700	-55 to +105	15,000	70	
	PH	Long life, Low ESR	4~50	10~2,200	-55 to +105	20,000	73	

Surface Mount Aluminum Electrolytic Capacitor

	Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 Compliant
Surface Mount	CN	Bi-Polarized, 85°C	6.3~50	0.1~100	-55 to +85	1,000	88	●
	CS	Standard, 85°C	4~100	0.1~1,500	-55 to +85	2,000	90	
	CH	Standard, 105°C	4~50	0.1~1,500	-55 to +105	1,000	92	
	CK	Long life, 105°C	6.8~100	1~6,800	-55 to +105	2,000	94	●
	CD	Low impedance	6.3~100	1~1,500	-55 to +105	2,000~3,000	97	●
	CDS	Downsizing and Lower impedance	6.3~50	10~2,200	-55 to +105	2,000	99	●
	CL	High voltage 400V	160~400	2.2~82	-40 to +105	2,000	101	●
	CKL	Long life, 105°C	6.3~50	1~1,000	-40 to +105	5,000	103	●
	CDL	Long life, 105°C	6.3~100	22~12,000	-55 to +105	5,000	105	●
	CDV	Long life, Lower impedance, Anti-vibration	6.3~100	22~12,000	-55 to +105	5,000	107	●
	CLL	Long life, Lower impedance	6.3~50	10~1,000	-25 to +105	7,000~10,000	109	●
	CG	Long life, 125°C	10~63 80~160	2.2~470	-55 to +125 -40 to +125	1,000~3,000	111	●
	CGL	Low impedance, Long life, 125°C	16~50	33~680	-40 to +125	2,000~3,000	113	●
	CGS	Low impedance	6.3~100	1~4,700	-55 to +125	1,000~2,000	115	●
	CGV	Low impedance, Anti-vibration	6.3~100	10~4,700	-55 to +125	1,500~2,000	117	●
	CTS	Low impedance, Long life, 125°C	16~50	10~3,900	-40 to +125	2,000~5,000	119	●
	CTV	Low impedance, Long life, 125°C, Anti-vibration	16~50	47~2,200	-40 to +125	2,000~5,000	121	●
	CGH	Long life, 135°C	10~63	33~3,300	-40 to +135	2,000	123	●

— Be sure to "Cautions for using Aluminum Electrolytic capacitors", before using these products.

Products Series Table

Radial Type Aluminum Electrolytic Capacitor

Series	Applications	Rated Voltage(V)	Capacitance Range(μF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 compliant	
Miniature	H5	5mm height, 105°C	4~50	0.1~220	-40 to +105	1,000	125	
	M5	5mm height, Low impedance	6.3~35	1~100	-40 to +105	1,000	127	
	SM	7mm height, 105°C	6.3~50	0.1~330	-40 to +105	1,000	129	
	MD	7mm height, Low impedance	6.3~35	6.8~220	-40 to +105	1,000	131	
	ST	7mm height, Long life	6.3~50	0.1~220	-40 to +105	5,000	133	
Standard	LF	Long life, 85°C	400, 420 450~500	10~150	-40 to +85 -25 to +85	8,000	135	
	SK	Standard, 105°C	6.3~400 420~600	0.1~22,000	-40 to +105 -25 to +105	2,000	137	
	SKR	High ripple current	160~400 450	22~470	-40 to +105 -25 to +105	2,000	140	
	SKA	High voltage, High ripple current	400 450~500	10~150	-40 to +105 -25 to +105	2,000	142	
	SDA	High voltage, High ripple current	400 450~500	10~150	-40 to +105 -25 to +105	2,000	144	
	LK	-55°C low temperature resistant products	400~450	10~150	-55 to +105	2,000	146	
	UK	High ripple current, 3000hrs	6.3~400 420~500	0.1~22,000	-40 to +105 -40 to +105	3,000	148	
High Reliability	SE	Long life, 5000hrs	6.3~400 420~500	0.47~22,000	-25 to +105 -25 to +105	3,000~5,000	150	
	SEA	High voltage, High ripple current	400 450~500	10~150	-40 to +105 -25 to +105	5,000	153	
	SEB	SEA series ripple current enhancement products	160~400 450~460	10~150	-40 to +105 -25 to +105	5,000	155	
	SER	Long life, High ripple current, 5,000hrs	160~400 450	22~470	-40 to +105 -25 to +105	5,000	157	
	HE	Long life, 10,000hrs	160~400 450	6.8~330	-40 to +105 -25 to +105	8,000~10,000	159	
	HU	Miniaturized and Long life	10~100	0.47~330	-25 to +105	10,000	162	
	HH	Long life, 12,000hrs	160~450 500	6.8~680	-40 to +105 -25 to +105	10,000~12,000	164	
	HW	Long life, 20,000hrs (Consulting engineering bulletin detail)	160~450	3.9~100	-40 to +105	12,000~20,000	168	
	SH	High reliability, 125°C	10~450	4.7~1,000	-40 to +125 -25 to +125	2,000~5,000	170	●
For Ballast	HA	For ballast, 3,000hrs	160~400 450	1~220	-40 to +105 -25 to +105	3,000	172	
	HB	For ballast, 5,000hrs	160~400 450	1~220	-40 to +105 -25 to +105	5,000	174	
	HD	For ballast, 10,000hrs	160~400 450	1~220	-40 to +105 -25 to +105	10,000	176	
Low Impedance	SD	Low impedance	6.3~400 450	0.47~15,000	-40 to +105 -25 to +105	2,000	178	
	NK	SD series ripple current enhancement products	400~500	4.7~100	-40 to +105	3,000	181	
	MC	Low impedance, High ripple current	6.3~400 450	2.2~15,000	-40 to +105 -25 to +105	2,000~3,000	183	
	MF	Low impedance, High ripple current than MC series	6.3~400 450	2.2~15,000	-40 to +105 -25 to +105	2,000~5,000	186	
	HF	Low impedance	6.3~100	5.6~18,000	-40 to +105	2,000~8,000	189	
	SG	Lower impedance, High ripple current	6.3~100	6.8~68,000	-40 to +105	2,000~5,000	192	
	SX	Lower impedance, High ripple current	10~50	100~2,700	-40 to +105	4,000~5,000	195	
	MG	Lower impedance, High ripple current than SG series	6.3~35	47~8,200	-40 to +105	5,000~6,000	197	
	HG	Low impedance, High ripple current, Long life 10,000 hrs	6.3~100	6.8~18,000	-40 to +105	4,000~10,000	199	
	HX	High ripple current, Long life 10,000hrs	6.3~100	8.2~22,000	-40 to +105	6,000~10,000	204	
	SHG	125°C, Low ESR, 30G Vibration resistance	10~100	220~8,200	-40 to +105	4,000~5,000	208	●
	UH	High reliability, 130°C	10~250 350~450	1.8~4,700	-40 to +130 -25 to +130	2,000~3,000	210	●
	UR	High-temperature resistance , high ripple current 135°C	25 ~ 100	160~12,000	-40 to +135	2,000~3,000	212	●
WH	High-temperature resistance , high ripple current 150°C	16~100	10~3,300	-40 ~ +150	1,000~2,000	215	●	

■Be sure to "Cautions for using Aluminum Electrolytic capacitors", before using these products.

Products Series Table

Radial Type Aluminum Electrolytic Capacitor

Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 compliant	
Non-polarized	SN	Standard, 85°C	6.3~100	0.1~6,800	-40 to +85	2,000	217	
	HN	Standard, 105°C	6.3~160	0.1~1,000	-40 to +105	2,000	219	
	HR	Horizontal deflection current correction use	25,35,50,100	2.2~10	-40 to +105	1,000	221	
Special	SA	Low leakage current, 85°C	6.3~100	0.1~4,700	-40 to +85	2,000	222	
	SB	Low leakage current, 105°C	6.3~100	0.1~4,700	-40 to +105	1,000	222	
	AK	For permissible voltage	200,400	4.7~470	-25 to +105	2,000	224	
	YR	For audio equipment, 105°C	6.3~100	1~10,000	-40 to +105	2,000	226	

Aluminum Electrolytic Capacitor Anhydrous Type

Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 compliant	
Anhydrous	SDN	Low impedance standard	6.3~100 160~400	0.47~15,000	-55 to +105 -40 to +105	2,000	228	●
	HFN	Lower impedance	6.3~50 63~100	5.6~18,000	-55 to +105 -40 to +105	4,000~8,000	231	●
	SGN	Lower impedance, High ripple current	6.3~50	22~6,800	-55 to +105	2,000~5,000	234	●
	HGN	Low impedance, High ripple current, Long life 10,000hrs	6.3~50 63~100	6.8~18,000	-55 to +105 -40 to +105	4,000~10,000	237	●
	SEN	High voltage, Long life, 5,000hrs	160~400	2.2~120	-40 to +105	3,000~5,000	242	●

Snap-in Type Aluminum Electrolytic Capacitor

Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 compliant	
Snap-in Type	LX	Standard, 85°C	10~100 160~500	47~68,000	-40 to +85 -25 to +85	2,000	244	
	LXB	Standard, 85°C	10~100 160~500	47~68,000	-40 to +85 -25 to +85	3,000	248	
	LXA	Standard, 85°C	10~100 160~500	47~68,000	-40 to +85 -25 to +85	5,000	252	
	LZ	Standard, 105°C	10~250 350~500	68~68,000	-40 to +105 -25 to +105	2,000	256	
	HZ	Long life 3000hrs	16~250 350~450	47~56,000	-40 to +105 -25 to +105	3,000	261	●
	MZ	Long life 5000hrs	10~100 160~600	82~47,000	-40 to +105 -25 to +105	5,000	265	●
	TZ	Long life 10000hrs	200~450	220~1800	-25 to +105	10,000	270	
	AZ	For over voltage vent operation test	200, 400, 420	33~1,200	-25 to +105	2,000	272	
	AU	Snap-in Type, For audio equipment, 105°C	16~250 400~450	56~33000	-40 to +105 -25 to +105	2,000	275	
WZ	Standard, 125°C, Long life 2,000hrs	400~450	82~820	-25 to +125	2,000	279		

Aluminum Electrolytic Capacitor LUG Terminal Type

Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 compliant	
LUG Terminal	LM	Standard, 85°C	16~250 315~450	68~150,000	-40 to +85 -25 to +85	2,000	281	
	LG	Standard, 105°C	16~250 315~450	22~10,000	-40 to +105 -25 to +105	2,000	283	

Aluminum Electrolytic Capacitor Screw Terminal Type

Series	Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life (hrs)	Page	AEC-Q200 compliant	
Anhydrous	LP	Standard, 85°C	16~250 350~500	470~500,000	-40 to +85 -25 to +85	3,000	285	
	LS	85°C, High ripple current	350~500	820~22,000	-25 to +85	5,000	288	
	LV	85°C, High voltage	500~650	1,000~15,000	-25 to +85	5,000	291	
	LW	85°C, Long life 10,000 hrs	350~500	1,500~18,000	-25 to +85	10,000	293	
	HP	Long life, 105°C	10~100 160~450	220~1,000,000	-40 to +105 -25 to +105	2,000~5,000	295	
	HT	105°C, Long life 8,000 hrs	400~450	470~10,000	-40 to +105	8,000	299	

*Be sure to "Cautions for using Aluminum Electrolytic capacitors", before using these products.

NOTE: Design. Specifications are subject to change without notice.

from su'scon to ensure that the component is suitable for your use. It is recommended that you shall obtain technical specifications

Part Number System

Part Number For V-chip Type :

PN	^① C K L	^② 0 1 6	^③ M	^④ 4 7 1	^⑤ F	^⑥ 1 0	^⑦ P	^⑧ K K K	^⑨ V 0 0	^⑩ R
	Series	Voltage	Tol.	Capacitance	Dia.	Height	Special request	Auxiliary code	Package	Standard
Digit	1 2 3	4 5 6	7	8 9 10	11	12 13	14	15 16 17	18 19 20	21

(1) Series

Please refer to Series Index (to page4 , When the series is a two digit code, the third digit code can be empty)

(2)Voltage

Voltage(V)	2.5	4	6.3	10	16	50	63	100	160	200	300	400	450
Code	002	004	006	010	016	50	063	100	160	200	300	400	450

(3) Capacitance Tolerance

Tol. (%)	±5	±10	±20	-10/+20	-0/+20
Code	J	K	M	V	A

(4)Capacitance Code:

Cap.	0.1	1	10	100	1000	10000	220000
Code	0R1	1R0	100	101	102	103	224

(5) Diameter

Diameter	4	5	5.5	6.3	8	7.5	10	12.5	16	18
Code	C	D	5	E	F	7	G	X	J	K

(6) Length

Length	5	5.4	7	6.5	7.7	9.5	10	12	12.5	13.5	16	16.5	21.5
Code	05	5A	07	6B	7D	9B	10	12	CB	DB	16	GB	QB

(7) Special request

Rubber	Flat
Code	P

(8)Standard & none Standard

KKK = Standard, others is special

(9)Package (incl. Cutting & Forming)

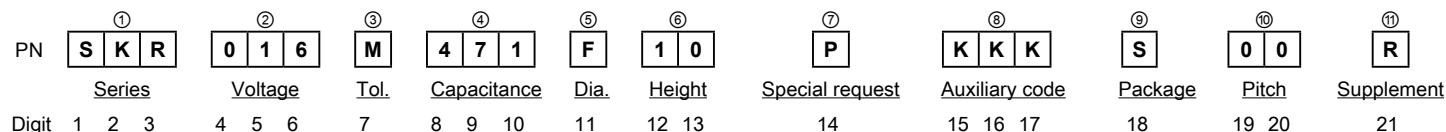
Package	SMD
Code	V00

(10)Supplement

Supplement	Standard	AEC-Q200
Code	R	A

Part Number System

Part Number For Radial Type:



(1) Series

Please refer to Series Index (to page3~4,When the series is a two digit code, the third digit code can be empty)

(2)Voltage

Voltage(V)	6.3	10	16	50	63	100	160	200	300	400	450	500	550
Code	006	010	016	050	063	100	160	200	300	400	450	500	550

(3) Capacitance Tolerance

Tol. (%)	±5	±10	±20	-10/+20	-0/+20
Code	J	K	M	V	A

(4)Capacitance Code:

Cap.	0.1	1	10	100	1000	10000	220000
Code	0R1	1R0	100	101	102	103	224

(5) Diameter

Diameter	4	5	5.5	6.3	8	7.5	10	12
Code	C	D	5	E	F	7	G	H
Diameter	12.5	13	14.5	16	18	20	22	
Code	X	I	Y	J	K	L	M	

(6) Length

Length	5	7	8	10	12	12.5	13.5	16	16.5	18	31.5
Code	05	07	08	10	12	CB	DB	16	GB	18	NB

(7) Special request

Rubber	Flat	Stand off
Code	P	T

(8)Auxiliary code

Auxiliary	KKK	CKK	KRK	CRK	CKL	XXX
Code	Standard	RC request	ESR request	RC & ESR request	RC& LC special	special

RC:ripple current;ESR:equivalent series resistance;LC:Leakage current;XXX:serial number for you.

(9)Package (incl. Cutting & Forming)

Package	Standard	Ammo	Lead Cut	Cut Form & Kink
Code	S	P	C	refer to "Lead Cutting and Forming"

Standard= Bulk

(10)Pitch(mm)

Length	standard	1.5	2.0	2.5	3.5	5.0	7.5	10.0
Code	00	15	20	25	35	50	75	10

EX: ①+② S00= Standard Bulk , P35= ammo pitch 3.5mm C30= lead cut 3mm
remark: This procesn number is for cutting, forming and kink, 00 is for standard packing Bulk, Ammo, Reel

(11)Supplement

Supplement	Standard	AEC-Q200
Code	R	A

Part Number System

Part Number For Snap-in and LUG Type :

PN	^① H Z	^② 4 5 0	^③ M	^④ 2 7 1	^⑤ N	^⑥ 3 5	^⑦ 0	^⑧ K K K	^⑨ Y L 0	^⑩ R
	Series	Voltage	Tol.	Capacitance	Dia.	Height	Special code	Auxiliary	Terminal	Supplement
Digit	1 2 3	4 5 6	7	8 9 10	11	12 13	14	15 16 17	18 19 20	21

(1) Series

Please refer to Series Index(to page 4,When the series is a two digit code, the third digit code can be empty)

(2)Voltage

Voltage(V)	10	25	63	50	63	100	400	420	450	500	550
Code	010	025	063	050	063	100	400	420	450	500	550

(3) Capacitance Tolerance

Tol. (%)	±5	±10	±20	-10/+20	-0/+20
Code	J	K	M	V	A

(4)Capacitance

Cap.	22	47	56	100	1000	10000	220000
Code	220	470	560	101	102	103	224

(5) Diameter

Diameter	22	25	30	35	40	45	50
Code	M	N	O	P	Q	8	4

(6) Length

Length	20	25	30	35	40	50	55	100	105	115
Code	20	25	30	35	40	50	55	A0	A5	B5

(7) Special request

category	Snap-in & LUG
code	0

Remark: snap-in incl. Lug type

(8)Auxiliary code

Auxiliary	KKK	CKK	KRK	CRK	CKL	XXX
Code	Standard	RC request	ESR request	RC & ESR request	RC& LC request	Special

RC:ripple current;ESR:equivalent series resistance;LC:Leakage current;XXX:serial number for you.

(9)Terminal

Terminal	Short lead	Standard	Lug type	3 pins	4 pins	5pins
Code	YS0	YL0	ST0	T00/TS0	PCS/PCY	U00

remark: TSO is short lead with 3 pins TOO = standard with 3pins PCS is LUG with 4 pins PCY is standard with 4 pins

(10)Supplement

Supplement	Standard	AEC-Q200
Code	R	A

Part Number System

Part Number For Screw Type :

PN	^① H P	^② 4 5 0	^③ M	^④ 3 3 1	^⑤ P	^⑥ A 0	^⑦ 0	^⑧ K K K	^⑨ W 0 0	^⑩ R
	Series	Voltage	Tol.	Capacitance	Dia.	Height	Special code	Auxiliary	Terminal	Supplement
Digit	1 2	3 4 5	6	7 8 9	10	11 12	13	14 15 16	17 18 19	20

(1) Series

Please refer to Series Index (to page 4, When the series is a two digit code, the third digit code can be empty)

(2) Voltage

Voltage(V)	10	16	25	63	50	63	100	400	420	450	500	550	600
Code	010	016	025	063	050	063	100	400	420	450	500	550	600

(3) Capacitance Tolerance

Tol. (%)	±5	±10	±20	-10/+20	-0/+20
Code	J	K	M	V	A

(4) Capacitance

Cap.	47	68	100	1000	10000	220000	1000000
Code	470	680	101	102	103	224	105

(5) Diameter

Diameter	35	51	64	76	90
Code	P	R	S	T	U

(6) Length

Length	50	80	100	105	115	120	140	190
Code	50	80	A0	A5	B5	C0	E0	J0

(7) Special request

Category	Snap-in, LUG
Code	0

(8) Auxiliary code

Auxiliary	KKK	CKK	KRK	CRK	CKL	XXX
Code	Standard	RC request	ESR request	RC & ESR request	RC & LC request	special

RC:ripple current;ESR:equivalent series resistance;LC:Leakage current;XXX:serial number for you.

(9) Terminal

Terminal	Standard	Thread stud mounting
Code	W00	W01

(10) Supplement

Supplement	Standard	AEC-Q200
Code	R	A

Note: If you have any other requirements regarding product structure, please contact us.

Precautions in Using Conductive Polymer Aluminum Electrolytic Capacitors

導電性高分子鋁電解電容使用須知

■導電性高分子鋁電解電容使用注意事項(含半固態)

聲明：

- 1.本目錄中記述的電路和“規格書”內容是用於說明我司產品的動作示例和使用示例,對客戶實際使用時的設備系統操作,恕不給予任何保證。如因使用上述資訊導致故障、損害發生,我公司概不負責。
- 2.關於“規格書”中記述的我公司產品特性是否適用於貴公司設備系統規格,最終由貴公司判斷並承擔相應責任。

一、回路設計上的注意事項

1. 極性

導電性高分子鋁電解電容是有正極和負極。

使用時,切勿錯置極性。若極性錯置,使用時將會增加漏電流或減少使用壽命。

2. 禁止使用的回路

導電性高分子鋁電解電容的漏電流在以下條件有可能會增大。

- (a)鍍焊錫時
- (b)經過無外加電壓的高溫無負荷、高溫高濕無負荷、冷熱沖擊試驗等,漏電流也有增大的可能。

以下回路有可能出現故障,請禁止使用

- (a) 高阻抗回路
- (b) 藕合回路
- (c) 時間恒定回路
- (d)有關漏電流變而影響回路工作的情況

▲為提高耐壓而將兩個以上的導電性高分子鋁電解電容串聯連接使用時,請與我們聯絡。

3. 電路設計

請在確認以下內容的基礎上進行電路設計。

- (1) 隨著溫度及頻率的變化,電容器的電氣特性會隨之變化。請在確認這些變化之後進行電路的設計。
- (2)當並聯2個以上的電容器時,請在設計電路時考慮電流的平衡。
- (3)當串聯2個以上的電容器時,因載入電壓存在差異,有可能加載過電壓,請使用的時候另行諮詢我們。

4. 確認使用環境溫度、電壓和紋波電流

- (a)使用溫度應控制在出廠規格書規定的使用溫度範圍內。
- (b)超過額定電壓的過電壓將會發生短路,因此即使是瞬間也不得外加過電壓。
- (c)不得接通超過額定的紋波電流,若接通過大的紋波電流,將會增高內部發熱,減少使用壽命。

■Precautions in using conductive Polymer Solid Aluminum Capacitors(incl. Polymer Hybrid Capacitors)

Declaration:

The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems. We are not in any case responsible for any failures or damage caused by the use of information contained herein.

You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.

一、Precautions for circuit designing

1.Polarity

Conductive Polymer Aluminum Electrolytic Capacitors have the positive and negative electrodes.

Using reversed voltage may cause leakage current increased or life span decreased.

2.Prohibited circuits

Conductive Polymer Aluminum Electrolytic Capacitors leakage current may become larger as the following conditions.

- (a) Soldering
- (b) High temperature no-load test, high temperature and high humidity no-load test, rapidly changing temperature test, etc.

Avoid the use of Capacitors in the following type of circuits because leakage current may increase.

- (a)High-impedance circuits
- (b)Coupling circuits
- (c)Time constant circuits
- (d)Other circuits that are significantly affected by leakage current

▲ If you plan to use 2 or more Conductive Polymer Aluminum Solid Capacitors in a series connection, please contact us before use.

3.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. Only design your 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 Su'scon before using capacitors connected in series.

4.Operating temperature、voltages and ripple current

- (a)Operating temperature must be under the category temperature range of specification.
- (b)Do not apply voltages exceeding the full rated voltage.
- (c)Do not apply currents that excess the rated ripple current.

When excessive ripple current is applied ,the Conductive Polymer Aluminum Capacitors may result in shorter life due to the internal heat increase.

Precautions in Using Conductive Polymer Aluminum Electrolytic Capacitors

導電性高分子鋁電解電容使用須知

5. 快速充放電的限制

急速充放電所導致過大的衝擊電流將會造成短路或增加漏電流以下條件時,應使用保護回路。

- (a)衝擊電流超過10A
- (b)超過所用導電性高分子鋁電解電容額定紋波電流值10倍；
- ▲測試漏電流時,務必插入1kΩ的保護電阻,進行充電和放電。

6. 故障

最高使用溫度範圍 外加電壓範圍時,基於JIS C 5003標準(可信度水準 60%) 0.5%/1000小時。

以下為導電性高分子鋁電解電容的主要故障模式。

6-1 偶發故障

- 1.產品溫度上升引起的靜電電容減少及ESR的上升引起的開放模式磨損是主要的故障模式。有時候也會偶發因過大電壓和超大電流導致的短路模式。
 - 2.通過降低周圍溫度 紋波電流和加載電壓可以減少故障率。
 - 3.由於加載超過額定電壓的電壓引起短路和通電電流過大的時候這種情況,不得將臉和手靠近。
 - 4.構成產品的材質中含有可燃物質,短路部位有可能因為電火花等而起火。產品的安裝方法 位置 圖形設計等請考慮以下設計方面的注意點,以確認絕對的安全。
- A.設置保護電路 保護裝置,確保絕對的安全。
 - B.設置冗長電路等,以便設備不會因為單個的故障而不穩定。

6-2. 使用中的電氣特性變動及磨耗故障(使用壽命)

導電性高分子鋁電解電容即使在出廠規格書記載的額定,電性能和機械性能的範圍內使用,也會在各自性能規定的範圍內發生靜電容量減少 等效串聯電阻增大等電氣特性的變動,設計時應予以注意至於磨耗故障,主要是超過信賴性和高溫高濕保障時間後,這類電氣特性的變動進而增大,最終形成電介質的絕緣化(劣化),成為開放模式。

6-3. 壽命時間推算

A: $L_x = L_0 \times 10^{(T_0 - T_x)/20}$ B: $L_x = L_0 \times 2^{(T_0 - T_x)/10}$

L_x : 實際使用推算的壽命值

L₀ : 保證壽命值

T_x : 裝置內的電容器

A	B
EA,EC,EL,EH,EP,VA,VC,VL,VH,VT,VP	PC,PL,PV,PH 與鋁電解電容壽命計算一樣
105°C ≥ 2,000hrs	105°C ≥ 2,000hrs
95°C ≥ 6,324hrs	95°C ≥ 4,000hrs
85°C ≥ 20,000hrs	85°C ≥ 8,000hrs
75°C ≥ 63,245hrs	75°C ≥ 16,000hrs

5.Sudden charge and discharge

An excessive surge current by sudden charge or discharge may result in a short circuit or a large leakage current. Protection circuits are recommended to retain high reliability in case of the following conditions.

- (a)The surge current value exceeds 10A
- (b)The value exceeds 10 times of the rated ripple current
- ▲ When you measure leakage current, a protection resistor of approximately 1k Ω must be inserted to the circuit before charge and discharge.

6.Failure and life-span

The failure rate is 0.5% / 1000h(with a 60% reliability standard) based on JIS C 5003.

The mainly failure modes are as follows.

6-1 Contingency failure

- 1.The product of electrostatic capacitance decrease caused by temperature rise and the rise of the ESR open mode caused by the wear .that is the main failure mode.Sometimes accidental short-circuit caused by excessive voltage and large current mode
 2. Decrease the failure rate we can reduce ambient temperature ripple current and use voltage.
 - 3.When the load voltage exceeds the rated voltage will cause a short circuit or ripple current is too large, internal pressure increased and the rubber expansion or peeling, smelliness
 4. The installation method of products, Position, Graphic design please consider the following points to ensure the safety
- A. Set the protection circuit and Protector to ensure the safety.
 - B. Setting a redundant circuit, so that the equipment will not be unstable because of a single fault.

6-2. Wear-out failure (life-span)

When life span exceeded the specified guarantee time of Endurance and Damp heat, dielectric might insulate and cause electric characteristic changed. This is called an open circuit.

The electric characteristics of capacitance and ESR may possibly change within the specified range in specifications when it is used under the condition of the rated voltage, electric and mechanical performance. Please note it when design.

6-3.Lifetime (hours) of the capacitor to be estimated:

A: $L_x = L_0 \times 10^{(T_0 - T_x)/20}$ B: $L_x = L_0 \times 2^{(T_0 - T_x)/10}$

L_x:Lifetime (hours) of the capacitor to be estimated.(15 Years Life is Maximum)

L₀:Base lifetime (hours) of the capacitor

T_x:Actual ambient temperature (°C)of the capacitor

A	B
EA,EC,EL,EH,EP,VA,VC,VL,VH,VT,VP	PC,PL,PV,PH is similar to the lifetime estimation of Al electroly capacitor
105°C ≥ 2,000hrs	105°C ≥ 2,000hrs
95°C ≥ 6,324hrs	95°C ≥ 4,000hrs
85°C ≥ 20,000hrs	85°C ≥ 8,000hrs
75°C ≥ 63,245hrs	75°C ≥ 16,000hrs

Precautions in Using Conductive Polymer Aluminum Electrolytic Capacitors

導電性高分子鋁電解電容使用須知

二、安裝的注意事項

1. 漏電流

漏電流因焊接的熱應力及輸送等機械性應力的影響而有增大的可能。在這種情況下,若在導電性高分子鋁電解電容的最高使用溫度範圍以下外加電壓,則漏電流將會逐漸變小。在接近最高使用溫度範圍的狀態下,越是外加額定電壓以下的高電壓,越會加快漏電流的修復速度。

漏電流回升的原因

- a. 焊接
- b. 高溫無負荷、高溫高濕、溫度急劇變化等試驗。
- c. 急劇充放電。

2. 電容器的絕緣

- (a) 外殼和負極端子之間有不穩定的電阻,未經絕緣處理,應予以注意。
- (b) 外殼,負極電極端子,正極電極端子及線路結構之間的電路應完全隔離。

3. 使用環境的限制

不得在以下環境下使用。

- (a) 直接濺水,濺鹽水,濺油或結露狀態下的環境。
- (b) 充滿有害氣體(硫化氫,亞硫酸,亞硝酸,氯,氨等)的環境。
- (c) 受臭氧,紫外線,放射線照射的環境。

4. 印刷電路板的設計

- (a) 避免在導電性高分子鋁電解電容周圍及印刷電路板背面安裝發熱元件。
- (b) 貼裝型應按照技術手冊或出廠規格書記載的建議條件,設計印刷電路板接合區結構的電路。
- (c) 插裝型應願及技術手冊或出廠規格書記載的產品尺寸公差,設計安裝的基板孔及孔徑。

5. 並聯連接

導電性高分子鋁電解電容與其他電容器並聯連接使用時,流入導電性高分子鋁電解電容的紋波電流將會增多,選購時應予以注意。

6. 其他

確認以下內容後,再設計電路。(a) 電氣特性隨著溫度和頻率的變動而變化。設計前,應先掌握這一變化部份。(b) 在雙面基板上安裝導電性高分子鋁電解電容時,多餘的基板孔和基板正反面連接用通孔不要位於導電性高分子鋁電解電容的下方。

三、實際安裝時的注意事項

1. 焊接時的注意事項

焊接條件應控制在出廠規格書規定的範圍內。

若採用規定以外的嚴格焊接條件,因電氣特性的劣化或在最壞的情況下,

二、Caution For Assembling Capacitors

1. Leakage Current

Mechanical stress may cause Conductive Polymer Aluminum Capacitors leakage current increased. In such a case, leakage current will gradually decrease by applying voltage within the category voltage and the upper category temperature. Then, self-healing speed of leakage current is faster when it is near to the upper category temperature and the category voltage.

The cause of Leakage current rise again

- a. soldering
- b. High Temp shelf, High Temp High Humidity and Temp rapid change etc.
- c. Rapid charging and discharging

2. Capacitor insulation

- (a) The space between the case and the negative electrode terminal is insulated and has some resistance.
- (b) Be sure to completely separate the case, negative lead terminal, positive lead terminal and PC board patternst.

3. Operating environmental restrictions

Do not use the Conductive Polymer Aluminum Electrolytic Capacitors in the following environments.

- (a) Places where water, salt water or oil can directly fall on it, and places where condensation may form.
- (b) Places filled with noxious gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
- (c) Places susceptible to ozone, ultraviolet rays and radiation.

4. PCB design

- (a) Avoid locating heat-generating components around the Conductive Polymer Aluminum Electrolytic Capacitors and on the underside of the PC board.
- (b) For the surface mount capacitor, design the copper pads on the PC board in according with the recommended land pattern or dimensions in the series specifications.
- (c) For radial capacitor, design the terminal pitch and hole size after conforming the dimensional tolerance in the series specifications.

5. Parallel connection

A large amount of ripple current may be applied to the Conductive Polymer Aluminum Capacitors when it is used in parallel with another capacitor. Carefully select the type of capacitor.

6. Others

Design circuits after checking the following items.

- (a) Electric characteristics are affected by temperature or frequency fluctuations. Design circuits after checking the changes.
- (b) When mounting an Conductive Polymer Aluminum Capacitors on a double-sided PC board, extra PC board holes or the through holes for connecting the front and back of the PCB must not exist underneath the Conductive Polymer Aluminum Capacitors.

三、Precautions for mounting on-board

1. Considerations when soldering

The soldering conditions as soldering iron, flow soldering, reflow soldering should be under the range prescribed in specifications.

If the specifications are not followed, there is a possibility of the

Precautions in Using Conductive Polymer Aluminum Electrolytic Capacitors

導電性高分子鋁電解電容使用須知

可導致外觀不良,漏電流增加及容量減少。

2. 安裝前的預備知識

- (a)導電性高分子鋁電解電容安裝在設備上開通電後,不得重新使用。除了定期檢修時為測試電氣性能而卸下的導電性高分子混合型鋁電解電容以外,不得重新使用。
- (b)長期保存的導電性高分子鋁電解電容有時會增加漏電流。遇這種情況,應通過約 1kΩ 的電阻進行施加電壓處理。此時的電壓處理,推薦在約60~70°C 下外加1小時額定電壓。

3. 安裝-1

- (a)先確認額定靜電容量和額定電壓後,再進行安裝。
- (b)小心操作,不要摔落。摔落的導電性高分子鋁電解電容不得使用。
- (c)安裝時不要使其變形。
- (d)安裝時不要破壞壳表面皮膜。

4. 安裝-2

- (a)避免在導電性高分子鋁電解電容周圍及印刷電路板背面安裝發熱元件。
- (b)貼裝型應按照技術手冊或出廠規格書記載的建議條件,設計印刷電路板接合區結構的電路。
- (c)插裝型應顧及技術手冊或出廠規格書記載的產品尺寸公差,設計安裝的基板孔及孔徑。

5. 使用電烙鐵時的焊接條件

(a)請在以下焊接條件(溫度、時間)範圍內使用。

焊接條件	電烙鐵溫度	時間
	380±10°C	within 5s.

- (b)焊接插裝型時,若電極端子間距和印刷電路板孔間距不符而需要修整電極端子(引線端子)時,應在焊接前避免對導電性高分子鋁電解電容體施加應力的情況下修整。
- (c)使用電烙鐵焊接時,注意不要對導電性高分子鋁電解電容主體施加過度應力。
- (d)焊接後需要卸下導電性高分子鋁電解電容,用電烙鐵修正焊接狀態時,應先充分熔化焊料,防止對導電性高分子鋁電解電容的電極端子施加應力。
- (e)電烙鐵頭不得接觸導電性高分子鋁電解電容主體。

6. 正流焊接條件

(a)請在以下焊接條件(溫度、時間)範圍內使用。

正流焊推薦條件

條件	溫度	時間	次數
預熱	120°C以下(環境)	120秒以下	1次
焊接	260±5°C以下	10 + 1秒以下	2次以下※1

※ 1.進行2次時,焊料的浸漬時間合計為10+1秒以下。

cosmetic deflection, the intensive increase of leakage current or the capacitance reduction.

2.Capacitor insulation

- (a)Do not reuse Conductive Polymer Aluminum Electrolytic Capacitors that have been assembled in a set and energized.Excluding Conductive Polymer Aluminum Electrolytic Capacitors that have been removed for measuring electrical characteristics during a periodic inspection, Conductive Polymer Aluminum Electrolytic Capacitors cannot be reused.
- (b)Leakage current may increase when Conductive Polymer Aluminum Capacitors are stored for long term. In this case, we recommend that you apply the rated voltage for 1 hour at 60°C~70°C with a resistor load of 1kΩ.

3.Mounting -1

- (a)Mount after checking the capacitance and the rated voltage.
- (b)Do not drop Conductive Polymer Aluminum Electrolytic Capacitors on the floor and do not use it that is dropped.
- (c)Do not mount Conductive Polymer Aluminum Electrolytic Capacitors that is deformed.
- (d)Do not break aluminum case surface Nylon in mounting

4.Mounting -2

- (a)Avoid locating heat-generating components around the Conductive Polymer Aluminum Electrolytic Capacitors and on the underside of the PC board.
- (b)For the surface mount capacitor, design the copper pads on the PC board in according with the recommended land pattern or dimensions in the series specifications.
- (c)For radial capacitor,design the terminal pitch and hole size after conforming the dimensional tolerance in the series specifications.

5.Soldering with a soldering iron

(a)Soldering condition should be under the following ranges.

Soldering condition	Soldering iron temperature	time
	380±10°C	within 5s.

- (b)When the lead terminal for radial lead type must be processed because the lead pith and the PCB holes in spacing do not match, process it without any stresses to Conductive Polymer Aluminum Conductive Polymer Aluminum Electrolytic Capacitors.
- (c)Solder without any excessive stresses to Conductive Polymer Aluminum Capacitors itself.
- (d)When an Conductive Polymer Aluminum Electrolytic Capacitors has been soldered once and needs to be removed, remove it after the solder has been completely melted.
- (e)Do not let the tip of the soldering iron touch the Conductive Polymer Aluminum Capacitors itself.

6.Flow soldering

(a)Soldering condition should be under the following ranges.

Recommended flow soldering condition

Conditions	Temperature	Time	Flow number
Preheating	120°C or(less ambient temperature)	120 sec. or less	1 time
Soldering	260 + 5°C or less	10 + 1 sec. or less	2 times or less ※ 1

※1.When soldering 2 times,immersion time should be 10 + 1 sec.or less.

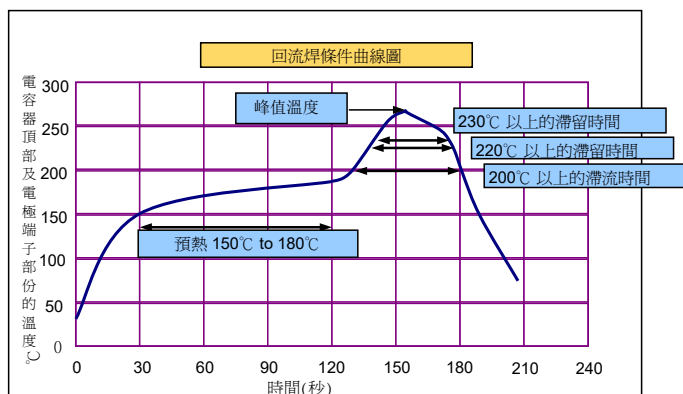
Precautions in Using Conductive Polymer Aluminum Electrolytic Capacitors

導電性高分子鋁電解電容使用須知

- (b)貼裝型導電性高分子鋁電解電容不適用於波峰焊。
- (c)不要將導電性高分子鋁電解電容主體浸漬在溶解焊料中。焊接部位只限於印刷路板上與導電性高分子鋁電解電容相反的一側。
- (d)松脂不要貼附在電極端子以外的部位。
- (e)焊接時,注意不要碰倒其他元件,以免碰觸導電性高分子鋁電解電容。

7. 回流焊接條件

(a)請在以下焊接條件(溫度-時間)範圍內使用回流焊推薦條件



※峰值溫度:電容器頂部及電極端子的溫度。

(b)導電性高分子混合型鋁電解電容

電壓範圍(V)	16~63	80~125
峰值溫度	260°C5秒以內	250°C5秒以下
預熱溫度	120秒以內	120秒以內
"200°C以上滯留時間"	100秒以內	100秒以內
"220°C以上滯留時間"	80秒以內	80秒以內
"230°C以上滯留時間"	40秒以內	40秒以內
回流次數	2次以下	2次以下

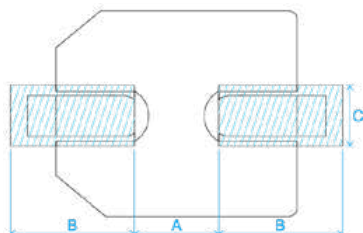
(c)導電性高分子固態鋁電解電容

項目	Polymer系列	
峰值溫度	250°C以下	260°C以下
預熱溫度	150°C~180°C 90±3秒	
"200°C以上滯留時間"	60秒以內	60秒以內
"220°C以上滯留時間"	50秒以內	50秒以內
"230°C以上滯留時間"	40秒以內	40秒以內
回流次數	2次以下	1次

※以上如需兩次回流焊,需在第一次回流焊後放置1小時以上讓部品恢復常溫(5~35°C)才可進行。

(d)插裝(DIP)型導電性高分子鋁電解電容不適用於回流焊。

(e)建議焊點尺寸

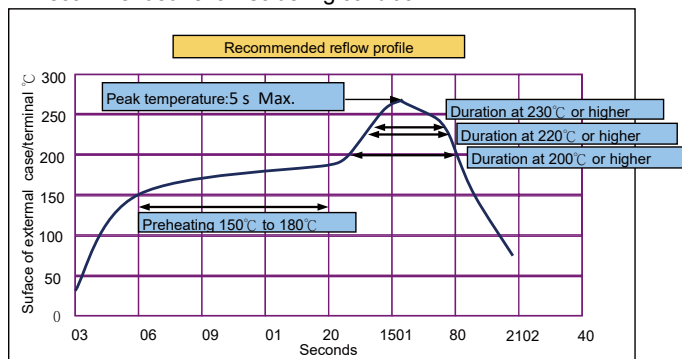


- (b)Do not apply flow soldering to SMD type.
- (c)Do not solder Conductive Polymer Aluminum Electrolytic Capacitors itself by submerging it in melted solder. Solder the opposite side that the Conductive Polymer Aluminum Electrolytic Capacitors is mounted on.
- (d)Note that flux does not adhere to anywhere except the lead terminal.
- (e)Note that other components do not fall over and touch the Conductive Polymer Aluminum Electrolytic Capacitors when soldering.

7.Reflow soldering

(a)Soldering condition should be under the following ranges.

Recommended reflow soldering condition



※All temperatures are measured on the topside of the Al-can and terminal surface.

(b)Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

Voltage Range(V)	16~63	80~125
Peak Temperature	260°C 5sec max.	250°C 5sec max.
Preheating Temperature	120sec. max.	120sec. max.
Duration at 200°C or higher	100 sec. max.	100 sec. max.
Duration at 220°C or higher	80 sec. max.	80 sec. max.
Duration at 230°C or higher	40 sec. max.	40 sec. max.
Reflow number	twice or less	twice or less

(c)Conductive Polymer Aluminum Solid Capacitors

Item	Polymer series	
Peak Temperature	250°C or less	260°C or less
Preheating Temperature	50°C~180°C 90±3秒	
Duration at 200°C or higher	60 sec. max.	60 sec. max.
Duration at 220°C or higher	50 sec. max.	50 sec. max.
Duration at 230°C or higher	40 sec. max.	40 sec. max.
Reflow number	twice or less	only 1 time

※Reflow should be performed twice or less.Please ensure that the capacitor became cold enough to the room temperature (5 to 35°C) before the second reflow.

(d)Do not apply reflow soldering to Radial Lead type.

(e)Recommended Land Pattend Dimension Of PCB

ΦD	A	B	C
Φ5	1.4	3	1.6
Φ6.3	1.9	3.5	1.6
Φ8	3.1	4.2	2.2
Φ10	4.5	4.4	2.2
Φ10(G)	3.8	4.8	4.1

“(G)” “Anti-vibration Structure”.

Precautions in Using Conductive Polymer Aluminum Electrolytic Capacitors

導電性高分子鋁電解電容使用須知

8. 焊接後注意事項

- (a) 焊接在線路板上後,不得傾斜,扳倒,扭曲導電性高分子鋁電解電容主體。
- (b) 焊接在線路板上後,不得用導電性高分子鋁電解電容代替把手移動基板。
- (c) 焊接在線路板上後,注意不要碰撞導電性高分子鋁電解電容。堆放基板時,注意不要使導電性高分子鋁電解電容接觸基板或其他元件。
- (d) 焊接在線路板上後,不得對導電性高分子鋁電解電容施加過度應力。

9. 清洗基板

可使用Pine-α ST-00S, Clean thru750H,750L,710M,750K,Techno Care FRW14~17等高級乙醇類清洗劑或AK-225ES等氟利昂代替品,IPA等清洗劑清洗,清洗時,應確認以下內容。

- (a) 採用浸漬,超聲波等清洗方式時,清洗時間合計應控制在2分以內。
- (b) 清洗液溫度請控制在60°C以下。
- (c) 要進行清洗液的防污染管理(導電度、Ph值、比重、含水量等)。
- (d) 清洗後,不要在清洗液環境中或密封容器中保管。
- (e) 用熱風(請在使用溫度範圍以下進行)烘乾基板和導電性高分子鋁電解電容時,些許的清洗劑其液附在電容器表面上,若擦拭可抹去電容器上的標記,應予以注意。
- (f) 關於清洗劑和清洗方法等詳細情況以及使用其他種類的清洗劑時,請事先與本公司洽詢。

10. 固定劑和塗層劑

- (a) 選擇適合於導電性高分子鋁電解電容外裝材質和封裝材質的材料。特別是固定劑和塗層劑或稀釋劑中不得含有丙酮。
- (b) 使用固定劑和塗層劑前,清除基板和導電性高分子鋁電解電容封裝部之間的焊劑殘渣和污垢。
- (c) 使用固定劑和塗層劑前,烘乾清洗劑等。
- (d) 請洽詢固定劑和塗層劑的熱固化條件。

■ 環境物質對應

對應 RoHS 法規

環境管理物質名	化學物質記號	環境對應 (ppm)
鎘以及鎘化合物	Cd	100
鉛以及鉛化合物	Pb	1000
汞以及汞化合物	Hg	1000
六價鉻化合物	Cr ⁶⁺	1000
聚溴聯苯	PBBs	1000
聚溴二苯醚	PBDEs	1000
鄰苯二甲酸二正丁酯	DBP	1000
鄰苯二甲酸苯基丁酯	BBP	1000
鄰苯二甲酸二(2-乙基己基)酯	DEHP	1000
鄰苯二甲酸二異丁酯	DIBP	1000

8. Handling after soldering

- (a) Do not tilt, bend or twist Conductive Polymer Aluminum Capacitors .
- (b) Do not move the PCB with catching Conductive Polymer Aluminum Capacitors itself.
- (c) When stacking PCBs, make sure that the Conductive Polymer Aluminum Capacitors does not touch other PCBs or components.
- (d) Do not dump the Conductive Polymer Aluminum Electrolytic Capacitors with objects.

9. Cleaning PCB

Check the following items before washing PC board with these detergents: high quality alcohol-based cleaning fluid such as Pine-α ST-100S, clean thru 750H, 750L, 710M, 750K or Techno Care FRW 14 through 17 or detergents including substitute freon as AK-225AES or IPA.

- (a) Use immersion or ultrasonic waves to clean within 2 minutes on polymer conductive type.
- (b) The temperature of the cleaning fluid should be less than 60°C.
- (c) Watch the contamination of the detergent as conductivity, pH, specific gravity, water content, etc.
- (d) Do not store the Conductive Polymer Aluminum Electrolytic Capacitors in a location subject to gases from the cleaning fluid or in an airtight container after cleaning.
- (e) Dry the PCB or Conductive Polymer Aluminum Electrolytic Capacitors with hot air that should be less than the maximum operating temperature. Please note that Indication may disappear when rubbing print side after washing as a cleaner.
- (f) Please contact us for details about detergents, cleaning methods and about detergents other than those listed above.

10. Fixatives and coating materials

- (a) Select the appropriate covering and sealant materials for Capacitors In particular, make sure the fixative, coating and thinner do not contain acetone.
- (b) Before applying a fixative or coating, completely remove any flux residue and foreign matter from the area where the board and Conductive Polymer Aluminum Electrolytic Capacitors will be jointed together.
- (c) Allow any detergent to dry before applying the fixative or coating.
- (d) Please contact us for fixative and coating heat curing conditions.

■ Environmental Consideration

Compliance with RoHS Directive

Substance	Symbol	Maximum Limit (ppm)
Cadmium and Cadmium Compounds	Cd	100
Lead and Lead Compounds	Pb	1000
Mercury and Mercury Compounds	Hg	1000
Hexavalent Chromium Compounds	Cr ⁶⁺	1000
Polybrominated Biphenyls	PBBs	1000
Polybrominated Diphenyl Ethers	PBDEs	1000
Dibutyl phthalate	DBP	1000
Benzylbutyl phthalate	BBP	1000
Di-2-ethylhexyl phthalate	DEHP	1000
Diisobutyl phthalate	DIBP	1000

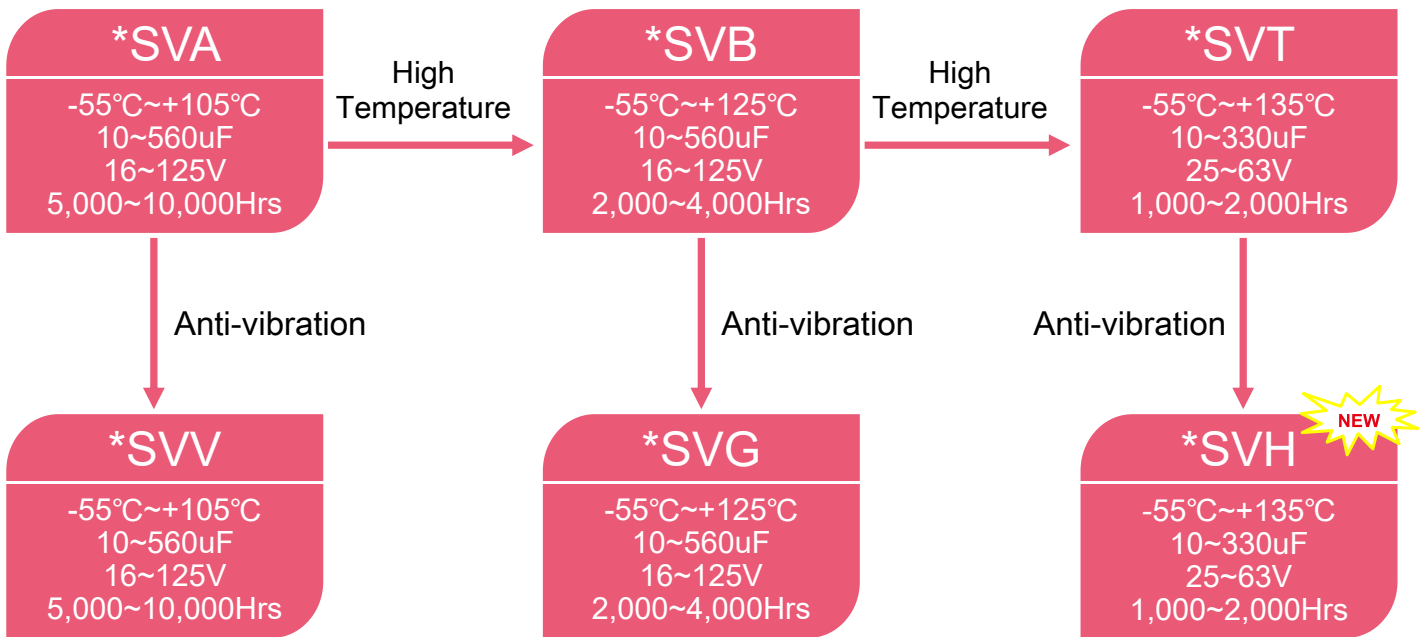
Hybrid Series Chart

Note:AEC-Q200 marked with *

Radial Type

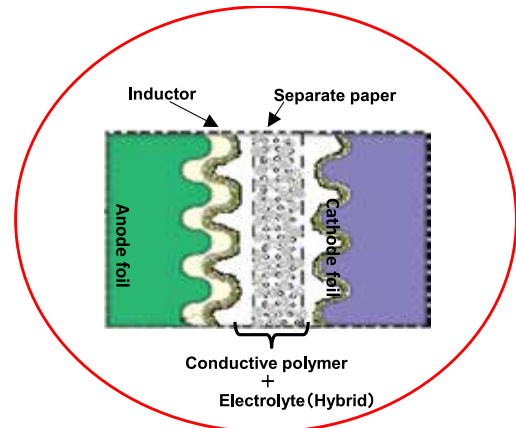
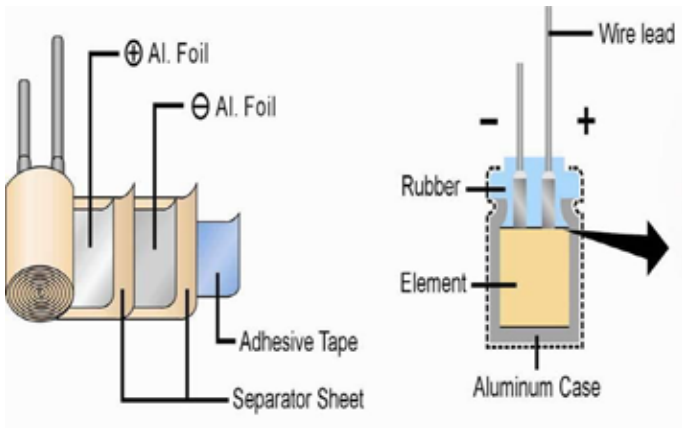


SMD Type



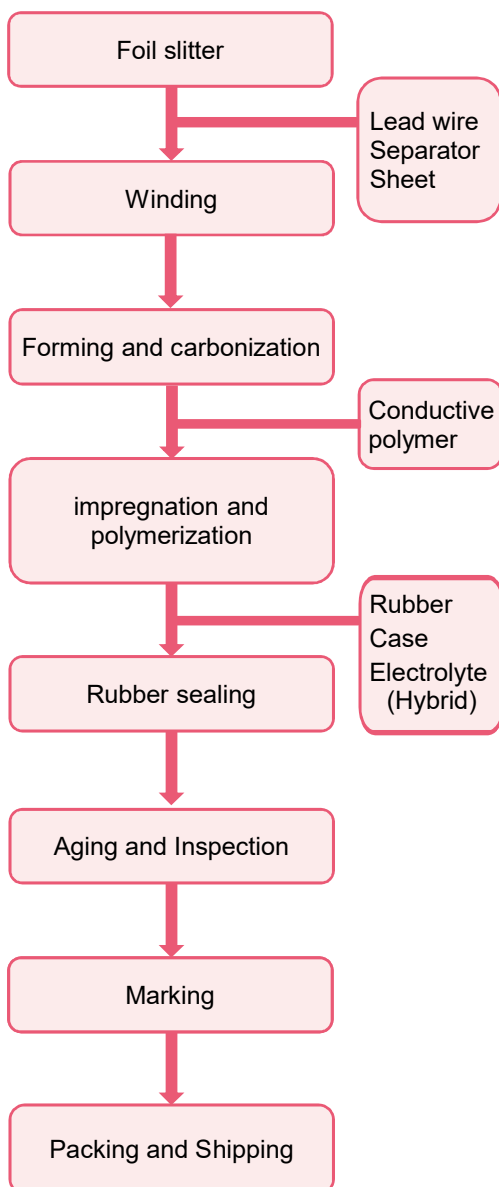
Product Process Flow Chart

Basic structure

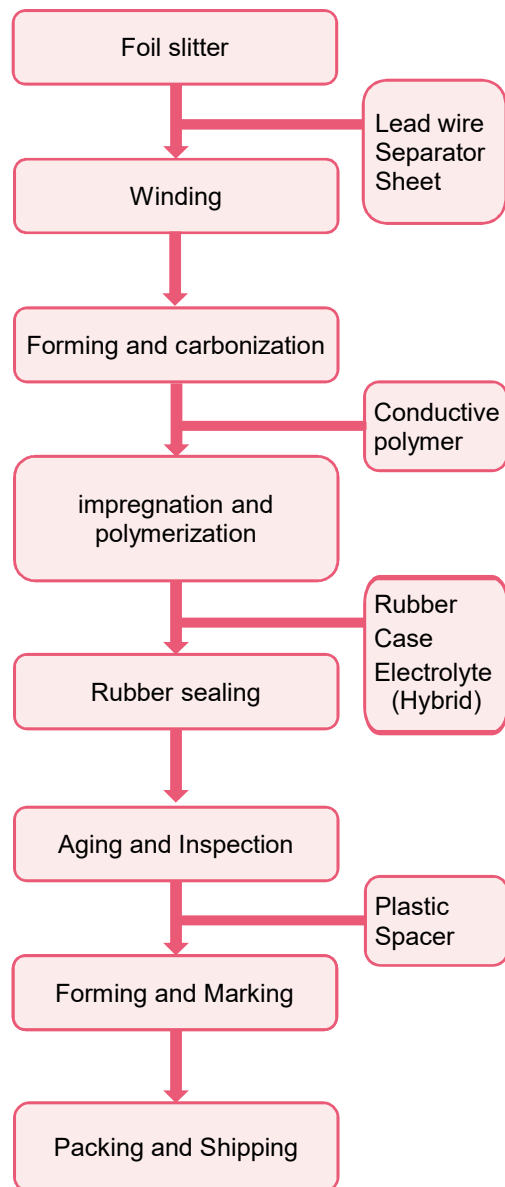


Manufacturing Method

Radial Type



SMD Type



SPA series

- Low ESR.
- High Voltage, Long Life.
- 105°C,5,000~10,000hrs.
- RoHS compliant
- For high reliability applications.(Automotive equipment,Base station equipment,etc.)



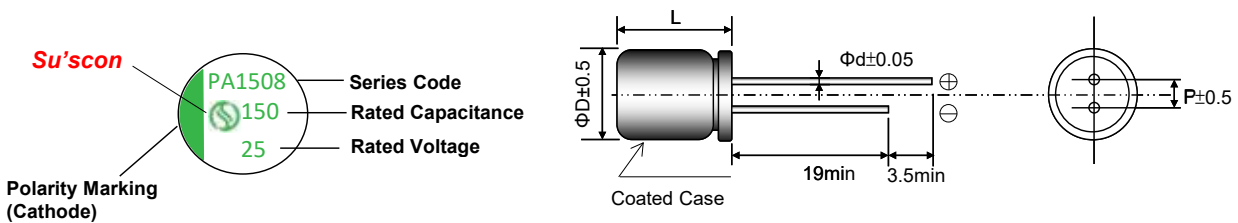
SPA

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	16 ~ 125V	
Capacitance Tolerance	at 20°C,120Hz	±20%(M)	
Surge Voltage	at 15 ~ 35°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I≤0.01CV or 3(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C.Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for5,000 to 10,000 hours at 105°C. Φ6.3=5,000hrs,D≥Φ8=10,000hrs;	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	6.3x7.2	8x9.5	10x9.5	10x11.5
ΦD	6.3	8	10	10
L	L+1.5 max	L+1.5max	L+1.5 max	L+1.5max
Φd	0.5	0.6	0.6	0.6
P	2.5	3.5	5.0	5.0

SPA series

SPA

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code D×L	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	120	6.3×7.2	19	40	1500	0.16
	270	8×9.5	43	26	2000	0.16
	470	10×9.5	75	21	2600	0.16
	560	10×11.5	90	15	3000	0.16
25 (28.8)	68	6.3×7.2	17	45	1400	0.16
	150	8×9.5	38	27	1900	0.16
	270	10×9.5	68	22	2500	0.16
	330	10×11.5	83	16	2900	0.16
35 (40.3)	47	6.3×7.2	16	60	1300	0.16
	100	8×9.5	35	30	1800	0.16
	150	10×9.5	53	23	2400	0.16
	220	10×11.5	77	17	2800	0.16
40 (46.0)	27	6.3×7.2	11	70	1200	0.16
	56	8×9.5	22	32	1700	0.16
	100	10×9.5	40	24	2400	0.16
	120	10×11.5	48	18	2700	0.16
50 (57.5)	15	6.3×7.2	8	80	1200	0.16
	33	8×9.5	17	35	1600	0.16
	56	10×9.5	28	25	2300	0.16
	82	10×11.5	41	19	2600	0.16
63 (72.5)	10	6.3×7.2	6	100	1000	0.16
	22	8×9.5	14	40	1500	0.16
	33	8×9.5	21	40	1500	0.16
		10×9.5	21	30	2100	0.16
	47	10×9.5	30	30	2100	0.16
	56	10×11.5	35	22	2400	0.16
80 (92.0)	12	10×9.5	10	70	1600	0.16
	15	10×9.5	12	70	1600	0.16
	18	10×11.5	14	50	1800	0.16
100 (115.0)	10	10×9.5	10	80	1400	0.16
	12	10×9.5	12	80	1400	0.16
	15	10×11.5	15	60	1600	0.16
125 (143.8)	10	10×9.5	13	90	1200	0.16

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	100 ≦ F < 1K	1K ≦ F < 10K	10K ≦ F < 100K	100K ≦ F
4.7 < C ≦ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SPB series

- Low ESR.
- High Voltage, Long Life.
- 125°C, 2,000 to 4,000hrs.
- RoHS compliant
- For automotive mouldes and other high temperature applications



SPB

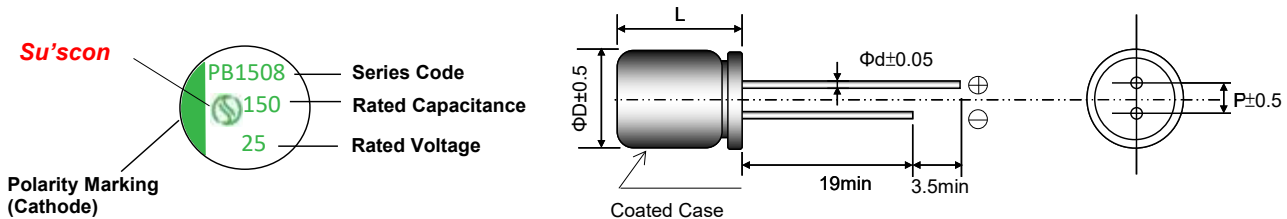
SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	16 ~ 50V	
Capacitance Tolerance	at 20°C, 120HZ	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.01CV or 3(μA) Whichever is greater measured after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 to 4,000 hours at 125°C. Φ6.3=2,000hrs, D ≥ Φ8=4,000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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 125°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	6.3x7.2	8x9.5	10x9.5	10x11.5
ΦD	6.3	8.0	10.0	10.0
L	L+1.5max	L+1.5max	L+1.5max	L+1.5max
Φd	0.5	0.6	0.6	0.6
P	2.5	3.5	5.0	5.0

SPB series

SPB

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 125°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	120	6.3×7.2	19	40	1100	0.16
	270	8×9.5	43	26	1500	0.16
	470	10×9.5	75	21	2000	0.16
	560	10×11.5	90	15	2300	0.16
25 (28.8)	68	6.3×7.2	17	45	1000	0.16
	150	8×9.5	38	27	1300	0.16
	270	10×9.5	68	22	1500	0.16
	330	10×11.5	83	16	1700	0.16
35 (40.3)	47	6.3×7.2	16	60	900	0.16
	100	8×9.5	35	30	1200	0.16
	150	10×9.5	53	23	1400	0.16
	220	10×11.5	77	17	1600	0.16
40 (46.0)	27	6.3×7.2	11	70	900	0.16
	56	8×9.5	22	32	1200	0.16
	100	10×9.5	40	24	1400	0.16
	120	10×11.5	48	18	1600	0.16
50 (57.5)	15	6.3×7.2	8	80	800	0.16
	33	8×9.5	17	35	1100	0.16
	56	10×9.5	28	25	1300	0.16
	82	10×11.5	41	19	1500	0.16

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SPT series

- Low ESR.
- High Voltage, Long Life.
- 135°C, 1,000 to 2,000hrs.
- RoHS compliant
- For automotive mouldes and other high temperature applications



SPT

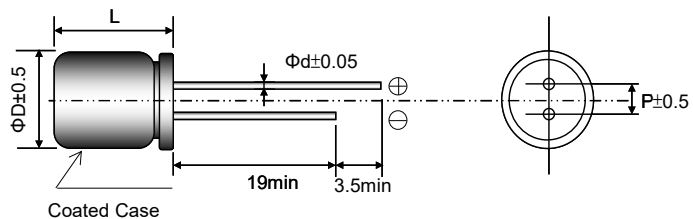
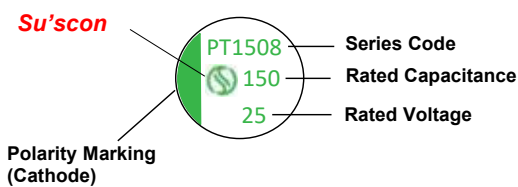
SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +135°C	
Rated Voltage Range	—	25 ~ 63V	
Capacitance Tolerance	at 20°C, 120HZ	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.01CV or 3(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 to 2,000 hours at 135°C. Φ6.3=1,000hrs, D ≥ Φ8=2,000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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 135°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	6.3x7.2	8x9.5	10x9.5	10x11.5
ΦD	6.3	8.0	10.0	10.0
L	L+1.5max	L+1.5max	L+1.5max	L+1.5max
Φd	0.5	0.6	0.6	0.6
P	2.5	3.5	5.0	5.0

SPT series

SPT

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 135°C	D.F. (tanδ) max. 120Hz / 20°C
25 (28.8)	68	6.3×7.2	17	45	750	0.16
	150	8×9.5	38	27	1000	0.16
	270	10×9.5	68	22	1200	0.16
	330	10×11.5	83	16	1350	0.16
35 (40.3)	47	6.3×7.2	16	60	730	0.16
	100	8×9.5	35	30	1000	0.16
	150	10×9.5	53	23	1100	0.16
	220	10×11.5	77	17	1300	0.16
40 (46.0)	27	6.3×7.2	11	70	700	0.16
	56	8×9.5	22	32	950	0.16
	100	10×9.5	40	24	1100	0.16
	120	10×11.5	48	18	1300	0.16
50 (57.5)	15	6.3×7.2	8	80	650	0.16
	33	8×9.5	17	35	900	0.16
	56	10×9.5	28	25	1100	0.16
	82	10×11.5	41	19	1250	0.16
63 (72.5)	10	6.3×7.2	6	100	550	0.16
	22	8×9.5	14	40	850	0.16
	33	8×9.5	21	40	850	0.16
		10×9.5	21	30	1000	0.16
	47	10×9.5	30	30	1000	0.16
	56	10×11.5	35	22	1100	0.16

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≦ F < 1K	1K ≦ F < 10K	10K ≦ F < 100K	100K ≦ F
Capacitance (μF)				
4.7 < C ≦ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SVA series

- Low ESR.
- High Voltage, Long Life.
- 105°C, 5,000 to 10,000hrs.
- RoHS Compliant.
- For high reliability applications. (Automotive equipment, Base station equipment, etc.)



SVA

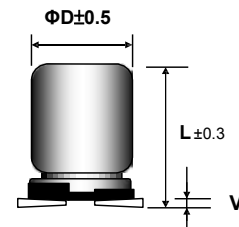
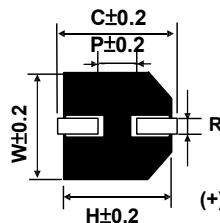
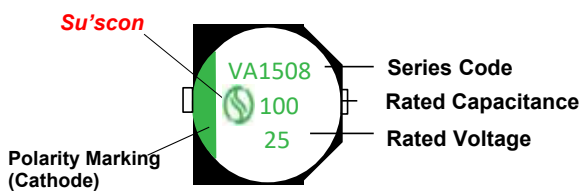
SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	16 ~ 125V	
Capacitance Tolerance	at 20°C, 120HZ	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.01CV or 3(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5000 to 10000 hours at 105°C, Φ6.3=5000hrs, D≥Φ8=10000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30 seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	ΦD	L	W	H	C	R	P	V max
6.3×6.0	6.3	7.7	6.6	6.6	7.3	0.5~0.8	2.1	0.3
6.3×7.7	6.3	7.7	6.6	6.6	7.3	0.5~0.8	2.1	0.3
8×10.5	8.0	10.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10×10.5	10.0	10.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
10×12.5	10.0	12.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

SVA series

SVA

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	82	6.3x6.0	13	55	1380	0.16
	120	6.3x7.7	19	40	1500	0.16
	270	8x10.5	43	26	2000	0.16
	470	10x10.5	75	21	2600	0.16
	560	10x12.5	90	15	3000	0.16
25 (28.8)	47	6.3x6.0	12	60	1270	0.16
	68	6.3x7.7	17	45	1400	0.16
	150	8x10.5	38	27	1900	0.16
	270	10x10.5	68	22	2500	0.16
	330	10x12.5	83	16	2900	0.16
35 (40.3)	27	6.3x6.0	9	100	1080	0.16
	47	6.3x7.7	16	60	1300	0.16
	100	8x10.5	35	30	1800	0.16
	150	10x10.5	53	23	2400	0.16
	220	10x12.5	77	17	2800	0.16
40 (46.0)	18	6.3x6.0	7	110	1030	0.16
	27	6.3x7.7	11	70	1200	0.16
	56	8x10.5	22	32	1700	0.16
	100	10x10.5	40	24	2400	0.16
	120	10x12.5	48	18	2700	0.16
50 (57.5)	10	6.3x6.0	5	120	980	0.16
	15	6.3x7.7	8	80	1200	0.16
	33	8x10.5	17	35	1600	0.16
	47	8x10.5	17	35	1600	0.16
	56	10x10.5	28	25	2300	0.16
	82	10x12.5	41	19	2600	0.16
63 (72.5)	6.8	6.3x6.0	4	150	960	0.16
	10	6.3x7.7	6	100	1000	0.16
	22	8x10.5	14	40	1500	0.16
	33	8x10.5	21	40	1500	0.16
		10x10.5	21	30	2100	0.16
	47	10x10.5	30	30	2100	0.16
	56	10x12.5	35	22	2400	0.16
80 (92.0)	12	10x10.5	10	70	1600	0.16
	15	10x10.5	12	70	1600	0.16
	18	10x12.5	14	50	1800	0.16
100 (115.0)	10	10x10.5	10	80	1400	0.16
	12	10x10.5	12	80	1400	0.16
	15	10x12.5	15	60	1600	0.16
125 (143.8)	10	10x10.5	13	90	1200	0.16

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SVV series

- Low ESR, Anti-vibration, Peak acceleration: 30G
- High Voltage, Long Life.
- 105°C, 5,000~10,000hrs.
- RoHS Compliant.
- For high reliability applications. (Automotive equipment, Base station equipment, etc.)



SVV

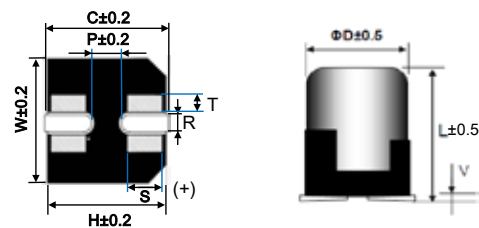
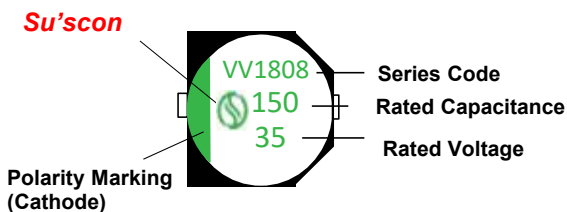
SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	16 ~ 125V	
Capacitance Tolerance	at 20°C,120HZ	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage ×1.15V	
Leakage Current	at 20°Cafter 2 minutes	I≤0.01CV or 3(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for 5,000 to 10,000 hours at 105°C, Φ6.3=5,000hrs, D≥Φ8=10,000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	D±0.5	L±0.5	W±0.2	H±0.2	C±0.2	R	P±0.2	V _{max}
6.3×6.0	6.3	6.0	6.6	6.6	7.3	0.5to0.8	2.1	0.3
6.3×8.0	6.3	8.0	6.6	6.6	7.3	0.5to0.8	2.1	0.3
8×10.5	8	10.5	8.3	8.3	9.0	1.0to1.4	3.2	0.3
10×10.5	10	10.5	10.3	10.3	11.0	1.0to1.4	4.5	0.3
10×12.5	10	12.5	10.3	10.3	11.0	1.0to1.4	4.5	0.3

SWV series

SWV

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	82	6.3x6.0	13	55	1380	0.16
	120	6.3x8.0	19	40	1500	0.16
	270	8x10.5	43	26	2000	0.16
	470	10x10.5	75	21	2600	0.16
	560	10x12.5	90	15	3000	0.16
25 (28.8)	47	6.3x6.0	12	60	1270	0.16
	68	6.3x8.0	17	45	1400	0.16
	150	8x10.5	38	27	1900	0.16
	270	10x10.5	68	22	2500	0.16
	330	10x12.5	83	16	2900	0.16
35 (40.3)	27	6.3x6.0	9	100	1080	0.16
	47	6.3x8.0	16	60	1300	0.16
	100	8x10.5	35	30	1800	0.16
	150	10x10.5	53	23	2400	0.16
	220	10x12.5	77	17	2800	0.16
40 (46.0)	18	6.3x6.0	7	110	1030	0.16
	27	6.3x8.0	11	70	1200	0.16
	56	8x10.5	22	32	1700	0.16
	100	10x10.5	40	24	2400	0.16
	120	10x12.5	48	18	2700	0.16
50 (57.5)	10	6.3x6.0	5	120	980	0.16
	15	6.3x8.0	8	80	1200	0.16
	33	8x10.5	17	35	1600	0.16
	47	8x10.5	17	35	1600	0.16
	56	10x10.5	28	25	2300	0.16
	82	10x12.5	41	19	2600	0.16
63 (72.5)	6.8	6.3x6.0	4	150	960	0.16
	10	6.3x8.0	6	100	1000	0.16
	22	8x10.5	14	40	1500	0.16
	33	8x10.5	21	40	1500	0.16
		10x10.5	21	30	2100	0.16
	47	10x10.5	30	30	2100	0.16
	56	10x12.5	35	22	2400	0.16
80 (92.0)	12	10x10.5	10	70	1600	0.16
	15	10x10.5	12	70	1600	0.16
	18	10x12.5	14	50	1800	0.16
100 (115.0)	10	10x10.5	10	80	1400	0.16
	12	10x10.5	12	80	1400	0.16
	15	10x12.5	15	60	1600	0.16
125 (143.8)	10	10x10.5	13	90	1200	0.16

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SVB series

- Low ESR.
- High Voltage, Long Life.
- 125°C, 2,000 to 4,000hrs.
- RoHS compliant
- For automotive mouldes and other high temperature applications



SVB

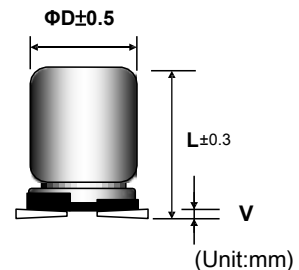
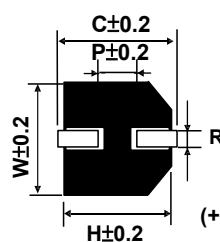
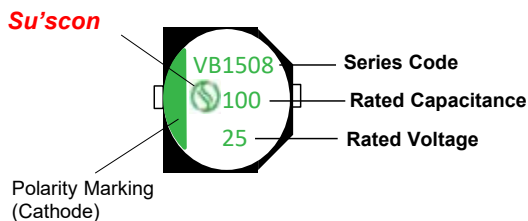
SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	16 ~ 125V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.01CV or 3(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 to 4,000 hours at 125°C. Φ6.3=2,000hrs, D ≥ Φ8=4,000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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 125°C.

MARKING AND DIMENSIONS



Size	ΦD	L	W	H	C	R	P	V max
6.3×6.0	6.3	6.0	6.6	6.6	7.3	0.5~0.8	2.1	0.3
6.3×7.7	6.3	7.7	6.6	6.6	7.3	0.5~0.8	2.1	0.3
8×10.5	8.0	10.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10×10.5	10.0	10.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
10×12.5	10.0	12.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

SVB series

SVB

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 125°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	82	6.3x6.0	13	55	970	0.16
	120	6.3x7.7	19	40	1100	0.16
	270	8x10.5	43	26	1500	0.16
	470	10x10.5	75	21	2000	0.16
	560	10x12.5	90	15	2300	0.16
25 (28.8)	47	6.3x6.0	12	60	890	0.16
	68	6.3x7.7	17	45	1100	0.16
	150	8x10.5	38	27	1300	0.16
	270	10x10.5	68	22	1500	0.16
	330	10x12.5	83	16	1700	0.16
35 (40.3)	27	6.3x6.0	9	100	760	0.16
	47	6.3x7.7	16	60	900	0.16
	100	8x10.5	35	30	1200	0.16
	150	10x10.5	53	23	1400	0.16
	220	10x12.5	77	17	1700	0.16
40 (46.0)	18	6.3x6.0	7	110	720	0.16
	27	6.3x7.7	11	70	900	0.16
	56	8x10.5	22	32	1200	0.16
	100	10x10.5	40	24	1400	0.16
	120	10x12.5	48	18	1600	0.16
50 (57.5)	10	6.3x6.0	5	120	690	0.16
	15	6.3x7.7	8	80	800	0.16
	33	8x10.5	17	35	1100	0.16
	47	8x10.5	24	35	1100	0.16
	56	10x10.5	28	25	1300	0.16
	82	10x12.5	41	19	1500	0.16
63 (72.5)	6.8	6.3x6.0	4	150	670	0.16
	10	6.3x7.7	6	100	700	0.16
	22	8x10.5	14	40	1000	0.16
	33	8x10.5	21	40	1000	0.16
		10x10.5	21	30	1200	0.16
	47	10x10.5	30	30	1200	0.16
	56	10x12.5	35	22	1400	0.16
80 (82.0)	12	10x10.5	10	70	900	0.16
	15	10x10.5	12	70	900	0.16
	18	10x12.5	14	50	1100	0.16
100 (115.0)	10	8x10.5	10	80	800	0.16
	12	10x10.5	12	80	800	0.16
	15	10x12.5	15	60	1000	0.16
125 (143.8)	10	10x10.5	13	90	700	0.16

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SVG series

- Low ESR, Anti-vibration, Peak acceleration: 30G.
- High Voltage, Long Life.
- 125°C, 2,000~4,000hrs.
- RoHS compliant
- For automotive modules and other high temperature applications



SVG

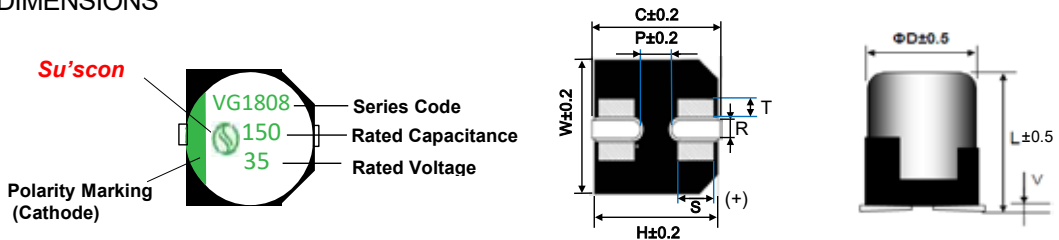
SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	16 ~ 125V	
Capacitance Tolerance	at 20°C,120Hz	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage ×1.15V	
Leakage Current	at 20°Cafter 2 minutes	I≤0.01CV or 3(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for 2,000 to 4,000 hours at 125°C, Φ6.3=2,000hrs, D≥Φ8=4,000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤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 voltages specified at 15~35°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF(tanδ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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 125°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	D±0.5	L±0.5	W±0.2	H±0.2	C±0.2	R	P±0.2	V _{max}
6.3×6.0	6.3	6.0	6.6	6.6	7.3	0.5to0.8	2.1	0.3
6.3×8.0	6.3	8.0	6.6	6.6	7.3	0.5to0.8	2.1	0.3
8×10.5	8	10.5	8.3	8.3	9.0	1.0to1.4	3.2	0.3
10×10.5	10	10.5	10.3	10.3	11.0	1.0to1.4	4.5	0.3
10×12.5	10	12.5	10.3	10.3	11.0	1.0to1.4	4.5	0.3

SVG series

SVG

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 125°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	82	6.3x6.0	13	55	970	0.16
	120	6.3x8.0	19	40	1100	0.16
	270	8x10.5	43	26	1500	0.16
	470	10x10.5	75	21	2000	0.16
	560	10x12.5	90	15	2300	0.16
25 (28.8)	47	6.3x6.0	12	60	890	0.16
	68	6.3x8.0	17	45	1100	0.16
	150	8x10.5	38	27	1300	0.16
	270	10x10.5	68	22	1500	0.16
	330	10x12.5	83	16	1700	0.16
35 (40.3)	27	6.3x6.0	9	100	760	0.16
	47	6.3x8.0	16	60	900	0.16
	100	8x10.5	35	30	1200	0.16
	150	10x10.5	53	23	1400	0.16
	220	10x12.5	77	17	1700	0.16
40 (46.0)	18	6.3x6.0	7	110	720	0.16
	27	6.3x8.0	11	70	900	0.16
	56	8x10.5	22	32	1200	0.16
	100	10x10.5	40	24	1400	0.16
	120	10x12.5	48	18	1600	0.16
50 (57.5)	10	6.3x6.0	5	120	690	0.16
	15	6.3x8.0	8	80	800	0.16
	33	8x10.5	17	35	1100	0.16
	56	10x10.5	28	25	1300	0.16
	82	10x12.5	41	19	1500	0.16
63 (72.5)	7	6.3x6.0	4	150	670	0.16
	10	6.3x8.0	6	100	700	0.16
	22	8x10.5	14	40	1000	0.16
		8x10.5	21	40	1000	0.16
	33	10x10.5	21	40	1200	0.16
		10x10.5	30	30	1200	0.16
	56	10x12.5	35	22	1400	0.16
80 (92.0)	12	10x10.5	10	70	900	0.16
	15	10x10.5	12	70	900	0.16
	18	10x12.5	14	50	1100	0.16
100 (115.0)	10	10x10.5	10	80	800	0.16
	12	10x10.5	12	80	800	0.16
	15	10x12.5	15	60	1000	0.16
125 (143.8)	10	10x10.5	13	90	700	0.16

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF) \ Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SVT series

- Low ESR.High Temperature
- High Voltage, Long Life.
- 135°C,1,000 to 2,000hrs.
- RoHS compliant
- For automotive mouldes and other high emperature applications



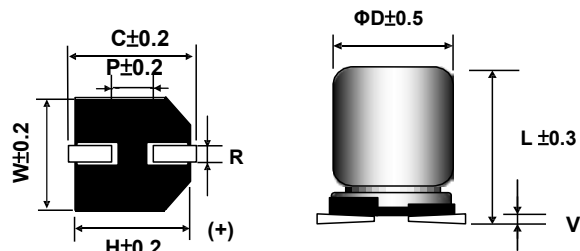
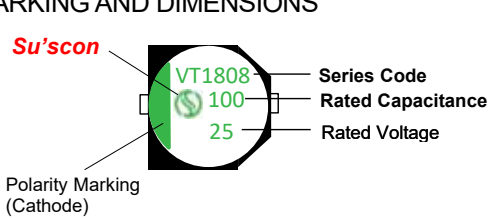
SVT

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +135°C	
Rated Voltage Range	—	25 ~ 63V	
Capacitance Tolerance	at 20°C,120Hz	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I≤0.01CV or 3(uA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for1,000 to 2,000 hours at 135°C. Φ6.3=1,000hrs, D≥Φ8=2,000hrs	Appearance	No significant damage.
		Capacitance change	≤ ±30% of the initial value.
		DF (tan δ)	≤ 200% of the initial specified value.
		ESR	≤ 200% of the initial specified value.
		Leakage current	≤ The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	≤ ±30% of the initial value.
		DF (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 voltages specified at 15~35°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	≤ ±30% of the initial value.
		DF (tan δ)	≤ 200% of the initial specified value.
		ESR	≤ 200% of the initial specified value.
		Leakage current	≤ The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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 135°C.

MARKING AND DIMENSIONS



Size	ΦD	L	W	H	C	R	P	V max
6.3×7.7	6.3	7.7	6.6	6.6	7.3	0.5~0.8	2.1	0.3
8×10.5	8.0	10.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10×10.5	10.0	10.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
10×12.5	10.0	12.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

SVT series

SVT

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 135°C	D.F. (tanδ) max. 120Hz / 20°C
25 (28.8)	68	6.3×7.7	17	45	750	0.16
	150	8x10.5	38	27	1000	0.16
	270	10x10.5	68	22	1200	0.16
	330	10x12.5	83	16	1350	0.16
35 (40.3)	47	6.3×7.7	16	60	730	0.16
	100	8x10.5	35	30	1000	0.16
	150	10x10.5	53	23	1100	0.16
	220	10x12.5	77	17	1300	0.16
40 (46)	27	6.3×7.7	11	70	700	0.16
	56	8x10.5	22	32	950	0.16
	100	10x10.5	40	24	1100	0.16
	120	10x12.5	48	18	1300	0.16
50 (57.5)	15	6.3×7.7	8	80	650	0.16
	33	8x10.5	17	35	900	0.16
	56	10x10.5	28	25	1100	0.16
	82	10x12.5	41	19	1250	0.16
63 (72.5)	10	6.3×7.7	6	100	550	0.16
	22	8x10.5	14	40	850	0.16
	33	8x10.5	21	40	850	0.16
		10x10.5	21	30	1000	0.16
	47	10x10.5	30	30	1000	0.16
	56	10x12.5	35	22	1100	0.16

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

SVH series

- Low ESR , Anti-vibration , Peak acceleration: 30G
- High Voltage, Long Life.
- 135°C, 1,000 to 2,000hrs.
- RoHS compliant
- For automotive mouldes and other high temperature applications



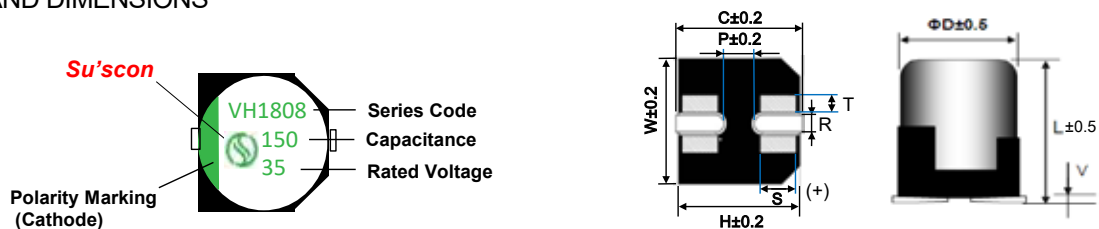
SVH

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +135°C	
Rated Voltage Range	—	25 ~ 63V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 15~35°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.01CV or 3(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 to 2,000 hours at 135°C. Φ6.3=1,000hrs, D≥Φ8=2,000hrs	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF (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°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF (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 voltages specified at 15~35°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±30% of the initial value.
		DF (tan δ)	≤200% of the initial specified value.
		ESR	≤200% of the initial specified value.
		Leakage current	≤The initial specified value.
Standards	IEC 60384-4 (JIS C 5101-4)		

※ 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 135°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	D±0.5	L±0.5	W±0.2	H±0.2	C±0.2	R	P±0.2	Vmax
6.3×8.0	6.3	8.0	6.6	6.6	7.3	0.5to0.8	2.1	0.3
8×10.5	8	10.5	8.3	8.3	9.0	1.0to1.4	3.2	0.3
10×10.5	10	10.5	10.3	10.3	11.0	1.0to1.4	4.5	0.3
10×12.5	10	12.5	10.3	10.3	11.0	1.0to1.4	4.5	0.3

SVH series

SVH

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 135°C	D.F. (tanδ) max. 120Hz / 20°C
25 (28.8)	68	6.3×8	17	45	750	0.16
	150	8×10.5	38	27	1000	0.16
	270	10×10.5	68	22	1200	0.16
	330	10×12.5	83	16	1350	0.16
35 (40.3)	47	6.3×8	16	60	730	0.16
	100	8×10.5	35	30	1000	0.16
	150	10×10.5	53	23	1100	0.16
	220	10×12.5	77	17	1300	0.16
40 (46.0)	27	6.3×8	11	70	700	0.16
	56	8×10.5	22	32	950	0.16
	100	10×10.5	40	24	1100	0.16
	120	10×12.5	48	18	1300	0.16
50 (57.5)	15	6.3×8	8	80	650	0.16
	33	8×10.5	17	35	900	0.16
	56	10×10.5	28	25	1100	0.16
	82	10×12.5	41	19	1250	0.16
63 (72.5)	10	6.3×8	6	100	550	0.16
	22	8×10.5	14	40	850	0.16
	33	8×10.5	21	40	850	0.16
		10×10.5	21	30	1000	0.16
	47	10×10.5	30	30	1000	0.16
	56	10×12.5	35	22	1100	0.16

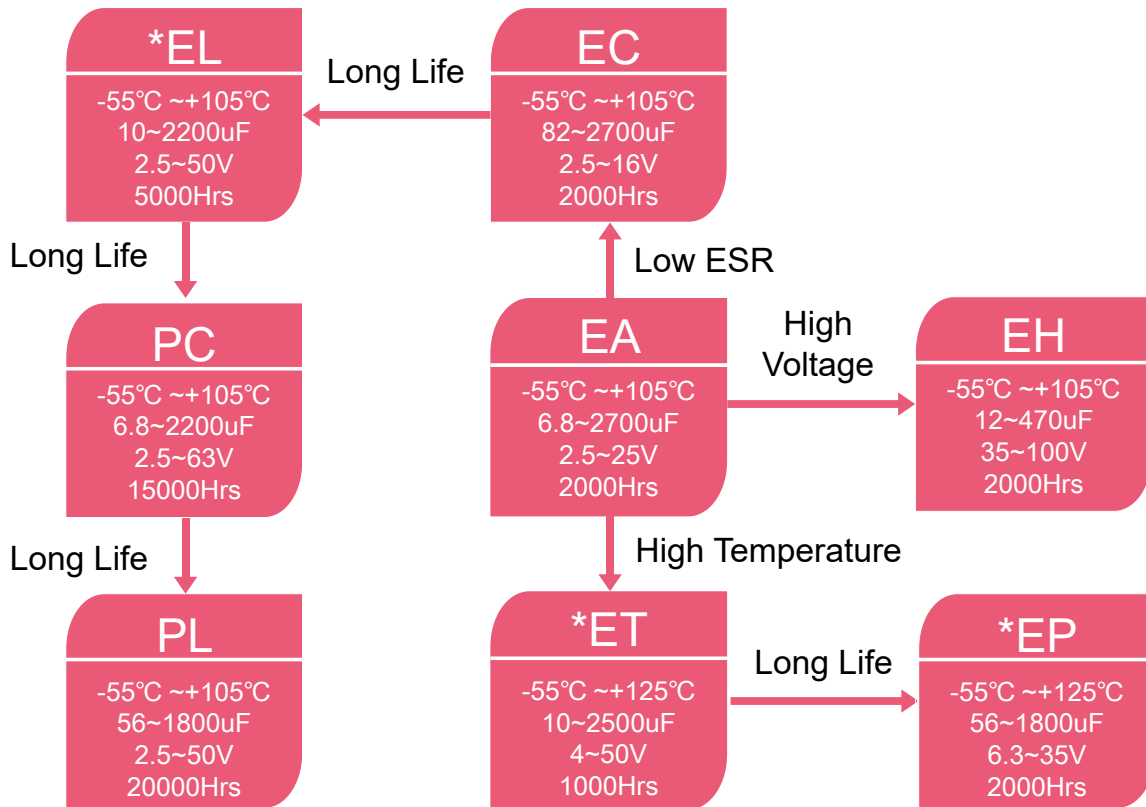
Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	100 ≦ F < 1K	1K ≦ F < 10K	10K ≦ F < 100K	100K ≦ F
4.7 < C ≦ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

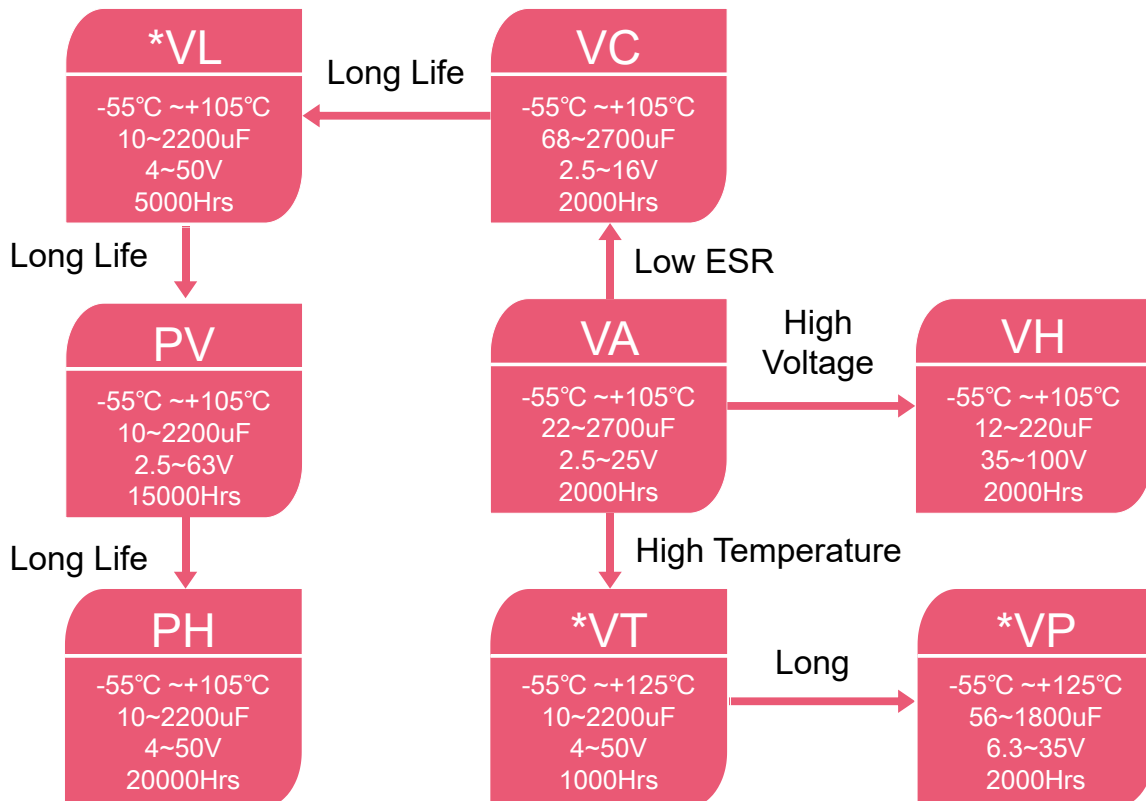
Polymer Series Chart

Note:AEC-Q200 marked with *

Radial Type

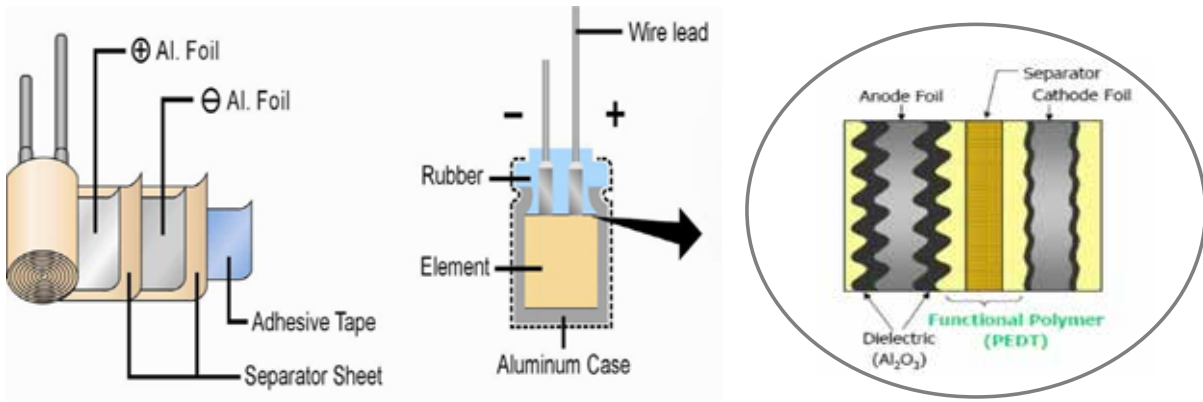


SMD Type

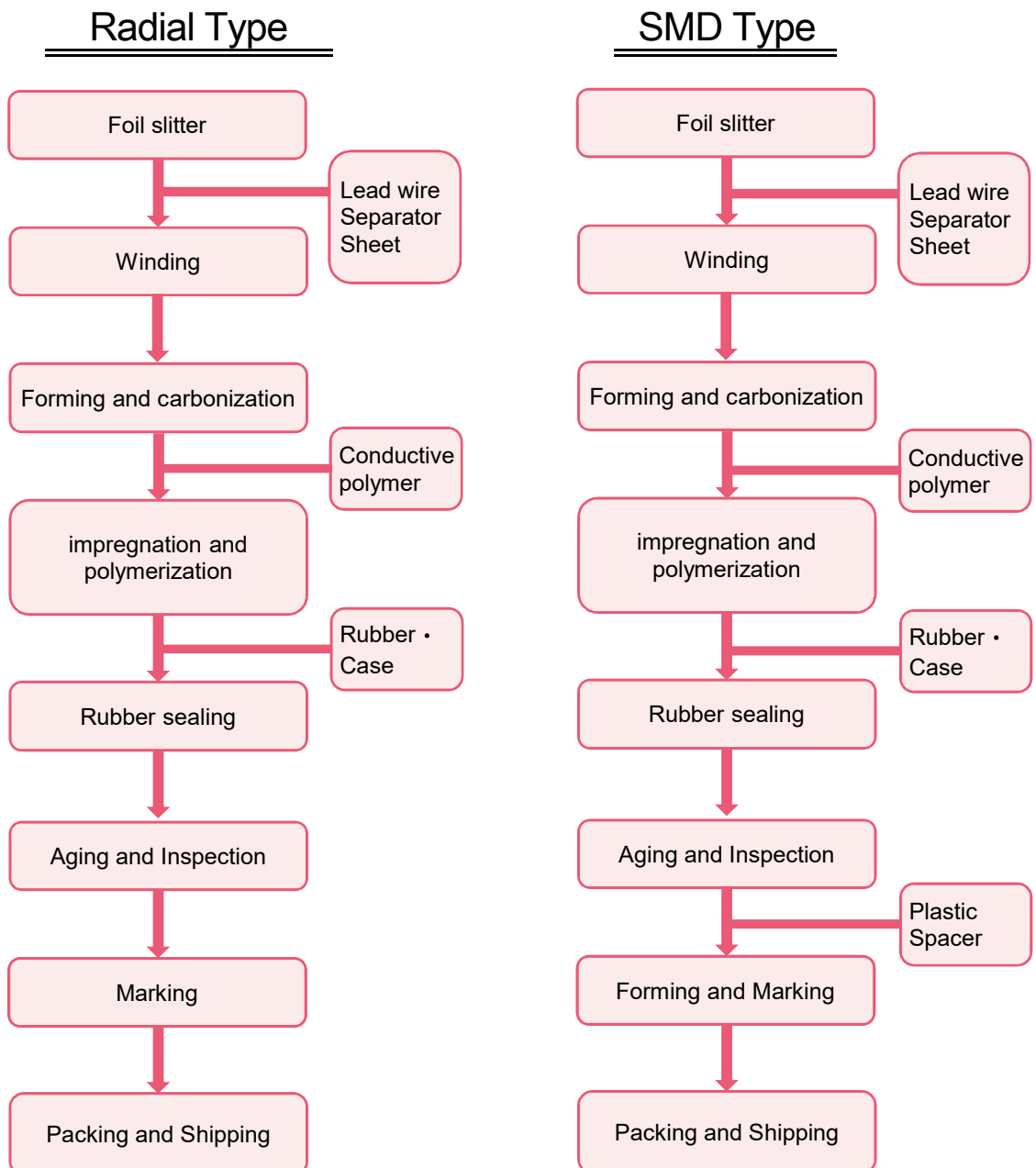


Product Process Flow Chart

Basic structure



Manufacturing Method



EA series

- Standard radial lead type.
- Rated voltage :2.5~25V.
- Endurance:2,000hours at 105°C
- Applications:motherboards, servers,VGA ,etc.
- ROHS compliant
- Halogen Free compliant

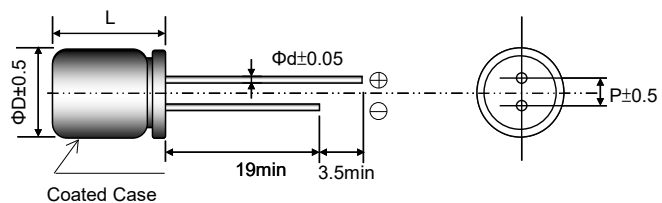
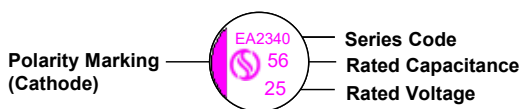


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5 ~ 25V	
Capacitance Tolerance	at 20°C,120HZ	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°Cafter 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	Z(-55°C) / Z(+20°C)	≤ 1.25
	at -25°C,100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (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 voltages specified at 105°C for 30 seconds through aprotective resistor (R = 1 kΩ) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	5x6	5x8	6.3×6	6.3x8	6.3×10.5	8x8	8×11.5	10x11.5	10x14
ΦD	5	5	6.3	6.3	6.3	8	8	10	10
L	L+1.0 max	L+1.0 max	L+1.0 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.0 max
Φd	0.45	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6
P	2.0	2.0	2.5	2.5	2.5	3.5	3.5	5.0	5.0

EA

EA series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	390	6.3×6	300	35	2100	0.12
	560	6.3×8	300	12	3500	0.12
	560	8×8	300	12	4320	0.12
	820	6.3×8	410	12	5200	0.12
	1200	8×8	600	12	5200	0.12
	1500	8×11.5	750	10	5200	0.12
	2700	10×11.5	1350	10	5230	0.12
4 (4.6)	270	6.3×6	300	35	2000	0.12
	560	6.3×8	448	15	3500	0.12
	680	6.3×8	544	15	3500	0.12
	820	8×8	656	13	5100	0.12
	1000	8×11.5	800	12	5100	0.12
	2200	10×11.5	1760	12	5560	0.12
6.3 (7.2)	82	5×6	300	40	1700	0.12
	100	6.3×6	300	35	1900	0.12
	220	6.3×6	300	35	1900	0.12
	470	6.3×8	592	15	3630	0.12
	560	6.3×8	706	15	3630	0.12
	560	8×8	706	15	4210	0.12
	680	8×8	857	15	4710	0.12
	1000	8×11.5	1260	14	5100	0.12
	2200	10×11.5	2772	15	5400	0.12
10 (11.5)	47	5×8	300	25	2200	0.12
	220	5×8	440	25	2200	0.12
	330	6.3×8	660	25	3560	0.12
	680	8×8	1360	25	3700	0.12
	820	8×11.5	1640	12	4500	0.12
	1500	10×11.5	3000	12	5440	0.12
16 (18.4)	47	6.3×6	300	25	1620	0.12
	82	6.3×6	300	25	1890	0.12
	100	6.3×6	320	25	1890	0.12
	270	6.3×8	864	15	2680	0.12
	470	8×8	1504	15	2820	0.12
	560	8×11.5	1792	20	3640	0.12
	680	10×11.5	2176	16	4270	0.12
	820	10×11.5	2624	16	4270	0.12
	1000	10×11.5	3200	16	4270	0.12

EA

EA series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
20 (23.0)	22	6.3×6	300	60	1450	0.12
	82	6.3×6	328	60	1450	0.12
	220	6.3×8	880	40	1620	0.12
	330	8×8	1320	40	2400	0.12
	470	8×11.5	1880	24	3320	0.12
	820	10×11.5	3280	20	3800	0.12
25 (28.8)	6.8	6.3×6	300	80	1200	0.12
	47	6.3×6	300	40	2000	0.12
	100	6.3×8	500	30	2150	0.12
	180	8×8	900	30	2580	0.12
	220	8×11.5	1100	25	3200	0.12
	470	10×11.5	2350	25	4100	0.12
	560	10×14	2800	20	4500	0.12
	680	8×16	3400	20	4600	0.12
	820	10×14	4100	20	5000	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

EA

EC series

- Low ESR at high frequency range.
- Rated voltage :2.5~16V.
- Endurance:2,000hours at 105°C
- Applications:LCD Monitor,LCD-TV,D/A Inverter,SPS,D/D Converter.etc.
- ROHS compliant
- Halogen Free compliant

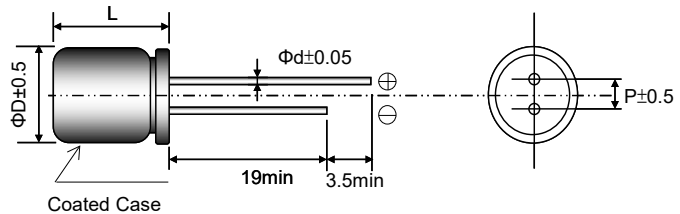
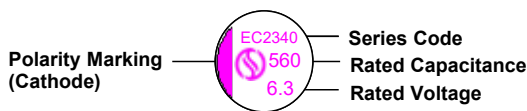


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5 ~ 16V	
Capacitance Tolerance	at 20°C,120HZ	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°Cafter 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured,after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	$Z(-55^\circ C)/Z(+20^\circ C) \leq 1.25$	
	at -25°C,100kHz	$Z(-25^\circ C)/Z(+20^\circ C) \leq 1.15$	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for 2,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF (tan δ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF (tan δ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF (tan δ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	5x6	5x8	6.3x6	6.3x8	6.3x10.5	8x8	8x11.5	8x16	8x20	10x11.5	10x16	10x20
ΦD	5	5	6.3	6.3	6.3	8	8	8	8	10	10	10
L	L+1.0 max	L+1.0 max	L+1.0 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max
Φd	0.45	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
P	2.0	2.0	2.5	2.5	2.5	3.5	3.5	3.5	3.5	5.0	5.0	5.0

EC series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	560	6.3×8	300	8	5080	0.12
	560	8×8	300	7	5580	0.12
	820	6.3×8	410	8	5080	0.12
	1200	8×8	600	7	5580	0.12
	1500	8×11.5	750	7	5820	0.12
	2,700	10×11.5	1350	7	6100	0.12
4 (4.6)	560	6.3×8	448	8	5080	0.12
	560	8×8	448	7	5580	0.12
	680	8×8	544	7	5580	0.12
	820	8×11.5	656	7	5820	0.12
	2200	10×11.5	1760	7	6100	0.12
6.3 (7.2)	100	5×6	300	30	1500	0.12
	270	5×8	340	15	2400	0.12
	470	6.3×8	592	10	4500	0.12
	560	6.3×8	706	10	5080	0.12
	560	8×8	706	10	5580	0.12
	680	6.3×8	857	10	5080	0.12
	820	6.3×10.5	1033	8	5080	0.12
	820	8×8	1033	8	5580	0.12
	1,000	8×11.5	1260	8	5820	0.12
	1,200	8×11.5	1260	8	6200	0.12
	1,500	10×11.5	1890	7	6200	0.12
	2,200	10×11.5	2772	7	6200	0.12
10 (11.5)	220	6.3×8	440	10	2820	0.12
	470	6.3×8	940	10	5080	0.12
	470	8×8	940	10	5080	0.12
	560	8×8	1120	8	5580	0.12
	680	8×8	1360	9	5580	0.12
	820	8×11.5	1640	9	5820	0.12
	1,000	10×11.5	2000	8	6100	0.12
	1500	8×20	3000	8	6100	0.12
	1500	10×11.5	3000	8	6100	0.12



EC series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max. ※2	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	100	6.3×6	320	30	2200	0.12
	220	6.3×8	704	15	3500	0.12
	270	6.3×8	864	15	3500	0.12
	330	8×8	1056	15	4500	0.12
	470	8×8	1504	13	4500	0.12
	470	8×11.5	1504	13	5400	0.12
	560	8×11.5	1792	16	5400	0.12
	820	10×11.5	2624	10	6100	0.12
	1000	8×16	3200	10	6100	0.12
	1000	10×11.5	3200	10	6100	0.12
	1500	8×20	4800	8	6100	0.12
	1500	10×16	4800	8	6500	0.12
	1800	10×20	5760	8	6800	0.12
	2200	10×20	7040	8	6800	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

EL series

- Super low ESR,High ripple current capability
- Rated voltage :2.5~50V
- Endurance:5,000hours at 105°C
- Applications: Servers,LCD-TV power,Inverter etc.
- ROHS compliant
- Halogen Free compliant

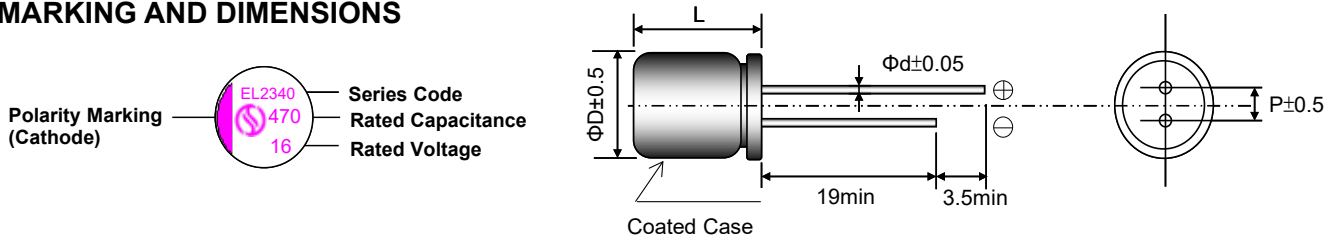


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5 ~ 50V	
Capacitance Tolerance	at 20°C, 120 Hz	±20% (M)	
Surge Voltage	at 105°C	Rated voltage x 1.15v	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C.Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120 Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	Z(-55°C) / Z(+20°C)	≤ 1.25
	at -25°C,100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% 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°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (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 voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	6.3×6	6.3×8	8×8	8×11.5	10×10	10×11.5
ΦD	6.3	6.3	6.3	8	8	10
L	L+1.0 max	L+1.5 max	L+1.0 max	L+1.5 max	L+1.0 max	L+1.5 max
Φd	0.5	0.5	0.5	0.6	0.6	0.6
P	2.5	2.5	3.5	3.5	5.0	5.0

EL series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max. ※2	ESR(mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	220	6.3×6	300	24	2400	0.12
	560	6.3×8	300	15	3200	0.12
	1000	8×8	500	15	3640	0.12
	1200	8×11.5	600	10	5200	0.12
	1,800	10×11.5	900	10	5200	0.12
	2,200	10×11.5	1100	10	5500	0.12
6.3 (7.2)	100	6.3×6	300	24	2400	0.12
	180	6.3×6	300	24	2400	0.12
	470	6.3×8	592	15	3500	0.12
	560	6.3×8	706	15	3500	0.12
	560	8×8	706	15	4100	0.12
	680	8×8	856	15	4300	0.12
	1,000	8×11.5	1260	12	5000	0.12
	1,200	10×10	1512	15	5200	0.12
	1,800	10×11.5	2268	12	5500	0.12
10 (11.5)	120	6.3×6	300	24	2400	0.12
	330	6.3×8	660	15	3500	0.12
	560	8×8	1120	15	4000	0.12
	680	8×11.5	1360	15	4800	0.12
	1,000	10×10	2000	15	4800	0.12
	1,200	10×11.5	2400	12	5500	0.12
16 (18.4)	82	6.3×6	300	24	2400	0.12
	100	6.3×8	320	15	3500	0.12
	220	6.3×8	704	15	3500	0.12
	330	8×8	1056	15	4200	0.12
	470	8×11.5	1504	12	4500	0.12
	470	10×11.5	1504	10	5100	0.12
	680	10×10	2176	15	5100	0.12
	820	10×11.5	2624	15	5400	0.12
	1,000	10×11.5	3200	15	5400	0.12
25 (28.8)	47	6.3×6	300	40	1500	0.12
	100	6.3×8	500	30	2500	0.12
	180	8×8	900	30	3260	0.12
	220	8×11.5	1100	30	3520	0.12
	330	10×10	1650	20	3850	0.12
	470	10×11.5	2350	25	4020	0.12

EL

EL series

EL SERIES STANDARD CHARACTERISTICS LIST

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max. ×2	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
35 (40.3)	22	6.3×6	300	70	1450	0.12
	68	6.3×8	476	60	1520	0.12
	120	8×8	840	30	2100	0.12
	150	8×11.5	1050	26	2800	0.12
	220	10×10	1540	30	3050	0.12
	270	10×11.5	1890	26	3650	0.12
50 (57.5)	10	6.3×6	300	90	900	0.12
	33	6.3×8	330	60	1500	0.12
	47	8×8	470	32	2000	0.12
	68	8×11.5	680	28	2200	0.12
	100	10×10	1000	32	2350	0.12
	100	10×11.5	1000	28	2550	0.12
63 (72.5)	22	6.3×8	300	65	1350	0.12
	33	8×8	415	40	1600	0.12
	47	8×11.5	592	38	2100	0.12
	56	10×10	706	38	2100	0.12
	82	10×11.5	1033	26	2500	0.12
	100	10×11.5	1260	26	2550	0.12
	180	10×16	2268	22	3200	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

EH series

- Low ESR, High Voltage, High ripple current capability
- Rated voltage :35~100V
- Endurance:2,000hours at 105°C
- Applications: LED Driver, LED Power Supply etc.
- ROHS compliant
- Halogen Free compliant



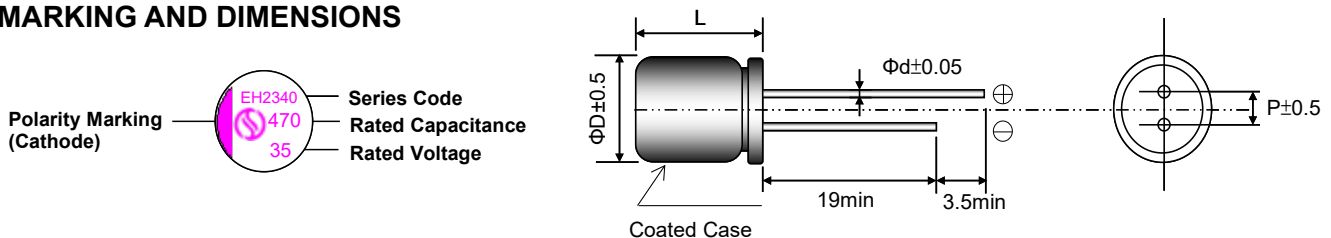
EH

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	35 ~ 100V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 105°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or 300(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	$Z(-55^\circ\text{C})/Z(+20^\circ\text{C}) \leq 1.25$	
	at -25°C, 100kHz	$Z(-25^\circ\text{C})/Z(+20^\circ\text{C}) \leq 1.15$	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF(tanδ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF(tanδ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R = 1kΩ) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF(tanδ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	6.3x6	6.3x8	8x6	8x8	8x11.5	10x10	10x11.5	10x16
ΦD	6.3	6.3	8	8	8	10	10	10
L	L+1.0 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max	L+1.0 max	L+1.5 max	L+1.0 max
Φd	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
P	2.5	2.5	3.5	3.5	3.5	5.0	5.0	5.0

EH series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 105°C/100kHz	D.F.(tanδ) max. 120Hz / 20°C
35 (40.3)	22	6.3×6	300	70	1450	0.12
	68	6.3×8	476	40	1500	0.12
	82	8×6	574	60	1800	0.12
	100	8×8	700	30	2100	0.12
	100	8×11.5	700	26	2300	0.12
	100	10×11.5	700	24	3000	0.12
	150	8×8	1050	30	2500	0.12
	180	8×11.5	1260	26	2800	0.12
	220	10×10	1540	26	3000	0.12
	220	10×11.5	1540	24	3200	0.12
	330	10×11.5	2310	24	3600	0.12
	470	10×16	3290	20	5000	0.12
50 (57.5)	12	6.3×8	300	60	1500	0.12
	33	6.3×8	330	60	1500	0.12
	33	8×6	330	60	1500	0.12
	47	8×8	470	32	1850	0.12
	68	8×11.5	680	30	2250	0.12
	47	8×11.5	470	30	2250	0.12
	100	10×11.5	1000	28	2560	0.12
	150	10×11.5	1500	28	2620	0.12
63 (72.5)	22	6.3×8	300	60	1500	0.12
	33	8×8	415	32	2050	0.12
	33	10×10	415	32	2200	0.12
	47	8×11.5	592	26	2200	0.12
	56	10×10	705	30	2300	0.12
	82	10×11.5	1033	26	2350	0.12
	100	10×11.5	1260	25	2550	0.12
80 (92.0)	22	8×8	352	35	1850	0.12
	33	8×11.5	528	32	1950	0.12
	47	10×10	752	33	2200	0.12
	68	10×11.5	1088	28	2350	0.12
100 (115.0)	15	8×11.5	300	40	1850	0.12
	22	10×11.5	440	38	2250	0.12
	27	10×11.5	540	38	2250	0.12



FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

ET series

- High temperature, low ESR, High ripple current capability
- Rated voltage :4~50V
- Endurance:1,000hours at 125°C
- Applications: DC-DC Converters, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- ROHS compliant
- Halogen Free compliant

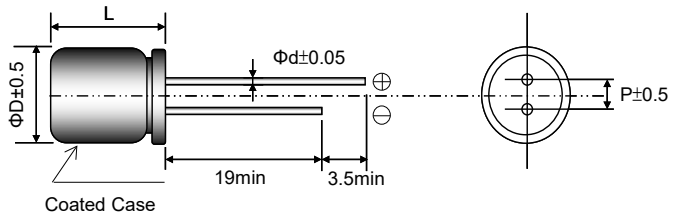


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	4 ~ 50V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 125°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	Z(-55°C)/Z(+20°C)	≤ 1.25
	at -25°C, 100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 125°C.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF(tanδ)	≤ 150% of the initial specified value.
		ESR	≤ 150% 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°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF(tanδ)	≤ 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 voltages specified at 105°C 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.
		DF(tanδ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.

※ 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 125°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	6.3x6	6.3x8	8x6	8x8	8x11.5	10x10	10x11.5
ΦD	6.3	6.3	8.0	8.0	8.0	10.0	10.0
L	L+1.0 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max
Φd	0.5	0.5	0.5	0.6	0.6	0.6	0.6
P	2.5	2.5	3.5	3.5	3.5	5.0	5.0

ET series

STANDARD RATINGS

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (uA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)		D.F. (tanδ) max. 120Hz / 20°C
					105°C 100kHz	125°C 100kHz	
4 (4.6)	100	6.3×6	300	40	2390	797	0.12
	330	6.3×8	300	20	3200	1067	0.12
	560	6.3×8	448	20	3200	1067	0.12
	1000	8×8	800	20	3800	1267	0.12
	1200	8×11.5	960	16	4200	1400	0.12
	2500	10×11.5	2000	16	5460	1820	0.12
6.3 (7.2)	100	6.3×6	300	40	2100	700	0.12
	470	6.3×8	592	20	3100	1033	0.12
	560	8×8	705	20	4300	1433	0.12
	1000	8×11.5	1260	16	5100	1700	0.12
	1,200	8×11.5	1512	16	5100	1700	0.12
	1500	10×10	1890	20	5200	1733	0.12
	1800	10×11.5	2268	16	5440	1813	0.12
10 (11.5)	100	6.3×6	300	40	1800	600	0.12
	330	6.3×8	660	20	2360	787	0.12
	330	8×6	660	40	2560	853	0.12
	560	8×8	1120	20	3200	1067	0.12
	820	8×11.5	1640	16	4200	1400	0.12
	1000	10×10	2000	20	5120	1707	0.12
	1200	10×11.5	2400	16	5600	1867	0.12
16 (18.4)	47	6.3×6	300	30	1620	540	0.12
	82	6.3×6	300	30	1620	540	0.12
	100	6.3×8	320	20	2120	707	0.12
	330	8×8	1056	20	4300	1433	0.12
	470	8×11.5	1504	16	4500	1500	0.12
	560	10×11.5	1792	16	4700	1567	0.12
	820	10×11.5	2624	16	4700	1567	0.12
25 (28.8)	47	6.3×6	300	50	2000	667	0.12
	100	6.3×8	500	30	2000	667	0.12
	180	8×8	900	28	3100	1033	0.12
	220	8×11.5	1100	26	3600	1200	0.12
	330	10×11.5	1650	24	4250	1417	0.12
	470	10×11.5	2350	24	4200	1400	0.12
35 (40.3)	22	6.3×6	300	70	1450	483	0.12
	68	6.3×8	476	60	1500	500	0.12
	120	8×8	840	30	2200	733	0.12
	150	8×11.5	1050	28	2600	867	0.12
	220	8×11.5	1540	28	2950	983	0.12
	270	10×10	1890	28	3200	1067	0.12
50 (57.5)	10	6.3×6	300	60	1400	467	0.12
	33	6.3×8	330	60	1500	500	0.12
	47	8×8	470	30	2000	667	0.12
	68	8×11.5	680	28	2200	733	0.12
	100	10×10	1000	28	2300	767	0.12
	100	10×11.5	1000	28	2500	833	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

ET

EP series

- High temperature, low ESR, High ripple current capability
- Rated voltage :6.3~35V
- Endurance:2,000hours at 125°C
- Applications: Lamps Power, LED Power, Service Equipment.
- ROHS compliant
- Halogen Free compliant



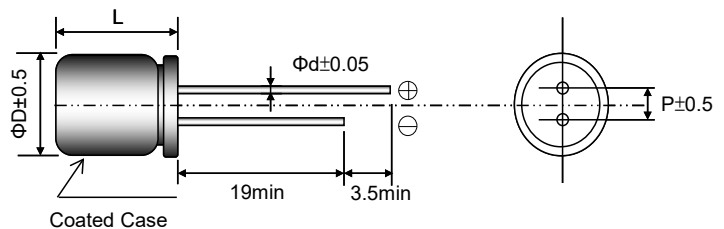
EP

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	6.3 ~ 35V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 125°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	$Z(-55^\circ C)/Z(+20^\circ C) \leq 1.25$	
	at -25°C, 100kHz	$Z(-25^\circ C)/Z(+20^\circ C) \leq 1.15$	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 125°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF(tanδ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF(tanδ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30 seconds	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF(tanδ)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.

※ 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 125°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size	6.3x8	8x8	8x11.5	10x10	10x11.5
ΦD	6.3	8.0	8.0	10.0	10.0
L	L+1.5 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max
Φd	0.5	0.6	0.6	0.6	0.6
P	2.5	3.5	3.5	5.0	5.0

EP series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)		D.F. (tanδ) max. 120Hz / 20°C
					105°C 100kHz	125°C 100kHz	
6.3 (7.2)	470	6.3x8	592	25	3800	1267	0.12
	680	8x8	857	25	4000	1333	0.12
	1000	8x11.5	1260	20	4200	1400	0.12
	1200	10x10	1512	25	5500	1833	0.12
	1800	10x11.5	2268	20	6100	2033	0.12
10 (11.5)	330	6.3x8	660	25	3700	1233	0.12
	560	8x8	1120	25	4000	1333	0.12
	680	8x11.5	1360	20	4500	1300	0.12
	820	10x10	1640	25	4200	1400	0.12
	1000	10x10	2000	25	4500	1500	0.12
	1200	10x11.5	2400	20	5600	1867	0.12
16 (18.4)	220	6.3x8	704	25	2850	950	0.12
	330	8x8	1056	25	4000	1333	0.12
	470	8x11.5	1504	20	4500	1500	0.12
	680	10x10	2176	25	5100	1700	0.12
	820	10x11.5	2624	20	5600	1867	0.12
20 (23.0)	120	6.3x8	480	25	2510	837	0.12
	220	8x8	880	25	2750	917	0.12
	270	8x11.5	1080	20	2950	983	0.12
	330	10x10	1320	25	4700	1567	0.12
	470	10x11.5	1880	20	5950	1983	0.12
25 (28.8)	100	6.3x8	500	40	2380	793	0.12
	180	8x8	900	30	2900	967	0.12
	220	8x11.5	1100	28	3500	1167	0.12
	330	10x10	1650	30	4250	1417	0.12
	470	10x11.5	2350	28	4500	1500	0.12
35 (40.3)	56	6.3x8	392	60	2300	767	0.12
	100	8x8	700	50	2500	833	0.12
	120	8x11.5	840	30	2950	983	0.12
	150	10x10	1050	30	2950	983	0.12
	220	10x11.5	1540	28	3400	1133	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

EP

PC series

- Low ESR at high frequency range.
- Rated voltage :2.5~63V.
- Endurance:15,000hours at 105°C
- Applications:LCD Monitor,LCD-TV,D/A Inverter,SPS,D/D Converter.etc.
- ROHS compliant
- Halogen Free compliant



SPECIFICATIONS

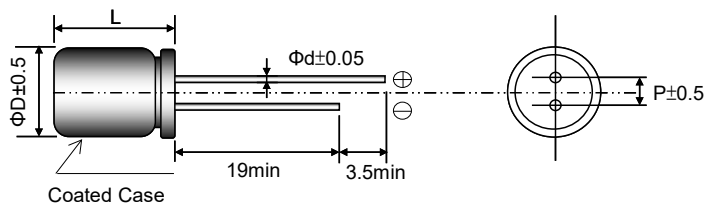
Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5~63V	
Capacitance Tolerance	at 20°C,120HZ	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°CAfter 2 minutes	I≤0.2CV or 300(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	Z(-55°C)/Z(+20°C) ≤ 1.25	
	at -25°C,100kHz	Z(-25°C)/Z(+20°C) ≤ 1.15	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for 15,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤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 voltages specified at 105°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS

Polarity Marking (Cathode)

Series Code
Rated Capacitance
Rated Voltage



(Unit:mm)

Size	5X6	6.3X6	6.3X9	6.3X10.5	8X8	8X11.5	8X14	8X16	8X20	10X11.5	10X14	10X16
ΦD	5	6.3	6.3	6.3	8	8	8	8	8	10	10.0	10.0
L	L+1.0 max	L+1.0 max	L+1.0 max	L+1.5 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.0 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max
Φd	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
P	2.0	2.5	2.5	2.5	3.5	3.5	3.5	3.5	3.5	5.0	5.0	5.0

PC series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	560	6.3×9	300	8	5080	0.12
	560	8×8	300	7	5820	0.12
	820	6.3×9	410	8	5080	0.12
	1200	8×8	600	7	5580	0.12
	1500	8×11.5	750	7	5820	0.12
	2,700	10×11.5	1350	7	6100	0.12
4 (4.6)	560	6.3×9	448	8	5080	0.12
	560	8×8	448	7	5580	0.12
	680	8×8	544	7	5580	0.12
	820	8×11.5	656	7	5820	0.12
	2200	10×11.5	1760	7	6100	0.12
6.3 (7.2)	100	5×6	300	13	1500	0.12
	220	5×8	300	12	2400	0.12
	470	6.3×9	592	10	4500	0.12
	560	6.3×9	706	10	5080	0.12
	560	8×8	706	10	5580	0.12
	1,000	8×11.5	1260	7	5820	0.12
	1,000	10×11.5	1260	7	6200	0.12
	2,200	10×11.5	2772	7	6200	0.12
10 (11.5)	220	6.3×9	440	10	2820	0.12
	270	6.3×9	540	10	5580	0.12
	560	8×8	1120	8	5580	0.12
	680	8×8	1360	9	5580	0.12
	820	8×11.5	1640	9	5820	0.12
	1,000	10×11.5	2000	9	6100	0.12
	1500	10×11.5	3000	9	6100	0.12
16 (18.4)	82	6.3×6	300	30	2200	0.12
	100	6.3×6	320	30	2200	0.12
	220	6.3×9	704	15	3500	0.12
	270	6.3×9	864	15	3500	0.12
	330	6.3×10.5	1056	15	3500	0.12
	470	8×8	1504	13	4500	0.12
	470	8×11.5	1504	13	5400	0.12
	470	10×11.5	1504	13	6100	0.12
	560	8×11.5	1792	16	5400	0.12
	680	10×11.5	2176	16	6100	0.12
	820	10×11.5	2624	10	6100	0.12
	1000	8×16	3200	10	6100	0.12
	1000	10×12	3200	10	6100	0.12
	1500	8×20	4800	8	6100	0.12
	1500	10×16	4800	8	6500	0.12
1800	10×20	5760	8	6800	0.12	
2200	10×20	7040	8	6800	0.12	

PC

PC series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
20 (23)	22	6.3×6	300	60	1450	0.12
	82	6.3×6	328	60	1450	0.12
	220	6.3×9	880	40	1620	0.12
	330	8×8	1320	40	2400	0.12
	470	8x11.5	1880	24	3320	0.12
	820	10x11.5	3280	20	3800	0.12
25 (28.8)	6.8	6.3×6	300	80	1200	0.12
	47	6.3×6	300	40	2000	0.12
	100	6.3×9	500	30	2150	0.12
	180	8×8	900	30	2580	0.12
	220	8x11.5	1100	25	3200	0.12
	330	10x10	1650	28	3800	0.12
	470	10x11.5	2350	25	4100	0.12
	560	10x14	2800	16	4500	0.12
	680	8X16	3400	16	4600	0.12
	820	10x14	4100	16	5000	0.12
35 (40.3)	22	6.3x6	300	70	1450	0.12
	68	6.3x9	476	40	1500	0.12
	82	8x7	574	60	1800	0.12
	100	8x8	700	30	2100	0.12
	100	8x11.5	700	26	2300	0.12
	100	10x11.5	700	24	3000	0.12
	150	8x8	1050	30	2500	0.12
	180	8x11.5	1260	26	2800	0.12
	220	10x10	1540	26	3000	0.12
	220	10x11.5	1540	24	3200	0.12
	330	10x11.5	2310	24	3600	0.12
	470	10x16	3290	20	5000	0.12
	50 (57.5)	12	6.3×9	300	60	1500
33		6.3x9	330	60	1500	0.12
33		8x7	330	60	1500	0.12
47		8x8	470	32	1850	0.12
68		8x11.5	680	30	2250	0.12
47		8x11.5	470	30	2250	0.12
100		10x11.5	1000	28	2560	0.12
150		10x11.5	1500	28	2620	0.12
63 (72.5)	22	6.3x9	300	60	1500	0.12
	33	8x8	415	32	2050	0.12
	33	10x10	415	32	2200	0.12
	47	8x11.5	592	26	2200	0.12
	56	10x10	705	30	2300	0.12
	82	10x11.5	1033	26	2350	0.12
	100	10x11.5	1260	25	2550	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

PL series

- Super low ESR,High ripple current capability
- Rated voltage :2.5~50V
- Endurance:20,000hours at 105°C
- Applications: Servers,LCD-TV power,Inverter etc.
- ROHS compliant
- Halogen Free compliant

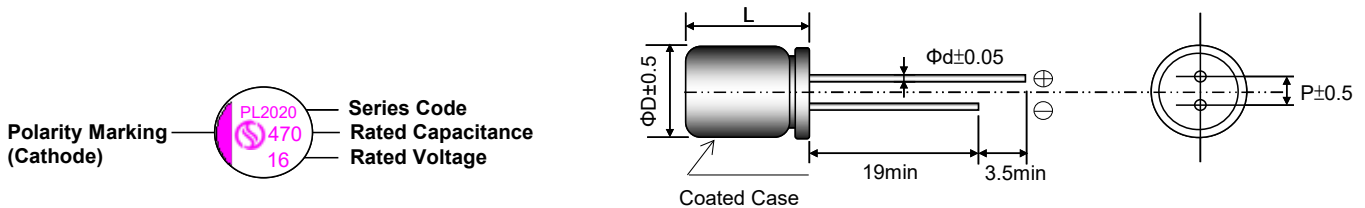


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5~50V	
Capacitance Tolerance	at 20°C,120HZ	±20%(M)	
Surge Voltage	at 105°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	I≤0.2CV or 300(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C.	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	Z(-55°C)/Z(+20°C)	≤ 1.25
	at -25°C,100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for 20,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤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 voltages specified at 105°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



Size	6.3×6	6.3×9	8×8	8×11.5	10×10	10×11.5
ΦD	6.3	6.3	8	8	10	10
L	L+1.0 max	L+1.0 max	L+1.5 max	L+1.5 max	L+1.0 max	L+1.5 max
Φd	0.5	0.5	0.6	0.6	0.6	0.6
P	2.5	2.5	3.5	3.5	5.0	5.0

PL

PL series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	220	6.3×6	300	24	2400	0.12
	560	6.3×9	300	15	3200	0.12
	1000	8×8	500	15	3640	0.12
	1200	8×11.5	600	10	5200	0.12
	1800	10×11.5	900	10	5200	0.12
	2200	10×11.5	1100	10	5500	0.12
6.3 (7.2)	100	6.3×6	300	24	2400	0.12
	180	6.3×6	300	24	2400	0.12
	470	6.3×9	592	20	3500	0.12
	560	6.3×9	706	20	3500	0.12
	560	8×8	706	15	4100	0.12
	680	8×8	856	15	4300	0.12
	1000	8×11.5	1260	12	5000	0.12
	1200	10×10	1512	15	5200	0.12
	1800	10×11.5	2268	12	5500	0.12
10 (11.5)	120	6.3×6	300	24	2400	0.12
	330	6.3×9	660	15	3500	0.12
	560	8×8	1120	15	4000	0.12
	680	8×11.5	1360	15	4800	0.12
	1000	10×10	2000	15	4800	0.12
	1200	10×11.5	2400	12	5500	0.12
16 (18.4)	82	6.3×6	300	24	2400	0.12
	100	6.3×9	320	15	3500	0.12
	220	6.3×9	704	15	3500	0.12
	330	8×8	1056	15	4200	0.12
	470	8×11.5	1504	12	4500	0.12
	470	10×11.5	1504	10	5100	0.12
	680	10×10	2176	15	5100	0.12
	820	10×11.5	2624	15	5400	0.12
	1000	10×11.5	3200	15	5400	0.12
25 (28.8)	47	6.3×6	300	40	1500	0.12
	100	6.3×9	500	30	2500	0.12
	180	8×8	900	30	3260	0.12
	220	8×11.5	1100	30	3520	0.12
	330	10×10	1650	20	3850	0.12
	470	10×11.5	2350	25	4020	0.12
35 (40.3)	22	6.3×6	300	70	1450	0.12
	68	6.3×9	476	60	1520	0.12
	120	8×8	840	30	2100	0.12
	150	8×11.5	1050	26	2800	0.12
	220	10×10	1540	30	3050	0.12
	270	10×11.5	1890	26	3650	0.12
50 (57.5)	10	6.3×6	300	90	900	0.12
	33	6.3×9	330	60	1500	0.12
	47	8×8	470	32	2000	0.12
	68	8×11.5	680	28	2200	0.12
	100	10×10	1000	32	2350	0.12
	100	10×11.5	1000	28	2550	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

VA series

- Standard SMD type.
- Rated voltage :2.5~25V
- Endurance:2,000hours at 105°C
- Applications:motherboards, servers,VGA ,etc.
- ROHS compliant
- Halogen Free compliant

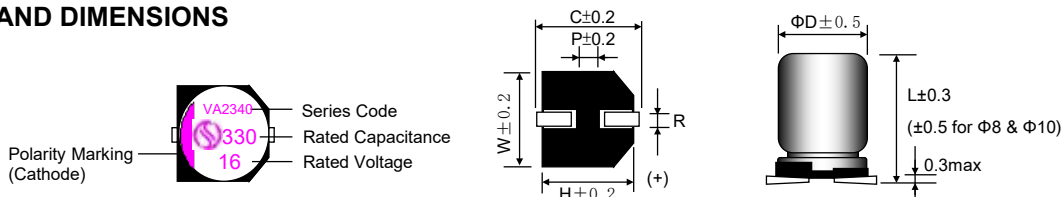


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5 ~ 25V	
Capacitance Tolerance	at 20°C,120Hz	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	Z(-55°C)/Z(+20°C)	≤ 1.25
	at -25°C,100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°Cafter the rated voltage is applied for 2,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (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 voltages specified at 105°C for 30 seconds through aprotective resistor (R=1kΩ) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

ΦDxL	ΦD	L	W	H	C	R	P
5×5.8	5.0	5.8	5.3	5.3	6.0	0.5~0.8	1.4
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3×7.7	6.3	7.7	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VA

VA series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	220	6.3×5.8	300	25	2390	0.12
	330	6.3×5.8	300	25	2390	0.12
	560	6.3×7.7	300	25	2390	0.12
	820	6.3×9.5	410	20	3000	0.12
	1200	8×9.5	600	20	4520	0.12
	1500	8×9.5	750	20	4520	0.12
	1800	8×12	900	13	4520	0.12
	2200	10×10.5	1100	18	4520	0.12
4 (4.6)	220	6.3×5.8	300	25	2000	0.12
	560	5×5.8	448	20	4500	0.12
	820	8×9.5	656	20	4500	0.12
	1000	8×9.5	800	20	4500	0.12
	1200	8×12	960	15	4820	0.12
	1500	10×10.5	1200	15	4820	0.12
	2200	10×12.5	1760	15	5200	0.12
	6.3 (7.2)	100	6.3×5.8	300	25	2400
220		6.3×5.8	300	25	2400	0.12
220		8×6.7	300	25	3020	0.12
560		6.3×9.5	705	20	3020	0.12
820		8×9.5	1033	20	4500	0.12
1000		8×9.5	1260	20	4500	0.12
1200		8×12	1512	15	4800	0.12
1500		10×10.5	1890	15	4950	0.12
10 (11.5)	2200	10×12.5	2772	15	5200	0.12
	33	5×5.8	300	45	1100	0.12
	100	6.3×5.8	300	30	1700	0.12
	150	6.3×5.8	300	45	1700	0.12
	330	6.3×9.5	660	45	2050	0.12
	560	8×9.5	1120	35	2560	0.12
	680	8×9.5	1360	35	2560	0.12
	820	8×12	1640	17	3950	0.12
16 (18.4)	1000	10×10.5	2000	15	3950	0.12
	1500	10×12.5	3000	13	5230	0.12
	22	5×5.8	300	40	1000	0.12
	100	6.3×5.8	320	35	1620	0.12
	270	6.3×5.8	864	20	2500	0.12
	270	8×9.5	864	20	3200	0.12
	330	8×9.5	1056	20	3690	0.12
	470	8×9.5	1504	20	3890	0.12
	560	8×12	1792	20	3940	0.12
	680	10×10.5	2176	20	4220	0.12
820	10×12.5	2624	16	4720	0.12	
1000	10×12.5	3200	16	5200	0.12	

※ 1. Capacitance tolerance : ±20% (M)
 ※ 2. After 2 minutes

VA series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
20 (23.0)	68	5×5.8	300	38	1450	0.12
	180	6.3×9.5	720	30	2450	0.12
	330	8×9.5	1320	30	3000	0.12
	470	8×12	1880	28	3320	0.12
	560	10×12.5	2240	28	3320	0.12
	680	10×12.5	2720	28	4220	0.12
25 (28.8)	47	6.3×5.8	300	40	1200	0.12
	100	6.3×9.5	500	30	2000	0.12
	100	8×6.7	500	40	2000	0.12
	150	8×9.5	750	35	3000	0.12
	220	8×12	1100	28	3500	0.12
	330	10×10.5	1650	30	3800	0.12
	470	10×12.5	2350	28	4000	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0



VC series

- Super low ESR, High ripple current capability
- Rated voltage :2.5~16V.
- Endurance:2,000hours at 105°C
- Applications:motherboards, servers,VGA ,etc.
- ROHS compliant
- Halogen Free compliant



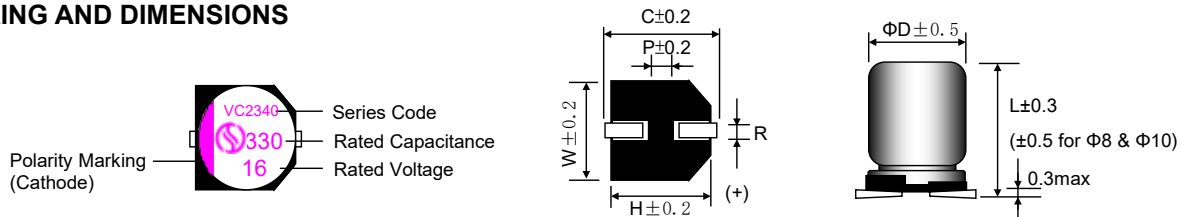
VC

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5 ~ 16V	
Capacitance Tolerance	at 20°C, 120HZ	±20% (M)	
Surge Voltage	at 105°C	Rated voltage x1.15V	
Leakage Current	at 20°C After 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor ($\tan \delta$)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	$Z(-55^\circ C) / Z(+20^\circ C)$	≤ 1.25
	at -25°C, 100kHz	$Z(-25^\circ C) / Z(+20^\circ C)$	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R = 1 kΩ) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
Leakage current		\leq The initial specified value.	

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

ΦDxL	ΦD	L	W	H	C	R	P
5×5.8	5.0	5.8	5.3	5.3	6.0	0.5~0.8	1.4
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VC series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	220	5×5.8	300	40	1620	0.12
	330	6.3×5.8	300	20	2690	0.12
	820	6.3×9.5	410	18	3200	0.12
	820	8×9.5	410	18	4520	0.12
	1500	8×9.5	750	18	4520	0.12
	1800	8×12	900	12	5200	0.12
	2700	10×12.5	1350	12	5500	0.12
4 (4.6)	68	5×5.8	300	40	1500	0.12
	150	6.3×5.8	300	24	2200	0.12
	680	6.3×9.5	544	16	3200	0.12
	680	8×6.7	544	20	3400	0.12
	1000	8×9.5	800	16	4500	0.12
	1500	8×12	1200	14	5100	0.12
	1800	10×12.5	1440	12	5500	0.12
	2200	10×12.5	2000	12	5500	0.12
6.3 (7.2)	100	5×5.8	300	40	1500	0.12
	220	5×7	300	20	1600	0.12
	220	6.3×5.8	300	20	2400	0.12
	560	6.3×9.5	705	20	3200	0.12
	560	8×6.7	705	20	3300	0.12
	820	8×9.5	1033	15	4450	0.12
	1000	8×9.5	1260	15	4520	0.12
	1200	8×12	1512	12	5020	0.12
	1500	10×10.5	1890	15	5020	0.12
	1800	10×10.5	2268	12	5400	0.12
	2200	10×12.5	2772	12	5500	0.12
10 (11.5)	68	5×5.8	300	40	1500	0.12
	120	6.3×5.8	300	25	2420	0.12
	150	8×6.7	300	22	2450	0.12
	330	6.3×9.5	660	20	3200	0.12
	560	8×9.5	1120	16	4450	0.12
	680	8×9.5	1360	16	4450	0.12
	820	8×12	1640	14	4850	0.12
	1000	10×10.5	2000	15	5020	0.12
	1200	10×10.5	2400	15	5200	0.12
	1500	10×12.5	3000	14	5400	0.12
16 (18.4)	100	6.3×5.8	320	24	2400	0.12
	180	6.3×9.5	576	20	3200	0.12
	220	6.3×9.5	704	20	3200	0.12
	270	6.3×9.5	864	20	3200	0.12
	270	8×6.7	864	20	3400	0.12
	270	8×9.5	864	20	4400	0.12
	470	8×9.5	1504	20	4400	0.12
	560	8×12	1792	16	4820	0.12
	680	10×10.5	2176	18	5200	0.12
	1000	10×12.5	3200	16	5400	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

VC

VH series

- Low ESR, High Voltage, High ripple current capability
- Rated voltage : 35~100V
- Endurance: 2,000 hours at 105°C
- Applications: LED Driver, LED Power Supply etc.
- ROHS compliant
- Halogen Free compliant



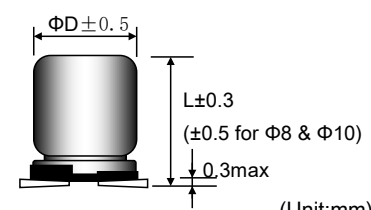
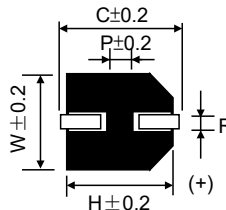
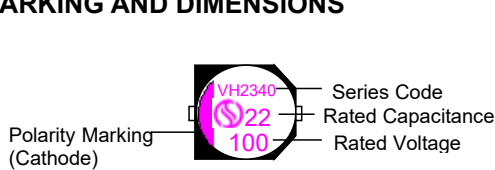
VH

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	35 ~ 100V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 105°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor ($\tan \delta$)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	$Z(-55^\circ C)/Z(+20^\circ C)$	≤ 1.25
	at -25°C, 100kHz	$Z(-25^\circ C)/Z(+20^\circ C)$	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R = 1 kΩ) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



ΦDxL	ΦD	L	W	H	C	R	P
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VH series

VH

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
35 (40.3)	22	6.3x5.8	300	80	1450	0.12
	56	6.3x9.5	392	50	2300	0.12
	68	6.3x9.5	476	50	2300	0.12
	68	8x6.7	476	60	2500	0.12
	100	8x12	700	28	2750	0.12
	220	10x12.5	1540	28	3200	0.12
50 (57.5)	12	6.3x5.8	300	100	1450	0.12
	33	6.3x9.5	330	50	1800	0.12
	47	8x9.5	470	45	2100	0.12
	100	10x12.5	1000	28	2560	0.12
	180	10x12.5	1800	28	2750	0.12
63 (72.5)	22	6.3x9.5	300	50	1800	0.12
	33	6.3x9.5	416	50	1800	0.12
	47	8x12	592	36	2200	0.12
	56	10x10.5	705	32	2350	0.12
	100	10x12.5	1260	28	2550	0.12
	150	10x12.5	1890	28	2550	0.12
80 (92.0)	22	8x9.5	352	45	2100	0.12
	33	8x12	528	45	2100	0.12
	47	10x10.5	752	45	2250	0.12
	68	10x12.5	1088	38	2550	0.12
100 (115.0)	15	8x12	300	40	2050	0.12
	22	10x12.5	440	38	2250	0.12
	27	10x12.5	540	38	2250	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

VL series

- Super low ESR, Long Life capability
- Rated voltage :4.0~50V.
- Endurance:5,000hours at 105°C
- Applications:DC/DC Converter, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- ROHS compliant
- Halogen Free compliant

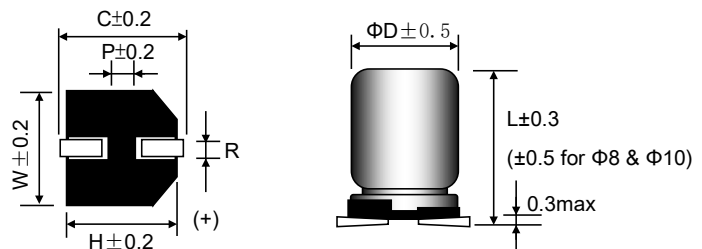
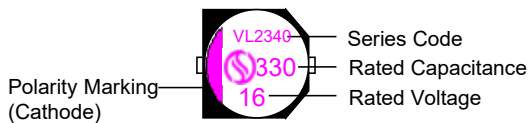


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	4 ~ 50V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor ($\tan \delta$)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	$Z(-55^\circ C)/Z(+20^\circ C) \leq 1.25$	
	at -25°C, 100kHz	$Z(-25^\circ C)/Z(+20^\circ C) \leq 1.15$	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R = 1 kΩ) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

ΦDxL	ΦD	L	W	H	C	R	P
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	1.4
6.3×7	6.3	7.0	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VL series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
4 (4.6)	220	5x5.8	300	20	2800	0.12
	560	6.3x5.8	448	20	3500	0.12
	560	8x6.7	448	18	3700	0.12
	820	8x9.5	656	15	4000	0.12
	1200	8x12	960	15	4450	0.12
	1500	10x10.5	1200	13	4500	0.12
	2200	10x12.5	1760	13	5400	0.12
6.3 (7.2)	100	6.3x5.8	300	22	2400	0.12
	220	6.3x5.8	300	22	2600	0.12
	470	6.3x9.5	592	22	3200	0.12
	560	6.3x9.5	705	22	3200	0.12
	820	8x9.5	1033	20	3850	0.12
	1000	8x12	1260	20	4250	0.12
	1200	10x10.5	1512	18	4350	0.12
	1800	10x12.5	2268	18	5200	0.12
10 (11.5)	68	6.3x5.8	300	30	2400	0.12
	100	6.3x5.8	300	30	2400	0.12
	220	6.3x7	440	30	2500	0.12
	330	6.3x9.5	660	30	3150	0.12
	560	8x9.5	1120	25	3850	0.12
	680	8x12	1360	25	4150	0.12
	820	10x10.5	1640	20	4250	0.12
	1000	10x10.5	2000	20	4250	0.12
	1200	10x12.5	2400	20	5100	0.12
16 (18.4)	100	6.3x5.8	320	30	2200	0.12
	220	6.3x9.5	704	30	3050	0.12
	330	8x9.5	1056	20	3450	0.12
	470	8x12	1504	20	4050	0.12
	680	10x10.5	2176	20	4150	0.12
	820	10x12.5	2624	20	5100	0.12
25 (28.8)	47	6.3x5.8	300	40	1500	0.12
	100	6.3x9.5	500	35	2800	0.12
	180	8x9.5	900	30	3250	0.12
	220	8x12	1100	30	3900	0.12
	330	10x10.5	1650	20	4100	0.12
	470	10x12.5	2350	25	4500	0.12
35 (40.3)	22	6.3x5.8	300	70	1450	0.12
	68	6.3x9.5	476	60	1500	0.12
	120	8x9.5	840	50	1800	0.12
	150	8x12	1050	50	2850	0.12
	220	10x10.5	1540	40	2950	0.12
	270	10x12.5	1890	40	3200	0.12
50 (57.5)	10	6.3x5.8	300	60	1400	0.12
	33	6.3x9.5	330	30	1700	0.12
	47	8x9.5	470	30	2000	0.12
	68	8x12	680	28	2200	0.12
	100	10x10.5	1000	30	2300	0.12
	100	10x12.5	1000	26	2650	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0



VT series

- Super low ESR, High ripple current capability
- Rated voltage : 4.0~50V.
- Endurance: 1,000hours at 125°C
- Applications: Motherboard, DC/DC Converter, Adapter, SPS, VCR, Camcorder, DSC, PDA, HD Drive, MO Drive, etc.
- ROHS compliant
- Halogen Free compliant



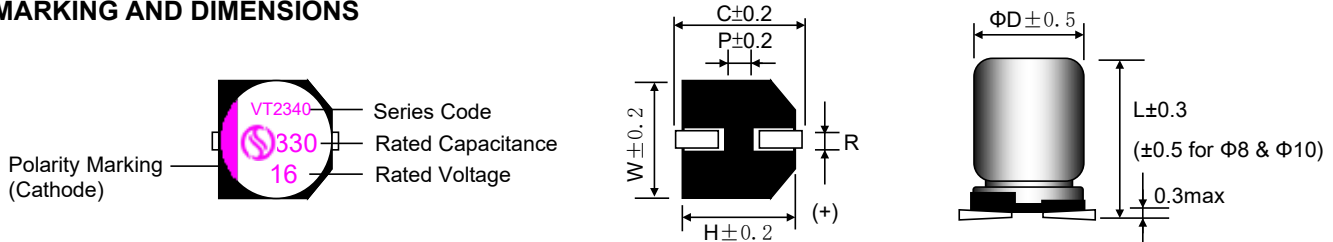
VT

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	4 ~ 50V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 105°C	Rated voltage × 1.15V	
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor ($\tan \delta$)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	$Z(-55^\circ C)/Z(+20^\circ C) \leq 1.25$	
	at -25°C, 100kHz	$Z(-25^\circ C)/Z(+20^\circ C) \leq 1.15$	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 125°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 125°C.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor ($R = 1 k\Omega$) and discharge for 5 minutes 30 seconds.	Appearance	No significant damage.
		Capacitance change	$\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$)	$\leq 150\%$ of the initial specified value.
		ESR	$\leq 150\%$ of the initial specified value.
		Leakage current	\leq The initial specified value.

※ 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 125°C.

MARKING AND DIMENSIONS



(Unit:mm)

ΦDxL	ΦD	L	W	H	C	R	P
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3×7	6.3	7.0	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VT series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)		D.F. (tanδ) max. 120Hz / 20°C
					105°C 100kHz	125°C 100kHz	
4 (4.6)	150	6.3x5.8	300	35	2450	700	0.12
	220	6.3x5.8	300	20	2800	800	0.12
	560	6.3x9.5	448	20	3000	857	0.12
	560	8x6.7	448	20	3000	857	0.12
	820	8x9.5	656	15	3500	1000	0.12
	1200	8x12	960	15	3800	1086	0.12
	1500	10x10.5	1200	12	4500	1286	0.12
	2200	10x12.5	1760	12	5500	1571	0.12
6.3 (7.2)	100	6.3x5.8	300	40	2400	686	0.12
	150	6.3x5.8	300	40	2400	686	0.12
	330	6.3x7	415	30	2800	800	0.12
	470	6.3x9.5	592	25	2800	800	0.12
	680	8x9.5	856	25	2800	800	0.12
	820	8x12	1033	20	3000	857	0.12
	1000	8x12	1260	20	3000	857	0.12
	1200	10x10.5	1512	20	3000	857	0.12
10 (11.5)	100	6.3x5.8	300	35	2800	800	0.12
	330	6.3x9.5	660	25	2800	800	0.12
	470	8x9.5	940	25	3000	857	0.12
	560	8x9.5	1120	25	3000	857	0.12
	680	8x12	1360	20	3500	1000	0.12
	820	10x10.5	1640	20	3500	1000	0.12
	1000	10x10.5	2000	20	3500	1000	0.12
	1200	10x12.5	2400	12	5200	1486	0.12
16 (18.4)	100	6.3x5.8	320	35	2050	586	0.12
	220	6.3x9.5	704	25	2050	586	0.12
	330	8x9.5	1056	25	2700	771	0.12
	470	8x12	1504	20	3930	1123	0.12
	680	10x10.5	2176	18	4520	1291	0.12
	820	10x12.5	2624	18	4900	1400	0.12
25 (28.8)	47	6.3x5.8	300	60	1650	471	0.12
	100	6.3x9.5	500	30	1650	471	0.12
	220	8x12	1100	28	3310	946	0.12
	330	10x10.5	1650	30	4320	1234	0.12
	470	10x12.5	2350	28	4500	1286	0.12
35 (40.3)	22	6.3x5.8	300	70	1450	414	0.12
	68	6.3x9.5	476	40	1450	414	0.12
	120	8x9.5	840	40	1800	514	0.12
	150	8x12	1050	30	2000	571	0.12
	220	10x10.5	1540	30	2200	629	0.12
	270	10x12.5	1890	30	2500	714	0.12

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)		D.F. (tanδ) max. 120Hz / 20°C
					105°C 100kHz	125°C 100kHz	
50 (57.5)	10	6.3x5.8	300	60	1400	400	0.12
	33	6.3x9.5	330	40	1500	429	0.12
	47	8x9.5	470	40	2000	571	0.12
	68	8x12	680	35	2300	657	0.12
	100	10x10.5	1000	35	2200	629	0.12
	100	10x12.5	1000	35	2500	714	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

VT

VP series

- Super low ESR, High ripple current capability
- Rated voltage :6.3~35V.
- Endurance:2,000hours at 125°C
- Applications:Lamps Power, LED Driver, Serving Equipment
- ROHS compliant
- Halogen Free compliant

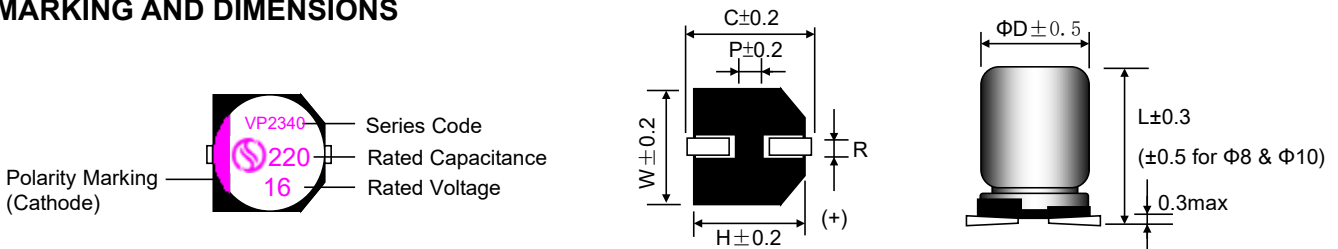


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +125°C	
Rated Voltage Range	—	6.3 ~ 35V	
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)	
Surge Voltage	at 125°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	Z(-55°C)/Z(+20°C)	≤ 1.25
	at -25°C, 100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 125°C.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% 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°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	≤ ±20% of the initial value.
		DF (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 voltages specified at 105°C 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.
		DF (tan δ)	≤ 150% of the initial specified value.
		ESR	≤ 150% of the initial specified value.
		Leakage current	≤ The initial specified value.

※ 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 125°C.

MARKING AND DIMENSIONS



(Unit:mm)

$\Phi D \times L$	ΦD	L	W	H	C	R	P
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VP series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms/100kHz)		D.F. (tanδ) max. 120Hz / 20°C
					105°C 100kHz	125°C 100kHz	
6.3 (7.2)	470	6.3x9.5	592	25	3800	1267	0.12
	680	8x9.5	857	25	4000	1333	0.12
	1000	8x12	1260	20	4200	1400	0.12
	1200	10x10.5	1512	25	5500	1833	0.12
	1800	10x12.5	2268	20	6100	2033	0.12
10 (11.5)	330	6.3x9.5	660	25	3700	1233	0.12
	560	8x9.5	1120	25	4000	1333	0.12
	680	8x12	1360	20	4500	1500	0.12
	820	10x10.5	1640	25	4200	1400	0.12
	1000	10x10.5	2000	25	4500	1500	0.12
	1200	10x12.5	2400	20	5600	1867	0.12
16 (18.4)	220	6.3x5.8	704	25	2850	950	0.12
	330	6.3x9.5	1056	25	4000	1333	0.12
	470	8x9.5	1504	20	4500	1500	0.12
	680	8x12	2176	25	5100	1700	0.12
	820	10x12.5	2624	20	5600	1867	0.12
20 (23.0)	120	6.3x5.8	480	25	2510	837	0.12
	220	6.3x9.5	880	25	2750	917	0.12
	270	8x12	1080	20	2950	983	0.12
	330	10x10.5	1320	25	4700	1567	0.12
	470	10x12.5	1880	20	4950	1650	0.12
25 (28.8)	100	6.3x5.8	500	40	2380	793	0.12
	180	6.3x9.5	900	30	2900	967	0.12
	220	8x12	1100	28	3500	1167	0.12
	330	10x10.5	1650	30	4250	1417	0.12
	470	10x12.5	2350	28	4500	1500	0.12
35 (40.3)	56	6.3x5.8	392	60	2300	767	0.12
	100	6.3x9.5	700	50	2500	833	0.12
	120	8x9.5	840	30	2950	983	0.12
	150	10x10.5	1050	30	2950	983	0.12
	220	10x12.5	1540	28	3400	1133	0.12

VP

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

PV series

- Super low ESR, High ripple current capability
- Rated voltage :2.5~63V.
- Endurance:15,000hours at 105°C
- Applications:motherboards, servers,VGA ,etc.
- ROHS compliant
- Halogen Free compliant

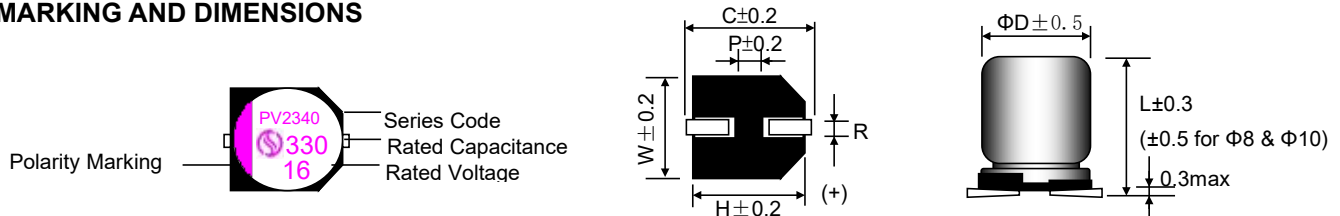


SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	2.5~63V	
Capacitance Tolerance	at 20°C,120HZ	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I≤0.2CV or 300(μA) Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C,100kHz	Z(-55°C)/Z(+20°C)	≤ 1.25
	at -25°C,100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 15,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	≤±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance	No significant damage.
		Capacitance change	≤±20% of the initial value.
		DF(tanδ)	≤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 voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	≤±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	ΦD	L	W	H	C	R	P
5×5.8	5.0	5.8	5.3	5.3	6.0	0.5~0.8	1.4
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

PV series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
2.5 (2.9)	220	5x5.8	300	40	1620	0.12
	330	6.3x5.8	300	20	2690	0.12
	820	6.3x9.5	410	18	3200	0.12
	820	8x9.5	410	18	4520	0.12
	1500	8x9.5	750	18	4520	0.12
	1800	8x12	900	12	5200	0.12
	2700	10x12.5	1350	12	5500	0.12
4 (4.6)	68	5x5.8	300	40	1500	0.12
	150	6.3x5.8	300	24	2200	0.12
	680	6.3x9.5	544	16	3200	0.12
	680	8x6.7	544	20	3400	0.12
	1000	8x9.5	800	16	4500	0.12
	1500	8x12	1200	14	5100	0.12
	1800	10x12.5	1440	12	5500	0.12
	2200	10x12.5	2000	12	5500	0.12
6.3 (7.2)	100	5x5.8	300	40	1500	0.12
	220	5x7	300	20	1600	0.12
	220	6.3x5.8	300	20	2400	0.12
	560	6.3x9.5	705	20	3200	0.12
	560	8x6.7	705	20	3300	0.12
	820	8x9.5	1033	15	4450	0.12
	1000	8x9.5	1260	15	4520	0.12
	1200	8x12	1512	12	5020	0.12
	1500	10x10.5	1890	15	5020	0.12
	1800	10x12.5	2268	12	5400	0.12
	2200	10x12.5	2772	12	5500	0.12
10 (11.5)	68	5x5.8	300	40	1500	0.12
	120	6.3x5.8	300	25	2420	0.12
	150	8x6.7	300	22	2450	0.12
	330	6.3x9.5	660	20	3200	0.12
	560	8x9.5	1120	16	4450	0.12
	680	8x9.5	1360	16	4450	0.12
	820	8x12	1640	14	4850	0.12
	1000	10x10.5	2000	15	5020	0.12
	1200	10x10.5	2400	15	5200	0.12
	1500	10x12.5	3000	14	5400	0.12
	16 (18.4)	100	6.3x5.8	320	24	2400
180		6.3x9.5	576	15	3200	0.12
220		6.3x9.5	704	15	3200	0.12
270		6.3x9.5	864	15	3200	0.12
270		8x6.7	864	20	3400	0.12
270		8x9.5	864	20	4400	0.12
470		8x9.5	1504	25	4400	0.12
560		8x12	1792	16	4820	0.12
680		10x10.5	2176	18	5200	0.12
1000		10x12.5	3200	16	5400	0.12

PV

PV series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
20 (23.0)	68	6.3x5.8	300	38	1450	0.12
	180	6.3x9.5	720	30	1450	0.12
	330	8x9.5	1320	30	1890	0.12
	470	8x12	1880	28	3320	0.12
	560	10x10.5	2240	28	3320	0.12
	680	10x12.5	2720	28	4220	0.12
25 (28.8)	47	6.3x5.8	300	40	1200	0.12
	100	6.3x9.5	500	30	2000	0.12
	100	8x6.7	500	40	2000	0.12
	150	8x9.5	750	35	3000	0.12
	220	8x12	1100	32	3500	0.12
	330	10x10.5	1650	35	3800	0.12
	470	10x12.5	2350	32	4000	0.12
35 (40.3)	22	6.3x5.8	300	80	1450	0.12
	56	6.3x9.5	392	50	2300	0.12
	68	6.3x9.5	476	50	2300	0.12
	68	8x6.7	476	60	2500	0.12
	100	8x12	700	28	2750	0.12
	220	10x12.5	1540	28	3200	0.12
50 (57.5)	12	6.3x5.8	300	100	660	0.12
	33	6.3x9.5	330	50	900	0.12
	47	8x9.5	470	45	1850	0.12
	100	10x12.5	1000	28	2560	0.12
	180	10x12.5	1800	28	2560	0.12
63 (72.5)	22	6.3x9.5	300	50	1800	0.12
	33	6.3x9.5	416	50	1800	0.12
	47	8x12	592	36	2200	0.12
	56	10x10.5	705	32	2350	0.12
	100	10x12.5	1260	28	2550	0.12
	150	10x12.5	1890	28	2550	0.12

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

PH series

- Super low ESR, Long Life capability
- Rated voltage :4.0~50V.
- Endurance:20,000hours at 105°C
- Applications:DC/DC Converter, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- ROHS compliant
- Halogen Free compliant



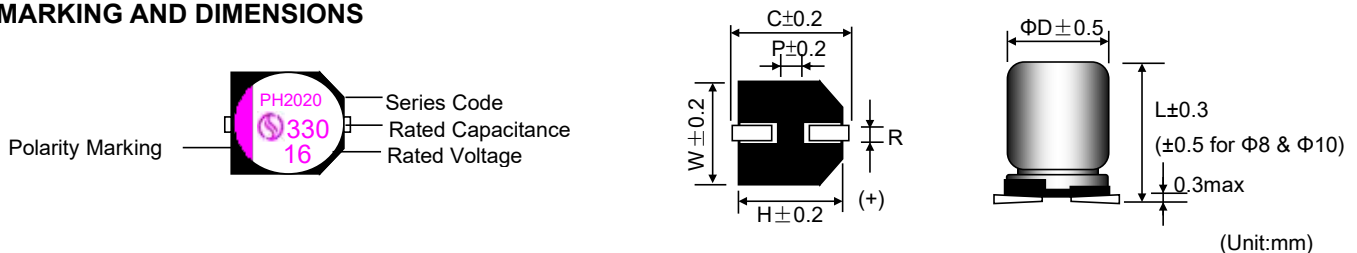
PH

SPECIFICATIONS

Items	Conditions	Characteristics	
Category Temperature Range	—	-55 to +105°C	
Rated Voltage Range	—	4.0~50V	
Capacitance Tolerance	at 20°C, 120HZ	±20%(M)	
Surge Voltage	at 105°C	Rated voltage ×1.15V	
Leakage Current	at 20°C after 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list	
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list	
Low Temperature Characteristics (Max. Impedance Ratio)	at -55°C, 100kHz	Z(-55°C)/Z(+20°C)	≤ 1.25
	at -25°C, 100kHz	Z(-25°C)/Z(+20°C)	≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 20,000 hours at 105°C.	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% 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°C after subjecting them to subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤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 voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance	No significant damage.
		Capacitance change	±20% of the initial value.
		DF(tanδ)	≤150% of the initial specified value.
		ESR	≤150% of the initial specified value.
		Leakage current	≤The initial specified value.

※ 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°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	ΦD	L	W	H	C	R	P
6.3x5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	2.1
6.3x7	6.3	7.0	6.6	6.6	7.3	0.6~0.9	2.1
6.3x9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8x6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	3.2
8x9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8x12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10x10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10x12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

PH series

STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max. ※2	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
4 (4.6)	220	6.3x5.8	300	20	2,800	0.12
	560	6.3x9.5	448	20	3,500	0.12
	560	8x6.7	448	18	3,700	0.12
	820	8x9.5	656	15	3,500	0.12
	1200	8x12	960	15	4,450	0.12
	1500	10x10.5	1200	13	4,200	0.12
	2200	10x12.5	1760	13	5,400	0.12
6.3 (7.2)	100	6.3x5.8	300	35	2,400	0.12
	220	6.3x5.8	300	22	2,600	0.12
	470	6.3x9.5	592	22	3,200	0.12
	560	6.3x9.5	705	22	3,200	0.12
	820	8x9.5	1033	20	3,850	0.12
	1000	8x12	1260	20	4,250	0.12
	1200	10x10.5	1512	18	4,350	0.12
	1800	10x12.5	2268	18	5,200	0.12
10 (11.5)	68	6.3x5.8	300	30	2,400	0.12
	100	6.3x5.8	300	30	2,400	0.12
	220	6.3x7	440	30	2,500	0.12
	330	6.3x9.5	660	30	3,150	0.12
	560	8x9.5	1120	25	3,850	0.12
	680	8x12	1360	25	4,150	0.12
	820	10x10.5	1640	20	4,250	0.12
	1000	10x10.5	2000	20	4,250	0.12
	1200	10x12.5	2400	20	5,100	0.12
16 (18.4)	100	6.3x5.8	320	30	2,200	0.12
	220	6.3x9.5	704	30	3,050	0.12
	330	8x9.5	1056	20	3,450	0.12
	470	8x12	1504	22	4,050	0.12
	680	10x10.5	2176	20	4,150	0.12
	820	10x12.5	2624	20	5,100	0.12
	1000	10x10.5	2000	20	4,250	0.12
25 (28.8)	47	6.3x5.8	300	40	1,500	0.12
	100	6.3x9.5	500	40	2,800	0.12
	180	8x9.5	900	30	3,250	0.12
	220	8x12	1100	30	3,900	0.12
	330	10x10.5	1650	20	4,100	0.12
	470	10x12.5	2350	25	4,500	0.12
35 (40.3)	22	6.3x5.8	300	70	1,450	0.12
	68	6.3x9.5	476	60	1,500	0.12
	120	8x9.5	840	50	1,800	0.12
	150	8x12	1050	50	2,850	0.12
	220	10x10.5	1540	40	2,950	0.12
	270	10x12.5	1890	40	3,200	0.12
50 (57.5)	10	6.3x5.8	300	60	1,400	0.12
	33	6.3x9.5	330	30	1,700	0.12
	47	8x9.5	470	30	2,000	0.12
	68	8x12	680	28	2,200	0.12
	100	10x10.5	1000	30	2,300	0.12
	100	10x12.5	1000	28	2,650	0.12

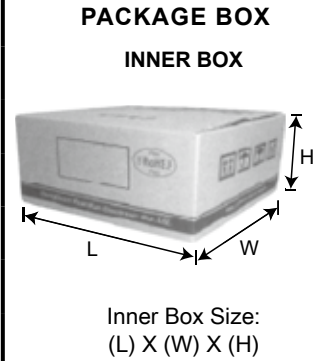
FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1.0

Conductive Polymer Aluminum Electrolytic Capacitors Package

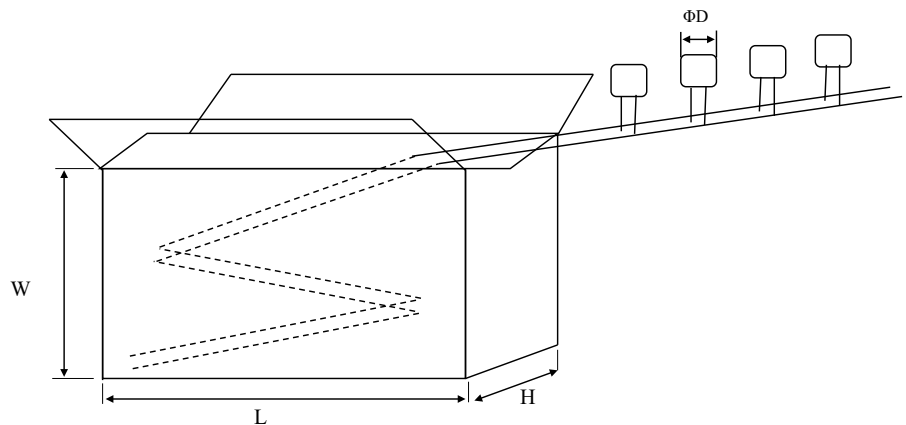
Packing specifications(Lead type)

ΦDXL	Bags/ Inner Box	Layer Quantity	Quantity (pcs/bag)	Total Quantity (pcs/carton)	Size of Inner Box : length x width x height (mm)	Size of Out Box : length x width x height (mm)
5×6~7	15	2	1000	30,000	267X260X135	540X277X152
5×8~12	10	2	1000	20,000		
6.3×6~9	10	2	1000	20,000		
6.3×10~12	8	2	1000	16,000		
8×7~12	10	2	500	10,000		
8×14~16	8	2	500	8,000		
8×20	6	2	500	6,000		
10×8~12	11	2	500	4,400		
10×16~22	9	2	500	3,600		



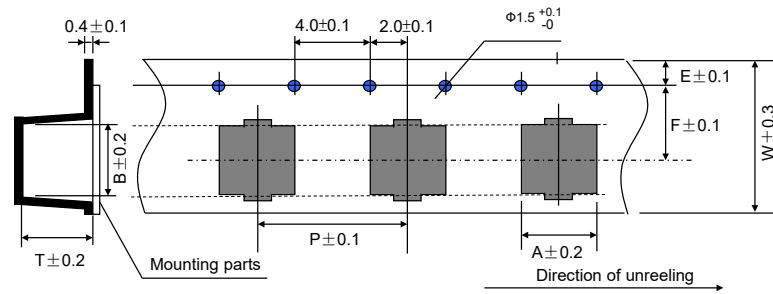
TAPING PACKAGE

Item	Taping packing					
	W±5 (mm)	L±5 (mm)	H±5 (mm)	Qty. (pcs)	Inner Box (pcs)	Total (pcs)
5×6~12	235	320	51	2000	10	20,000
6.3×6~12	235	320	51	1500		15,000
8×7~16	235	320	51	1000		10,000
8×20	255	320	51	1000	8	8,000
10×8~22	218	320	51	600	5	3,000



Conductive Polymer Aluminum Electrolytic Capacitors Package

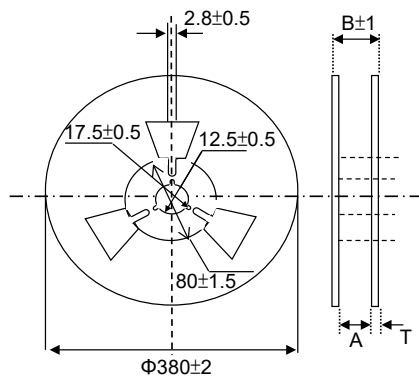
Carrier Tape



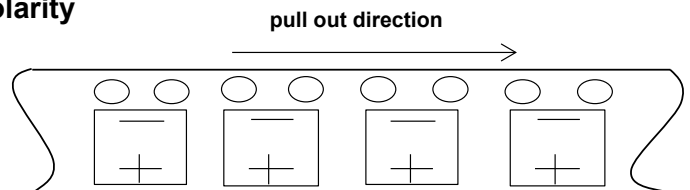
Unit : mm

Size (ΦxL)	Item						
	A	B	W	F	E	P	T
5 x 6.0~7.0	5.7	5.7	12	5.5	1.75	12.0	7.5
6.3 x 4.2	7.0	7.0	16	7.5	1.75	12.0	4.5
6.3 x 4.5	7.0	7.0	16	7.5	1.75	12.0	4.8
6.3 x 5.7~6.0	7.0	7.0	16	7.5	1.75	12.0	6.5
6.3 x 6.0 (鋁殼L=6.8mm)	7.0	7.0	16	7.5	1.75	12.0	8.2
6.3 x 7.0	7.0	7.0	16	7.5	1.75	12.0	8.2
6.3 x 7.7	7.0	7.0	16	7.5	1.75	12.0	8.2
6.3 x 8.0	7.0	7.0	16	7.5	1.75	12.0	8.2
6.3 x 8.0 (鋁殼L=9.3mm)	7.0	7.0	16	7.5	1.75	12.0	9.3
6.3 x 9.5~10	7.0	7.0	16	7.5	1.75	12.0	10.0
8 x 7.0	8.7	8.7	24	11.5	1.75	16.0	8.8
8 x 9.5	8.7	8.7	24	11.5	1.75	16.0	11.0
8 x 12	8.7	8.7	24	11.5	1.75	16.0	13.0
10 x 8	10.7	10.7	24	11.5	1.75	16.0	8.5
10 x 10	10.7	10.7	24	11.5	1.75	16.0	11.0
10 x 10.5	10.7	10.7	24	11.5	1.75	16.0	11.0
10 x 12.5	10.7	10.7	24	11.5	1.75	16.0	13或13.5

Reel



Polarity



Sizecode (ΦxL)	A	B±1	T±0.5
5x6~7	14	18	2.0
6.3x6~10	18	22	
8x7~12	26	30	
10x8~12.5	26	30	

(Unit:mm)

Size Code ΦDxL	A	B	Q'ty / Reel	Size of Inner Box (L)x(W)x(H)	Size of Out Box (L)x(W)x(H)
5x6	14.0±1.0	18.0±1.0	1000pcs	385x385x106	412x403x255
6.3x(6~8)	18.0±1.0	22.0±1.0	1000pcs	385x385x125	412x403x293
6.3x(9.5)	18.0±1.0	22.0±1.0	800pcs	385x385x125	412x403x293
8x(7~10)	26.0±1.0	30.0±1.0	500pcs	385x385x106	412x403x255
10x(8~10.5)	26.0±1.0	30.0±1.0	500pcs	385x385x106	412x403x255
(8~10)x12.5	26.0±1.0	30.0±1.0	400pcs	385x385x106	412x403x255

PACKAGE BOX

INNER BOX



Inner Box Size:
(L) X (W) X (H)

使用時注意事項:Precautions for users:

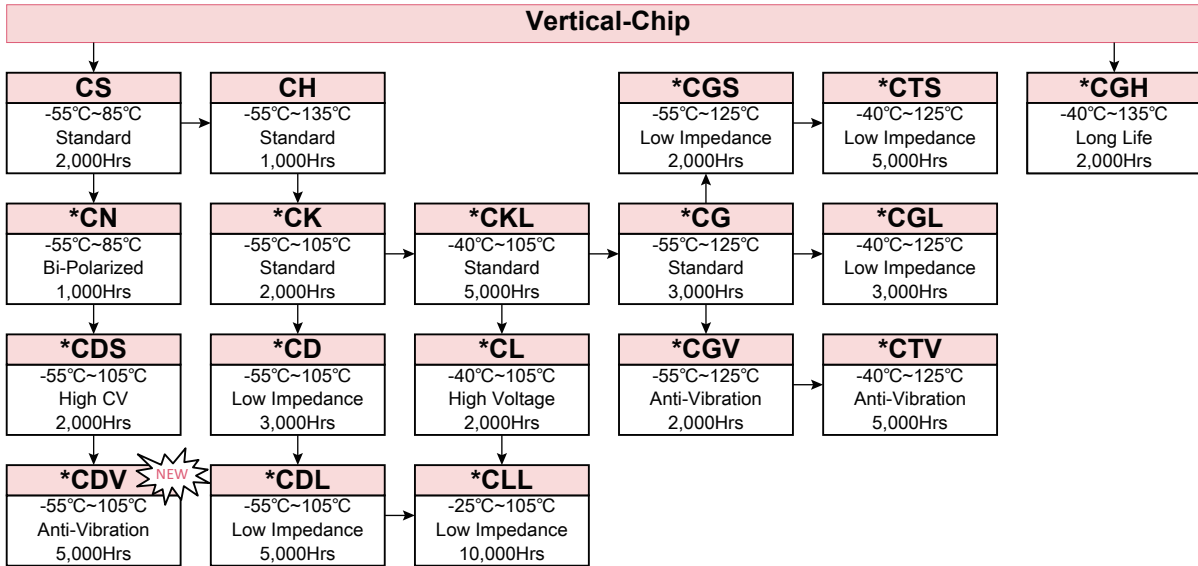
- 1.輕拿輕放 handle gently
- 2.取出托盤時,請用手托住紙盤底部,以免電容鬆散。

When take the tray out, pls support the bottom of the paper plate with your hands to avoid loose capacitors.

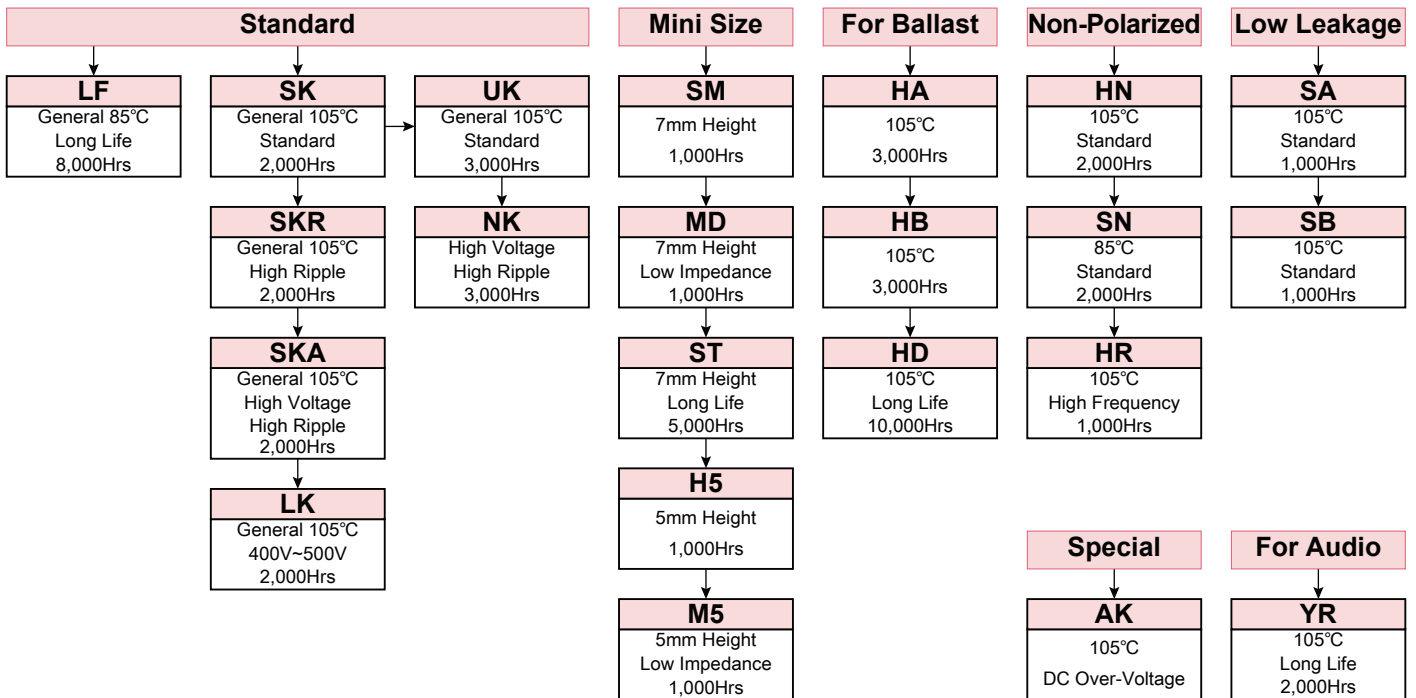
E-Cap Series Chart

Note:AEC-Q200 marked with *

Vertical-Chip



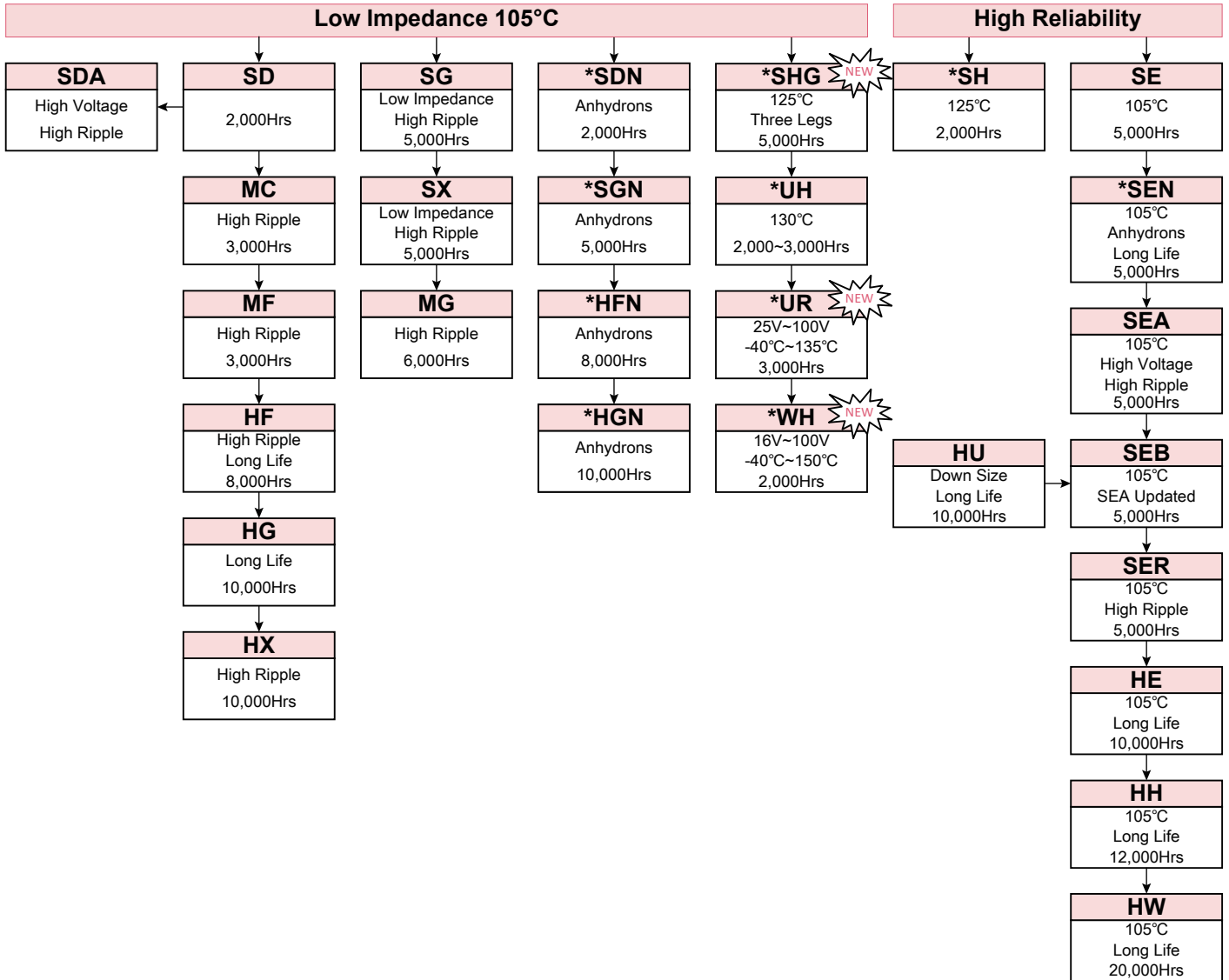
Radial



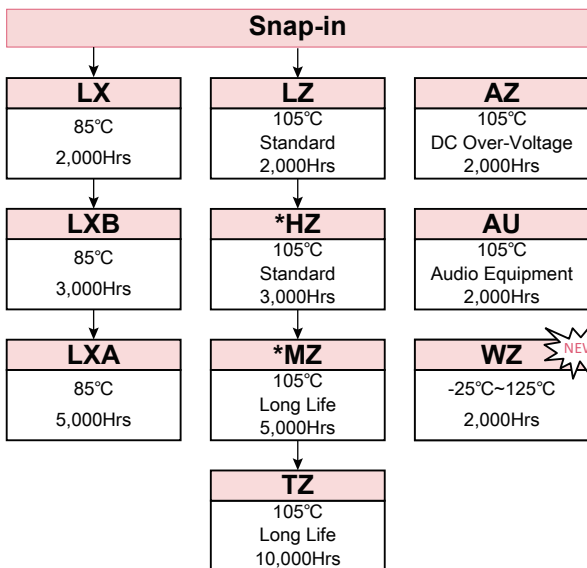
E-Cap Series Chart

Note:AEC-Q200 marked with *

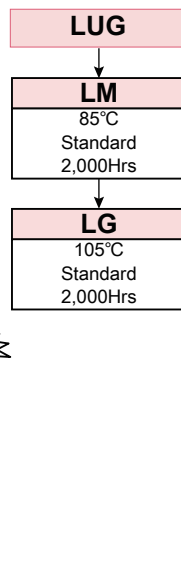
■ Radial



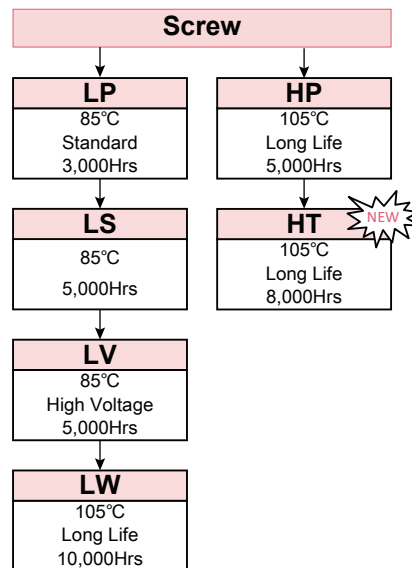
■ Snap-in



■ LUG



■ Snap-in & LUG



Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用須知

一、電路設計的注意事項

1. 在確認使用環境及安裝環境的基礎上，在電容器的產品目錄及規格書上所規定的性能範圍內進行設計。
2. 在設計上，應該避免在下述情況下使用：
 - (1) 不可超過電容器的最高使用溫度。
 - (2) 不可有超過額定紋波電流的電流通過。
 - (3) 不可有超過額定電壓的電壓通過電容器。
 - a. 要注意紋波電壓(交流部分)重疊到直流電壓上時的峰值不可超過額定電壓。
 - b. 當兩個電容器串聯時，通過各個電容器的電壓不可超過額定電壓。此時，要在各個電容器上並聯用於防止漏損電流的分壓電阻器。
 - (4) 電容器為極性電容器。要確認有無連接反向電壓或交流電壓。在極性反轉電路中請用雙極性電容器，但是雙極性電容器也不可以用於交流電路。
3. 進行電路設計時，請選用與機器壽命相符的電容器。
4. 在需要重複進行急速充放電的電路中請選用與條件相符的電容器。
5. 電容器的外殼、輔助引出端子與正、負極以及電路板間必須完全隔離。
6. 當電容器套管的絕緣不能保證時，在有絕緣性能特定要求的地方請勿使用。需要外套具有絕緣功能時請諮詢我們。
7. 電容器如果在以下環境中使用，可能會發生故障。
 - (1) 直接與水、油類、鹽水相接觸的環境或高溫高濕或結露的環境。
 - (2) 充滿有毒氣體(硫化物、亞硫酸、亞硝酸、氯氣、氨水等)的環境。
 - (3) 不能置於日照、O₃、紫外線及有放射性物質環境下使用。
 - (4) 有酸性及鹼性溶劑濺落的環境。
 - (5) 振動或衝擊條件超過交貨仕様書規定範圍的惡劣環境。
8. 在設計電容器的安裝時，必須確認下述內容：
 - (1) 電路板的孔距必須與電容器兩端子的間距相吻合。
 - (2) 在電容器防爆閥的上方盡量不要安裝配線及其它元件，應在防爆閥的上方保留一定的空間。

Φ8(6.3) ~ Φ16 : 2mm以上

Φ18 ~ Φ35 : 3mm以上

≥Φ40 : 5mm以上

一、Caution During Circuit Design

1. Please make sure the application and mounting conditions to which the capacitor will be exposed are within the conditions specified in the catalog or alternate product specification (Referred as to specification here after).
2. Design Aluminum Electrolytic Capacitors, please pay attention to the points listed below:
 - (1) The capacitor shall not be used in an ambient temperature which exceeds the operating temperature specified in the specification.
 - (2) Do not apply excessive current which exceeds the allowable ripple current.
 - (3) Make sure that no excess voltage (that is higher than the rated voltage) is applied to the capacitor.
 - a. Please pay attention that the peak voltage, which is DC voltage overlapped by ripple current, should not exceed the rated voltage.
 - b. In the case where more than 2 aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage be will applied to each capacitor equally using a balancing resistor in parallel with the capacitors.
 - (4) Aluminum electrolytic capacitors are polarized. Make sure that no reverse voltage or AC voltage is applied to the capacitors. Please apply bi-polarized capacitor to reverse polarity circuit but bi-polarized capacitors can not be applied to AC circuit.
3. Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.
4. For a circuit that repeats rapid charging/discharging of electricity, an appropriate capacitor that is capable of enduring such a condition must be used.
5. Aluminum case, cathode lead wire, anode lead wire and circuit pattern must be isolated .
6. The sleeve of capacitors is not recognized as an insulator, and therefore, the standard capacitor should not be used in a place where insulation function is needed. If you require a higher grade of insulating sleeve, please consult us.
7. Capacitors may fail if they are used under the following conditions:
 - (1) Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
 - (2) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
 - (3) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - (4) Being exposed to acidic or alkaline solutions.
 - (5) Under severe conditions where vibration and / or mechanical shock exceed the applicable ranges of the specification.
8. In designing a circuit, the following matters should be ensured in advance to the capacitor assembly on the P.C. board.
 - (1) Design the appropriate hole spacing to match the lead pitch of capacitors.
 - (2) Do not locate any wiring and circuit patterns directly above the capacitor vent. Ensure enough free space above the capacitor vent.

Φ8(6.3) ~ Φ16 : Above 2mm

Φ18 ~ Φ35 : Above 3mm

≥Φ40 : Above 5mm

Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用須知

- (3)請勿在電容器的四周及電路板的背面(電容器下面)配置發熱元件
 - (4)請勿在電容器的封口部下方進行電路配線。如果在電容器附近配線，請確保線路間隔在2mm以上。
 - (5)螺栓型電容器在主體安裝螺絲時，鎖緊的扭力不要超過產品目錄或規格說明書規定的範圍。此外，橫放時，防爆閥的位置不可居於下方。
- 9.電容器的電氣特性根據溫度及頻率的變動而變化，請在確認該變化量的基礎上進行電路設計。
 - 10.在雙面印刷板上安裝電容器時，電容器的安裝位置避免多餘的基板孔和過孔。
 - 11.並聯兩個以上的電容器時，要充分考慮電流平衡。
 - 12.串聯兩個以上的電容器時，要充分考慮電壓平衡和插入並聯用分壓相抗。

二、安裝的注意事項

- 1.除了定期點檢時為檢測電氣性能而拆卸的電容器外，對組裝到設備上已經通電的電容器，拆除後均不能再使用。
- 2.當電容器產生再生電壓時，請通過約1KΩ的電阻器進行放電。
- 3.長期保存的電容器，需通過約1KΩ的電阻加壓處理。
- 4.請確認電容器的規格(靜電容量及額定電壓)及極性後，才可進行安裝。
- 5.掉落在地上的電容器及本體已經變形的電容器，請勿再使用。
- 6.安裝時請確認電路板的孔距是否與電容器兩端子的間距吻合。
- 7.自動插入機扭結固定電容器引線的強度不可過大。
- 8.焊接時請注意以下內容：
 - (1) 焊接條件(溫度、時間)不可超出承認書中所規定的範圍。
 - (2) 請勿讓烙鐵的烙鐵頭接觸到電容器的本體及不要將電容器本體浸入焊錫溶液中。
 - (3) 在進行焊接時，避免其它物件倒下碰到電容器。
 - (4) 在進行焊接時，除端子外電容器其它部位不可附著有焊劑。
- 9.電容器焊接在電路板後，請注意以下內容：
 - (1) 不可將電容器本體傾斜、扭轉等。
 - (2) 不可讓其它物體碰到電容器。

- (3) Do not design a circuit board so that heat generating components are placed near an aluminum electrolytic capacitor or reverse side of P.C. board (under the capacitor).
 - (4) Do not print any copper trace under the seal (terminal) side of a capacitor. Copper traces should be 2mm spaced apart from the side of the capacitor body.
 - (5) 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 terminal facing downward. Also, if the body of a capacitor is installed horizontally such as being laid on its side. Do not position the pressure relief vent downward.
9. Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.
 10. When you mount capacitors on the double-sided P.C. boards, avoid excess substrate holes and vias to capacitor location.
 11. When you install more than 2 capacitors in parallel, consider the balance of current flowing through the capacitors.
 12. If more than 2 aluminum electrolytic capacitors are used in series, make sure the applied voltage will be lower than the rated voltage and that voltage will be applied to each capacitor equally using a balancing resistor in parallel with each capacitor.

二、Caution For Assembling Capacitors

1. Once a capacitor has been assembled in the set and power applied, even if a capacitor is discharged, an electric potential (restricting voltage) may exist between the terminals.
2. Electric potential between positive and negative terminal may exist as a result of returned electromotive force, so please discharge the capacitor using a 1KΩ resistor.
3. Leakage current of aluminum electrolytic capacitors may be increased during long storage time. In this case, the capacitors should be subjected to voltage treatment a 1KΩ resistor before using.
4. Please confirm ratings (voltage and capacitance) and polarity before in stalling capacitors on the P.C. board.
5. Do not drop capacitors on the floors and damage, nor use a capacitors that was dropped.
6. Please confirm that lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.
7. Please pay attention that the clinch force is not too strong when capacitors are placed and fixed by an automatic insertion machine.
8. Soldering :
 - (1) Soldering condition (temperature and times) must be confirmed to be within Su'scon specification.
 - (2) Soldering iron should never touch the capacitors body and do not dip capacitors body into melted solder.
 - (3) Please avoid contact between other components and the aluminum capacitor.
 - (4) Please avoid having flux adhere to any portion except the terminal.
9. After Soldering
 - (1) Do not bend or twist the capacitors body after soldering on P.C. board.

Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用需知

10. 電解電容器不得以鹵化化學藥品類似溶劑，作為電容器洗滌用。
11. 在使用固定劑與塗層劑時，電路板與電容器的封口部之間須乾淨，不可留有焊劑殘渣及污垢。

三、組裝使用注意事項

1. 不可直接觸摸電容器的端子，有導致觸電的危險。
2. 不可有導電體靠近電容器的兩端子，避免電容器端子之間短路。
3. 裝配了電容器的設備請不要在以下環境中使用：
 - (1) 直接與水、油類、鹽水相接觸的環境或高溫高濕或結露的環境。
 - (2) 充滿有毒氣體(硫化物、亞硫酸、亞硝酸、氯氣、氨水等)
 - (3) 不能置於日照、O₃、紫外線及有放射性物質環境下使用。
 - (4) 有酸性及鹼性溶劑濺落的環境。
 - (5) 振動或衝擊條件超過交貨仕様書規定範圍的惡劣環境。

四、電容器的保養與檢修

電容器在工業機器中使用時要進行定期檢修，檢修時請注意電容器的外觀及電氣性能是否符合產品的標準。

五、安全注意事項

1. 在設備使用過程中，電容器的防爆閥開裂，並冒出氣體時，應切斷設備的主電源或從設備上拔下電線插頭。
2. 電容器的防爆閥開裂時，因為超過100°C高溫氣體噴出，臉不要接近。噴出的氣體進入眼睛時，立即用水清洗眼睛。如果噴出的電解液濺到皮膚上，請立即使用肥皂進行沖洗。

六、儲存條件

1. 電容器建議在環境溫度5 ~ 35°C、相對濕度低於75%的條件下存放。
2. 請勿儲存於下列所述的環境中。
 - (1) 直接與水、油類、鹽水相接觸的環境或高溫高濕或結露的環境。
 - (2) 充滿有毒氣體(硫化物、亞硫酸、亞硝酸、氯氣、氨水等)的環境。
 - (3) 不能置於日照、O₃、紫外線及有放射性物質環境下使用。
 - (4) 有酸性及鹼性溶劑濺落的環境。
 - (5) 振動或衝擊條件超過交貨仕様書規定範圍的惡劣環境。

- (2) Do not hit the capacitors and isolate capacitors from the P.C. board or other device when stacking P.C. boards in store.
10. Standard Aluminum Electrolytic Capacitors should be free from halogenated solvents during P.C. board cleaning after soldering.
11. Do not use halogenated adhesives and coating materials to fix aluminum electrolytic capacitors.

三、Caution For Assembling Capacitors

1. Do not directly touch terminal by hand.
2. Keep electric conductor off terminals to avoid short circuit.
3. Do not use following conditions for assembling capacitors.
 - (1) Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
 - (2) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
 - (3) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - (4) Being exposed to acidic or alkaline solutions.
 - (5) Under severe conditions where vibration and / or mechanical shock exceed the applicable ranges of the specification.

四、Maintenance Inspection

Please periodically inspect the capacitors that are installed in industrial equipment. Remarkable abnormality such as vent operating, leaking electrolyte, etc. Capacitance, dielectric loss tangent, leakage current, and items specified in the specification.

五、Safe Precautions

1. If you see smoke due to operation of safety vent, turn off the main switch or pull out the plug from the outlet.
2. Do not bring your face near the capacitor when the pressure relief vent operates, because the gases emitted from that are over 100°C. If the gas gets into your eyes, please flush your eyes immediately with pure water. If electrolyte exposed on your skin, please wash it with soap and water.

六、Storage

1. It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
2. Confirm that the environment does not have any of the following conditions:
 - (1) Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
 - (2) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
 - (3) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - (4) Being exposed to acidic or alkaline solutions.
 - (5) Under severe conditions where vibration and/or mechanical shock exceed the applicable ranges of the specification.

Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用需知

3. 儲存壽命

分類	規格	儲存壽命
中高壓產品	160V(含)以上	2年; 一年以上, 需要做特性檢驗, 如果特性異常, 需要再次充電老化
低壓產品	120V(含)以下	2年

註：再次老化的條件視規定而定

七、廢棄處理

1. 在電容器上開孔或壓碎後焚燒。
2. 電容器不焚燒時，請交給專業的工業廢棄物處理廠處理。

八、特別注意事項

在選用電容器時，如果在產品目錄及規格書中沒有找到符合要求的系列或規格時，請直接與我司的業務部或研發部聯繫，我司可根據客戶的要求開發特殊性能產品。上述鋁電解電容器的使用注意事項依據 EIAJRCR-2367B 2002年3月發行的《電子機器用固定鋁電解電容器使用注意事項指南》製作而成，詳情請參照該指南。

3. Storage life

Category	Description	Storage life
Mid-High Voltage	160V and above	2yrs; after 1yr, needs to check characteristics; if NG, needs to do aging
Low Voltage	120V and below	2yrs

Remark: Re-aging condition depends on its own spec.

七、Disposal

1. Make a hole in the capacitor body or crush capacitors and incinerate them.
2. If incineration is not applicable, hand them over to a waste disposal agent and have them buried in a landfill.

八、Special Notice

When choosing capacitors, if it couldn't find the series or specification in catalogue, please contact Su'scon Sales or R&D Dept., we are able to provide customized products. For further details, please refer to EIAJ-RCR-2367B-Guideline of notabilia for fix for use in electronic equipment (Technical Standardization Committee on Passive Components (established in March 1995, revised in March 2002))

Environment Protection Policy

We are reducing environmentally harmful substances to do our capacitors in global environmental protection activities. Products compatible with Pb-free and products with non-PVC encasing and ROHS Compliance materials are available.

- ROHS Compliance

Our capacitors do not use any of the materials specifically identified and restricted hazardous material under ROHS Prohibited
Pb : Lead, Cr6+: Hexavalent chromium, Hg:Mercury, Cd:Cadmium, PBB:Polybrominated biphenyls, PBDE : Polybrominated diphenylethers, PVC:Polyvinyl chloride

- PVC free Capacitors

We use PET (Polyethylene Terephthalate) sleeve to instead of PVC (Polyvinyl Chloride) sleeve since 2005 January. As there is a size limitation for this counter measure, Please consult our sales representative their availability in big size capacitors.

- Pb-Free Capacitors

Our Capacitors lead wire and terminal doesn't contain lead.

We follow up those conditions as rule and standards to use right materials to production capacitors for maintain earth environment everlasting for human.

Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用須知

Effects of ambient temperature to life (for reference)

Because an aluminum electrolytic capacitor is essentially an electrochemical component, increase temperatures accelerate the chemical reaction producing gas within the capacitor, diffuse the gas to outside through the end seal, and consequently accelerate a gradual decrease in capacitance and a gradual increase in $t_{en\delta}$ and ESR, the following equation has been experimentally found to express the relationship between the temperature acceleration factor and the deterioration of the capacitor.

$$L_x = L_o \cdot K_{temp} = L_o \cdot B^{(T_o - T_x)/10}$$

$$K_{temp} = B^{(T_o - T_x)/10}$$

L_x = Life time (hour) of capacitor to be estimated

L_o = Base life time (hour) of capacitor

T_o = Maximum rated operating temperature (°C) of capacitor shown in catalog

T_x = Actual ambient temperature (°C) of capacitor

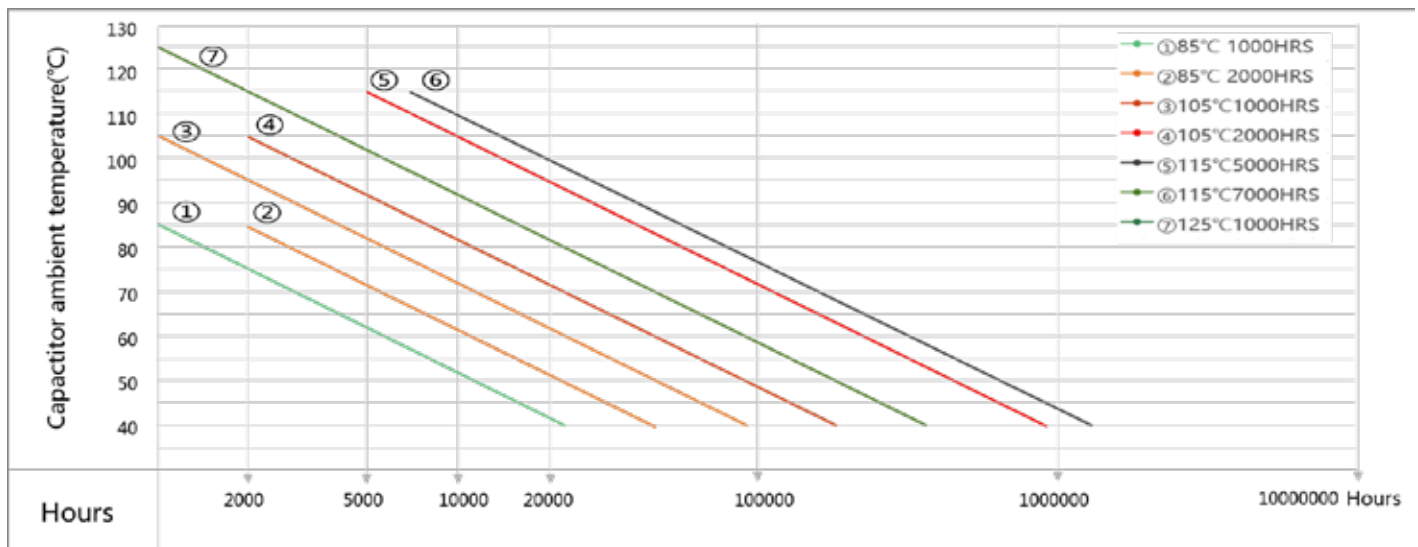
B = Temperature acceleration factor (=2)

Where:

This equations is similar to Arrhenius equation that express a relationship between chemical reaction rates and temperature and called Arrhenius rule of aluminum electrolytic capacitors.

The temperature acceleration factor (B) is approximately 2 over an ambient temperature range (T_x) from 40°C to the maximum rated operating temperature of the capacitor, and it means that the lifetime is approximately halved with every 10°C rise in ambient temperature and can be extended by using the capacitors at low temperatures.

For an ambient temperature range (T_x) of 20°C to 40°C, the factor B will be close to 2, and the lifetime will be actually extended. However, the environment where the devices are placed and their operating conditions influence ambient temperature, and in particular the ambient temperature in this range will be very inconstant. Therefore, a minimum lifetime should be estimated form the above formula by using the 40°C as T_x .



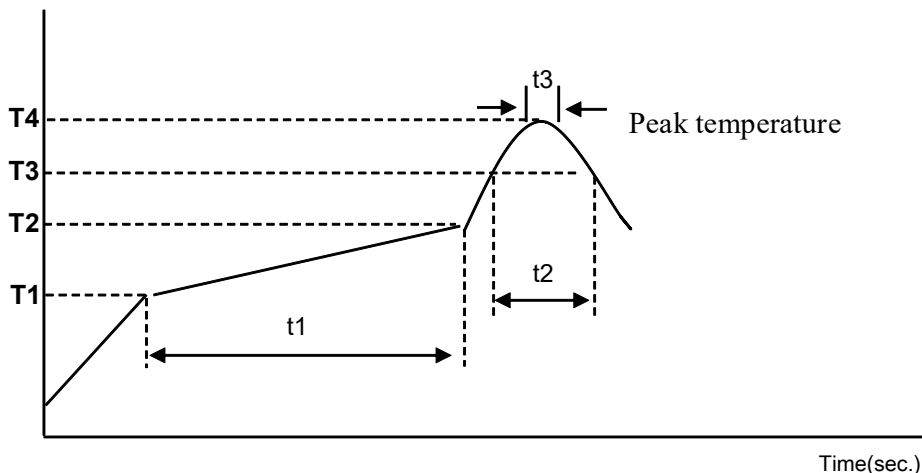
- ※ 1. A guide limit of the calculated like Aimo is 15 years max
- 2. $T_x \geq 40^\circ\text{C}$

Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用須知

RECOMMENDED PB-FREE REFLOW SOLDERING CONDITIONS

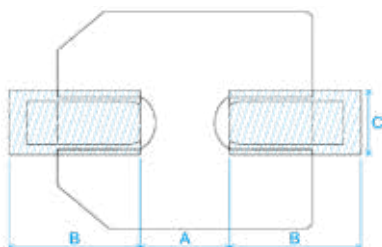
The following conditions are recommended for air or infrared reflow soldering of the surface mount capacitors onto a glass epoxy circuit board of 95 x 50 x 0.8mm (with resist) by cream solder (eutectic solder). The temperatures shown are the surface temperature values of the top of the capacitor.



TEMPERATURE PROFILE

Profile Feature	Pb Free Assembly	
	4~6.3Ø	8~18Ø
Average Ramp-up Rate	3°C/second max.	3°C/second max.
Preheat Temperature Min(T1 min) Temperature Max(T2 max) Time (t1 Max)	150°C 180°C 120sec.	150°C 180°C 120sec.
Ramp-up Rate (T2 ~T3)	3°C/second max.	3°C/second max.
Time maintained above Temperature(T3) Time(t2 Max)	217°C 90sec.	217°C 40sec.
Peak Temperature(T4)	260°C	245°C
Time(t3 Max)	5sec.	5sec.
Reflow cycles	1	2 or less

RECOMMENDED LAND PATTEND DIMENSION OF PCB



DxL	a	b	c
Φ4	1.0	2.6	1.6
Φ5	1.4	3.0	1.6
Φ6.3	1.9	3.5	1.6
Φ8	3.0	3.5	2.5
Φ10	4.0	4.0	2.5
Φ12.5	4.3	5.8	2.5
Φ16	6.6	6.5	5.0
Φ18	6.6	7.7	5.0
Φ8(G)	2.5	4.5	4.7
Φ10(G)	3.8	4.8	4.7
Φ12.5(G)	3.8	6.1	6.9
Φ16(G)	5.0	8.0	9.5
Φ18(G)	5.0	8.6	9.5

“(G)” “Anti-vibration Structure”.

Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用須知

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 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.

Location of components : Temperature increases at the edge of PC board more than the center.

Population of PC board : The less the component population is the more temperature rises.

Material of PC board : A ceramic made board needs more heat than a glass epoxy made board. The heat increase may cause damage of the capacitors.

Thickness of PC board : A thicker board needs more heat than a thinner board. The heat increase may damage the capacitors.

Size of PC board : A larger board needs more heat than a smaller board. The heat increase may damage the capacitors.

Location of infrared ray lamps : IR reflow as well as hot plate reflow applies heat only on the reverse side of the PC board to lessen heat stress to the capacitors.

Vapor heat transfer systems (VPS) are not recommended.

Rework of soldering

Avoid reflow soldering more than once. Use a soldering iron for rework. Do not exceed an iron tip temperature of $380 \pm 10^{\circ}\text{C}$ 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. These may damage the capacitors.

Cleaning assembly board

Immediately after solvent cleaning, remove residual solvent for at least 10 minutes with an air knife. The solvent is so insufficiently dry for a long period of time that the capacitors may be cored.

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 use for lessening stress to the capacitors.

Molding with resin

Internal chemical reaction gradually produces gas in the capacitor; then, internal pressure is increasing. If the end seal of the capacitor is completely molded with a resin. The gas stays inside the capacitor. It will face dangerous situation. The chlorine contained resin will penetrate into the end seal, reach the inside element, and cause damage of the capacitor.

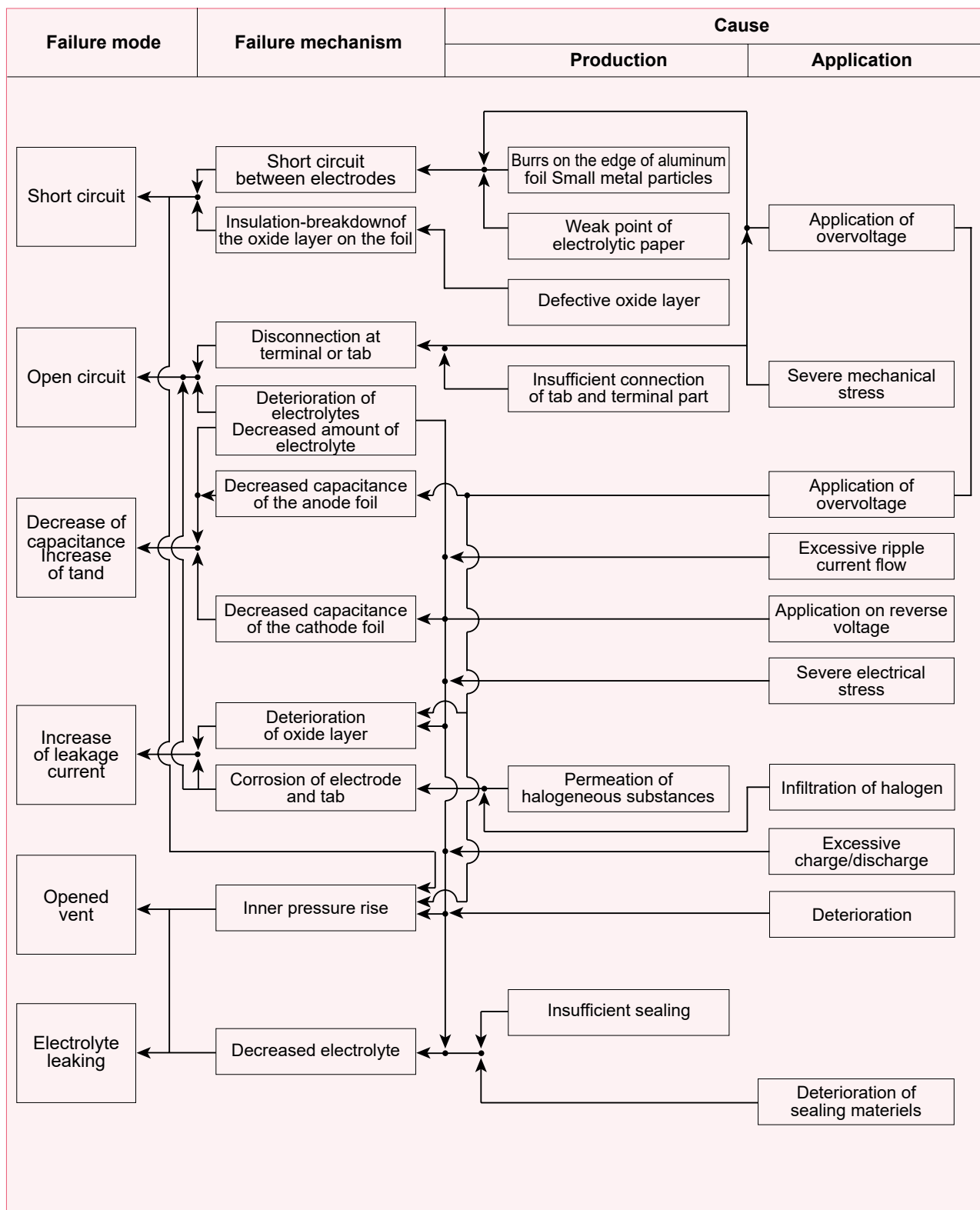
Others

Precautions and Guidelines for Aluminum Electrolytic Capacitors shall be referred.

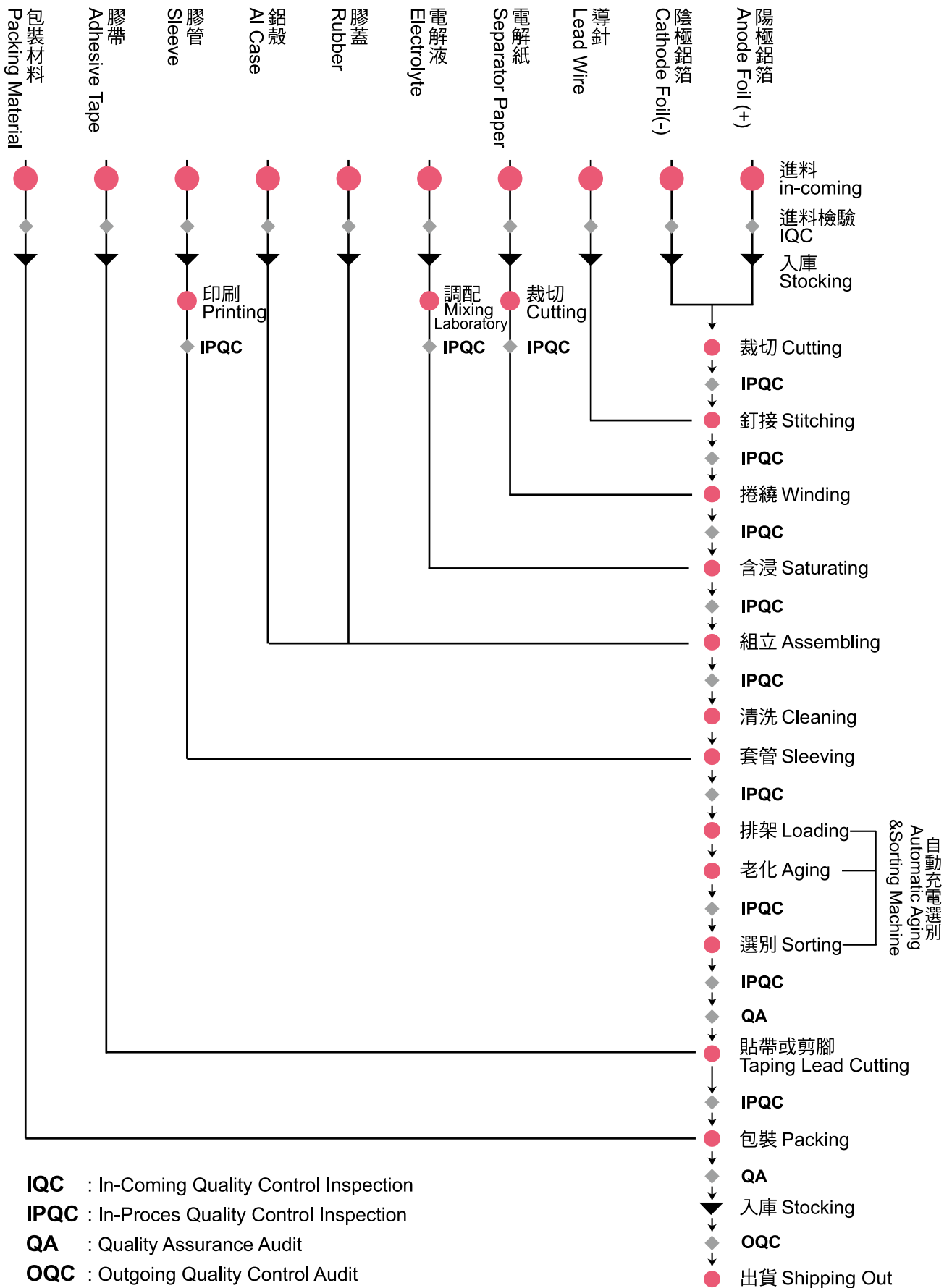
Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用須知

Analysis of Failure Mode



Process Flow Chart For Aluminum Electrolytic Capacitors



CN series

- 85°C 1000 hours, Non-polarity V-chip.
- Applicable to SMT process.
- RoHS Compliance.
- 85°C 1000小時, V-Chip 無極性產品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-55 ~ +85°C						
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC						
Capacitance Range 靜電容量範圍	0.1 ~ 100µF						
Leakage Current 洩漏電流	I ≤ 0.03CV or 5 (µA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	6.3	10	16	25	35	50
	tan δ(Max)	0.30	0.25	0.20	0.17	0.15	0.15
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2
	Z(-55°C)/Z(20°C)	8	6	4	4	3	3
Load Life 負荷壽命	1000hours,with application of rated voltage at 85°C						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.				Capacitance Change	Within ± 10% of Initial Value	
					tan δ	Initial Specified Value	
					Leakage Current	Initial Specified Value or less	
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)						

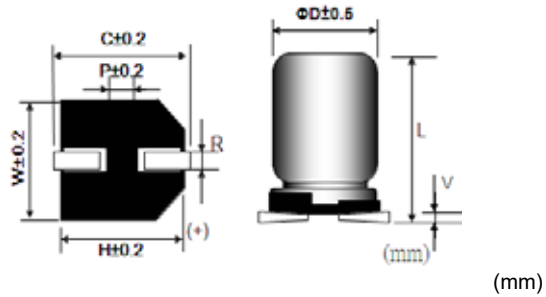
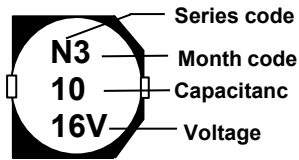
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	≥ 10K
Coefficient	0.70	1.00	1.17	1.36	1.50

CN series

DIMENSIONS(mm)

■ Chip Type



Size	ΦD	L	W	H	C	R	P	Vmax
4x5.4	4.0	5.4±0.3	4.3	4.3	5.1	0.5~0.8	1.0	0.3
5x5.4	5.0	5.4±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3x5.4	6.3	5.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 85°C 120 Hz

Cap (μF)	V	6.3		10		16		25		35		50	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.1												4x5.4	1.0
0.22												4x5.4	2.0
0.33												4x5.4	2.8
0.47												4x5.4	4.0
1												4x5.4	8.4
2.2										4x5.4	8.4	5x5.4	13
3.3								5x5.4	12	5x5.4	16	5x5.4	17
4.7						4x5.4	12	5x5.4	16	5x5.4	18	6.3x5.4	20
10				4x5.4	17	5x5.4	23	6.3x5.4	27	6.3x5.4	29	6.3x5.4	40
22		4x5.4	28	4x5.4	33	5x5.4	37	6.3x5.4	50				
33		6.3x5.4	37	6.3x5.4	41	6.3x5.4	49						
47		6.3x5.4	45	6.3x5.4	54								
100		6.3x5.4	65										

CS series

- Standard type of V-chip, -55 ~ +85°C. 2000 hours.
- Applicable to SMT process.
- RoHS Compliance.
- -55 ~ +85°C .2000小時.V-Chip型標準品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-55 ~ +85°C									
Rated Voltage Range 額定電壓範圍	4 ~ 100VDC									
Capacitance Range 靜電容量範圍	0.1 ~ 1500μF									
Leakage Current 洩漏電流	$I \leq 0.01CV$ or $3(\mu A)$, which is greater. (After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	4	6.3	10	16	25	35	50	63~100	
	tan δ(Max)	0.42	0.30	0.26	0.22	0.16	0.14	0.14	0.12	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	4	6.3	10	16	25	35	50	63~100	
	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	2	2	
	Z(-55°C) / Z(20°C)	15	8	8	4	4	3	3	3	
Load Life 負荷壽命	2000hours,with application of rated voltage at 85°C									
	Capacitance Change	Within ± 20% of Initial Value (Within±25% for 4V)								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value			
						tan δ	Initial Specified Value			
						Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)									

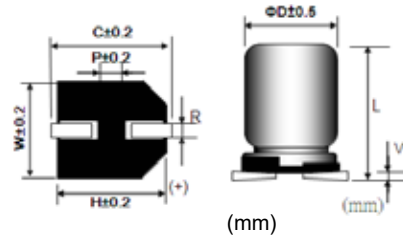
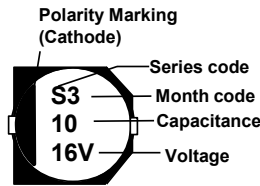
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	≧10K
Coefficient	0.70	1.00	1.17	1.36	1.50

CS series

DIMENSIONS(mm)

Chip Type



Size	ΦD	L	W	H	C	R	P	Vmax
4x5.4	4.0	5.4±0.3	4.3	4.3	5.1	0.5~0.8	1.0	0.3
5x5.4	5.0	5.4±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3x5.4	6.3	5.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3x7.7	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8x10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 85°C 120Hz.

Cap (μF)	V	4		6.3		10		16		25	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
4.7										4x5.4	16
10						4x5.4	28	4x5.4	23	4x5.4	23
22		4x5.4	28	4x5.4	28	5x5.4	33	5x5.4	37	5x5.4	34
33		4x5.4	28	4x5.4	28	5x5.4	41	5x5.4	49	6.3x5.4	47
47		4x5.4	33	5x5.4	45	5x5.4	52	6.3x5.4	58	6.3x5.4	57
56		5x5.4	42	6.3x5.4	52	6.3x5.4	57	6.3x5.4	63	6.3x5.4	62
100		5x5.4	56	6.3x5.4	65	6.3x5.4	76	6.3x5.4	86	6.3x7.7	130
150		6.3x5.4	79	6.3x5.4	71	6.3x7.7	130	6.3x7.7	130		
220		6.3x5.4	96	6.3x5.4	105	6.3x7.7	130	6.3x7.7	130	8x10	250
		6.3x7.7	130	6.3x7.7	130			8x10	250		
330		6.3x7.7	130	6.3x7.7	130	8x10	250	8x10	250	10x10	310
		6.3x7.7	130	8x10	280						
470		8x10	250	8x10	280	8x10	280	10x10	280		
680		8x10	300	8x10	300	10x10	350	10x10	350		
1000		10x10	430	10x10	430	10x10	430				
1500		10x10	480	10x10	480						

Cap (μF)	V	35		50		63		100	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.1				4x5.4	3	4x5.4	2		
0.22				4x5.4	5	4x5.4	3		
0.33				4x5.4	6	4x5.4	4		
0.47				4x5.4	7	4x5.4	5		
1				4x5.4	10	4x5.4	8	4x5.4	6
2.2		4x5.4	12	4x5.4	14	5x5.4	12	5x5.4	10
3.3		4x5.4	16	4x5.4	19	5x5.4	17		
4.7		4x5.4	18	4x5.4	26	5x5.4	23		
10		5x5.4	29	5x5.4	31	6.3x5.4	42		
22		6.3x5.4	46	6.3x5.4	59	6.3x7.7	60	10x10	90
33		6.3x5.4	51	6.3x7.7	75	8x10	110	10x10	90
47		6.3x5.4	63	6.3x7.7	75	8x10	130		
56		6.3x7.7	70	8x10	175	10x10	160		
100		6.3x7.7	70	8x10	175	10x10	170		
		8x10	175						
220		10x10	320	10x10	320				
330		10x10	360						

CS

CH series

- Standard type of V-chip, -55 ~ +105°C. 1000 hours
- Applicable to SMT process.
- RoHS Compliance.
- -55 ~ +105°C 1000小時 .V-Chip型標準品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)							
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C							
Rated Voltage Range 額定電壓範圍	4 ~ 50VDC							
Capacitance Range 靜電容量範圍	0.1 ~ 1500μF							
Leakage Current 洩漏電流	I ≤ 0.01CV or 3(μA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)							
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	4	6.3	10	16	25	35	50
	tan δ(Max)	0.42	0.30	0.26	0.22	0.16	0.14	0.14
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.							
	Rated Voltage(V)	4	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	2
	Z(-55°C)/Z(20°C)	15	8	8	4	4	3	3
Load Life 負荷壽命	1000hours,with application of rated voltage at 105°C							
	Capacitance Change	Within ± 25% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.				Capacitance Change	Within ± 10% of Initial Value		
					tan δ	Initial Specified Value		
					Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)							

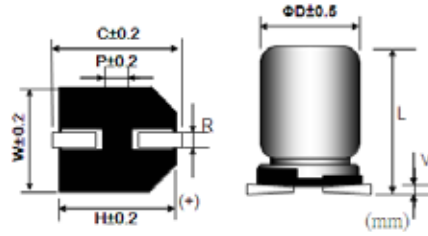
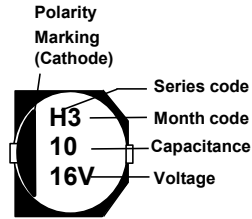
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	≥ 10K
Coefficient	0.70	1.00	1.17	1.36	1.50

CH series

DIMENSIONS(mm)

Chip Type



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
4x5.4	4.0	5.4±0.3	4.3	4.3	5.1	0.5~0.8	1.0	0.3
5x5.4	5.0	5.4±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3x5.4	6.3	5.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3x7.7	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8x10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V Item	4		6.3		10		16	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
10								4x5.4	18
22		4x5.4	22	4x5.4	24	5x5.4	27	5x5.4	30
33		5x5.4	30	5x5.4	33	5x5.4	35	6.3x5.4	40
47		5x5.4	36	5x5.4	40	5x5.4	40	6.3x5.4	50
100		6.3x5.4	60	6.3x5.4	66	6.3x5.4	79	6.3x5.4	90
						6.3x7.7	121		
150		6.3x5.4	65	6.3x5.4	75	6.3x7.7	121	8x10	210
						6.3x7.7	121		
220		6.3x5.4	79	6.3x5.4	79	8x10	210	8x10	210
						8x10	210		
330		6.3x7.7	121	6.3x7.7	121	8x10	210	8x10	210
470		8x10	210	8x10	210	8x10	210	10x10	250
680		8x10	210	8x10	210	10x10	310	10x10	310
1000		8x10	230	10x10	350	10x10	410		
1500		10x10	410	10x10	410				

Cap (μF)	V Item	25		35		50	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
0.1						4x5.4	1.0
0.22						4x5.4	2.6
0.33						4x5.4	3.2
0.47						4x5.4	3.8
1						4x5.4	6.3
2.2						4x5.4	11
3.3						4x5.4	14
4.7		4x5.4	13	4x5.4	15	4x5.4	18
10		4x5.4	22	5x5.4	25	6.3x5.4	30
22		6.3x5.4	32	6.3x5.4	42	6.3x5.4	39
33		6.3x5.4	48	6.3x5.4	47	6.3x7.7	60
						8x10	70
47		6.3x5.4	58	6.3x5.4	56	6.3x7.7	60
						8x10	110
100		6.3x7.7	84	6.3x7.7	84	8x10	140
				8x10	131		
150		8x10	140	8x10	155	10x10	180
220		8x10	155	8x10	190	10x10	220
330		8x10	190	10x10	300		
470		10x10	300				

CK series

- Standard type of V-chip, 2000 hours, 105°C.
- Applicable to SMT process.
- RoHS Compliance.
- 105°C 2000小時 V-Chip型標準品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)							
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C							
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC							
Capacitance Range 靜電容量範圍	1 ~ 6800μF							
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (μA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)							
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	6.3	10	16	25	35	50	63~100
	tan δ(Max)	0.32	0.28	0.24	0.18	0.15	0.14	0.12
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.							
	Rated Voltage(V)	6.3	10	16	25	35	50	63~100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2
	Z(-55°C)/Z(20°C)	8	8	4	4	3	3	3
Load Life 負荷壽命	2000hours,with application of rated voltage at 105°C							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value	
						tan δ	Initial Specified Value	
						Leakage Current	Initial Specified Value or less	
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	≥ 10K
Coefficient	0.70	1.00	1.17	1.36	1.50

CK series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=4\sim 10\text{mm}$

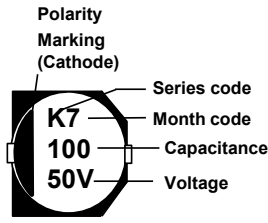
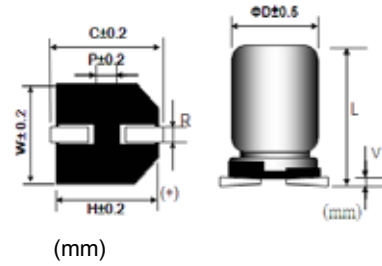
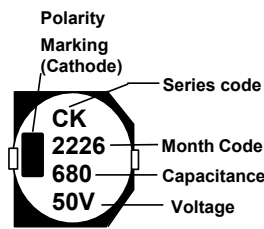


Fig.2 $\Phi D\geq 12.5\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
4x5.4	4.0	5.4±0.3	4.3	4.3	5.1	0.5~0.8	1.0	0.3
5x5.4	5.0	5.4±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3x5.4	6.3	5.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3x7.7	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8x6.5	8.0	6.5±0.5	8.3	8.3	9.0	0.5~0.8	2.3	0.3
8x10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
12.5x13.5	12.5	13.5±0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
12.5x16	12.5	16±0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
16x16.5	16.0	16.5±0.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4
16x21.5	16.0	21.5±0.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4
18x16.5	18.0	16.5±1.0	19.0	19.0	20.0	1.7~2.1	6.4	0.4
18x21.5	18.0	21.5±1.0	19.0	19.0	20.0	1.7~2.1	6.4	0.4

CK

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	6.3		10		16		25	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
10						4x5.4	17	5x5.4	27
22		4x5.4	22	5x5.4	30	5x5.4	30	6.3x5.4	44
33		5x5.4	34	5x5.4	34	6.3x5.4	45	6.3x5.4	50
47		5x5.4	38	6.3x5.4	48	6.3x5.4	48	6.3x5.4	60
100		6.3x5.4	69	6.3x5.4	69	6.3x5.4	69	6.3x7.7	100
150				6.3x7.7	100	6.3x7.7	100	8x10	240
220		6.3x7.7	120	6.3x7.7	120	6.3x7.7	120	8x10	320
330		8x10	290	8x10	290	8x10	290	10x10	450
470		8x10	320	8x10	320	8x10	320	10x10	490
680		8x10	340			10x10	470		
1000		10x10	410	10x10	410	12.5x13.5	550	16x16.5	820
						16x16.5	650	18x16.5	880
1500		10x10	550						
		12.5x13.5	680	12.5x16	750	16x16.5	950	16x21.5	1250
2200		16x16.5	840	16x16.5	850	18x16.5	1000	18x21.5	1300
		12.5x16	850	16x16.5	1000	16x21.5	1200		
3300		18x16.5	1000	18x16.5	1100	18x21.5			
	4700		16x21.5	1200	16x21.5	1300			
		18x16.5	18x21.5		1350				
6800		16x21.5	1200						
		18x21.5	1350						

CK series

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V Item	35		50		63		100	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
1.0				4x5.4	8	4x5.4	8		
2.2				4x5.4	12	4x5.4	12		
3.3				4x5.4	15	5x5.4	17		
4.7		4x5.4	16	5x5.4	20	6.3x5.4	22		
10		5x5.4	27	6.3x5.4	32	6.3x5.4	32		
22		6.3x5.4	44			6.3x7.7	58	8x10	100
33				6.3x7.7	65	8x10	140	10x10	150
47		6.3x7.7	80	6.3x7.7	80	8x10	170	12.5x13.5	250
68								12.5x13.5	300
100		6.3x7.7	100	8x10	230	10x10	310	12.5x13.5	380
								16x16.5	450
150		8x10	260						
220		10x10	375	10x10	375			12.5x13.5	470
								16x16.5	560
330		10x10	450	12.5x13.5	500			16x16.5	700
				16x16.5	600			18x16.5	750
470		12.5x13.5	520	16x16.5	700		900		
		16x16.5	650	18x16.5	750			18x16.5	
1000		16x16.5	750	18x21.5	1200				
		18x16.5	1000						
2200		18x21.5	1450						

CK

CD series

- Low impedance, 105°C 2000 hours~3000 hours V-chip.
- Applicable to SMT process.
- RoHS Compliance.
- 105°C 2000小時~3000小時.低阻抗、V-Chip型產品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC									
Capacitance Range 靜電容量範圍	1 ~ 1500μF									
Leakage Current 洩漏電流	I ≤ 0.01CV or 3(μA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	tan δ(Max)	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	2
	Z(-55°C)/Z(20°C)	8	5	4	3	3	3	3	3	3
Load Life 負荷壽命	3000hours,with application of rated voltage 105°C(L < 10mm : 2000hrs)									
	Capacitance Change	Within ± 30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value			
						tan δ	Initial Specified Value			
						Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)									

Frequency Coefficient of Permissible Ripple Current

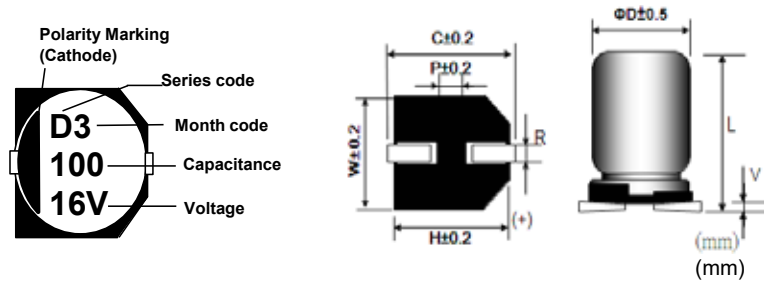
Frequency (Hz)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
≤ 33	0.35	0.70	0.90	1.00
33 ~ 150	0.40	0.85	0.92	1.00
> 150	0.60	0.85	0.95	1.00



CD series

DIMENSIONS(mm)

Chip Type



Size	ΦD	L	W	H	C	R	P	Vmax
4x5.4	4.0	5.4±0.3	4.3	4.3	5.1	0.5~0.8	1.0	0.3
5x5.4	5.0	5.4±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3x5.4	6.3	5.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3x6.0	6.3	6.0±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3x7.7	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8x6.5	8.0	6.5±0.5	8.3	8.3	9.0	0.5~0.8	2.3	0.3
8x10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, IMP (Ω max) at 20°C 100kHz.

Cap (μF)	V	6.3			10			16			25			35		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
4.7														4x5.4	80	2.0
10								4x5.4	80	2.0	4x5.4	80	2.0	5x5.4	150	1.20
22		4x5.4	80	2.0	4x5.4	80	2.0	5x5.4	150	1.20	5x5.4	150	1.20	6.3x5.4	230	0.80
33		4x5.4	80	2.0	5x5.4	150	1.20	5x5.4	150	1.20	6.3x5.4	230	0.80	6.3x5.4	230	0.80
47		5x5.4	150	1.20	5x5.4	150	1.20	5x5.4	150	1.20	6.3x5.4	230	0.80	6.3x5.4	230	0.80
100		6.3x5.4	230	0.80	6.3x5.4	230	0.80	6.3x5.4	230	0.80	6.3x7.7	280	0.58	8x10	450	0.22
150		6.3x5.4	230	0.80	6.3x5.4	230	0.80	6.3x7.7	280	0.58	8x10	450	0.22	8x10	450	0.22
220		6.3x5.4	230	0.80	6.3x7.7	280	0.58	6.3x7.7	280	0.58	8x10	450	0.22	10x10	670	0.15
330		8x10	450	0.22	8x10	450	0.22	8x10	450	0.22	8x10	450	0.22			
470		8x10	450	0.22	8x10	450	0.22	8x10	450	0.22	10x10	670	0.15			
								10x10	670	0.15						
680		8x10	450	0.22	10x10	670	0.15	10x10	670	0.15						
1000		8x10	450	0.22	10x10	670	0.15									
1500		10x10	670	0.15												

Cap (μF)	V	50			63			80			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
1		4x5.4	60	9.0									
2.2		4x5.4	60	9.0									
3.3		4x5.4	60	9.0	5x5.4	85	5.0	5x5.4	50	5.3			
4.7		5x5.4	85	5.0	5x5.4	85	5.0	6.3x5.4	60	4.8			
10		6.3x5.4	165	2.2	6.3x5.4	165	2.2				8x10	130	1.88
22		6.3x5.4	165	2.2	6.3x7.7	185	1.4	8x10	130	1.88	10x10	200	0.90
33		6.3x7.7	185	1.4	8x10	369	0.85	10x10	200	0.90	10x10	200	0.90
47		6.3x7.7	185	1.4	8x10	369	0.85	10x10	200	0.90	10x10	200	0.90
68		8x10	369	0.68	10x10	450	0.48	10x10	200	0.90			
100		8x10	369	0.68	10x10	553	0.48						
		10x10	553	0.48									
150		10x10	553	0.48									

CDS series

- Low impedance, 105°C 2000 hours High CV.
- Applicable to SMT process.
- RoHS Compliance.
- 105°C 低阻抗、2000小時 高比容產品。
- 適用於SMT制程。



SPECIFICATIONS

Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-55°C ~ + 105°C						
Rated Voltage Range 額定電壓範圍	6.3~50VDC						
Capacitance Range 靜電容量範圍	10~2200μF						
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (μA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	6.3	10	16	25	35	50
	tan δ(Max)	0.26	0.19	0.16	0.14	0.12	0.10
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2
	Z(-40°C)/Z(20°C)	8	5	4	3	3	3
Load Life 負荷壽命	2000hours,with application of rated voltage at 105°C						
	Capacitance Change	within ±30% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	within ±30% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value
						tan δ	Initial Specified Value
						Leakage Current	Initial Specified Value or less
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)						

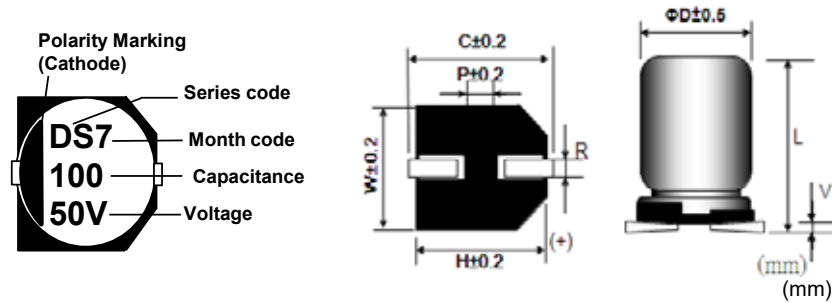
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF) ≤ 470	0.35	0.70	0.90	1.00
>470	0.40	0.85	0.92	1.00

CDS series

DIMENSIONS(mm)

Chip Type



Size	ΦD	L	W	H	C	R	P	Vmax
4×6.0	4.0	6.0±0.3	4.3	4.3	5.1	0.5~0.8	1.0	0.3
5×6.0	5.0	6.0±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3×6.0	6.3	6.0±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3×7.7	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8×10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10×10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz,ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V	6.3			10			16			25			35			50		
		Item	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.
10																	4x6	85	2.50
																	5x6	165	0.90
22										4x6	160	0.95	4x6	160	0.95	5x6	165	0.90	
33										4x6	160	0.95	5x6	240	0.40				
47								4x6	160	0.95	5x6	240	0.40	5x6	240	0.40	6.3x6	195	0.70
68					4x6	160	0.95	5x6	240	0.40	5x6	240	0.40	6.3x6	300	0.30			
100	4x6	160	0.95					5x6	240	0.40	6.3x6	300	0.30	6.3x6	300	0.30	6.3x7.7	350	0.40
150					5x6	240	0.40	6.3x6	300	0.30	6.3x7.7	600	0.20	6.3x7.7	600	0.20			
220	5x6	240	0.40		6.3x6	300	0.30	6.3x6	300	0.30	6.3x7.7	600	0.20				8x10	670	0.18
330	6.3x6	300	0.30		6.3x7.7	600	0.20	6.3x7.7	600	0.20				8x10	850	0.09	10x10	900	0.12
470	6.3x7.7	600	0.20		6.3x7.7	600	0.20				8x10	850	0.09						
560														10x10	1190	0.08			
680	6.3x7.7	600	0.20					8x10	850	0.09									
820											10x10	1190	0.08						
1000					8x10	850	0.09	10x10	1190	0.07									
1500	8x10	850	0.09		10x10	1190	0.08												
2200	10x10	1190	0.08																

CDS

CL series

- 105°C 2000hours.
- Suitable for lighting and power charger.
- RoHS Compliance.
- 105°C 2000小時。
- 適用於照明設備及電源充電器。



SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C				
Rated Voltage Range 額定電壓範圍	160~400VDC				
Capacitance Range 靜電容量範圍	2.2 ~ 82μF				
Leakage Current 洩漏電流	$I \leq 0.04CV + 100(\mu A)$ (After 2 minutes application of DC rated voltage, at 20°C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	160~250		400	
	tan δ(Max)	0.2		0.25	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	160	200	250	400
	Z(-25°C)/Z(20°C)	3	3	3	6
	Z(-40°C)/Z(20°C)	6	6	6	10
Load Life 負荷壽命	2000hours,with application of rated voltage at 105°C				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.			Capacitance Change	Within ± 10% of Initial Value
				tan δ	Initial Specified Value
				Leakage Current	Initial Specified Value or less
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	≧ 10K
Capacitance (μF)					
2.2~82	0.70	1.00	1.17	1.36	1.50

CL series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=8\sim 10\text{mm}$

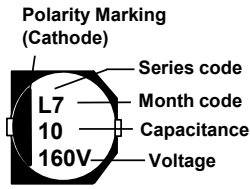
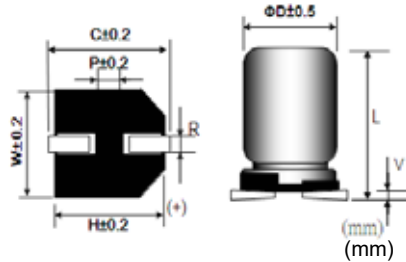
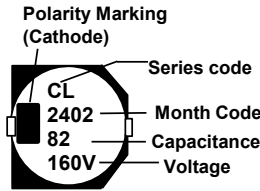


Fig.2 $\Phi D \geq 12.5\text{mm}$



Size	ΦD	L	W	H	C	R	P	Vmax
8×10.5	8.0	10.5±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10×10.5	10.0	10.5±0.5	10.3	10.3	11.0	1.0~1.3	4.5	0.3
12.5×13.5	12.5	13.5±1.0	13.0	13.0	13.7	1.1~1.4	4.5	0.4
16×16.5	16.0	16.5±1.0	17.0	17.0	18.0	1.7~2.1	6.4	0.4

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	160		200		250		400	
		Item	D x L	R.C.	DxL	R.C.	D x L	R.C.	D x L
2.2								8x10.5	25
3.3						8x10.5	31	10x10.5	36
4.7						8x10.5	37	10x10.5	38
6.8						8x10.5	44	12.5x13.5	47
10		8x10.5	57	10x10.5	64	10x10.5	64	12.5x13.5	57
22		12.5x13.5	112	12.5x13.5	112	12.5x13.5	112	16x16.5	115
33		12.5x13.5	137	12.5x13.5	137	16x16.5	150		
47		16x16.5	180	16x16.5	180	16x16.5	180		
68		16x16.5	215	16x16.5	215				
82		16x16.5	235						

CL

CKL series

- 105°C 5000 hours Long Life.
- Applicable to SMT process.
- RoHS Compliance.
- 105°C 5000小時長壽命產品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C						
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC						
Capacitance Range 靜電容量範圍	1~ 1000µF						
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	6.3	10	16	25	35	50
	tan δ(Max)	0.32	0.28	0.22	0.16	0.13	0.12
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2
	Z(-40°C)/Z(20°C)	10	7	5	3	3	3
Load Life 負荷壽命	5000hours,with application of rated voltage at 105°C						
	Capacitance Change	Within ± 30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	Within ± 30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.				Capacitance Change	Within ± 10% of Initial Value	
					tan δ	Initial Specified Value	
					Leakage Current	Initial Specified Value or less	
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)						

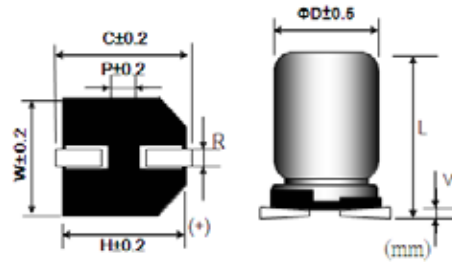
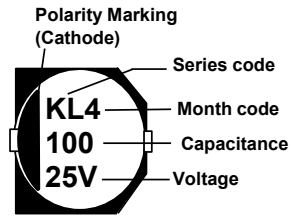
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (µF)				
4.7 ~ 33	1.00	1.20	1.30	1.45
>33	1.00	1.10	1.20	1.30

CKL series

DIMENSIONS(mm)

Chip Type



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
4x6	4.0	6±0.3	4.3	4.3	5.0	0.5~0.8	1.0	0.3
5x6	5.0	6±0.3	5.3	5.3	6.0	0.5~0.8	1.4	0.3
6.3x6	6.3	6±0.3	6.6	6.6	7.3	0.5~0.8	2.1	0.3
6.3x7.7	6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.1	0.3
8x10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

CKL

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz .

Cap (μF)	V	6.3		10		16		25		35		50	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
1.0												4x6	6.2
2.2												4x6	11
3.3										4x6	15	4x6	14
4.7						4x6	18	5x6	25	5x6	25	5x6	19
10				5x6	30	5x6	30	6.3x6	42	6.3x6	42	6.3x6	30
22				5x6	35	6.3x6	48	6.3x6	48	6.3x7.7	57	6.3x7.7	49
33	5x6	35	6.3x6	50	6.3x6	50	6.3x7.7	63	8x10	92	8x10	80	
47	5x6	36	6.3x7.7	81	6.3x7.7	81	8x10	116	10x10	150	8x10	95	
100	6.3x6	60	8x10	140	10x10	216	10x10	240	10x10	280	10x10	160	
220	6.3x7.7	101	10x10	240	10x10	300	10x10	375					
330	8x10	160	10x10	280	10x10	320							
470	10x10	260											
1000	10x10	260											

CDL series

- Low impedance, 105°C 5000 hours Long Life.
- Applicable to SMT process.
- RoHS Compliance.
- 105°C 低阻抗、5000小時 長壽命產品。
- 適用於SMT制程。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3~100VDC									
Capacitance Range 靜電容量範圍	22~12000μF									
Leakage Current 洩漏電流	≤ 0.01CV or 3 (μA), which is greater. (After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	tan δ(Max)	0.3	0.26	0.22	0.16	0.14	0.14	0.08	0.08	0.07
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	2
	Z(-55°C)/Z(20°C)	8	5	4	3	3	3	3	3	3
Load Life 負荷壽命	5000hours,with application of rated voltage at 105°C									
	Capacitance Change	Within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.						Capacitance Change	Within ± 10% of Initial Value		
							tan δ	Initial Specified Value		
							Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)									

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
≤ 33	0.35	0.70	0.90	1.00
33 ~ 150	0.40	0.85	0.92	1.00
> 150	0.60	0.85	0.95	1.00

CDL series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=8\sim 10\text{mm}$

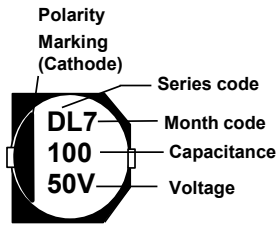
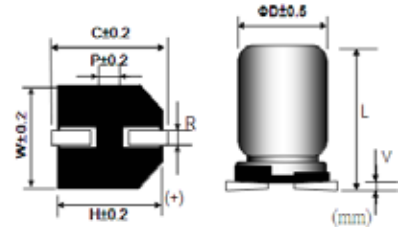
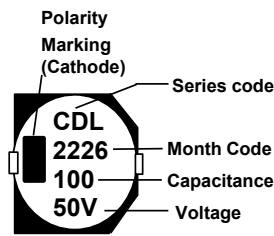


Fig.2 $\Phi D\geq 12.5\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
8x10	8.0	10 ± 0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10 ± 0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
10x12.5	10.0	13.5 ± 0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.4
12.5x13.5	12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
16x16.5	16.0	16.5 ± 0.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4
18x16.5	18.0	16.5 ± 1	19.0	19.0	20.0	1.7~2.1	6.4	0.4
18 × 21.5	18.0	21.5 ± 1	19.0	19.0	20.0	1.7~2.1	6.4	0.4

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, ESR(Ω max) at 20°C 100kHz.

Cap (μF)	V Item	6.3			10			16			25			35		
		D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
100														8x10	600	0.17
150											8x10	600	0.17	8x10	600	0.17
220											8x10	600	0.17	10x10	850	0.09
330					8x10	600	0.17	8x10	600	0.17	8x10	600	0.17			
470		8x10	600	0.17	8x10	600	0.17	8x10	600	0.17	10x10	850	0.09	12.5x13.5	1100	0.06
680		8x10	600	0.17	10x10	850	0.09	10x10	850	0.09	12.5x13.5	1100	0.06	12.5x13.5	1100	0.06
1000		8x10	600	0.17	10x10	850	0.09	10x10	850	0.09	12.5x13.5	1100	0.06	16x16.5	1800	0.035
								12.5x13.5	1100	0.06				16x16.5	1800	0.035
1500		10x10	850	0.09	12.5x13.5	1100	0.06				16x16.5	1800	0.035	16x16.5	1800	0.035
2200		12.5x13.5	1100	0.06	12.5x13.5	1100	0.06				16x16.5	1800	0.035	18x16.5	2060	0.033
2700														18x21.5	2060	0.028
3300								16x16.5	1800	0.035	18x16.5	2060	0.033			
3900											18x21.5	2060	0.028			
4700					16x16.5	1800	0.035	18x16.5	2060	0.033						
5600								18x21.5	2060	0.028						
6800		16x16.5	1800	0.035	18x16.5	2060	0.033									
8200		18x16.5	2060	0.033	18x21.5	2060	0.028									
10000		18x16.5	2060	0.033												
12000		18x21.5	2060	0.028												

Cap (μF)	V Item	50			63			80			100		
		D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
22											8x10	130	1.88
33								8x10	130	1.88	10x10	200	0.65
47					8x10	200	0.70	10x10	200	0.90	12.5x13.5	500	0.32
56		8x10	330	0.34	10x10	369	0.48						
68		8x10	330	0.34							12.5x13.5	500	0.32
100		8x10	330	0.34	12.5x13.5	800	0.16	12.5x13.5	500	0.32	16x16.5	793	0.17
150		10x10	670	0.18	12.5x13.5	800	0.16	12.5x13.5	500	0.32	16x16.5	793	0.17
220					12.5x13.5	800	0.16				18x16.5	917	0.153
330		12.5x13.5	900	0.12	16x16.5	1410	0.082	16x16.5	793	0.17	18x21.5	1230	0.083
470		16x16.5	1610	0.073	16x16.5	1410	0.082	18x16.5	917	0.153			
680		16x16.5	1610	0.073	18x16.5	1690	0.080						
1000		16x16.5	1610	0.073	18x21.5	1960	0.055						
1200		18x16.5	1900	0.068									
1500		18x21.5	2100	0.042									

CDL

CDV series

- Low impedance, 105°C 5000 hours.
- Applicable to SMT process.
- RoHS Compliance.
- Peak acceleration: 30G
- 105°C 低阻抗、5000小時 長壽命產品。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	±20% (120Hz, 20°C)									
Operating Temperature Range 適用溫度範圍	-55°C ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3~100VDC									
Capacitance Range 靜電容量範圍	22~12000μF									
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (μA), which is greater. (After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	tan δ(Max)	0.30	0.26	0.22	0.16	0.14	0.14	0.08	0.08	0.07
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	2
	Z(-55°C)/Z(20°C)	8	5	4	3	3	3	3	3	3
Load Life 負荷壽命	5000hours, with application of rated voltage at 105°C									
	Capacitance Change	Within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.						Capacitance Change	Within ± 10% of Initial Value		
							tan δ	Initial Specified Value		
							Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)									

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
≤ 33	0.35	0.70	0.90	1.00
33 ~ 150	0.40	0.85	0.92	1.00
> 150	0.60	0.85	0.95	1.00

CDV series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=8\sim 10\text{mm}$

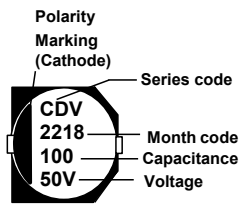
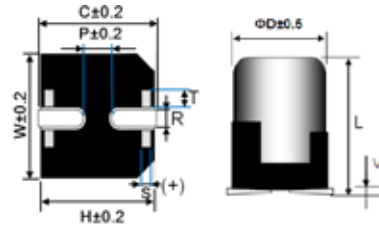
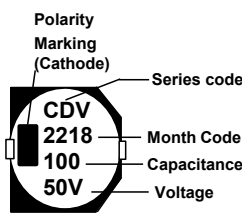


Fig.2 $\Phi D\geq 12.5\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	S	T	Vmax
8 × 10.5	8.0	10 ± 0.5	8.3	8.3	9.0	1.0~1.4	3.2	0.7	1.3	0.3
10 × 10.5	10.0	10 ± 0.5	10.3	10.3	11.0	1.0~1.4	4.5	0.7	1.3	0.3
12.5 × 13.5	12.5	13.5 ± 1.0	13.5	13.5	14.2	1.1~1.4	4.5	2.2	2.4	0.4
16 × 16.5	16.0	16.5 ± 1.0	17.0	17.0	18.0	1.7~2.1	6.4	3.0	2.0	0.4
18 × 16.5	18.0	16.5 ± 1.0	19.0	19.0	20.0	1.7~2.1	6.4	3.0	2.0	0.4
18 × 21.5	18.0	21.5 ± 1.0	19.0	19.0	20.0	1.7~2.1	6.4	3.0	2.0	0.4

CDV

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V	6.3			10			16			25			35		
		Item	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.
100														8x10.5	600	0.170
150											8x10.5	600	0.170	8x10.5	600	0.170
220											8x10.5	600	0.170	10x10.5	850	0.090
330					8x10.5	600	0.170	8x10.5	600	0.170	8x10.5	600	0.170			
470	8x10.5	600	0.170	8x10.5	600	0.170	8x10.5	600	0.170	10x10.5	850	0.090	12.5x13.5	1100	0.060	
680	8x10.5	600	0.170	10x10.5	850	0.090	10x10.5	850	0.090	12.5x13.5	1100	0.060	12.5x13.5	1100	0.060	
1000	8x10.5	600	0.170	10x10.5	850	0.090	10x10.5	850	0.090	12.5x13.5	1100	0.060	16x16.5	1800	0.035	
							12.5x13.5	1,100	0.060							
1500	10x10.5	850	0.090	12.5x13.5	1100	0.060	12.5x13.5	1,100	0.060	16x16.5	1800	0.035	16x16.5	1800	0.035	
2200	12.5x13.5	1100	0.060	12.5x13.5	1100	0.060				16x16.5	1800	0.035	18x16.5	2060	0.033	
2700													18x21.5	2060	0.028	
3300							16x16.5	1,800	0.035	18x16.5	2060	0.033				
3900										18x21.5	2060	0.028				
4700				16x16.5	1800	0.035	18x16.5	2,060	0.033							
5600							18x21.5	2,060	0.028							
6800	16x16.5	1800	0.035	18x16.5	2060	0.033										
8200	18x16.5	2060	0.033	18x21.5	2060	0.028										
10000	18x16.5	2060	0.033													
12000	18x16.5	2060	0.033													

Cap (μF)	V	50			63			80			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
22											8x10.5	130	1.88
33								8x10.5	130	1.88	10x10.5	200	0.650
47					8x10.5	200	0.700	10x10.5	200	0.900	12.5x13.5	500	0.320
56	8x10.5	330	0.340	10x10.5	369	0.480							
68	8x10.5	330	0.340								12.5x13.5	500	0.320
100	8x10.5	330	0.340	12.5x13.5	800	0.160	12.5x13.5	500	0.320	16x16.5	793	0.170	
150	10x10.5	670	0.180	12.5x13.5	800	0.160	12.5x13.5	500	0.320	16x16.5	793	0.170	
220				12.5x13.5	800	0.160					18x16.5	917	0.153
330	12.5x13.5	900	0.120	16x16.5	1410	0.082	16x16.5	793	0.170	18x21.5	1230	0.083	
470	16x16.5	1610	0.073	16x16.5	1410	0.082	18x16.5	917	0.153				
680	16x16.5	1610	0.073	18x16.5	1690	0.080							
1,000	16x16.5	1610	0.073	18x21.5	1960	0.055							
1,200	18x16.5	1900	0.068										
1,500	18x21.5	2100	0.042										

CLL series

- Low impedance, 105°C 7000 hours~10000 hours Long Life.
- Applicable to SMT process.
- RoHS Compliance.
- 105°C 低阻抗、7000小時~10000小時 長壽命產品。
- 適用於SMT制程。



SPECIFICATIONS

Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-25°C ~ + 105°C						
Rated Voltage Range 額定電壓範圍	6.3~50VDC						
Capacitance Range 靜電容量範圍	10~1000µF						
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C						
	Rated Voltage(V)	6.3	10	16	25	35	50
	tan δ(Max)	0.32	0.28	0.26	0.16	0.14	0.14
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz						
	Rated Voltage(V)	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2
Load Life 負荷壽命	Φ≤6.3 : 7000hours, Φ≥8 : 10000 with application of rated voltage at 105°C						
	Capacitance Change	within ±30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	within ±30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hott plate maintained at 250°C for 30seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value
						tan δ	Initial Specified Value
						Leakage Current	Initial Specified Value or less
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (µF)				
C ≤ 22	0.50	0.80	0.90	1.00
22 < C ≤ 150	0.65	0.85	0.92	1.00
C > 150	0.70	0.85	0.95	1.00

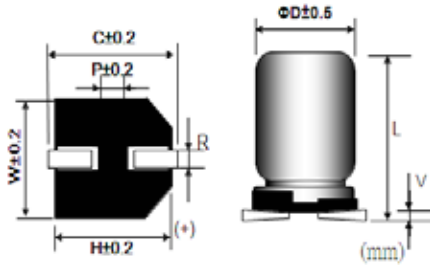
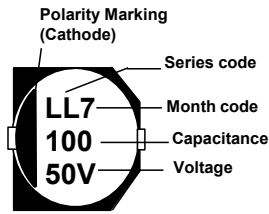
CLL

CLL series

DIMENSIONS(mm)

■ Chip Type

Fig.1 $\Phi D=5\sim 10\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
5×7	5.0	7.0±0.3	5.3	5.3	5.9	0.5~0.8	1.4	0.3
6.3×7	6.3	7.0±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3×8.4	6.3	8.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8×10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10×10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

CLL

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V	6.3			10			16			25			35			50			
		Item	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
10														5x7	95	2.20				
								5x7.0	95	2.20	5x7	95	2.20	5x7	95	2.20	6.3x8.4	100	1.80	
22											6.3x7	140	1.10	6.3x8.4	230	1.00	8x10	350	0.53	
33					5x7	95	2.20	6.3x7.0	140	1.10	6.3x7	140	1.10	6.3x8.4	230	1.00	8x10	350	0.53	
47	5x7	95	2.20					6.3x7.0	140	1.10	6.3x8.4	230	1.00	8x10	600	0.22	10x10	670	0.35	
100	6.3x7	140	1.10					6.3x8.4	230	1.00	8x10	600	0.22							
150					6.3x7	140	1.10	6.3x8.4	230	1.00	8x10	600	0.22	10x10	850	0.16				
220	6.3x8.4	230	1.00					8x10	600	0.220	10x10	850	0.16	10x10	850	0.16				
330	6.3x8.4	230	1.00					10x10	850	0.16										
470	8x10	600	0.22																	
1000	10x10	850	0.16																	

CG series

- 125°C 1000 hours~3000 hours.
- Applicable to SMT process.
- RoHS Compliance.
- 125°C 1000小時~3000小時 長壽命產品。
- 適用於SMT製程。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-55 ~ +125°C					-40 ~ +125°C				
Rated Voltage Range 額定電壓範圍	10 ~ 63VDC					80 ~ 160VDC				
Capacitance Range 靜電容量範圍	10 ~ 470μF					2.2 ~ 33μF				
Leakage Current 洩漏電流	I ≤ 0.01CV or 3(μA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	10	16	25	35	50	63	80	100	160
	tan δ(Max)	0.32	0.24	0.21	0.18	0.18	0.15	0.15	0.12	0.20
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	10	16	25	35	50	63	80	100	160
	Z(-25°C)/Z(20°C)	3	2	2	2	2	2	2	2	-
	Z(-40°C)/Z(20°C)	-	-	-	-	-	-	3	3	-
Z(-55°C)/Z(20°C)	6	4	4	3	3	3	-	-	-	
Load Life 負荷壽命	3000hours,with application of rated voltage at 125°C (ØD=4~6.3x5.4mm : 1000hrs;6.3x7.7mm : 2000hrs)									
	Capacitance Change	Within ± 30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	500% or less of Initial Specified Value								
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value			
						tan δ	Initial Specified Value			
						Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)									

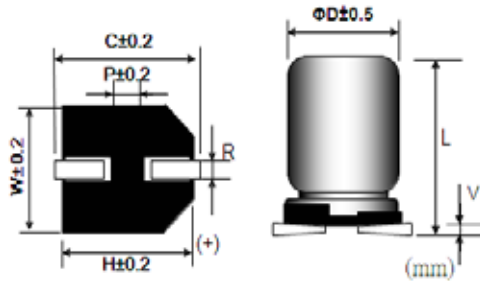
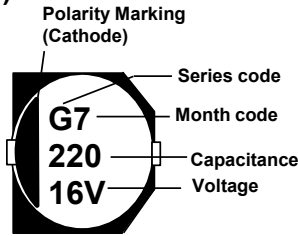
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	60	120	1K	≥10K
Coefficient	0.64	0.64	1.00	1.36	1.50

CG series

DIMENSIONS(mm)

Chip Type



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
6.3x5.4	6.3	5.4±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3x7.7	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8x10	8.0	10±0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10x10	10.0	10±0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 125°C 120Hz.

Cap (μF)	V	10		16		25		35		50	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
10								6.3x5.4	46	6.3x7.7	34
22								6.3x5.4	46	6.3x7.7	55
33						6.3x5.4	46	6.3x7.7	73	8x10	106
47				6.3x5.4	40	6.3x7.7	73	6.3x7.7	73	8x10	106
										10x10	164
100	6.3x7.7	58		6.3x7.7	73	6.3x7.7	73	8x10	131	10x10	164
						8x10	131	10x10	164		
220	6.3x7.7	58		8x10	131	8x10	131	10x10	164		
				10x10	164	10x10	164				
330	8x10	90		10x10	164	10x10	164				
	10x10	112									
470	10x10	130									

Cap (μF)	V	63		80		100		160	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2								8x10	22
3.3								8x10	22
4.7								10x10	70
10	6.3x7.7	40		8x10	46	8x10	46		
22	8x10	66		8x10	46	8x10	46		
				10x10	76	10x10	76		
33	8x10	66		8x10	46	10x10	76		
	10x10	113		10x10	76				
47	8x10	66							
	10x10	113							

CGL series

- Low impedance, 125°C 2000 hours~3000 hours Long Life
- Applicable to SMT process.
- RoHS Compliance.
- 125°C低阻抗、2000小時~3000小時 長壽命產品。
- 適用於SMT製程



SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +125°C				
Rated Voltage Range 額定電壓範圍	16~50VDC				
Capacitance Range 靜電容量範圍	33~680µF				
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA), which is greater. (After 2 minutes application of DC rated voltage, at 20°C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	16	25	35	50
	tan δ(Max)	0.23	0.18	0.16	0.14
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	16	25	35	50
	Z(-25°C)/Z(20°C)	3	3	2	2
	Z(-40°C)/Z(20°C)	4	4	3	3
Load Life 負荷壽命	≤6.3Φ: 2,000 hours, 3,000 hours with application of rated voltage at 125°C				
	Capacitance Change	Within ±30% of Initial Value			
	tan δ	300% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ±30% of Initial Value			
	tan δ	300% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.			Capacitance Change	Within ± 10% of Initial Value
				tan δ	Initial Specified Value
				Leakage Current	Initial Specified Value or less
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (µF)				
33~330	0.4	0.75	0.9	1.00

CGL

CGL series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=6.3\sim 10\text{mm}$

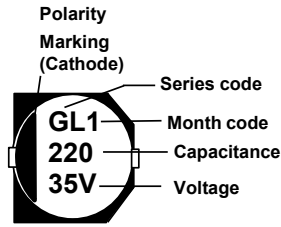
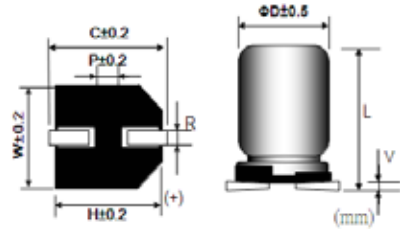
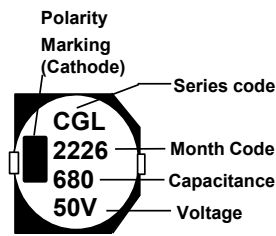


Fig.2 $\Phi D\geq 12.5\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
6.3 × 6	6.3	6.0 ± 0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3 × 7.7	6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8 × 10	8.0	10.0 ± 0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10 × 10	10.0	10.0 ± 0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
12.5 × 13.5	12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
12.5 × 16	12.5	16 ± 0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4

CGL

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 125°C 100kHz, ESR(Ω max) at 20°C 100kHz.

Cap (μF)	V	16				25				35				50				
		Item	D x L	R.C.	ESR		D x L	R.C.	ESR		D x L	R.C.	ESR		D x L	R.C.	ESR	
					20°C	-40°C			20°C	-40°C			20°C	-40°C			20°C	-40°C
33		6.3x6	70	1.0	15	6.3x6	70	1.0	15					8x10	250	0.36	4.5	
47														8x10	250	0.36	4.5	
		6.3x7.7	200	0.70	10	6.3x7.7	200	0.70	10	8x10	300	0.30	4.5	10x10	350	0.25	3.0	
100										8x10	300	0.30	4.5	10x10	350	0.25	3.0	
		8x10	300	0.30	4.5	8x10	300	0.30	4.5	10x10	500	0.20	3.0					
220		8x10	300	0.30	4.5	8x10	300	0.30	4.5	10x10	500	0.20	3.0					
		10x10	500	0.20	3.0	10x10	500	0.20	3.0									
330		10x10	500	0.20	3.0	10x10	500	0.20	3.0									
680										12.5x16	1470	0.056	2.0					

CGS series

- Chip type with 6.3Φ~16Φ, 125°C, 1000 hours~2000 hours, long life product.
- Designed For automobile modules and other high temperature applications.
- RoHS Compliance.
- 6.3Φ~16ΦV-Chip 型, 125°C, 1000小時~2000小時 長壽命產品。
- 專為汽車模塊和其它高溫應用設計。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-55 ~ +125°C									
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC									
Capacitance Range 靜電容量範圍	1 ~ 4700μF									
Leakage Current 洩漏電流	I ≤ 0.01CV or 3(μA) · which is greater. (After 3 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	
	tan δ(Max)	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	
	Z(-40°C)/Z(20°C)	8	6	4	3	3	3	3	3	
Load Life 負荷壽命	6.3V~50V:2,000hours (ΦD =6.3mm1,000hours);63V~100V:1,500 hours with application of rated voltage at 125°C									
	Capacitance Change	within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.						Capacitance Change	Within ± 10% of Initial Value		
							tan δ	Initial Specified Value		
							Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)									

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
C ≤ 22	0.50	0.80	0.90	1.00
22 < C ≤ 150	0.65	0.85	0.92	1.00
150 < C	0.70	0.85	0.95	1.00

CGS series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=6.3\sim 10\text{mm}$

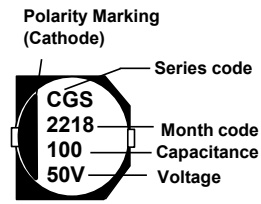
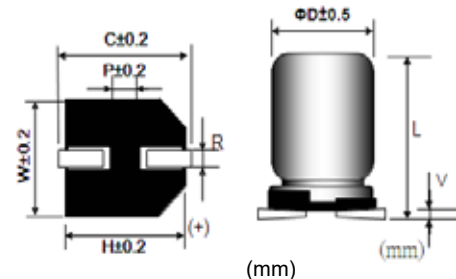
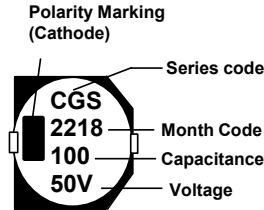


Fig.2 $\Phi D \geq 12.5\text{mm}$



Size	ΦD	$L \pm 0.5$	W	H	C	R	P	Vmax
6.3 × 6	6.3	6.0 ± 0.3	6.6	6.6	7.3	0.5~0.8	2.1	0.3
6.3 × 7.7	6.3	7.7 ± 0.3	6.6	6.6	7.3	0.5~0.8	2.1	0.3
8 × 10	8.0	10.0 ± 0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10 × 10	10.0	10.0 ± 0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
12.5 × 13.5	12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
16 × 16.5	16.0	16.5 ± 0.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 125°C 100KHz, ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V	6.3			10			16			25		
		D x L	R.C.	ESR	DxL	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
33											6.3x6	70	1.6
47					6.3x6	70	1.6	6.3x6	70	1.6	6.3x7.7	110	0.90
100	6.3x6	70	1.6	6.3x7.7	110	0.90	8x10	160	0.40		6.3x7.7	110	0.90
220	6.3x7.7	110	0.90	6.3x7.7	110	0.90	8x10	160	0.40	8x10	8x10	160	0.40
				8x10	160	0.40					10x10	220	0.30
330	8x10	160	0.40	8x10	160	0.40	10x10	220	0.30	10x10	10x10	220	0.30
											12.5x13.5	550	0.12
470	8x10	160	0.40	10x10	220	0.30	12.5x13.5	550	0.12	12.5x13.5	550	0.12	
680	10x10	220	0.30	12.5x13.5	550	0.12	12.5x13.5	550	0.12	12.5x13.5	550	0.12	
1000	12.5x13.5	550	0.12	12.5x13.5	550	0.12	12.5x13.5	550	0.12	12.5x13.5	550	0.12	
1500	12.5x13.5	550	0.12	12.5x13.5	550	0.12	16x16.5	900	0.08	16x16.5	900	0.08	
2200	12.5x13.5	550	0.12	16x16.5	900	0.08	16x16.5	900	0.08				
3300	16x16.5	900	0.08	16x16.5	900	0.08							
4700	16x16.5	900	0.08										

Cap (μF)	V	35			50			63			100		
		D x L	R.C.	ESR	DxL	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
1					6.3x6	45	3.5						
2.2					6.3x6	45	3.5						
3.3					6.3x6	45	3.5						
4.7	6.3x6	60	2.0	6.3x6	45	3.5							
10	6.3x6	70	1.6	6.3x6	50	2.8					8x10	70	1.00
22	6.3x6	70	1.6	6.3x7.7	80	2.0	8x10	100	1.00		8x10	70	1.00
33	6.3x7.7	110	0.90	6.3x7.7	80	2.0	8x10	100	1.00	8x10	10x10	115	0.80
				8x10	140	0.70							
47	6.3x7.7	110	0.90	8x10	140	0.70	8x10	100	1.00	8x10	12.5x13.5	350	0.33
				8x10	160	0.40							
100	8x10	160	0.40	10x10	240	0.50	10x10	150	0.50	10x10	16x16.5	500	0.24
				10x10	220	0.30							
220	10x10	220	0.30	12.5x13.5	490	0.23	12.5x13.5	350	0.25	12.5x13.5	16x16.5	500	0.18
				12.5x13.5	550	0.12							
330	12.5x13.5	550	0.12	12.5x13.5	490	0.23	16x16.5	500	0.18	16x16.5	500	0.18	
				16x16.5	800	0.15							
470	12.5x13.5	550	0.12	16x16.5	800	0.15	16x16.5	500	0.18	16x16.5	500	0.18	
680	16x16.5	900	0.08	16x16.5	800	0.15							
1000	16x16.5	900	0.08										

CGS

CGV series

- Chip type with 8Φ~16Φ, 125°C, 1500 hours~2000 hours, long life product.
- Designed For automobile modules and other high temperature applications.
- Peak acceleration: 30G
- RoHS Compliance.
- 8Φ~16ΦV-Chip 型, 125°C, 1500小時~2000小時 長壽命產品。
- 專為汽車模塊和其它高溫應用設計。
- 峰值加速度：30G。



SPECIFICATIONS

Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-55 ~ +125°C								
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC								
Capacitance Range 靜電容量範圍	1 ~ 4700μF								
Leakage Current 洩漏電流	$I \leq 0.01CV$ or $3(\mu A)$ · which is greater. (After 3 minutes application of DC rated voltage, at 20°C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	tan δ(Max)	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	8	6	4	3	3	3	3	3
Load Life 負荷壽命	6.3V~50V:2,000hours;63V~100V:1,500 hours with application of rated voltage at 125°C								
	Capacitance Change	within ±30% of Initial Value							
	tan δ	300% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	Within ± 30% of Initial Value							
	tan δ	300% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.					Capacitance Change	Within ± 10% of Initial Value		
						tan δ	Initial Specified Value		
						Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)								

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
C ≤ 22	0.50	0.80	0.90	1.00
22 < C ≤ 150	0.65	0.85	0.92	1.00
150 < C	0.70	0.85	0.95	1.00

CGV

CGV series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=8\sim 10\text{mm}$

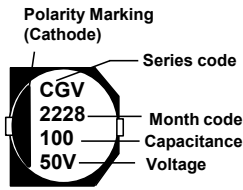
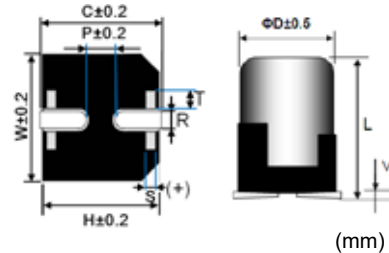
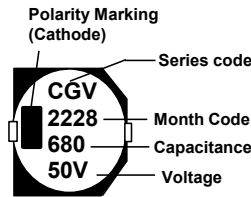


Fig.2 $\Phi D \geq 12.5\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	S	T	Vmax
8 × 10.5	8.0	10.5 ± 0.5	8.3	8.3	9.0	1.0~1.4	3.2	0.7	1.3	0.3
10 × 10.5	10.0	10.5 ± 0.5	10.3	10.3	11.0	1.0~1.4	4.5	0.7	1.3	0.3
12.5 × 13.5	12.5	13.5 ± 1.0	13.5	13.5	14.2	1.1~1.4	4.5	2.2	2.4	0.4
16 × 16.5	16.0	16.5 ± 1.0	17.0	17.0	18.0	1.7~2.1	6.4	3.0	2.0	0.4

CGV

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 125°C 100KHz, ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V Item	6.3			10			16			25		
		D x L	R.C.	ESR	DxL	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
100								8x10.5	160	0.40	8x10.5	160	0.40
220								8x10.5	160	0.40	8x10.5	160	0.40
					8x10.5	160	0.40				10x10.5	220	0.30
330		8x10.5	160	0.40	8x10.5	160	0.40	10x10.5	220	0.30	10x10.5	220	0.30
											12.5x13.5	550	0.12
470		8x10.5	160	0.40	10x10.5	220	0.30	12.5x13.5	550	0.12	12.5x13.5	550	0.12
680		10x10.5	220	0.30	12.5x13.5	550	0.12	12.5x13.5	550	0.12	12.5x13.5	550	0.12
1000		12.5x13.5	550	0.12	12.5x13.5	550	0.12	12.5x13.5	550	0.12	16x16.5	900	0.080
1500		12.5x13.5	550	0.12	12.5x13.5	550	0.12	16x16.5	900	0.080	16x16.5	900	0.080
2200		12.5x13.5	550	0.12	16x16.5	900	0.080	16x16.5	900	0.080			
3300		16x16.5	900	0.08	16x16.5	900	0.080						
4700		16x16.5	900	0.08									

Cap (μF)	V Item	35			50			63			100		
		D x L	R.C.	ESR	DxL	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR
10											8x10.5	70	1.00
22								8x10.5	100	1.00	8x10.5	70	1.00
33								8x10.5	100	1.00	10x10.5	115	0.80
					8x10.5	140	0.70						
47					8x10.5	140	0.70	8x10.5	100	1.00	12.5x13.5	350	0.33
		8x10.5	160	0.40	10x10.5	240	0.50	10x10.5	150	0.50			
100		8x10.5	160	0.40	10x10.5	240	0.50	10x10.5	150	0.50	16x16.5	500	0.24
		10x10.5	220	0.30	12.5x13.5	490	0.23	12.5x13.5	350	0.25			
220		10x10.5	220	0.30	12.5x13.5	490	0.23	12.5x13.5	350	0.25			
		12.5x13.5	550	0.12				16x16.5	500	0.18			
330		12.5x13.5	550	0.12	12.5x13.5	490	0.23	16x16.5	500	0.18			
					16x16.5	800	0.15						
470.0		12.5x13.5	550	0.12	16x16.5	800	0.15	16x16.5	500	0.18			
		16x16.5	900	0.080									
680.0		16x16.5	900	0.080	16x16.5	800	0.15						
1000.0		16x16.5	900	0.080									

CTS series

- Chip type with 8Φ~16Φ, 125°C, 2000 hours~5000 hours, long life product.
- Designed For automobile modules and other high temperature applications.
- RoHS Compliance.
- 8Φ~16ΦV-Chip 型, 125°C, 2000小時~5000小時 長壽命產品。
- 專為汽車模塊和其它高溫應用設計。



SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +125°C				
Rated Voltage Range 額定電壓範圍	16~50VDC				
Capacitance Range 靜電容量範圍	10 ~ 3900μF				
Leakage Current 洩漏電流	$I \leq 0.01CV$ or $3(\mu A)$, which is greater. (After 2 minutes application of DC rated voltage, at 20°C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	16	25	35	50
	tan δ(Max)	0.20	0.20	0.14	0.14
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	16	25	35	50
	Z(-25°C)/Z(20°C)	5	2	2	2
	Z(-40°C)/Z(20°C)	8	4	3	3
Load Life 負荷壽命	5000hours ,with application of rated voltage at 125°C(Φ8~Φ10:2000hours; Φ12.5:3000hours)				
	Capacitance Change	Within ±30% of Initial Value			
	tan δ	300% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ±30% of Initial Value			
	tan δ	300% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.			Capacitance Change	Within ± 10% of Initial Value
				tan δ	Initial Specified Value
				Leakage Current	Initial Specified Value or less
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
全系列	0.60	0.85	0.93	1.00

CTS series

DIMENSIONS(mm)

Chip Type

Fig.1 $\Phi D=6.3\sim 10\text{mm}$

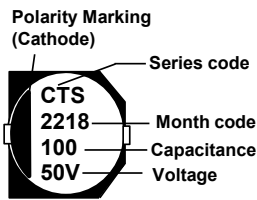
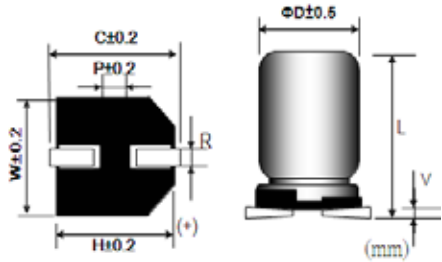
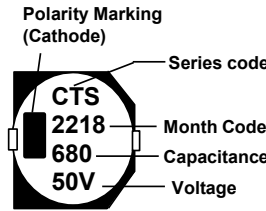


Fig.2 $\Phi D\geq 12.5\text{mm}$



(mm)

Size	ΦD	L	W	H	C	R	P	Vmax
6.3 × 6.0	6.3	6.0 ± 0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
6.3 × 7.7	6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5~0.8	2.1	0.3
8 × 10	8.0	10 ± 0.5	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10 × 10	10.0	10 ± 0.5	10.3	10.3	11.0	0.7~1.3	4.5	0.3
12.5 × 13.5	12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
16 × 16.5	16.0	16.5 ± 0.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4
18 × 16.5	18.0	16.5 ± 1.0	19.0	19.0	20.0	1.7~2.1	6.4	0.4
18 × 21.5	18.0	21.5 ± 1.0	19.0	19.0	20.0	1.7~2.1	6.4	0.4

CTS

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 125°C 100KHz, ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V	16.0			25			35			50		
		Item	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.
10											6.3x6.0	70	2.00
22								6.3x6.0	110	1.60			
33					6.3x6.0	110	1.60	6.3x6.0	110	1.60			
								6.3x7.7	200	0.45			
47	6.3x6.0	110	1.60				6.3x7.7	200	0.45	8x10	250	0.45	
100	6.3x7.7	200	0.45	6.3x7.7	200	0.45	8x10	300	0.18	10x10	350	0.30	
160							8x10	300	0.18				
220					8x10	300	0.18	10x10	500	0.11	12.5x13.5	700	0.15
270					8x10	300	0.18						
300								10x10	500	0.11			
330	8x10	300	0.18	10x10	500	0.11	12.5x13.5	1200	0.08				
390	8x10	300	0.18										
470	10x10	500	0.11	10x10	500	0.11	12.5x13.5	1200	0.08	16x16.5	1000	0.09	
620							12.5x13.5	1200	0.08				
680	10x10	500	0.11	12.5x13.5	1200	0.08	16x16.5	1800	0.05	18x16.5	1200	0.07	
910				12.5x13.5	1200	0.08							
1000	12.5x13.5	1200	0.08	16x16.5	1800	0.05	16x16.5	1800	0.05	18x21.5	1650	0.05	
1500	12.5x13.5	1200	0.08	16x16.5	1800	0.05	18x16.5	2000	0.045				
2200	16x16.5	1800	0.05	18x21.5	2000	0.045	18x21.5	2200	0.04				
3300	18x16.5	2000	0.045	18x21.5	2200	0.04							
3900	18x21.5	2200	0.04										

CTV series

- Chip type with 8Φ~16Φ, 125°C, 2000 hours~5000 hours, long life product.
- Designed For automobile modules and other high temperature applications.
- Peak acceleration: 30G
- RoHS Compliance.
- 8Φ~16ΦV-Chip 型, 125°C, 2000小時~5000小時 長壽命產品。
- 專為汽車模塊和其它高溫應用設計。



SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +125°C				
Rated Voltage Range 額定電壓範圍	16~50VDC				
Capacitance Range 靜電容量範圍	47 ~ 2200μF				
Leakage Current 洩漏電流	I ≤ 0.01CV or 3(μA) , which is greater. (After 2 minutes application of DC rated voltage, at 20°C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	16	25	35	50
	tan δ(Max)	0.20	0.20	0.14	0.14
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	16	25	35	50
	Z(-25°C)/Z(20°C)	5	2	2	2
	Z(-40°C)/Z(20°C)	8	4	3	3
Load Life 負荷壽命	Φ8~Φ10:2000hours; Φ12.5:3000hours ; Φ16: 5000hours with application of rated voltage at 125°C				
	Capacitance Change	Within ±30% of Initial Value			
	tan δ	300% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ±30% of Initial Value			
	tan δ	300% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.	Capacitance Change	Within ± 10% of Initial Value		
		tan δ	Initial Specified Value		
		Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
全系列	0.60	0.85	0.93	1.00

CTV

CTV series

DIMENSIONS(mm)

Chip Type Fig.1 $\Phi D=8\sim 10\text{mm}$

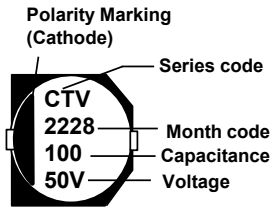
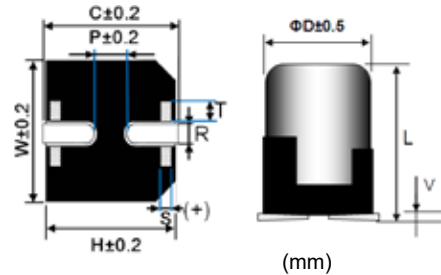
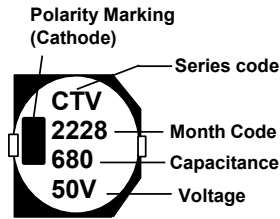


Fig.2 $\Phi D\geq 12.5\text{mm}$



Size	ΦD	L	W	H	C	R	P	S	T	Vmax
8 × 10.5	8.0	10.5 ± 0.5	8.3	8.3	9.0	1.0~1.4	3.2	0.7	1.3	1.5
10 × 10.5	10.0	10.5 ± 0.5	10.3	10.3	11.0	1.0~1.4	4.5	0.7	1.3	1.5
12.5 × 13.5	12.5	13.5 ± 1.0	13.5	13.5	14.2	1.1~1.4	4.5	2.2	2.4	1.5
16 × 16.5	16.0	16.5 ± 1.0	17.0	17.0	18.0	1.7~2.1	6.4	3.0	2.0	1.5

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 125°C 100KHz, ESR(Ω max) at 20°C 100KHz.

Cap (μF)	V	16.0			25			35			50		
		Item	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.	ESR	D x L	R.C.
47													
100								8x10.5	300	0.18	8x10.5	250	0.5
160								8x10.5	300	0.18	10x10.5	350	0.30
220					8x10.5	300	0.18	10x10.5	500	0.11	12.5x13.5	700	0.15
270					8x10.5	300	0.18						
300								10x10.5	500	0.11			
330	8x10.5		300	0.18	10x10.5	500	0.11	12.5x13.5	1200	0.08			
390	8x10.5		300	0.18									
470	10x10.5		500	0.11	10x10.5	500	0.11	12.5x13.5	1200	0.08	16x16.5	1000	0.09
620								12.5x13.5	1200	0.08			
680	10x10.5		500	0.11	12.5x13.5	1200	0.08	16x16.5	1800	0.05			
910					12.5x13.5	1200	0.08						
1000	12.5x13.5		1200	0.08	16x16.5	1800	0.05						
1500	12.5x13.5		1200	0.08	16x16.5	1800	0.05						
2200	16x16.5		1800	0.05									

CTV

CGH series

- 135°C 2000 hours Long Life.
- Applicable to SMT process.
- RoHS Compliance.
- 130°C 2000小時 长寿命品。
- 适用于SMT制程。



SPECIFICATIONS

Items 項目	Characteristics 特性					
Capacitance Tolerance 靜電容量誤差	±20%(120Hz,20°C)					
Operating Temperature Range 適用溫度範圍	-40°C ~ +135°C					
Rated Voltage Range 額定電壓範圍	10~63VDC					
Capacitance Range 靜電容量範圍	33~3300μF					
Leakage Current 洩漏電流	10~63VV 8~10ΦI≤0.01CV or 3 (μA) , 12.5~16ΦI≤0.03CV or 4 (μA), which is greater.					
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C					
	Rated Voltage(V)	10	16	25	35~50	63
	tan δ(Max)	0.24	0.22	0.20	0.16	0.14
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.					
	Rated Voltage(V)	10	16	25	35~63	
	Z(-25°C)/Z(20°C)	4	3	2	2	
	Z(-40°C)/Z(20°C)	8	6	4	3	
Load Life 負荷壽命	2000hours,with application of rated voltage at 135°C					
	Capacitance Change	within ±30% of Initial Value				
	tan δ	300% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 135°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.					
	Capacitance Change	within ±300% of Initial Value				
	tan δ	300% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Resistance to Soldering Heat 焊錫耐熱性	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature they meet the characteristics requirements listed at right.			Capacitance Change	Within ± 10% of Initial Value	
				tan δ	Initial Specified Value	
				Leakage Current	Initial Specified Value or less	
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)					

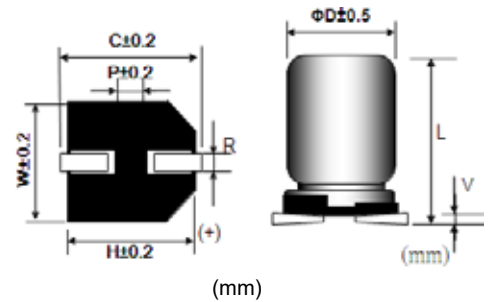
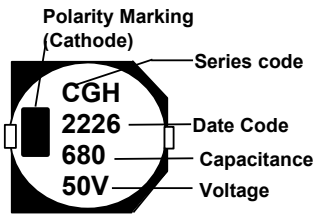
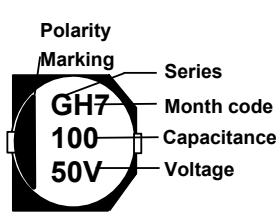
Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
1~33	0.55	0.83	0.93	1.00
>33	0.60	0.86	0.93	1.00

CGH series

DIMENSIONS(mm) Fig.1 $\Phi D=8\sim 10\text{mm}$ Fig.2 $\Phi D \geq 12.5\text{mm}$

Chip Type



(mm)

Size	ΦD	$L \pm 0.5$	W	H	C	R	P	Vmax
8 × 10	8.0	10.0	8.3	8.3	9.0	0.7~1.1	3.2	0.3
10 × 10	10.0	10.0	10.3	10.3	11.0	0.7~1.3	4.5	0.3
12.5 × 13.5	12.5	13.5	13.0	13.0	13.7	1.1~1.4	4.5	0.4
16 × 16.5	16.0	16.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4
16 × 21.5	16.0	21.5	17.0	17.0	18.0	1.7~2.1	6.4	0.4
18 × 16.5	18.0	16.5 ± 1.0	19.0	19.0	20.0	1.7~2.1	6.4	0.4
18 × 21.5	18.0	21.5 ± 1.0	19.0	19.0	20.0	1.7~2.1	6.4	0.4

CGH

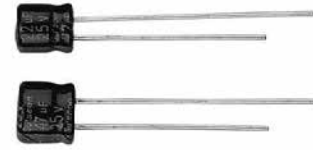
STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 135°C 100kHz.

Cap (μF)	V Item	10		16		25		35		50		63	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
33												8x10	100
47										8x10	160	10x10	120
100				8x10	220	8x10	220	8x10	200	10x10	240	10x10	270
220		8x10	220	8x10	220	10x10	300	10x10	300	12.5x13.5	550		
330	8x10	220	10x10	300	10x10	300	12.5x13.5	750					
	10x10	300											
470		10x10	300	10x10	300	12.5x13.5	750			16x16.5	850	16x16.5	820
680				12.5x13.5	750			16x16.5	1000	18x16.5	1200		
1000		12.5x13.5	750			16x16.5	1000	16x16.5	1000	16x21.5	1600		
1500		12.5x13.5	750	16x16.5	1000	16x16.5	1000	16x21.5	1900				
2200		16x16.5	1000			18x16.5	1400	16x21.5	2200				
2700		16x16.5	1000			16x21.5	1900						
3300						18x21.5	2200						

H5 series

- Subminiature product, 105°C , 1000 hours
- Applicable to small electronic devices.
- Height: 5mm.
- RoHS Compliance
- 105°C , 超小型1000小時壽命產品。
- 適用於小型電子設備。
- 高度 : 5mm



SPECIFICATIONS

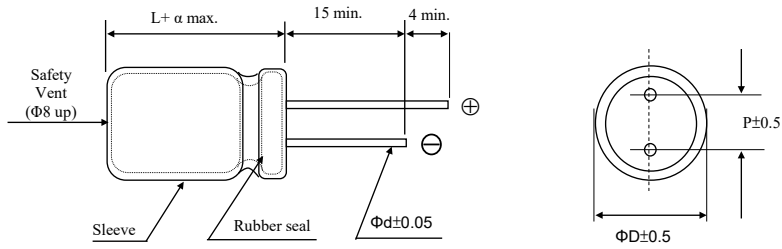
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)							
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C							
Rated Voltage Range 額定電壓範圍	4 ~ 50VDC							
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3 (μA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)							
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	4	6.3	10	16	25	35	50
	tan δ(Max)	0.35	0.24	0.20	0.16	0.15	0.14	0.13
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.							
	Rated Voltage(V)	4	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	6	3	3	2	2	2	2
	Z(-40°C)/Z(20°C)	12	8	5	4	3	3	3
Load Life 負荷壽命	1000hours,with application of rated voltage at 105°C							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 105°C without voltage applied. Before the measurement. The apacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Standards 參照標準	IEC 60384-4(JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	50	120	1K	≥ 10K
< 100	0.80	1.00	1.30	1.50
≥ 100	0.80	1.00	1.15	1.20

H5 series

DIMENSIONS(mm)



ΦD	4	5	6.3	8
P	1.5	2.0	2.5	2.5
Φd	0.45	0.45	0.45	0.45

α	=1.5
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STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	4		6.3		10		16	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
10						4x5	16	4x5	18
22		4x5	20	4x5	21	4x5	25	4x5	33
33		5x5	28	5x5	29	5x5	34	5x5	44
47		5x5	33	5x5	34	6.3x5	46	6.3x5	52
100		6.3x5	60	6.3x5	66	6.3x5	77	8x5	93
150		6.3x5	67	6.3x5	75	8x5	100	8x5	115
220		8x5	95	8x5	115	8x5	125		

Cap (μF)	V	25		35		50	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.47						4x5	3.7
1						4x5	6.2
2.2						4x5	10
3.3				4x5	11	4x5	14
4.7		4x5	13	4x5	16	5x5	18
10		4x5	22	5x5	25	6.3x5	28
22		6.3x5	38	6.3x5	46	6.3x5	59
33		6.3x5	48	6.3x5	50	8x5	65
47		6.3x5	58	8x5	69	8x5	78

H5

M5 series

- Subminiature product, Low impedance, 105°C , 1000 hours
- Applicable to small electronic devices.
- Height: 5mm.
- RoHS Compliance
- 105°C 低阻抗、超小型1000小時壽命產品。
- 適用於小型電子設備。
- 高度：5mm系列。



SPECIFICATIONS

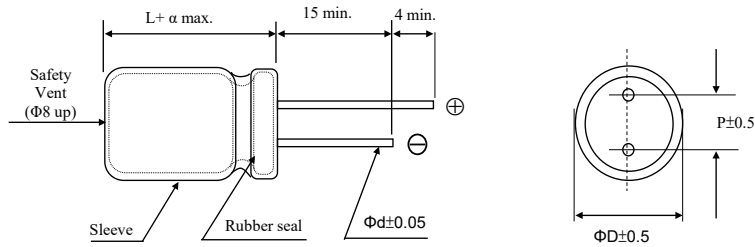
Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C						
Rated Voltage Range 額定電壓範圍	6.3 ~ 35VDC						
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3 (μA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	6.3	10	16	25	35	50
	tan δ(Max)	0.22	0.20	0.18	0.14	0.12	0.10
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	6.3	10	16	25	35~50	
	Z(-25°C)/Z(20°C)	2	2	2	2	2	
	Z(-40°C)/Z(20°C)	4	4	3	3	3	
Load Life 負荷壽命	1000hours,with application of rated voltage at 105°C						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Standards 參照標準	IEC 60384-4(JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	10K ~ 100K
Coefficient	0.50	0.65	0.70	0.90	1.00

M5 series

DIMENSIONS(mm)



ΦD	4	5	6.3
P	1.5	2.0	2.5
Φd	0.45	0.45	0.45

$\alpha = 1.5$

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, IMP (Ω max) at 20°C 100KHz.

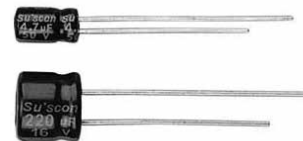
Cap (μF)	V	6.3			10			16		
	Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
10								4x5	55	5.0
15								5x5	80	2.6
22	4x5	52	5.0	5x5	80	2.6	5x5	82	2.5	
33	5x5	82	2.5	5x5	82	2.5	6.3x5	113	1.3	
47	5x5	85	2.5	6.3x5	115	1.2	6.3x5	115	1.2	
68	6.3x5	118	1.3							
100	6.3x5	120	1.2							

Cap (μF)	V	25			35		
	Item	D x L	R.C.	IMP	D x L	R.C.	IMP
1					4x5	48	5.0
1.5					4x5	49	4.9
2.2					4x5	50	4.9
3.3					4x5	52	4.8
4.7	4x5	49	5.0	4x5	55	4.8	
6.8	4x5	52	4.8	5x5	80	2.6	
10	5x5	82	2.5	5x5	85	2.5	
15	6.3x5	116	1.3	6.3x5	116	1.3	
22	6.3x5	118	1.2	6.3x5	118	1.2	
33	6.3x5	120	1.1				

M5

SM series

- Miniature product, 105°C.1000 hours
- Applicable to small electronic devices.
- Height: 7 mm.
- RoHS Compliance
- 105°C小型化1000小時壽命產品。
- 適用於小型電子設備。
- 高度：7mm系列。



SPECIFICATIONS

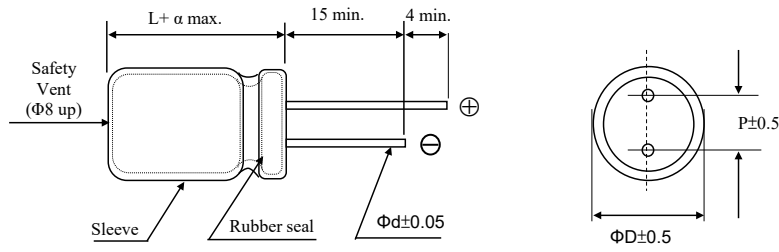
Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC									
Leakage Current 洩漏電流	I≤0.01CV or 3 (μA) which is greater.(After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	2.7	6.3	10	16	25	35	50	63	100
	tan δ(Max)	0.25	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.07
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50			
	Z(-25°C)/Z(20°C)	3	2	2	2	2	2			
	Z(-40°C)/Z(20°C)	6	5	4	3	3	3			
Load Life 負荷壽命	1000hours,with application of rated voltage at 105°C									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	IEC 60384-4(JIS C 5101-4)									

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	50	120	1K	≥ 10K
< 100	0.80	1.00	1.30	1.50
≥ 100	0.80	1.00	1.15	1.20

SM series

DIMENSIONS(mm)



ΦD	4	5	6.3	8
P	1.5	2.0	2.5	3.5
Φd	0.45	0.5	0.5	0.5

$$\alpha = 1.5$$

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	6.3		10		16	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
10						4x7	28
22		4x7	34	4x7	37	4x7	44
33		4x7	42	4x7	45	5x7	52
47		4x7	50	5x7	60	5x7	69
100		5x7	75	6.3x7	86	6.3x7	95
220		6.3x7	95	8x7	145	8x7	150
330		8x7	160				

Cap (μF)	V	25		35		50	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.47						4x7	5.0
1						4x7	10
2.2						4x7	18
3.3				4x7	18	4x7	24
4.7		4x7	22	4x7	22	4x7	28
10		4x7	29	5x7	33	5x7	42
22		5x7	35	6.3x7	55	6.3x7	60
33		6.3x7	62	6.3x7	65	8x7	68
47		8x7	75	8x7	80	8x7	95
100		8x7	95				
150		8x7	105				
180		8x7	120				

SM

MD series

- Miniture,Low impedance, 105°C 1000hours product.
- Applicable to small electronic devices.
- Height: 7 mm.
- RoHS Compliance
- 105°C 低阻抗、小型化1000小時壽命產品。
- 適用於小型電子設備。
- 高度：7mm系列。



SPECIFICATIONS

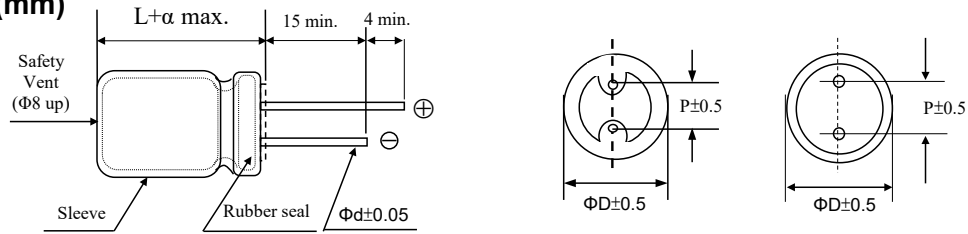
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C								
Rated Voltage Range 額定電壓範圍	6.3 ~ 35VDC								
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3 (μA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	40~ 50	63	100
	$\tan \delta$ (Max)	0.18	0.16	0.14	0.12	0.12	0.10	0.09	0.07
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35			
	Z(-25°C)/Z(20°C)	2	2	2	2	2			
	Z(-40°C)/Z(20°C)	3	3	3	3	3			
Load Life 負荷壽命	1000hours,with application of rated voltage at 105°C								
	Capacitance Change	Within ± 20% of Initial Value							
	$\tan \delta$	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.								
	Capacitance Change	Within ± 20% of Initial Value							
	$\tan \delta$	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	IEC 60384-4(JIS C 5101-4)								

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	10K ~ 100K
Coefficient	0.35	0.50	0.64	0.83	1.00

MD series

DIMENSIONS(mm)



ΦD	4	5	6.3	8
P	1.5	2.0	2.5	3.5
Φd	0.45	0.5	0.5	0.5

$$\alpha = 1.5$$

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, IMP (Ω max) at 20°C 100KHz.

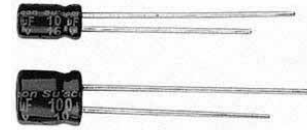
Cap (μF)	V	6.3			10			16		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
15								4x7	70	3.3
22					4x7	70	3.3	5x7	110	1.7
33		5x7	110	1.7	5x7	115	1.7	6.3x7	160	0.8
47		5x7	110	1.7	5x7	143	1.3	6.3x7	165	0.8
68		6.3x7	160	0.8	6.3x7	165	0.8	8x7	200	0.5
100		6.3x7	160	0.8	8x7	200	0.5	8x7	210	0.5
150		8x7	200	0.5	8x7	205	0.5			
220		8x7	200	0.5						

Cap (μF)	V	25			35		
		Item	D x L	R.C.	IMP	D x L	R.C.
6.8					4x7	70	3.3
10		4x7	70	3.3	5x7	110	1.7
15		5x7	110	1.7	6.3x7	132	1.7
22		5x7	110	1.7	6.3x7	160	0.8
33		6.3x7	160	0.8	8x7	200	0.5
47		8x7	200	0.5	8x7	230	0.5
68		8x7	200	0.5			
100		8x7	300	0.4			

MD

ST series

- Miniture, long life 5000 hours, 105°C product.
- Applicable to small electronic devices.
- Height: 7 mm.
- RoHS Compliance
- 105°C 5000小時、小型化長壽命產品。
- 適用於小型電子設備。
- 高度：7mm系列。



SPECIFICATIONS

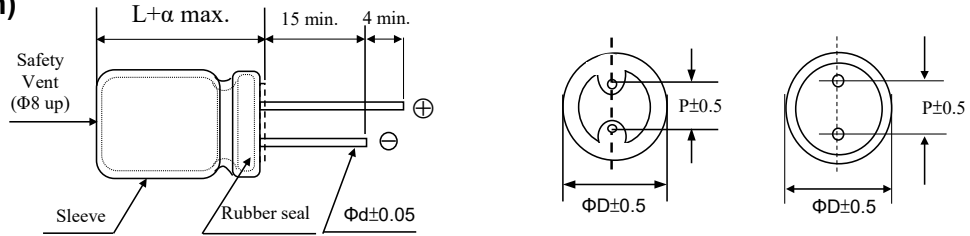
Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C						
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC						
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (μA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	6.3	10	16	25	35	50
	tan δ(Max)	0.24	0.20	0.17	0.15	0.13	0.12
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2
	Z(-40°C)/Z(20°C)	8	6	4	3	3	3
Load Life 負荷壽命	5000hours,with application of rated voltage at 105°C						
	Capacitance Change	Within ± 30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	Within ± 30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Standards 參照標準	IEC 60384-4(JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	300	1K	≥ 10K
Coefficient	0.70	1.00	1.17	1.36	1.50

ST series

DIMENSIONS(mm)



ΦD	4	5	6.3	8
P	1.5	2.0	2.5	3.5
Φd	0.45	0.5	0.5	0.5

α	=1.5
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STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	6.3		10		16	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
10						4x7	29
22		4x7	35	5x7	42	5x7	46
33		5x7	43	5x7	50	6.3x7	58
47		5x7	50	6.3x7	60	6.3x7	70
100		6.3x7	76	8x7	96	8x7	110
220		8x7	131				

Cap (μF)	V	25		35		50	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.47						4x7	5
1						4x7	12
2.2						4x7	21
3.3						4x7	26
4.7				4x7	26	5x7	31
10		5x7	36	5x7	36	6.3x7	46
22		6.3x7	52	6.3x7	60	8x7	67
33		6.3x7	65	8x7	75		
47		8x7	80				

ST

LF series

- 85°C 8000 hours ,Long life of SL series
- Suitable for LCD TV Power, SMPS.
- RoHS Compliance
- 85度8000小時，SL系列壽命提升品。
- 適用於液晶顯示電源及開關電源等。



SPECIFICATIONS

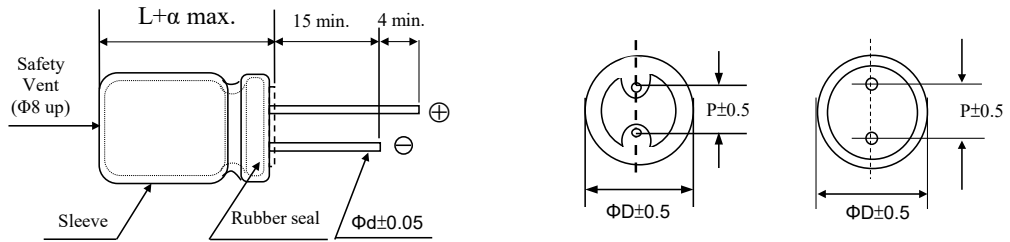
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +85°C			-25 ~ +85°C	
Rated Voltage Range 額定電壓範圍	400 ~ 420VDC			450 ~ 500VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	400~420	450	460	500
	tan δ (Max)	0.15	0.20	0.20	0.20
When nominal capacitance over 1000 μ F, tan δ shall be added 0.02 to the listed value with increase of every 1000 μ F .					
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	400~420	450	460	500
	Z(-25°C)/Z(20°C)	3	3	6	6
	Z(-40°C)/Z(20°C)	6	-	-	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 8,000 hours at 85°C.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement. The capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4(JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Capacitance (μ F)	Frequency (Hz)				
	120	10K	30K	50K	100K
10 ~ 150	1.00	1.50	1.60	1.75	2.00

LF series

DIMENSIONS(mm)



ΦD	10	12.5	16	18	20
P	5.0	5.0	7.5	7.5	10
Φd	0.6	0.6	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 85°C 120Hz.

Cap (μF)	V	400				420				450			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.			
				120Hz	100KHz		120Hz	100KHz		120Hz	100KHz		
10		10x16	150	300	10x20	180	360	10x20	150	300			
22		12.5x20	300	600	12.5x25	330	660	12.5x25	330	660			
47		12.5x25	350	700	16x20	400	800	16x25	380	760			
56		16x25	480	960	16x25	500	1000	16x31.5	450	900			
68		16x31.5	563	1126	16x31.5	550	1100	16x36	530	1060			
82		16x35.5	650	1300	16x36	630	1260	16x40	600	1200			
100		16x40	780	1560	16x40	750	1500	16x45	720	1440			
120		16x45	889	1778	16x45	840	1680	16x50	840	1680			
150		16x50	980	1960	16x50	920	1840						

Cap (μF)	V	460				500			
		Item	D x L	R.C.		D x L	R.C.		
				120Hz	100KHz		120Hz	100KHz	
10		12.5x16	120	240	12.5x16	115	230		
22		16x25	250	500	16x25	230	460		
47		16x36	450	900	16x36	435	870		
56		16x40	500	1000	16x40	491	982		
68		16x45	580	1160	16x45	563	1126		
82		16x50	650	1300	16x50	630	1260		
100		18x45	730	1460	18x45	700	1400		
120		20x45	800	1600					

SK series

- 105°C 2000hours, standard product.
- RoHS Compliance
- 105°C 2000小時 標準品



SPECIFICATIONS

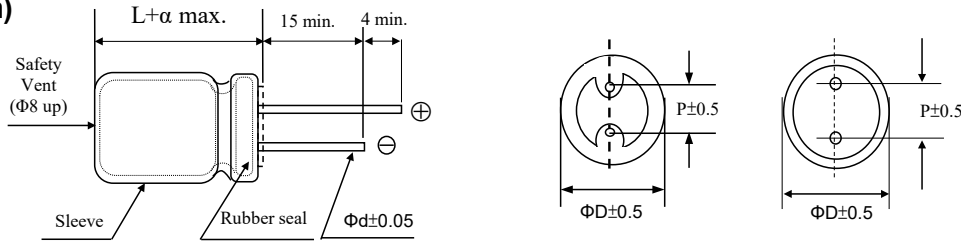
Items 項目	Characteristics 特性													
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)													
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					-40 ~ +105°C					-25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC					160~400VDC					420 ~ 600VDC			
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)							I ≤ 0.03CV +20 (µA) (After 3 minutes application of DC rated voltage, at 20 °C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C													
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	130	160~250	350~500	600
	tan δ(Max)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08	0.08	0.08	0.20	0.25	0.25
	When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .													
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.													
	Rated voltage(V)	6.3	10	16	25	35	50~100	160~250	350~400	450~500				
	Z(-25°C)/(20°C)	5	4	3	2	2	2	3	6	15				
	Z(-40°C)/(20°C)	10	8	6	4	3	3	4	-	-				
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.													
	Capacitance Change	Within ± 20% of Initial Value												
	tan δ	200% or less of Initial Specified Value												
	Leakage Current	Initial Specified Value or less												
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.													
	Capacitance Change	Within ± 20% of Initial Value												
	tan δ	200% or less of Initial Specified Value												
	Leakage Current	Initial Specified Value or less												
Standards 參照標準	IEC 60384-4(JIS C 5101-4)													

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)			
		50	120	1K	≥20K
≤ 100	< 100	0.75	1.00	1.40	1.50
	100 ~ 470	0.75	1.00	1.20	1.30
	> 470	0.85	1.00	1.10	1.15
≥ 160	0.47 ~ 470	0.75	1.00	1.10	1.50

SK series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	1.0

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	6.3		10		16		25		35		50		63		100	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
0.47												5x11	11	5x11	12	5x11	17
1												5x11	15	5x11	17	5x11	20
2.2												5x11	24	5x11	25	5x11	30
3.3												5x11	30	5x11	31	5x11	36
4.7								5x11	30	5x11	31	5x11	36	5x11	37	5x11	44
6.8								5x11	35	5x11	37	5x11	46	5x11	51	5x11	45
10						5x11	42	5x11	43	5x11	47	5x11	54	5x11	58	5x11	50
22	5x11	54	5x11	59	5x11	63	5x11	65	5x11	75	5x11	83	5x11	75	6.3x11	95	
33	5x11	66	5x11	77	5x11	79	5x11	83	5x11	91	5x11	88	6.3x11	116	8x11.5	133	
47	5x11	78	5x11	87	5x11	94	5x11	97	5x11	93	6.3x11	145	6.3x11	120	8x11.5	165	
56	5x11	90	5x11	100	5x11	105	5x11	109	6.3x11	110	6.3x11	151	8x11.5	155	10x16	187	
68	5x11	102	5x11	119	5x11	145	5x11	151	6.3x11	127	6.3x11	196	8x11.5	172	10x12.5	190	
100	5x11	111	5x11	139	6.3x11	151	5x11	155	6.3x11	230	8x11.5	219	8x11.5	200	10x16	270	
220	5x11	175	5x11	155	6.3x11	190	6.3x11	200	8x11.5	300	10x12.5	300	10x16	375	12.5x20	450	
330	6.3x11	233	6.3x11	210	6.3x11	225	8x11.5	328	10x12.5	385	10x16	450	10x20	540	12.5x25	520	
470	6.3x11	266	6.3x11	250	8x11.5	315	8x15	380	10x16	460	10x20	580	12.5x20	720	16x25	720	
560	8x11.5	272	8x11.5	306	8x14	387	10x16	448	10x20	629	12.5x20	774	12.5x25	871	16x35.5	1012	
680	8x11.5	278	8x11.5	319	8x15	424	10x20	581	12.5x20	702	12.5x25	726	16x25	1004	18x31.5	1210	
1000	8x11.5	390	10x12.5	460	10x12.5	500	10x16	650	12.5x20	908	12.5x25	1089	16x25	1020	18x35.5	1573	
1500	8x20	545	10x20	592	10x20	641	12.5x20	1017	12.5x25	1041	16x31.5	1410	18x31.5	1718			
2200	10x16	635	10x16	705	10x20	710	12.5x25	1132	16x25	1314	16x31.5	1452	18x35.5	1997			
3300	10x20	840	12.5x20	1000	12.5x25	1170	16x25	1428	16x31.5	1500	18x35.5	1997	22x40	2347			
4700	12.5x20	1090	12.5x25	1260	16x25	1500	16x25	1520	16x35.5	1780	22x40	2541	22x50	2965			
5600										22x25	1900						
6800	12.5x25	1350	16x25	1570	16x25	1600	16x35.5	1750	18x40	2000	22x50	3025					
10000	16x25	1650	16x31.5	1820	16x35.5	1930	18x40	2350	22x50	3207							
15000	16x31.5	1820	16x35.5	2050	18x40	2210	22x50	3328									
22000	18x35.5	2280	18x40	2420	22x50	3630											

Cap (μF)	V	160		200		250		350		400		450		500		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2	6.3x11	35	6.3x11	35	8x11.5	72	8x11.5	56	10x12.5	54	10x16	75				
3.3	8x11.5	72	8x11.5	72	8x11.5	78	10x12.5	85	10x12.5	69	10x16	102	10x20	42		
4.7	8x11.5	75	8x11.5	75	10x12.5	110	10x12.5	90	10x16	120	10x20	130	10x20	56		
6.8	8x11.5	78	8x11.5	78	10x12.5	120	10x12.5	95	10x16	125	12.5x20	155	12.5x20	105		
10	10x12.5	92	10x16	145	10x16	145	10x20	150	10x20	145	12.5x20	165	12.5x20	110		
22	10x16	145	10x20	210	12.5x20	245	12.5x20	210	12.5x25	252	12.5x25	235	16x25	250		
33	10x20	210	12.5x20	240	12.5x20	260	12.5x25	245	16x25	370	16x25	380	16x31.5	280		
47	12.5x20	245	12.5x20	245	12.5x20	270	16x25	405	16x25	375	16x31.5	450	18x35.5	320		
68	12.5x20	255	12.5x25	250	16x25	270	16x25	430	16x31.5	475	18x31.5	585	18x45	360		
82	12.5x25	270	12.5x25	300	16x25	310	16x31.5	480	18x26	480	18x35.5	650				
100	12.5x25	290	16x25	430	16x25	480	18x31.5	580	18x31.5	580	18x40	720				
120	16x25	530	16x25	530	16x31.5	650	18x35.5	650	18x35.5	650	18x40	750				
150	16x25	540	16x31.5	570	18x31.5	730	18x40	750	18x40	720	22x45	785				
220	16x31.5	550	16x35.5	620	18x35.5	750										
330	18x35.5	810	18x40	800												
470	18x40	1050	22x40	1100												

SK

SK series

- 105°C 2000hrs Standard.
- For LCD-TV and LCD-Monitor Power.
- RoHS Compliance.
- 105°C 耐高溫標準品，高壓400~500V，壽命2000小時。
- 使用於LCD TV與LCD Monitor電源應用。



SPECIFICATIONS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μ F)	V Item	400		450		500	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
22		8x50	158	8x50	168	12.5x40	158
		10x30	150	10x35	153		
33		8x61	210	8x61	218	12.5x45	162
		10x40	192	10x45	198		
39		8x61	258	8x61	287	14.5x45	160
		10x45	235	10x50	250		
		12.5x35	250	12.5x40	265		
47		10x50	285	10x50	335	14.5x45	163
		12.5x40	282	12.5x45	305		
		14.5x30	278	14.5x30	290		
53		10x50	305	10x50	400	16x50	178
68		12.5x45	340	14.5x40	460		
		14.5x30	330	16x35.5	490		
82		12.5x50	365	14.5x50	460		
		14.5x40	385	16x40	490		
100		14.5x45	468	14.5x50	620		
				16x50	640		
120		14.5x50	550	16x50	650		

SKR series

- 105°C 2000 hours high-temperature resistance, high ripple current.
- RoHS Compliance
- 105°C 2000小時壽命，耐高溫、高紋波。



SPECIFICATIONS

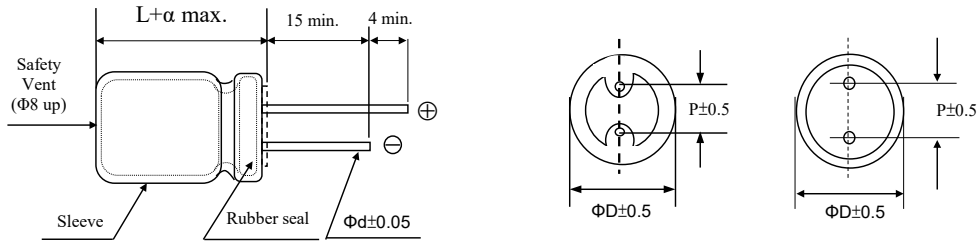
Items 項目	Characteristics 特性			
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)			
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C		-25 ~ +105°C	
Rated Voltage Range 額定電壓範圍	160 ~ 400VDC		450VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage)			
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C			
	Rated Voltage(V)	160~250	400~450	
	tan δ (Max)	0.15	0.20	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.			
	Rated Voltage(V)	160~250	400	450
	Z(-25°C)/Z(20°C)	3	5	6
	Z(-40°C)/Z(20°C)	6	6	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.			
	Capacitance Change	Within ± 20% of Initial Value		
	tan δ	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.			
	Capacitance Change	Within ± 20% of Initial Value		
	tan δ	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4(JIS C 5101-4)			

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	120	1K	10K	100K
22~82	1.00	1.25	1.50	1.75
100~470	1.00	1.15	1.30	1.40

SKR series

DIMENSIONS(mm)



ΦD	10	12.5	14.5	16	18	20
P	5.0	5.0	7.5	7.5	7.5	10.0
Φd	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

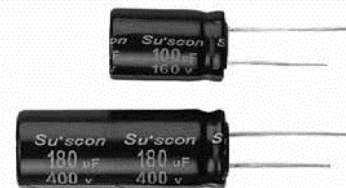
D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	160		200		250		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
22								10x30	260	10x35	280
33								10x40	360	12.5x30	375
39								10x45	405	12.5x35	415
47								12.5x35	443	12.5x40	465
							14.5x30			465	
56								12.5x40	510	14.5x35	520
							16x30			520	
68	10x25	375	10x30	485	12.5x25	530		12.5x45	580	14.5x40	600
								14.5x30	580	16x35.5	600
82	10x30	485	10x35	528	12.5x30	595		14.5x40	635	16x40	650
										18x31.5	650
100	10x35	528	10x40	615	16x25	650		14.5x45	690	18x36	700
								18x31.5	690		
120	10x40	615	10x45	710	16x31.5	715		16x40	810	18x40	820
								18x36	810		
150	10x45	710	12.5x35	780	16x31.5	860		18x40	940	18x45	990
										20x40	1000
220	12.5x40	880	12.5x45	995	18x36	1120					
			14.5x35	995							
270	12.5x45	995	16x35.5	1150	18x40	1200					
330	16x35.5	1150	16x40	1320							
			18x31.5	1320							
470	18x40	1270	18x45	1660							

SKR

SKA series

- On the basis of SK series ripple promotion product.
- Suitable for LCD TV Power, SMPS.
- RoHS Compliance.
- SK系列紋波提升品。
- 適用於液晶顯示電源及開關電源等。



SPECIFICATIONS

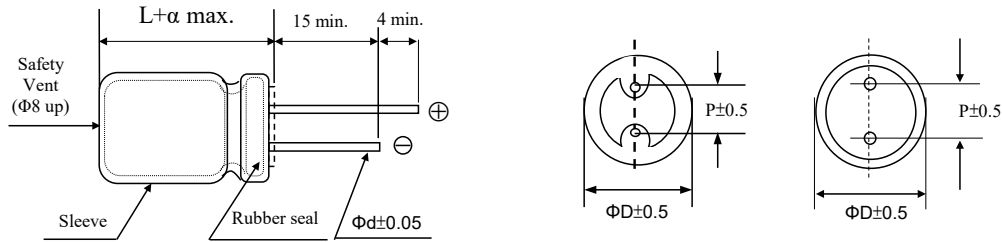
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C			-25 ~ +105°C	
Rated Voltage Range 額定電壓範圍	400VDC			450 ~ 500VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	400	450	460	500
	tan δ(Max)	0.15	0.20	0.20	0.20
	When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .				
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	400	450	460	500
	Z(-25°C)/Z(20°C)	3	3	6	6
	Z(-40°C)/Z(20°C)	6	-	-	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement. The capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4(JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	120	10K	30K	50K	100K
10 ~ 150	1.00	1.50	1.60	1.75	2.00

SKA series

DIMENSIONS(mm)



ΦD	10	12.5	16	18	20	22
P	5.0	5.0	7.5	7.5	10.0	10.0
Φd	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L \geq 20) 2.0

STANDARD RATINGS

D x L (mm) ; R.C. (mA rms) at 105°C 120Hz.

Cap (μF)	V	400				450				460				500			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.		D x L	R.C.				
				120Hz	100kHz		120Hz	100kHz		120Hz	100kHz		120Hz	100kHz			
10		10x16	100	200	10x20	130	260	10x20	120	240	12.5x20	78	156				
15		10x20	200	400	12.5x20	200	400	12.5x20	150	300	12.5x20	100	200				
22		12.5x20	280	560	12.5x20	300	600	12.5x25	300	600	12.5x25	190	380				
33		12.5x20	330	660	12.5x25	400	800	16x25	400	800	16x25	270	540				
47		12.5x25	380	760	16x25	500	1000	18x26	500	1000	18x26	300	600				
56		16x25	500	1000	18x26	600	1200	18x26	550	1100	18x31.5	330	660				
68		16x25	650	1300	18x31.5	690	1380	18x31.5	600	1200	18x35.5	450	900				
82		18x26	750	1500	18x31.5	750	1500	18x31.5	650	1300	18x40	560	1120				
100		18x31.5	800	1600	18x35.5	780	1560	18x35.5	750	1500	18x45	650	1300				
120		18x35.5	850	1700	18x40	850	1700	18x40	800	1600	20x45	700	1400				
150		18x40	900	1800	18x45	900	1800	20x45	827	1654	22x45	750	1500				

SKA

SDA series

- 105°C 2000 hours , On the basis of SD series ripple promotion product
- Suitable for LCD TV Power ,SMPS
- RoHS Compliance
- 105°C 2000小時壽命，在SD 系列基礎上紋波提升品
- 適用於液晶顯示電源及開關電源等



SPECIFICATIONS

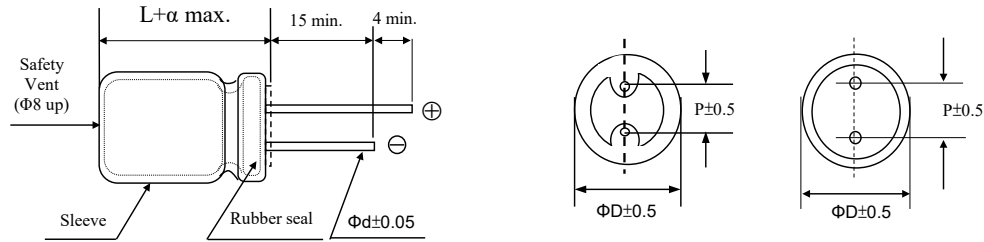
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C			-25 ~ +105°C	
Rated Voltage Range 額定電壓範圍	400VDC			450 ~ 500VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	400	450	460	500
	tan δ(Max)	0.15	0.20	0.20	0.20
	When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF .				
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	400	450	460	500
	Z(-25°C)/Z(20°C)	3	3	6	6
	Z(-40°C)/Z(20°C)	6	-	-	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement. The capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4(JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)				
	120	10K	30K	50K	100K
10 ~ 150	1.00	1.50	1.60	1.75	2.00

SDA series

DIMENSIONS(mm)



ΦD	10	12.5	16	18	20	22
P	5.0	5.0	7.5	7.5	10	10
Φd	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L \geq 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120Hz & 100kHz.

Cap (μF)	V	400				450				460				500			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.		D x L	R.C.				
				120Hz	100kHz		120Hz	100kHz		120Hz	100kHz		120Hz	100kHz			
10		10x16	120	240	10x20	170	340	10x20	150	300	12.5x20	83	166				
15		10x20	230	460	12.5x20	230	460	12.5x20	200	400	12.5x20	110	220				
22		12.5x20	300	600	12.5x20	350	700	12.5x25	350	700	12.5x25	200	400				
33		12.5x20	380	760	12.5x25	400	800	16x25	480	960	16x25	300	600				
47		12.5x25	400	800	16x25	530	1060	18x26	530	1060	18x26	330	660				
56		16x25	550	1100	18x26	630	1260	18x26	600	1200	18x31.5	350	700				
68		16x25	700	1400	18x31.5	690	1380	18x31.5	690	1380	18x35.5	480	960				
82		18x26	780	1560	18x31.5	750	1500	18x31.5	750	1500	18x40	590	1180				
100		18x31.5	830	1660	18x35.5	800	1600	18x35.5	800	1600	18x45	680	1360				
120		18x35.5	900	1800	18x40	950	1900	18x40	950	1900	20x45	730	1460				
150		18x40	1000	2000	18x45	1050	2100	20x45	1300	2600	22x45	780	1560				

SDA

LK series

- -55°C~105°C 2000hrs low temperature resistant products
- Suitable for LED, intelligent electronic meter and outdoor power supply
- RoHS Compliance
- -55°C~105°C 2000hrs 耐低溫產品
- 適用於LED、智能電子電表及戶外電源等



SPECIFICATIONS

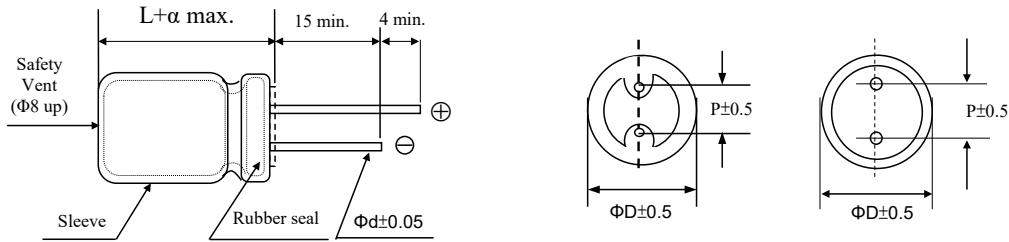
Items 項目	Characteristics 特性		
Capacitance Tolerance 靜電容量誤差	±20% (120Hz , 20°C)		
Operating Temperature Range 適用溫度範圍	- 55 ~ +105°C		
Rated Voltage Range 額定電壓範圍	400~450VDC		
Leakage Current 洩漏電流	≤0.03CV +20 (µA) (After 3 minutes application of DC rated voltage, at 20 °C)		
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C		
	Rated Voltage(V)	400	450
	tan δ(Max)	0.20	0.20
	When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .		
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.		
	Rated Voltage(V)	400	450
	Z(-25°C)/Z(20°C)	2	2
	Z(-40°C)/Z(20°C)	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.		
	Capacitance Change	within ±20% of Initial Value	
	tan δ	200% or less of Initial Specified Value	
	Leakage Current	Initial Specified Value or less	
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C51 01-4.		
	Capacitance Change	within ±20% of Initial Value	
	tan δ	200% or less of Initial Specified Value	
	Leakage Current	Initial Specified Value or less	
Standards 參照標準	IEC 60384-4(JIS C 5101-4)		

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	120	10K	30K	50K	100K
10 ~ 82	1.00	1.75	2.25	2.23	2.50
100 ~ 150	1.00	1.67	2.05	2.15	2.25

LK series

DIMENSIONS(mm)



ΦD	10	12.5	16	18
P	5.0	5.0	7.5	7.5
Φd	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	Item	400		450			
			D x L	R.C.		D x L	R.C.	
				120Hz	100kHz		120Hz	100kHz
10		10x16	150	375	10x20	105	263	
15		10x20	170	425	12.5x20	130	325	
22		12.5x20	250	625	12.5x25	210	525	
33		12.5x25	350	875	16x20	270	675	
47		16x20	480	1200	18x26	450	1125	
56		16x25	500	1250	18x26	550	1375	
68		18x26	550	1375	18x31.5	600	1500	
82		18x26	600	1500	18x31.5	650	1625	
100		18x31.5	680	1530	18x35.5	750	1688	
120		18x35.5	750	1688	18x40	800	1800	
150		18x40	800	1800	18x45	900	2025	

LK

UK series

- High-temperature resistance, high ripple current.
- 105°C for general purposes, 3000 hours standard product.
- RoHS Compliance
- 耐高溫、高紋波。
- 105°C 3000hours 標準品



SPECIFICATIONS

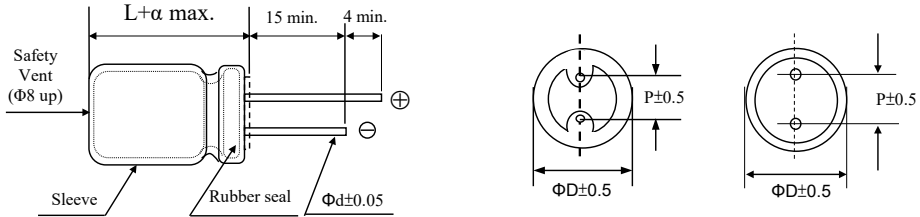
Items 項目	Characteristics 特性													
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)													
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C				-40 ~ +105°C				-25 ~ +105°C					
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC				160 ~ 400VDC				420 ~ 500VDC					
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)							I ≤ 0.03CV +20 (µA) (After 3 minutes application of DC rated voltage, at 20 °C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C													
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	120	160~250	350~450	500
	tan δ(Max)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08	0.08	0.08	0.20	0.25	0.25
	When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .													
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.													
	Rated voltage(V)	6.3	10	16	25	35	50~100	160~250	350~400	450				
	Z(-25°C)/(20°C)	5	4	3	2	2	2	3	6	15				
	Z(-40°C)/(20°C)	10	8	6	4	3	3	4	-	-				
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105°C.													
	Capacitance Change	Within ± 20% of Initial Value												
	tan δ	200% or less of Initial Specified Value												
	Leakage Current	Initial Specified Value or less												
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.													
	Capacitance Change	Within ± 20% of Initial Value												
	tan δ	200% or less of Initial Specified Value												
	Leakage Current	Initial Specified Value or less												
Standards 參照標準	IEC 60384-4(JIS C 5101-4)													

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)			
		50	120	1K	≥20K
≤ 100	< 100	0.75	1.00	1.57	2.00
	100 ~ 470	0.80	1.00	1.34	1.50
	> 470	0.85	1.00	1.10	1.15
≥ 160	0.47 ~ 1000	0.85	1.00	1.40	1.50

UK series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18	20	22
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	10
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	6.3		10		16		25		35		50		63	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
0.47												5x11	12		
1.0												5x11	16		
2.2												5x11	25		
3.3												5x11	35		
4.7								5x11	32	5x11	33	5x11	38		
6.8								5x11	37	5x11	39	5x11	50	5x11	52
10						5x11	44	5x11	45	5x11	49	5x11	56	5x11	68
22	5x11	56	5x11	61	5x11	65	5x11	67	5x11	76	5x11	89	6.3x11	112	
33	5x11	68	5x11	79	5x11	81	5x11	85	5x11	93	6.3x11	130	8x11.5	145	
47	5x11	80	5x11	89	5x11	97	5x11	100	6.3x11	133	6.3x11	152	8x11.5	174	
56	5x11	92	5x11	103	5x11	107	5x11	121	6.3x11	136	6.3x11	171	8x11.5	187	
68	5x11	105	5x11	121	5x11	150	5x11	158	6.3x11	173	6.3x11	208	8x11.5	234	
100	5x11	113	5x11	145	6.3x11	157	6.3x11	179	8x11.5	197	8x14	270	10x12.5	292	
220	5x11	176	6.3x11	223	8x11.5	248	8x11.5	318	10x12.5	347	10x16	583	10x20	693	
330	6.3x11	240	6.3x11	275	8x11.5	361	10x12.5	391	10x16	490	10x20	737	12.5x20	770	
470	6.3x11	292	8x11.5	339	8x14	427	8x15	523	10x20	627	12.5x20	902	12.5x25	1012	
560	8x11.5	350	8x11.5	443	8x14	475	10x16	594	10x20	644	12.5x20	963	12.5x25	1177	
680	8x11.5	413	8x11.5	538	8x15	548	10x20	704	12.5x20	770	12.5x25	1040	16x25	1337	
1000	8x14	502	10x12.5	645	10x16	768	10x20	919	12.5x20	1194	12.5x25	1485	16x31.5	1848	
1500	10x16	669	10x20	798	10x20	993	12.5x20	1155	12.5x25	1370	16x31.5	1810	18x31.5	1975	
2200	10x20	912	10x20	988	12.5x20	1231	12.5x25	1447	16x25	1678	16x36	2200	18x35.5	2288	
3300	10x20	1154	12.5x20	1395	12.5x25	1560	16x25	1847	16x36	2145	18x35.5	2541	22x40	2695	
4700	12.5x20	1447	12.5x25	1671	16x25	1958	16x31.5	2310	18x35.5	2640	22x40	2915	22x50	3069	
6800	12.5x25	1795	16x25	2056	16x36	2374	18x35.5	2767	22x40	2761	22x50	3080			
10000	16x25	2112	16x36	2265	18x35.5	2903	22x40	2860	22x50	3210					
15000	16x36	2629	18x35.5	2820	22x40	2991	22x50	3350							
22000	18x40	2805	22x40	3620	22x50	3650									

Cap (μF)	V	100		160		200		250		350		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
0.47		5x11	12	6.3x11	22	6.3x11	22	6.3x11	26	8x11.5	24	8x11.5	26	8x11.5	25
1		5x11	18	6.3x11	30	6.3x11	25	6.3x11	28	8x11.5	45	8x11.5	46	10x16	75
2.2		5x11	28	6.3x11	35	6.3x11	30	8x11.5	62	10x12.5	62	8x11.5	70	10x16	80
3.3		5x11	40	8x11.5	65	8x11.5	70	8x11.5	75	10x12.5	90	10x12.5	105	10x20	125
4.7		5x11	46	8x11.5	70	8x11.5	75	10x12.5	120	10x12.5	95	10x16	130	10x20	135
6.8		5x11	54	8x11.5	75	8x11.5	85	10x12.5	125	10x20	105	10x16	150	12.5x20	165
10		6.3x11	69	10x12.5	90	10x16	140	10x16	150	12.5x25	145	10x20	175	12.5x20	175
22		8x11.5	127	10x16	145	10x20	200	12.5x20	250	16x25	245	12.5x25	280	16x25	410
33		8x11.5	167	10x20	200	12.5x20	250	12.5x20	260	16x25	420	16x25	420	16x31.5	470
47		10x16	231	12.5x20	240	12.5x25	340	12.5x25	350	16x31.5	450	16x25	470	18x31.5	540
68		10x16	271	12.5x20	303	12.5x25	360	16x25	540	16x31.5	490	16x31.5	510	18x35.5	570
82		10x16	299	12.5x25	365	12.5x25	385	16x25	550	18x31.5	510	18x31.5	580	18x35.5	590
100		10x20	402	16x25	520	16x25	550	16x31.5	630	18x35.5	620	18x35.5	650	18x40	750
120		10x25	457	16x25	550	16x25	570	16x31.5	650	18x40	650	18x40	780	18x45	820
150		12.5x20	579	16x25	580	16x31.5	650	18x31.5	720		850	22x40	920		
220		12.5x25	762	16x25	660	18x35.5	800	18x40	850						
330		16x25	952	18x35.5	957	22x35	1100								
470		16x31.5	1238	18x40	1100	22x40	1238								
1000		18x35.5	1321	22x50	1760										

UK

SE series

- 105°C 5000hrs high-temperature, high reliability.
- Suitable for office communicative and industrial equipments.
- RoHS Compliance
- 105°C 5000hrs 耐高溫、高信賴性、長壽命產品。
- 適用於辦公室通訊設備、工業設備。



SPECIFICATIONS

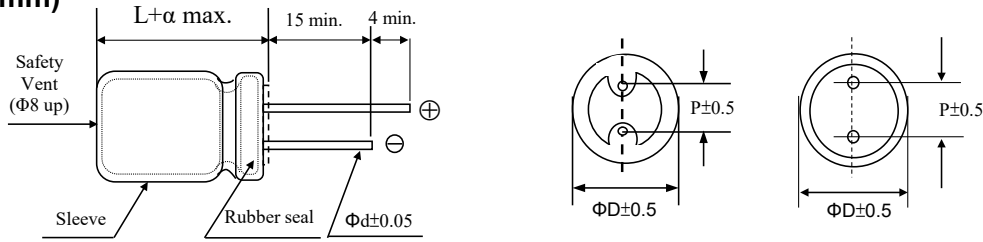
Items 項目	Characteristics 特性												
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)												
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C				- 40 ~ +105°C				-25 ~ +105°C				
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC				160~400VDC				420 ~ 450VDC				
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)							I ≤ 0.03CV +20 (µA) (After 3 minutes application of DC rated voltage, at 20 °C)					
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C												
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	160~250	350 ~450	
	tan δ(Max)	0.24	0.20	0.17	0.15	0.12	0.10	0.09	0.08	0.08	0.15	0.20	
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .													
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.												
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	160~250	350~400	450
	Z(-25°C)/Z(20°C)	4	3	3	2	2	2	2	2	2	4	8	15
	Z(-40°C)/Z(20°C)	8	6	6	4	4	4	4	4	4	6	-	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5000 hours (ΦD≤8:3,000 hours;ΦD=10:4,000 hours) at 105°C.												
	Capacitance Change	Within ± 20% of Initial Value											
	tan δ	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.												
	Capacitance Change	Within ± 20% of Initial Value											
	tan δ	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Standards 參照標準	JIEC 60384-4 (JIS C 5101-4)												

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)			
		120	1k	10k	100k
≤ 100	< 100	1.00	1.40	1.60	1.70
	100 ~ 4700	1.00	1.30	1.40	1.50
	> 4700	1.00	1.15	1.20	1.30
≥ 160	2.2 ~ 820	1.00	1.30	1.40	1.50

SE series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	14.5	16	18	22
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	7.5	10.0
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

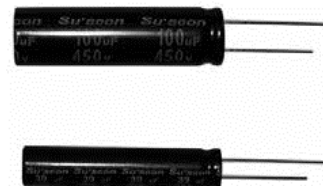
Cap (μF)	V	6.3		10		16		25		35		50		63	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
0.47												5x11	8		
1.0												5x11	17		
2.2												5x11	23		
3.3												5x11	31		
4.7												5x11	35		
10								5x11	45	5x11	48	5x11	51	5x11	56
22								5x11	60	6.3x11	78	6.3x11	85	6.3x11	95
33								6.3x11	90	6.3x11	100	8x11.5	102	8x11.5	122
47						5x11	85	6.3x11	105	8x11.5	130	8x11.5	141	10x12.5	152
100		5x11	120	5x11	130	6.3x11	140	8x11.5	185	8x11.5	190	10x12.5	231	10x16	250
220		6.3x11	170	6.3x11	190	8x11.5	240	10x12.5	290	10x12.5	320	10x16	368	10x20	415
330		8x11.5	250	8x11.5	280	8x11.5	310	10x12.5	350	10x16	420	10x20	490	12.5x20	550
470		8x11.5	290	8x11.5	330	10x12.5	380	10x20	465	12.5x20	580	12.5x20	665	16x25	725
1000		10x12.5	490	10x16	580	10x20	670	12.5x20	830	12.5x25	1000	16x25	1080	16x31.5	1135
2200		10x20	830	12.5x20	970	12.5x25	1130	16x25	1210	16x31.5	1450	18x35.5	1695		
3300		12.5x20	1060	12.5x25	1250	16x25	1350	16x31.5	1540	18x35.5	1830	18x40	2070		
4700		12.5x25	1310	16x25	1400	16x31.5	1570	18x35.5	1870	18x40	2150				
6800		16x25	1430	16x31.5	1690	18x35.5	1930	18x40	2120						
10000		16x31.5	1790	18x35.5	2010	18x40	2190								
15000		18x35.5	1980	18x40	2260										
22000		18x40	2290												

Cap (μF)	V	100		160		200		250		400		420		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
2.2		5x11	28	6.3x11	28	6.3x11	28	8x11.5	35	8x11.5	35	10x12.5	36	10x12.5	36
3.3		5x11	34	8x11.5	34	8x11.5	35	8x11.5	50	8x11.5	50	10x12.5	48	10x12.5	48
4.7		5x11	40	8x11.5	43	10x12.5	50	8x11.5	55	10x12.5	60	10x16	130	10x16	130
10		6.3x11	66	10x12.5	75	10x16	80	10x16	100	10x16	180	10x16	150	10x20	180
22		8x11.5	112	10x16	130	10x20	140	12.5x20	170	10x20	235	10x20	235	10x20	210
33		10x12.5	155	10x20	170	12.5x20	200	12.5x20	225	10x30	320	12.5x20	320	12.5x20	320
39		10x12.5	160	10x20	190	12.5x20	220	12.5x25	250	12.5x20	345	10x30	365	12.5x25	350
47		10x16	190	12.5x20	230	12.5x20	250	12.5x25	280	10x35	425	12.5x25	415	12.5x25	415
68		10x20	210	12.5x25	260	12.5x25	280	16x20	310	125x30	530	12.5x30	530	16x25	580
82		12.5x20	240	16x22	320	16x22	350	16x22	410	12.5x35	610	16x25	605	16x25	605
100		12.5x20	310	16x25	350	16x25	480	16*25	500	16x25	670	16x31.5	790	18x25	690
120										16x31.5	790	16x35	905	18x31.5	815
150										18x31.5	915	18x31.5	915	18x35	935
180										18x35.5	1020	18x40	1050	18x45	1100
220										18x40	1160	18x45	1190	18x50	1190

SE

SE series

- 105°C high-temperature and high voltage 350~450WV , life 3000~5000hrs.
- Specially Size, 8~16mm diameter.
- For LCD-TV and LCD-Monitor Power.
- RoHS Compliance.
- 105°C 耐高溫標準品，高壓350~450WV，壽命3000~5000小時。
- 特殊專用尺寸，直徑8~16mm。
- 使用於LCD TV與LCD Monitor電源應用。



STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (µF)	V	350		420		450	
		Item	D x L	R.C.	D x L	R.C.	D x L
22				8x50	135	10x30	290
33				8x61	280	10x35	340
		10x30	320	10x30	320		
39				8x61	280	10x40	380
		10x35	370	10x35	370		
47				10x40	420	10x45	440
		10x40	420				
		12.5x35	430				
53				12.5x35	530	12.5x40	480
		10x60	400				
		12.5x35	460				
68				12.5x40	560	12.5x40	550
				14.5x31.5	530		530
82				125x45	640		630
				14.5x35	620	14.5x35	620
100				14.5x40	670	14.5x40	680
		12.5x45	690	12.5x50	680		
120				14.5x50	700	14.5x60	700
		12.5x50	750	14.5x60	720		

SE

SEA series

- On the basis of SE series 105°C 5000hrs high ripple promotion product.
- Suitable for LCD TV Power, SMPS.
- RoHS Compliance
- SE 105°C 5000hrs系列紋波提升品。
- 適用於液晶顯示電源及開關電源等。



SPECIFICATIONS

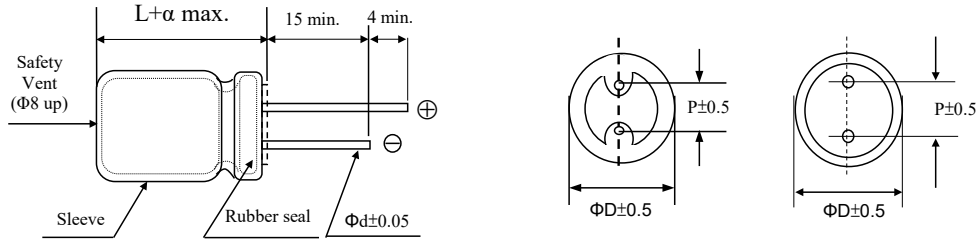
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C			-25 ~ +105°C	
Rated Voltage Range 額定電壓範圍	400VDC			450 ~ 500VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	160~400	450	460	500
	tan δ(Max)	0.15	0.20	0.20	0.20
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .					
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	400	450	460	500
	Z(-25°C)/Z(20°C)	3	3	6	6
	Z(-40°C)/Z(20°C)	6	-	-	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement. The capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	120	10K	30K	50K	100K
10 ~ 82	1.00	1.75	2.25	2.35	2.50
100 ~ 150	1.00	1.67	2.05	2.15	2.25

SEA series

DIMENSIONS(mm)



ΦD	10	12.5	16	18	20	22
P	5.0	5.0	7.5	7.5	10	10
Φd	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

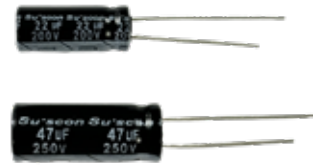
DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	400				450				460				500			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.		D x L	R.C.				
				120Hz	100KHz		120Hz	100KHz		120Hz	100KHz		120Hz	100KHz			
10		10x16	150	375	10x20	105	263	10x20	80	200	12.5x20	75	187.5				
15		10x20	170	425	12.5x20	130	325	12.5x20	110	275	12.5x20	90	225				
22		12.5x20	250	625	12.5x25	210	525	12.5x25	180	450	12.5x25	170	425				
33		12.5x25	350	875	16x22	270	675	16x25	330	825	16x25	260	650				
47		12.5x25	480	1200	18x26	450	1125	18x26	400	1000	18x31.5	350	875				
56		16x25	500	1250	18x26	550	1375	18x26	500	1250	18x35.5	520	1300				
68		18x26	650	1625	18x31.5	600	1500	18x31.5	600	1500	18x35.5	550	1375				
82		18x26	750	1875	18x31.5	650	1625	18x31.5	650	1625	18x40	650	1625				
100		18x31.5	800	1800	18x35.5	750	1688	18x35.5	750	1688	18x45	700	1575				
120		18x35.5	850	1913	18x40	800	1800	18x40	800	1800	22x45	800	1800				
150		18x40	900	2025	20x45	900	2025	20x45	900	2025							

SEA

SEB series

- 105°C 5000 hours life, On the basis of SEA series ripple promotion product
- Suitable for LCD TV Power , SMPS
- RoHS Compliance
- 105°C 5000小時壽命，在SEA系列基礎上紋波提升品
- 適用於液晶顯示電源及開關電源等



SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C			- 25 ~ +105°C	
Rated Voltage Range 額定電壓範圍	160~400VDC			450~460VDC	
Leakage Current 洩漏電流	I ≤ 0.03CV + 20 (µA) (After 3 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C				
	Rated Voltage(V)	160~250	350	400	450~460
	tan δ(Max)	0.15	0.15	0.20	0.20
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .					
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	160~250	350	400~450	460
	Z(-25°C)/Z(20°C)	3	5	3	6
	Z(-40°C)/Z(20°C)	6	-	-	-
Load Life 負荷壽命	5000hours,with application of rated voltage at 105°C				
	Capacitance Change	within ±20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	within ±20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

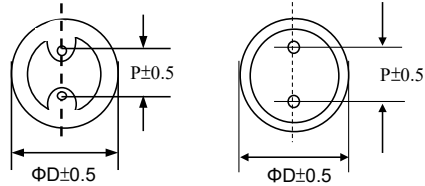
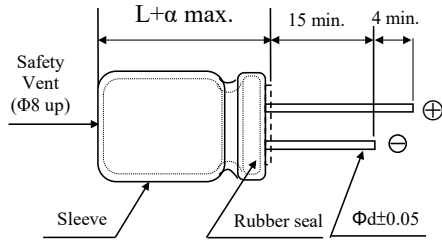
SEB

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	120	1K	10K	50K	100K
10~82	1.00	1.75	2.25	2.23	2.50
100~150	1.00	1.67	2.05	2.15	2.25

SEB series

DIMENSIONS(mm)



ΦD	8	10	12.5	16	18	20
P	3.5	3.5	5.0	7.5	7.5	10
Φd	0.5	0.5	0.6	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	160		200		250		350	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
10		8x11.5	140	8x14	180	10x12.5	180	8x20	180
22		8x15	220	8x15	220	10x16	200	8x30	250
				10x12.5	220				
27		10x14	220	10x16	250	10x20	240	10x25	280
33		8x20	280	10x20	280	10x20	260	12.5x20	350
47		10x20	320	10x25	320	10x25	320	12.5x25	380
56		10x25	360	10x25	330	12.5x20	445	16x22	450
68		12.5x20	445	10x30	390	12.5x25	520	16x25	550
82		10x30	445	10x35	485	12.5x30	580	18x25	650
100		12.5x25	520	10x40	560	16x25	650	18x25	700

Cap (μF)	V	400		450		460	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
10		10x16	160	10x20	180	10x20	150
15		10x20	180	12.5x20	300	12.5x20	210
22		12.5x20	300	12.5x25	390	12.5x25	280
33		12.5x25	390	16x22	450	16x25	430
47		12.5x25	430	18x25	650	18x25	500
56		16x25	530	18x25	700	18x25	540
68		18x25	680	18x31.5	750	18x31.5	680
82		18x25	760	18x31.5	780	18x31.5	720
100		18x31.5	830	18x35.5	820	18x35.5	800
120		18x35.5	880	18x40	920	18x45	1000
150		18x40	950	20x45	1080	20x45	1050

SEB

SER series

- 105°C 5000 hours high-temperature resistance, high reliability and long life. high ripple current.
- Suitable for office communicative or industrial equipments.
- RoHS Compliance
- 105°C 5000小時壽命，耐高溫、高信賴性、長壽命。
- 適用於辦公室通訊設備、工業設備。



SPECIFICATIONS

Items 項目	Characteristics 特性			
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)			
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C		-25 ~ +105°C	
Rated Voltage Range 額定電壓範圍	160 ~ 400VDC		450VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage)			
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C			
	Rated Voltage(V)	160 ~ 250	400 ~ 450	
	$\tan \delta$ (Max)	0.15	0.20	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.			
	Rated Voltage(V)	160 ~ 250	400	450
	Z(-25°C)/Z(20°C)	3	5	6
	Z(-40°C)/Z(20°C)	6	6	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C.			
	Capacitance Change	Within ± 25% of Initial Value		
	$\tan \delta$	200% of less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.			
	Capacitance Change	Within ± 20% of Initial Value		
	$\tan \delta$	200% of less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)			

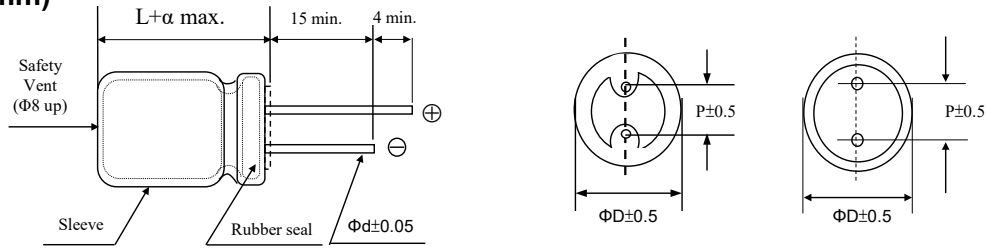
Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	120	1K	10K	100K
22 ~ 82	1.00	1.25	1.50	1.75
100 ~ 470	1.00	1.15	1.30	1.40

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

SER series

DIMENSIONS(mm)



ΦD	10	12.5	14.5	16	18	20
P	5.0	5.0	7.5	7.5	7.5	10.0
Φd	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

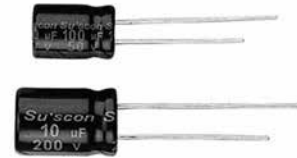
D×L(mm) ; R.C.(mA rms) at 105°C 120Hz.

Cap (μF)	V	160		200		250		400		450		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
22			10x16	130					10x30	205	10x40	280
33			10x20	210					10x40	260	12.5x35	290
39			10x20	210					10x45	320	12.5x40	345
47			10x25	305				12.5x35	385	10x50	350	
										14.5x40	420	
56			10x25	305				12.5x40	420	14.5x40	420	
										16x30	477	
68			10x25	345	10x30	445	13x25	490	13x45	500	14.5x45	550
									14.5x30	500	18x31.5	550
82			10x30	445	10x35	485	13x30	550	14.5x40	545	16x40	650
											18x31.5	650
100			10x35	485	10x40	560	16x25	620	14.5x45	600	18x35.5	720
									18x31.5	600		
120			10x40	560	10x45	680	16x31.5	685	16x40	710	18x40	800
									18x35.5	710		
150			10x45	680	13x35	720	16x35.5	815	18x40	835	18x45	960
											20x40	1000
220			12.5x40	850	13x45	890	18x36	1020				
					14.5x35	890						
270			12.5x45	945	16x35	1030	18x40	1090				
330			16x35.5	1100	16x40	1200						
					18x32	1200						
470			18x40	1220	18x45	1305						

SER

HE series

- High ripple current.
- 8000~10000 hours long life product.
- RoHS Compliance
- 高紋波電流。
- 8000~10000小時長壽命品。



SPECIFICATIONS

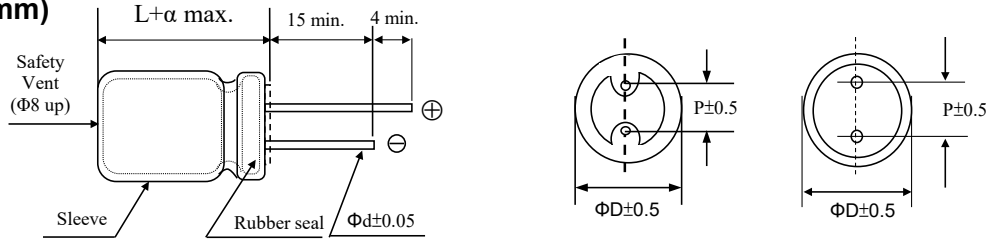
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)							
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C				-25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	160 ~ 400VDC				450VDC			
Leakage Current 洩漏電流	$I \leq 0.04CV + 100 (\mu A)$ (After 1 minutes application of DC rated voltage, at 20 °C)							
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	160	200	250	350	400	420	450
	tan δ(Max)	0.15	0.15	0.15	0.20	0.20	0.20	0.20
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.								
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.							
	Rated Voltage(V)	160	200	250	350	400	450	
	Z(-25°C)/Z(20°C)	3	3	3	6	6	6	
	Z(-40°C)/Z(20°C)	6	6	6	6	6	-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours(ΦD≤10:8,000 hours) at 105°C.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	50	120	1K	10K	100K
1~5.6	0.65	1.00	1.25	1.50	2.00
6.8 ~ 82	0.70	1.00	1.75	2.25	2.50
100 ~ 330	0.75	1.00	1.67	2.05	2.25

HE series

DIMENSIONS(mm)



ΦD	8	10	12.5	14.5	16	18
P	3.5	5.0	5.0	7.5	7.5	7.5
Φd	0.5	0.6	0.6	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	160				200				250			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.			
				120Hz	100KHZ		120Hz	100KHZ		120Hz	100KHZ		
10		10x16	125	313	10x16	125	313	10x20	140	350			
22		10x20	200	500	10x20	200	500	10x20	200	500			
33		10x20	250	625	10x20	260	650	12.5x20	320	800			
47		10x20	300	750	12.5x20	390	975	12.5x20	390	975			
68		12.5x20	470	1175	12.5x20	470	1175	16x22	520	1300			
82		12.5x20	510	1275	16x22	550	1375	16x22	550	1375			
100		12.5x25	620	1395	16x22	630	1420	16x25	680	1530			
		16x20	630	1418				16x25	680	1530			
150		16x20	770	1733	16x25	840	1890	18x25	860	1935			
220		18x25	1020	2295	18x25	1050	2365	18x31.5	1130	2545			
330		18x31.5	1390	3128	18x35.5	1430	3220						

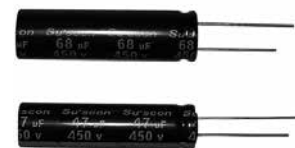
Cap (μF)	V	350				400				450			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.			
				120Hz	100KHZ		120Hz	100KHZ		120Hz	100KHZ		
6.8		10x16	110	275	10x16	110	275	10x20	110	275			
10		10x20	140	350	10x20	140	350	12.5x20	180	450			
15					12.5x20	220	550	12.5x25	240	600			
22		12.5x20	260	650	12.5x20	260	650	16x22	290	725			
33		16x22	360	900	16x22	360	900	16x25	390	975			
	18x20							380	950				
47		16x22	430	1075	16x25	470	1175	18x25	480	1200			
	18x20				450	1125							
68		16x25	560	1400	18x25	585	1463	18x31.5	630	1575			
		18x20	550	1375									
82		18x25	610	1525	18x25	610	1525	18x35.5	715	1788			
100		18x25	700	1575	18x31.5	765	1721	18x40	800	1800			
120		18x31.5	830	1868	18x35.5	865	1946						
150		18x35.5	960	2160	18x40	985	2216						

HE

HE series

SLIM TYPE

- 105°C high-temperature and high voltage 350~450V, life 8000~10000hrs.
- Specially Size, 8~16mm diameter.
- For LCD-TV and LCD-Monitor Power.
- RoHS Compliance.
- 105°C 耐高溫標準品，高壓350~450V，壽命8000~10000小時。
- 特殊專用尺寸，直徑8~16mm。
- 使用於LCD TV與LCD Monitor電源應用。



STANDARD RATINGS

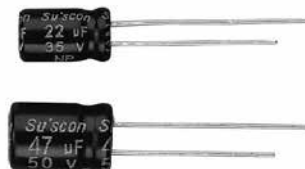
DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (µF)	V	350			400			450			
		Item	D x L	R.C.		D x L	R.C.		D x L	R.C.	
				120Hz	100KHZ		120Hz	100KHZ		120Hz	100KHZ
22		10x30	212	530	8x50	236	590	8x50	254	635	
					10x35	260	650	10x40	280	700	
33		8x50	240	600	8x61	280	700	8x61	280	700	
		10x35	260	650	10x40	312	780	10x45	332	830	
39		10x40	280	700	12.5x30	336	840	12.5x40	360	900	
					10x50	380	950	10x50	420	1050	
47		10x50	380	950	12.5x35	400	1000	12.5x40	460	1150	
					14.5x30	400	1000	14.5x35	440	1100	
53		10x50	440	1100	10x60	480	1200	10x60	520	1300	
					12.5x40	480	1200	12.5x45	500	1250	
68		10x60	520	1300	14.5x30	400	1000	14.5x35	440	1100	
					12.5x40	480	1200	12.5x50	540	1350	
82		12.5x50	540	1350	14.5x45	600	1500	14.5x45	600	1500	
					14.5x35	440	1100	16x35	560	1400	
100		12.5x40	480	1200	12.5x60	600	1500	12.5x60	660	1650	
		14.5x40	588	1470	14.5x50	648	1620	14.5x50	680	1700	
		14.5x45	682	1534	16x40	648	1620	16x40	628	1570	
		12.5x60	660	1485	14.5x50	770	1733	14.5x50	720	1800	
		14.5x45	682	1534	16x45	648	1620	16x45	792	1980	
					14.5x60	770	1733	14.5x60	855	1924	
					16x50	902	2030	16x50	990	2228	



HU series

- 105°C 10000 hours, miniaturized and long life.
- RoHS Compliance
- 105°C 10000小時小型化長壽命品。



SPECIFICATIONS

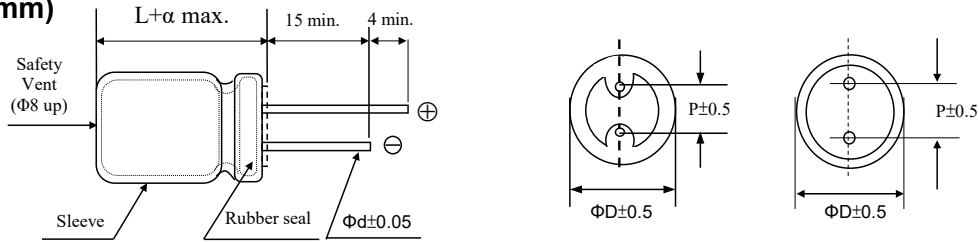
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz, 20°C)							
Operating Temperature Range 適用溫度範圍	- 25 ~ +105°C							
Rated Voltage Range 額定電壓範圍	10 ~ 100VDC							
Leakage Current 洩漏電流	$I \leq 0.01CV$ or $3(\mu A)$ which is greater. (After 2 minutes application of DC rated voltage, at 20°C)							
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency:120Hz. Temperature: 20°C							
	Rated Voltage(V)	10	16	26	35	50	63	100
	$\tan \delta$ (MAX)	0.45	0.35	0.3	0.22	0.19	0.17	0.15
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz							
	Rated Voltage(V)	10	16	25	35	50	63	100
	Z(-25°C) / Z(20°C)	8	6	4	4	3	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105°C.							
	Capacitance Change				within ±25% of Initial Value			
	$\tan \delta$				300% or less of Initial Specified Value			
	Leakage Current				Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change				within ±25% of Initial Value			
	$\tan \delta$				300% or less of Initial Specified Value			
	Leakage Current				Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (μF)	Frequency (Hz)			
		120	1K	10K	100K
10~100	0.47~10	0.42	0.60	0.80	1.00
	22~33	0.55	0.75	0.90	1.00
	47~330	0.70	0.85	0.95	1.00

HU series

DIMENSIONS(mm)



ΦD	5	6.3	8
P	2.0	2.5	3.5
Φd	0.5	0.5	0.5

α	(L < 20) 1.5
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STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 100kHz.

Cap (μF)	V	10		16		25		35		50		63		100	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
0.47										5x11	12			5x11	20
1										5x11	25			5x11	40
2.2										5x11	35			5x11	50
3.3										5x11	70			5x11	60
4.7										5x11	80			5x11	70
10										5x11	80	5x11	80	6.3x11	150
22										5x11	110	6.3x11	170	8x11.5	230
33						5x11	130	5x11	130	6.3x11	190	6.3x11	170		
47				5x11	130	5x11	157	6.3x11	210	6.3x11	190	8x11.5	240		
100		5x11	130	6.3x11	210	6.3x11	210	8x11.5	330	8x11.5	270				
220		6.3x11	210	8x11.5	330										
330		8x11.5	330												

HU

HH series

- Miniature HE series, long-life products.
- Load life:10000~12000 hours , 105°C
- Suitable for electronic ballast for lighting equipment,
- long-life power input with smooth function.
- RoHS Compliance
- HE系列的小型化長壽命品。
- 105°C 保證壽命10000~12000小時。
- 適用於照明設備電子整流器，長壽命電源輸入平滑用等。



SPECIFICATIONS

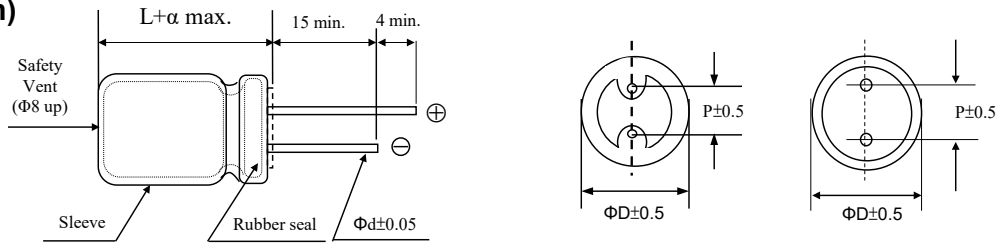
Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz, 20°C)						
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C			- 25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	160 ~ 450VDC			500VDC			
Leakage Current 洩漏電流	$I \leq 0.04CV + 100\mu A$. (After 1minutes application of DC rated voltage, at 20 °C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C						
	Rated Voltage(V)	160	200~220	250	350	400~420	450~500
	tanδ(MAX)	0.20	0.20	0.20	0.24	0.24	0.24
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF							
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz						
	Rated Voltage(V)	160	200~220	250	350	400~420	450~500
	Z(-25°C) / Z(20°C)	3	3	3	5	5	6
	Z(-40°C) / Z(20°C)	8	8	8	10	10	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 12,000 hours at 105°C.(L≤20mm,10,000 hours)						
	Capacitance Change	within ±20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	within ±20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	500% or less of Initial Specified Value					
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	120	1K	10K	100K
6.8~82	1.00	1.75	2.25	2.50
100~680	1.00	1.67	2.05	2.25

HH series

DIMENSIONS(mm)



ΦD	10	12.5	14.5	16	18
P	5.0	5.0	7.5	7.5	7.5
Φd	0.6	0.6	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	160		200		220		250		350	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
12										10x16	135
22								10x16	185	10x20	200
27				10x16	200	10x16	200			10x25	240
										10x30	255
33								10x20	240	12.5x20	330
39		10x16	245			10x20	265			10x35	325
47		10x20	275	10x20	290			10x25	315	10x40	375
								10x30	340	12.5x25	425
										14.5x20	420
56		10x20	315	10x25	345	10x25	345	12.5x20	430	10x45	425
						10x30	370			12.5x30	495
										16x20	475
68		10x25	380	10x30	405	12.5x20	475	10x35	430	10x50	485
								14.5x20	505	12.5x35	580
										14.5x25	545
										18x20	550
82		10x25	415	12.5x20	520	10x35	470	10x40	495	12.5x40	655
		10x30	445			14.5x20	555	10x45	515	14.5x31.5	645
								12.5x25	565	16x25	625
100		12.5x20	575	10x35	520	10x40	545	10x50	585	12.5x45	750
				12.5x25	625	10x45	565	12.5x30	660	12.5x50	770
				14.5x20	615	12.5x25	625	14.5x25	665	14.5x35.5	740
						16x20	635	16x31.5	740	18x25	710
120		10x35	570	10x40	595	10x50	645	12.5x35	770	14.5x40	835
				10x45	620	12.5x30	725	16x25	755	14.5x45	860
		14.5x20	675	12.5x30	725	14.5x25	725	18x20	730	16x35.5	830
				16x20	695	16x20	695				
150		10x40	665	10x50	720	12.5x35	860	12.5x40	890	14.5x50	980
		10x45	695	12.5x35	860	16x25	845	12.5x45	920	16x40	960
		12.5x25	765	14.5x25	810	18x20	815	14.5x31.5	870	16x45	975
										18x31.5	940
180		10x50	785	14.5x31.5	955	12.5x40	975	12.5x50	1035	16x50	1090
		12.5x30	885	16x25	925	12.5x45	1005	14.5x35.5	990	18x35.5	1065
								14.5x40	1020		
		14.5x25	890	18x20	895	14.5x31.5	955	16x31.5	995	18x40	1080
16x20	855	18x25	950								



HH series

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μ F)	V Item	160		200		220		250		350	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
220		12.5x35	1040	12.5x40	1075	12.5x50	1145	14.5x45	1160	18x45	1210
		16x25	1020	12.5x45	1110	14.5x35.5	1095	14.5x50	1185		
		18x20	990	14.5x35.5	1095	16x31.5	1100	18x31.5	1135	18x50	1220
				18x25	1050	18x25	1050				
270		12.5x40	1190	12.5x50	1265	14.5x45	1285	16x40	1285		
		12.5x45	1230	14.5x40	1250	14.5x50	1315	16x45	1310		
		14.5x31.5	1170	14.5x45	1290	16x35.5	1245				
		14.5x35.5	1210	16x31.5	1220	18x31.5	1260	18x35.5	1300		
		16x35.5	1250								
330		12.5x50	1400	14.5x50	1450	16x40	1425	16x50	1475		
		14.5x40	1385	16x40	1425	16x45	1450	18x40	1460		
		16x31.5	1350	18x31.5	1395	18x35.5	1440	18x45	1485		
		18x25	1290								
390		14.5x45	1545	16x45	1575	16x50	1600	18x50	1625		
		16x35.5	1500	18x35.5	1565	18x40	1590				
						18x45	1620				
470		14.5x50	1735	16x50	1755	18x50	1785				
		16x40	1700	18x40	1745						
		16x45	1730								
		18x31.5	1660	18x45	1770						
		18x35.5	1715								
560		16x50	1920	18x50	1945						
		18x40	1905								
680		18x45	2130								
		18x50	2145								

HH

HH series

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V Item	400		420		450		500	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
6.8				10x16	105	10x16	105	10x20	90
8.2								10x25	110
10		10x16	125					10x30	130
12				10x20	150	10x20	150	12.5x20	135
15				10x25	185	10x25	185	10x35	170
								10x40	175
								12.5x25	165
18		10x20	180	10x30	215	10x30	215	10x45	190
						12.5x20	255	12.5x30	190
22		10x25	215	12.5x20	285	10x35	250	10x50	230
								12.5x35	220
27		10x30	255	10x35	275	10x40	290	12.5x40	260
				10x40	290	10x45	305		
		12.5x20	300	12.5x25	340	12.5x25	340		
				14.5x20	335	14.5x20	335		
33		10x35	300	10x45	335	12.5x30	400	12.5x45	285
				12.5x30	400	14.5x25	400		
				16x20	385	16x20	385		
39		10x40	340	10x50	375	10x50	375	12.5x50	330
		10x45	355			12.5x35	460		
		12.5x25	390	14.5x25	435	18x20	440		
		14.5x20	385						
47		12.5x30	455	12.5x35	505	12.5x40	525		
		16x20	435	16x25	500	14.5x31.5	515		
				18x20	480	16x25	500		
56		10x50	440	12.5x40	570	12.5x45	590		
		12.5x35	525	12.5x45	590	14.5x35.5	580		
		14.5x25	495	14.5x31.5	560	16x31.5	585		
		18x20	500			18x25	560		
68		12.5x40	600	12.5x50	670	12.5x50	670		
		14.5x31.5	585	14.5x35.5	640	14.5x40	660		
				14.5x40	660	14.5x45	680		
		16x25	570	16x31.5	645	16x35.5	660		
				18x25	615				
82		12.5x45	680	14.5x45	750	14.5x50	765		
		12.5x50	700	16x35.5	725	16x40	750		
		14.5x35.5	670			16x45	760		
		16x31.5	670	18x31.5	730	18x31.5	730		
		18x25	640						
100		14.5x40	760	14.5x50	845	16x50	855		
		14.5x45	785	16x40	825				
		16x35.5	760	16x45	840	18x35.5	835		
				18x35.5	835				
120		14.5x50	875	16x50	935	18x40	930		
		16x40	860	18x40	930				
		16x45	875						
		18x31.5	840	18x45	945	18x45	945		
		18x35.5	870						
150		16x50	995	18x50	1060	18x50	1060		
		18x40	985						
180		18x45	1095						
220		18x50	1220						



HW series

- 105°C 15000~20000 hours ,On the basis of HH series life promotion product
- Suitable for LED Lighting Power supply Circuit
- RoHS Compliance
- 105°C 15000~20000小時壽命，在HH系列基礎上壽命提升品
- 適用於LED照明用電源電路



SPECIFICATIONS

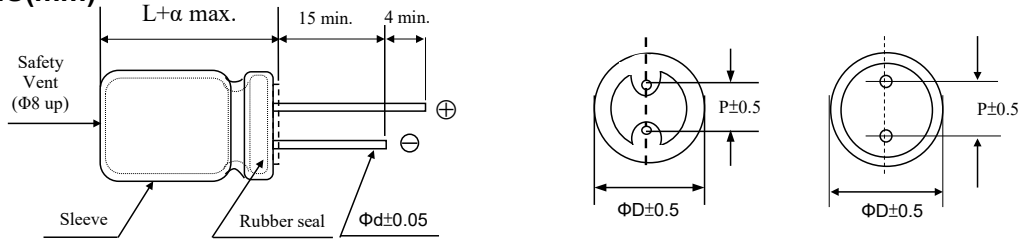
Items 項目	Characteristics 特性					
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)					
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C					
Rated Voltage Range 額定電壓範圍	160 ~ 450VDC					
Leakage Current 洩漏電流	I ≤ 0.04CV + 100 (µA) (After 1 minutes application of DC rated voltage, at 20 °C)					
Leakage Current 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C					
	Rated Voltage(V)	160 ~450				
	tanδ (Max)	0.24				
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz					
	Rated Voltage(V)	160	200	250	400	450
	Z(-25°C) / Z(20°C)	3	3	3	6	6
	Z(-40°C) / Z(20°C)	8	8	8	10	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C aftersubjected to DC voltage with the rated ripple current is applied for 20,000 hours(ΦD=10:15,000 hours) at 105°C.					
	Capacitance Change	within ±30% of Initial Value				
	tan δ	300% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.					
	Capacitance Change	within ±30% of Initial Value				
	tan δ	300% or less of Initial Specified Value				
	Leakage Current	500% or less of Initial Specified Value				
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)					

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)			
		120	1K	10K	100K
160~450	5.6~68	1.00	1.75	2.25	2.50

HW series

DIMENSIONS(mm)



ΦD	10	12.5	16	18
P	5.0	5.0	7.5	7.5
Φd	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	160				200			250		
	(Code)	R.C.		R.C.		R.C.		R.C.			
	Item	D x L	120HZ	100kHz	D x L	120HZ	100kHz	D x L	120HZ	100kHz	
10								10x12.5	90	225	
12								10x12.5	97	242	
15								10x16	120	300	
18					10x12.5	113	282	10x16	129	318	
22		10x12.5	121	302	10x16	135	337	10x20	150	375	
27					10x20	149	372	12.5x20	185	462	
33		10x16	158	395	12.5x20	210	525	12.5x20	198	495	

Cap (μF)	V	400			450		
	(Code)	R.C.		R.C.			
	Item	D x L	120HZ	100kHz	D x L	120HZ	100kHz
3.9		10x12.5	48	120			
4.7		10x12.5	57	142			
5.6		10x12.5	64	160	10x16	54	135
6.8		10x16	80	200	10x16	62	155
8.2		10x16	88	220	10x16	88	220
10		10x20	115	287	10x20	92	230
15		12.5x20	150	375	12.5x20	140	350
22		12.5x20	209	522	12.5x25	240	600
33		16x22	297	742	16x25	392	980
					18x20	312	780
47		16x25	425	1062	18x25	480	1200
68		18x25	520	1300	18x31.5	520	1300
82		18x31.5	560	1400	18x35.5	574	1435
100		18x35.5	620	1550	18x40	650	1625

HW

SH series

- High temperature resistance, high reliability.
- Applicable to automobile modules or lighting equipment and other high temperature applications.
- 125°C , 2000~5000 hours long life product.
- RoHS Compliance
- 耐高溫、高信賴性。
- 適應于汽車電裝或照明設備等的高溫用途
- 125°C 2000H~5000H長壽命品。



SPECIFICATIONS

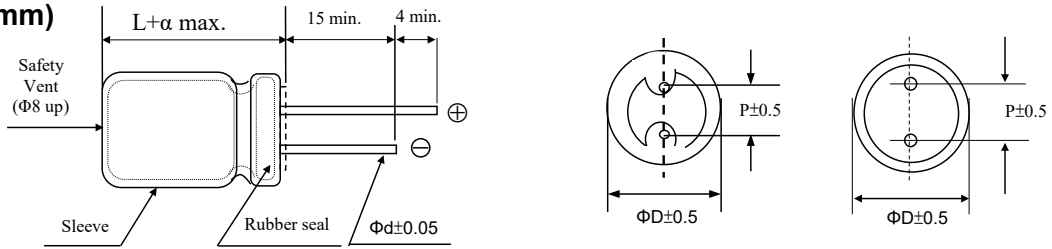
Items 項目	Characteristics 特性												
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)												
Operating Temperature Range 適用溫度範圍	-40 ~ +125°C						-25~ +125°C						
Rated Voltage Range 額定電壓範圍	10 ~ 50VDC						160 ~ 450VDC						
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)						I ≤ 0.03CV +20 (µA) (After 3 minutes application of DC rated voltage, at 20 °C)						
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C												
	Rated Voltage(V)	10	16	25	35	50~100	160	200~250	350~450				
	tan δ(Max)	0.20	0.16	0.14	0.12	0.10	0.15	0.20	0.20				
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.													
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.												
	Rated Voltage(V)	10	16	25	35	50	63	100	160	200	250	350~450	
	Z(-25°C)/Z(20°C)	3	2	2	2	2	2	3	3	3	6	6	
	Z(-40°C)/Z(20°C)	8	6	4	4	4	4	4	6	6	6	-	
Impedance Ratio(Max) 阻抗比率(最大值)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for at 125°C.												
	Case size	ΦD≤ 8						≥ΦD10					
	Working voltage	≤50 WV						2000hours			5000hours		
		≥160 WV						2000hours					
	Capacitance Change	within ±30% of Initial Val											
	tan δ	300% or less of Initial Specified Value											
Leakage Current	Initial Specified Value or less												
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.												
	Capacitance Change	Within ± 25% of Initial Value											
	tan δ	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)												

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)			
		120	1K	10K	100K
≤ 50	100	0.40	0.75	0.90	1.00
	220 ~ 470	0.50	0.85	0.94	1.00
	560~ 1000	0.60	0.87	0.95	1.00
≥ 160	4.7 ~ 150	1.00	1.40	1.50	1.55

SH series

DIMENSIONS(mm)



ΦD	6.3	8	10	12.5	16
P	2.5	3.5	5.0	5.0	7.5
Φd	0.5	0.5	0.6	0.6	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 125°C100kHz,IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	10			16			25			35			50		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
4.7														8x11.5	85	0.450
10														8x11.5	180	0.450
22														8x11.5	250	0.450
33														8x11.5	300	0.450
47														8x11.5	440	0.450
100					8x11.5	340	0.320	8x11.5	500	0.320	10x12.5	800	0.170	10x12.5	590	0.300
220	8x11.5	340	0.260	10x12.5	800	0.170	10x12.5	800	0.170	10x16	1050	0.120	10x20	970	0.190	
330	10x12.5	800	0.170	10x12.5	800	0.170	10x16	1050	0.120	10x20	1300	0.094				
470	10x12.5	800	0.170	10x16	1050	0.120	10x20	1300	0.094							
1000	10x20	1300	0.094													

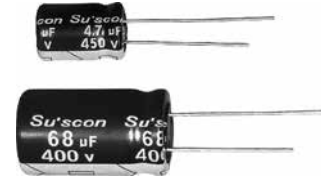
DxL(mm), R.C.(mA rms) at 125°C,120Hz

Cap (μF)	V	160		200		250		350		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
4.7								10x20	53	10x20	53	10x25	50
10				10x20	110	10x20	78	10x25	85	10x25	86	12.5x20	86
22	10x20	115	10x25	126	12.5x20	128	12.5x25	139	12.5x31.5	142	16x25	154	
33	10x25	154	12.5x20	157	12.5x25	171	16x25	189	16x25	189	16x31.5	203	
47	12.5x20	187	12.5x25	204	16x25	225	16x31.5	243	16x31.5	243			
68	12.5x25	245	16x20	250	16x31.5	292							
100	16x25	329	16x25	329									
150	16x31.5	434											

SH

HA series

- 105°C high-temperature resistance, standard product.
- 3000 hours Load Life.
- Suitable for LED and electronic rectifier.
- RoHS Compliance
- 105°C耐高溫標準品。
- 壽命3000小時。
- 適用於節能燈與電子整流器。



SPECIFICATIONS

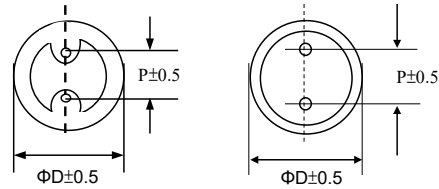
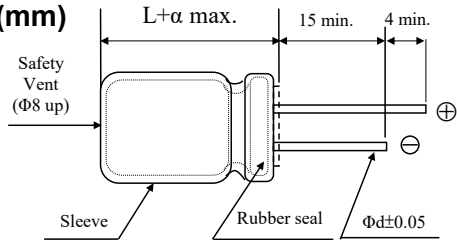
Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C			-25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	160 ~ 400VDC			450VDC			
Leakage Current 洩漏電流	I ≤ 0.02CV + 10 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20°C)			I ≤ 0.03CV + 10 (µA) (After 2 minutes application of DC rated voltage, at 20°C)			
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	160	200	250	350	400	450
	tan δ(Max)	0.15	0.15	0.15	0.15	0.20	0.20
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	160	200	250	350	400	450
	Z(-25°C)/Z(20°C)	3	3	3	5	5	6
	Z(-40°C)/Z(20°C)	6	6	6	6	6	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105°C.						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	500% or less of Initial Specified Value					
Standards 參照標準	IEC 60384-4(JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	120	1K	10K ~ 20K	30K ~ 100K
160 ~ 250	0.55	0.85	0.90	1.00
350 ~ 450	0.50	0.80	0.90	1.00

HA series

DIMENSIONS(mm)



ΦD	6.3	8	10	12.5	16	18
P	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105 C 100 kHz.

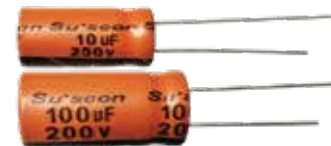
Cap (μF)	V	160		200		250		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2			6.3x11	36	6.3x11	38	8x11.5	47
3.3			8x11.5	50	8x11.5	59	8x11.5	69
4.7			8x11.5	55	8x11.5	65	8x11.5	70
5.6			8x11.5	65	8x11.5	75	8x15	85
6.8			8x11.5	70	8x14	80	10x12.5	95
8.2			8x11.5	80	8x15	85	10x16	105
10			8x11.5	85	10x12.5	120	10x16	150
15			8x15	120	10x12.5	150	10x16	180
22			10x16	195	10x16	210	10x20	250
33			10x20	230	12.5x20	280	12.5x20	320
47			12.5x20	310	12.5x20	395	12.5x25	410
68			12.5x20	380	12.5x25	460	16x25	480
82			12.5x25	430	12.5x25	570	16x25	590
100			16x25	640	16x25	670	16x31.5	720
150			16x25	700	16x31.5	790	18x31.5	875
220			16x36	990	18x35.5	1040	18x40	1100

Cap (μF)	V	350		400		450		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
1			8x11.5	33	8x11.5	35	8x15	30
1.5			8x11.5	42	8x11.5	45	10x16	50
2.2			8x11.5	47	8x11.5	55	10x16	60
3.3			8x15	60	10x12.5	75	10x16	90
4.7			10x12.5	95	10x16	100	10x20	115
6.8			10x12.5	100	10x16	125	12.5x20	130
8.2			10x16	130	10x20	145	12.5x20	155
10			10x20	145	10x20	150	12.5x20	160
15			12.5x20	205	12.5x20	210	12.5x20	255
22			12.5x25	270	12.5x25	285	16x25	280
33			16x25	355	16x25	400	16x31.5	455
47			16x25	430	16x25	480	18x31.5	550
68			16x31.5	505	16x31.5	585	18x35.5	690
82			16x36	655	18x31.5	695	18x35.5	805
100			18x31.5	750	18x35.5	795	18x40	860

HA

HB series

- 105°C high-temperature resistance, high ripple current and long life.
- 5000hours load life.
- Suitable for LED and electronic rectifier.
- RoHS Compliance
- 105°C耐高溫、高紋波、長壽命。
- 壽命5000小時。
- 適用於節能燈與電子整流器。



SPECIFICATIONS

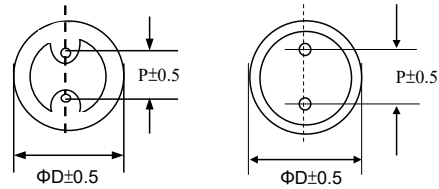
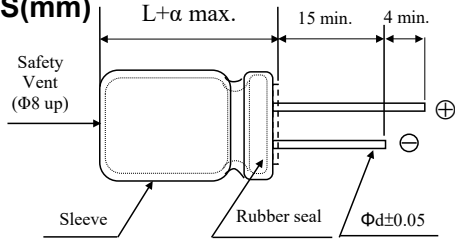
Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C			-25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	160 ~ 400VDC			450VDC			
Leakage Current 洩漏電流	I ≤ 0.02CV + 10 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)			I ≤ 0.03CV + 10 (µA) (After 2 minutes application of DC rated voltage, at 20 °C)			
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C						
	Rated Voltage(V)	160	200	250	350	400	450
	tan δ(Max)	0.15	0.15	0.15	0.15	0.20	0.20
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.						
	Rated Voltage(V)	160	200	250	350	400	450
	Z(-25°C)/Z(20°C)	3	3	3	5	5	6
	Z(-40°C)/Z(20°C)	6	6	6	6	6	-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C.						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	500% or less of Initial Specified Value					
Standards 參照標準	IEC 60384-4(JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	120	1K	10K ~ 20K	30K ~ 100K
160 ~ 250	0.55	0.85	0.90	1.00
350 ~ 450	0.50	0.80	0.90	1.00

HB series

DIMENSIONS(mm)



ΦD	6.3	8	10	12.5	16	18
P	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 100kHz.

Cap (μF)	V	160		200		250		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2			6.3x11	60	8x11.5	68	8x11.5	70
3.3			8x11.5	72	8x11.5	75	8x11.5	80
4.7			8x11.5	75	8x11.5	80	10x12.5	85
5.6			8x11.5	80	8x15	85	10x12.5	90
6.8			8x11.5	90	8x15	95	10x12.5	100
8.2			8x11.5	95	8x15	110	10x16	130
10			8x11.5	100	10x16	180	10x20	200
15			10x16	210	10x16	230	10x20	260
22			10x20	300	10x20	330	10x20	380
33			10x20	330	12.5x20	400	12.5x25	450
47			12.5x20	400	12.5x20	450	12.5x25	520
68			12.5x25	490	16x25	560	16x31.5	630
82			12.5x25	550	16x25	640	16x31.5	700
100			16x25	680	16x25	720	18x31.5	830
150			16x31.5	930	16x36	1030	18x35.5	1230
220			18x31.5	1050	18x35.5	1250	18x40	1340

Cap (μF)	V	350		400		450		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
1			8x11.5	43	8x15	50	8x15	60
1.5			8x11.5	45	10x12.5	53	10x16	63
2.2			8x11.5	53	10x12.5	63	10x16	70
3.3			10x12.5	80	10x16	90	10x16	95
4.7			10x16	90	10x16	100	10x20	105
5.6			10x16	100	10x16	108	10x20	110
6.8			10x20	130	10x20	155	12.5x20	160
8.2			12.5x20	160	12.5x20	190	12.5x20	220
10			12.5x20	190	12.5x20	230	12.5x20	250
15			12.5x25	230	12.5x25	250	12.5x25	300
22			16x25	300	16x25	380	16x31.5	430
33			16x25	350	16x31.5	430	16x36	560
47			16x36	480	18x26	580	18x31.5	630
68			18x26	560	18x31.5	650	18x35.5	780
82			18x31.5	730	18x35.5	800	18x40	950
100			18x35.5	840	18x40	930		

HB

HD series

- 105°C high-temperature resistance, high ripple current and long life.
- 10000hours Life.
- Suitable for LED and electronic rectifier.
- RoHS Compliance
- 105°C耐高溫、高紋波、長壽命。
- 壽命10000小時。
- 適用於節能燈與電子整流器。



SPECIFICATIONS

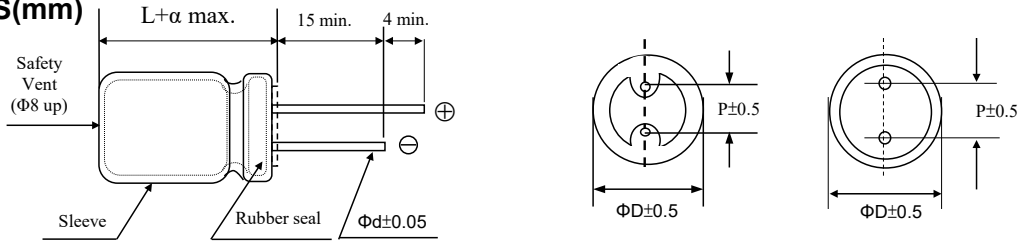
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)							
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C				-25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	160 ~ 400VDC				450VDC			
Leakage Current 洩漏電流	I ≤ 0.02CV + 10 (μA) (After 2 minutes application of DC rated voltage, at 20 °C)				I ≤ 0.03CV + 10 (μA) (After 2 minutes application of DC rated voltage, at 20 °C)			
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	160	200	250	350	400	450	420~500
	tan δ(Max)	0.15	0.15	0.15	0.15	0.20	0.20	0.20
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.							
	Rated Voltage(V)	160	200	250	350	400	450	
	Z(-25°C)/Z(20°C)	3	3	3	5	5	6	
	Z(-40°C)/Z(20°C)	6	6	6	6	6	-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours(8Φ~10Φ:8,000 hours) at 105°C.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	500% or less of Initial Specified Value						
Standards 參照標準	IEC 60384-4(JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	1K	10K	100K
Coefficient	0.45	0.55	0.75	0.90	1.00

HD series

DIMENSIONS(mm)



ΦD	8	10	12.5	16	18	22
P	3.5	5.0	5.0	7.5	7.5	10.0
Φd	0.5	0.6	0.6	0.8	0.8	0.8

α	(L < 20) 1.5
	(L \geq 20) 2.0

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz.

Cap (μF)	V	160		200		250		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2			8x11.5	80	8x11.5	90	8x11.5	90
3.3			8x11.5	90	8x11.5	102	10x12.5	110
4.7			8x11.5	98	8x15	110	10x16	120
5.6			8x15	104	8x15	118	10x16	125
6.8			8x15	115	10x12.5	128	10x16	130
8.2			10x16	125	10x16	220	10x16	240
10			10x16	255	10x16	260	10x20	290
15			10x16	430	10x20	430	12.5x20	460
22			10x20	510	12.5x20	510	12.5x20	610
33			12.5x20	580	12.5x20	610	12.5x25	650
47			12.5x25	670	12.5x25	670	16x25	730
68			16x25	770	16x25	770	16x31.5	930
100			16x25	900	16x25	1030	18x31.5	1210
150			18x31.5	1270	18x35.5	1330	22x35	1530
220			18x35.5	1410	22x35	1710		

Cap (μF)	V	350		400		450		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
1			8x11.5	74	8x15	85	10x12.5	90
1.5			10x12.5	80	10x12.5	95	10x16	100
2.2			10x16	98	10x16	105	10x16	110
3.3			10x16	110	10x16	115	10x16	120
4.7			10x20	145	10x20	148	10x20	150
5.6			12.5x20	165	12.5x20	180	12.5x20	200
6.8			12.5x20	200	12.5x20	230	12.5x20	260
8.2			12.5x20	250	12.5x20	270	12.5x20	290
10			12.5x20	290	12.5x20	300	12.5x20	330
15			12.5x25	350	12.5x25	390	12.5x25	430
22			16x25	450	16x25	500	16x31.5	600
33			16x31.5	510	16x31.5	650	16x36	710
47			16x36	670	18x26	850	18x31.5	900
68			18x31.5	860	18x31.5	960	18x35.5	1150
82			18x31.5	1150	18x35.5	1300	18x40	1400
100			18x35.5	1250	18x40	1400		

HD

SD series

- 105°C 2000 hours High frequency and low impedance, high ripple current resistance.
- Suitable for return-circuit of switching power source.
- RoHS Compliance
- 105°C 2000小時壽命，高頻低阻抗、耐高紋波
- 適用於開關電源迴路



SPECIFICATIONS

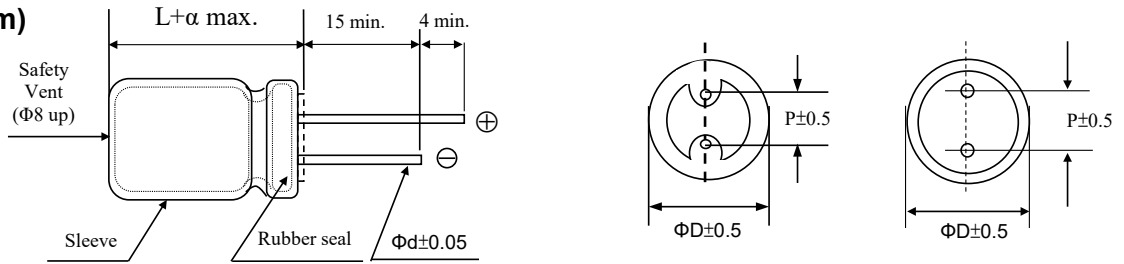
Items 項目	Characteristics 特性											
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)											
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C						-25 ~ +105°C					
Rated Voltage Range 額定電壓範圍	6.3 ~ 400VDC						450VDC					
Leakage Current 洩漏電流	$V \leq 100V$ $I \leq 0.01CV$ or 3 (μA) (After 2 minutes application of DC rated voltage, at 20°C) $V > 100V$ $I \leq 0.03CV + 20$ (μA) (After 5 minutes application of DC rated voltage, at 20°C)											
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C											
	Rated Voltage(V)	6.3	10	16	25	30	35	50	63	100	160~250	400~450
	$\tan \delta$ (Max)	0.22	0.19	0.16	0.14	0.13	0.12	0.10	0.08	0.07	0.20	0.24
When nominal capacitance over 1000 μF , $\tan \delta$ shall be added 0.02 to the listed value with increase of every 1000 μF .												
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.											
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	160~250	400	450
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	3	5	6
Z(-40°C)/Z(20°C)	8	6	4	3	3	3	3	3	6	10	12	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.											
	Capacitance Change	Within ± 20% of Initial Value										
	$\tan \delta$	200% or less of Initial Specified Value										
	Leakage Current	Initial Specified Value or less										
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.											
	Capacitance Change	Within ± 20% of Initial Value										
	$\tan \delta$	200% or less of Initial Specified Value										
	Leakage Current	Initial Specified Value or less										
Standards 參照標準	IEC 60384-4(JIS C5101-4)											

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (μF)	Frequency (Hz)				
		50	120	1K	10K	100K
6.3 ~ 100	0.47 ~ 100	0.45	0.55	0.75	0.90	1.00
	220 ~ 1000	0.60	0.70	0.85	0.95	1.00
	1500 ~ 15000	0.70	0.80	0.95	0.98	1.00
160 ~ 450	2.2 ~ 330	0.55	0.65	0.80	0.90	1.00

SD series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	6.3			10			16			25		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
4.7											5x11	50	1.500
10											5x11	80	1.500
22											5x11	110	0.800
47					5x11	140	0.650	5x11	170	0.650	5x11	170	0.650
68					5x11	160	0.650	5x11	210	0.550	6.3x11	210	0.550
100					5x11	180	0.650	6.3x11	270	0.300	6.3x11	270	0.300
220	6.3x11	270	0.300		6.3x11	295	0.300	8x11.5	520	0.200	8x11.5	550	0.200
330	6.3x11	320	0.300		8x11.5	528	0.200	8x11.5	550	0.200	10x12.5	720	0.100
470	8x11.5	528	0.200		8x11.5	550	0.200	10x12.5	720	0.100	10x16	850	0.075
680	8x11.5	550	0.200		10x12.5	760	0.100	10x16	850	0.075	10x20	1200	0.058
1000	10x12.5	780	0.100		10x16	875	0.075	10x20	1200	0.058	12.5x20	1450	0.055
1500	10x16	950	0.075		10x20	1250	0.058	12.5x20	1450	0.055	12.5x25	1850	0.040
2200	10x25	1420	0.055		12.5x20	1450	0.055	12.5x25	1850	0.043	16x25	2250	0.030
3300	12.5x20	1550	0.055		12.5x25	1850	0.043	16x25	2250	0.030	16x31.5	2850	0.027
4700	12.5x25	1950	0.035		16x25	22250	0.030	16x31.5	2850	0.027	18x35.5	3120	0.025
6800	16x25	2460	0.030		16x31.5	2850	0.027	18x35.5	3120	0.025	18x40	3650	0.023
10000	16x31.5	2890	0.027		18x35.5	3120	0.025	18x40	3650	0.023			
15000	16x35.5	2950	0.025		18x40	3650	0.023						

Cap (μF)	V	35			50			63			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
0.47					5x11	25	7.500				5x11	20	15.00
1					5x11	40	5.300				5x11	30	15.00
2.2					5x11	55	4.500				5x11	44	9.800
3.3					5x11	65	3.900				5x11	58	6.600
4.7	5x11	85	2.000		5x11	90	2.300	5x11	65	4.494	5x11	74	4.600
10	5x11	100	1.200		5x11	110	1.400	5x11	110	2.252	6.3x11	130	1.805
22	5x11	120	1.000		5x11	140	1.200	6.3x11	200	1.000	8x11.5	280	1.360
33	5x11	210	0.430		6.3x11	240	0.480	6.3x11	250	0.900	10x12.5	450	0.460
47	6.3x11	270	0.300		6.3x11	240	0.480	8x11.5	420	0.800	10x16	650	0.390
68	8x11.5	525	0.300		8x11.5	525	0.300	10x12.5	525	0.760	10x20	750	0.288
100	8x11.5	550	0.200		8x11.5	550	0.250	10x12.5	550	0.580	12.5x20	950	0.208
220	10x12.5	720	0.100		10x16	720	0.170	10x20	850	0.170	16x25	1250	0.104
330	10x16	850	0.075		10x20	800	0.150	12.5x20	1250	0.142	16x31.5	1510	0.088
470	10x20	1200	0.058		12.5x20	1450	0.090	12.5x25	1500	0.070	16x36	1720	0.072
680	12.5x20	1450	0.055		12.5x25	1850	0.700	16x25	1780	0.055	18x35.5	1950	0.064
1000	12.5x25	1850	0.043		16x25	2250	0.048	16x31.5	2120	0.043	18x40	2320	0.047
1500	16x25	2250	0.030		16x31.5	2850	0.043	18x35.5	2310	0.033			
2200	16x31.5	2850	0.027		18x35.5	3120	0.040	18x40	2540	0.032			
3300	18x35.5	3120	0.025										
4700	18x40	3650	0.023										

SD

SD series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

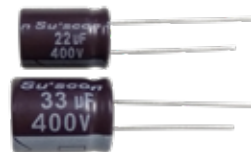
Cap (μF)	V (Code)	160 (2C)			200 (2D)			250 (2E)		
	Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
2.2								8x11.5	105	13
3.3		8x11.5	104	11	8x11.5	113	11	8x11.5	122	11
4.7		8x11.5	112	6.5	8x11.5	126	6.1	10x12.5	140	4.3
10		10x12.5	180	4.3	10x12.5	210	3.8	10x16	300	3.5
22		10x16	250	3.0	10x20	465	2.7	12.5x20	485	2.80
33		10x20	570	1.9	10x25	600	1.4	12.5x20	620	2.13
47		12.5x20	730	1.2	12.5x20	730	1.2	12.5x25	810	1.60
68		12.5x20	850	0.86	12.5x25	985	0.7	16x25	1010	1.07
100		16x25	1285	0.50	16x25	1285	0.5	16x31.5	1405	0.62
220		16x36	1450	0.29	18x31.5	1510	0.36	18x40	1490	0.38
330		18x35.5	1850	0.26						

Cap (μF)	V (Code)	400 (2G)			450 (2W)		
	Item	D x L	R.C.	IMP	D x L	R.C.	IMP
2.2		6.3x12	50	27.0	8x11.5	60	28.0
		8x11.5	80	13.0	10x12.5	90	23.0
3.3		8x11.5	90	16.5	8x11.5	80	23.0
		10x12.5	110	8.20	10x16	126	20.0
4.7		8x11.5	90	9.50	8x14	95	12.5
		10x16	160	4.80	10x20	170	6.20
10		10x16	170	6.10	10x16	160	7.50
		10x20	195	3.00	12.5x20	280	3.70
22		12.5x20	290	4.00	12.5x20	280	7.00
		12.5x25	350	1.95	16x25	580	3.50
33		12.5x20	400	3.00	12.5x25	420	3.60
		12.5x25	480	1.50	16x25	610	1.60
47		12.5x25	530	1.25	16x25	650	1.90
		16x25	720	1.10	16x31.5	850	0.85
68		16x25	750	1.10	18x31.5	940	0.71
		16x31.5	820	0.55			
100		18x26	850	1.00	18x35.5	1000	1.00
		18x35.5	950	0.48	18x40	1100	0.43

SD

NK series

- On the basis of SD series ripple promotion product , 3,000 hours at 105°C.
- Suitable for LCD TV Power ,SMPS
- RoHS Compliance
- 高頻低阻抗,耐高紋波 , 105°C 3000小時壽命
- 適用於液晶顯示電源及開關電源等



SPECIFICATIONS

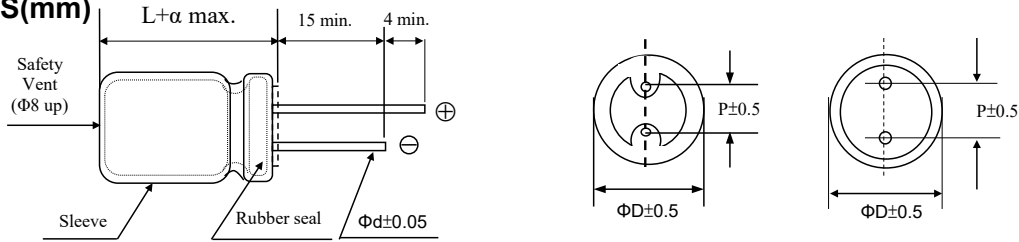
Items 項目	Characteristics 特性			
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)			
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C			
Rated Voltage Range 額定電壓範圍	400VDC		450VDC~500VDC	
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 5 minutes application of DC rated voltage, at 20 °C)			
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C			
	Rated Voltage(V)	400V	450V	500V
	tan δ (Max)	0.15	0.18	0.20
	When nominal capacitance over 1000 μ F, tan δ shall be added 0.02 to the listed value with increase of every 1000 μ F .			
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz			
	Rated Voltage(V)	400	450	500
	Z(-25°C)/Z(20°C)	5	6	6
	Z(-40°C)/Z(20°C)	10	12	12
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105°C.			
	Capacitance Change	Within ± 20% of Initial Value		
	tan δ	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.			
	Capacitance Change	Within ± 20% of Initial Value		
	tan δ	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4(JIS C5101-4)			

Frequency Coefficient of Permissible Ripple Current

Capacitance (μ F)	Frequency (Hz)				
	50	120	1K	10K	100K
10~150	0.55	0.65	0.80	0.90	1.00

NK series

DIMENSIONS(mm)



ΦD	6.3	8	10	12.5	16	18
P	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

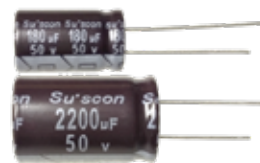
STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 100k Hz;IMP(Qmax)at 20°C 100kHz.

Cap (μF)	V	400			450			500			
		Item	D x L	IMP	R.C.	D x L	IMP	R.C.	D x L	IMP	R.C.
4.7			6.3x12	9.50	120	6.3x16	15.6	115	6.3x16	17.4	82
						8x10	15.6	115	8x10	17.4	82
6.8			6.3x13	8.30	130	10x10	12.7	130	10x10	15.2	90
8.2			6.3x15	7.50	175	8x12	9.20	165	10x11	11.1	115
10						8x15	8.10	195	10x13	9.80	150
			8x10	5.30	195	10x11	8.10	195			
12			8x13	4.10	235	10x13	6.30	230	10x14	7.50	210
15			8x15	3.90	265	10x13.5	6.00	255	10x15	7.20	225
18			8x17	3.10	300	10x15	5.70	300	10x17	6.50	245
22			10x14	3.00	315	10x17	5.40	315	12.5x17	5.60	315
			8x18	3.00	315						
27			10x15	3.00	375	10x20	4.50	375	10x23	5.30	350
33			10x18	2.50	445	10x35	3.10	445	12.5x20	4.10	405
47			12.5x19	1.90	620	10x45	2.60	620	16x20	3.10	565
68			16x20	1.40	1010	10x50	1.60	1010	18x20	2.20	815
82			18x20	1.00	1200	16x25	1.30	1200	18x25	1.90	980
100			18x25	0.900	1350	18x25	1.00	1250			

MC series

- Low Impedance and E.S.R., high ripple current resistance, 2000~3000 hours long life at 105°C
- Suitable for output return circuit of switching power supply for IT products.
- RoHS Compliance
- 低阻抗、耐高紋波，105°C 2000~3000小時壽命。
- 適用於電腦之開關電源供應器的輸出迴路。



SPECIFICATIONS

Items 項目	Characteristics 特性											
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)											
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C						-25 ~ +105°C					
Rated Voltage Range 額定電壓範圍	6.3 ~ 400VDC						450VDC					
Leakage Current 洩漏電流	WV≤100V I≤0.01CV or 3 (µA) (After 2 minutes application of DC rated voltage, at 20 °C) WV > 100V I≤0.03CV +20 (µA) (After 5 minutes application of DC rated voltage, at 20 °C)											
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C											
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	160~250	350	400~450
	tan δ(Max)	0.20	0.17	0.16	0.14	0.12	0.10	0.08	0.08	0.15	0.20	0.25
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .												
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.											
	Rated Voltage(V)	6.3	10	16	25	35	50	63~100		160~350		400~450
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2		3		6
	Z(-40°C)/Z(20°C)	8	6	4	3	3	3	3		6		12
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours(ΦD≤8:2,000 hours) at 105°C.											
	Capacitance Change	Within ± 20% of Initial Value										
	tan δ	200% or less of Initial Specified Value										
	Leakage Current	Initial Specified Value or less										
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.											
	Capacitance Change	Within ± 20% of Initial Value										
	tan δ	200% or less of Initial Specified Value										
	Leakage Current	Initial Specified Value or less										
Standards 參照標準	IEC 60384-4(JIS C5101-4)											

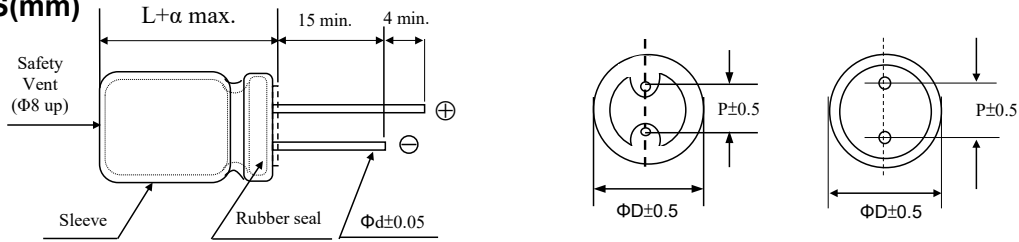
MC

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	50	120	1K	10K	100K
0.47 ~ 100	0.45	0.55	0.75	0.90	1.00
220 ~ 1000	0.60	0.70	0.85	0.95	1.00
1500 ~ 15000	0.70	0.80	0.95	0.98	1.00
2.2 ~ 330	0.55	0.65	0.80	0.90	1.00

MC series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105 C , 100kHz , IMP:(Ω max) at 20 C , 100kHz.

Cap (μF)	V	6.3			10			16			25		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
33											5x11	155	0.800
39											5x11	175	0.650
47								5x11	155	0.800	6.3x11	210	0.550
56								5x11	175	0.650	6.3x11	235	0.440
68					5x11	155	0.800	6.3x11	220	0.500	6.3x11	260	0.336
82					5x11	175	0.650	6.3x11	240	0.420	6.3x11	285	0.330
100		5x11	200	0.620	6.3x11	200	0.420	6.3x11	255	0.370	8x11.5	360	0.220
220		6.3x11	275	0.320	8x11.5	360	0.220	8x11.5	550	0.140	8x14	600	0.100
270		6.3x11	320	0.250	8x11.5	420	0.185	8x15	650	0.140	8x20	750	0.095
330		8x11.5	530	0.180	8x11.5	550	0.140	10x12.5	750	0.100	10x16	800	0.069
470		10x12.5	750	0.140	10x12.5	750	0.100	10x16	800	0.085	10x20	1050	0.064
680		10x16	950	0.100	10x16	800	0.085	10x20	1050	0.064	12.5x20	1370	0.049
1000		10x16	950	0.069	10x20	1080	0.065	12.5x20	1360	0.039	12.5x25	1600	0.038
2200		10x25	1450	0.043	12.5x25	1650	0.038	12.5x30	2050	0.028	12.5x40	2300	0.024
3300		12.5x25	1750	0.035	12.5x35	2100	0.028	12.5x40	2360	0.024	16x35.5	2600	0.019
3900		12.5x30	1910	0.034	12.5x40	2360	0.024	16x31.5	2470	0.022	16x40	2950	0.019
4700		12.5x35	2050	0.028	16x31.5	2370	0.024	16x35.5	2600	0.019	18x40	3500	0.019
6800		16x31.5	2300	0.024	16x35.5	2600	0.019	18x35.5	2900	0.019			
8200		16x35.5	2650	0.021	18x35.5	2900	0.019	18x40	3500	0.017			
10000		18x31.5	2850	0.019	18x40	3500	0.018						
15000		18x40	3500	0.019									

MC

MC series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105 C 100kHz , IMP:(Ω max) at 20 C ,100kHz.

Cap (μF)	V	35			50			63			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
47					8x11.5	320	0.350	8x11.5	450	0.300	10x25	850	0.350
68			360	0.220	8x11.5	450	0.250	8x15	550	0.220	12.5x20	1100	0.240
100		8x11.5	450	0.140	10x16	850	0.200	10x20	700	0.170	12.5x25	1250	0.180
220		10x16	880	0.069	10x20	1100	0.100	12.5x20	1300	0.150	16x31.5	1850	0.071
330		10x20	1100	0.044	12.5x20	1300	0.095	12.5x25	1400	0.070	18x40	2350	0.049
470		12.5x20	1370	0.039	12.5x25	1450	0.070	12.5x35	1650	0.047			
680		12.5x25	1600	0.038	12.5x35	1800	0.040	16x31.5	2000	0.037			
1000		12.5x30	1930	0.029	16x31.5	2100	0.034	18x31.5	2200	0.034			
2200		16x35.5	2550	0.019	18x40	2800	0.025						
3300		18x40	3150	0.019									

Cap (μF)	V	160			200			250		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
2.2								8x11.5	85	13.0
3.3		8x11.5	85	11.0	8x11.5	90	11.0	8x11.5	97	11.0
4.7		8x11.5	90	6.50	8x11.5	100	6.10	10x12.5	112	4.30
10		10x12.5	144	4.30	10x12.5	168	3.80	10x16	240	3.50
22		10x16	200	3.00	10x20	372	2.70	12.5x20	388	2.80
33		10x20	450	2.50	10x25	480	2.30	12.5x20	495	2.20
47		12.5x20	580	2.00	12.5x20	584	2.00	12.5x25	650	1.80
68		12.5x20	680	1.05	12.5x25	788	0.980	16x25	810	0.900
100		16x25	1028	0.900	16x25	1030	0.900	16x31.5	1124	0.850
220		16x35.5	1160	0.800	18x31.5	1208	0.750	18x40	1200	0.700
330		18x35.5	1480	0.700						

Cap (μF)	V	400			450		
		Item	D x L	R.C.	IMP	D x L	R.C.
2.2		8x11.5	65	7.60	10x12.5	75	9.50
3.3		10x12.5	88	5.20	10x16	100	7.90
4.7		10x16	128	3.85	10x20	115	6.20
10		10x20	156	3.10	12.5x20	224	3.70
22		12.5x25	280	2.10	16x25	460	1.00
33		12.5x25	460	1.78	16x25	488	0.950
47		16x25	580	1.36	16x31.5	680	0.850
68		16x31.5	960	0.960	16x31.5	750	0.710
100		18x35.5	1000	0.780	18x40	880	0.430

MC

MF series

- Low impedance、High reliability、2000~5000 hours Long life at 105°C.
- Suitable for switching regulator of computer,etc.
- RoHS Compliance
- 低阻抗、高信賴性、105°C 2000~5000小時壽命。
- 適用於電腦類開關調節器。



SPECIFICATIONS

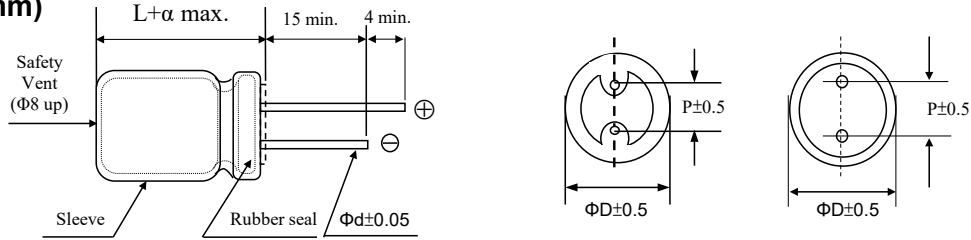
Items 項目	Characteristics 特性													
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)													
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C							-25 ~ +105°C						
Rated Voltage Range 額定電壓範圍	6.3 ~ 400VDC							450VDC						
Leakage Current 洩漏電流	$V \leq 100V$ $I \leq 0.01CV$ or 3 (μA) (After 2 minutes application of DC rated voltage, at 20°C) $V > 100V$ $I \leq 0.03CV + 20$ (μA) (After 5 minutes application of DC rated voltage, at 20°C)													
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C													
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	160~250	350	400~450	500
	$\tan \delta$ (Max)	0.20	0.17	0.16	0.14	0.12	0.10	0.08	0.08	0.08	0.15	0.20	0.25	0.25
	When nominal capacitance over 1000 μF , $\tan \delta$ shall be added 0.02 to the listed value with increase of every 1000 μF .													
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.													
	Rated Voltage(V)	6.3	10	16	25	35	50	63~100	160~250	350~400	450			
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	3	6	15			
	Z(-40°C)/Z(20°C)	8	6	4	3	3	3	3	4	10	-			
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours ($\Phi D \leq 6.3:2,000$ hours; $\Phi D=8:3,000$ hours) at 105°C.													
	Capacitance Change	Within ± 20% of Initial Value												
	$\tan \delta$	200% or less of Initial Specified Value												
	Leakage Current	Initial Specified Value or less												
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.													
	Capacitance Change	Within ± 20% of Initial Value												
	$\tan \delta$	150% or less of Initial Specified Value												
	Leakage Current	Initial Specified Value or less												
Standards 參照標準	IEC 60384-4(JIS C5101-4)													

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (μF)	Frequency (Hz)				
		50	120	1K	10K	100K
6.3 ~ 100	10 ~ 150	0.60	0.70	0.85	0.95	1.00
	220 ~ 1800	0.65	0.75	0.90	0.98	1.00
	2200 ~ 15000	0.75	0.80	1.00	1.00	1.00
160 ~ 450	1 ~ 330	0.55	0.65	0.80	0.90	1.00

MF series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	6.3			10			16			25		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
33											5x11	145	0.920
47								5x11	180	0.650	6.3x11	210	0.600
100	5x11	140	0.920	5x11	180	0.650	5x11	230	0.550	6.3x11	370	0.350	
220	6.3x11	275	0.300	6.3x11	340	0.300	8x11.5	580	0.280	8x11.5	640	0.230	
330	6.3x11	320	0.300	8x11.5	580	0.280	8x11.5	640	0.230	10x12.5	865	0.080	
470	8x11.5	580	0.280	8x11.5	640	0.230	8x15	840	0.150	10x16	1210	0.060	
560	8x11.5	640	0.230	10x12.5	780	0.160	10x12.5	880	0.100	10x16	1320	0.055	
680	8x11.5	720	0.140	10x12.5	820	0.110	10x16	1000	0.085	10x20	1380	0.052	
820	8x15	840	0.087	8x15	865	0.080	10x16	1040	0.076	10x20	1400	0.046	
1000	10x12.5	865	0.080	10x16	1040	0.076	10x20	1210	0.060	12.5x20	1900	0.035	
1200	10x16	960	0.064	10x16	1210	0.060	10x25	1580	0.042	12.5x20	2058	0.032	
1500	10x16	1210	0.060	10x20	1400	0.058	12.5x20	1870	0.035	12.5x20	2124	0.030	
1800	10x20	1400	0.058	12.5x20	1580	0.042	12.5x20	1900	0.032	12.5x30	2340	0.028	
2200	10x25	1450	0.046	12.5x20	1900	0.032	12.5x20	2124	0.030	12.5x35	2450	0.026	
2700	12.5x20	1580	0.042	12.5x20	2124	0.030	12.5x30	2340	0.028	12.5x35	2743	0.024	
3300	12.5x20	1870	0.035	12.5x30	2340	0.028	12.5x35	2450	0.026	16x31.5	3029	0.022	
3900	12.5x20	1900	0.032	12.5x35	2450	0.026	16x25	2500	0.028	16x35.5	3124	0.020	
4700	12.5x20	2124	0.030	16x25	2500	0.028	16x31.5	3029	0.022	18x35.5	3638	0.019	
5600	12.5x30	2524	0.026	16x25	2552	0.026	16x35.5	3124	0.020	18x40	3781	0.016	
6800	16x25	2760	0.028	16x31.5	3029	0.022	16x40	3586	0.019				
8200	16x31.5	3029	0.022	16x31.5	3600	0.020	18x35.5	3750	0.018				
10000	16x35.5	3124	0.020	18x35.5	3638	0.019							
12000	18x31.5	3600	0.020										
15000	18x35.5	3781	0.018										

Cap (μF)	V	35			50			63			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
10					5x11	120	1.400	5x11	125	1.650	6.3x11	130	1.250
22	5x11	150	0.920	5x11	160	1.200	6.3x11	240	0.780	8x11.5	230	0.850	
33	5x11	220	0.430	6.3x11	230	0.300	8x11.5	270	0.650	10x12.5	330	0.690	
47	6.3x11	280	0.300	6.3x11	295	0.300	8x11.5	300	0.504	10x12.5	370	0.450	
100	8x11.5	450	0.200	10x12.5	760	0.120	10x16	610	0.160	10x25	560	0.300	
220	10x12.5	760	0.100	10x16	1150	0.078	10x20	1100	0.120	12.5x20	880	0.280	
330	10x16	1210	0.060	12.5x20	1660	0.055	12.5x20	1280	0.100	16x25	1440	0.130	
470	10x20	1400	0.058	12.5x20	1950	0.046	12.5x20	1710	0.082	18x31.5	1690	0.110	
560	12.5x20	1660	0.055	12.5x20	2124	0.034	16x25	1820	0.058	18x35.5	2020	0.043	
680	12.5x20	1900	0.035	12.5x30	2310	0.030	16x25	1850	0.055	18x35.5	2100	0.043	
820	12.5x20	2124	0.030	12.5x35	2510	0.025	16x31.5	2250	0.043				
1000	12.5x20	2340	0.028	12.5x35	2920	0.022	16x35.5	2450	0.036				
1200	12.5x30	2524	0.026	16x31.5	3010	0.022	18x31.5	2580	0.031				
1500	16x25	2600	0.026	16x35.5	3150	0.020							
1800	16x25	2850	0.025	18x31.5	3635	0.020							
2200	16x31.5	3029	0.022	18x35.5	3680	0.017							
2700	18x31.5	3600	0.020										
3300	18x40	3781	0.015										

MF

MF series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz.

Cap (μ F)	V	160		200		250	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
4.7						8x11.5	150
10		10x16	330	10x16	330	10x16	330
22		10x20	510	10x20	510	10x20	510
33		10x20	650	10x20	650	12.5x20	800
47		10x20	750	12.5x20	980	12.5x20	980
100		12.5x25	1420	16x25	1580	16x31.5	1750
150		16x25	1900	16x25	1900	18x31.5	2050
330		18x25	2100	18x31.5	2300		

Cap (μ F)	V	350		400		450	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2				10x13	150		
3.3				10x13	160		
4.7		10x13	140	10x16	230	10x20	210
10		10x20	350	10x20	350	12.5x20	450
22		12.5x20	640	12.5x20	640	16x20	750
33		16x20	850	16x20	850	16x25	950
47		16x25	1030	16x25	1030	18x25	1050
100		16x31.5	1180	18x31.5	1180	18x31.5	1230

HF series

- Ultra Low impedance at High frequency range.
- High ripple current, 4000~8000 hours long life at 105°C .
- RoHS Compliance
- 高頻低阻抗。
- 高紋波電流.105°C 4000~8000小時長壽命產品。



SPECIFICATIONS

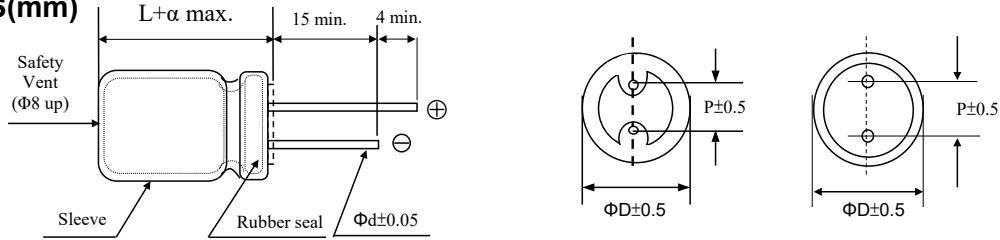
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C								
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC								
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3 (µA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	tan δ(Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
	When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.								
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	8	6	4	3	3	3	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for varied hours according to varied Φ [please refer to below sheet] at 105°C.								
	Time	Φ	5	6.3	8	10	12.5~13	14.5~16	18
		hours	4000	4000	5000	6000	7000	8000	8000
	Capacitance Change	within ±20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	within ±20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	IEC 60384-4(JIS C5101-4)								

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	120	1K	10K	100K
5.6 ~ 180	0.40	0.75	0.90	1.00
220 ~ 560	0.50	0.85	0.94	1.00
680 ~ 1800	0.60	0.87	0.95	1.00
2200 ~ 3900	0.75	0.90	0.95	1.00
4700 ~ 18000	0.85	0.95	0.98	1.00

HF series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,-10°C 100kHz.

Cap (μF)	V	Item	6.3				10				16				25			
			D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C			20°C	-10°C			20°C	-10°C	
47																		
100						5x11	0.500	1.000	170									
150		5x11	0.500	1.000	170					6.3x11	0.250	0.500	295	6.3x11	0.250	0.500	295	
220						6.3x11	0.240	0.500	295	6.3x15	0.170	0.360	410	6.3x15	0.180	0.350	420	
330		6.3x11	0.240	0.500	295	6.3x15	0.180	0.350	400	8x11.5	0.120	0.230	660	8x11.5	0.120	0.230	650	
390														8x15	0.090	0.180	750	
470		6.3x15	0.180	0.360	400	8x11.5	0.120	0.230	650	10x12.5	0.090	0.180	770	10x12.5	0.090	0.180	770	
560										8x20	0.080	0.160	830	8x20	0.079	0.150	820	
680		8x11.5	0.120	0.240	655	8x15	0.090	0.180	830	10x16	0.067	0.136	1070	10x20	0.052	0.104	1230	
820		10x12.5	0.091	0.180	860	10x12.5	0.090	0.180	860					10x20	0.052	0.104	1230	
1000		8x15	0.091	0.190	830	8x20	0.080	0.150	1010	10x20	0.052	0.103	1270	10x25	0.044	0.090	1450	
1200		10x16	0.067	0.136	1250	10x16	0.067	0.136	1250	10x20	0.052	0.103	1270	10x30	0.037	0.073	1720	
1500		10x20	0.051	0.103	1420	10x20	0.052	0.103	1420	10x25	0.045	0.090	1450	12.5x20	0.037	0.076	1670	
1800						10x25	0.044	0.090	1640	10x30	0.036	0.074	1700					
2200		10x25	0.044	0.090	1640	10x30	0.036	0.074	1930	12.5x20	0.038	0.076	1670	12.5x25	0.030	0.060	1960	
2700		10x30	0.038	0.075	1930					12.5x30	0.024	0.050	2330	12.5x30	0.024	0.050	2320	
3300		12.5x20	0.037	0.075	1650	12.5x20	0.038	0.077	1650	16x20	0.028	0.058	2220	16x20	0.029	0.068	2220	
3900		12.5x25	0.030	0.060	1960	12.5x25	0.030	0.060	1960	12.5x35	0.022	0.043	2520	12.5x35	0.022	0.043	2520	
4700		12.5x30	0.024	0.050	2320	12.5x30	0.024	0.050	2320	16x25	0.022	0.043	2570	16x25	0.022	0.043	2570	
5600		12.5x35	0.021	0.043	2520	16x20	0.028	0.058	2230	16x31.5	0.018	0.038	3020	16x31.5	0.019	0.038	3020	
6300						16x25	0.022	0.044	2570	18x20	0.028	0.055	2490	18x20	0.027	0.056	2500	
6800		16x20	0.028	0.057	2230	18x20	0.027	0.056	2490	16x35.5	0.017	0.034	3160	16x35.5	0.017	0.033	3140	
8200		16x31.5	0.019	0.038	3020	18x20	0.027	0.056	2490	18x25	0.020	0.040	2750	18x25	0.020	0.040	2750	
10000		18x25	0.020	0.040	2750	16x35.5	0.017	0.034	3150	18x31.5	0.017	0.035	3350	18x31.5	0.018	0.035	3340	
12000		18x31.5	0.017	0.035	3340	18x31.5	0.017	0.036	3340	16x40	0.015	0.030	3720	16x40	0.015	0.030	3720	
15000		18x35.5	0.016	0.031	3670	18x35.5	0.016	0.031	3670	18x25	0.200	0.040	2750	18x35.5	0.016	0.031	3690	
18000		18x40	0.015	0.030	3810					18x35.5	0.016	0.032	3670	18x35.5	0.016	0.031	3690	

HF

HF series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,-10°C 100kHz.

Cap (μF)	V	35				50				63				100				
		Item	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C			20°C	-10°C			20°C	-10°C	
5.6														5x11	2.000	5.200	90	
12										5x11	1.800	4.000	145		1.200	3.100	120	
18															0.620	1.800	200	
22						5x11	0.900	1.800	165			1.000	2.000	250	8x11.5	0.540	1.600	250
27															10x12.5	0.480	1.400	350
33		5x11	0.490	1.000	185										8x15	0.740	2.000	320
39															10x16	0.620	1.650	460
47											0.600	1.400	340	8x20	0.280	0.750	450	
56			0.250	0.500	300													
68							0.310	0.620	370						10x20	0.270	0.710	580
100			0.170	0.360	410	8x11.5	0.210	0.430	490	8x11.5	0.340	0.740	410	10x25	0.200	0.530	760	
										8x15	0.260	0.650	540	10x30	0.160	0.430	910	
										10x12.5	0.254	0.510	550	12.5x20	0.160	0.430	840	
120						8x15	0.160	0.320	640									
						10x12.5	0.150	0.320	630	10x16	0.190	0.380	620	12.5x25	0.120	0.320	1010	
150		8x11.5	0.120	0.230	625					8x20	0.210	0.510	690	12.5x20	0.250	0.650	950	
180						8x20	0.120	0.240	740									
						10x16	0.130	0.250	860	10x20	0.144	0.290	890	12.5x30	0.130	0.360	1220	
220		8x15	0.090	0.180	740													
		10x12.5	0.090	0.170	770	10x20	0.087	0.180	1060	10x25	0.130	0.260	1060	12.5x35	0.088	0.250	1420	
															16x25	0.082	0.230	1400
270		8x20	0.079	0.160	820										12.5x40	0.060	0.180	1600
															18x20	0.085	0.240	1400
330		10x16	0.067	0.136	1060	10x25	0.073	0.15	1260	10x30	0.090	0.180	1310	16x31.5	0.059	0.180	1740	
										12.5x20	0.084	0.170	1290	18x25	0.070	0.200	1610	
390						10x30	0.054	0.11	1520									
						12.5x20	0.058	0.12	1490	12.5x25	0.070	0.140	1730	16x35.5	0.053	0.150	1950	
															18x31.5	0.059	0.170	1820
470		10x20	0.052	0.103	1230					12.5x30	0.054	0.110	2100					
										16x20	0.058	0.120	1780	16x40	0.056	0.160	2100	
560		10x25	0.044	0.090	1450	12.5x25	0.044	0.087	1850									
															18x35.5	0.053	0.150	2150
680		10x30	0.037	0.073	1700	12.5x30	0.038	0.078	2230	12.5x35	0.046	0.093	2280					
										16x25	0.050	0.100	2170	18x40	0.042	0.120	2300	
		12.5x20	0.038	0.076	1670	16x20	0.047	0.095	1850	18x20	0.054	0.110	2300					
820						12.5x35	0.033	0.065	2300	12.5x40	0.042	0.084	2570					
						18x20	0.042	0.083	1990	16x31.5	0.042	0.085	2680					
										18x25	0.042	0.085	2690					
1000		12.5x25	0.030	0.060	1960	12.5x40	0.029	0.058	2510									
						16x25	0.034	0.068	2250	16x35.5	0.035	0.071	2780					
1200		12.5x30	0.024	0.050	2320	16x31.5	0.027	0.055	2710	16x35.5	0.030	0.060	2860					
		16x20	0.028	0.057	2220	18x25	0.028	0.057	2610	18x31.5	0.032	0.064	2960					
1500		12.5x35	0.022	0.043	2520	16x35.5	0.025	0.050	2810	18x35.5	0.030	0.060	3120					
1800		12.5x40	0.016	0.034	2880	164x0	0.020	0.042	3210									
		16x25	0.022	0.044	2570					18x40	0.025	0.050	3220					
		18x20	0.027	0.055	2510	18x31.5	0.025	0.050	3010									
2200		16x31.5	0.018	0.038	3020													
		18x25	0.020	0.040	2750	18x35.5	0.022	0.045	3110									
2700		16x35.5	0.017	0.033	3160													
		18x31.5	0.018	0.036	3340	18x40	0.020	0.040	3410									
3300		16x40	0.015	0.030	3720													
		18x35.5	0.016	0.031	3690													
3900		18x40	0.015	0.030	3810													

SG series

- High ripple current Very Low impedance at High frequency range.
- 2000~5000 hours Long life at 105°C .
- RoHS Compliance
- 高紋波電流、高頻超低阻抗。
- 105°C 2000~5000小時長壽命產品。



SPECIFICATIONS

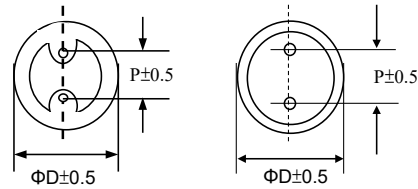
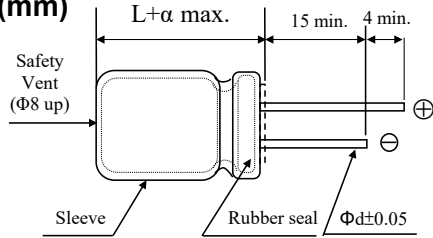
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	±20% (120Hz , 20°C)								
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C								
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC								
Leakage Current 洩漏電流	I≤0.01CV or 3 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20°C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	50	63~80	100
	tan δ(Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz								
	Rated Voltage(V)	6.3	10	16	25	35	50	63~80	100
	Z(-25°C)/Z(20°C)	2	2	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	3	3	3	3	3	3	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours (ΦD≤6.3:2,000 hours;ΦD=8:3,000 hours;ΦD=10:4,000 hours) at 105°C.								
	Capacitance Change	within ±25% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	IEC 60384-4(JIS C5101-4)								

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	50	120	1K	10K	100K
≤ 33	0.35	0.40	0.75	0.90	1.00
47 ~ 330	0.45	0.50	0.85	0.95	1.00
470 ~ 1000	0.50	0.60	0.90	0.95	1.00
1200 ~ 6800	0.65	0.80	0.90	0.95	1.00

SG series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16
P	2.0	2.5	3.5	5.0	5.0	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8

α	(L < 20)	1.5
	(L ≥ 20)	2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	6.3			10			16		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
33								5x7	210	0.450
56					5x7	210	0.440	5x11	250	0.300
68		5x7		310					300	0.240
100					5x11	250	0.300			
120						300	0.230	6.3x11	405	0.130
								8x7	380	0.150
150		5x11		250						
		6.3x7		300						
180					8x7	380	0.150			
220		8x7		380	6.3x11	405	0.130			
330		6.3x11		405	8x11.5	600	0.085	8x11.5	760	0.072
470								8x15	995	0.056
					8x11.5	760	0.072	10x12.5	1030	0.053
560		8x11.5		760						
680					8x15	995	0.056	8x20	1250	0.041
								10x16	1430	0.038
820		8x15		995						
1000		10x12.5		1030	8x20	1250	0.041	10x20	1820	0.023
					10x16	1430	0.038			
1200		8x20		1250	10x20	1820	0.023	10x25	2150	0.022
		10x16		1430						
1500		10x20		1820	10x25	2150	0.022	12.5x20	2360	0.021
2200		10x25		2150	12.5x20	2360	0.021	12.5x25	2770	0.018
								12.5x30	3140	0.016
2700								16x20	3290	0.018
3300		12.5x20		2360	12.5x25	2770	0.018	12.5x35	3400	0.015
3900		12.5x25		2770	12.5x30	3290	0.016	16x25	3460	0.016
					16x20	3140	0.018			
4700		12.5x30		3290	12.5x35	3400	0.015			
5600		12.5x35		3350						
		16x20		3400	16x25	3460	0.016			
6800		16x25		3460						

Cap (μF)	V	25			35			50		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
10								5x7	210	210
22								5x11	238	238
								6.3x7	300	300
27		5x7		210		210	0.470		238	238
33					5x11	250	0.300	8x7	380	380
39					6.3x7	300	0.250			
47		5x11		250						
56		6.3x7		300	6.3x11	405	0.130	6.3x11	385	385
					8x7	380	0.150			
100		6.3x11		405				8x11.5	724	724
		8x7		380						
120								8x15	950	950
150					8x11.5	760	0.072	10x12.5	979	979
180								8x20	1190	1190
220		8x11.5		760	8x15	995	0.056	10x16	1370	1370
					10x12.5	1030	0.053			

SG

SG series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V Item	25			35			50		
		D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
270					8x20	1250	0.041	10x20	1580	0.030
330		8x15	995	0.056	10x16	1430	0.038	10x25	1870	0.028
		10x12.5	1030	0.053						
470		8x20	1250	0.041	10x20	1820	0.023	12.5x20	2050	0.027
		10x16	1430	0.038						
560						2150	0.022	12.5x25	2410	0.023
680		10x20	1820	0.023	12.5x20	2360	0.021	12.5x30	2860	0.021
820		10x25	2150	0.022	12.5x20	2450	0.02	12.5x35	2960	0.025
								16x20	2730	0.023
1000		12.5x20	2360	0.021	12.5x25	2770	0.018	16x25	3010	0.021
1200		12.5x20	2360	0.021	12.5x30	3140	0.016			
					16x20	3290	0.018			
1500		12.5x25	2770	0.018	12.5x35	3400	0.015			
1800		12.5x30	3140	0.016	16x25	3460	0.016			
		16x20	3290	0.018						
2200		12.5x35	3400	0.015						
2700		16x25	3460	0.016						

Cap (μF)	V Item	63			80			100		
		D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
6.8								5x11	125	1.400
15		5x11	165	0.880				6.3x11	205	0.570
27								8x11.5	355	0.360
33		6.3x11	265	0.350						
39								8x15	450	0.250
47								10x12.5	480	0.170
56		8x11.5	500	0.220				8x20	565	0.190
68					10x12.5	480	0.170	10x16	600	0.110
82		8x15	665	0.160				10x20	800	0.084
		10x12.5	690	0.110						
100					10x16	600	0.110	12.5x16	750	0.110
120		8x20	820	0.120	10x20	800	0.084	10x25	900	0.069
		10x16	950	0.076						
150					10x25	900	0.069	12.5x20	1100	0.062
					12.5x16	750	0.110			
180		10x20	1150	0.056						
		12.5x16	1150	0.072						
220		10x25	1350	0.046	12.5x20	1100	0.062	12.5x25	1250	0.047
								16x20	1350	0.048
270		12.5x20	1500	0.041						
330					12.5x25	1250	0.047	12.5x30	1500	0.042
					16x20	1350	0.048	12.5x35	1650	0.036
								18x20	1500	0.045
390		12.5x25	1900	0.031	12.5x30	1500	0.042	12.5x40	1700	0.032
470		12.5x30	2300	0.028	12.5x35	1650	0.036	16x31.5	1850	0.032
		16x20	2000	0.032	16x25	1700	0.038	18x25	1750	0.036
					18x20	1500	0.045			
560		12.5x35	2500	0.024	12.5x40	1800	0.032	16x35.5	2000	0.029
								18x31.5	1900	0.030
680		12.5x40	2800	0.021	16x31.5	1850	0.032	16x40	2200	0.027
		16x25	2600	0.025	18x25	1750	0.036	18x35.5	2200	0.027
		18x20	2500	0.030						
820		16x31.5	2850	0.021	16x35.5	2000	0.029	18x40	2700	0.026
		18x20	2800	0.024	18x31.5	1900	0.030			
1000		16x35.5	2900	0.019	16x40	2200	0.027			
					18x35.5	2200	0.027			
1200		16x40	3400	0.018	18x40	2700	0.026			
		18x31.5	3300	0.020						
1500		18x35.5	3400	0.018						
1800		18x40	3400	0.017						

SG

SX series

- High ripple and Low impedance, long life: 4000~5000hrs at 105°C
- Suited for LCD TV BLU Inverter, SMPS, IP-Board, Adaptor etc..
- 105°C高紋波低阻抗品，壽命：4000~5000Hrs
- 高頻超低阻抗
- 適用背光模組轉換器開關電源，適配器等。



SPECIFICATIONS

Items 項目	Characteristics 特性					
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz, 20°C)					
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					
Rated Voltage Range 額定電壓範圍	10 ~ 50VDC					
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)					
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C					
	Rated Voltage(V)	10	16	25	35	50
	tan δ(Max)	0.19	0.16	0.14	0.12	0.10
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.						
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.					
	Rated Voltage(V)	10	16	25	35	50
	Z(-25°C)/Z(20°C)	2	2	2	2	2
	Z(-40°C)/Z(20°C)	3	3	3	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours (ΦD≤8 & Size:10x13; 4,000 hours) at 105°C.					
	Capacitance Change	Within ± 30% of Initial Value				
	tan δ	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.					
	Capacitance Change	Within ± 25% of Initial Value				
	tan δ	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Standards 參照標準	IEC 60384-4(JIS C5101-4)					

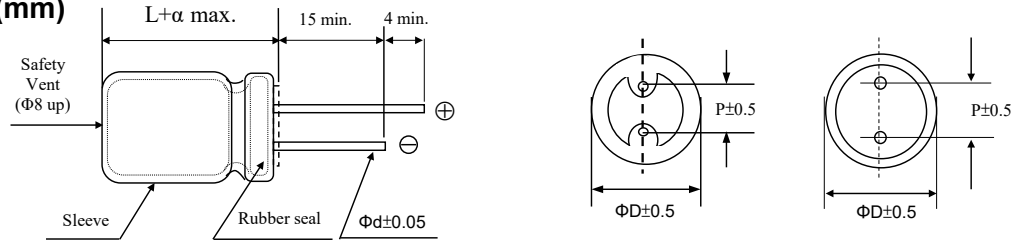
Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	120	1K	10K	100K
100 ~ 270	0.40	0.75	0.90	1.00
330 ~ 680	0.50	0.85	0.94	1.00
820 ~ 1800	0.60	0.87	0.95	1.00
2200 ~ 2700	0.75	0.90	0.95	1.00

SX

SX series

DIMENSIONS(mm)



ΦD	8	10
P	3.5	5.0
Φd	0.5	0.6

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

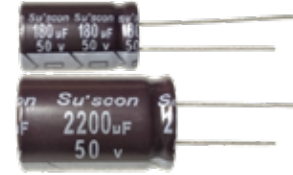
Cap (μF)	V Item	10			16			25		
		D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
330								8x11.5	1420	0.072
390								8x15	2045	0.056
470					8x11.5	1420	0.072	10x12.5	2180	0.052
560								8x20	2385	0.040
680		8x11.5	1420	0.072	8x11.5	2045	0.056	10x16	2540	0.037
					10x12.5	2180	0.052			
820								10x20	2870	0.027
1000		8x15	2045	0.056	8x20	2385	0.040	10x25	3165	0.023
1000		10x12.5	2180	0.052	10x16	2540	0.037			
1200								10x35	3580	0.020
1500		8x20	2385	0.040	10x20	2870	0.027			
		10x16	2540	0.037						
1800		10x20	2870	0.027	10x25	3165	0.023			
2200		10x25	3165	0.023	10x35	3580	0.020			
2700		10x35	3580	0.020						

Cap (μF)	V Item	35			50		
		D x L	R.C.	IMP	D x L	R.C.	IMP
100					8x11.5	1090	0.095
120					8x15	1560	0.078
150					10x12.5	1620	0.087
180					8x20	1900	0.064
220		8x11.5	1420	0.072	10x16	1990	0.056
270		8x15	2045	0.056	10x20	2330	0.041
330		10x12.5	2180	0.052	10x25	2630	0.036
390		8x20	2385	0.040			
470		10x16	2540	0.037	10x35	2960	0.032
560		10x20	2870	0.027			
680		10x25	3165	0.023			
1000		10x35	3580	0.020			

XS

MG series

- 105°C 5000 hours~6000 hours,Low impedance at high frequency range
- Smaller case size and high ripple current
- RoHS Compliance
- 105°C 5000小時~6000小時,高頻超低阻抗
- 小尺寸高紋波電流



SPECIFICATIONS

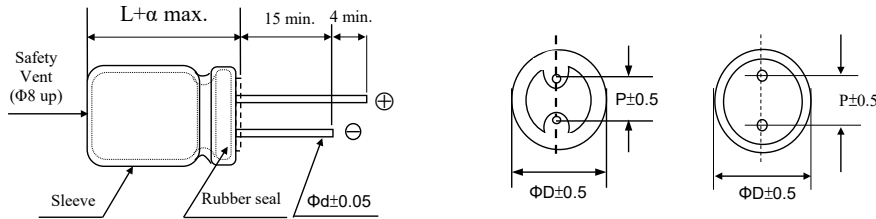
Items 項目	Characteristics 特性					
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)					
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					
Rated Voltage Range 額定電壓範圍	6.3 ~ 35VDC					
Leakage Current 洩漏電流	$I \leq 0.01CV$ or $3(\mu A)$ which is greater.(After 2 minutes application of DC rated voltage, at 20°C)					
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C					
	Rated Voltage(V)	6.3	10	16	25	35
	$\tan \delta$ (Max)	0.21	0.18	0.15	0.13	0.11
When nominal capacitance over 1000 μF , $\tan \delta$ shall be added 0.02 to the listed value with increase of every 1000 μF .						
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.					
	Rated Voltage(V)	6.3	10	16	25	35
	Z(-25°C)/Z(20°C)	2	2	2	2	2
	Z(-40°C)/Z(20°C)	3	2	2	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 6,000 hours ($\Phi D \leq 6.3:5,000$ hours) at 105°C.					
	Capacitance Change	Within ± 25% of Initial Value				
	$\tan \delta$	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.					
	Capacitance Change	Within ± 20% of Initial Value				
	$\tan \delta$	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Standards 參照標準	IEC 60384-4(JIS C5101-4)					

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	120	1K	10K	100K
47 ~ 150	0.40	0.75	0.90	1.00
220 ~ 560	0.50	0.85	0.94	1.00
680 ~ 1800	0.60	0.87	0.95	1.00
2200 ~ 3900	0.75	0.90	0.95	1.00
4700 ~ 8200	0.85	0.95	0.98	1.00

MG series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16
P	2.0	2.5	3.5	5.0	5.0	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

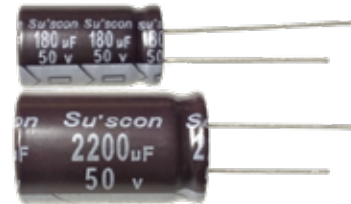
Cap (μF)	V	Item	6.3			10			16				
			D x L	IMP		R.C.	D x L	IMP		D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C		20°C	-10°C	
100													
150						5x11	0.230	0.760	360	6.3x11	0.100	0.330	450
220		5x11	0.230	0.760	360	6.3x11	0.100	0.330	450	6.3x11	0.100	0.330	550
330			0.100	0.330	460	6.3x11	0.100	0.330	550	8x11.5	0.059	0.181	830
470			0.100	0.330	550	8x11.5	0.059	0.181	820	8x11.5	0.059	0.181	990
680		8x11.5	0.059	0.181	900	8x11.5	0.059	0.181	990	8x15	0.046	0.143	1330
820		8x11.5	0.059	0.181	990	10x12.5	0.043	0.133	1250	10x12.5	0.043	0.133	1360
1000		10x12.5	0.043	0.133	1250	8x15	0.046	0.143	1330	8x20	0.031	0.105	1550
1200		10x12.5	0.043	0.133	1360	10x12.5	0.043	0.133	1360	10x16	0.030	0.095	1815
1500		8x20	0.031	0.105	1550	10x16	0.030	0.095	1650	10x20	0.019	0.057	1930
1800		10x16	0.030	0.095	1815	8x20	0.031	0.105	1550	10x20	0.019	0.057	2160
2200		10x16	0.030	0.095	1815	10x16	0.030	0.095	1815	10x25	0.017	0.051	2475
2700		10x20	0.019	0.057	2160	10x20	0.019	0.057	2160	10x25	0.017	0.051	2450
3300		10x25	0.017	0.051	2475	10x25	0.017	0.051	2450	12.5x20	0.017	0.043	2725
3900		12.5x20	0.016	0.041	2500	12.5x20	0.016	0.041	2725	12.5x25	0.015	0.038	3190
4700		12.5x20	0.016	0.041	2725	12.5x20	0.016	0.041	2725	12.5x30	0.013	0.033	3795
5600		12.5x25	0.014	0.036	3190	12.5x25	0.014	0.036	3190	16x22	0.015	0.038	3575
6800		12.5x30	0.012	0.031	3795	12.5x30	0.012	0.031	3795	16x25	0.012	0.033	3990
8200		12.5x35	0.011	0.029	3925	12.5x35	0.011	0.029	3925				
		16x22	0.014	0.036	3575								
		16x25	0.012	0.033	3990								

Cap (μF)	V	Item	25			35				
			D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C	
47						5x11	0.230	0.760	360	
68		5x11	0.230	0.076	360	6.3x11	0.100	0.330	450	
100		6.3x11	0.100	0.033	450	6.3x11	0.100	0.330	550	
150		8x11.5	0.100	0.033	550	8x11.5	0.059	0.181	820	
220		8x11.5	0.059	0.181	810	8x11.5	0.059	0.181	990	
270		8x11.5	0.059	0.181	900	8x15	0.046	0.143	1330	
330		8x11.5	0.059	0.181	990	10x12.5	0.043	0.133	1360	
390		8x15	0.046	0.143	1330	8x20	0.031	0.105	1550	
470		10x12.5	0.043	0.133	1360	10x16	0.030	0.095	1815	
560		8x20	0.032	0.110	1550	10x20	0.030	0.095	2160	
680		10x16	0.031	0.100	1815	10x25	0.027	0.080	2475	
820		10x20	0.020	0.062	2160	12.5x20	0.022	0.066	2725	
1000		10x25	0.018	0.055	2475	12.5x20	0.019	0.057	2920	
1200		12.5x20	0.017	0.059	2650	12.5x25	0.017	0.052	3190	
1500		12.5x20	0.017	0.059	2725	12.5x30	0.015	0.051	3795	
1800		12.5x25	0.015	0.038	3190	16x22	0.018	0.054	3575	
2200		12.5x30	0.012	0.031	3795	16x25	0.012	0.033	3990	
2700		16x22	0.014	0.036	3575					
3300		12.5x35	0.011	0.029	3925					
		16x25	0.012	0.033	3990					

MG

HG series

- High ripple current. Low impedance at High frequency range.
- 105°C Long life : 4000 hours~10000 hours.
- RoHS Compliance
- 高紋波電流.高頻低阻抗。
- 105°C 4000小時~10000小時長壽命產品。



SPECIFICATIONS

Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)										
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C										
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC										
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (μA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)										
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C										
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	
	tan δ (Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08	
When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.											
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.										
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	
	Impedance Ratio(Max) 阻抗比率(最大值)	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	2
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for varied hours according to varied Φ and voltage [please refer to below sheet] at 105°C.										
	Case Size	ΦD ≤ 6.3		ΦD = 8, 10		ΦD ≥ 13					
	Rated Voltage(V)	6.3~10 V	4,000hours		6,000hours		8,000hours				
		16~100 V	5,000hours		7,000hours		10,000hours				
	Capacitance Change	Within ± 25% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
Leakage Current	Initial Specified Value or less										
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.										
	Capacitance Change	Within ± 20% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Standards 參照標準	IEC 60384-4(JIS C5101-4)										

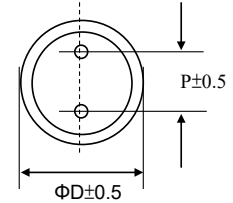
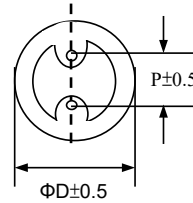
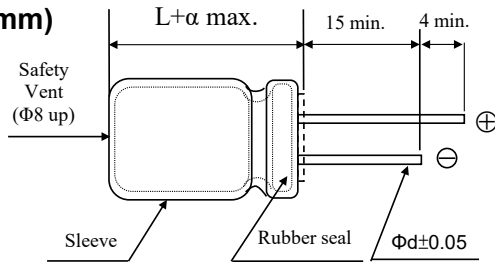
HG

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)				
	50	120	300	1K	100K
≤ 33	0.50	0.55	0.70	0.90	1.00
47 ~ 330	0.60	0.70	0.85	0.95	1.00
470 ~ 1000	0.65	0.75	0.90	0.98	1.00
1200 ~ 18000	0.70	0.80	0.95	1.00	1.00

HG series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	6.3				10				
		Item	D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C	
100						5x11	0.580	2.30	215	
150		5x11		0.570	2.30	210	5x11	0.580	2.30	230
220		6.3x11		0.250	0.900	320	6.3x11	0.220	0.870	340
330		6.3x11		0.210	0.870	340	6.3x11	0.220	0.870	380
470		8X11.5		0.150	0.580	520	8X11.5	0.130	0.520	640
680		8X11.5		0.130	0.520	645	8x15	0.086	0.350	845
	10x12.5						0.080	0.310	865	
820		10x12.5		0.080	0.320	865	10x16	0.070	0.280	1015
1000		8x15		0.085	0.350	870	8x20	0.068	0.270	1050
	10x16						0.060	0.240	1215	
1200		8x20		0.071	0.260	1050	10x20	0.045	0.180	1410
		10x16		0.060	0.240	1215				
1500		10x20		0.045	0.180	1410	10x25	0.041	0.170	1650
1800		12.5x16		0.048	0.160	1460	12.5x16	0.049	0.160	1450
							12.5x20	0.039	0.150	1710
2200		10x25		0.042	0.170	1650	10x30	0.030	0.120	1920
							12.5x20	0.035	0.120	1910
							16x16	0.042	0.120	1940
2700		10x30		0.030	0.120	1910	18x16	0.042	0.110	2220
		16x16		0.041	0.120	1945				
3300		12.5x20		0.034	0.120	1900	12.5x25	0.026	0.089	2230
3900		12.5x25		0.026	0.088	2240	12.5x30	0.023	0.078	2660
		18x16		0.042	0.110	2210	16x20	0.026	0.078	2540
4700		12.5x30		0.023	0.078	2650	12.5x35	0.020	0.065	2890
5600		12.5x35		0.020	0.065	2890	12.5x40	0.016	0.055	3360
							16x25	0.020	0.060	2940
							18x20	0.025	0.066	2870
6800		12.5x40		0.016	0.055	3350	16x31.5	0.016	0.050	3460
		16x25		0.020	0.060	2940				
		18x20		0.025	0.066	2870				
8200		16x31.5		0.016	0.050	3450	16x35.5	0.015	0.044	3610
							18x31.5	0.015	0.040	4180
10000		16x35.5		0.014	0.044	3620	16x40	0.013	0.038	4090
		18x25		0.018	0.049	3150	18x35.5	0.014	0.038	4230
12000		16x40		0.012	0.038	4090	18x40	0.011	0.032	4290
		18x31.5		0.014	0.040	4180				
15000		18x35.5		0.013	0.038	4230				
18000		18x40		0.012	0.032	4290				

HG

HG series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	16				25				
		Item	D x L	IMP		R.C.	D x L	IMP		R.C
				20°C	-10°C			20°C	-10°C	
47						5x11	0.570	2.30	210	
56		5x11	0.570	2.30	220	5x11	0.570	2.30	240	
100		6.3x11	0.210	0.820	310	6.3x11	0.210	0.870	340	
120		6.3x11	0.210	0.870	340					
220		8x11.5	0.190	0.850	510	8x11.5	0.120	0.520	650	
330		8x11.5	0.120	0.520	650	8x15	0.087	0.350	850	
						10x12.5	0.080	0.320	870	
470		8x15	0.086	0.350	840	8x20	0.069	0.270	1050	
		10x12.5	0.080	0.320	865	10x16	0.060	0.240	1210	
680		8x20	0.069	0.270	1060	10x20	0.045	0.180	1410	
		10x16	0.060	0.240	1210	12.5x16	0.049	0.160	1460	
820		10x20	0.052	0.220	1310	10x25	0.041	0.170	1660	
1,000		10x20	0.045	0.180	1410	10x30	0.030	0.120	1920	
						12.5x21	0.034	0.120	1910	
		13x16	0.050	0.160	1450					
						16x16	0.042	0.120	1940	
1,200		10x25	0.042	0.170	1650	18x16	0.043	0.110	2220	
1,500		10x30	0.030	0.120	1920	12.5x25	0.026	0.089	2240	
		12.5x21	0.035	0.120	1910					
		16x16	0.042	0.120	1940					
1,800		12.5x25	0.028	0.095	2140	12.5x30	0.024	0.078	2660	
						16x20	0.026	0.078	2540	
2,200		12.5x25	0.026	0.089	2240	12.5x35	0.020	0.065	2890	
		18x16	0.042	0.110	2220	18x20	0.025	0.066	2870	
2,700		12.5x30	0.023	0.077	2650	12.5x40	0.016	0.056	3360	
		16x20	0.026	0.078	2540	16x25	0.021	0.060	2940	
3,300		12.5x35	0.020	0.066	2890	16x31.5	0.016	0.050	3460	
						18x25	0.018	0.048	3150	
3,900		12.5x40	0.016	0.056	3350	16x35.5	0.014	0.043	3620	
		16x25	0.021	0.060	2930					
						18x31.5	0.015	0.040	4180	
4,700		18x20	0.025	0.067	2860					
		16x31.5	0.016	0.050	3450	16x40	0.014	0.044	4080	
5,600		18x25	0.018	0.049	3150	18x35.5	0.013	0.040	4230	
		16x35.5	0.015	0.044	3620	18x40	0.011	0.032	4290	
6,800		18x31.5	0.015	0.040	4180					
8,200		16x40	0.012	0.038	4080					
10,000		18x35.5	0.014	0.038	4230					
		18x40	0.011	0.032	4290					

HG

HG series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V Item	35				50			
		D x L	IMP		R.C.	D x L	IMP		R.C
			20°C	-10°C			20°C	-10°C	
1						5x11	4.00	16.0	35
2.2						5x11	2.50	10.0	50
3.3						5x11	2.20	8.80	60
4.7						5x11	1.90	7.60	100
10						5x11	1.50	6.00	120
22						5x11	0.700	2.80	180
33		5x11	0.560	2.30	220				
47		6.3x11	0.350	1.40	280	6.3x11	0.300	1.20	300
56		6.3x11	0.210	0.860	340	6.3x11	0.300	1.20	300
100		8x11.5	0.150	0.560	510	8x11.5	0.160	0.670	560
120						8x15	0.120	0.480	740
150		8x11.5	0.130	0.520	650	10x12.5	0.120	0.480	770
180		8x15	0.086	0.350	840	8x20	0.090	0.360	920
220		8x15	0.086	0.350	850	10x16	0.083	0.340	1050
		10x12.5	0.080	0.320	865				
270		8x20	0.069	0.260	1060	10x20	0.060	0.240	1230
						12.5x16	0.062	0.200	1250
330		10x16	0.060	0.240	1210	10x25	0.053	0.220	1450
470		10x20	0.045	0.180	1410	10x30	0.043	0.170	1695
						12.5x20	0.044	0.150	1670
						16x16	0.054	0.170	1695
560		10x25	0.041	0.160	1650	12.5x25	0.033	0.110	1950
						18x16	0.053	0.150	1940
680		10x30	0.030	0.120	1920	12.5x30	0.030	0.100	2320
		12.5x20	0.033	0.132	1910				
		16x16	0.041	0.143	1950				
820		12.5x25	0.028	0.088	2100	12.5x35	0.023	0.081	2520
						16x20	0.033	0.100	2220
						12.5x40	0.020	0.069	2930
1000		18x16	0.043	0.110	2220	16x25	0.025	0.075	2555
						18x20	0.036	0.097	2490
						12.5x30	0.023	0.078	2660
1200		16x20	0.026	0.078	2530	18x25	0.025	0.070	2750
		1500	12.5x35	0.020	0.065	2880	16x35.5	0.018	0.056
1800		12.5x40	0.016	0.056	3350	16x40	0.016	0.048	3720
		16x25	0.020	0.060	2940				
		18x20	0.025	0.066	2870	18x31.5	0.021	0.057	3640
2200		16x31.5	0.016	0.050	3500	18x35.5	0.017	0.046	3690
		18x25	0.019	0.049	3140				
2700		16x35.5	0.015	0.044	3620	18x40	0.014	0.038	3810
		18x31.5	0.014	0.040	4180				
3300		16x40	0.013	0.038	4090				
		18x35.5	0.014	0.040	4230				
3900		18x40	0.012	0.033	4290				

HG series

STANDARD RATINGS

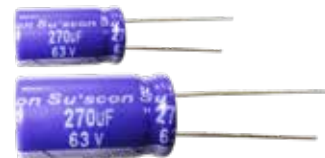
DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V Item	63				80			
		D x L	IMP		R.C.	D x L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
15		5x11	0.880	3.50	165				
33		6.3x11	0.350	1.40	265				
47		8x11.5	0.220	0.880	500				
56			0.220	0.880	500				
68						10x12.5	0.170	0.660	480
82		8x15	0.160	0.640	665				
		10x12.5	0.110	0.440	690				
100		10x16	0.078	0.330	950	10x16	0.110	0.470	600
120		8x20	0.120	0.480	820	10x20	0.084	0.340	800
		10x16	0.076	0.310	950				
150						10x25	0.069	0.280	900
						12.5x16	0.110	0.340	750
180		10x20	0.056	0.230	1150				
		12.5x16	0.072	0.290	1150				
220		10x25	0.046	0.190	1350	12.5x20	0.062	0.180	1100
270		12.5x20	0.041	0.130	1500				
330		12.5x25	0.032	0.093	1900	12.5x25	0.047	0.140	1250
						16x20	0.048	0.150	1350
390		12.5x25	0.031	0.093	1900	12.5x30	0.042	0.130	1500
						12.5x35	0.036	0.110	1650
470		12.5x30	0.028	0.084	2300	12.5x35	0.036	0.110	1650
		16x20	0.032	0.096	2000	16x25	0.038	0.120	1700
560		12.5x35	0.024	0.072	2500	18x20	0.045	0.140	1500
						12.5x40	0.032	0.095	1800
						16x25	0.025	0.075	2600
680		12.5x40	0.021	0.063	2800	18x25	0.036	0.110	1750
		18x20	0.030	0.090	2500				
820		16x31.5	0.021	0.063	2850	16x35.5	0.029	0.086	2000
		18x25	0.024	0.072	2800	18x31.5	0.030	0.090	1900
1000		16x35.5	0.019	0.057	2900	16x40	0.027	0.081	2200
		18x31.5	0.021	0.063	2900	18x35.5	0.027	0.081	2200
1200		16x40	0.018	0.054	3400	18x40	0.026	0.077	2700
		18x31.5	0.020	0.060	3300				
1500		18x35.5	0.018	0.054	3400				
1800		18x40	0.017	0.051	3500				

Cap (μF)	V Item	D x L	100		R.C.
			IMP		
			20°C	-10°C	
6.8		5x11	1.40	5.60	125
15		6.3x11	0.570	2.30	205
27		8x11.5	0.360	1.40	355
39		8x15	0.250	1.00	450
47		10x12.5	0.170	0.660	480
56		8x20	0.190	0.760	565
68		10x16	0.110	0.470	600
82		10x20	0.084	0.340	800
100		12.5x16	0.110	0.340	750
120		10x25	0.069	0.280	900
150		12.5x20	0.062	0.180	1100
220		12.5x25	0.047	0.140	1250
		16x20	0.048	0.150	1350
270		12.5x30	0.042	0.130	1500
		12.5x35	0.036	0.110	1650
330		16x25	0.038	0.120	1700
		18x20	0.045	0.140	1500
390		12.5x40	0.032	0.095	1800
470		16x31.5	0.032	0.095	1850
		18x25	0.036	0.110	1750
560		16x35.5	0.029	0.086	2000
		18x31.5	0.030	0.090	1900
680		16x40	0.027	0.081	2200
		18x35.5	0.027	0.081	2200
820		18x40	0.026	0.077	2700

HX series

- 105°C High ripple and low impedance, long life: 6000 hours~10000 hours
- Suited for LCD TV BLU Inverter, SMPS, IP-Board, Adaptor etc..
- 105°C耐高纹波，低阻抗，寿命：6000小時~10000小时。
- 適用背光模组转换器 开关电源，适配器等。



SPECIFICATIONS

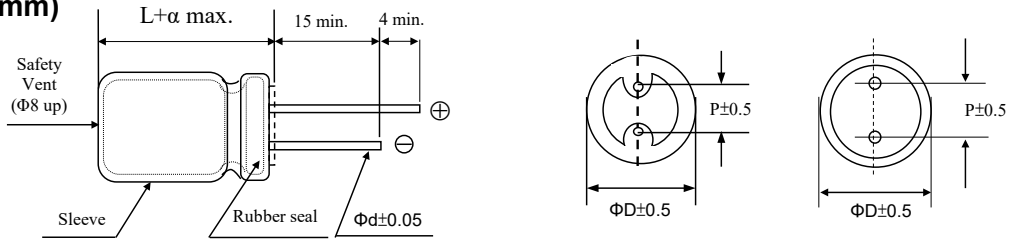
Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz, 20°C)									
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC									
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	tan δ (Max)	0.22	0.19	0.16	0.14	0.12	0.1	0.09	0.08	0.08
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.										
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100
	Impedance Ratio(Max) 阻抗比率(最大值)	Z(-25°C)/Z(20°C)	2	2	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	3	3	3	3	3	3	3	3	3
Load Life 負荷壽命	Case size(ΦD)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for varied hours according to varied ϕ and voltage [please refer to below sheet] at 105°C.								
			6.3V			10~50V			63~100V	
	Φ5~Φ6.3	6000hrs			7000hrs			6000hrs		
	Φ8x11.5L	8000hrs			9000hrs			8000hrs		
	Φ8x15L~Φ20L	9000hrs			10000hrs			9000hrs		
	Φ10x12.5L	9000hrs								
	Φ10x16L~25L>Φ10	10000hrs								
	Rated Voltage(V)	6.3~10 V			16~100 V					
	Capacitance Change	Within ± 30% of Initial Value			Within ± 25% of Initial Value					
	tan δ	200% or less of Initial Specified Value								
Leakage Current	Initial Specified Value or less									
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	IEC 60384-4(JIS C5101-4)									

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	120	1K	10K	100K
5.6 ~ 180	0.40	0.70	0.90	1.00
220 ~ 560	0.50	0.85	0.94	1.00
680 ~ 1800	0.60	0.87	0.95	1.00
2200 ~ 3900	0.75	0.90	0.95	1.00
4700 ~ 18000	0.85	0.95	0.98	1.00

HX series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5	5	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	6.3			10			16			25		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
68											5x11	450	0.380
120								5x11	460	0.380			
150					5x11	460	0.380				6.3x11	700	0.170
220		5x11	350	0.380									
270								6.3x11	700	0.160			
330					6.3x11	700	0.160				8x11.5	1200	0.075
470											8x11.5	1200	0.075
560								8x11.5	1200	0.075	10x12.5	1700	0.052
680					8x11.5	1200	0.075	8x15	1600	0.059	8x20	1970	0.040
					8x15	1600	0.058	8x15	1610	0.059	10x16	2000	0.037
								10x12.5	1700	0.053			
820		8x11.5	945	0.074	8x15	1610	0.058	8x20	1970	0.040	10x20	2500	0.028
1000					8x20	1960	0.041	10x16	2000	0.038	12.5x16	2400	0.110
					10x12.5	1700	0.053						
1200		8x15	1250	0.059	8x20	1970	0.040	10x16	2000	0.037	10x25	2910	0.026
1200		10x12.5	1330	0.053	10x16	2000	0.037						
1500		8x20	1510	0.041				10x20	2520	0.027	12.5x20	2610	0.024
								12.5x16	2400	0.035			
1800		10x16	1765	0.037	10x20	2520	0.027	10x25	2910	0.026	12.5x25	3200	0.019
					12.5x16	2400	0.035						
2200					10x25	2910	0.023	12.5x20	2610	0.024	12.5x30	3660	0.018
											16x20	3330	0.021
2700		10x20	1965	0.027	12.5x20	2610	0.024	12.5x25	3200	0.018	12.5x35	4120	0.016
		12.5x16	1900	0.035									
3300		10x25	2260	0.026	12.5x25	3060	0.090	12.5x30	3660	0.018	16x25	3810	0.017
								16x20	3250	0.021	18x20	3450	0.020
3900		12.5x20	2485	0.024	12.5x25	3200	0.019	16x20	3330	0.021			
4700		12.5x25	2910	0.019	12.5x30	3660	0.018	16x25	3650	0.017	16x31.5	4100	0.016
					16x20	3330	0.021	18x20	3450	0.020	18x25	3880	0.016
5600		12.5x25	2910	0.019	12.5x35	4120	0.016	16x25	3810	0.017	16x35.5	4280	0.014
					18x20	3450	0.020				18x31.5	4190	0.014
6800		12.5x30	3450	0.018	16x25	3810	0.017	16x31.5	4100	0.016	16x40	4580	0.013
		16x20	3250	0.021				18x25	3880	0.016	18x35.5	4380	0.012
8200		12.5x35	3570	0.016	16x31.5	4100	0.016	16x35.5	4280	0.014	18x40	4960	0.011
		18x20	3450	0.020	18x25	3880	0.016	18x31.5	4190	0.014			
10000		16x25	3630	0.017	16x35.5	4280	0.014	16x40	4580	0.013			
					18x31.5	4190	0.014	18x35.5	4380	0.012			
12000		16x31.5	4100	0.016	16x40	4580	0.013	18x40	4960	0.011			
		18x25	3880	0.016	18x35.5	4380	0.012						
15000		16x35.5	4280	0.014	18x40	4960	0.011						
		18x31.5	4190	0.014									
18000		16x40	4580	0.013									
		18x35.5	4380	0.012									
22000		18x40	4960	0.011									

HX

HX series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V Item	35			50			63		
		D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
8.2										
12										
18								5x11	240	0.520
27					5x11	300	0.480			
33										
39								6.3x11	420	0.240
47		5x11	450	0.380				6.3x11	430	0.240
56										
					6.3x11	700	0.180			
68								8x11.5	720	0.150
82								8x11.5	720	0.150
100		6.3x11	700	0.170	8x11.5	1200	0.085	8x15	990	0.100
120								8x20	1200	0.077
					8x15	1600	0.065	10x12.5	990	0.090
150					10x12.5	1280	0.073	8x20	1200	0.077
180		8x11.5	1200	0.075	8x20	1960	0.049	10x16	1200	0.061
220										
		8x15	1600	0.059	10x16	1650	0.053			
270		10x12.5	1700	0.053				10x20	1570	0.045
								12.5x16	1570	0.058
330		8x20	1970	0.040	10x20	2060	0.038	10x25	1990	0.037
					12.5x16	2160	0.045			
390		10x16	2000	0.038	10x25	2420	0.032	12.5x20	1990	0.033
470										
		10x20	2500	0.028	12.5x20	2300	0.032	12.5x25	2450	0.043
560										
		12.5x16	2400	0.035				12.5x25	2460	0.026
		10x20	2520	0.027				16x20	2150	0.035
680										
		10x25	2910	0.026	12.5x25	2800	0.025	12.5x30	2760	0.024
								16x20	2380	0.027
820		12.5x20	2610	0.025	12.5x30	3370	0.023	12.5x35	3040	0.022
					16x20	3070	0.026	18x20	2530	0.026
1000					12.5x35	3810	0.021	16x25	2890	0.024
					16x25	3010	0.022			
1200		12.5x25	3200	0.019	16x25	3510	0.022	16x31.5	3280	0.02
					18x20	3120	0.025	18x25	2930	0.022
1500		12.5x30	3660	0.018	16x31.5	4030	0.019	16x35.5	3440	0.018
		16x20	3330	0.021	18x25	3530	0.021	18x31.5	3380	0.018
1800		12.5x35	4120	0.016	16x35.5	4220	0.016	16x40	3690	0.016
		16x25	3810	0.170				18x35.5	3550	0.017
		18x20	3450	0.020						
2200					16x40	4500	0.014	18x40	3930	0.015
					18x31.5	4080	0.016			
2700		16x31.5	4100	0.016	18x35.5	4270	0.013			
		18x25	3880	0.016						
3300		16x35.5	4280	0.014	18x40	4850	0.012			
		18x31.5	4190	0.014						
3900		16x40	4580	0.013						
		18x35.5	4380	0.012						
4700		18x40	4960	0.011						

HX

HX series

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V Item	80			100		
		D x L	R.C.	IMP	D x L	R.C.	IMP
8.2					5x11	235	0.720
12		5x11	235	0.072			
18					6.3x11	390	0.340
27		6.3x11	390	0.340	8x11.5	450	0.430
33					8x11.5	650	0.200
39							
47		8x11.5	650	0.200	8x15	820	0.140
56					8x20	1090	0.120
		8x15	780	0.250	10x12.5	860	0.140
68		8x15	820	0.140	8x20	1090	0.012
		10x12.5	780	0.300	10x16	1050	0.090
82		8x20	1090	0.120	10x16	1150	0.090
		10x12.5	860	0.140			
100		10x12.5	860	0.140	10x20	1570	0.068
		10x16	1050	0.100	12.5x16	1400	0.090
120		10x16	1150	0.090	10x20	1570	0.068
					12.5x16	1430	0.090
150		10x16	1150	0.090	10x25	1780	0.055
180		10x20	1570	0.068	12.5x20	1800	0.048
		12.5x16	1430	0.090			
220		10x20	1570	0.068	12.5x25	2210	0.038
		10x25	1780	0.055			
270		12.5x16	1430	0.090			
		10x25	1780	0.055	12.5x30	2520	0.033
330		12.5x20	1800	0.048	16x20	2150	0.036
		12.5x20	1800	0.048	16x20	2150	0.036
390		12.5x25	1950	0.038			
		12.5x25	2210	0.038	12.5x35	2860	0.026
470					16x25	2620	0.028
		12.5x30	2520	0.033	18x20	2280	0.032
560		16x20	2150	0.036	16x31.5	2650	0.038
					12.5x40	3150	0.026
680					16x31.5	2900	0.022
		12.5x35	2860	0.026	16x31.5	2900	0.022
820					16x35.5	3150	0.020
		12.5x40	3150	0.026	18x25	2750	0.027
1000		16x25	2620	0.028	16x35.5	3150	0.020
		18x20	2280	0.032	18x31.5	3150	0.020
1200		16x31.5	2900	0.022	16x40	3710	0.018
		18x25	2750	0.027	16x40	3710	0.018
1500		18x25	2750	0.027	18x35.5	3710	0.018
		16x315.5	3150	0.02	18x40	4060	0.017
1800		16x40	3710	0.018			
		18x31.5	3150	0.02			
2200		18x35.5	3710	0.018			
2700		18x40	4060	0.017			
3300							
3900							
4700							



SHG series

- 125°C,5000 hours long life product.(4000 hours:63V to 100V)
- Best-suited to smoothing circuits and control circuits for industrial equipment power supplies of which long life and high reliability are required.
- NC terminal added items are lineup for vibration resistance.
(30G guaranteed: 20mm L or less)
- RoHS Compliance
- 125°C5000小時(4000 小時:63V to 100V)產品
- 適用於要求長壽命和高可靠性的工業設備電源的平滑電路和控制電路
- NC端子增加的項目為抗振系列。(保證30G : 20mm L 以下)



SPECIFICATIONS

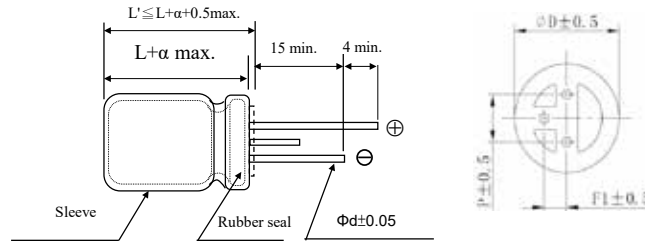
Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	- 40 ~ +125°C									
Rated Voltage Range 額定電壓範圍	10~100VDC									
Leakage Current 洩漏電流	I≤0.01CV or 3 (uA)which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	10	16	25	35	50	63	80	100	
	tan δ (Max)	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08	
	When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	10	16	25	35	50	63	80	100	
	Z(-40°C) / Z(20°C)	4	3	3	3	3	3	3	3	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours(63~100V,4000 hours) at 125°C.									
	Capacitance Change	within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 125°C without voltage applied. Before the measurement. TheCapacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	within ±30% of Initial Value								
	tan δ	300% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	IEC 60384-4(JIS C 5101-4)									

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	50~60	120	1K	10K~100K
220~330	0.55	0.65	0.85	1.00
390~1000	0.70	0.75	0.90	1.00
1200~8200	0.80	0.85	0.95	1.00

SHG series

DIMENSIONS(mm)



ΦD	12.5	16	18	20
P	5.0	7.5	7.5	10
F1	2.5	3.8	3.8	5.0
α	2.0	2.0	2.0	2.0
Φd	0.8	0.8	0.8	1.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 125°C 100kHz.IMP:(Ω max) at 20°C,100kHz.

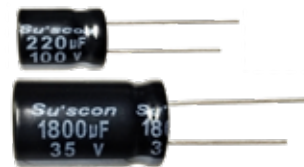
Cap (μF)	V	10			16			25			35					
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP		
470											12.5x20	1830	0.055			
1000	12.5x15	1390	0.077	12.5x20	1830	0.052	12.5x20	1830	0.052	12.5x25	2410	0.042				
				16x16	1940	0.057	12.5x25	2410	0.042	16x25	3100	0.031				
1200								12.5x20	1830	0.052	12.5x30	2570	0.038			
											16x20	2290	0.042			
1500											12.5x35	2980	0.030			
											16x31.5	3160	0.026			
											18x25	3200	0.029			
1800											12.5x40	3600	0.026			
											16x20	2290	0.042			
2200	12.5x25	2410	0.042	12.5x25	2410	0.042	12.5x30	2570	0.038	16x31.5	3160	0.026				
	16x20	2280	0.042	16x25	3100	0.031	16x25	3100	0.031	16x35.5	3590	0.025				
	18x16	2170	0.053	18x20	2490	0.038	18x20	2490	0.038	18x25	3200	0.029				
2700											12.5x35	2980	0.030			
											16x25	3100	0.031	18x31.5	3410	0.023
											18x20	2490	0.038	20x25	3500	0.029
3300	16x25	3100	0.031	16x31.5	3160	0.026	12.5x40	3600	0.026	16x40	4300	0.022				
	18x20	2490	0.038	18x25	3200	0.029	16x31.5	3160	0.026	18x35.5	4200	0.022				
							20x30	4000	0.025							
3900											16x35.5	3590	0.025			
											18x25	3200	0.029			
4700	16x31.5	3160	0.026	16x35.5	3590	0.025	18x35.5	4200	0.022	18x40	4600	0.021				
	18x25	3200	0.029	18x31.5	3410	0.023	20x25	3500	0.029	20x35.5	4700	0.021				
5600											16x40	4300	0.022			
											18x35.5	4200	0.022	20x40	5100	0.020
											20x30	4000	0.025			
6800											18x40	4600	0.021			
											20x35.5	4700	0.021			
8200											20x40	5100	0.020			

Cap (μF)	V	50			63			80			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
220											16x20	1110	0.286
330											16x25	1460	0.165
470	12.5x20	1500	0.091					16x25	1500	0.151	16x35.5	2000	0.100
560								18x25	1600	0.130	16x40	2200	0.090
820	12.5x30	2150	0.049	16x31.5	1910	0.104	18x35.5	2180	0.081	18x40	2330	0.077	
1000	16x25	2620	0.04	16x35.5	2110	0.086	18x40	2470	0.066				
1800	18x31.5	3140	0.033										
2200	18x35.5	3510	0.029										

SHG

UH series

- 130°C High temperature, high ripple current at high frequency.
- Specially designed for electronic ballast and energy saving lamp.
- Load Life: 2,000~3,000 hours.
- RoHS Compliance
- 130°C 耐高溫, 高紋波及高頻率。
- 專為電子整流器和節能燈。
- 2,000~3,000小時壽命。



SPECIFICATIONS

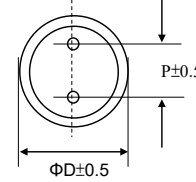
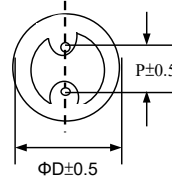
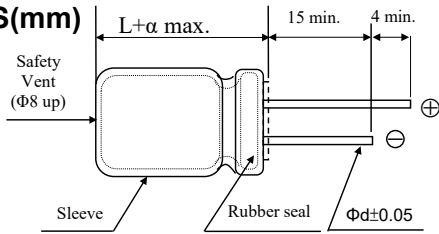
Items 項目	Characteristics 特性												
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)												
Operating Temperature Range 適用溫度範圍	- 40 ~ +130°C						- 40 ~ +130°C			- 25 ~ +130°C			
Rated Voltage Range 額定電壓範圍	10 ~ 100VDC						160 ~ 250VDC			350 ~ 450VDC			
Leakage Current 洩漏電流	I ≤ 0.01CV or 2 (µA) which is greater. (After 2 minutes application of DC rated voltage, at 20°C)						I ≤ 0.03CV + 20 (µA) (After 3 minutes application of DC rated voltage, at 20°C)						
Leakage Current 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C												
	Rated Voltage(V)	10	16	25	35	50	63	100	160	200	250	350 ~ 450	
	tan δ (Max)	0.20	0.16	0.14	0.12	0.10	0.10	0.10	0.15	0.20	0.20	0.24	
	When nominal capacitance over 1000µF, tan δ shall be added 0.02 to the listed value with increase of every 1000µF .												
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz												
	Rated Voltage(V)	10	16	25	35	50	63	100	160	200	250	350 ~ 450	
	Z(-25°C) / Z(20°C)	3	2	2	2	2	2	3	3	3	3	6	
	Z(-40°C) / Z(20°C)	8	6	4	4	4	4	4	6	6	6	-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours(ΦD≤8:2,000 hours) at 130°C.												
	Capacitance Change	within ±25% of Initial Value											
	tan δ	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 130°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.												
	Capacitance Change	within ±25% of Initial Value											
	tan δ	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)												

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)			
		50	120	1K	≥10K
≤ 100	< 100	0.50	0.70	0.85	1.00
	100 ~ 1500	0.65	0.75	0.90	1.00
	> 1500	0.75	0.80	0.95	1.00
≥ 160	1.8~5.6	0.20	0.40	0.80	1.00
	6.8~100	0.40	0.75	0.90	1.00

UH series

DIMENSIONS(mm)



ΦD	8	10	12.5	16
P	3.5	5.0	5.0	7.5
Φd	0.5	0.6	0.6	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL (mm); R.C.: (mA rms) at 130°C, 100kHz.

Cap (μF)	V	10		16		25		35		50		63	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
3.3										8x11.5	70	8x11.5	60
4.7										8x11.5	100	8x11.5	90
10										8x11.5	150	8x11.5	130
22										8x11.5	200	8x11.5	180
33										8x11.5	250	10x12.5	400
47										8x11.5	300	10x16	450
100		8x11.5	340	8x11.5	340	8x11.5	340	10x12.5	620	10x12.5	520	12.5x20	820
220		8x11.5	340	10x12.5	620	10x12.5	620	10x16	800	10x20	890	12.5x25	1000
330		10x12.5	580	10x12.5	620	10x16	800	10x20	960	12.5x20	1000	16x25	1500
470		10x12.5	620	10x16	800	10x20	960	12.5x20	1430	12.5x25	1200	16x31.5	1650
1000		10x20	960	12.5x20	1430	12.5x25	1430	16x25	1900	16x31.5	1850	16x35.5	1820
2200		12.5x25	1430	16x25	1900	16x31.5	2300	16x35.5	2300				
3300		16x25	1900	16x31.5	2300	16x35.5	2550						
4700		16x31.5	2300	16x35.5	2550								

Cap (μF)	V	100		160		200		250		350		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
2.2												10x16	68	10x16	60
3.3										10x16	84	10x16	82	10x16	72
4.7		8x11.5	80	8x11.5	80	8x11.5	80	10x16	70	10x16	105	10x16	100	10x20	90
5.6		8x11.5	118	8x11.5	100	8x15	118	10x16	130	10x16	150	10x20	160	10x20	110
6.8		8x11.5	145	8x14	130	8x15	145	10x16	150	10x20	186	10x20	180	10x20	150
10		8x11.5	200	10x16	200	10x16	200	10x20	224	10x20	215	10x20	220	12.5x20	255
22		8x11.5	220	10x20	300	10x20	350	12.5x20	400	10x25	255	12.5x20	350	12.5x25	355
33		10x12.5	260	10*20	350	12.5x20	480	12.5x25	510	12.5x25	420	12.5x25	390	16x25	580
47		10x16	330	12.5x25	528	12.5x25	528	16x20	620	16x25	650	16x25	630	16x30	625
100		12.5x20	670	16x25	716	16x25	650	16x26	680	16*35.5	780	16x35.5	680	16x40	750
220		16x25	1100	16x30	750										
330		16x31.5	1300												

UH

UR series

- High-temperature resistance , high ripple current.
- Load Life:2,000~3,000 hours at 135°C.
- RoHS Compliance
- 耐高溫、高紋波。
- 135°C 2,000~3,000小時長壽命品。



SPECIFICATIONS

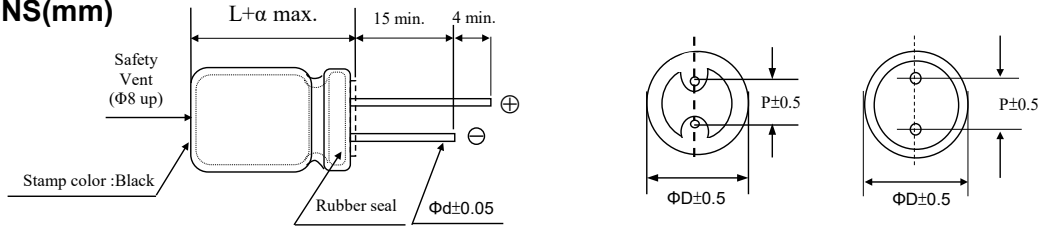
Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)						
Operating Temperature Range 適用溫度範圍	- 40 ~ +135°C						
Rated Voltage Range 額定電壓範圍	25 ~ 100VDC						
Leakage Current 洩漏電流	I≤0.03CV or 4 (μA)which is greater. (After 1 minutes application of DC rated voltage, at 20 °C)						
Leakage Current 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C						
	Rated Voltage(V)	25	35	50	63	80	100
	tan δ (Max)	0.14	0.12	0.10	0.10	0.08	0.08
	When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF .						
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz						
	Rated Voltage(V)	25	35	50	63	80	100
	Z(-25°C) / Z(20°C)	2	2	2	2	2	3
	Z(-40°C) / Z(20°C)	4	4	4	4	4	4
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours (63~100VDC:2,000 hours)at 135°C.						
	Capacitance Change	within ±30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 125°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.						
	Capacitance Change	within ±30% of Initial Value					
	tan δ	300% or less of Initial Specified Value					
	Leakage Current	Initial Specified Value or less					
Standards 參照標準	IEC 60384-4(JIS C 5101-4)						

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	120	1K	10K	100K
160	0.40	0.75	0.90	1.00
220~560	0.50	0.85	0.94	1.00
680~2000	0.60	0.87	0.95	1.00
2200~4300	0.75	0.90	0.95	1.00
4700~12000	0.85	0.95	0.98	1.00

UR series

DIMENSIONS(mm)



ΦD	12.5	16	18
P	5.0	7.5	7.5
Φd	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 125°C, 135°C 100kHz ; IMP(Ωmax)at 20°C,-40°C 100kHz.

Cap (μF)	V	Item	D x L	25				35				
				IMP		R.C.		D x L	IMP		R.C.	
				20°C	-40°C	125°C	135°C		20°C	-40°C	125°C	135°C
1300								12.5x20	0.045	0.510	2760	1690
1800								12.5x25	0.036	0.330	3460	1990
2000			12.5x20	0.046	0.510	2,740	1,670	16x20	0.038	0.300	3020	1840
2200								12.5x30	0.031	0.270	4490	2900
2400								18x20	0.037	0.250	3230	1850
2700								12.5x35	0.027	0.230	5140	3190
3000			12.5x25	0.035	0.330	3,480	2,010	16x25	0.031	0.250	4240	2750
3300			16x20	0.038	0.310	3,040	1,860	12.5x40	0.027	0.220	5780	3440
3600			12.5x30	0.031	0.270	4,490	2,900	16x30	0.025	0.200	5480	3400
3900								18x25	0.031	0.230	4400	2800
4300			18x20	0.037	0.260	3,250	1,870	16x35	0.023	0.170	6050	3600
4700			12.5x35	0.028	0.250	5,140	3,190	18x30	0.026	0.190	5570	3450
			16x25	0.032	0.260	4,260	2,870					
5100			12.5x40	0.027	0.220	5,800	3,460					
5600			16x30	0.026	0.210	5,460	3,380	16x40	0.022	0.150	6780	3900
6200			18x25	0.031	0.220	4,500	2,900	18x35	0.022	0.150	6280	3750
7500			16x35	0.024	0.170	6,050	3,600	18x40	0.020	0.130	7070	4080
			18x30	0.025	0.190	5,580	3,450					
9100			16x40	0.022	0.150	6,810	3,900					
10000			18x35	0.022	0.150	6,280	3,750					
12000			18x40	0.021	0.130	7,070	4,080					

Cap (μF)	V	Item	D x L	50				63				
				IMP		R.C.		D x L	IMP		R.C.	
				20°C	-40°C	125°C	135°C		20°C	-40°C	125°C	135°C
390								12.5x20	0.072	0.560	1640	1420
560								12.5x25	0.056	0.420	2500	2020
620			12.5x20	0.073	0.880	2400	1470					
680								16x20	0.057	0.380	2110	1880
750								12.5x30	0.046	0.330	3080	2600
820			12.5x25	0.057	0.660	3350	2260					
910								12.5x35	0.038	0.290	3730	2930
								18x20	0.047	0.300	2320	2070
1000			16x20	0.053	0.580	2940	1850	16x25	0.042	0.270	2910	2650
1100			12.5x30	0.052	0.550	4200	2500	12.5x40	0.035	0.260	4580	3230
1200								16x30	0.038	0.240	3840	3020
1300			12.5x35	0.045	0.470	4780	2750	18x25	0.037	0.230	3060	2790
			16x25	0.045	0.470	4020	2480					
			18x20	0.045	0.470	3110	2080					
1600			12.5x40	0.040	0.390	5220	3000	16x35	0.031	0.190	4560	3400
			16x30	0.039	0.400	5100	2920	18x30	0.032	0.190	4050	3190
1800			18x25	0.036	0.350	4210	2510	16x40	0.029	0.180	5160	3640
			16x35	0.032	0.300	5450	3120	18x35	0.026	0.160	5180	3650
2400			18x30	0.030	0.280	5240	3020	18x40	0.024	0.150	5600	3760
2700			16x40	0.028	0.250	5900	3390					
3000			18x35	0.027	0.230	5850	3360					
3600			18x40	0.026	0.190	6400	3680					

UR

UR series

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 125°C, 135°C 100kHz ; IMP(Ω max)at 20°C,-40°C 100kHz.

Cap (μ F)	V Item	80				100					
		D x L	IMP		R.C.		D x L	IMP		R.C.	
			20°C	-40°C	125°C	135°C		20°C	-40°C	125°C	135°C
160						12.5x20	0.094	0.790	1560	1380	
220						12.5x25	0.072	0.590	2120	1940	
270		12.5x20	0.075	0.600	1,600	1,380	16x20	0.071	0.510	2020	1650
300							12.5x30	0.052	0.410	2950	2330
360							12.5x35	0.049	0.390	3500	2600
							18x20	0.065	0.390	2240	1830
390		12.5x25	0.056	0.430	2,480	2,020	16x25	0.052	0.370	2770	2330
430							12.5x40	0.042	0.330	4120	2900
470		16x20	0.057	0.380	2,120	1890	16x30	0.045	0.310	3440	2720
510		12.5x30	0.046	0.340	3,050	2600	18x25	0.049	0.290	2900	2450
560							16x35	0.038	0.250	4170	2940
620		12.5x35	0.039	0.290	3730	2950	18x30	0.040	0.230	3900	2900
		18x20	0.048	0.300	2320	2080					
680		16x25	0.042	0.270	2910	2670					
750		12.5x40	0.035	0.260	4590	3240	16x40	0.032	0.220	5000	3360
		16x30	0.038	0.240	3840	3020					
820		18x25	0.037	0.230	3080	2810	18x35	0.034	0.200	4680	3300
910							18x40	0.030	0.180	5260	3540
1000		16x35	0.031	0.190	4570	3400					
1100		18x30	0.032	0.190	4060	3200					
1300		16x40	0.029	0.180	5170	3650					
1300		18x35	0.026	0.160	5200	3670					
1600		18x40	0.025	0.150	5640	3800					

UR

WH series

- High-temperature resistance , high ripple current.
- Load Life:2,000 hours at 150°C.
- Designed for automotive electronic circuits.
- 耐高溫、高紋波。
- 150°C 壽命2,000小時。
- 專為汽車電子迴路設計



SPECIFICATIONS

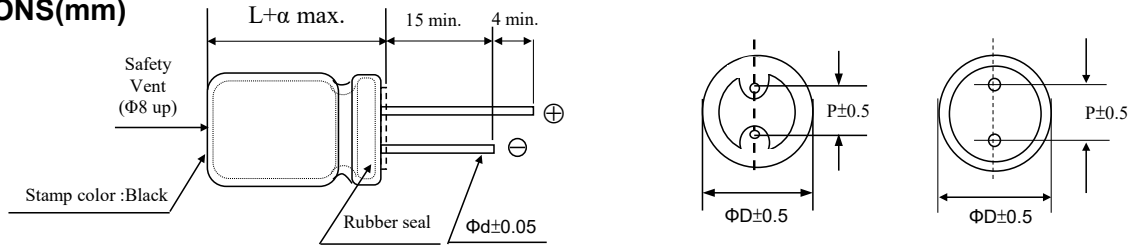
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz, 20°C)							
Operating Temperature Range 適用溫度範圍	- 40 ~ +150°C							
Rated Voltage Range 額定電壓範圍	16 ~ 100VDC							
Leakage Current 洩漏電流	I ≤ 0.03CV or 4 (μA) which is greater. (After 1 minutes application of DC rated voltage, at 20°C)							
Dissipation Factor 散逸因素(tan δ)	Rated Voltage(V)	16	25	35	50	63	80	100
	tanδ(MAX)	0.16	0.14	0.12	0.10	0.10	0.08	0.08
	When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF .							
Low Temperature Stability 低溫特性	Measurement Frequency:120Hz							
	Rated Voltage(V)	16	25	35	50	63	80	100
	Impedance Ratio(Max) 阻抗比率(最大值)	Z(-25°C) / Z(20°C)	2	2	2	2	2	2
	Z(-40°C) / Z(20°C)	4	4	4	4	4	4	4
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours (ΦD ≤ 12.5:1,000 hours) at 150°C.							
	Capacitance Change	within ±30% of Initial Value						
	tan δ	300% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 150°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.							
	Capacitance Change	within ±25% of Initial Value						
	tan δ	300% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Standards 參照標準	IEC 60384-4(JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Capacitance * working voltage (C * V)	Frequency (Hz)			
	120	1k	10k	100k
1000 ≤ CV	0.67	0.91	1.00	1.00
1000 > CV	0.50	0.83	1.00	1.00

WH series

DIMENSIONS(mm)



ΦD	10	12.5	16	18
P	5.0	5.0	7.5	7.5
Φd	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 150°C 100kHz.

Cap (μF)	V	16		25		35		50		63	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
10						10x12.5	175				
22						10x12.5	200				
33						10x12.5	225				
47						10x12.5	250				
56										10x12.5	430
68										10x16	560
100				10x12.5	250	10x20	400	10x12.5	380	10x20	710
220		10x16	300	12.5x20	500	12.5x25	600	10x20	640	12.5x25	1040
330		10x20	400	12.5x25	600	16x25	800	12.5x20	770	12.5x32	1170
470		12.5x20	600	16x25	800	16x32	1000	12.5x25	960	16x25	1280
560								12.5x32	1080	16x32	1520
680								16x25	1190	16x36	1520
1,000		16x25	800	16x32	1000	18x40	1300	16x32	1420		
2,200		16x36	1200								
3,300		18x40	1300								

Cap (μF)	V	80		100		
		Item	D x L	R.C.	D x L	R.C.
22					10x12.5	390
33		10x12.5	420		10x16	510
47		10x16	550		10x20	640
56		10x20	690		10x20	640
68		10x20	690		12.5x20	760
100		12.5x20	820		12.5x25	950
220		16x25	1250		16x32	1380
330		16x32	1480		18x32	1430
470		18x32	1530			

WH

SN series

- Non-polarity standard product, 85 °C 2000 hours.
- Suitable for DC two-way return circuit.
- RoHS Compliance
- 無極性 85°C 2000小時標準品。
- 適用於直流雙向迴路。



SPECIFICATIONS

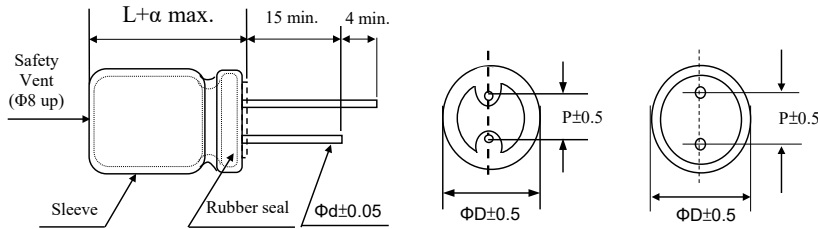
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-40 ~ +85°C								
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC								
Leakage Current 洩漏電流	I ≤ 0.03CV or 3 (μA) which is greater. (After 5 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	tan δ(Max)	0.26	0.24	0.22	0.20	0.16	0.14	0.12	0.10
When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	10	8	6	5	4	4	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours with the polarity inverted every 250 hours at 85°C.								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	IEC 60384-4 (JIS C5101-4)								

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	50	120	1K	≥ 10K
< 100	0.80	1.00	1.30	1.50
≥ 100	0.80	1.00	1.15	1.20

SN series

DIMENSIONS(mm)



ΦD	4	5	6.3	8	10	12.5	16	18
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.45	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 85°C 120 Hz.

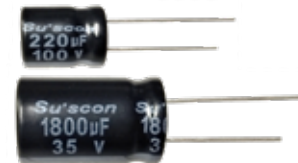
Cap (μF)	V	6.3		10		16		25	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
4.7						4x7	19	5x7	22
10						5x7	30	5x11	45
				4x7	24	5x11	42	6.3x7	35
22				5x7	41	5x11	59	6.3x7	53
				5x11	57	6.3x7	51	6.3x11	66
33		5x7	43	5x11	67	6.3x7	64	6.3x11	88
		5x11	63	6.3x7	56	6.3x11	80	8x7	74
47		6.3x7	58	6.3x7	67	6.3x7	75	8x7	87
		5x11	76	6.3x11	83	6.3x11	95	8x11.5	100
100		6.3x11	125	6.3x11	128	8x7	125	8x14	160
		8x7	96	8x7	110	8x11.5	160		
220		8x7	140	8x14	215	10x16	300	10x16	385
		8x11.5	210						
330		8x14	270	10x16	350	10x16	375	12.5x20	460
470		10x16	370	10x20	410	10x20	480	12.5x20	540
1000		10x20	650	12.5x20	720	12.5x25	855	16x26	950
2200		12.5x25	1160	16x26	1280	16x31.5	1510	18x35.5	1620
3300		16x26	1570	16x31.5	1690	18x35.5	1980		
4700		16x31.5	2020	18x35.5	2160				
6800		18x35.5	2600						

Cap (μF)	V	35		50		63		100	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.47				4x7	8.9				
				5x11	11	5x11	11	5x11	14
1.0				4x7	12	5x11	17	5x11	21
				5x11	17				
2.2				4x7	19	5x11	25	6.3x11	33
				5x11	25				
3.3				5x7	25	5x11	37	6.3x11	39
		4x7	20	5x11	28				
4.7		5x7	30	5x11	34	6.3x11	47	8x11.5	57
		5x11	34	6.3x7	38				
10		5x11	45	6.3x11	52	8x11.5	68	8x14	80
		6.3x7	48	8x7	54				
22		6.3x11	74	8x7	66	8x14	95	10x16	135
		8x7	62	8x11.5	88				
33		8x7	76	8x14	105	10x16	135	12.5x20	220
		8x11.5	105						
47		8x14	125	10x16	150	10x20	180	12.5x20	240
100		10x16	230	10x20	265	12.5x20	320	16x26	430
220		12.5x20	420	12.5x25	480	16x26	570	18x35.5	720
330		12.5x20	510	16x26	650	16x31.5	660		
470		12.5x25	660	16x31.5	840	18x35.5	965		
1000		16x31.5	1140						

NS

HN series

- Non-polarity standard product, 105°C 2000 hours.
- Suitable for DC two-way return circuit.
- RoHS Compliance
- 無極性105°C 2000小時標準品。
- 適用於直流雙向迴路。



SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3 ~ 160VDC									
Leakage Current 洩漏電流	I ≤ 0.03CV or 3 (µA) which is greater. (After 5 minutes application of DC rated voltage, at 20 °C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	160
	tan δ(Max)	0.26	0.24	0.22	0.20	0.16	0.14	0.12	0.10	0.15
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF .										
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	160
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	3
	Z(-40°C)/Z(20°C)	10	8	6	5	4	4	3	3	4
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours with the polarity inverted every 250 hours at 105°C.									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	IEC 60384-4 (JIS C5101-4)									

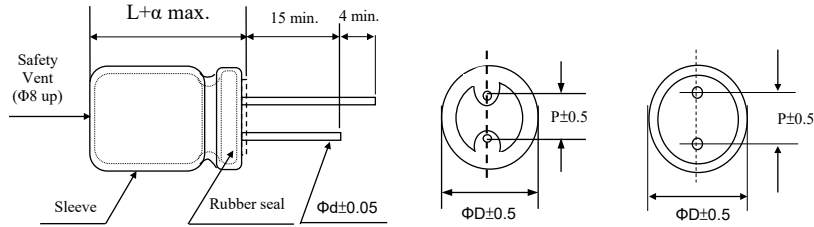
Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	50	120	1K	≥ 10K
< 100	0.80	1.00	1.30	1.50
≥ 100	0.80	1.00	1.15	1.20

HN

HN series

DIMENSIONS(mm)



ΦD	4	5	6.3	8	10	12.5	16
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5
Φd	0.45	0.5	0.5	0.5	0.6	0.6	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 120 Hz.

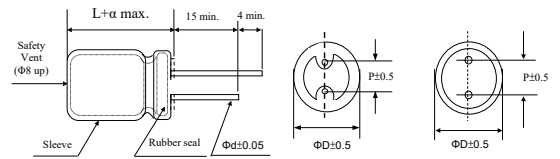
Cap (μF)	V	6.3		10		16		25	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
3.3								4x7	15
4.7						4x7	18	5x7	18
10				4x7	23	5x7	27	5x11	36
						5x11	30	6.3x7	28
22	5x7	33	5x7	36	6.3x7	41	6.3x11	55	
			5x11	42	6.3x11	52	8x7	42	
33	5x7	40	6.3x7	45	6.3x11	66	8x11.5	75	
	5x11	48	6.3x11	58	8x7	52			
47	6.3x7	49	6.3x11	70	8x11.5	90	10x12.5	96	
	6.3x11	65	8x7	55					
100	8x11.5	105	10x12.5	125	10x12.5	140	10x16	158	
220	10x12.5	168	10x16	205	10x20	285	12.5x20	306	
330	10x16	230	10x20	278	12.5x20	346	12.5x25	415	
470	10x20	330	12.5x20	370	12.5x25	460	16x26	545	
1000	12.5x25	550	16x26	665	16x26	750	16x31.5	870	

Cap (μF)	V	35		50		63		100		160	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
0.47				4x7	6.6	4x7	7.3				
				5x11	8	5x11	5	5x11	10	6.3x11	10
1				4x7	9.7	4x7	10	5x11	15	8x11.5	17
				5x11	12	5x11	15				
2.2	4x7	13	5x7	14	5x7	16	6.3x11	24	8x11.5	20	
			5x11	18	5x11	22					
3.3	5x7	16	5x7	18	6.3x7	20	8x11.5	32	8x11.5	25	
			5x11	22	6.3x11	26					
4.7	5x7	20	6.3x7	22	6.3x11	32	8x11.5	40	8x11.5	30	
	5x11	25	6.3x11	30	8x7	24					
5.6	5x11	28	6.3x11	35	6.3x11	40	8x11.5	48	8x14	35	
6.8	5x11	33	6.3x11	40	8x11.5	45	8x14	52	8x16	41	
10	6.3x11	40	8x11.5	50	8x11.5	55	10x12.5	65	10x16	55	
	8x7	30									
22	8x11.5	68	10x12.5	82	10x16	90	10x20	120	12.5x20	106	
33	10x12.5	90	10x16	100	10x20	128	12.5x20	168	12.5x20	130	
47	10x12.5	110	10x20	146	10x20	156	12.5x20	200	12.5x25	167	
56	10x16	140	12.5x20	195	12.5x20	218	12.5x20	250	16x26	206	
100	10x20	196	12.5x25	260	12.5x25	275	12.5x25	295	16x31.5	300	
220	12.5x25	365	16x26	445	16x31.5	486					
330	16x26	492	16x31.5	595							
470	16x31.5	595									

HN

HR series

- 105°C 1000 hours. Non-polarity , Low E.S.R. , ripple current high frequency and high-temperature resistance.
- Suitable for propositive amplifier of high-grade audio and horizontal compensatory return circuit of TV set.
- RoHS Compliance
- 105°C 1000小時.無極性、低阻抗、耐高紋波、高頻率、耐高溫產品。
- 適用於高級音響的前置放大器及電視機的水平補償迴路。



ΦD	10	12.5	16
P	5.0	5.0	7.5
Φd	0.6	0.6	0.8

SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C				
Rated Voltage Range 額定電壓範圍	25、35、50、100VDC				
Leakage Current 洩漏電流	After 5 minutes application of DC rated voltage, leakage current is 100µA or less.				
Dissipation Factor 散逸因素(tan δ)	0.05 Max. measured at 120Hz. 20°C				
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	25	35	50	100
	Z(-25°C)/Z(20°C)	3	3	3	3
	Z(-40°C)/Z(20°C)	4	4	4	4
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 1,000 hours at 105°C.				
	Capacitance Change	Within ± 15% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 15% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C5101-4)				

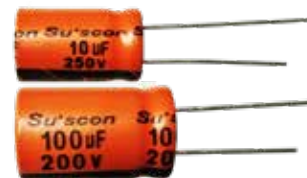
STANDARD RATINGS

DxL(mm), R.C : A(p-p)15.75KHz at 105°C, E.S.R. (Ω) at 20°C 120 Hz.

Cap (µF)	V	25			35 50 100		
		D x L	R.C.	E.S.R	D x L	R.C.	E.S.R
2.2		10x20	2.8	30.20	12.5x25	3.00	30.20
2.7		12.5x20	3.5	24.23	12.5x25	4.50	24.23
3.3		12.5x20	4.0	20.12	16x26	5.00	20.12
4.7		12.5x20	5.0	14.30	16x26	6.50	14.30
5.6		12.5x25	6.0	9.80	16x31.5	6.50	9.80
6.8		16x26	7.0	8.10	16x36	7.50	8.10
8.2		16x26	7.5	7.05	16x36	8.00	7.05
10		16x31.5	9.0	5.60			

SA/SB series

- Low leakage current product. SA:85°C 2000 hours,SB:105°C 1000hours .
- Suitable for prepositive amplifier of high-grade audio and oscillating return of TV set.
- RoHS Compliance.
- 低洩漏電流產品。SA:85°C 2000小時,SB:105°C 1000小時 .
- 適用於高級音響的前置放大器及電視機的振盪迴路。



SPECIFICATIONS

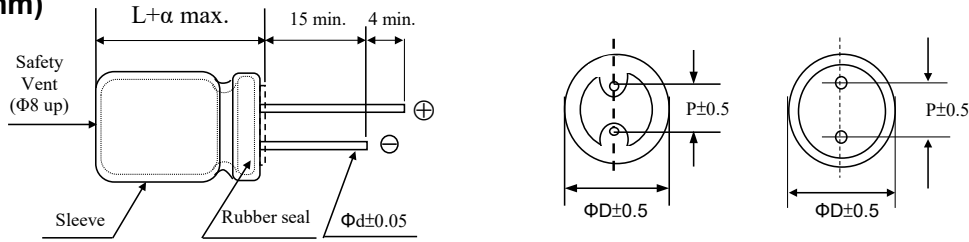
Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	SA : -40 ~ +85°C SB : -40 ~ +105°C									
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC									
Leakage Current 洩漏電流	I≤0.002CV or 0.4 (µA),which is greater. (After 2 minutes application of DC rated voltage, at 20°C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	
	tan δ(Max)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08	
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.										
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	
	Z(-40°C)/Z(20°C)	8	6	6	4	4	3	3	3	
Load Life 負荷壽命	SA	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours 85°C.								
	SB	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 1,000 hours 105°C.								
	Capacitance Change	Within ± 25% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C and 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 25% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	IEC 60384-4 (JIS C5101-4)									

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)			
	50	120	1K	10K
< 100	0.80	1.00	1.30	1.50
100 ~ 1000	0.80	1.00	1.15	1.20
> 1000	0.80	1.00	1.10	1.15

SA/SBseries

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 85°C / 105°C 120 Hz.

Cap (μF)	V	6.3		10		16		25	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
4.7								5x11	45
6.8								5x11	55
10						5x11	55	5x11	70
15						5x11	70	5x11	85
22						5x11	85	5x11	100
33						5x11	100	6.3x11	140
47				5x11	100	6.3x11	140	6.3x11	170
68				6.3x11	150	6.3x11	160	8x11.5	230
100				6.3x11	180	8x11.5	230	8x11.5	280
150				8x11.5	250	8x11.5	280	10x12.5	370
220				8x11.5	310	10x12.5	370	10x16	400
330				10x12.5	400	10x16	420	10x20	490
470	10x12.5	385	10x16	530	10x16	550	10x20	650	
680	10x12.5	480	10x16	600	10x20	720	12.5x20	800	
1000	10x16	640	10x20	780	12.5x20	900	12.5x25	1000	
1500	10x20	900	12.5x25	1020	16x26	1150	16x31.5	1270	
2200	12.5x20	1050	12.5x25	1200	16x26	1300	16x36	1440	
3300	16x26	1300	16x31.5	1420	16x36	1550	18x40	1720	
4700	16x31.5	1500	16x36	1650	18x35.5	1820			

Cap (μF)	V	35		50		63		100	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
0.47				5x11	5.0			5x11	10.1
0.68				5x11	7.3			5x11	14.5
1				5x11	10.7			5x11	19
1.5				5x11	16			5x11	23
2.2				5x11	23			5x11	28
3.3				5x11	40			5x11	45
4.7	5x11	45	5x11	45				5x11	50
6.8	5x11	55	5x11	55	5x11	59	6.3x11	65	
10	5x11	70	5x11	70	6.3x11	75	8x11.5	90	
15	5x11	85	6.3x11	95	6.3x11	100	8x11.5	110	
22	6.3x11	110	6.3x11	110	8x11.5	115	10x12.5	136	
33	6.3x11	140	8x11.5	165	8x11.5	170	10x16	180	
47	8x11.5	190	8x11.5	190	10x12.5	200	10x20	220	
68	8x11.5	230	10x12.5	250	10x16	270	10x20	290	
100	10x12.5	300	10x16	320	10x20	330	12.5x20	370	
150	10x16	400	10x20	420	12.5x20	450	12.5x25	470	
220	10x20	440	12.5x20	490	12.5x20	550	16x26	580	
330	12.5x20	550	12.5x20	600	12.5x25	710	16x31.5	730	
470	12.5x25	680	12.5x25	750	16x26	850	18x35.5	910	
680	12.5x25	800	16x26	910	16x31.5	1050			
1000	16x26	1110	16x31.5	1140	18x35.5	1330			
1500	16x31.5	1390	18x40	1480					
2200	18x35.5	1580							

SA/SB

AK series

- Protective countermeasure against DC over-voltage, 105°C 2000 hours.
- RoHS Compliance.
- DC過電壓安全對策105°C 2000小時。



SPECIFICATIONS

Items 項目	Characteristics 特性		
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)		
Operating Temperature Range 適用溫度範圍	-25 ~ +105°C		
Rated Voltage Range 額定電壓範圍	200VDC ~ 400VDC		
Leakage Current 洩漏電流	$I \leq 0.04CV + 100 (\mu A)$ (After 1 minutes application of DC rated voltage, at 20 °C)		
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C		
	Rated Voltage(V)	200	400
	tan δ(Max)	0.15	0.15
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.		
	Rated Voltage(V)	200	400
	Z(-25°C)/Z(20°C)	4	6
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.		
	Capacitance Change	Within ± 20% of Initial Value	
	tan δ	200% or less of the Initial Specified Value	
	Leakage Current	Initial Specified Value or less	
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.		
	Capacitance Change	Within ± 20% of Initial Value	
	tan δ	200% or less of Initial Specified Value	
	Leakage Current	Initial Specified Value or less	
Standards 參照標準	IEC 60384-4 (JIS C5101-4)		

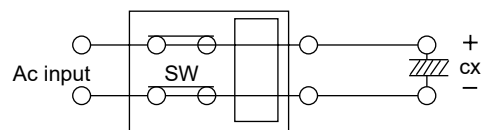
◆ DC over voltage test conditions

The vent will be operated and the capacitor shall become an open circuit without burning materials when the following excess DC voltage is applied.

TEST DC VOLTAGE

Rated Voltage	Current Limit	Test DC Voltage
200 Vdc	4A	300 / 375 Vdc
400 Vdc	2A	500 / 600 Vdc

TEST CIRCUIT

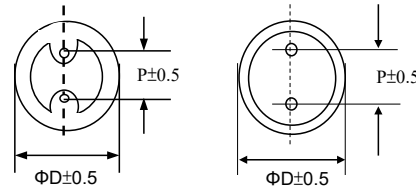
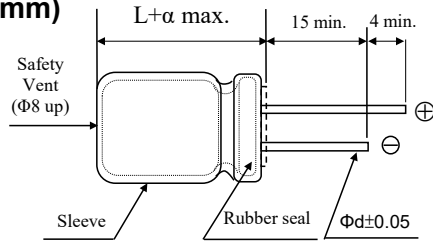


Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)				
		60(50)	120	150	1K	≥10K
200	22 ~ 470	0.85	1.00	1.30	1.50	1.85
	4.7 ~ 68	0.85	1.00	1.20	1.30	1.50
400	82 ~ 220	0.85	1.00	1.10	1.15	1.20

AK series

DIMENSIONS(mm)



ΦD	10	12.5	16	18	20	22
P	5.0	5.0	7.5	7.5	10	10
Φd	0.6	0.6	0.8	0.8	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz

V	Cap (μF)	D x L	R.C.
200	22	10x20	120
	33	10x25	160
		12.5x20	160
	47	10x30	195
		12.5x20	195
	56	12.5x25	210
	68	12.5x25	250
		16x22	250
	82	12.5x32	285
		16x22	285
		16x26	305
	100	12.5x35	335
		16x26	335
		16x36	350
		18x21	335
	120	16x26	450
		16x31.5	500
		18x25	500
	150	16x31.5	560
		16x36	585
		18x21	560
		18x25	585
	180	16x36	600
		16x40	645
18x31.5		645	
220	18x31.5	680	
	18x35.5	700	
	18x40	735	
330	18x35.5	775	
	18x40	810	
	18x45	920	
390	18x40	850	
	22x40	920	
470	18x45	1120	
	22x40	1270	

V	Cap (μF)	D x L	R.C.
400	4.7	10x10	60
		10x12.5	63
	10	10x16	87
		10x20	105
	15	10x20	105
		10x25	115
	22	12.5x25	135
		12.5x30	145
		16x22	145
		16x26	180
		12.5x25	175
	33	16x26	195
		18x21	225
		18x25	255
		12.5x32	370
		16x26	268
	47	16x31.5	275
		16x36	290
		18x21	275
		18x25	290
		18x31.5	310
	56	16x31.5	326
		16x36	338
		16x40	350
		18x31.5	320
		16x36	320
	68	16x40	360
		18x25	350
		18x31.5	360
		18x35.5	380
		16x31.5	395
	82	18x25	395
		18x31.5	400
		18x40	420
	100	18x28	450
		18x31.5	470
18x35.5		490	
120	18x40	510	
	18x31.5	515	
	18x35.5	530	
150	18x40	550	
	18x35.5	770	
	18x40	790	
180	22x35	800	
	22x40	1000	

AK

YR series

- Ideally suited for first class audio equipment where qualitative quantitative comfortableness is required.
- RoHS Compliance ,105°C 2000hours.
- 適用於高級音響器材 當要求舒適的音頻質量。
- 環境對策品,105°C 2000小時。



SPECIFICATIONS

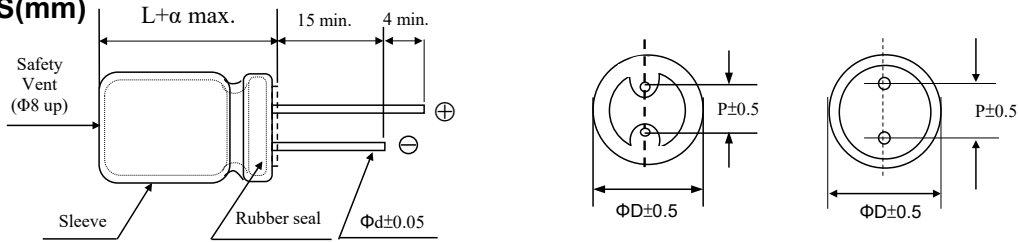
Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)										
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C										
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC										
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3 (uA) (After 2 minute application of working voltage)										
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C										
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	200
	tan δ(Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08	0.15
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.											
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.										
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	
	Z(-25°C)/Z(20°C)	5	4	3	2	2	2	2	2	2	
	Z(-40°C)/Z(20°C)	10	8	6	4	3	3	3	3	3	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.										
	Capacitance Change	Within ± 20% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.										
	Capacitance Change	Within ± 20% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Standards 參照標準	IEC 60384-4 (JIS C5101-4)										

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	50	120	300	1K	10K
1 ~ 47	0.75	1.00	1.35	1.57	2.00
100 ~ 470	0.80	1.00	1.23	1.34	1.50
1000 ~ 10000	0.85	1.00	1.10	1.13	1.15

YR series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.0
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

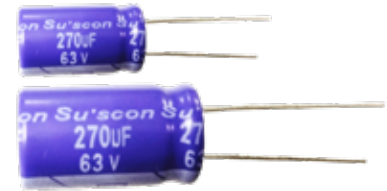
Cap (μF)	V	6.3		10		16		25		35		50	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
1												5x11	9
2.2												5x11	18
3.3												5x11	22
4.7												5x11	27
10												5x11	39
22								5x11	50	6.3x11	60	6.3x11	65
33						5x11	57	6.3x11	70	6.3x11	75	8x11.5	93
47				5x11	60	6.3x11	74	6.3x11	85	8x11.5	101	8x11.5	111
100				6.3x11	99	8x11.5	128	8x11.5	140	10x12.5	176	10x16	215
220				8x11.5	170	10x12.5	226	10x16	260	10x20	320	12.5x20	390
330				10x12.5	247	10x16	309	10x20	351	12.5x20	446	12.5x20	488
470	10x12.5	270	10x16	330	10x20	406	12.5x20	476	12.5x25	590	16x25	650	
1000	10x20	485	12.5x20	601	12.5x25	723	16x25	854	16x25	1060	16x31.5	1143	
2200	12.5x25	867	16x25	1047	16x25	1290	16x35.5	1570	18x35.5	1840			
3300	16x25	1135	16x31.5	1520	16x35.5	1720	18x40	1794					
4700	16x31.5	1431	16x35.5	1840	18x35.5	2140							
6800	18x35.5	1810	18x40	2049									
10000	18x40	2100											

Cap (μF)	V	63		80		100	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
1						5x11	15
2.2						5x11	22
3.3						5x11	27
4.7						5x11	36
10		6.3x11	50	6.3x11	55	8x11.5	65
22		8x11.5	85	8x11.5	100	10x12.5	110
33		8x11.5	105	10x12.5	130	10x16	150
47		10x12.5	140	10x16	170	10x20	190
100		10x20	255	12.5x20	270	12.5x20	300
220		12.5x20	420	12.5x25	490	16x25	549
330		12.5x25	541	16x31.5	650	16x31.5	734
470		16x25	840	16x35.5	920	18x35.5	980
1000		18x35.5	1400				

YR

SDN series

- 105°C 2000 hours. Anhydrous product.
- Low impedance at High frequency range, high ripple current resistance.
- Suitable for return-circuit of switching power source.
- RoHS Compliance
- 105°C 2000小時.無水系產品
- 高頻低阻抗、耐高紋波
- 適用於開關電源迴路



SPECIFICATIONS

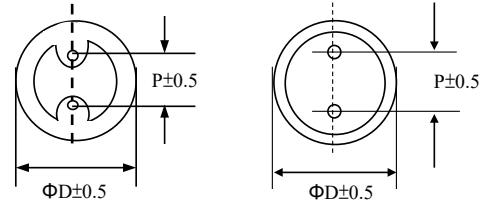
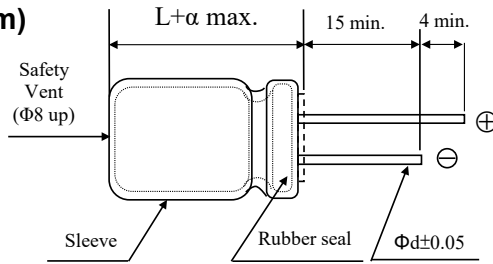
Items 項目	Characteristics 特性												
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)												
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C						-40 ~ +105°C						
Rated Voltage Range 額定電壓範圍	6.3 ~ 100VDC						160 ~ 400VDC						
Leakage Current 洩漏電流	$V \leq 100V$ $I \leq 0.01CV$ or 3 (μA) (After 2 minutes application of DC rated voltage, at 20 °C) $V > 100V$ $I \leq 0.03CV + 20$ (μA) (After 5 minutes application of DC rated voltage, at 20 °C)												
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C												
	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	100	160~250	400	
	$\tan \delta$ (Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07	0.20	0.24	
When nominal capacitance over 1000 μF , $\tan \delta$ shall be added 0.02 to the listed value with increase of every 1000 μF .													
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.												
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	160~250	400		
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	3	6		
	Z(-40°C)/Z(20°C)	-	-	-	-	-	-	3	3	6	12		
Z(-55°C)/Z(20°C)	8	6	4	3	3	3	-	-	-	-			
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.												
	Capacitance Change	Within ± 20% of Initial Value											
	$\tan \delta$	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.												
	Capacitance Change	Within ± 20% of Initial Value											
	$\tan \delta$	200% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Standards 參照標準	AEC-Q200、IEC 60384-4(JIS C5101-4)												

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (μF)	Frequency (Hz)				
		50	120	1K	10K	100K
6.3 ~ 100	47 ~ 100	0.45	0.55	0.75	0.90	1.00
	220 ~ 1000	0.60	0.70	0.85	0.95	1.00
	1500 ~ 15000	0.70	0.80	0.95	0.98	1.00
160 ~ 400	2.2 ~ 330	0.55	0.65	0.80	0.90	1.00

SDN series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm) ; R.C.(mA rms) at 105°C 100 KHz ; IMP(Ω max) at 20°C,100KHz.

Cap (μF)	V	6.3			10			16			25		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
4.7											5x11	50	1.820
10											5x11	80	1.820
22											5x11	110	0.970
47					5x11	140	0.860	5x11	170	0.790	5x11	170	0.790
68					5x11	160	0.860	5x11	210	0.670	6.3x11	210	0.670
100					5x11	180	0.860	6.3x11	270	0.360	6.3x11	270	0.360
220		6.3x11	270	0.430	6.3x11	270	0.400	8x11.5	440	0.240	8x11.5	440	0.240
330		6.3x11	320	0.410	8x11.5	440	0.260	8x11.5	440	0.240	10x12.5	650	0.120
470		8x11.5	440	0.290	8x11.5	440	0.260	10x12.5	650	0.120	10x16	800	0.091
680		8x11.5	440	0.290	10x12.5	650	0.130	10x16	800	0.091	10x20	1,050	0.070
1000		10x12.5	650	0.140	10x16	800	0.098	10x20	1,050	0.070	12.5x20	1,350	0.067
1500		10x16	800	0.100	10x20	1,050	0.077	12.5x20	1,350	0.067	12.5x25	1,650	0.048
2200		10x25	1,350	0.079	12.5x20	1,350	0.073	12.5x25	1,650	0.052	16x26	2,050	0.036
3300		12.5x20	1,350	0.079	12.5x25	1,650	0.065	16x26	2,050	0.036	16x31.5	2,550	0.033
4700		12.5x25	1,650	0.051	12.5x35	2,050	0.040	16x31.5	2,550	0.033	18x35.5	2,950	0.031
6800		16x26	2,050	0.043	16x31.5	2,550	0.036	18x35.5	2,950	0.031	18x40	3,300	0.028
10000		16x31.5	2,550	0.039	18x35.5	2,950	0.034	18x40	3,300	0.028			
15000		16x35.5	2,950	0.036	18x40	3,300	0.030						

Cap (μF)	V	35			50			63			100		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
0.47					5x11	25	10.73				5x11	20	30.30
1					5x11	40	7.580				5x11	30	28.60
2.2					5x11	55	6.440				5x11	44	14.00
3.3					5x11	65	5.580				5x11	58	9.400
4.7		5x11	85	2.640	5x11	90	3.290	5x11	65	9.880	5x11	74	6.600
10		5x11	100	1.580	5x11	110	2.000	5x11	110	5.450	6.3x11	130	2.600
22		5x11	120	1.320	5x11	140	1.720	6.3x11	200	1.890	8x11.5	230	2.000
33		5x11	210	0.568	6.3x11	240	0.690	6.3x11	250	1.770	10x12.5	320	0.700
47		6.3x11	270	0.550	6.3x11	240	0.690	8x11.5	320	0.800	10x16	390	0.500
68		8x11.5	360	0.396	8x11.5	300	0.430	10x12.5	380	0.760	10x20	420	0.400
100		8x11.5	440	0.246	8x11.5	400	0.360	10x12.5	450	0.670	12.5x20	580	0.300
220		10x12.5	650	0.132	10x16	600	0.240	10x20	780	0.340	16x26	880	0.100
330		10x16	800	0.100	10x20	800	0.220	12.5x20	950	0.210	16x31.5	930	0.100
470		10x20	1,050	0.077	12.5x20	1,050	0.130	12.5x25	1,430	0.170	16x36	1,230	0.100
680		12.5x20	1,350	0.073	12.5x25	1,150	0.100	16x26	1,780	0.130	18x35.5	1,410	0.091
1000		12.5x25	1,650	0.056	16x26	1,550	0.069	16x31.5	1,900	0.100	18x40	1,520	0.065
1500		16x26	2,050	0.040	16x31.5	1,950	0.061	18x35.5	2,150	0.079			
2200		16x31.5	2,550	0.036	18x35.5	2,250	0.057	18x40	2,350	0.077			
3300		18x35.5	2,950	0.034									
4700		18x40	3,300	0.030									

SDN

SDN series

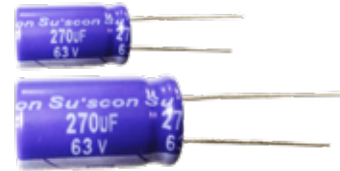
STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz

Cap (μ F)	V Item	160		200		250		400	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2							105	8x11.5	80
3.3			104	8x11.5	113	8x11.5	122	10x12.5	110
4.7			112	8x11.5	126	10x12.5	140	10x16	160
10		10x12.5	180	10x12.5	210	10x16	300	10x20	195
22		10x16	250	10x20	465	12.5x20	485	12.5x25	350
33		10x20	570	10x25	600	12.5x20	620	12.5x25	580
47		12.5x20	730	12.5x20	730	12.5x25	810	16x26	720
68		12.5x25	850	12.5x25	985	16x26	1,010	16x31.5	820
100		16x26	1,285	16x26	1,285	16x31.5	1,405	18x35.5	950
150		16x31.5	1,310	16x31.5	1,310	18x31.5	1,455		
220		16x36	1,450	18x31.5	1,510	18x40	1,490		
330		18x35.5	1,850						

HFN series

- Anhydrous product.
- Low impedance at High frequency range.
- High ripple current resistance, 105°C 4000 hours~8000 hours. long life.
- RoHS Compliance
- 無水系產品
- 高頻低阻抗。
- 耐高紋波電流、105°C 4000小時~8000小時長壽命產品。



SPECIFICATIONS

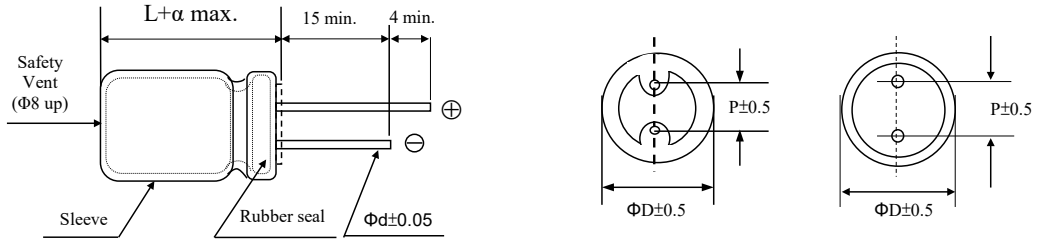
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C				-40 ~ +105°C				
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC				63 ~ 100VDC				
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (μA) which is greater. (After 2 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Rated Voltage(V)	6.3	10	16	25	35	50	63~80	100
	tan δ(Max)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08
When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	-	-	-	-	-	-	3	3
Z(-55°C)/Z(20°C)	8	6	4	3	3	3	-	-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for varied hours according to varied Φ [please refer to below sheet] at 105°C								
	Time	Φ	5	6.3	8	10	13	16	18
		hours	4000	4000	5000	6000	7000	8000	8000
	Capacitance Change	within ±25% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C 5101-4.								
	Capacitance Change	within ±25% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	AEC-Q200、IEC 60384-4(JIS C5101-4)								

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)			
	120	1K	10K	100K
5.6 ~ 180	0.40	0.75	0.90	1.00
220 ~ 560	0.50	0.85	0.94	1.00
680 ~ 1800	0.60	0.87	0.95	1.00
2200 ~ 3900	0.75	0.90	0.95	1.00
4700 ~ 18000	0.85	0.95	0.98	1.00

HFN series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 100kHz, IMP (Ω max) at 20°C,-10°C 100kHz.

Cap (μF)	V	6.3				10				16				25				
		Item	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C			20°C	-10°C			20°C	-10°C	
47										5x11	0.550	1.100	170	5x11	0.600	1.210	175	
100						5x11	0.550	1.10	170		0.290	0.550	295		0.310	0.610	295	
150		5x11	0.550	1.100	170										0.220	0.430	420	
220							0.270	0.550	295		0.190	0.400	410	8x11.5	0.150	0.290	650	
330		6.3x11	0.270	0.550	295		0.200	0.390	400	8x11.5	0.140	0.260	660	8x16	0.110	0.220	750	
390														10x12.5	0.110	0.220	770	
470		6.3x15	0.200	0.400	400	8x11.5	0.140	0.260	650	8x20	0.091	0.180	830	8x20	0.096	0.180	820	
560										10x12.5	0.100	0.200	770	10x16	0.085	0.170	1,060	
680		8x11.5	0.140	0.280	655	8x16	0.100	0.200	830	10x16	0.077	0.150	1,070	10x20	0.067	0.130	1,230	
820		10x12.5	0.100	0.200	860	10x12.5	0.100	0.200	860					10x25	0.057	0.110	1,450	
1000		8x16	0.100	0.210	830	8x20	0.091	0.170	1,010	10x20	0.061	0.120	1,270	10x30	0.048	0.092	1,720	
1200		10x16	0.077	0.150	1,250	10x16	0.077	0.150	1,250	10x25	0.053	0.100	1,450	12.5x20	0.048	0.097	1,670	
1500		10x20	0.059	0.120	1,420	10x25	0.052	0.100	1,640	10x30	0.043	0.085	1,700	12.5x25	0.040	0.076	1,960	
1800						10x30	0.043	0.085	1,930	12.5x20	0.045	0.087	1,670	12.5x30	0.033	0.064	2,320	
2200		10x25	0.052	0.100	1,640	12.5x20	0.045	0.088	1,650	12.5x25	0.036	0.069	1,970	12.5x35	0.025	0.051	2,520	
2700		10x30	0.045	0.086	1,930					12.5x30	0.030	0.058	2,330	12.5x40	0.020	0.041	2,860	
3300		12.5x20	0.044	0.086	1,650	12.5x25	0.036	0.069	1,960	12.5x35	0.028	0.051	2,520	16x26	0.025	0.051	2,570	
3900		12.5x25	0.036	0.069	1,960	12.5x30	0.030	0.058	2,320	12.5x40	0.022	0.041	2,880	16x36	0.020	0.040	3,140	
4700		12.5x30	0.030	0.058	2,320	12.5x35	0.025	0.052	2,520	16x26	0.028	0.051	2,570	18x31.5	0.021	0.042	3,340	
5600		12.5x35	0.026	0.051	2,520	12.5x40	0.022	0.041	2,880	16x31.5	0.023	0.045	3,020	16x40	0.018	0.036	3,720	
6300						16x26	0.020	0.052	2,570	18x25	0.025	0.047	2,750	18x35.5	0.018	0.037	3,690	
6800		12.5x40	0.022	0.041	2,880	16x36	0.022	0.041	3,160	16x40	0.019	0.036	3,720					
8200		16x26	0.028	0.051	2,570	16x36	0.022	0.041	3,150									
10000		16x31.5	0.024	0.045	3,020	18x25	0.025	0.047	2,750	18x31.5	0.021	0.039	3,670					
12000		16x40	0.020	0.036	3,720	18x31.5	0.022	0.043	3,340	18x40	0.020	0.035	3,810					
15000		18x31.5	0.022	0.042	3,340	18x40	0.021	0.037	3,670									
18000		18x35.5	0.021	0.037	3,670													
18000		18x40	0.020	0.036	3,810													

HFN

HFN series

STANDARD RATINGS

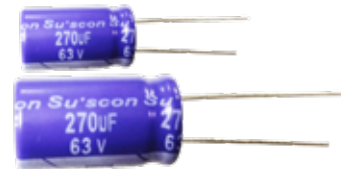
DxL(mm) ; R.C.(mA rms) at 105°C 100kHz ; IMP(Ω max) at 20°C, -10°C 100kHz.

Cap (μF)	V	35				50				63				100				
		Item	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C			20°C	-10°C			20°C	-10°C	
5.6														5x11	2.640	6.860	90	
12										5x11	2.970	6.600	145	6.3x11	1.580	4.090	120	
18														6.3x15	0.820	2.380	200	
22						5x11	1.490	2.970	165		1.650	3.300	250	8x11.5	0.720	2.110	250	
27														10x12.5	0.640	1.850	350	
33	5x11	0.850	1.740	185										8x16	0.480	1.300	320	
														10x16	0.450	1.200	460	
39										6.3x15	0.990	2.310	340	8x20	0.370	0.990	450	
47							0.720	1.490	270									
56		0.300	0.820	300										10x20	0.360	0.940	580	
68						6.3x15	0.520	1.060	370	8x11.5	0.570	1.230	410	10x25	0.270	0.700	760	
100	6.3x15	0.280	0.720	410		8x11.5	0.350	0.710	490	8x16	0.430	1.080	540	10x30	0.210	0.570	910	
										10x12.5	0.420	0.850	550	12.5x20	0.210	0.570	840	
120						8x16	0.270	0.530	640									
						10x12.5	0.250	0.530	630	10x16	0.320	0.630	620	12.5x25	0.160	0.430	1,010	
150	8x11.5	0.150	0.280	625						8x20	0.350	0.850	690					
180						8x20	0.200	0.400	740									
						10x16	0.220	0.420	860	10x20	0.240	0.480	890	12.5x30	0.130	0.360	1,220	
220	8x16	0.110	0.220	740										12.5x35	0.120	0.330	1,420	
	10x12.5	0.110	0.210	770		10x20	0.150	0.300	1,060	10x25	0.220	0.430	1,060	16x26	0.110	0.310	1,400	
270	8x20	0.099	0.200	820										12.5x40	0.083	0.240	1,600	
330	10x16	0.085	0.170	1,060		10x25	0.130	0.250	1,260	10x30	0.150	0.300	1,310	16x31.5	0.079	0.240	1,740	
										12.5x20	0.140	0.290	1,290	18x25	0.096	0.270	1,610	
390						10x30	0.095	0.19	1,520					16x36	0.074	0.200	1,950	
						12.5x20	0.100	0.200	1,490	12.5x25	0.120	0.240	1,730	18x31.5	0.082	0.230	1,820	
470	10x20	0.067	0.130	1,230						12.5x30	0.095	0.190	2,100	16x40	0.060	0.160	2,100	
560	10x25	0.057	0.110	1,450		12.5x25	0.078	0.150	1,850					18x35.5	0.074	0.200	2,150	
680	10x30	0.048	0.092	1,700		12.5x30	0.068	0.130	2,230	12.5x35	0.081	0.160	2,280					
	12.5x20	0.050	0.096	1,670						16x26	0.087	0.170	2,170	18x40	0.060	0.160	2,250	
820						12.5x35	0.060	0.110	2,300	12.5x40	0.075	0.140	2,570					
										16x31.5	0.075	0.146	2,680					
										18x25	0.075	0.150	2,690					
1000	12.5x25	0.040	0.076	1,960		12.5x40	0.053	0.100	2,510									
						16x26	0.062	0.120	2,250	16x36	0.063	0.120	2,780					
1200	12.5x30	0.033	0.064	2,320		16x31.5	0.050	0.096	2,710	16x36	0.054	0.100	2,860					
						18x25	0.051	0.099	2,610	18x31.5	0.059	0.110	2,960					
1500	12.5x35	0.031	0.056	2,520		16x36	0.047	0.087	2,810	18x35.5	0.054	0.100	3,120					
1800	12.5x40	0.023	0.045	2,880		16x40	0.038	0.075	3,210									
	16x26	0.031	0.057	2,570		18x31.5	0.047	0.087	3,010	18x40	0.047	0.087	3,220					
2200	16x31.5	0.025	0.050	3,020														
	18x25	0.028	0.052	2,750		18x35.5	0.042	0.080	3,110									
2700	16x36	0.024	0.044	3,160														
	18x31.5	0.025	0.047	3,340		18x40	0.038	0.071	3,410									
3300	16x40	0.022	0.040	3,720														
	18x35.5	0.023	0.041	3,690														
3900	18x40	0.022	0.040	3,810														

HFN

SGN series

- Anhydrous product.
- High ripple current, ultra low impedance at high frequency range.
- 105°C 2000 hours~5000 hours.Long life.
- RoHS Compliance
- 無水系產品。
- 高紋波電流、高頻超低阻抗。
- 105°C 2000小時~5000小時.長壽命產品。



SPECIFICATIONS

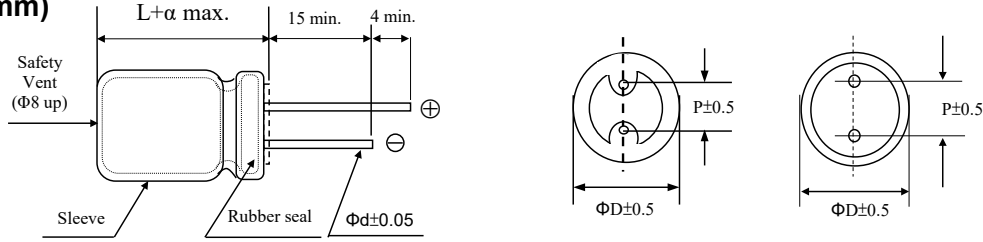
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C								
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC								
Leakage Current 洩漏電流	I≤0.01CV or 3 (μA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	50	63~100	
	tan δ(Max)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	
When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.									
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35	50		
	Impedance Ratio(Max) 阻抗比率(最大值)	Z(-25°C)/Z(20°C)	2	2	2	2	2	2	
	Z(-55°C)/Z(20°C)	3	3	3	3	3	3		
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours (φ D≤6.3:2,000 hours; φ D=8:3,000 hours; φ D=10:4,000 hours) at 105°C.								
	Capacitance Change	Within ± 25% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	AEC-Q200、IEC 60384-4(JIS C5101-4)								

Frequency Coefficient of Permissible Ripple Current

Capacitance (μF)	Frequency (Hz)				
	50	120	1K	10K	100K
≤ 33	0.45	0.55	0.75	0.90	1.00
47 ~ 330	0.60	0.70	0.85	0.95	1.00
470 ~ 1000	0.65	0.75	0.90	0.98	1.00
1200 ~ 6800	0.75	0.80	0.95	1.00	1.00

SGN series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	6.3			10			16			
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.	IMP
56								5x11	250	0.500	
100					5x11	250	0.500				
120									405	0.210	
150				250	0.845						
220							405	0.380	8x11.5	700	0.210
330				405	0.230				8x11.5	760	0.120
470						8x11.5	760	0.210	8x16	995	0.093
560		8x11.5	760	0.130					10x12.5	1,030	0.087
680					8x16	995	0.093	8x20	1,250	0.068	
820		8x16	995	0.099	10x12.5	1,030	0.087	10x16	1,430	0.062	
1000		10x12.5	1,030	0.093	8x20	1,250	0.068	10x20	1,820	0.038	
1200		8x20	1,250	0.072	10x16	1,430	0.062	10x20	1,820	0.038	
1500		10x16	1,430	0.066	10x20	1,820	0.038	10x25	2,150	0.036	
2200		10x20	1,820	0.040	10x25	2,150	0.036	12.5x20	2,360	0.035	
2700		10x25	2,150	0.038	12.5x20	2,360	0.035	12.5x25	2,770	0.030	
3300								12.5x30	3,140	0.027	
3900		12.5x20	2,360	0.037	12.5x25	2,770	0.030	12.5x35	3,400	0.024	
4700		12.5x25	2,770	0.032	12.5x30	3,290	0.027	16x26	3,460	0.026	
5600		12.5x30	3,290	0.027	12.5x35	3,400	0.024				
6800		12.5x35	3,140	0.026	16x26	3,460	0.026				
6800		16x26	3,460	0.027							

Cap (μF)	V	25			35			50		
		Item	D x L	R.C.	IMP	D x L	R.C.	IMP	D x L	R.C.
22								5x11	238	1.310
33					5x11	250	0.330			
47		5x11	250	0.500				6.3x11	385	1.140
56					6.3x11	405	0.230	6.3x11	385	0.540
68										
100		6.3x11	405	0.380				8x11.5	724	0.340
120								8x16	950	0.230
150					8x11.5	760	0.130	10x12.5	979	0.230
180								8x20	1,190	0.180
220		8x11.5	760	0.150	8x16	995	0.099	10x16	1,370	0.160
270					10x12.5	1,030	0.093	10x20	1,580	0.120
330		8x20	1,250	0.100	8x20	1,250	0.100	10x20	1,580	0.120
470		10x16	1,430	0.100	10x16	1,430	0.100	10x25	1,870	0.110
560		10x12.5	1,030	0.087	10x20	1,820	0.085	10x25	1,870	0.110
680		8x20	1,250	0.068	10x20	1,820	0.085	12.5x20	2,050	0.110
820		10x16	1,430	0.062	10x25	2,150	0.053	12.5x25	2,410	0.088
1000		10x20	1,820	0.058	12.5x20	2,360	0.051	12.5x30	2,860	0.081
1200		10x25	2,150	0.036	12.5x20	2,450	0.048	12.5x35	2,960	0.074
1500		12.5x20	2,360	0.035	12.5x25	2,770	0.044	16x26	3,010	0.081
1800		12.5x20	2,360	0.035	12.5x30	3,140	0.037			
2200		12.5x25	2,770	0.030	12.5x35	3,400	0.035			
2700		12.5x30	3,140	0.026	16x26	3,460	0.037			
3300		12.5x35	3,400	0.024						
3900		16x26	3,460	0.026						
4700										
5600										
6800										

SGN

SGN series

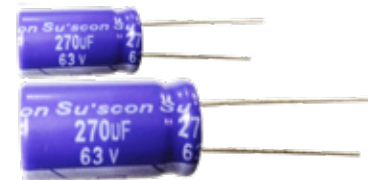
STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 105°C 100kHz , IMP:(Ω max) at 20°C,100kHz.

Cap (μF)	V	63				100			
		D x L	R.C.	IMP		D x L	R.C.	IMP	
				20°C	-10°C			20°C	-10°C
2.2						5x11	72	6.00	21.0
3.3						5x11	78	5.00	18.0
4.7						6.3x11	180	1.20	4.20
6.8						6.3x11	180	1.20	4.20
10		6.3x11	180	1.20	4.20	8x11.5	305	0.560	2.00
22		6.3x11	180	1.20	4.20	8x11.5	308	0.560	2.00
33		8x11.5	305	0.560	2.00	10x12.5	380	0.500	1.18
39		8x11.5	305	0.560	2.00	10x16	500	0.320	1.10
47		8x11.5	305	0.560	2.00	10x20	620	0.270	0.950
56		10x12.5	380	0.500	1.18	10x20	620	0.270	0.950
68		10x12.5	380	0.500	1.80	10x25	760	0.210	0.630
100		10x20	620	0.270	0.950	12.5x20	890	0.160	0.560
220		12.5x20	820	0.094	0.240	16x20	1,440	0.090	0.320
330		12.5x25	1,100	0.073	0.210	16x31.5	1,790	0.060	0.170
390		12.5x25	1,100	0.073	0.210	16x35.5	2,065	0.056	0.140
470		16x25	1,770	0.060	0.180				
560		16x31.5	2,030	0.048	0.140				
680		16x31.5	2,030	0.048	0.140				
1000		18x35.5	2,240	0.041	0.110				

HGN series

- Anhydrous product.
- High ripple current, Low impedance at high frequency range.
- 105°C, long life 10000hours.
- RoHS Compliance
- 無水系產品。
- 高紋波電流、高頻低阻抗。
- 105°C ,10000小時長壽命產品。



SPECIFICATIONS

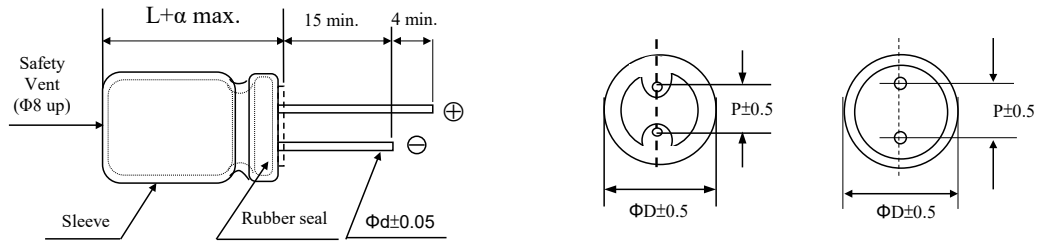
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-55 ~ +105°C				-40 ~ +105°C				
Rated Voltage Range 額定電壓範圍	6.3 ~ 50VDC				63 ~ 100VDC				
Leakage Current 洩漏電流	I ≤ 0.01CV or 3 (µA) which is greater.(After 2 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C								
	Rated Voltage(V)	6.3	10	16	25	35	50	63~80	100
	tan δ(Max)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08
When nominal capacitance over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100
	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	-	-	-	-	-	-	3	3
	Z(-55°C)/Z(20°C)	8	6	4	3	3	3	3	3
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for varied hours according to varied φ and voltage [please refer to below sheet] at 105°C.								
	Case size			φ D ≤ 6.3		φ D = 8,10		φ D ≥ 13	
	Voltage	6.3 ~ 10 V		4,000 hours		6,000 hours		8,000 hours	
		16 ~ 100 V		5,000 hours		7,000 hours		10,000 hours	
	Capacitance Change		Within ± 25% of Initial Value						
	tan δ		200% or less of Initial Specified Value						
Leakage Current		Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing t14be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change		Within ± 25% of Initial Value						
	tan δ		200% or less of Initial Specified Value						
	Leakage Current		Initial Specified Value or less						
Standards 參照標準	IEC 60384-4(JIS C5101-4,AEC-Q200)								

Frequency Coefficient of Permissible Ripple Current

Capacitance (µF)	Frequency (Hz)				
	50	120	300	1K	100K
≤ 33	0.50	0.55	0.70	0.90	1.00
47 ~ 330	0.60	0.70	0.85	0.95	1.00
470 ~ 1000	0.65	0.75	0.90	0.98	1.00
1200 ~ 18000	0.70	0.80	0.95	1.00	1.00

HGN series

DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L ≥ 20) 2.0

STANDARD RATINGS

DxL(mm) ; R.C.(mA rms) at 105°C 100kHz ; IMP (Ω max) at 20°C,-10°C 100kHz.

Cap (μF)	V	Item	6.3			10				
			D x L	IMP		R.C.	D x L	IMP		R.C.
				20°C	-10°C			20°C	-10°C	
100						5x11	0.640	2.53	215	
150		5x11	0.630	2.53	210	5x11	0.640	2.53	230	
220		6.3x11	0.280	0.990	320		0.250	0.960	340	
330		6.3x11	0.230	0.960	340		0.250	0.960	380	
470		8x11.5	0.170	0.640	345	8x11.5	0.150	0.580	640	
680		8x11.5	0.150	0.580	645	8x16	0.098	0.390	845	
						10x12.5	0.091	0.340	865	
820		10x12.5	0.091	0.360	865	10x16	0.080	0.310	1,015	
1000		8x16	0.097	0.390	870	8x20	0.078	0.300	1,050	
						10x16	0.069	0.270	1,215	
1200		8x20	0.081	0.290	1,050	10x20	0.053	0.200	1,410	
		10x16	0.072	0.270	1,215					
1500		10x20	0.053	0.210	1,410	10x25	0.048	0.190	1,610	
1800						12.5x20	0.046	0.170	1,710	
2200		10x25	0.050	0.190	1,650	10x30	0.036	0.140	1,920	
						12.5x20	0.042	0.140	1,910	
2700		10x30	0.036	0.140	1,900					
3300		12.5x20	0.041	0.140	1,900	12.5x25	0.032	0.100	2,230	
3900		12.5x25	0.032	0.100	2,240	12.5x30	0.029	0.089	2,660	
4700		12.5x30	0.029	0.089	2,650	12.5x35	0.025	0.075	2,890	
5600		12.5x35	0.025	0.075	2,890	12.5x40	0.021	0.064	3,360	
						16x26	0.025	0.069	2,940	
6800		12.5x40	0.021	0.064	3,350	16x31.5	0.021	0.058	3,460	
		16x26	0.025	0.069	2,940	18x25	0.025	0.057	3,150	
8200		16x31.5	0.021	0.058	3,450	16x36	0.020	0.052	3,610	
						18x31.5	0.020	0.047	4,180	
10000		16x36	0.019	0.052	3,620	16x40	0.018	0.045	4,090	
		18x25	0.023	0.057	3,150	18x35.5	0.017	0.045	4,150	
12000		16x40	0.017	0.045	4,090	18x40	0.015	0.039	4,290	
		18x31.5	0.019	0.047	4,180					
15000		18x35.5	0.018	0.045	4,230					
18000		18x40	0.016	0.035	4,290					

HGN

HGN series

STANDARD RATINGS

DxL(mm) ; R.C.(mA rms) at 105°C 100kHz ; IMP (Ω max) at 20°C,-10°C 100kHz.

Cap (μ F)	V Item	16				25			
		D x L	IMP		R.C.	D x L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
47						5x11	0.760	3.04	200
56		5x11	0.760	3.04	220	5x11	0.760	3.04	240
100		6.3x11	0.280	1.15	310		0.280	1.15	340
120		6.3x11	0.280	1.15	340				
220		8x11.5	0.250	1.13	510	8x11.5	0.160	0.690	650
330		8x11.5	0.160	0.690	650	8x16	0.120	0.470	850
	10x12.5					0.110	0.430	870	
470		8x16	0.120	0.470	840	8x20	0.096	0.360	1,050
		10x12.5	0.110	0.430	865	10x16	0.083	0.320	1,210
680		8x20	0.095	0.360	1,060	10x20	0.064	0.240	1,410
		10x16	0.083	0.320	1,210				
820		10x20	0.073	0.290	1,310	10x25	0.058	0.230	1,660
1000		10x20	0.064	0.240	1,410	10x30	0.043	0.160	1,920
	12.5x20					0.049	0.160	1,910	
1200		10x25	0.061	0.230	1,650				
1500		10x30	0.043	0.160	1,920	12.5x25	0.038	0.120	2,240
		12.5x20	0.050	0.160	1,910				
1800		12.5x25	0.041	0.130	2,140	12.5x30	0.036	0.110	2,660
2200		12.5x25	0.038	0.120	2,240	12.5x35	0.030	0.090	2,890
2700		12.5x30	0.035	0.110	2,650	12.5x40	0.025	0.078	3,360
	16x26					0.031	0.083	2,940	
3300		12.5x35	0.030	0.091	2,890	16x31.5	0.025	0.070	3,460
	18x25					0.028	0.067	3,150	
3900		12.5x40	0.031	0.078	3,350	18x25	0.023	0.061	3,620
		16x26	0.028	0.083	2,930	18x31.5	0.024	0.056	4,180
4700		16x31.5	0.025	0.070	3,450	16x40	0.020	0.054	4,090
		18x25	0.028	0.068	3,150	18x35.5	0.022	0.054	4,230
5600		16x36	0.024	0.062	3,620	18x40	0.018	0.047	4,290
		18x31.5	0.024	0.056	4,180				
6800		16x40	0.020	0.054	4,080				
8200		18x35.5	0.023	0.054	4,230				
10000		18x40	0.018	0.047	4,290				

HGN series

STANDARD RATINGS

DxL(mm) ; R.C.(mA rms) at 105°C 100kHz ; IMP (Ω max) at 20°C,-10°C 100kHz.

Cap (μ F)	V Item	35				50			
		D x L	IMP		R.C.	D x L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
22						5x11	1.540	6.16	180
33			0.690	2.78	220				
47			0.430	1.70	280		0.780	3.30	220
56			0.400	1.58	340		0.660	2.64	300
100		8x11.5	0.320	1.18	510	8x11.5	0.360	1.47	560
120						8x16	0.270	1.06	740
150		8x11.5	0.16	0.630	650	10x12.5	0.270	1.06	770
180						8x20	0.200	0.800	920
220		8x16	0.110	0.430	850	10x16	0.190	0.750	1,050
		10x12.5	0.100	0.390	865				
270		8x20	0.088	0.320	1,060	10x20	0.140	0.530	1,230
330		10x16	0.076	0.290	1,210	10x25	0.120	0.490	1,450
470		10x20	0.058	0.220	1,410	10x30	0.100	0.380	1,695
	12.5x20					0.100	0.340	1,670	
560		10x25	0.053	0.200	1,650	12.5x25	0.080	0.250	1,950
680		10x30	0.040	0.150	1,920	12.5x30	0.072	0.230	2,320
		12.5x20	0.044	0.160	1,910				
820						12.5x35	0.058	0.180	2,520
1000		12.5x25	0.037	0.110	2,230	12.5x40	0.050	0.160	2,930
						16x26	0.062	0.170	2,555
1200		12.5x30	0.032	0.098	2,660	16x31.5	0.052	0.150	3,020
						18x25	0.062	0.160	2,750
1500		12.5x35	0.028	0.083	2,880	16x36	0.046	0.130	3,150
1800		12.5x40	0.023	0.072	3,350	16x40	0.042	0.110	3,720
		16x26	0.028	0.076	2,940	18x31.5	0.052	0.130	3,640
2200		16x31.5	0.023	0.064	3,500	18x35.5	0.044	0.100	3,690
		18x25	0.026	0.063	3,140				
2700		16x36	0.022	0.057	3,620	18x40	0.038	0.090	3,810
		18x31.5	0.021	0.052	4,180				
3300		16x40	0.020	0.050	4,090				
		18x35.5	0.021	0.050	4,230				
3900		18x40	0.019	0.044	4,290				

HGN series

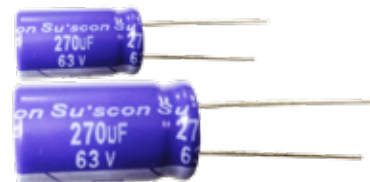
STANDARD RATINGS

DxL(mm) ; R.C.(mA rms) at 105°C 100kHz ; IMP (Ω max) at 20°C,-10°C 100kHz.

Cap (μ F)	V Item	63				100			
		D x L	IMP		R.C.	D x L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
6.8						5x11	2.78	11.64	56
15			2.20	9.20	56	6.3x11	1.52	6.33	120
27						8x11.5	0.980	3.54	235
33			1.20	5.00	120				
39						8x16	0.570	2.66	280
47		8x11.5	0.680	3.10	190	10x12.5	0.550	2.28	290
56		8x11.5	0.620	2.80	235	8x20	0.410	2.02	330
68						10x16	0.380	1.90	358
82		8x16	0.450	2.10	310	10x20	0.270	1.19	470
		10x12.5	0.430	1.80	300				
100		10x16	0.350	1.80	320	10x25	0.260	1.07	536
120		8x20	0.330	1.60	362	10x30	0.190	0.900	666
		10x16	0.300	1.50	357	12.5x20	0.210	0.810	690
180		10x20	0.200	0.940	470	12.5x25	0.160	0.570	790
220		10x25	0.200	0.840	531	12.5x30	0.130	0.530	905
	16x22					0.120	0.470	1,050	
270		10x30	0.150	0.700	663	12.5x35	0.110	0.450	1,060
		12.5x20	0.130	0.650	690	16x26	0.095	0.340	1,250
330		12.5x25	0.120	0.450	790	12.5x40	0.092	0.380	1,190
390						16x31.5	0.071	0.260	1,570
						18x25	0.075	0.270	1,490
470		12.5x30	0.100	0.420	910	16x36	0.061	0.220	1,790
	18x31.5					0.063	0.220	1,640	
560		12.5x35	0.082	0.350	1,050	16x40	0.054	0.190	2,030
		16x26	0.073	0.270	1,250				
680		12.5x40	0.070	0.300	1,190	18x35.5	0.054	0.190	1,790
820		16x31.5	0.053	0.200	1,580	18x40	0.049	0.170	2,340
		18x25	0.057	0.210	1,490				
1000		16x36	0.045	0.170	1,790				
		18x31.5	0.047	0.170	1,640				
1200		16x40	0.039	0.150	2,020				
		18x35.5	0.040	0.150	1,790				
1500		18x40	0.035	0.130	2,340				

SEN series

- Anhydrous product.
- 105°C 3000 hours~5000 hours.high-temperature, high reliability and long life.
- Suitable for office communicative and industrial equipments.
- RoHS Compliance
- 無水系產品。
- 105°C 3000小時~5000小時. 耐高溫、高信賴性、長壽命製品。
- 適用於辦公室通訊設備、工業設備。



SPECIFICATIONS

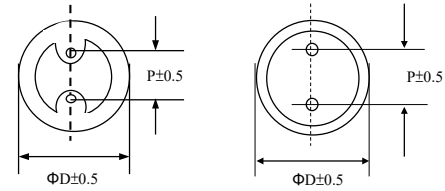
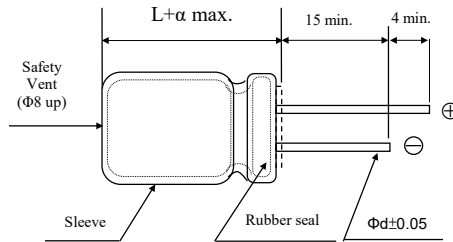
Items 項目	Characteristics 特性					
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)					
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					
Rated Voltage Range 額定電壓範圍	160 ~ 450VDC					
Leakage Current 洩漏電流	$I \leq 0.03CV + 20 (\mu A)$ (After 3 minutes application of DC rated voltage, at 20 °C)					
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C					
	Rated Voltage(V)	160	200	250	350	400~450
	tan δ (Max)	0.20	0.20	0.20	0.25	0.25
When nominal capacitance over 1000 μ F, tan δ shall be added 0.02 to the listed value with increase of every 1000 μ F.						
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.					
	Rated Voltage(V)	160	200	250	350	400
	Z(-25°C)/Z(20°C)	3	3	3	6	15
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours ($\phi D \leq 8:3,000$ hours; $\phi D = 10:4,000$ hours) at 105°C.					
	Capacitance Change	Within ± 25% of Initial Value				
	tan δ	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.					
	Capacitance Change	Within ± 20% of Initial Value				
	tan δ	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Standards 參照標準	IEC 60384-4(JIS C5101-4,AEC-Q200)					

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Capacitance (μ F)	Frequency (Hz)			
		50	120	1K	$\geq 10K$
≥ 160	2.2 ~ 220	0.80	1.00	1.30	1.40

SEN series

DIMENSIONS(mm)



ΦD	6.3	8	10	12.5	16	18
P	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5	0.5	0.6	0.6	0.8	0.8

α	(L < 20) 1.5
	(L \geq 20) 2.0

STANDARD RATINGS

DxL(mm), R.C.(mA rms) at 105°C 120 Hz.

Cap (μF)	V	160		200		250		400		450		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
2.2			6.3x11	29		29	8x11.5	36	8x11.5	36	8x11.5	36
3.3			8x11.5	35	8x11.5	36	8x11.5	52	8x11.5	45	8x11.5	52
4.7			8x11.5	44	8x11.5	52	8x11.5	57	10x12.5	57	10x12.5	62
10			10x12.5	78	10x16	83	10x16	104	10x20	95	10x20	104
22			10x16	135	10x20	145	12.5x20	176	12.5x20	168	12.5x25	197
33			10x20	176	12.5x20	208	12.5x20	234	12.5x25	213	16x22	249
39			10x20	197	12.5x20	228	12.5x25	260	16x22	213	16x26	312
47			12.5x20	239	12.5x20	260	12.5x25	291	16x26	332	16x31.5	343
68			12.5x25	270	12.5x25	291	16x22	322	16x26	364	18x25	364
82			16x22	332	16x26	364	16x31.5	405	18x25	436	18x31.5	603
100			16x26	364	16x31.5	499	16x36	520	18x31.5	572	18x35.5	686
120									18x40	676	18x40	800

LX series

- Snap-in type, 85°C 2000 hours standard product.
- Suitable for filter circuit of home appliance, e.g. TV set, audio etc.
- RoHS Compliance
- 基板自立 85°C 2000小時標準品。
- 適用於家電產品輸入/輸出電源的濾波迴路，如電視機、音響等。



SPECIFICATIONS

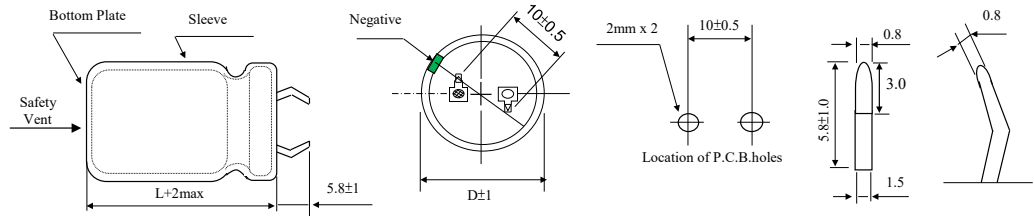
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)								
Operating Temperature Range 適用溫度範圍	-40 ~ +85°C				-25 ~ +85°C				
Rated Voltage Range 額定電壓範圍	10 ~ 100VDC				160 ~ 500VDC				
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (µA) (After 5 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C								
	Rated Voltage(V)	10	16	25	35	50~80	100~250	300	315~500
	tan δ(Max)	0.50	0.40	0.35	0.30	0.25	0.20	0.25	0.25
When nominal capacitance over 1000µF, tanδ shall be added 0.01 to the listed value with increase of every 1000µF.									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.								
	Rated Voltage(V)	10~100		160~250			350~500		
	Z(-25°C)/Z(20°C)	4		4			8		
	Z(-40°C)/Z(20°C)	12		15			-		
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85°C.								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	150% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)								

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	50	120	1K	≥ 10K
10 ~ 100	0.88	1.00	1.15	1.15
160 ~ 250	0.81	1.00	1.32	1.50
350 ~ 500	0.77	1.00	1.30	1.43

LX series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C.(A rms) at 85°C 120 Hz.

Cap (μF)	V Item	10		16		25		35		50		63		80	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
820														22x25	1.34
1000												22x25	1.52	22x25	1.64
1500												22x25	1.68	22x30 25.4x25	1.80
2200										22x25	2.08	22x30 25.4x25	2.58	22x35 25.4x30	2.65
2700										22x30	2.32	22x35 25.4x30	2.80	22x40 25.4x30	2.82
3300										22x30 25.4x25	2.65	22x40 25.4x30	2.88	22x45 25.4x40	3.30
3900								22x25	2.44	22x35 25.4x30	2.72	22x45 25.4x35	3.15	25.4x45 30x35	3.40
4700						22x25	2.49	22x30 25.4x25	2.64	22x40 25.4x35	3.09	22x50 25.4x40	3.39	25.4x50 30x40	3.62
6800				22x25	2.40	22x30 25.4x25	2.57	22x40 25.4x30	2.81	22x50 25.4x40	3.86	25.4x50 30x40	4.34	30x50 35x40	4.68
8200				22x25	2.90	22x35 25.4x25	2.96	22x45 25.4x35	3.12	25.4x50 30x40	4.42	30x45 35x35	4.84	35x45	4.96
10000	22x25	2.10	22x30	3.08	22x40 25.4x30	3.40	22x50 25.4x40	3.55	25.4x50 30x40	4.98	35x40	5.51	35x50	6.08	
12000	22x25	2.42	22x30 25.4x25	3.50	22x45 25.4x35	3.61	25.4x45 30x35	4.02	30x50 35x35	5.16	35x50	6.22			
15000	22x30	2.79	22x35 25.4x30	3.95	25.4x45 30x35	4.10	30x40 35x35	5.01	35x45	6.45					
18000	22x35 25.4x25	3.17	22x40 25.4x35	4.40	25.4x45 30x35	4.47	30x45 35x40	5.55	35x50	6.72					
22000	22x40 25.4x30	3.57	22x50 25.4x40	4.71	25.4x50 30x45	5.22	35x45	6.02							
27000	22x45 25.4x35	4.22	25.4x45 30x35	5.51	30x50 35x40	6.02	35x50	6.85							
33000	22x50 25.4x40	5.26	25.4x50 30x40	5.82	35x45	6.78	35x45	6.95							
39000	25.4x45 30x35	5.35	30x45 35x35	6.36	35x45	7.60	35x50	7.16							
47000	30x40	6.04	30x50 35x40	6.99	35x50	7.88									
56000	30x45	6.67	35x45	7.17											
68000	35x40	7.35	35x50	10.10											

LX series

STANDARD RATINGS

DxL(mm), R.C.(A rms) at 85°C 120 Hz.

Cap (μF)	V Item	100		160		180		200		250		315		350	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.			D x L	R.C.
100														22x25	0.77
120														22x30 25.4x25	0.93
150										22x25	1.1			22x35 25x30	1.12 1.16
180												22x25	1.21	22x30	1.22
220				22x20	1.12			22x25 25.4x20	1.37	22x30 25.4x25	1.44	22x30	1.41	22x35 22x45 25.4x35	1.44 1.47
270											1.31	22x30	1.60	22x40 25.4x30	1.66
330				22x25 25.4x20	1.45			22x30 25.4x25	1.88	22x30 25.4x30	1.75 1.93	22x40 25.4x30 30x25	1.82	22x45 25.4x35 30x40	1.88 1.99
390								22x25	1.68	22x30 25.4x25	1.91	22x45 25.4x35 30x30	2.01	22x50 25.4x40 30x30 35x25	2.06
470				22x30 25.4x25	1.83	22x25	2.08	22x30 25.4x30	1.85 2.25	22x35 25.4x30	2.11	22x50 25.4x40 30x30 35x25	2.27	25.4x45 30x35 35x30	2.40
560				25.4x30	2.03	22x30	2.25	22x40 25.4x25	2.43	22x40 25.4x30 30x25	2.25	25.4x45 30x35 35x30	2.56	25.4x50 30x40 35x30	2.60
680	22x25	1.54	22x35 25.4x30	2.5 2.37	22x30 25.4x25	2.50	22x35 25.4x30	2.68	22x45 25.4x35 30x30	2.50	30x40 35x35	2.87	30x45 35x35	2.96	
820	22x25 25.4x20	1.88	22x40 25.4x35	2.75	22x35 25.4x30	2.75	22x40 25.4x30 30x25	2.93	22x50 25.4x40 30x30 35x25	2.77	30x45 35x40	3.25	30x50 35x45	3.25	
1000	22x30 25.4x25	1.94	25.4x40 30x35	3.00	22x45 30x25	3.00	22x45 25.4x35 30x30 35x25	3.25	25.4x45 30x35 35x30	3.32	30x50 35x45	3.63	35x50	3.54	
1200	22x30 25.4x25	2.11	22x45 25.4x40 30x35	3.25	22x50 25.4x40 30x30 35x25	3.31	25.4x40 30x30 35x30	3.5	30x40 35x35	3.53			35x60	4.17	
1500	22x35 25.4x30	2.47	22x50 25.4x40 30x30 35x25	3.73	25.4x45 30x35 35x30	3.83	25.4x50 30x35 35x30	3.87	30x50 35x40	4.04			35x65	4.56	
1800			25.4x45 30x35 35x30	4.20	25.4x50 30x40 35x30	4.32	30x45 35x35	4.32	35x45	4.55					
2200	22x45 25.4x40	3.15	30x40 35x35	4.78	30x45 35x40	4.92	35x50	4.92	40x60	6.13			45x75	5.75	
2700	25.4x45 30x35	3.72	35x40	5.45	35x45	5.52	30x50	5.45							
3300	25.4x50 30x40	4.06	35x45	5.75	35x50	5.75									
3900	30x45 35x35	4.55	35x50	6.00											
4700	30x50 35x40	5.12													
6800	35x50	5.85													

LX

LX series

STANDARD RATINGS

DxL(mm), R.C.(A rms) at 85°C 120 Hz.

Cap (μ F)	V	400		420		450		500	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
47		22x25	0.42					22x35	0.47
82						22x25	0.83		
100		22x30 25.4x25	1.05	22x25	0.97	22x25	0.93	25.4x40	1.13
						25.4x25	1.10		
120		22x25	1.02	22x25	1.08	22x30	1.04	25.4x45	1.25
		25.4x25	1.15			25.4x30	1.21		
150		22x30	1.16	22x30 25.4x25	1.30	22x35	1.19	25.4x50	1.50
						25.4x25			
		25.4x30	1.25			22x45	1.30	30x35	1.48
				25.4x35					
180		22x35	1.44	22x35 25.4x30	1.48	22x40 25.4x30	1.35		
220		22x40 25.4x30	1.49	22x40 25.4x35 30x25	1.65	22x45 25.4x40 30x30 35x25	1.55	30x45	1.78
		22x50 25.4x40	1.70						
270		22x45 25.4x35 30x25	1.67	22x50 25.4x35 30x30	1.94	"22x50 25.4x40 30x30"	1.78		
330		22x50 25.4x40 30x30 35x25	1.90	25.4x45 30x35 35x30	2.17	25.4x50 30x40 35x30	2.01	35x45	2.81
		25.4x45 30x35 35x30							
470		25.4x50 30x40 35x30	2.39	30x40 35x35	2.61	30x45 35x40	2.53	35x60	3.00
							35x50		
560		30x45 35x35	2.69	30x50 35x40	2.82	30x50 35x45	2.82	35x60	3.03
680		30x50 35x40	2.96	35x45	3.11	35x60	3.36	35x70	3.27
820		35x45	3.25			35x65	3.59	40x70	3.76
1000		35x65	4.20			35x70	3.81	45x80	4.21
1200		35x70	4.41			40x70	4.01	45x90	4.50
1500		40x70	4.52			45x70	4.13	45x100	4.80
2200		45x85	5.64			45x100	5.22		

LXB series

- Long life of LX series : 85°C 3000 hours
- Suitable for filter circuit of home appliance, e.g. TV set, audio, etc.
- RoHS Compliance
- LX系列壽命提升品 : 85°C 3000小時
- 適用於家電產品輸入/輸出電源的濾波迴路, 如電視機、音響等。



SPECIFICATIONS

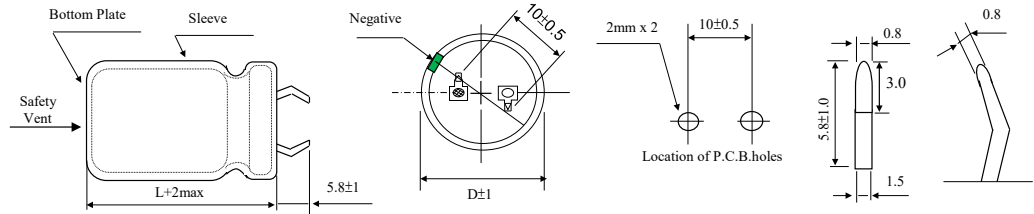
Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	±20% (120Hz, 20°C)								
Operating Temperature Range 適用溫度範圍	- 40 ~ +85°C				- 25 ~ +85°C				
Rated Voltage Range 額定電壓範圍	10~ 100VDC				160~ 550VDC				
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (μA) (After 5 minutes application of DC rated voltage, at 20 °C)								
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C								
	Rated Voltage(V)	10	16	25	35	50~100	135	160~250	330~500
	tan δ(Max)	0.50	0.40	0.35	0.30	0.25	0.25	0.20	0.25
When nominal capacitance over 1000μF, tanδ shall be added 0.01 to the listed value with increase of every 1000μF .									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz								
	Rated Voltage(V)	10~100		160~250			330~500		
	Z(-25°C)/Z(20°C)	4		4			8		
	Z(-40°C)/Z(20°C)	12		15			-		
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 85°C.								
	Capacitance Change	within ±20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 85°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.								
	Capacitance Change	within ±20% of Initial Value							
	tan δ	150% or less of Initial Specified Value							
	Leakage Current	Initial Specified Value or less							
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)								

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	50	120	1K	≥ 10K
10 ~ 100	0.88	1.00	1.15	1.15
160 ~ 250	0.81	1.00	1.32	1.50
330 ~ 550	0.87	1.00	1.30	1.43

LXB series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz

Cap (μF)	V Item	10		16		25		35		50		63		80	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
820														22x25	1.35
1000												22x25	1.54	22x25	1.66
1500												22x25	1.7	22x30 25.4x25	1.82
2200										22x25	2.10	22x30 25.4x25	2.61	22x35 25.4x30	2.68
2700										22x30	2.34	22x35 25.4x30	2.83	22x40 25.4x30	2.85
3300										22x30 25.4x25	2.68	22x40 25.4x30	2.91	22x45 25.4x40	3.33
3900								22x25	2.46	22x35 25.4x30	2.75	22x45 25.4x35	3.18	25.4x45 30x35	3.43
4700						22x25	2.51	22x30 25.4x25	2.67	22x40 25.4x35	3.12	22x50 25.4x40	3.42	25.4x50 30x40	3.66
6800				22x25	2.42	22x30 25.4x25	2.60	22x40 25.4x30	2.84	22x50 25.4x40	3.90	25.4x50 30x40	4.38	30x50 35x40	4.73
8200				22x25	2.93	22x35 25.4x25	2.99	22x45 25.4x35	3.15	25.4x50 30x40	4.46	30x45 35x35	4.89	35x45	5.01
10000	22x25	2.10	22x30	3.11	22x40 25.4x30	3.43	22x50 25.4x40	3.59	25.4x50 30x40	5.03	35x40	5.57	35x50	6.14	
12000	22x25	2.42	22x30 25.4x25	3.54	22x45 25.4x35	3.65	25.4x45 30x35	4.06	30x50 35x35	5.21	35x50	6.28			
15000	22x30	2.79	22x35 25.4x30	3.99	25.4x45 30x35	4.14	30x40 35x35	5.06	35x45	6.51					
18000	22x35 25.4x25	3.17	22x40 25.4x35	4.44	25.4x45 30x35	4.51	30x45 35x40	5.61	35x50	6.79					
22000	22x40 25.4x30	3.57	22x50 25.4x40	4.76	25.4x50 30x45	5.27	35x45	6.08							
27000	22x45 25.4x35	4.22	25.4x45 30x35	5.57	30x50 35x40	6.08	35x50	6.92							
33000	22x50 25.4x40	5.26	25.4x50 30x40	5.88	35x45	6.85	35x45	7.02							
39000	25.4x45 30x35	5.35	30x45 35x35	6.42	35x45	7.68	35x50	7.23							
47000	30x40	6.04	30x50 35x40	7.06	35x50	7.96									
56000	30x45	6.67	35x45	7.24											
68000	35x40	7.35	35x50	10.2											

LXB series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz

Cap (µF)	V Item	100		160		180		200		220		250		315	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
100															
												22x20	0.97	22x20	0.79
120														25.4x20	0.90
														22x25	1.06
150														22x20	1.06
														25.4x20	1.00
180														22x30	1.29
										22x20	1.06			25.4x25	1.38
220				22x20	1.13	22x20	1.18	22x20	1.18					22x25	1.24
												25.4x20	1.22	30x20	1.16
270														22x30	1.41
														25.4x25	1.47
330				22x20	1.30			22x25	1.37	22x25				30x20	1.28
								25.4x20	1.35	25.4x20	1.47			22x25	1.50
390														30x20	1.28
														22x25	1.50
470				22x25	1.46	22x25	1.77	22x25	1.51	22x30				22x35	1.68
				25.4x20	1.46	25.4x20	1.49	25.4x20	1.49	25.4x25	1.70			25.4x30	1.70
560														30x25	1.55
														30x25	1.55
680				22x25	1.63	22x25	1.84	22x30	1.73	22x30	1.58			22x30	1.66
				25.4x20	1.62			25.4x25	1.71	25.4x25	1.89			25.4x25	1.61
820														30x20	1.58
														22x35	1.88
1000				22x25	1.63	22x25	1.84	22x30	1.73	22x30	1.58			30x25	1.88
				25.4x20	1.62			25.4x25	1.71	25.4x25	1.89			25.4x30	1.88
1200														30x25	1.86
														25.4x40	2.11
1500														30x20	1.71
														35x20	2.15
1800				22x30	1.86	22x30	1.91	22x30	1.97	22x35				30x30	2.15
				25.4x25	1.86	25.4x25	2.08	25.4x25	1.95	25.4x30	2.08			22x35	1.66
2200														35x20	1.91
														25.4x25	1.46
2700														30x20	1.49
														25.4x25	1.49
3300														30x20	1.49
														25.4x25	1.49
3900														30x20	1.49
														30x20	1.49
4700														30x20	1.49
														30x20	1.49
6800														30x20	1.49
														30x20	1.49

LXB

LXB series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz

Cap (μF)	V Item	300		400		420		450		500	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
47				22x25	0.42	22x20	0.54	22x20	0.54	22x35	0.47
56						22x20	0.59	22x20	0.59		
68				22x20	0.65	25.4x20	0.68	22x25	0.71		
								25.4x20	0.68		
82		22x20	0.72	22x25	0.84	22x25	0.85	22x25	0.86		
								25.4x20	0.74		
100				25.4x20	0.74	25.4x20	0.74	30x20	0.79		
		22x25	0.78	22x25	0.99	22x30	0.97	22x30	0.95	25.4x40	1.14
				25.4x20	0.82	25.4x25	0.98	25.4x25	0.97		
120						30x20	0.87	30x20	0.87		
		22x25	1.04	22x30	1.09	22x30	1.07	22x35	1.07	25.4x45	1.26
		25.4x20	0.90	25.4x25	1.13	25.4x25	1.08	25.4x30	1.09		
				30x20	0.95	30x20	0.95	30x25	1.12		
150								35x20	0.99		
		22x30	1.20	22x35	1.24	22x35	1.21	22x40	1.18	25.4x50	1.52
		25.4x25	1.22	25.4x30	1.27	25.4x30	1.26	25.4x30	1.25		
		30x20	1.06	30x25	1.20	35x20	1.11	30x25	1.29		
180								35x20	1.06	30x35	1.49
		22x30	1.34	22x40	1.41	22x40	1.33	22x45	1.32		
		25.4x25	1.37	25.4x30	1.44	25.4x35	1.42	25.4x35	1.40		
		30x20	1.16	30x25	1.52	30x25	1.48	30x30	1.45		
220								35x25	1.33		
		22x35	1.47	22x45	1.58	22x45	1.55	22x50	1.48	30x45	1.80
		25.4x30	1.53	25.4x35	1.64	25.4x35	1.58	25.4x40	1.59		
		30x25	1.54	30x30	1.66	30x30	1.65	30x30	1.64		
270								35x25	1.66		
		22x40	1.70	22x50	1.65	25.4x40	1.74	25.4x45	1.73		
		25.4x35	1.73	25.4x40	1.79	30x35	1.90	30x35	1.89		
		30x25	1.80	30x30	1.82	35x30	1.94	35x30	1.90		
330											
		22x45	1.87	25.4x45	2.00	25.4x50	2.20	25.4x50	2.12	35x45	2.84
		25.4x35	1.97	30x35	2.05	30x35	1.98	30x40	2.12		
390		30x30	2.03	35x30	2.05	35x35	2.17	35x35	2.15		
		35x25	1.80								
		25.4x40	2.14	25.4x50	2.12	30x40	2.22	30x45	2.35		
470		30x35	2.23	30x40	2.26	35x35	2.27	35x40	2.38		
		35x30	2.30	35x35	2.28						
560		30x35	2.53	30x45	2.51	30x45	2.50	30x50	2.65	35x60	3.03
		25.4x50	2.55	35x35	2.54	35x40	2.61	35x45	2.68		
		35x30	2.55								
680		30x40	2.73	30x50	2.85	35x45	2.95	35x50	2.88	35x60	3.06
		35x35	2.75	35x40	2.85			35x55	3.18		
		35x45	3.32	35x50	3.39						
820		30x50	3.15	35x50	3.10	35x50	3.15	35x60	3.39	35x70	3.30
		35x40	3.15								
1000		35x50	3.47								
		35x45	3.47	35x60	3.87			35x65	3.63	40x70	3.80
1200		35x50	3.60	35x65	4.24			35x70	3.85	45x80	4.25
		35x55	3.93								
1500		35x60	4.21	35x70	4.45			40x70	4.05	45x90	4.55
1500		35x65	4.61	40x70	4.57			45x70	4.17	45x100	4.85
2200		45x75	5.81	45x85	5.70			45x100	5.27		

LXB

LXA series

- 85°C 5,000 hours . Long life of LX series.
- Suitable for filter circuit of home appliance, e.g. TV set, audio, etc.
- RoHS Compliant
- 85°C 5000小時.LX系列壽命提升品
- 適用於家電產品輸入輸出電源的濾波迴路，如電視機、音響等。



SPECIFICATIONS

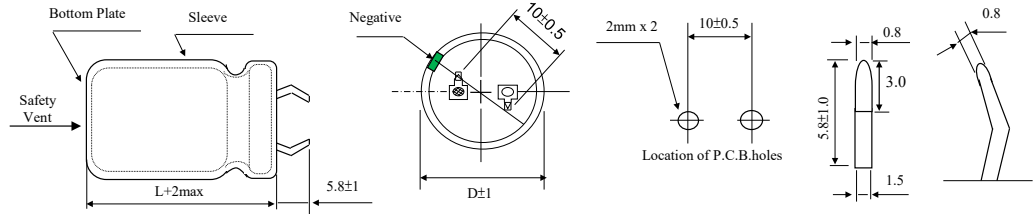
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	±20% (120Hz, 20°C)							
Operating Temperature Range 適用溫度範圍	- 40 ~ +85°C				- 25 ~ +85°C			
Rated Voltage Range 額定電壓範圍	10~ 100VDC				160~ 550VDC			
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV} (\mu A)$ (After 5 minutes application of DC rated voltage, at 20 °C)							
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency:120Hz. Temperature: 20°C							
	Rated Voltage(V)	10	16	25	35	50~100	160~250	330~500
	tan δ(Max)	0.50	0.40	0.35	0.30	0.25	0.20	0.25
When nominal capacitance over 1000μF, tanδ shall be added 0.01 to the listed value with increase of every 1000μF .								
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency:120Hz							
	Rated Voltage(V)	10~100		160~250		350~500		
	Z(-25°C)/Z(20°C)	4		4		8		
	Z(-40°C)/Z(20°C)	12		15		-		
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85°C.							
	Capacitance Change	within ±20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 85°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	150% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)							

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	50	120	1K	≥ 10K
10 ~ 100	0.88	1.00	1.15	1.15
160 ~ 250	0.70	1.00	1.32	1.50
330 ~ 550	0.88	1.00	1.32	1.47

LXA series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz.

Cap (μF)	V Item	10		16		25		35		50		63		80	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
820														22x25	1.37
1000												22x25	1.55	22x25	1.67
1500												22x25	1.71	22x30 25.4x25	1.84
2200										22x25	2.12	22x30 25.4x25	2.63	22x35 25.4x30	2.70
2700										22x30	2.37	22x35 25.4x30	2.86	22x40 25.4x30	2.88
3300										22x30	2.70	22x40	2.94	22x45	3.37
										25.4x25		25.4x30		25.4x40	
3900								22x25	2.49	22x35	2.77	22x45	3.21	25.4x45	3.47
										25.4x30		25.4x35		30x35	
4700						22x25	2.54	22x30	2.69	22x40	3.15	22x50	3.46	25.4x50	3.69
								25.4x25		25.4x35		25.4x40		30x40	
6800				22x25	2.45	22x30	2.62	22x40	2.87	22x50	3.94	25.4x50	4.43	30x50	4.77
						25.4x25		25.4x30		25.4x40		30x40		35x40	
8200				22x25	2.96	22x35	3.02	22x45	3.18	25.4x50	4.51	30x45	4.94	35x45	5.06
						25.4x25		25.4x35		30x40		35x35			
10000		22x25	2.12	22x30	3.14	22x40	3.47	22x50	3.62	25.4x50	5.08	35x40	5.62	35x50	6.20
						25.4x30		25.4x40		30x40					
12000		22x25	2.45	22x30	3.57	22x45	3.68	25.4x45	4.10	30x50	5.26	35x50	6.34		
				25.4x25		25.4x35		30x35		35x35					
15000		22x30	2.82	22x35	4.03	25.4x45	4.18	30x40	5.11	35x45	6.58				
				25.4x30		30x35		35x35							
18000		22x35	3.20	22x40	4.49	25.4x45	4.56	30x45	5.66	35x50	6.85				
		25.4x25		25.4x35		30x35		35x40							
22000		22x40	3.60	22x50	4.80	25.4x50	5.32	35x45	6.14						
		25.4x30		25.4x40		30x45									
27000		22x45	4.26	25.4x45	5.62	30x50	6.14	35x50	6.99						
		25.4x35		30x35		35x40									
33000		22x50	5.31	25.4x50	5.94	35x45	6.92	35x45	7.09						
		25.4x40		30x40											
39000		25.4x45	5.41	30x45	6.49	35x45	7.75	35x50	7.30						
		30x35		35x35											
47000		30x40	6.10	30x50	7.13	35x50	8.04								
				35x40											
56000		30x45	6.73	35x45	7.31										
68000		35x40	7.43	35x50	10.3										

LXA series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz.

Cap (μF)	V	100		160		180		200		210		220		250	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
150														22x25	1.12
220								22x25	1.40					22x30	1.47
				22x20	1.14			25.4x20	1.40					25.4x25	1.47
330				22x25	1.48			22x30	1.92					22x35	1.97
				25.4x20	1.48			25.4x25	1.92					25.4x30	1.97
470				22x30	1.87			22x40	2.30					22x45	2.44
				25.4x25	1.87			25.4x30	2.30					25.4x35	2.44
560				22x35	2.07			22x40	2.62					25.4x40	2.87
				25.4x30	2.07			25.4x30	2.62					30x35	2.87
600														30x35	4.03
680		22x25	1.57	22x35	2.42			22x50	2.90					25.4x50	4.03
				25.4x30	2.42			25.4x40	2.90					30x40	4.03
700												30x35	4.27		
800										30x35	4.48			30x40	4.66
820		22x25	1.92	22x40	2.81			25.4x45	3.42					30x45	4.66
		25.4x20	1.92	25.4x35	2.81			30x35	3.42					35x40	4.66
900						30x35	4.66	30x35	4.66	30x40	4.86	30x40	4.85	30x45	5.01
														35x35	4.73
1000		22x30	1.98	25.4x40	3.28							30x45	5.19	30x50	5.32
		25.4x25	1.98	30x35	3.28			30x40	5.01			35x35	4.87	35x45	5.32
1100						30x40	5.17			30x45	5.39			35x40	5.33
										35x35	5.06				
1200		22x30	2.15	25.4x40	3.48			30x45	5.51	30x50	5.71	30x50	5.68	30x55	5.96
		25.4x25	2.15	30x35	3.48			35x35	5.14			35x40	5.44	35x45	5.68
1300						30x45	5.64			35x40	5.65	30x55	6.09		
1400								30x50	5.95	30x55	6.31	35x45	5.96	35x50	6.25
								35x40	5.66						
1500		22x35	2.52	30x45	4.04	30x50	6.07	30x55	6.36	35x45	6.21			35x50	6.30
		25.4x30	2.52	35x35	4.04	35x40	5.75								
1600								35x45	6.14			35x50	6.51	35x55	6.87
1700						30x55	6.63			35x50	6.82				
1800						35x45	6.37					35x55	7.10		
1900								35x50	6.82						
2000						35x50	6.84			35x55	7.62				
2200		22x45	3.21	35x45	4.77			35x55	7.60					40x60	7.10
		25.4x40	3.21												
2700		25.4x45	3.79	35x50	5.46										
		30x35	3.79												
3300		25.4x50	4.14												
		30x40	4.14												
3900		30x45	4.64												
		35x35	4.64												
4700		30x50	5.22												
		35x40	5.22												
6800		35x50	5.97												

LXA

LXA series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz

Cap (μ F)	V Item	350		400		450		500	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
47				22x25	0.43	22x25	0.47	22x35	0.48
100		22x25	0.79	22x30	1.07	22x35	1.12	25.4x40	1.15
				25.4x25	1.07	25.4x25	1.12		
120		22x30	0.95	22x35	1.17	22x40	1.23	25.4x45	1.28
		25.4x25	0.95	25.4x25	1.17	25.4x30	1.23		
150		22x35	1.18	22x40	1.28	22x45	1.47	25.4x50	1.53
		25.4x30	1.18	25.4x30	1.28	25.4x35	1.47	30x35	1.51
220		22x45	1.50	22x50	1.80	25.4x45	1.81	30x45	1.82
		25.4x35	1.50	25.4x40	1.80	30x40	1.81		
330		25.4x50	2.03	30x40	2.35	30x45	2.85	35x45	2.87
		30x40	2.03	35x30	2.35	35x40	2.85		
470		30x50	2.49	35x45	2.88	35x50	2.98	35x60	3.06
		35x40	2.49						
560		35x45	3.36	35x50	3.43	35x55	3.21	35x60	3.09
680		35x50	3.51	35x50	3.57	35x60	3.43	35x70	3.34
820		35x50	3.65	35x60	3.91	35x65	3.66	40x70	3.84
1000		35x55	3.97	35x65	4.28	35x70	3.89	45x80	4.29
1200		35x60	4.25	35x70	4.50	40x70	4.09	45x90	4.59
1500		35x65	4.65	40x70	4.61	45x70	4.21	45x100	4.90
2200		45x75	5.87	45x85	5.75	45x100	5.32		

LZ series

- Snap-in type, 105°C 2000 hours standard product.
- High temp. and high ripple current resistance.
- Suitable for computer equipment, inverter air conditioner etc.
- RoHS Compliance
- 基板自立 105°C 2000小時標準品。
- 耐高溫、高紋波。
- 適用於電腦設備、變頻空調等。



SPECIFICATIONS

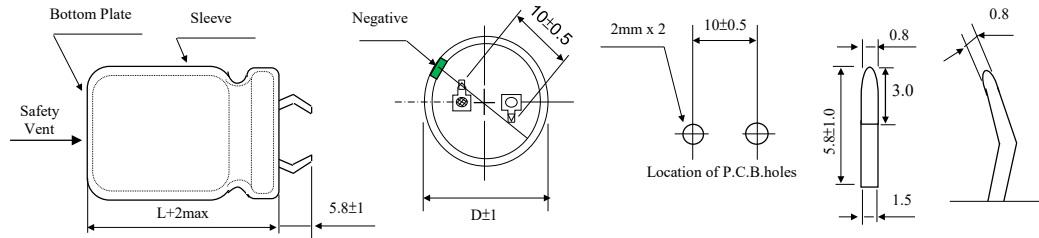
Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)										
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					-25 ~ +105°C					
Rated Voltage Range 額定電壓範圍	10 ~ 250VDC					315 ~ 500VDC					
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (μA) (After 5 minutes application of DC rated voltage, at 20 °C)										
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C										
	Rated Voltage(V)	10	16	25	35	50	63	80	100	160~250	315~500
	tan δ (Max)	0.45	0.40	0.35	0.30	0.25	0.25	0.20	0.20	0.15	0.20
	When nominal capacitance over 1000 μF , tan δ shall be added 0.01 to the listed value with increase of every 1000 μF .										
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.										
	Rated Voltage(V)	10	16	25	35	50	63~100	160~250	315~500		
	Z(-25°C)/Z(20°C)	6	6	4	4	4	4	4	4	8	
	Z(-40°C)/Z(20°C)	16	15	10	10	8	6	15		-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.										
	Capacitance Change	Within ± 20% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.										
	Capacitance Change	Within ± 15% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)										

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)				
	50	120	1K	10K	100K
10 ~ 100	0.88	1.00	1.15	1.15	1.20
160 ~ 250	0.81	1.00	1.32	1.45	1.55
315 ~ 500	0.77	1.00	1.30	1.41	1.45

LZ series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C.(A rms) at 105°C 120 Hz.

Cap (µF)	V	10		16		25		35		50	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
1500										22x25	1.20
1800										22x30	1.40
2200										22x30	1.60
										25.4x25	1.60
2700										22x25	1.65
								22x25	1.21	22x35	1.73
3300								22x30	1.36	22x30	1.92
										25.4x25	1.76
3900						22x25	1.35	22x30	1.57	22x30	2.08
										25.4x25	2.04
4700						22x30	1.58	22x25	1.87	22x35	2.43
								25.4x25	1.77	25.4x30	2.50
										30x25	2.29
5600						22x30	1.75	22x25	2.04	22x40	2.63
						25.4x25	1.75	25.4x25	2.00	25.4x35	2.61
										30x25	2.80
6800				22x25	1.8	22x35	2.02	22x30	2.36	22x50	3.05
						25.4x30	2.02	25.4x25	2.21	25.4x40	2.94
										30x30	3.30
										35x25	2.77
8200				22x30	2.08	22x40	2.18	22x35	2.65	25.4x45	3.60
				25.4x25	2.08	25.4x35	2.18	25.4x30	2.49	30x35	3.60
								30x25	2.62	35x30	3.60
10000		22x25	1.88	22x35	2.15	22x45	2.48	22x40	3.00	25.4x50	4.00
				25.4x30	2.15	25.4x40	2.48	25.4x35	2.88	30x40	4.00
								30x25	2.90	35x30	4.00
12000		22x30	2.18	22x40	2.31	22x50	2.86	22x50	3.47	30x50	4.29
		25.4x25	2.18	25.4x30	2.31	25.4x45	2.86	25.4x35	3.15	35x35	4.37
								30x30	3.25		
15000								35x25	3.20		
		22x35	2.27	22x45	2.69	25.4x50	3.15	25.4x40	3.61	35x40	4.50
		25.4x30	2.27	25.4x35	2.69	30x40	3.15	30x35	3.78		
								35x25	3.60		
18000		22x40	2.41	22x50	3.2	30x45	3.55	25.4x50	4.14	35x50	5.30
		25.4x30	2.41	25.4x40	3.2	35x35	3.55	30x40	4.30		
								35x30	4.10		
22000		22x45	2.68	25.4x45	3.4	30x50	4.0	30x50	5.00		
		25.4x35	2.68	30x35	3.4	35x40	4.0	35x35	4.64		
27000		25.4x40	3.17	30x40	3.85	35x45	4.55	35x40	5.37		
		30x35	3.17	35x35	3.85						
33000		25.4x45	3.39	30x50	4.32	35x50	5.56	35x50	6.00		
		30x35	3.39	35x40	4.32						
39000		25.4x50	3.72	35x40	4.85						
		30x40	3.72								
47000		30x45	4.22	35x50	5.56						
		35x35	4.22	35x50	5.56						
56000		35x40	5.00								
68000		35x50	5.21								

LZ series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μ F)	V Item	63		80		100		160		180	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
270								22x25	1.04		
330								22x30	1.26		
390								22x30	1.29		
								25.4x25	1.29	22x25	1.30
470								22x25	1.40	22x30	1.40
560						22x25	1.02	22x30	1.50	22x30	1.50
										25.4x25	1.50
680						22x30	1.12	22x30	1.70	22x35	1.70
								25.4x25	1.70	25.4x30	1.70
820				22x25	1.04	22x30	1.32	22x35	2.00	22x40	2.00
						25.4x25	1.32	25.4x30	2.00	25.4x30	2.00
								30x25	2.00	30x25	2.00
1000				22x30	1.21	22x35	1.45	22x40	2.20	22x45	2.20
						25.4x30	1.45	25.4x35	2.20	25.4x40	2.20
								30x25	2.20	30x30	2.20
						22x40	1.68			35x25	2.20
1200		25.4x25	1.21	22x35	1.29	25.4x35	1.68	25.4x40	2.30	25.4x45	2.30
				25.4x25	1.29			30x30	2.30	30x35	2.30
								35x25	2.30	35x30	2.30
1500		22x30	1.45	22x40	1.57	22x45	1.98	25.4x45	2.50	25.4x50	2.50
		25.4x25	1.45	25.4x30	1.57	25.4x40	1.98	30x35	2.50	30x40	2.50
								35x30	2.50	35x30	2.50
1800		22x35	1.59	22x45	1.72	25.4x45	2.23	25.4x50	2.70	30x45	2.70
		25.4x30	1.59	25.4x35	1.72	30x35	2.23	30x40	2.70	35x35	2.70
								35x30	2.70		
2200		22x40	1.84	25.4x40	2.01	25.4x50	2.53	30x45	2.90	30x50	2.90
		25.4x30	1.84	30x30	2.01	30x40	2.53	35x35	2.90	35x40	2.90
2700		22x45	2.12	25.4x45	2.32	30x45	2.82	30x50	3.10	35x50	3.10
		25.4x35	2.12	30x35	2.32	35x35	2.82	35x40	3.10		
3300		25.4x40	2.3	30x40	2.62	30x50	3.32	35x50	3.30		
		30x30	2.3	35x30	2.62	35x40	3.32				
3900		25.4x45	2.42	30x45	2.84	35x45	3.62				
		30x35	2.42	35x35	2.84						
4700		25.4x50	2.91	30x50	3.29	35x50	3.80				
		30x40	2.91								
5600		30x45	3.18	35x45	3.82						
		35x35	3.18								
6800		30x50	3.54	35x50	3.92						
		35x40	3.54								
8200		35x45	3.82	35x50	4.05						
10000		35x50	4.50	35x55	4.85						

LZ series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μ F)	V Item	200		250		315		350	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
82								22x25	0.60
100								22x30	0.69
120								22x25	0.75
150				22x25	0.76	22x25	0.82	22x30	0.82
180				22x30	0.98	22x30	0.90	22x30	0.90
								25.4x25	0.90
220		22x25	0.82	22x25	1.00	22x30	1.00	22x35	1.00
						25.4x25	1.00	25.4x30	1.00
270		22x30	1.07	22x25	1.10	22x35	1.10	22x40	1.10
						25.4x30	1.10	25.4x30	1.10
								30x25	1.10
330		22x30	1.28	22x30	1.20	22x45	1.20	22x45	1.20
		25.4x25	1.28	25.4x25	1.20	25.4x35	1.20	25.4x40	1.20
						30x25	1.20	30x30	1.20
390		22x25	1.31	22x35	1.30	22x 45	1.30	25.4x45	1.30
		25.4x30	1.31	25.4x25	1.30	25.4x40	1.30	30x35	1.30
						30x30	1.30	30x45	1.30
						35x25	1.30	35x40	1.30
470		22x30	1.45	22x40	1.40	25.4x45	1.40	25.4x50	1.40
				25.4x30	1.40	30x35	1.40	30x35	1.40
				30x25	1.40	35x25	1.40	35x30	1.40
560		22x30	1.67	22x45	1.50	25.4x50	1.50	30x45	1.50
		25.4x25	1.67	25.4x35	1.50	30x40	1.50	35x35	1.50
				30x25	1.50	35x30	1.50		
680		22x40	1.75	22x50	1.70	30x45	1.70	30x50	1.70
		25.4x30	1.75	25.4x40	1.70	35x35	1.70	35x40	1.70
				30x30	1.70			35x50	1.80
				35x25	1.70				
820		22x45	2.04	25.4x45	2.00	30x50	2.00	35x45	1.90
		25.4x35	2.04	30x35	2.00	35x40	2.00	35x65	2.35
		30x25	2.04	35x30	2.00				
1000		22x50	2.30	30x40	2.20	35x45	2.30		
		25.4x45	2.30	35x30	2.20				
		30x30	2.30						
		35x25	2.30						
1200		25.4x50	2.65	30x45	2.30				
		30x35	2.65	35x35	2.30				
		35x30	2.65						
1500		30x40	2.80	35x45	2.50				
		35x30	2.80						
1800		30x45	3.08	35x50	2.70				
		35x40	3.08						
2200		35x45	3.48						

LZ series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μ F)	V Item	400		420		450		500	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
68		22x25	0.52			22x25	0.50	22x40	0.56
82		22x30	0.66	22x25	0.64	22x30	0.56	25x35	0.68
100		22x25	0.70	22x25	0.66	22x30	0.64	25.4x35	0.78
		25.4x25	0.72	25.4x25	0.66	25.4x25	0.64		
120		22x30	0.75	22x30	0.81	22x35	0.72	25.4x45	0.85
		25.4x30	0.75	25.4x25	0.81	25.4x30	0.72		
150		22x30	0.88	22x35	0.84	22x40	0.79	25.4x50	1.01
		25.4x25	0.88	25.4x30	0.84	25.4x30	0.79	30x40	1.01
		25.4x35	0.89	30x25	0.84	30x25	0.79		
180		22x35	0.95	22x40	0.91	22x 45	0.87	30x45	1.21
		25.4x30	0.95	25.4x30	0.91	25.4x40	0.87	35x35	1.21
				30x25	0.91	30x30	0.87		
220		22x45	1.10	22x45	1.05	25.4x45	1.00	30x45	1.35
		25.4x35	1.10	25.4x35	1.05	30x30	1.00	35x40	1.35
		30x25	1.10	30x30	1.05	35x25	1.00		
				35x25	1.05				
270		22x50	1.22	25.4x40	1.25	25.4x50	1.19	35x45	1.53
		25.4x40	1.22	30x30	1.25	30x40	1.19		
		30x30	1.22	35x25	1.25	35x30	1.19		
		35x25	1.22						
330		25.4x45	1.44	25.4x50	1.42	30x45	1.38	35x50	1.75
		30x35	1.44	30x35	1.42	35x35	1.38		
		35x30	1.44	35x30	1.42				
390		25.4x50	1.55	30x40	1.61	30x50	1.55		
		30x40	1.55	35x35	1.61	35x40	1.55		
		35x30	1.55						
470		30x45	1.68	30x45	1.86	35x45	1.74		
		35x35	1.68	35x40	1.86				
560		30x50	1.90	35x45	2.10	35x50	1.90		
		35x40	1.90						
680		35x45	2.12	35x50	2.20				
820		35x65	2.50						

HZ series

- Down size, load life extend to 3000 hours.
- 105°C, high temperature, high ripple current resistance and high reliability.
- RoHS Compliance
- Done size、壽命3000小時。
- 105°C 耐高溫、高紋波、高信賴性。



SPECIFICATIONS

Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)										
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					-25 ~ +105°C					
Rated Voltage Range 額定電壓範圍	16 ~ 250VDC					350 ~ 450VDC					
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (μA) (After 5 minutes application of DC rated voltage, at 20 °C)										
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C										
	Rated Voltage(V)	16	25	35	50	63	80	100	160	200~250	350~450
	tan δ (Max)	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.15	0.20
	When nominal capacitance over 1000 μF , tan δ shall be added 0.01 to the listed value with increase of every 1000 μF .										
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.										
	Rated Voltage(V)	16	25	35	50	63	80	100	160~250	350~450	
	Z(-25°C)/Z(20°C)	6	6	4	4	4	4	4	4	8	
	Z(-40°C)/Z(20°C)	16	15	10	10	8	6	6	15	-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105°C.										
	Capacitance Change	Within ± 20% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.										
	Capacitance Change	Within ± 15% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)										

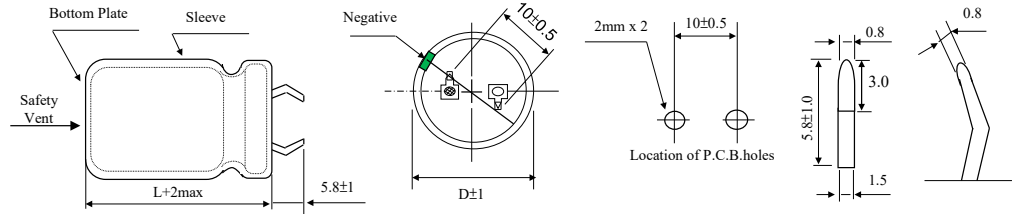
Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)				
	50	120	1K	10K	100K
16 ~ 100	0.88	1.00	1.05	1.10	1.15
160 ~ 250	0.85	1.00	1.20	1.30	1.50
350 ~ 450	0.88	1.00	1.20	1.25	1.40

HZ

HZ series

DIMENSIONS(mm)



STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V Item	16		25		35		50		63		80		100	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
560														20x25	0.95
680														20x30	1.15
820												20x25	1.04	20x35	1.32
1000										20x25	1.35	20x30	1.24	20x35	1.47
										22x25		20x35		22x30	
1500								20x25	1.02	20x30	1.47	20x35	1.59	22x40	1.98
										22x25		22x30		25.4x35	
2200								20x30	1.60	20x40	1.82	22x40	2.03	25.4x45	2.55
								22x25		22x35		25.4x30		30x35	
2700						20x25	1.29	20x35	1.73	22x35	2.11	22x45	2.39	25.4x50	2.89
								22x30		25.4x30		25.4x35		30x40	
3300						20x30	1.57	20x40	1.97	22x45	2.33	25.4x40	2.64	30x45	3.30
								22x35		25.4x35		30x35		35x35	
3900				20x25	1.65	22x25	1.78	22x40	2.22	22x50	2.55	25.4x50	2.97	30x50	3.67
								25.4x30		25.4x40		30x35		35x40	
4700				20x25	1.75	20x35	2.02	22x45	2.43	25.4x45	2.97	30x40	3.38	35x45	3.80
						22x30		25.4x35		30x35		35x35			
6800	20x25	1.50	20x35	2.11	22x40	2.41	25.4x45	3.30	30x40	3.65	35x45	4.10	35x50	4.05	
			22x30		25.4x30		30x35		35x35						
8200	20x30	1.70	20x40	2.34	22x45	2.85	25.4x50	3.60	30x50	4.04	35x50	4.30			
			22x30		25.4x35		30x40		35x40						
10000	20x35	1.85	22x35	2.65	22x50	3.05	30x45	4.05	35x45	4.48					
	22x30		25.4x30		25.4x40		35x35								
12000	20x40	2.01	22x40	2.81	25.4x45	3.37	30x50	4.56	35x50	4.75					
	22x30		25.4x30		30x35		35x40								
15000	22x35	2.39	22x45	3.13	25.4x50	3.72	35x50	4.77							
	25.4x30		25.4x35		30x40										
18000	22x40	2.90	25.4x40	3.56	30x45	4.37									
	25.4x30		30x30		35x35										
22000	22x45	3.10	25.4x50	4.04	30x50	4.92									
	25.4x35		30x35		35x40										
27000	22x50	3.55	30x45	4.74	35x50	5.30									
	25.4x40		35x35												
33000	25.4x45	4.05	30x50	5.50											
	30x35		35x40												
39000	25.4x50	4.55	35x45	5.80											
	30x40														
47000	30x45	5.36	35x50	6.30											
	35x40														
56000	30x50	5.60													
	35x45														

HZ

HZ series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (µF)	V	160		180		200		220		250		315	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
68												22x20	0.45
82												22x20	0.47
100												22x25	0.61
												25.4x20	0.56
120										22x20	0.60	22x25	0.75
												25.4x20	0.62
												30x20	0.65
150						22x20	0.73	22x20	0.67	22x25	0.65	22x30	0.82
										25.4x20	0.74	25.4x25	0.82
												30x20	0.70
												35x20	0.76
180				22x20	0.80	22x20	0.80	25.4x20	0.76	22x25	0.78	22x35	0.92
										25.4x20	0.75	25.4x25	0.92
												30x25	0.90
												35x20	0.85
220		22x20	0.81	25.4x20	0.90	20x25	1.00	22x25	1.00	20x30	0.95	22x40	1.04
		20x25	1.10			25.4x20	0.85	25.4x20	0.84	22x25	0.95	25.4x30	1.04
										25.4x25	0.95	30x25	1.04
										30x20		35x20	0.90
270		25.4x20	0.98	22x25	1.00	22x25	1.10	22x30	1.15	22x30	1.18	22x45	1.16
				25.4x20	0.95	30x20	1.05	25.4x25	1.08	25.4x25	1.18	25.4x35	1.16
								30x20	0.98	30x20	1.00	30x25	1.16
												35x25	1.15
330		20x30	1.21	22x25	1.20	20x30	1.25	22x35	1.25	20x40	1.20	22x50	1.33
		22x25	1.20	25.4x25	1.16	22x30	1.25	25.4x25	1.25	22x35	1.30	25.4x40	1.33
		25.4x20	1.02	30x20	1.15	25.4x25	1.25	35x20	1.13	25.4x30	1.30	30x30	1.33
						30x20	1.10			30x25	1.30	35x25	1.33
390		20x30	1.30	22x30	1.35	22x30	1.35	22x35	1.40	25.4x30	1.35	25.4x45	1.47
		22x25	1.30	25.4x25	1.35	25.4x25	1.35	25.4x30	1.40	22x40	1.49	30x35	1.47
		25.4x25	1.26	30x20	1.20	35x20	1.30	30x25	1.36	25.4x35	1.49	35x30	1.47
		30x20	1.25					35x20	1.23	30x25	1.49		
470		20x35	1.41	22x35	1.50	22x35	1.50	22x40	1.51	22x45	1.65	25.4x50	1.70
		22x30	1.41	25.4x30	1.50	25.4x30	1.50	25.4x35	1.54	25.4x35	1.65	30x40	1.70
		30x20	1.30	30x25	1.50	30x25	1.50	30x25	1.50	30x30	1.65	35x30	1.70
				35x20	1.36	35x20	1.41			35x25	1.65		
560		22x35	1.67	22x40	1.67	22x40	1.67	22x45	1.70	22x50	1.67	30x45	2.05
		25.4x30	1.67	25.4x30	1.67	25.4x30	1.67	30x30	1.70	25.4x40	1.80	35x35	2.05
		30x25	1.67	30x25	1.67	30x25	1.67	25.4x40	1.72	30x30	1.80		
		35x20	1.46	35x20	1.43			35x25	1.71	35x25	1.80		
680		22x40	1.82	22x45	1.78	22x45	1.78	25.4x45	1.94	25.4x50	2.00	30x50	2.17
		25.4x30	1.82	25.4x35	1.78	25.4x35	1.78	30x35	1.93	30x35		35x40	2.17
		30x25	1.82	30x30	1.78	30x30	1.78	35x25	1.89	35x30			
		35x20	1.51	35x25	1.83	35x25	1.78						
820		20x45	2.00	22x50	2.04	22x50	1.95	25.4x50	2.18	25.4x60	2.20	35x45	2.20
		22x45	2.04	25.4x40	2.04	25.4x45	2.04	30x40	2.19	30x40	2.30		
		25.4x35	2.04	30x30	2.04	30x30	2.04	35x30	2.16	35x35	2.30		
		30x30	2.04	35x25	2.04	35x25	2.04						
	35x25	2.04											
1000		22x50	2.25	25.4x45	2.30	25.4x45	2.30	25.4x60	2.54	30x45	2.35	35x60	2.55
		25.4x40	2.25	30x35	2.30	25.4x50	2.30	30x45	2.50	35x35	2.35		
		30x30	2.25	35x30	2.30	30x35	2.30	35x35	2.44	30x50	2.47		
		35x25	2.25			35x30	2.30			35x40	2.47		
1200		25.4x45	2.49	25.4x50	2.55	25.4x60	2.66	30x50	2.81	30x60	2.85		
		30x35	2.49	30x40	2.55	30x40	2.65	35x40	2.79	35x40	2.50		
		35x30	2.49	35x30	2.55	35x35	2.65			35x45	2.60		
1500		25.4x60	2.97	30x45	2.90	30x50	3.08	30x60	3.30	35x50	3.00		
		30x40	2.84	35x35	2.90	35x40	3.08	35x45	3.22				
		35x30	2.84										
1800		30x45	3.32	30x60	3.49	30x60	3.49	35x50	3.63	35x60	3.42		
		35x35	3.00	35x40	3.30	35x45	3.48						
2200		30x60	3.86	35x50	3.65	35x50	3.78	35x60	4.23				
		35x45	3.50										
2700		35x50	4.00	35x60	4.19								
3300		35x60	4.63										

HZ

HZ series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μ F)	V Item	350		400		420		450	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
47				22x20	0.37	22x20	0.37		
56		22x20	0.41	25.4x20	0.42	25.4x20	0.42	22x25	0.40
68		25.4x20	0.46	22x25	0.50	22x25	0.50	22x30	0.53
				25.4x20	0.46	25.4x20	0.46	25.4x25	0.50
82		22x25	0.55	22x25	0.64	22x25	0.64	22x30	0.64
		25.4x20	0.51	30x20	0.55	25.4x25	0.58	25.4x25	0.64
						30x20	0.53		
100		30x20	0.60	22x30	0.70	22x30	0.70	22x35	0.69
		22x25	0.69	25.4x25	0.70	25.4x25	0.70	25.4x30	0.69
				30x20	0.60	30x20	0.59	30x25	0.64
120		22x30	0.75	22x35	0.75	22x35	0.75	22x40	0.80
		25.4x25	0.75	25.4x25	0.75	25.4x30	0.75	25.4x30	0.80
		30x20	0.65	35x20	0.75	30x25	0.73	30x25	0.80
				30x25	0.73	35x20	0.67	35x25	0.73
150		22x35	0.82	22x40	0.88	22x40	0.88	22x 45	0.88
		30x25	0.82	25.4x30	0.88	25.4x35	0.88	25.4x35	0.88
		25.4x30	0.83	30x25	0.88	30x25	0.88	30x30	0.88
		35x20	0.76	35x20	0.80			35x25	0.75
180		22x40	0.92	22x45	0.98	22x45	0.95	22x50	1.00
		25.4x30	0.92	25.4x35	0.98	25.4x35	0.95	25.4x40	1.00
		30x25	0.90	30x30	0.98	30x30	0.95	30x30	1.00
				35x25	0.98	35x25	0.94		
220		22x45	1.05	22x50	1.10	22x50	1.10	25.4x45	1.12
		30x30	1.02	25.4x40	1.10	25.4x45	1.10	30x35	1.12
		25.4x35	1.04	30x30	1.10	30x35	1.10	35x30	1.12
		35x25	1.04	35x25	1.10	35x25	1.10		
270		22x50	1.16	25.4x45	1.22	25.4x50	1.22	25.4x60	1.18
		25.4x40	1.18	30x35	1.22	30x40	1.22		
		30x30	1.17	35x30	1.22	35x30	1.22	30x40	1.28
		35x25	1.20					35x35	1.28
330		25.4x45	1.29	25.4x50	1.44	25.4x60	1.41	30x50	1.45
		30x35	1.34	30x40	1.44	30x45	1.45	35x40	1.45
		35x30	1.22	35x30	1.44	35x35	1.45		
390		25.4x50	1.51	25.4x60	1.51	30x50	1.55	30x60	1.51
		30x40	1.51	30x45	1.60	35x40	1.55	35x40	1.55
		35x35	1.47	35x35	1.60				
470		25.4x60	1.66	30x50	1.90	30x60	1.79	35x50	1.85
		30x45	1.65	35x40	1.90	35x45	1.90		
		35x35	1.69						
560		30x50	1.85	30x60	2.10	35x50	2.15	35x60	1.91
		35x40	1.90	35x45	2.12				
680		30x60	2.15	35x50	2.27	35x60	2.27		
		35x45	2.00	35x60	2.27				
		35x50	1.99						
820		35x55	2.30						
		35x60	2.31						

MZ series

- 105°C, 5000 hours, long life.
- High temperature, high ripple current resistance and high reliability.
- RoHS Compliance
- 105°C 5000小時長壽命。
- 耐高溫、高紋波、高信賴性。



SPECIFICATIONS

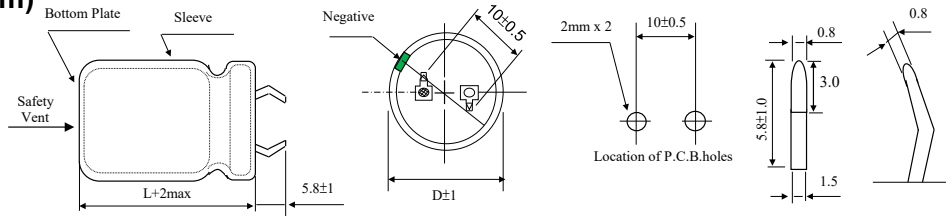
Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)									
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C					-25 ~ +105°C				
Rated Voltage Range 額定電壓範圍	10 ~ 100VDC					160 ~ 600VDC				
Leakage Current 洩漏電流	I ≤ 3√CV (μA) (After 5 minutes application of DC rated voltage, at 20 °C)									
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	10	16	25	35	50	63	80~100	160~400	420~600
	tan δ(Max)	0.60	0.45	0.30	0.25	0.20	0.15	0.15	0.15	0.20
When nominal capacitance over 1000μF, tanδ shall be added 0.01 to the listed value with increase of every 1000μF.										
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.									
	Rated Voltage(V)	10	16	25	35	50	63	80~100	160~400	420~600
	Z(-25°C)/Z(20°C)	4	4	3	3	2	2	2	4	8
Z(-40°C)/Z(20°C)										
15 15 10 8 6 6 5 - -										
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C.									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.									
	Capacitance Change	Within ± 15% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	IEC 60384-4 (JIS C 5101-4-1)									

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)				
	50	120	1K	10K	50K
10 ~ 100	0.90	1.00	1.05	1.10	1.15
160 ~ 250	0.80	1.00	1.32	1.45	1.50
315 ~ 450	0.76	1.00	1.30	1.41	1.43

MZ series

DIMENSIONS(mm)



STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V	10		16		25		35		50	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
1500										22x25	1.02
1800										22x30	1.18
										25.4x25	1.17
2200								22x25	1.11	22x35	1.32
2700										22x40	1.51
										25.4x30	1.48
										30x25	1.51
3300								22x30	1.42	25.4x35	1.71
								25.4x25	1.41	30x30	1.72
								22x35	1.58	35x25	1.74
3900						22x25	1.32	22x35	1.58	22x50	1.91
								25.4x30	1.59	25.4x40	1.89
4700						22x30	1.51	22x40	1.78	30x35	2.12
						25.4x25	1.52	30x25	1.78	35x30	2.16
5600								25.4x35	1.98	25.4x50	2.39
				22x25	1.45	22x35	1.71	30x30	1.99	30x40	2.39
								35x25	2.03	35x35	2.41
6800		22x25	1.31	22x30	1.67	22x40	1.92	22x50	2.26	30x50	2.79
						25.4x30	1.88				
				25.4x25	1.66	30x25	1.90	25.4x40	2.25	35x40	2.79
8200				22x35	1.88	25.4x35	2.15	25.4x50	2.57		
						30x30	2.16	30x35	2.51		
						35x25	2.19	35x50	2.56		
10000		22x30	1.65	22x40	2.12	22x50	2.45	30x40	2.87	35x50	3.56
				25.4x30	2.08						
12000		25.4x25	1.63	30x25	2.12	25.4x40	2.44	35x35	2.88		
		22x35	1.84	25.4x35	2.38	25.4x50	2.78	30x50	3.32		
		25.4x30	1.85	30x30	2.37	30x35	2.71				
15000		30x25	1.88	35x25	2.41	35x30	2.76	35x40	3.31		
		22x40	2.11	22x50	2.74	30x40	3.14				
		25.4x35	2.15	25.4x40	2.72	35x35	3.16				
18000		22x50	2.45	25.4x50	3.12	30x50	3.63	35x50	4.28		
		25.4x40	2.42	30x35	3.03						
		30x30	2.38	35x30	3.09	35x40	3.62				
		35x25	2.41								
22000		30x35	2.72	30x40	3.47						
		35x30	2.78	35x35	3.49						
27000		25.4x50	3.12	30x50	4.07	35x50	4.72				
		30x40	3.14	35x40	4.05						
33000		35x35	3.48								
39000		30x50	3.98	35x50	5.15						
		35x40	3.95								
47000		35x50	4.62								

MZ

MZ series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V Item	63		80		100		160		180	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
330											
390						22x25	0.78	22x25	1.32	22x25	1.22
470								22x25	1.47	22x25	1.34
										22x30	1.53
560						22x30	0.99	22x30	1.66	25.4x25	1.52
						25.4x25	0.98	25.4x25	1.67	22x30	1.68
680				22x25	0.97	22x25	1.12	22x30	1.86	25.4x25	1.67
								25.4x25	1.84	22x35	1.90
								30x25	1.95	25.4x30	1.89
820				22x30	1.12	22x40	1.26	22x35	2.09		
						25.4x30	1.24	25.4x30	2.08	22x40	2.13
						30x25	1.25			25.4x30	2.08
										25.4x35	2.17
1000		22x25	1.00	22x35	1.26	25.4x35	1.41	22x40	2.35	30x25	2.26
				25.4x25	1.24	30x30	1.42	22x45	2.40	22x45	2.40
						35x25	1.44	25.4x35	2.40	22x50	2.45
								30x25	2.50	25.4x40	2.45
										30x30	2.52
1200		22x30	1.16	22x40	1.42	22x50	1.60	22x50	2.69	35x25	2.66
		25.4x25	1.15	25.4x30	1.40	25.4x40	1.59	25.4x40	2.68	25.4x45	2.73
				30x25	1.41	30x35	1.61	30x30	2.77	30x35	2.83
								35x25	2.91		
1500		22x35	1.32	25.4x35	1.62	25.4x50	1.86	25.4x45	3.05		
						30x40	1.87	30x35	3.17	25.4x50	3.10
						35x30	1.85			30x40	3.26
1800		22x40	1.49	22x50	1.84	35x35	2.06	25.4x50	3.40	35x30	3.31
		25.4x30	1.46	25.4x40	1.83			30x40	3.57	30x45	3.66
		30x25	1.48	30x30	1.79			35x30	3.62	35x35	3.68
				35x25	1.82						
2200		25.4x35	1.67	25.4x50	2.10	30x50	2.40	30x45	4.05		
		30x30	1.68	30x35	2.06	35x40	2.39	30x50	4.11	30x50	4.11
		35x25	1.70	35x25	2.09			35x35	4.07	35x40	4.22
2700		22x50	1.92	30x40	2.35	35x50	2.81	35x40	4.67	35x45	4.32
		25.4x40	1.91	35x35	2.36			35x45	4.78	35x50	4.88
		30x35	1.93								
3300		25.4x50	2.20	30x50	2.75			35x50	5.40		
		35x30	2.18	35x40	2.73						
3900		30x40	2.41								
		35x35	2.43								
4700		30x50	2.79	35x50	3.46						
		35x40	2.78								
6800		35x50	3.55								

MZ series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz.

Cap (μF)	V Item	200		220		250		315		350	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.		
120										22x25	0.72
150								22x25	0.80	22x30	0.84
180								22x25	0.95	25.4x25	0.94
220		22x25	1.00			22x25	1.01	22x30	1.10	22x40	1.06
								25.4x25	1.10	25.4x30	1.07
										30x25	1.12
270		22x25	1.11	22x25	1.11	22x25	1.11	22x35	1.24	22x45	1.21
								25.4x30	1.25	25.4x35	1.24
										30x30	1.27
										35x25	1.34
330				22x30	1.18	22x30	1.29	22x40	1.40	22x50	1.37
								30x25	1.43	25.4x40	1.39
										30x35	1.42
390		22x25	1.34	22x35	1.39	22x35	1.44	22x45	1.56	25.4x45	1.55
				25.4x25	1.39	25.4x25	1.40	22x50	1.59	30x40	1.59
								25.4x35	1.57	35x30	1.65
470		22x30	1.54	22x35	1.55	22x40	1.61	25.4x40	1.76	25.4x50	1.73
				25.4x30	1.56	25.4x30	1.57	25.4x45	1.79	30x45	1.81
				30x25	1.62			30x30	1.73	35x35	1.82
								35x25	1.82		
560		22x35	1.72	22x45	1.73	22x 45	1.79	25.4x50	1.99	35x50	2.01
		25.4x25	1.67	25.4x35	1.81	25.4x35	1.79	30x35	1.93	35x40	2.06
				30x30	1.85	30x25	1.87	35x30	2.02		
680		22x40	1.94	22x50	1.98	22x50	2.02	30x40	2.19	35x45	2.34
		25.4x30	1.89	25.4x40	1.96	25.4x40	2.02	30x45	2.25		
		30x25	2.06	30x35	2.02	30x30	2.08	35x35	2.26		
				35x25	2.09	35x25	2.19				
820		22x45	2.17	25.4x45	2.24	25.4x45	2.26	30x50	2.51	35x50	2.62
		25.4x35	2.17	30x40	2.29	25.4x50	2.29	35x40	2.57		
				35x30	2.35	30x35	2.34				
						35x30	2.45				
1,000		22x50	2.45	25.4x50	2.52	30x40	2.66	35x45	2.91		
		25.4x40	2.45	30x45	2.58						
		30x30	2.52	35x35	2.63						
		35x25	2.66								
1,200		25.4x45	2.73	30x50	2.89	30x45	2.99	35x50	3.25		
		25.4x50	2.78	35x40	2.97	30x50	3.04				
		30x35	2.83			35x35	3.00				
		35x30	2.96			35x40	3.11				
1,500		30x40	3.26	35x45	3.41	35x45	3.56				
		30x45	3.34								
		35x35	3.36								
1,800		30x50	3.72	35x50	3.82	35x50	3.98				
		35x40	3.81								
2,200		35x45	4.32								
2,700		35x50	4.88								

MZ

MZ series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz.

Cap (μF)	V Item	400		420		450		500		550		600	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.				
82						22x25	0.64						
100		22x25	0.66	22x25	0.70	25.4x25	0.70	30x25	0.82				
120		22x25	0.77	22x30	0.81	22x30	0.81	30x30	0.91	30x30	0.91	30x40	0.96
				25.4x25	0.81	22x35	0.83	35x25	0.88			35x30	0.95
150						25.4x25	0.81						
		22x30	0.90	22x35	0.93	22x40	0.94	30x35	1.04	30x35	1.04	30x45	1.10
180						25.4x30	0.93					35x35	1.07
		22x35	1.02	22x40	1.04	22x45	1.06	30x40	1.17	30x40	1.17	30x50	1.22
220		25.4x25	0.99	25.4x30	1.02	25.4x35	1.06	35x30	1.10	35x30	1.10	35x40	1.22
				30x25	1.06	30x25	1.06						
270		22x40	1.15	22x45	1.17	22x50	1.20	30x45	1.33	30x50	1.35	30x60	1.40
		25.4x30	1.13	22x50	1.20	25.4x40	1.20	35x35	1.23	35x40	1.28	35x45	1.38
		30x25	1.17	25.4x35	1.18	30x30	1.18						
330						35x25	1.24						
		22x45	1.29	25.4x40	1.33	25.4x45	1.36	30x50	1.50	35x45	1.45	35x50	1.56
		22x50	1.32	25.4x45	1.36	25.4x50	1.38	35x40	1.42				
		25.4x35	1.30	30x30	1.31	30x35	1.34						
390				35x25	1.38	35x30	1.40						
		25.4x40	1.47	25.4x50	1.52	30x40	1.52	35x45	1.60	35x50	1.64	35x60	1.79
		30x30	1.45	30x35	1.48								
470		35x25	1.52	35x30	1.55								
		25.4x45	1.63	30x40	1.66	30x45	1.70	35x50	1.78	35x60	1.85		
		25.4x50	1.66	30x45	1.70	30x50	1.73						
		30x35	1.61	35x35	1.71	35x35	1.71						
560		35x30	1.68										
		30x40	1.82	30x50	1.90	35x40	1.95	35x60	2.03				
680		35x35	1.88	35x40	1.95	35x45	1.99						
		30x45	2.04	35x45	2.17	35x50	2.22						
820		30x50	2.07										
		35x40	2.13										
		35x45	2.40	35x50	2.45								
		35x50	2.69										

TZ series

- Snap-in type, 105°C10000 hours long life product.
- Long life. and high ripple current resistance.
- Suitable for computer equipment, inverter air conditioner etc.
- RoHS Compliance
- 基板自立 105°C10000小時長壽命品
- 耐高溫、高紋波。
- 適用於電腦設備、變頻空調等。



SPECIFICATIONS

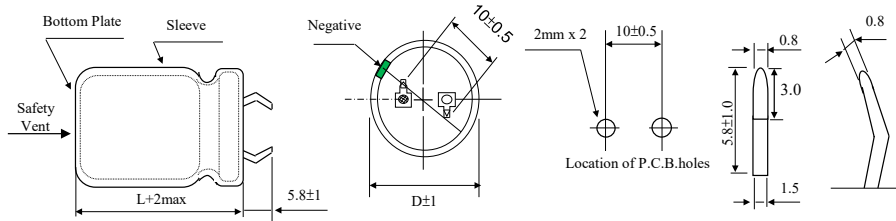
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(M)				
Operating Temperature Range 適用溫度範圍	-25 ~ +105°C				
Rated Voltage Range 額定電壓範圍	200 ~ 450VDC				
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (µA) or 5mA, which is smaller. (After 5 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	200	250	400	450
	tan δ(Max)	0.15	0.15	0.15	0.20
Temperature Stability 溫度特性	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	200	250	400	450
	Z(-25°C)/Z(20°C)	4	4	4	8
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105°C.				
	Capacitance Change	Within ±30% of the Initial Value			
	tan δ	250% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 15% of the Initial Value			
	tan δ	150% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	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

TZ series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μF)	V	200		250		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
220						30x35	1.00	30x40	1.04
220								35x30	1.02
270						30x40	1.15	30x45	1.19
270						35x30	1.13	35x35	1.16
330						30x45	1.29	30x50	1.33
330						35x35	1.26	35x40	1.32
330						40x30	1.28		
390				30x30	1.30	30x50	1.44	35x45	1.48
390						35x40	1.43		
470				30x35	1.42	35x45	1.60	35x50	1.64
470						40x35	1.58		
560		30x30	1.50	35x30	1.58	35x50	1.79	40x60	1.98
560						40x40	1.78		
680		30x35	1.70	30x45	1.80	40x50	2.05		
680				35x35	1.76				
820		30x40	2.00	30x50	2.03	40x60	2.36		
820		35x30	2.00	35x40	2.01				
820				40x30	1.96				
1000		30x45	2.20	35x45	2.30				
1000		35x35	2.20	40x35	2.27				
1000		40x30	2.17						
1200		35x40	2.40	35x50	2.55				
1200		40x35	2.45	40x40	2.53				
1500		35x50	2.81	40x50	2.98				
1500		40x40	2.79						
1800		40x50	3.24	40x60	3.40				

AZ series

- Protective countermeasure against DC over-voltage.
- Load Life: 105°C 2000 hours.
- RoHS Compliance
- DC過電壓安全對策，壽命保證 2000小時。



SPECIFICATIONS

Items 項目	Characteristics 特性			
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)			
Operating Temperature Range 適用溫度範圍	-25 ~ +105°C			
Rated Voltage Range 額定電壓範圍	200VDC、400VDC、420VDC			
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (µA) (After 5 minutes application of DC rated voltage, at 20 °C)			
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C			
	Rated Voltage(V)	200	400	420
	tan δ(Max)	0.15	0.15	0.15
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.			
	Rated Voltage(V)	200	400	420
	Z(-25°C)/Z(20°C)	3	8	8
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.			
	Capacitance Change	Within ± 20% of the Initial Value		
	tan δ	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.			
	Capacitance Change	Within ± 15% of the Initial Value		
	tan δ	≤150% of the Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4(JIS C 5101-4)			

◆ DC over voltage test conditions

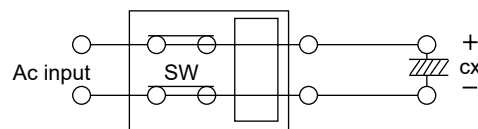
The vent will be operated and the capacitor shall become an open circuit without burning materials when the following excess DC voltage is applied.

According to the following experimental conditions, applying below rated voltage and rated current to be evaluated.

TEST DC VOLTAGE

Rated Voltage	Current Limit	Test DC Voltage
200 Vdc	1A	375 V
400 Vdc	1A	600 V
420 Vdc	1A	630 V
450 Vdc	1A	675 V

TEST CIRCUIT



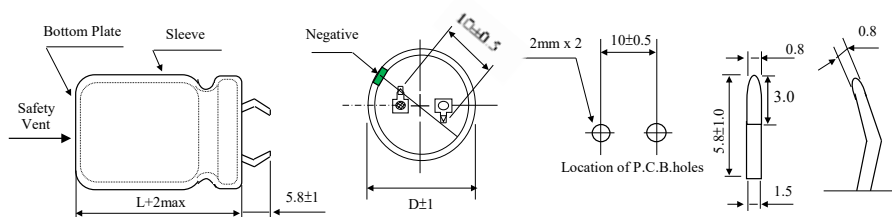
Determination: More than 80 percent of products explosion-proof vent operating normally, there is no any short-circuited, spark allowed.

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)					
	50	60	120	500	1K	≥10K
200	0.80	0.80	1.00	1.10	1.14	1.18
400~420	0.80	0.80	1.00	1.05	1.10	1.15

AZ series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C.(A rms) at 105°C 120 Hz.

Cap (μ F)	V Item	200		400		420	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
33				22x20	0.22	22x25	0.25
39				22x20	0.30		
47	22x20	0.35		22x25	0.35	22x25	0.35
				25.4x20	0.35		
				30x20	0.40		
56				22x25	0.38	22x25	0.38
				25.4x20	0.38		
68				22x25	0.40	22x30	0.45
				25.4x25	0.45		
				30x20	0.50		
82				22x30	0.50	22x35	0.64
				25.4x25	0.50		
				30x20	0.50		
100	22x20	0.50		22x35	0.55	22x40	0.69
				25.4x30	0.53		
				30x25	0.53		
				35x20	0.55		
120				22x40	0.60	22x45	0.75
				25.4x30	0.60		
				30x25	0.60		
				30x25	0.60		
150				22x45	0.70	25.4x40	0.82
				25.4x35	0.70		
				30x30	0.70		
				35x25	0.70		
				35x25	0.70		
180	22x25	0.70		22x50	0.80	25.4x45	0.90
				25.4x40	0.80		
	30x20	0.70		30x30	0.80		
220				35x25	0.80	35x30	0.90
				25.4x45	0.90		
				30x35	0.90		
270				35x30	0.90	35x35	1.00
				22x30	0.90		
				25.4x25	0.85		
				30x40	0.98	30x45	1.10
				30x20	1.10		
				35x35	0.96	35x40	1.10

AZ

AZ series

STANDARD RATINGS

DxL(mm), R.C.(A rms) at 105°C 120 Hz.

Cap (µF)	V Item	200		400		420	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
330		22x30	1.05	30x50	1.21	35x45	1.20
		25.4x30	1.05				
		30x25	1.05				
390		22x35	1.20	35x45	1.32		
		25.4x30	1.20				
		30x25	1.20				
470		22x40	1.30	35x50	1.45		
		25.4x35	1.30				
		30x25	1.35				
560		22x45	1.50				
		25.4x40	1.50				
		30x35	1.55				
		35x25	1.55				
680		25.4x50	1.70				
		30x40	1.70				
		35x30	1.70				
820		30x45	1.99				
		35x35	1.99				
1000		30x50	2.10				
		35x40	2.10				
1200		35x50	2.30				

AU series

- Snap-in type, 105°C 2000 hours specially designed for audio equipment
- Select structural materials with high sound quality
- Create high definition audio equipment with high sound quality
- Suitable for high sound quality audio equipment
- RoHS Compliance
- 基板自立 105°C 2000小時音響專用鋁電解電容器
- 精選高音質結構材料
- 打造高品質HD音響設備的音響效果
- 適用於高音質音響設備
- 環境對策品



SPECIFICATIONS

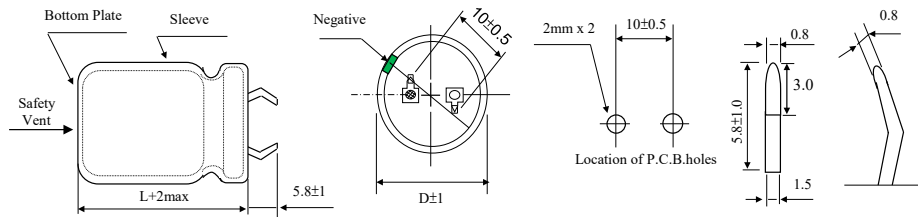
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	± 20% (M)							
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C			- 25 ~ +105°C				
Rated Voltage Range 額定電壓範圍	16 ~ 250VDC			400 ~ 450VDC				
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (µA) or 5mA, which is smaller. (After 5 minutes application of DC rated voltage, at 20 °C)							
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	16	25~75	80~100	180	200~400	450	
	tan δ(Max)	0.35	0.30	0.25	0.15	0.15	0.20	
When nominal capacitance over 22000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.								
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.							
	Rated Voltage(V)	16~250			400~450			
	Z(-25°C)/Z(20°C)	4			8			
	Z(-40°C)/Z(20°C)	12			-			
Load Life 負荷壽命	2000hours, with application of rated voltage at 105°C							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000hours 105°C without voltage applied. Before the measurement. The Capacitance shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Standards 參照標準	JIS C 5101-4-1 (IEC 60384-4)							

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)					
	50	120	300	1K	10K	50K
16~250	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

AU series

DIMENSIONS(mm)



STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz.

Cap (µF)	V Item	16		25		35		50	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
1500								22x20	1.34
1800								20x25	1.47
								25.4x20	1.43
2200						22x20	1.26	20x30	1.60
								22x25	1.60
2700						20x25	1.39	20x35	1.73
								22x30	1.73
						25.4x20	1.34	25.4x25	1.69
								30x20	1.78
3300				22x20	1.30	20x30	1.52	20x40	1.95
						22x25	1.52	22x35	1.91
3900				20x25	1.39			20x45	2.13
						30x20	1.60	22x40	2.04
				25.4x20	1.34			25.4x30	2.17
								30x25	2.04
								35x20	2.13
4700	22x20	1.17	20x30	1.47	20x35	1.91	20x50	2.39	
			22x25	1.47	22x30	1.91	22x45	2.26	
					25.4x25	1.86	25.4x35	2.34	
5600	20x25	1.26	20x40	2.08	22x50	2.52	22x50	2.52	
			30x20	1.60	22x35	2.04	25.4x40	2.52	
					25.4x30	1.95	30x30	2.60	
					35x20	1.95	35x25	2.47	
6800	25.4x20	1.47	20x35	1.91	20x50	2.17	25.4x45	2.86	
			22x30	1.91	22x40	2.26			
			25.4x25	1.86	30x25	2.26	30x35	2.82	
8200	20x30	1.65	20x40	2.08	22x45	2.52	30x40	3.08	
			22x35	2.04	25.4x40	2.34			
	22x25	1.65	25.4x30	2.00	30x30	2.39	35x30	3.17	
			35x20	1.95					
10000	20x35	1.78	20x50	2.21	25.4x45	2.65	30x45	3.47	
	22x30	1.78	22x40	2.3	30x35	2.60			
	25.4x25	1.73	25.4x35	2.17					
	30x20	1.82	30x25	2.3	35x25	2.78	35x35	3.47	
12000	20x40	1.95	22x45	2.52	25.4x50	3.00			
	22x35	1.91	25.4x40	2.39	30x40	2.86	35x40	3.78	
	25.4x30	1.86	30x30	2.43					
	35x20	1.82	35x25	2.3	35x30	2.95			
15000	20x45	2.26							
	22x40	2.17	25.4x45	2.73	30x45	3.30	35x50	4.08	
	25.4x35	2.08							
	30x25	2.17	30x35	2.69	35x35	3.30			
18000	22x45	2.43	25.4x50	3.08	30x50	3.73			
	25.4x40	2.26	30x40	2.95					
	30x30	2.30	35x30	3.04	35x40	3.60			
22000	25.4x45	2.56	30x45	3.34					
	30x35	2.52			35x45	4.08			
	35x25	2.52	35x35	3.34					
27000	25.4x50	2.95							
	30x40	2.82	35x40	3.73					
	35x30	2.91							
33000	30x45	3.21							
	35x35	3.17	35x45	4.21					

AU

AU series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V Item	63		80		100			
		D x L	R.C.	D x L	R.C.	D x L	R.C.		
680						20x30	1.47		
						22x25	1.52		
820	22x20	1.13		20x25	1.47	20x35	1.60		
				25.4x20	1.43	22x30	1.60	25.4x25	1.56
						30x20	1.65	20x40	1.78
1000	20x25	1.26		20x30	1.56	20x45	2.00		
				22x25	1.60			22x40	1.91
1200	25.4x20	1.43		20x35	1.69	25.4x30	2.04		
				22x30	1.69	30x25	1.91		
				25.4x25	1.65			35x20	2.00
				30x20	1.73				
1500	20x30	1.65		20x40	1.91	20x50	2.3		
	22x25	1.65		22x35	1.86	22x45	2.21		
				25.4x30	1.82	25.4x35	2.26		
1800	20x35	1.78		20x45	2.13	22x50	2.47		
	22x30	1.73		22x40	2.04	25.4x40	2.47		
	25.4x25	1.73		30x25	2.08	30x30	2.52		
	30x20	1.78		35x20	2.17	35x25	2.39		
2200	20x40	1.95		22x45	2.34	25.4x45	2.78		
	22x35	1.91		25.4x35	2.39	30x35	2.78		
	25.4x30	1.86	30x30	2.21	35x30	2.60			
	35x20	1.82							
2700	20x50	2.08	30x35	2.43	30x40	3.08			
	22x40	2.13							
	25.4x35	2.04	35x25	2.60	35x35	2.82			
	30x25	2.17							
3300	22x45	2.43		25.4x50	2.82	30x50	3.26		
	25.4x40	2.26		30x40	2.73				
	30x30	2.34		35x30	2.78				
3900	25.4x45	2.47		30x45	3.00	35x40	3.73		
	30x35	2.47	35x35	2.95					
	35x25	2.60							
4700	25.4x50	2.78		30x45	3.34	35x50	3.91		
	30x40	2.69	35x40	3.26					
	35x30	2.78							
5600	30x45	3.00	35x45	3.56					
	35x35	2.95							
6800	30x50	3.39	35x50	4.04					
	35x40	3.26							
8200	35x45	3.65							
10000	35x50	4.17							

AU

AU series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V	200		250		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
56								20x25	0.44
68						20x25	0.49	20x30	0.50
82						20x30	0.64	20x35	0.64
						22x25	0.64	22x30	0.64
100						20x35	0.68	20x40	0.69
					22x30			0.69	
					25.4x25			0.69	
120						20x35	0.73	20x45	0.72
						22x30	0.73	22x35	0.72
						25.4x25	0.73	25.4x30	0.72
150						20x45	0.85	22x45	0.79
						22x35	0.85	25.4x35	0.79
						25.4x30	0.85	30x25	0.79
180				20x25	0.90	20x50	0.95	22x50	0.87
						22x40	0.95	25.4x40	0.87
						25.4x35	0.95	30x30	0.87
220				20x30	1.00	22x50	1.10	25.4x45	1.05
		20x25	0.90			25.4x40	1.10		
				22x25	1.00	30x30	1.10	30x35	1.05
						35x25	1.10		
270		20x30	0.99	20x35	1.10	25.4x45	1.22	30x40	1.23
		22x25	0.99	22x30	1.10	30x35	1.22	35x30	1.23
330		20x35	1.20	20x40	1.20	25.4x50	1.44	30x45	1.38
				22x35	1.20	30x40	1.44	35x35	1.38
				25.4x25	1.20	35x30	1.44		
390		20x40	1.31	20x45	1.30	30x45	1.55	35x40	1.61
		22x30	1.31	22x40	1.30	35x35	1.55		
		25.4x25	1.31	25.4x30	1.30				
470		20x45	1.48	20x50	1.40	30x50	1.68	35x45	1.78
		22x35	1.48	22x45	1.40				
		25.4x30	1.48	25.4x35	1.40	35x40	1.68		
560		20x50	1.60	22x50	1.50	35x45	1.90	35x50	1.99
		22x40	1.60	25.4x40	1.50				
		25.4x35	1.60	30x30	1.50				
				35x25	1.50				
680		22x45	1.75	25.4x50	1.70	35x50	2.12		
		25.4x40	1.75						
		30x30	1.75	30x35	1.70				
		35x25	1.75						
820		25.4x45	2.04	30x40	2.00				
		30x35	2.04	35x30	2.00				
1000		25.4x50	2.30	30x45	2.20				
		30x40	2.30	35x35	2.20				
		35x30	2.30						
1200		30x45	2.65	35x40	2.30				
		35x35	2.65						
1500		30x50	2.80	35x50	2.50				
		35x40	2.80						
1800		35x45	3.08						
2200		35x50	3.48						

WZ series

- Snap-in type, 125°C 2000 hours long life product.
- Long life. and high ripple current resistance.
- Suitable for computer equipment, inverter air conditioner etc.
- RoHS Compliance
- 基板自立 125°C 2000小時長壽命品
- 耐高溫、高紋波。
- 適用於電腦設備、變頻空調等。



SPECIFICATIONS

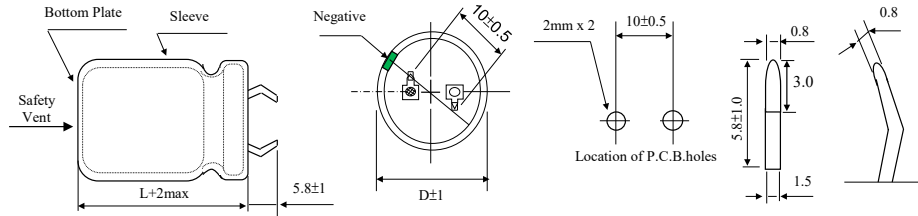
Items 項目	Characteristics 特性	
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)	
Operating Temperature Range 適用溫度範圍	-25 ~ +125°C	
Rated Voltage Range 額定電壓範圍	400~ 450VDC	
Leakage Current 洩漏電流	$I \leq 3\sqrt{CV}$ (µA) or 5mA, which is Smaller. (After 5 minutes application of DC rated voltage, at 20°C)	
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C	
	Rated Voltage(V)	400~450
	tan δ(Max)	0.25
	When nominal capacitance over 1000µF, tanδ shall be added 0.01 to the listed value with increase of every 1000µF .	
Temperature Stability 溫度特性	Measurement Frequency:120Hz	
	Rated Voltage(V)	400~450
	Z(-25°C)/Z(20°C)	10
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 125°C.	
	Capacitance Change	Within ± 20% of Initial Value
	tan δ	200% or less of Initial Specified Value
	Leakage Current	Initial Specified Value or less
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.	
	Capacitance Change	Within ± 20% of Initial Value
	tan δ	200% or less of Initial Specified Value
	Leakage Current	Initial Specified Value or less
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)	

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)				
	50	120	500	1K	≥10K
400 ~ 450	0.8	1.00	1.20	1.25	1.40

WZ series

DIMENSIONS(mm)



STANDARD RATINGS

DxL(mm), R.C.(A rms) at 125°C 120 Hz.

Cap (μF)	V Item	400		420		450	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
82		22X25	0.79	22X25	0.79	22X25	0.77
100		22X30	0.91	22X30	0.91	22X30	0.89
120		22X30	0.98	22X30	0.99	22X30	0.94
		25.4X25	0.96	25.4X25	0.96	25.4X25	0.93
150		22X35	1.14	22X35	1.14	22X40	1.17
		25.4X30	1.12	25.4X30	1.12	25.4X30	1.10
						30X25	1.06
180		22X40	1.28	22X45	1.34	22X45	1.32
		25.4X35	1.28	25.4X35	1.28	25.4X35	1.25
						30X30	1.24
220		22X50	1.50	22X50	1.51	22X50	1.49
		25.4X40	1.45	25.4X40	1.45	25.4X40	1.42
		30X30	1.35	30X30	1.35	30X30	1.31
						35X25	1.23
270		22X55	1.69	22X60	1.74	22X60	1.73
		25.4X40	1.64	25.4X45	1.64	25.4X45	1.59
		30X35	1.55	30X35	1.54	30X35	1.50
						35X30	1.45
330		25.4X55	1.90	25.4X55	1.90	25.4X55	1.88
		30X40	1.75	30X40	1.74	30X40	1.70
						35X35	1.65
390		25.4X60	2.09	25.4X60	2.09		
		30X45	1.94	30X45	1.93	30X45	1.88
		35X35	1.75	35X35	1.74	35X35	1.69
470		30X50	2.14	30X55	2.24	30X55	2.21
		35X40	1.96	35X40	1.95	35X40	1.90
560		30X60	2.45	30X60	2.44	30X60	2.39
		35X45	2.16	35X45	2.15	35X50	2.26
680		35X55	2.52	35X55	2.51	35X55	2.47
820		35X60	2.72				

LM series

- 85°C 2000 hours, LUG terminal type.
- High ripple current resistance.
- Suitable for power supply, control circuit of inverter.
- RoHS Compliance
- 85°C 2000小時 插片式電容。
- 耐高紋波電流。
- 適用於電源供應器、變頻器控制電路。



SPECIFICATIONS

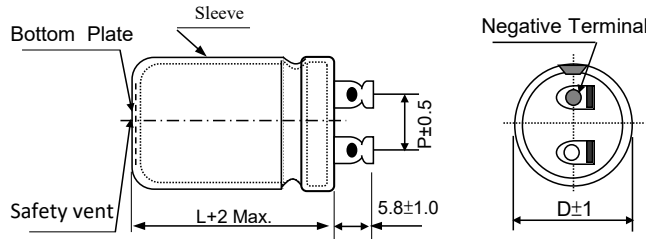
Items 項目	Characteristics 特性					
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)					
Operating Temperature Range 適用溫度範圍	-40 ~ +85°C		-25 ~ +85°C			
Rated Voltage Range 額定電壓範圍	16 ~ 250VDC		315 ~ 450VDC			
Leakage Current 洩漏電流	I ≤ 0.02CV (μA) or 5mA, whichever is smaller. (After 5 minutes application of DC rated voltage, at 20 °C)					
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C					
	Rated Voltage(V)	16	25	35~50	63~315	350~450
	tan δ(Max)	0.35	0.30	0.25	0.20	0.25
When nominal capacitance over 1000μF, tanδ shall be added 0.01 to the listed value with increase of every 1000μF .						
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.					
	Rated Voltage(V)	16~100		160~250		315~450
	Z(-25°C)/Z(20°C)	6		4		8
	Z(-40°C)/Z(20°C)	12		-		-
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85°C.					
	Capacitance Change	Within ± 20% of Initial Value				
	tan δ	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.					
	Capacitance Change	Within ± 20% of Initial Value				
	tan δ	200% or less of Initial Specified Value				
	Leakage Current	Initial Specified Value or less				
Standards 參照標準	IEC 60384-4(JIS C 5101-4)					

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	50	120	1K	≥10K
16 ~ 100	0.90	1.00	1.20	1.25
160 ~ 315	0.95	1.00	1.20	1.25
350 ~ 450	0.98	1.00	1.15	1.20

LM series

DIMENSIONS(mm)



ϕ	25.4	30	35	40	51
P	10	10	14	18	20

STANDARD RATINGS

DxL(mm), R.C.(A rms) at 85°C 120 Hz.

Cap (μ F)	V	16		25		35		40		50	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
3300								25.4x30	2.45	25.4x30	2.47
4700						25.4x30	2.88	25.4x40	3.21	25.4x40	3.22
6800				25.4x30	3.12	25.4x40	3.73	25.4x50	4.07	25.4x50	4.09
10000	25.4x30	3.43	25.4x40	4.03	25.4x50	4.71	25.4x60	5.07	30x50	5.10	
15000	25.4x40	4.42	25.4x50	5.08	30x50	5.81	30x60	6.24	35x60	6.67	
22000	25.4x50	5.44	30x50	6.15	35x60	7.45	35x60	7.48	35x80	8.34	
33000	30x50	6.57	35x60	7.85	35x80	9.17	35x80	9.25	40x100	10.60	
47000	35x60	8.19	35x80	9.48	40x100	11.3	51x105	12.5	51x105	12.80	
68000	35x80	9.85	40x100	11.6	51x105	13.2					
100000		12.1	51x105	13.5							
150000	51x105	13.9									

Cap (μ F)	V	63		80		100		160		200	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
330								25.4x30	0.92	25.4x30	0.95
470								25.4x40	1.22	25.4x40	1.25
680								25.4x50	1.60	25.4x50	1.63
1000						25.4x30	1.61	25.4x60	2.08	30x50	2.12
1500			25.4x30	1.91	25.4x40	2.13	30x60	2.68	35x50	2.87	
2200	25.4x30	2.06	25.4x40	2.52	25.4x50	2.75	35x60	3.40	35x60	3.81	
3300	25.4x40	2.73	25.4x50	3.29	30x50	3.53	35x100	5.02	35x80	5.27	
4700	25.4x50	3.50	25.4x60	4.14	35x60	4.76	40x100	6.15	40x100	6.81	
6800	25.4x60	4.37	30x60	5.15	35x80	6.17	51x105	7.86	51x105	8.12	
10000	30x60	5.46	35x80	7.08	40x100	8.16					
15000	35x80	7.48	40x80	8.42	51x105	10.2					
22000	35x100	9.16	51x105	11.2							
33000	51x105	11.7									

Cap (μ F)	V	250		315		350		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
68										25.4x30	0.38
100						25.4x30	0.50	25.4x30	0.50	25.4x40	0.50
150			25.4x30	0.61	25.4x40	0.69	25.4x40	0.62	25.4x50	0.68	
220	25.4x30	0.75	25.4x40	0.84	25.4x50	0.91	25.4x50	0.81	30x50	0.88	
330	25.4x40	1.02	25.4x50	1.12	25.4x60	1.21	30x60	1.15	35x60	1.24	
470	25.4x50	1.34	25.4x60	1.43	30x60	1.54	35x60	1.47	35x80	1.65	
680	30x50	1.73	30x60	1.85	35x60	1.98	35x80	1.98	35x100	2.18	
1000	30x60	2.25	35x70	2.56	35x100	2.95	40x100	2.78	51x80	2.77	
1500	35x80	3.21	35x100	3.54	40x100	3.72	51x105	3.69			
2200	35x100	4.19	40x100	4.41	51x105	4.86					
3300	51x80	5.24	51x105	5.82							

LG series

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

- 105°C 2000 hours, LUG terminal type.
- High temperature, high ripple current resistance.
- Suitable for machinery, filter circuit of tele-communication.
- RoHS Compliance
- 105°C 2000小時 插片式電容。
- 耐高溫、高紋波電流。
- 適用於機械、通訊設備的濾波迴路。



SPECIFICATIONS

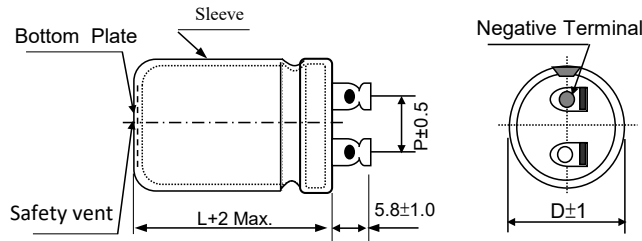
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	-40 ~ +105°C		-25 ~ +105°C		
Rated Voltage Range 額定電壓範圍	16 ~ 250VDC		315 ~ 450VDC		
Leakage Current 洩漏電流	I ≤ 0.02CV (µA) or 5mA, whichever is smaller. (After 5 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	16~25	35~50	63~315	350~450
	tan δ(Max)	0.35	0.25	0.20	0.25
When nominal capacitance over 1000µF, tanδ shall be added 0.01 to the listed value with increase of every 1000µF .					
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值)	Measurement Frequency: 120Hz.				
	Rated Voltage(V)	16~100	160~250	315~450	
	Z(-25°C)/Z(20°C)	6	4	8	
	Z(-40°C)/Z(20°C)	12	8	-	
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.				
	Capacitance Change	Within ± 25% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 25% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4(JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	50	120	1K	≥ 10K
16 ~ 100	0.90	1.00	1.20	1.25
160 ~ 315	0.95	1.00	1.20	1.25
350 ~ 450	0.98	1.00	1.15	1.20

LG series

DIMENSIONS(mm)



ϕ	25.4	30	35	40	51
P	10	10	14	18	20

STANDARD RATINGS

DxL(mm), R.C.(A rms) at 105°C 120 Hz

Cap (μF)	V	16		25		35		50		63		80		100	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
470										25.4x25	0.60	25.4x25	0.62	25.4x25	0.85
680										25.4x25	0.80	25.4x25	1.03	25.4x25	1.10
1000						25.4x25	0.50	25.4x25	0.80	25.4x25	1.10	25.4x35	1.30	25.4x40	1.40
1500						25.4x25	0.80	25.4x25	1.10	25.4x25	1.50	25.4x35	1.70	25.4x40	1.80
2200	25.4x25	0.70	25.4x25	1.00	25.4x35	1.30	25.4x35	1.60	25.4x35	1.70	25.4x50	1.90	30x50	2.40	
3300	25.4x25	1.02	25.4x30	1.40	25.4x40	1.80	25.4x50	2.10	30x50	2.30	30x60	2.60	30x60	2.80	
4700	25.4x30	1.50	25.4x35	1.90	25.4x50	2.00	30x50	2.60	30x60	2.80	35x60	3.10	40x60	3.70	
6800	25.4x35	2.01	25.4x50	2.40	30x50	2.70	35x50	3.00	35x60	3.20	40x60	3.90	40x80	5.10	
10000	25.4x50	2.40	30x50	2.90	30x60	3.20	35x60	4.40	40x60	4.90	40x80	5.80			

Cap (μF)	V	160		200		250		315		350		400		450	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
22														25.4x35	0.15
33														25.4x50	0.21
47												25.4x40	0.21	25.4x50	0.22
100						25.4x50	0.43	25.4x50	0.44	25.4x50	0.45	30x50	0.48	30x60	0.53
150						25.4x50	0.51	25.4x50	0.62	25.4x50	0.61	30x50	0.61	30x60	0.61
220	25.4x50	0.64	30x50	0.71	30x50	0.72	35x50	0.82	35x60	0.82	35x80	0.82	35x80	0.92	
330	30x50	0.92	30x60	0.92	35x60	1.03	35x80	1.05	35x80	1.10	40x80	1.10			
470	30x60	1.20	35x60	1.20	35x80	1.30	40x80	1.40	40x80	1.50					
680	35x60	1.60	40x60	1.70	40x80	1.80									
1000	35x80	2.20													

LP series

- 85°C 3,000 hours. Screw terminal type.
- High ripple current resistance.
- Suitable for industrial machinery, power converter, communication sets and test equipment. communication sets and test equipment.
- RoHS Compliance
- 85°C 3000小時 螺絲型端子。
- 耐高紋波電流。
- 適用於工業機械、電源轉換器、通訊或檢測設備。



SPECIFICATIONS

Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)										
Operating Temperature Range 適用溫度範圍	-40 ~ +85°C					-25 ~ +85°C					
Rated Voltage Range 額定電壓範圍	16 ~ 250VDC					350 ~ 450VDC					
Leakage Current 洩漏電流	I ≤ 0.02CV (µA) or 5mA, whichever is smaller. (After 5 minutes application of DC rated voltage, at 20°C)										
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C										
	Rated Voltage(V)	16	25	35	50	63	80	100	160~250	350~500	
	tan δ(Max)	35Ø	0.70	0.45	0.40	0.30	0.25	0.25	0.20	0.20	0.25
		51Ø	0.90	0.60	0.60	0.45	0.35	0.30	0.20	0.20	0.25
		64Ø	1.30	0.90	0.80	0.50	0.40	0.35	0.25	0.20	0.25
		76Ø	2.00	1.20	0.90	0.70	0.50	0.40	0.35	0.25	0.25
90Ø	-	-	-	-	-	-	-	0.25	0.25		
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.										
Impedance Ratio(Max) 阻抗比率(最大值)	Rated Voltage(V)	16~250					350~500				
	Z(-25°C)/Z(20°C)	-					8				
	Z(-40°C)/Z(20°C)	12					-				
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 85°C.										
	Capacitance Change	Within ± 15% of Initial Value									
	tan δ	175% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.										
	Capacitance Change	Within ± 15% of Initial Value									
	tan δ	175% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Standards 參照標準	IEC 60384-4(JIS C 5101-4)										

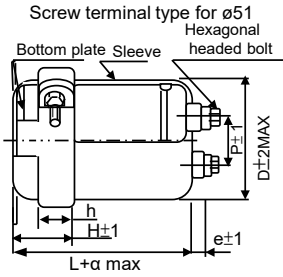
Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)			
	50	120	1K	≥ 10K
16 ~ 100	0.90	1.00	1.15	1.15
160 ~ 250	0.88	1.00	1.15	1.20
350 ~ 500	0.82	1.00	1.30	1.40

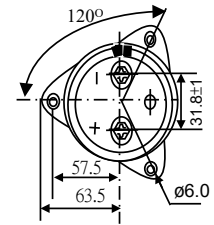
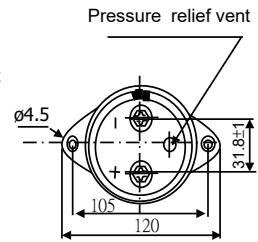
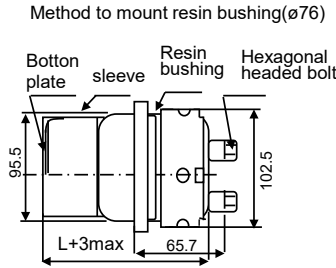
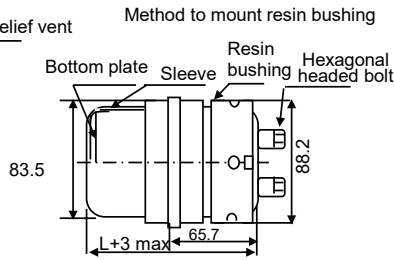
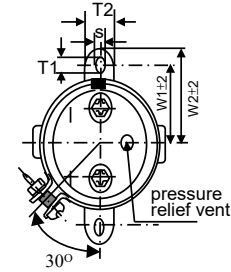
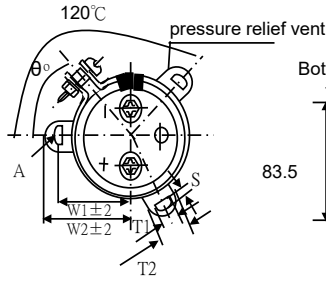
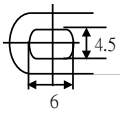
LP

LP series

DIMENSIONS(mm)



3-leg brackets for $\Phi 90$ capacitors have different hole shapes from the ordinary ones as illustrated below



DIMENSIONS OF TERMINAL PITCH(P)

ΦD (mm)	P (mm)	e	α
35	12.7	6	3
51	22.0	6	3
64	28.6	6	3
76	31.8	6	3
90	31.8	10	4

DIMENSIONS OF MOUNTING BRACKET

unit:mm

Cap (μF)	Leg shape	3-Legs					2-Legs			
		ΦD	$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$	$\Phi 100$	$\Phi 51$	$\Phi 64$	$\Phi 76$
	W1	31.8	38.1	44.5	50.8	57.5	34	40.5	46.5	54
	W2	38.1	42.6	49.2	55.6	63.5	40	46.5	53	60
	T1	7	7	7	7	8	7	7	7	7
	T2	14	14	14	14	15	14	14	14	14
	S	5	5	5	5	6	5	5	5	5
	θ°	60	60	60	60	60	45	45	45	45
	H	30	30	30	30	51.2	30	30	30	30
	h	24	24	24	24	50	24	24	24	24

STANDARD RATINGS

DxL(mm), R.C : (mA rms) at 85°C 120 Hz

Cap (μF)	V	16		25		35		50		63	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
10000										35x80	4.0
15000								35x80	5.4	35x100	5.5
22000								35x100	6.0	35x120	7.0
33000				35x80	6.0	35x80	6.2	51x80	7.0	51x80	8.8
47000	35x80	6.4	35x100	8.2	35x120	8.2	51x100	8.6	51x120	11.7	
68000	35x100	7.9	35x120	9.4	51x80	9.3	51x100	11.0	64x100	15.0	
100000	35x120	10.6	51x100	12.0	51x120	13.6	64x100	14.2	64x140	20.8	
150000	51x120	11.5	51x120	15.3	64x120	16.5	76x120	18.6	76x140	26.0	
220000	51x120	15.6	64x120	18.9	76x100	20.1					
330000	64x120	25.0	76x120	23.2	76x150	24.8					
470000	76x120	30.5									
500000	76x160	32.0									

LP series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz

Cap (μ F)	V	80		100		160		200		250	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
1000										35x80	2.4
1500								35x80	2.9	35x100	3.0
2200						35x80	3.2	35x100	3.5	51x80	4.0
3300						35x120	4.7	51x80	4.8	51x100	5.4
4700				35x80	3.7	51x80	5.0	51x100	6.3	64x100	7.3
6800				35x100	4.5	51x100	6.4	51x140	7.3	64x120	8.9
10000		35x80	4.2	35x120	5.3	64x100	9.0	64x120	9.8	76x120	11.8
15000		35x120	6.0	51x80	6.0	76x100	12.0	76x120	13.0	90x150	16.4
22000		51x80	6.5	51x100	6.8	76x140	16.9	90x150	15.9		
33000		51x120	9.2	51x140	10.0	90x150	19.2				
47000		64x120	12.7	64x140	14.1						
68000		64x140	15.5	76x150	18.2						
100000		76x150	21.3								

Cap (μ F)	V	350		400		450		500	
	Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
470				35x80	2.0	35x80	2.0	51x75	2.2
680		35x80	2.5	35x100	2.6	35x120	2.9	51x100	3.1
1000		51x60	3.3	51x80	3.3	51x80	3.6	51x130	3.8
1200		51x80	3.6	51x80	4.2	51x100	4.2	64x100	4.6
1500		51x80	4.5	51x100	4.8	51x120	5.0	64x120	5.4
1800		51x100	5.1	51x120	5.4	64x100	5.4	64x130	5.8
2200		51x120	6.0	51x140	6.3	64x120	6.6	76x120	6.9
2700		51x140	6.9	64x120	7.2	64x140	7.5	76x150	7.9
3300		64x100	8.0	64x140	8.4	76x120	8.4	90x140	8.6
3900		64x120	9.0	76x100	8.7	76x150	9.6	90x150	10.0
4700		76x100	9.6	76x150	10.5	76x150	11.4	90x190	12.0
5600		76x120	11.4	76x150	12.3	76x150	13.2		
6800		76x150	13.5	76x150	13.5	90x150	14.4		
8200		76x150	15.0	90x150	15.9	90x150	15.9		
10000		90x150	16.8	90x150	17.7	90x190	17.5		
12000		90x150	18.4	90x190	20.7				
15000		90x190	22.8						

LS series

- Load life:85°C 5000 hours Screw terminal type.
- Suitable for use in industrial equipment industrial power,solar pv inverter, wind power, Marine, heavy trucks, and other fields
- 85°C 5000小時 螺絲型端子。
- 適用於工業設備工控電源，太陽能光伏逆變器，風力發電，船舶，重型卡車等領域。



SPECIFICATIONS

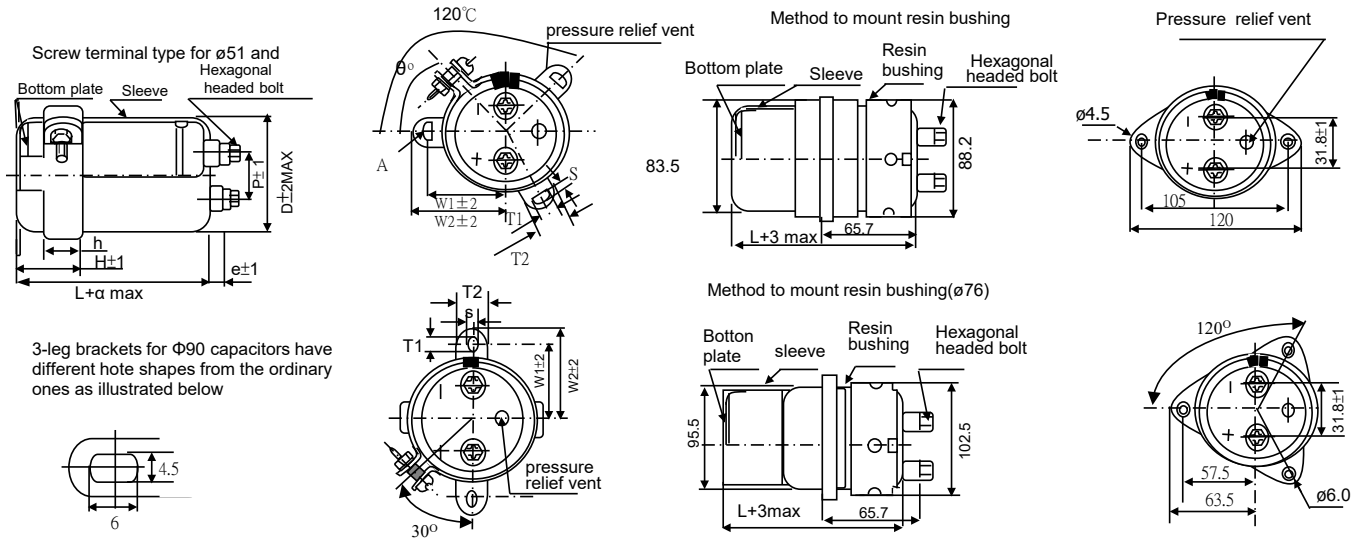
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	- 25 ~ +85°C				
Rated Voltage Range 額定電壓範圍	350 ~ 500VDC				
Rated Capacitance Range 容量範圍	820~22,000uF				
Leakage Current 洩漏電流	I ≤0.02CV (μA) or 5mA,whichever is smaller. (After 5 minutes application of DC rated voltage, at 20 °C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	350	400	450	500
	tan δ(MAX)	0.20	0.20	0.20	0.25
Temperature Stability 溫度特性	Measurement Frequency: 120Hz.				
	Capacitance Change C(-25°C)/Z(20°C) ≥ 0.6				
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85°C.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)				
	50	120	300	1K	≥10K
350 ~ 500	0.80	1.00	1.20	1.30	1.40

LS series

DIMENSIONS(mm)



TERMINAL PITCH(W) & LENGTH (e) TABLE

ΦD	P	e	α
51	22	6	3
64	28.6	6	3
76	31.8	6	3
90	31.8	6	3
100	41.5	10	4

DIMENSIONS OF MOUNTING BRACKET

unit:mm

Cap (μF)	Leg shape	3-Legs					2-Legs				
		ΦD	$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$	$\Phi 100$	$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$
	W1		31.8	38.1	44.5	50.8	57.5	34	40.5	46.5	54
	W2		38.1	42.6	49.2	55.6	63.5	40	46.5	53	60
	T1		7	7	7	7	8	7	7	7	7
	T2		14	14	14	14	15	14	14	14	14
	S		5	5	5	5	6	5	5	5	5
	θ°		60	60	60	60	60	45	45	45	45
	H		30	30	30	30	51.2	30	30	30	30
	h		24	24	24	24	50	24	24	24	24

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz

Cap (μF)	V	350		400		450		500	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
820						51x60	4.00		
1000					51x60	4.40	51x75	4.80	
1200		51x60	4.90			51x85	5.60		
				51x96	5.70				
1500				51x75	5.90	51x96	6.30	64x115	8.6
		51x75	6.50	51x85	6.80	51x115	7.60	64x130	10.0
1800				51x96	7.00				
		51x85	7.50	51x105	8.00	51x130	8.80	64x155	11.7
2200		51x96	7.70						

LS series

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 85°C 120 Hz.

Cap (μ F)	V Item	350		400		450		500	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
2700		51x115	9.30	51x130	9.80	64x115	10.1	76x120	15.0
3300		51x130	10.8	64x115	11.1	64x130	11.7	76x145	17.5
3900		64x115	12.1	64x130	12.7	64x155	13.8	76x155	20.2
						76x115	13.4		
4700		64x130	14.0	64x155	15.2	64x190	16.7	90x135	21.8
				76x115	14.7	76x130	15.5		
5600		64x155	16.6	64x190	18.2	76x155	18.3	90x160	25.3
		76x115	16.1	76x130	16.9				
6800		64x190	20.0	76x155	20.2	76x170	20.7	90x175	29.0
		76x130	18.6						
8200		76x155	22.2	76x170	22.8	90x155	24.1		
10000		76x170	25.2	90x155	26.6	90x170	27.8		
12000		90x155	29.1	90x170	30.0	100x190	29.3		
15000		90x190	35.7	100x190	33.7	100x250	37.0		
18000		100x190	36.9	100x220	37.4				
22000		100x250	46.1						

LV series

- Load life:85°C 5000 hours high voltage Screw terminal type
- Suitable for use in industrial equipment industrial power,solar pv inverter, wind power, Marine, heavy trucks, and other fields
- RoHS Compliance
- 85°C 5000小時 耐高壓螺栓型端子。
- 適用於在工業設備工控電源，太陽能光伏逆變器，風力發電，船舶，重型卡車等領域。



SPECIFICATIONS

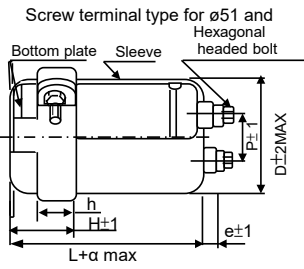
Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)				
Operating Temperature Range 適用溫度範圍	- 25 ~ +85°C				
Rated Voltage Range 額定電壓範圍	500 ~ 650VDC				
Rated Capacitance Range 容量範圍	220~15,000uF				
Leakage Current 洩漏電流	I ≤0.02CV (μA) or 5mA,whichever is smaller.(After 5 minutes application of DC rated voltage, at 20°C)				
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C				
	Rated Voltage(V)	500	550	600	650
	tan δ(MAX)	0.25	0.25	0.25	0.25
Temperature Stability 溫度特性	Measurement Frequency: 120Hz.				
	Capacitance Change C(-25°C)/Z(20°C) ≥ 0.6				
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85°C.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Standards 參照標準	IEC 60384-4(JIS C 5101-4)				

Frequency Coefficient of Permissible Ripple Current

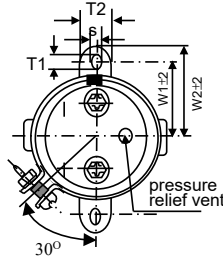
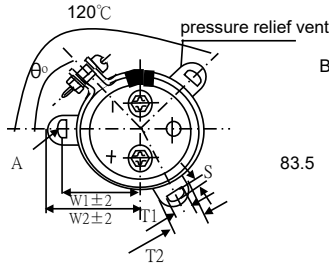
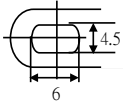
Rated Voltage (V)	Frequency (Hz)				
	50	120	360	1K	≥3K
500 ~ 650	0.80	1.00	1.20	1.30	1.40

LV series

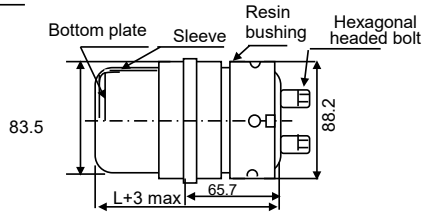
DIMENSIONS(mm)



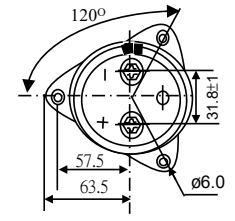
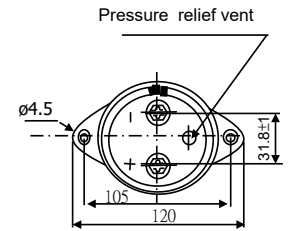
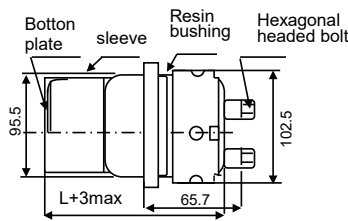
3-leg brackets for $\Phi 90$ capacitors have different hole shapes from the ordinary ones as illustrated below



Method to mount resin bushing



Method to mount resin bushing($\phi 76$)



TERMINAL PITCH(W) & LENGTH (e) TABLE

ΦD	P	e	α
51	22	6	3
64	28.6	6	3
76	31.8	6	3
90	31.8	6	3
100	41.5	10	4

DIMENSIONS OF MOUNTING BRACKET

unit:mm

Cap (μF)	Leg shape ΦD	3-Legs					2-Legs			
		$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$	$\Phi 100$	$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$
	W1	31.8	38.1	44.5	50.8	57.5	34	40.5	46.5	54
	W2	38.1	42.6	49.2	55.6	63.5	40	46.5	53	60
	T1	7	7	7	7	8	7	7	7	7
	T2	14	14	14	14	15	14	14	14	14
	S	5	5	5	5	6	5	5	5	5
	θ°	60	60	60	60	60	45	45	45	45
	H	30	30	30	30	51.2	30	30	30	30
	h	24	24	24	24	50	24	24	24	24

STANDARD RATINGS

D x L (mm) ; R.C. (A rms) at 85°C 120Hz

Cap (μF)	V Item	500		550		600		650	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
1000				51x95	5.40			64x100	6.30
1200		51x95	5.90	51x110	6.30	64x95	6.70	64x110	7.20
1500		51x115	7.20	51x130	7.60	64x110	8.00	64x130	8.60
1800		51x130	8.30	64x105	8.60	64x125	9.30	64x150	10.10
						76x95	9.10		
2200		51x150	9.80	64x120	10.10	64x145	11.00	64x170	11.70
						76x110	10.80		
2700		64x120	11.20	64x150	12.40	64x170	13.10	76x150	13.60
				76x105	11.70	76x125	12.60		
3300		64x140	13.30	64x170	14.50	76x145	14.90	76x170	15.80
				76x130	14.20				
3900		64x170	15.70	76x140	15.90	76x170	17.30	90x155	15.30
		76x130	15.40			90x130	14.20		
4700		76x150	18.10	76x170	19.10	76x190	20.00	90x190	18.40
				90x130	15.60	90x150	16.60		
5600		76x170	20.80	90x150	18.20	90x170	19.10		
		90x130	17.10						
6800		90x150	20.00	90x170	21.10				
8200		90x190	24.40	100x170	24.80				
10000		90x210	28.20	100x200	29.40				
12000		100x210	32.90						
15000		100x250	39.80						

LW series

- Load life:85°C 10000 hours Screw terminal type.
- Suitable for use in industrial equipment industrial power,solar pv inverter, wind power, Marine, heavy trucks, and other fields
- RoHS Compliance
- 85°C 10000小時 螺栓型端子。
- 適用於工業設備工控電源，太陽能光伏逆變器，風力發電，船舶，重型卡車等領域。



SPECIFICATIONS

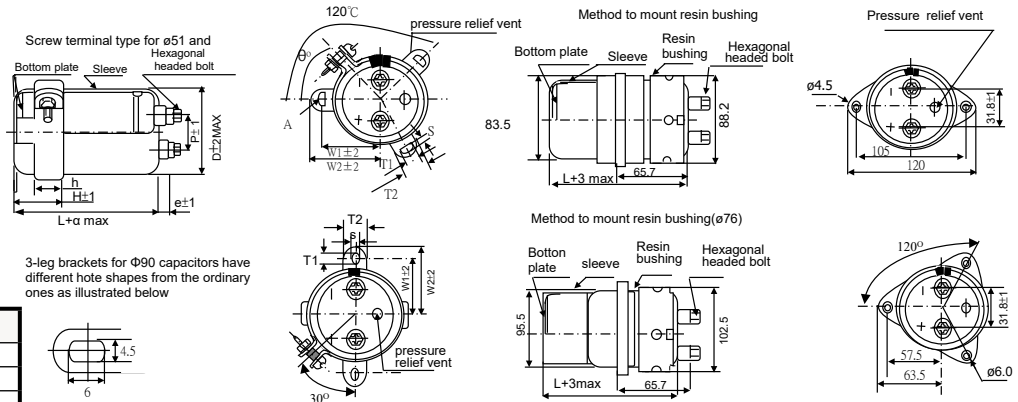
Items 項目	Characteristics 特性			
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)			
Operating Temperature Range 適用溫度範圍	- 25 ~ +85°C			
Rated Voltage Range 額定電壓範圍	350 ~ 450VDC			
Rated Capacitance Range 容量範圍	220~15,000uF(For higher capacity, please consult the designer)			
Leakage Current 洩漏電流	$I \leq 0.02CV$ (μA) or 5mA, whichever is smaller.(After 5 minutes application of DC rated voltage, at 20 °C)			
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C			
	Rated Voltage(V)	350	400	450
	$\tan \delta$ (MAX)	0.15	0.15	0.15
Temperature Stability 溫度特性	Measurement Frequency: 120Hz.			
	Capacitance Change $C(-25^{\circ}C)/Z(20^{\circ}C) \geq 0.6$			
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 85°C.			
	Capacitance Change	Within ± 20% of Initial Value		
	$\tan \delta$	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.			
	Capacitance Change	Within ± 20% of Initial Value		
	$\tan \delta$	200% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4(JIS C 5101-4)			

Frequency Coefficient of Permissible Ripple Current

Rated Voltage (V)	Frequency (Hz)				
	50	120	300	1K	$\geq 10K$
350 ~ 450	0.80	1.00	1.20	1.30	1.40

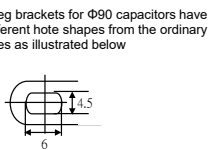
LW series

DIMENSIONS(mm)



TERMINAL PITCH(W) & LENGTH (e) TABLE

ΦD	P	e	α
51	22	6	3
64	28.6	6	3
76	31.8	6	3
90	31.8	6	3
100	41.5	10	4



DIMENSIONS OF MOUNTING BRACKET

unit:mm

Cap (μF)	Leg shape ΦD	3-Legs					2-Legs			
		Φ51	Φ64	Φ76	Φ90	Φ100	Φ51	Φ64	Φ76	Φ90
	W1	31.8	38.1	44.5	50.8	57.5	34	40.5	46.5	54
	W2	38.1	42.6	49.2	55.6	63.5	40	46.5	53	60
	T1	7	7	7	7	8	7	7	7	7
	T2	14	14	14	14	15	14	14	14	14
	S	5	5	5	5	6	5	5	5	5
	θ°	60	60	60	60	60	45	45	45	45
	H	30	30	30	30	51.2	30	30	30	30
	h	24	24	24	24	50	24	24	24	24

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 85°C 120Hz

Cap (μF)	V	350		400		450		500	
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L
1500								51x120	7.10
1500								51x130	7.40
1800								64x95	7.90
2200						64x95	8.70	64x105	9.10
								64x120	9.50
2700				51x120	9.50	51x120	9.50	64x130	10.9
				64x95	9.70	64x105	10.1	64x145	11.3
2900								76x95	10.5
						51x130	10.3		
3300		51x120	10.6	51x130	11.0	64x120	11.6	76x105	12.1
		51x130	11.0	64x105	11.2			76x120	12.6
		64x95	10.7						
3900		64x105	12.2	64x120	12.6	64x130	13.1	90x95	13.9
		64x120	12.6	64x130	13.1	76x95	12.7	90x105	14.5
				76x95	12.7				
4700		64x130	14.4	64x145	14.9	64x145	14.9	76x145	16.2
		76x95	13.9	76x105	14.5	76x105	14.5	90x120	16.5
		64x145	16.3	76x120	16.4	76x120	16.4	76x185	19.3
5600		73x105	15.8	90x95	16.6	90x95	16.6		
6800		76x120	18.1	76x145	19.4	76x145	19.4	90x145	21.2
		90x95	18.3	90x105	19.1	90x105	19.1	90x155	21.9
						90x120	19.8		
8200		76x145	21.3			76x180	23.3	76x220	25.2
		90x105	21.0	90x120	21.8			90x190	26.7
		90x120	21.8						
10000				76x180	25.8	90x145	25.7	90x220	33.1
				90x145	25.7	90x155	26.5		
12000		76x180	28.2	76x220	30.4	76x220	30.4		
		90x145	28.2	90x155	29.0	90x190	31.3		
		90x155	29.0						
15000		76x220	34.0	90x190	35.0	90x220	37.0		
		90x190	35.0						
18000		90x220	41.1	90x220	40.6				

HP series

- 105°C 2000 hours~ 5000 hours. Screw terminal type.
- High temperature, high ripple current resistance and long life.
- RoHS Compliance
- 105°C 2000小時~5000小時 螺栓型端子。
- 耐高溫、高紋波電流、長壽命。



SPECIFICATIONS

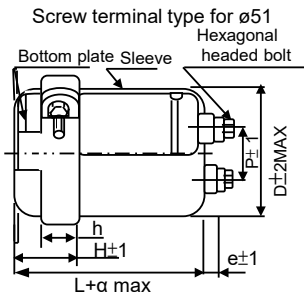
Items 項目	Characteristics 特性												
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)												
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C						- 25 ~ +105°C						
Rated Voltage Range 額定電壓範圍	10 ~ 100VDC						160 ~ 450VDC						
Rated Capacitance Range 容量範圍	220 ~ 1,000,000µF												
Leakage Current 洩漏電流	I ≤ 0.02CV (µA) or 5mA, whichever is smaller. (After 5 minutes application of DC rated voltage, at 20 °C)												
Dissipation Factor 散逸因素(tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C												
	Rated Voltage(V)		10	16	25	35	50	63	80	100	160~250	350~450	
	tan δ (MAX)	35Φ	80~140	0.65	0.45	0.40	0.30	0.25	0.25	0.20	0.12	0.15	0.20
		51Φ	80~140	0.90	0.60	0.50	0.40	0.25	0.25	0.20	0.15	0.15	0.20
		64Φ	120~190	1.20	0.80	0.70	0.50	0.35	0.30	0.25	0.20	0.20	0.20
		76Φ	120~190	2.00	1.20	0.90	0.70	0.55	0.50	0.35	0.30	0.20	0.20
90Φ		150~190	2.40	2.00	1.50	1.00	0.75	0.60	0.40	0.30	0.25	0.20	
100Φ	220	2.00	2.00	1.50	1.00	0.75	0.60	0.40	0.30	0.25	0.20		
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.												
Impedance Ratio(Max) 阻抗比率(最大值)	Rated Voltage(V)	10~100						160 ~ 525					
	Z(-25°C)/Z(20°C)	-						8					
	Z(-40°C)/Z(20°C)	12						-					
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours (10~250V,2000 hours) at 105°C.												
	Capacitance Change	Within ± 20% of Initial Value											
	tan δ	300% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.												
	Capacitance Change	Within ± 20% of Initial Value											
	tan δ	300% or less of Initial Specified Value											
	Leakage Current	Initial Specified Value or less											
Standards 參照標準	IEC 60384-4 (JIS C 5101-4)												

Frequency Coefficient of Permissible Ripple Current

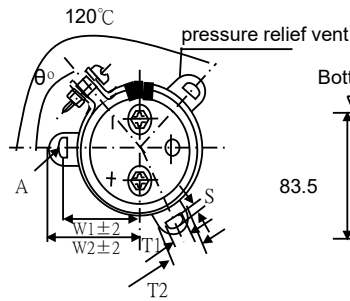
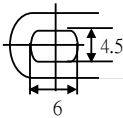
Rated Voltage (V)	Frequency (Hz)				
	50	120	300	1K	≥10K
10 ~ 100	0.90	1.00	1.06	1.10	1.20
160 ~ 250	0.80	1.00	1.12	1.22	1.30
350 ~ 525	0.80	1.00	1.20	-	-

HP series

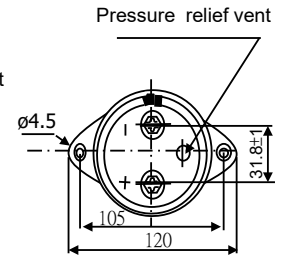
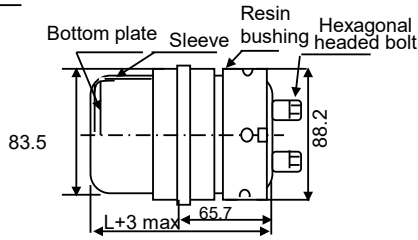
DIMENSIONS(mm)



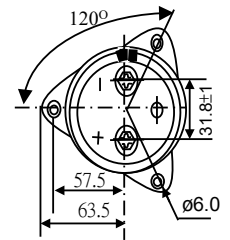
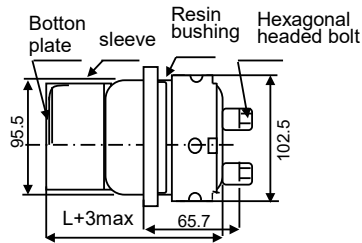
3-leg brackets for $\phi 90$ capacitors have different note shapes from the ordinary ones as illustrated



Method to mount resin bushing



Method to mount resin bushing($\phi 76$)



TERMINAL PITCH(W) & LENGTH (e) TABLE

ΦD	P	e	α
35	12.7	6	3
51	22	6	3
64	28.6	6	3
76	31.8	6	3
90	31.8	6	3
100	41.5	10	4

DIMENSIONS OF MOUNTING BRACKET

unit:mm

Cap (μF)	Leg shape ΦD	3-Legs					2-Legs				
		$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$	$\Phi 100$	$\Phi 35$	$\Phi 51$	$\Phi 64$	$\Phi 76$	$\Phi 90$
	W1	31.8	38.1	44.5	50.8	57.5	24	34	40.5	46.5	54
	W2	38.1	42.6	49.2	55.6	63.5	29	40	46.5	53	60
	T1	7	7	7	7	8	6	7	7	7	7
	T2	14	14	14	14	15	10	14	14	14	14
	S	5	5	5	5	6	3.8	5	5	5	5
	θ°	60	60	60	60	60	45	45	45	45	45
	H	30	30	30	30	51.2	15	30	30	30	30
	h	24	24	24	24	50	12	24	24	24	24

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μF)	V Item	10		16		25		35		50	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
3900										35x50	2.00
4700										35x50	2.20
5600										35x80	2.80
6800										35x80	3.00
8200								35x80	3.00	35x80	3.30
10000								35x80	3.30	35x80	3.70
12000						35x80	3.30	35x80	3.60	35x100	4.40
15000				35x50	2.90	35x80	3.70	35x80	4.10	35x120	4.70
18000				35x80	3.50	35x80	4.00	35x100	4.80	51x80	4.80
22000				35x80	3.90	35x80	4.50	35x120	5.20	51x100	5.90
27000	35x80	4.30	35x80	4.30	35x100	5.00	51x80	5.90	51x120	7.00	
33000	35x80	4.70	35x100	4.80	35x120	5.90	51x100	6.60	64x100	7.60	
39000	35x80	5.30	35x100	5.30	51x80	6.50	51x120	7.80	64x120	8.90	

HP series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V Item	10		16		25		35		50	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.		
47000		35x100	6.10	35x120	6.20	51x100	7.90	51x120	8.00	64x120	9.80
56000		35x100	6.20	51x80	6.30	51x120	8.80	64x100	9.20	76x120	11.9
68000		35x120	6.80	51x100	7.60	51x120	9.10	64x120	11.0	76x140	13.1
82000		51x80	7.80	51x120	8.30	64x100	10.6	76x120	12.7	90x140	14.8
100000		51x100	8.50	51x120	9.20	64x120	11.4	76x140	13.5	76x150	16.5
120000		51x100	9.50	64x100	9.90	76x100	12.8	90x140	16.1		
150000		64x100	11.0	76x100	12.3	76x120	13.7	76x150	15.0	90x150	19.5
180000		64x100	12.1	76x120	14.5	76x140	16.1				
220000		76x100	13.2	76x140	15.2	90x140	16.6	90x150	17.1	90x190	21.5
270000		76x120	14.4	90x140	16.8						
330000		76x140	17.0			90x150	20.2	90x190	21.0		
390000		90x140	18.6								
470000		90x140	16.0	90x140	20.2	90x190	22.0				
680000		90x170	18.0	90x170	22.0						
1000000		90x180	20.0	90x190	23.5						

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V Item	63		80		100		160		200	
		D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.	D x L	R.C.
470										35x50	0.90
560										35x80	1.00
680								35x50	1.10	35x80	1.10
820								35x80	1.20	35x80	1.30
1000								35x80	1.30	35x100	1.50
1200						35x50	1.40	35x80	1.50	35x120	1.70
1500						35x80	1.60	35x80	1.70	35x120	1.90
1800						35x80	1.80	35x100	2.00	51x80	2.20
2200				35x50	1.90	35x80	2.00	35x120	2.30	51x100	2.70
2700		35x50	1.90	35x80	2.20	35x80	2.40	35x120	2.70	51x120	3.20
3300		35x50	2.10	35x80	2.50	35x100	2.80	51x100	3.30	51x120	3.50
3900		35x80	2.70	35x80	2.90	35x120	3.10	51x120	3.80	64x100	4.00
4700		35x80	2.90	35x100	3.10	51x80	3.60	51x120	4.20	64x120	4.70
5600		35x80	3.20	35x100	3.50	51x100	4.30	51x120	4.70	76x100	5.30
6800		35x80	3.50	35x120	4.10	51x120	5.00	64x120	5.70	76x120	6.30
8200		35x100	4.20	51x80	4.80	51x120	5.50	76x100	6.40	76x140	6.40
10000		35x120	4.30	51x100	5.60	64x100	6.40	76x120	6.60	90x140	7.70
12000		51x80	4.80	51x100	6.10	64x120	6.60	76x140	7.80		
15000		51x100	5.90	51x120	7.40	76x100	7.50	90x140	9.50	76x150	10.4
18000		51x120	6.30	64x120	8.00	76x120	8.00				
22000		51x120	6.70	76x100	9.10	76x140	9.40	76x150	12.5	90x150	15.1
27000		64x120	8.80	76x120	9.70	90x140	10.4				
33000		76x100	10.0	76x140	11.5			90x150	13.4		
39000		76x120	10.7	90x140	12.5						
47000		76x140	12.5	76x150	13.0	90x150	16.5				
56000		90x140	13.8								
68000		76x150	13.2	90x150	16.5	90x190	18.0				
100000		90x150	17.3	90x190	18.2						
150000		90x190	20.5								

HP series

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

Cap (μF)	V Item	250		350		400	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
220						35x100	1.20
330		35x50	0.70	35x100	2.00	35x100	2.00
390		35x80	0.80				
470		35x80	0.90	35x100	2.40	35x120	3.00
560		35x80	1.00				
680		35x100	1.20	51x100	4.00	51x60	3.00
820		35x100	1.40	51x60	3.30		
1000		35x120	1.60				
1200		51x80	1.80			51x85	4.70
1500		51x100	2.20	51x85	5.20		
1800		51x120	2.60			51x105	6.30
2200		51x120	2.80	51x105	7.00	51x125	7.50
2200						64x85	7.30
2700		64x100	3.30	51x125	8.40	51x145	8.90
2700				64x85	8.10	64x105	8.80
3300		64x120	4.00	51x145	9.9	64x125	10.50
3300				64x105	9.8	76x85	9.90
3900		76x100	4.40	64x125	11.5		
3900				76x85	10.8		
4700		76x120	5.20			64x145	13.40
4700						76x125	13.90
5600		76x140	6.10	64x145	14.7		
6800		90x140	7.40	76x125	16.8	76x145	17.90
6800		76x150	7.10			90x125	17.20
8200				76x145	19.6	76x190	20.80
8200				90x125	18.9	90x145	20.10
10000		90x150	9.60	76x190	23		
10000				90x145	22.2		
12000						90x190	27.40
15000		90x190	12.70	90x190	30.6		
18000						90x270	39.40
22000				90x270	43.5		

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μF)	V Item	450		500		525	
		D x L	R.C.	D x L	R.C.	D x L	R.C.
220		35x100	1.40				
330		35x120	2.00				
390						51x60	2.20
470		51x100	3.00	51x60	2.40		
560		51x60	2.60				
680						51x85	3.30
820				51x85	3.60		
1000		51x85	4.00	51x105	4.40	51x125	4.80
1200		51x105	4.80	51x125	5.20		
1200				64x85	5.00		
1500				51x145	6.30	64x105	6.20
1800		51x125	6.40	64x105	6.80	64x125	7.30
1800		64x85	6.20				
2200		51x145	7.60			64x145	8.60
2200		64x105	7.50			76x105	8.30
2700		64x125	8.90	64x145	9.60	76x125	9.90
2700		76x85	8.40	76x105	9.20		
3300		64x145	10.6			76x145	11.7
3300		76x105	10.2				
3900		76x125	11.9	76x145	12.70		
3900				90x125	11.90		
4700		76x145	14.0			76x190	14.4
4700						90x145	13.9
5600		90x125	14.2			90x190	17.1
6800		76x190	17.3	90x190	18.80		
6800		90x145	16.7				
10000		90x190	22.8	90x270	26.80		
15000		90x270	32.8				

HT series

- Load life:105°C 8000 hours screw terminal type.
- Suitable for use in industrial equipment industrial power,solar pv inverter, wind power, Marine, heavy trucks, and other fields
- RoHS Compliance
- 105°C 8000小時 螺栓型端子。
- 適用於工業設備工控電源，太陽能光伏逆變器，風力發電，船舶，重型卡車等領域。



SPECIFICATIONS

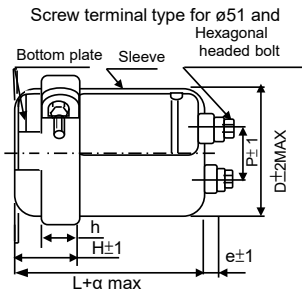
Items 項目	Characteristics 特性			
Capacitance Tolerance 靜電容量誤差	± 20%(120Hz,20°C)			
Operating Temperature Range 適用溫度範圍	- 40 ~ +105°C			
Rated Voltage Range 額定電壓範圍	400~ 450VDC			
Rated Capacitance Range 容量範圍	220~15,000uF(For higher capacity, please consult the designer)			
Leakage Current 洩漏電流	$I \leq 0.02CV$ (μA) or 5mA, whichever is smaller.(After 5 minutes application of DC rated voltage, at 20 °C)			
Dissipation Factor 散逸因素($\tan \delta$)	Measurement Frequency: 120Hz. Temperature: 20°C			
	Rated Voltage(V)	400	420	450
	$\tan \delta$ (MAX)	0.15	0.15	0.15
Temperature Stability 溫度特性	Measurement Frequency: 120Hz.			
	Capacitance Change $C(-25^{\circ}C)/C(+20^{\circ}C) \geq 0.7$			
Load Life 負荷壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 8,000 hours at 85°C.			
	Capacitance Change	Within ± 20% of Initial Value		
	$\tan \delta$	300% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Shelf Life 放置壽命	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.			
	Capacitance Change	Within ± 20% of Initial Value		
	$\tan \delta$	300% or less of Initial Specified Value		
	Leakage Current	Initial Specified Value or less		
Standards 參照標準	IEC 60384-4(JIS C 5101-4)			

Frequency Coefficient of Permissible Ripple Current

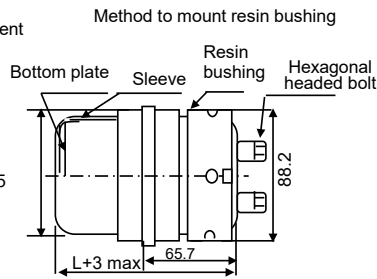
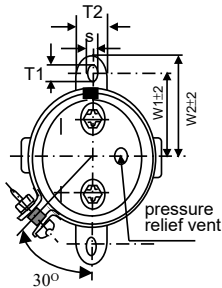
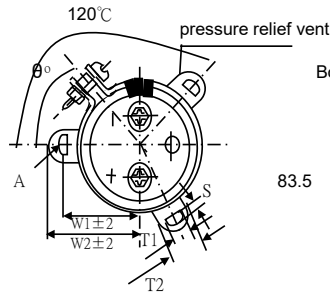
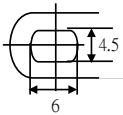
Rated Voltage (V)	Frequency (Hz)				
	60	120	300	1K	$\geq 10K$
400 ~ 450	0.82	1.00	1.20	1.35	1.40

HT series

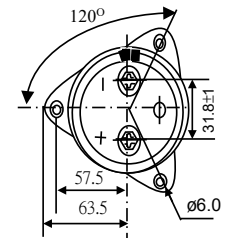
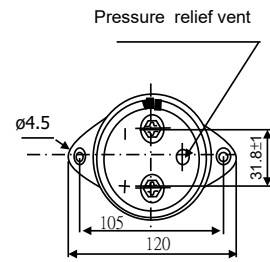
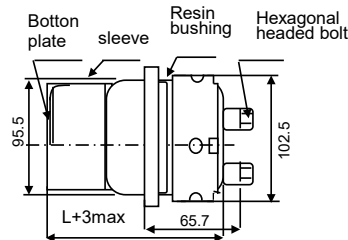
DIMENSIONS(mm)



3-leg brackets for ø90 capacitors have different hole shapes from the ordinary ones as illustrated below



Method to mount resin bushing(ø76)



TERMINAL PITCH(W) & LENGTH (e) TABLE

ΦD	P	e	α
51	22	6	3
64	28.6	6	3
76	31.8	6	3
90	31.8	6	3
100	41.5	10	4

DIMENSIONS OF MOUNTING BRACKET

unit:mm

Cap (μF)	Leg shape	3-Legs					2-Legs			
		ΦD	Φ51	Φ64	Φ76	Φ90	Φ100	Φ51	Φ64	Φ76
	W1	31.8	38.1	44.5	50.8	57.5	34	40.5	46.5	54
	W2	38.1	42.6	49.2	55.6	63.5	40	46.5	53	60
	T1	7	7	7	7	8	7	7	7	7
	T2	14	14	14	14	15	14	14	14	14
	S	5	5	5	5	6	5	5	5	5
	θ°	60	60	60	60	60	45	45	45	45
	H	30	30	30	30	51.2	30	30	30	30
	h	24	24	24	24	50	24	24	24	24

STANDARD RATINGS

DxL(mm), R.C : (A rms) at 105°C 120 Hz

Cap (μF)	V	10		16		25		
		Item	D x L	R.C.	D x L	R.C.	D x L	R.C.
470						51x80	3.00	
680		3.60		3.60		51x105	4.10	
680		3.90		3.90	51x80	3.70	51x105	4.80
1000		4.30		4.30	51x80	4.40	64x105	5.50
1000		4.80		4.80	51x105	4.90		
1500		5.90		5.90	51x105	6.00	64x105	6.80
2200		8.10		8.10	64x105	8.20	76x140	9.70
2200		8.50		8.50	76x105	8.60		
3300		12.1		12.1	76x140	12.3	76x140	12.5
4700		13.8		13.8	76x140	14.1	76x145	14.3
5600		15.1		15.1	76x145	15.3	76x145	15.5
6800		16.4		16.4	76x145	16.4	76x210	18.5
8200		19.1		19.1	76x210	19.5	76x210	20.1
10000		23.5		23.5	90x220	23.8	90x220	24.3

Taping Specification for Automatic insertion

APPLICATIONS

- These specifications include taped single-ended electrolytic capacitors with the body diameters from 4.0 to 16mm.
- Suitable to be used in automatic lead preparation and insertion machines.

DESCRIPTION

- Body tape requirements are shown from Fig.1 to Fig.6
- Polarity of capacitors shall be oriented in one direction.
- Leader tapes shall not be provided before the first and after the last capacitor on tape.
- Up to 3 capacitor consecutively missing on tape is permitted but a designed quantity of capacitors shall be packed in each case.
- Removal faulty capacitors from the tape shall be by pulling out or by cutting off leads. Cut off leads remaining on tape shall not protrude more than 2.0 mm from tape edge.

DIAGRAM OF TAPING DIMENSIONS

(Unit:mm)

Fig.1(Φ4-Φ8)

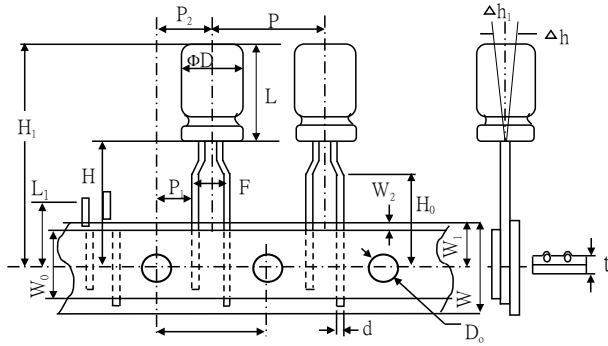


Fig.2(Φ4-Φ5)

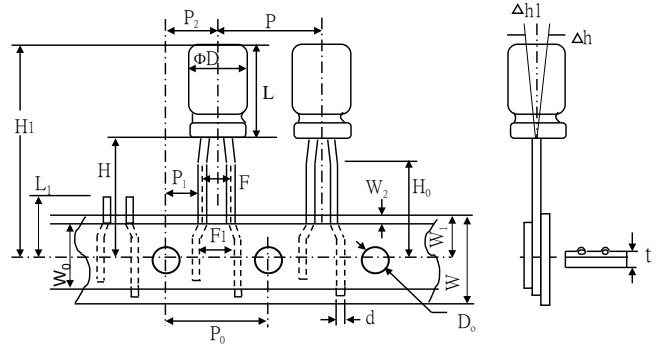


Fig.3(Φ5-Φ8)

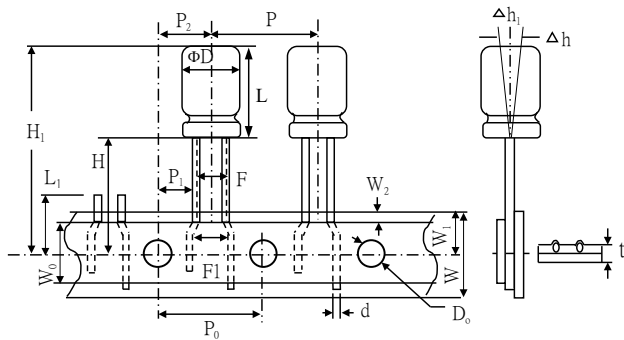


Fig.4(Φ10)

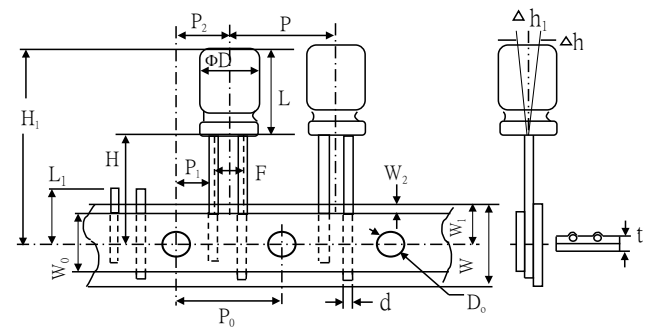


Fig.5(Φ12~13)

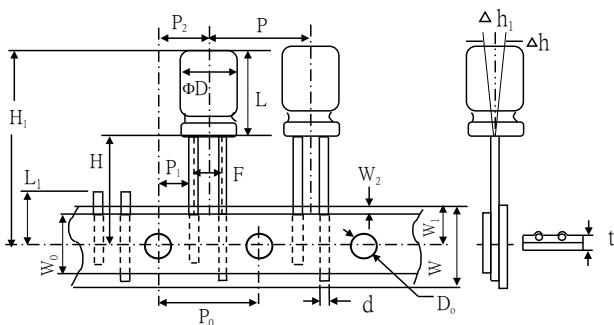
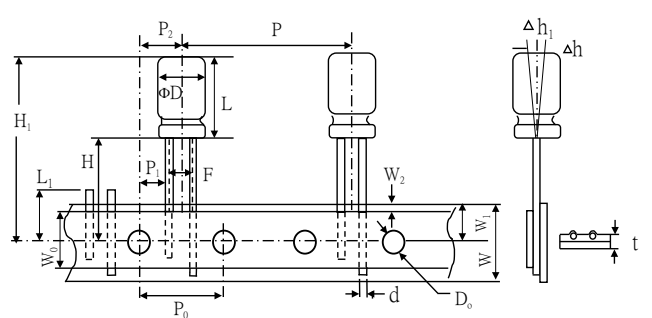


Fig.6(Φ16)



For Automatic Insertion Taping Capacitors

TAPING DIMENSIONS (Unit:mm)

Items	Symbol	Case Size										Tolerance	Remark	
		4×5	5×5	4×7	5×7	5×11	6.3×11	8×11.5	10×12.5	10×16	10×20			
			6.3×5		6.3×7									
Lead Wire Diameter	d	0.45	0.45	0.45	0.5		0.5			0.6		±0.05		
Body Height	L	6.5		8.5		12.5	13	14	17.5	22		max		
Intervals of Bodies	P	12.7										±1.0		
Intervals of Punched Holes	P ₀	12.7										±0.2		
Distance between Holes and Lead Wire	P ₁	3.85											Fig 1.Fig 4.	
		5.35	5.10	5.10	5.10	5.10	5.10	5.10				±0.7	Fig 2	
			5.35			5.35								Fig 3
Distance between Holes and Body Center	P ₂	6.35										±1.0		
Distance between Lead and Lead	F	5.00										+0.8	Fig 1.Fig 4.	
		2.5	2.5	2.5	2.5	2.5		2.5	3.5					Fig2
		1.5	2.0		2.5	2.0	2.5						-0.2	Fig3.
Distance between Lead and Lead	F1	5.0											Fig2, Fig3	
Base Tape Width	W	18.0										±0.5		
Adhesive Tape Width	W ₀	10.0	10.0	10.0	10.0	10.0		12.0				min		
			10.0		10.0									
			12.0		12.0									
Deviation between Holes and Base Tape	W ₁	9.0										±0.5		
Deviation between Adhesive and Base Tape	W ₂	1.5										max		
Deviation between Body Bottom and Tape Center	H	17.5	17.5	17.5	17.5		18.5					±0.75	Fig 1.Fig 2.	
			17.5		17.5		18.5						Fig 3.Fig 4.	
			18.5		18.5									
Lead Wire Clinched Height	H ₀	15.0	15.0	15.0	15.0		16.0					±0.5		
			15.0		15.0		16.0							
			16.0		16.0									
Distance between Body Top and Tape Center	H ₁	25	26	27	28	32	33	34	37	42	max			
Punched Hole Diameter	D ₀	4.0										±0.3		
Length of not Good Lead Slit	L ₁	11.0										max		
Base and Adhesive Tape Thickness	t	0.7										±0.2		
Deviation of Body Alignment	Δh	0										±2.0		
Deviation of Body Alignment	Δh ₁	0										±2.0		

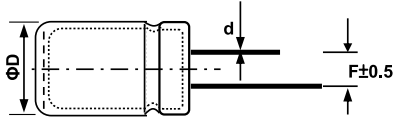
TAPING DIMENSIONS (Unit:mm)

Items	Symbol	Case Size										Tolerance	Remark
		12.5×20	12.5×25	12.5×30	12.5×35	16×26	16×32	16×36	18×20	18×25			
Lead Wire Diameter	d	0.6					0.8					±0.05	
Body Height	L	22	27	32	37	28	34	38	22	27	max		
Intervals of Bodies	P	15.0					30.0					±1.0	Fig5.Fig6.
Intervals of Bunched Holes	P ₀	15.0										±0.2	
Distance between Holes and Lead Wire	P ₁	5.0					3.75					±0.7	
Distance between Holes and Bodies	P ₂	7.5										±1.0	
Distance between lead and lead	F	5.0					7.5					+0.8 -0.2	Fig5.Fig6.
Base Tape Width	W	18.0										±0.5	
Adhesive Tape Width	W ₀	12.0					15.0					min	
Deviation between Holes and Base Tape	W ₁	9.0										±0.5	
Deviation between Adhesive and Base Tape	W ₂	1.5										max	
Deviation between Body Bottom and Tape Center	H	18.5										±0.75	Fig5.Fig6.
Distance Between Body Top and Tape Center	H ₁	42	47	52	57	48	54	58	42	47	max		
Punched Hole Diameter	D ₀	4.0										±0.3	
Length of not Good Idea Slit	L ₁	11.0										max	
Base and Adhesive Tape Thickness	t	0.7										±0.2	
Deviation of Body Alignment	Δh	0										±2.0	
Deviation of Body Alignment	Δh ₁	0										±2.0	

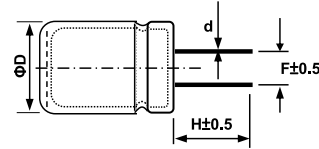
Lead Cutting and Forming

- With Terminals or Forms as below, Easier Inserting the Units into P.C.Board and Contributing to Higher Mounting Efficiency.

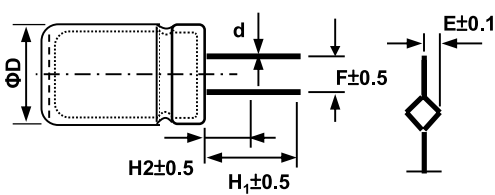
SHAPE (S)



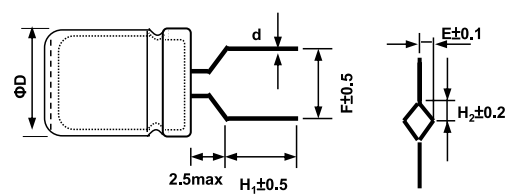
SHAPE (C)



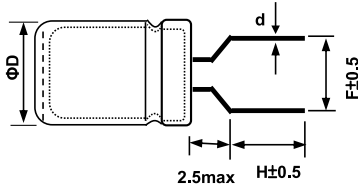
SHAPE (D)



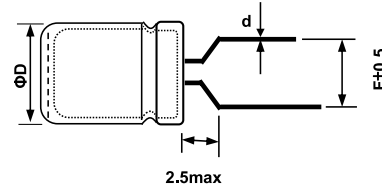
SHAPE (H)



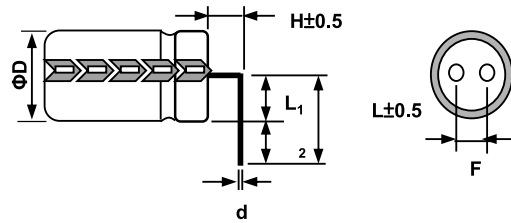
SHAPE (F)



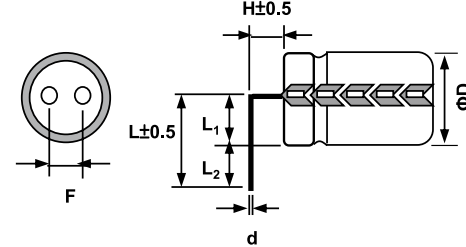
SHAPE (B)



SHAPE (L)



SHAPE (Z)



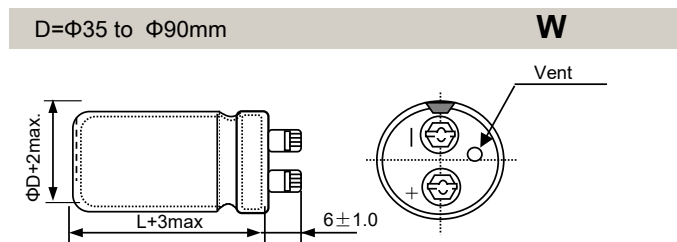
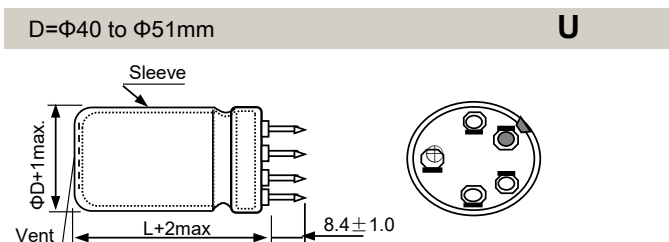
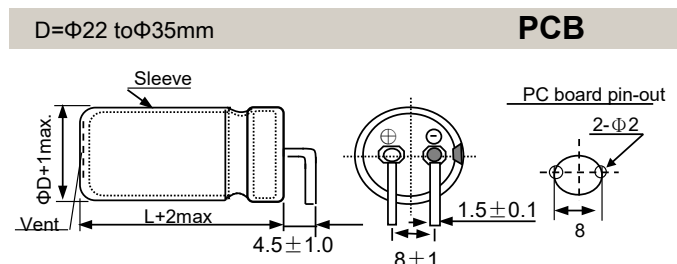
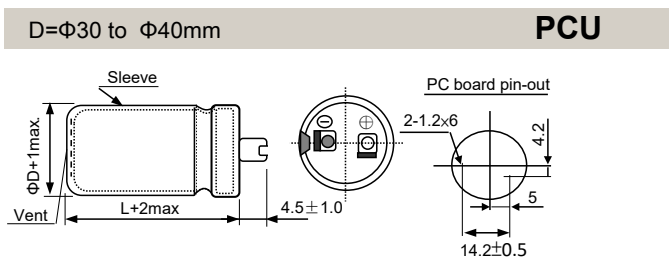
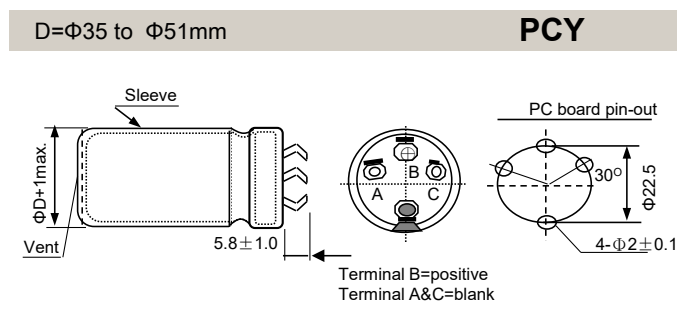
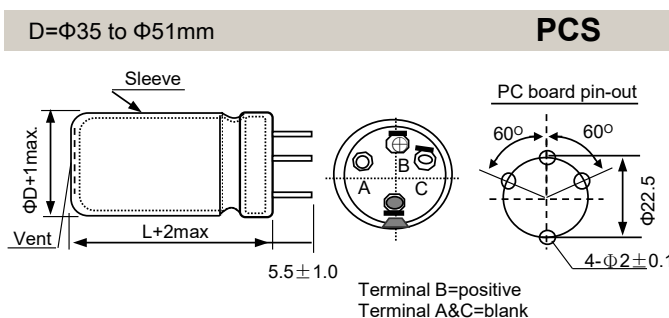
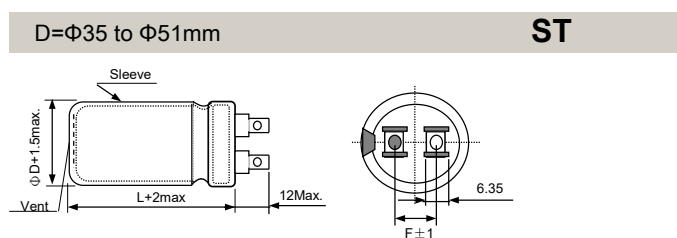
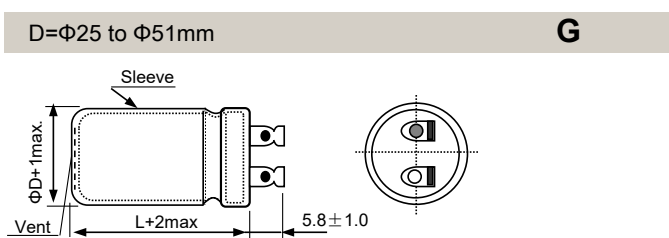
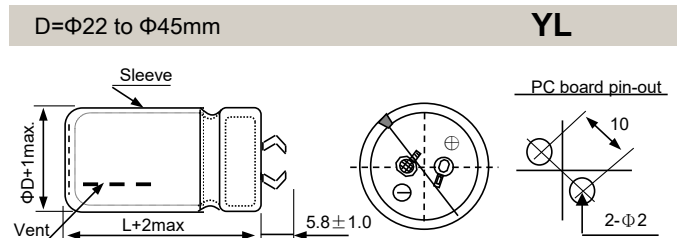
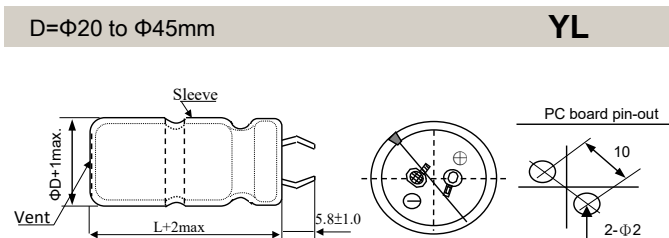
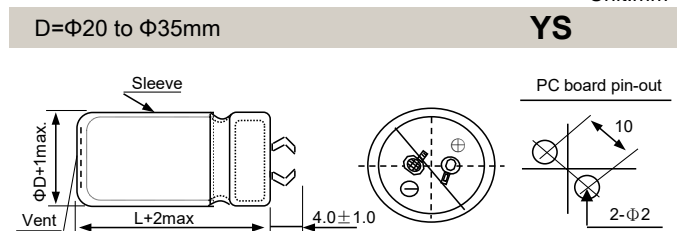
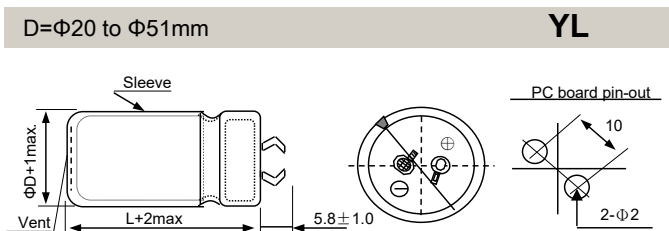
SPECIFICATION INFORMATION

(Unit:mm)

Shape No.	Cutting & Forming Methods	DΦ	4Φ	5Φ	6.3Φ	8Φ	10Φ	12.5Φ	13Φ	14.5Φ	16Φ	18Φ	22Φ	
S	Long Lead	F	1.5	2.0	2.5	3.5	5.0	5.0	5.0	7.5	7.5	7.5	10	
		d	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8	0.8	
C	Lead Cut Only	F	1.5	2.0	2.5	3.5	5.0	5.0	5.0	7.5	7.5	7.5	10.0	
		H	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
D	Lead Cut and Crimp	E	-	1.12	1.12	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.50	
		F	-	-	-	-	5.0	5.0	5.0	7.5	7.5	7.5	10	
		H ₁	-	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
		H ₂	-	-	-	-	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
F	Lead Cut and Form	d	-	-	-	-	0.6	0.6	0.6	0.8	0.8	0.8	0.8	
		F	5.0	5.0	5.0	5.0	-	-	-	-	-	-	-	
		H	4.0	5.0	5.0	5.0	-	-	-	-	-	-	-	
H	Lead Cut, Crimp and Form	d	0.45	0.5	0.5	0.5	-	-	-	-	-	-	-	
		E	-	1.12	1.12	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.50	
		F	5.0	5.0	5.0	5.0	-	-	-	-	-	-	-	
		H ₁	4.0	5.0	5.0	5.0	-	-	-	-	-	-	-	
B	Forming Only	H ₂	1.8	1.8	1.8	1.8	-	-	-	-	-	-	-	
		d	0.45	0.5	0.5	0.5	-	-	-	-	-	-	-	
L/Z	Lead Cut and Bending	F	5.0	5.0	5.0	5.0	-	-	-	-	-	-	-	
		d	0.45	0.5	0.5	0.5	-	-	-	-	-	-	-	
		F	1.5	2.0	2.5	3.5	5.0	5.0	5.0	7.5	7.5	7.5	10	
		H	2.0	2.0	2.0	2.5 or 3.5 or 5.0								
		L ₁	2.2	2.7	3.4	4.5	5.3	6.6	6.8	7.7	8.4	9.4	11.4	
L ₂	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		
d	0.45	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8	0.8		

Terminals Diagram for Capacitors

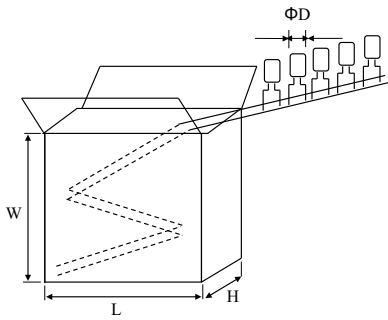
Unit:mm



CAUTION:

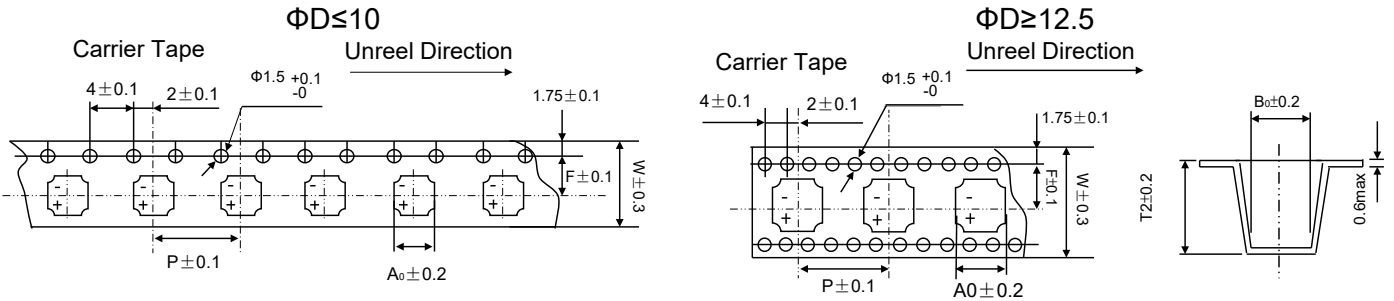
- Use the blank terminals for mechanical support only.
- The blank terminals must not be connected any copper on PC board.
- Be sure to electrically isolate from negative the positive terminals.

Taping and Reel



Item	Taping Packing				
	L±5 (mm)	W±5 (mm)	H±5 (mm)	Quantity (pcs)	Box/ Carton
ΦD (mm)					
4	490	330	275	2500	10
5	490	330	275	2000	10
6.3	490	330	275	1500	10
8(L≤16)	490	330	275	1000	10
8(L≤20)	490	330	275	900	8
10(L≤13)	335	233	275	600	5
10(L≤20)	335	233	305	600	5
10(L≤35)	335	233	280	600	4
12.5~13 (L≤25)	500	325	215	400	6
12.5~13 (L≤34)	500	325	236	400	6
14.5	510	315	236	280	6
16	510	315	236	250	6
18	540	320	236	200	6

Chip Packing

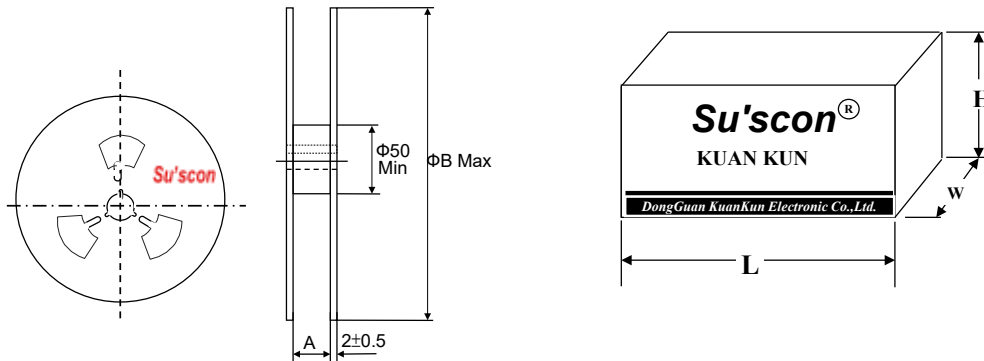


Size	Item						
	W	P	F	Ao	Bo	T2	
Φ4 × 5.3~5.6L	12	8	5.5	5.0	5.0	5.8	
Φ4 × 5.7~6.3L	12	8	5.5	5.0	5.0	6.3	
Φ5 × 5.3~5.6L	12	12	5.5	5.0	5.0	5.9	
Φ5 × 5.7~6.3L	12	12	5.5	5.0	5.0	6.3	
Φ5 × 6.4~7.0L	12	12	5.5	5.0	5.0	7.6	
Φ6.3 × 4.5L	16	12	7.5	7.0	7.0	4.8	
Φ6.3 × 5.3~5.6L	16	12	7.5	7.0	7.0	5.9	
Φ6.3 × 5.7~6.3L	16	12	7.5	7.0	7.0	6.5	
Φ6.3 × 7~8L	16	12	7.5	7.0	7.0	8.3	
Φ6.3 × 8.1~9L	16	12	7.5	7.0	7.0	9.3	
Φ8 × 6~7L	16	12	7.5	8.7	8.7	6.9	
Φ8 × 10~11L	24	16	11.5	8.7/9.4(G)	8.7/9.4(G)	11/11.4(G)	
Φ10 × 7.7 L	24	16	11.5	10.7	10.7	8.7	
Φ10 × 10~11 L	24	16	11.5	10.7/11.4(G)	10.7/11.4(G)	11/11.4(G)	
Φ10 × 12~13 L	24	16	11.5	10.7	10.7	13.1	
Φ10 × 16~17 L	24	16	11.5	10.7	10.7	17.5	
Φ12.5 × 13~14L	32	24	14.2	13.4/13.7(G)	13.4/13.7(G)	15	
Φ12.5 × 16~17L	32	24	14.2	13.4/13.7(G)	13.4/13.7(G)	17.5	
Φ16 × 16~17L	44	28	20.2	17.5	17.5	17.5	
Φ16 × 21~22L	44	28	20.2	17.5	17.5	23.0	
Φ18 × 16~17L	44	32	20.2	19.5	19.5	17.5	
Φ18 × 21~22L	44	32	20.2	19.5	19.5	23.0	

(G) : "Anti-vibration Structure"

Chip Reel

ΦD	Φ 4~5	Φ 6.3	8Φ	Φ10	Φ12.5	Φ16 ~18
A	14	18	26	26	34	46
B	382	382	382	382	382	382



PACKAGE QUANTITY

Size	Q'ty per reel(pcs)	Inner box		outer carton	
		Q'ty(PCS)	length x width x height (mm)	Q'ty(PCS)	length x width x height (mm)
Φ4	2,000	10,000	385x385x106	20,000	412x403x255
Φ5	1,000	5,000	385x385x106	10,000	412x403x255
Φ6.3 × 4~8L	1,000	5,000	385x385x125	10,000	412x403x293
Φ6.3 × 8.4L	800	4,000	385x385x125	8,000	412x403x293
Φ6.3 x 7.7L	1,000	5,000	385x385x125	10,000	412x403x293
Φ8 x 6~7L	1,000	5,000	385x385x125	10,000	412x403x293
Φ8 × 10~11L	500	1,500	385x385x106	3,000	412x403x255
Φ10 × 7~11 L	500	1,500	385x385x106	3,000	412x403x255
Φ10 × 12~13 L	400	1,200	385x385x106	2,400	412x403x255
Φ10 × 16~17 L	300	900	385x385x106	1,800	412x403x255
Φ12.5 × 13~14L	250	750	385x385x125	1,500	412x403x293
Φ12.5 × 16~17L	200	600	385x385x125	1,200	412x403x293
Φ16 × 16~17L	200	400	385x385x106	800	412x403x255
Φ16 × 21~22L	125	250	385x385x106	500	412x403x255
Φ18 × 16~17L	150	300	385x385x106	600	412x403x255
Φ18 × 21~22L	100	200	385x385x106	400	412x403x255

Package Information

Radial (Standard Bulk)

Dim. (Φ D×L)	Bags/ Inner Box	Layer Quantity	Quantity (pcs/bag)	Total Quantity (pcs/carton)	Size of Inner Box (length x width x height)	Size of Out Box (length x width x height)
4×5	20	2	1,000	40,000	267×260× 135	540 ×277 × 152
4×7	20	2	1,000	40,000		
5×5	15	2	1,000	30,000		
5×(7~11)	10	2	1,000	20,000		
6.3×(5~7)	10	2	1,000	20,000		
6.3×(11~12)	8	2	1,000	16,000		
6.3×15	5	2	1,000	10,000		
8×(5~9)	10	2	500	10,000		
8×(11~12)	9	2	500	9,000		
8×(14~16)	8	2	500	8,000		
8×20	6	2	500	6,000		
8×(21~30)	5	2	500	5,000		
10×(10~15)	11	2	200	4,400		
10×(16~20)	9	2	200	3,600		
10×25	8	2	200	3,200		
10×30	9	2	150	2,700		
10×35	8	2	150	2,400		
12×21	7	2	150	2,100		
12×25	7	2	150	2,100		
12×30	7	2	100	1,400		
12.5×(20~25)	7	2	150	2,100		
13×(13~21)	7	2	150	2,100		
13×25	6	2	150	1,800		
12.5~13×30	7	2	100	1,400		
12.5~13×35	7	2	100	1,400		
14.5×16	15	2	50	1,500		
14.5×(20~22)	12	2	50	1,200		
14.5×(24~26)	10	2	50	1,000		
14.5×(28~36)	8	2	50	800		
14.5×38	7	2	50	700		

Dim. (Φ D×L)	Number of inner boxes	Quantity per inner box(pcs)	Total Quantity (pcs/carton)	"Size of Inner Box (length x width x height)"	"Size of Out Box (length x width x height)"
8×(40~50)	4	1,218	4,872	254×254×180	528×264×380
8×60	4	588	2,352	254×254×110	527×273×248
10×(40~50)	4	828	3,312	254×254×180	528×264×380
10×60	4	414	1,656	254×254×110	527×273×248
12×(40~50)	4	608	2,432	254×254×180	528×264×380
12×60	4	304	1,216	254×254×110	527×273×248
12.5×(40~50)	4	570	2,280	254×254×180	528×264×380
12.5×60	4	288	1,152	254×254×110	527×273×248
13×(40~50)	4	540	2,160	254×254×180	528×264×380
13×60	4	270	1,080	254×254×110	527×273×248
14.5×(40~50)	4	448	1,792	254×254×180	528×264×380
14.5×60	4	224	896	254×254×110	527×273×248
16×(40~50)	4	390	1,560	254×254×180	528×264×380
16×60	4	182	728	254×254×110	527×273×248
16x(≤43)	4	585	2,340	254×254×146	527×273×320
16x(43.1~63)	4	390	1,560	254×254×146	527×273×320
16x(6.31~78)	4	390	1,560	254×254×180	528×264×380
18x(≤43)	4	429	1,716	254×254×146	527×273×320
18x(43.1~63)	4	286	1,144	254×254×146	527×273×320
18x(6.31~78)	4	286	1,144	254×254×180	528×264×380
20x(≤43)	4	360	1,440	254×254×146	527×273×320
20x(43.1~63)	4	240	960	254×254×146	527×273×320
20x(6.31~78)	4	240	960	254×254×180	528×264×380
22x(≤43)	4	297	1,188	254×254×146	527×273×320
22x(43.1~63)	4	198	792	254×254×146	527×273×320
22x(6.31~78)	4	198	792	254×254×180	528×264×380

Package Information

Lead Cut and Bending

Dim. (Φ D×L)	Number of inner boxes	Quantity per inner box(pcs)	Total Quantity (pcs/ carton)	"Size of Inner Box (length x width x height)"	"Size of Out Box (length x width x height)"
8x(26~32)	4	2,436	9,744	254x254x146	527x273x320
8x(32.1~43)	4	1,827	7,308		
8x(43.1~63)	4	1,218	4,872		
8x(63.1~78)	4	1,218	4,872	254x254x180	528x264x380
10x(\leq 20)	4	2,484	9,936	254x254x146	527x273x320
10x(20.1~32)	4	1,656	6,624		
10x(32.1~43)	4	1,242	4,968		
10x(43.1~63)	4	828	3,312		
10x(63.1~78)	4	828	3,312	254x254x180	528x264x380
12x(\leq 20)	4	1,824	7,296	254x254x146	527x273x320
12x(20.1~32)	4	1,216	4,864		
12x(32.1~43)	4	912	3,648		
12x(43.1~63)	4	608	2,432		
12x(63.1~78)	4	608	2,432		
12.5x(\leq 20)	4	1,710	6,840	254x254x146	527x273x320
12.5x(20.1~32)	4	1,140	4,560		
12.5x(32.1~43)	4	855	3,420		
12.5x(43.1~63)	4	570	2,280		
12.5x(63.1~78)	4	570	2,280	254x254x180	528x264x380
13x(\leq 20)	4	1,620	6,480	254x254x146	527x273x320
13x(20.1~32)	4	1,080	4,320		
13x(32.1~43)	4	810	3,240		
13x(43.1~63)	4	540	2,160		
13x(63.1~78)	4	540	2,160		
14.5x(20.1~32)	4	896	3,584	254x254x146	527x273x320
14.5x(32.1~43)	4	672	2,688		
14.5x(43.1~63)	4	448	1,792		
14.5x(63.1~78)	4	448	1,792		
14.5x(63.1~78)	4	448	1,792	254x254x180	528x264x380
16x(\leq 32)	4	780	3,120	254x254x146	527x273x320
16x(32.1~43)	4	585	2,340		
16x(43.1~63)	4	390	1,560		
16x(63.1~78)	4	390	1,560		
16x(63.1~78)	4	390	1,560	254x254x180	528x264x380
18x(\leq 32)	4	572	2,288	254x254x146	527x273x320
18x(32.1~43)	4	429	1,716		
18x(43.1~63)	4	286	1,144		
20x(\leq 32)	4	480	1,920	254x254x146	527x273x320
20x(32.1~43)	4	360	1,440		
20x(43.1~63)	4	240	960		
22x(\leq 32)	4	396	1,584	254x254x146	527x273x320
22x(32.1~43)	4	297	1,188		
22x(43.1~63)	4	198	792		

Cutting

Dim. (Φ D×L)	Bags/Inner Box	Layer Quantity	Quantity (pcs/bag)	Total Quantity (pcs/carton)	Size of Inner Box (length x width x height)	Size of Out Box (length x width x height)
4×5~7	30	2	1000	60000	267×260× 135	540×277 × 152
5×5~7	20	2	1000	40000		
5×11	15	2	1000	30000		
6.3×(5~7)	15	2	1000	30000		
6.3×11	10	2	1000	20000		
6.3x(15~16)	6	2	1000	12000		
6.3x20	10	2	500	10000		
8x5	30	2	250	15000		
8x7	28	2	250	14000		
8x9	24	2	250	12000		
8x(12~13)	20	2	250	10000		
8x16	16	2	250	8000		
8x(18~20)	14	2	250	7000		
8x25	10	2	250	5000		
8x30	8	2	250	4000		
10x(≤20)	9	2	200	3600		
10x(21~25)	8	2	150	2400		
10x(>25)	8	2	100	1600		
12x(≤25)	8	2	150	2400		
12x(>25)	8	2	100	1600		
12.5x(≤25)	7	2	150	2100		
12.5x(>25)	7	2	100	1400		
13x(≤25)	7	2	150	2100		
13x(>25)	7	2	100	1400		
14.5x16	15	2	50	1500		
14.5x(20~22)	12	2	50	1200		
14.5x(24~26)	10	2	50	1000		
14.5x(32~36)	8	2	50	800		
14.5x40	7	2	50	700		
14.5x45	7	2	50	700		
16x(≤32)	4	4	780	3120	254x254x146	527x273x320
16x(32.1~43)	3	4	585	2340		
16x(43.1~63)	2	4	390	1560		
16x(6.31~78)	2	4	390	1560	254x254x180	528x264x380
18x(≤32)	4	4	572	2288	254x254x146	527x273x320
18x(32.1~43)	3	4	429	1716		
18x(43.1~63)	2	4	286	1144		
18x(6.31~78)	2	4	286	1144	254x254x180	528x264x380
20Φ		4	242	968	254x254x146	527x273x320
22Φ		4	200	800		

Taping

Dim. (Φ D×L)	Number of inner boxes	Quantity per inner box(pcs)	Total Quantity (pcs/ carton)	Size of Inner Box (length x width x height)	Size of Out Box (length x width x height)	
4×5~11	10	2,500	25000	320×235× 51	490×330× 275	
5×5~11	10	2,000	20000			
6.3×5~15	10	1,500	15000			
8×5~16	10	1,000	10000			
8×20~33	8	1,000	8000	320×235× 63	335× 233× 275	
10×10~13	5	600	3000	320× 218× 51		
10×15~20	5	600	3000	320× 218× 57		
10×25~35	4	600	2400	320× 218×65		
12~13×12~25	6	400	2400	315× 240× 65		
12~13×26~35	6	400	2400	315× 240× 72		
14.5x16~36	6	280	1680	305× 245× 72		510× 315× 236
16x16~36	6	250	1500			
18x20~36	6	200	1200			

Package Information

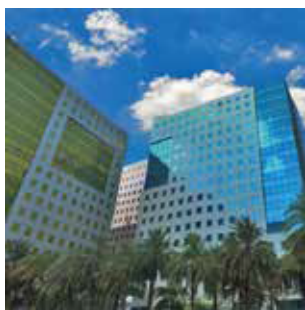
Snap-In, LUG

Dim. (Φ D×L)	Quantity per inner box(pcs)	Quantity per outer box (pcs)	Size of Inner Box (length x width x height)	Size of Out Box (length x width x height)
20×20~30L	300	1200	272×272×146	564×282×312
20×35~55L	200	800		
22×20~25L	300	1200		
22×30~55L	200	800		
25×20~30L	200	800	302×302×102	624×312×224
24.5×20~30L	200	800	302×302×80	624×312×180
25×35~55L	100	400		
24.5×35~55L	100	400		
25×60~120L	100	400	302×302×146	624×312×312
24.5×60~120L	100	400		
30×20~30L	75	300	179×179×146	378×189×312
30×35~55L	50	200		
30×60~120L	25	100		
35×20~30L	75	300	204×204×146	428×214×312
35×35~55L	50	200		
35×60~120L	25	100		
40~42×20~30L	75	300	229×229×146	478×239×312
40~42×35~55L	50	200		
40~42×60~120L	25	100		
45×60~120L	16	64	204×204×146	428×214×312

Screw Terminal

Dim. (Φ D×L)	Total Quantity (pcs/Carton)	Size of Inner Box (length x width x height)	Size of Out Box (length x width x height)
35 Φ (L≤170)	60	505×327×54	515×337×260
51 Φ (L≤120)	40		515×337×260
51 Φ (121~170L)	36		515×337×260
51 Φ (171~220L)	30		515×337×310
64 Φ (L≤120)	24		515×337×260
64 Φ (121~170L)	20		515×337×260
64 Φ (171~220L)	16		515×337×310
76 Φ (L≤120)	15		515×337×260
76 Φ (121~170L)	12		515×337×260
76 Φ (171~220L)	9		515×337×310
90 Φ (L≤120)	15		515×337×260
90 Φ (121~170L)	12		515×337×260
90 Φ (171~220L)	7		515×337×310

Su'scon 公司據點



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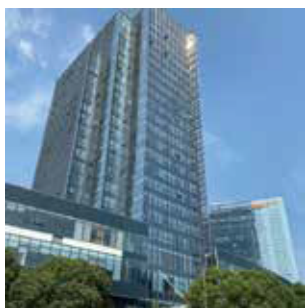
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