JAMICON®
KAIMEI ELECTRONIC CORP.

Aluminum Electrolytic Capacitor

ISO 9001 BSMI REGISTERED
ISO 14001 BSMI REGISTERED
DNV QS 9000

COMPANY BRIEF

Name:	**KAIMEI ELECTRONIC CORP.**
Established:	**November 28, 1973**
Capital:	**USD 44,871,802**
Employees:	**1,370 person**
Web site:	**http://www.jamicon.com.tw**
E-mail address:	**capacitor@jamicon.com.tw** (Capacitors Business) **fan@jamicon.com.tw** (Fan Business)

TAIPEI HEADQUARTERS
13th Fl., No.81, Sec.1, Xintai 5th Rd., Xizhi Dist.,
New Taipei City 22101, Taiwan, R.O.C.
TEL: +886-2-26981010
FAX: +886-2-26980386

ADVANCED R&D CENTER
No.143, Zhongzheng Rd., Dapi Township,
Yunlin County 63146, Taiwan. (R.O.C.)
TEL: +886-5-5915366
FAX: +886-5-5916628

SUZHOU KAIMEI ELECTRONICS CO., LTD.
68 Wendu Road, Wangting Township,
Xiangcheng District Suzhou City,
Jiangsu Province 215155, the PRC
TEL: +86-512-6-5388640
FAX: +86-512-6-5381388

KAIMEI ELECTRONIC (H.K.) LTD.
Shenzhen factory
No. 7-1, Gaoli Industrial Zore, Tangxia Town,
Dongguan City, Guangdong 523726, China.
TEL: +86-869-87919555

INDEX

ALUMINUM ELECTROLYTIC CAPACITORS

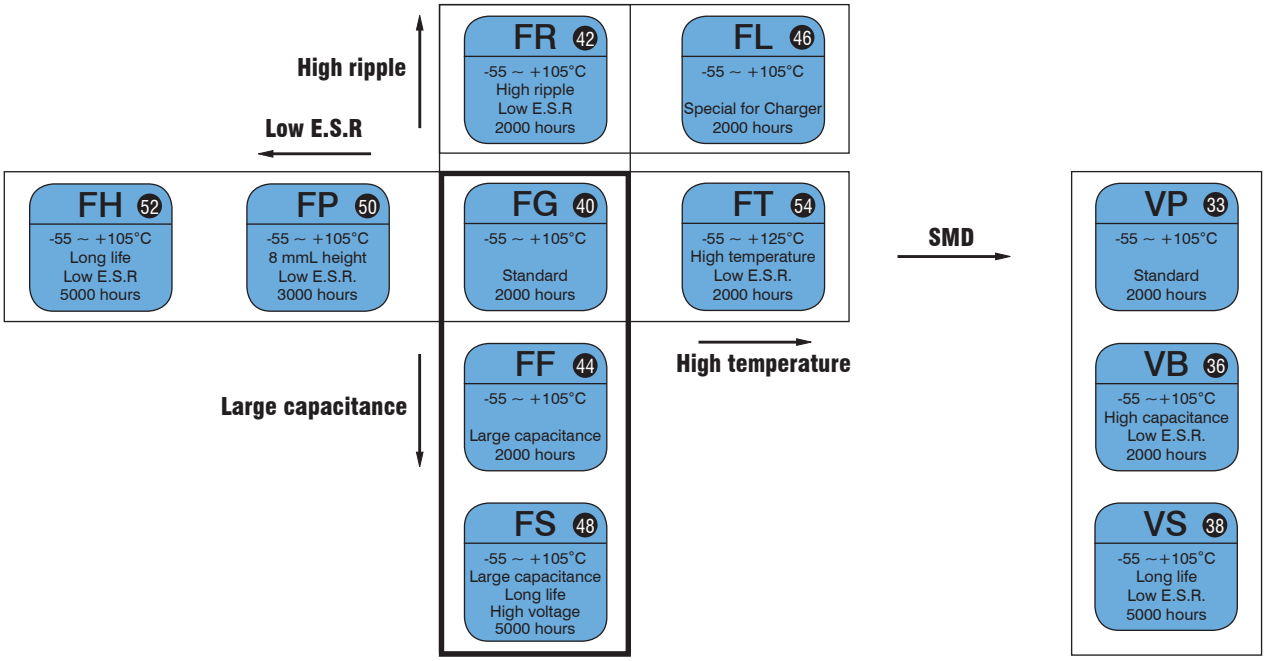
Classification		Series	Features · Application	Standard Type	Miniature Sized	Low Impedance	Long Life	Temperature Range (°C)	Load Life (Hour)	Capacitance Range (μF)	Rated Voltage Range (V.D.C.)	Page
Aluminum solid electrolytic capacitor with Conductive polymer		VP	Standard	●				-55~+105	2000	22~1500	2.5~25	33
		VB	High capacitance & Low E.S.R.			●		-55~+105	2000	33~1200	2.5~25	36
		VS	Long life & Low E.S.R.			●	●	-55~+105	5000	27~470	4~25	38
		FG	Standard	●				-55~+105	2000	22~2200	2.5~25	40
		FR	Higher ripple & Low E.S.R.					-55~+105	2000	270~2700	2.5~6.3	42
		FF	Large capacitance			●		-55~+105	2000	10~2200	6.3~63	44
		FL	Special for Charger	●				-55~+105	2000	22~2200	6.3~16	46
		FS	Large capacitance & Long life & High Voltage				●	-55~+105	5000	39~680	20~50	48
		FP	8mm height & Low E.S.R.		●	●		-55~+105	3000	10~1200	2.5~25	50
		FH	Long life & Low E.S.R.				●	-55~+105	5000	100~1800	2.5~16	52
		FT	125°C / 2000hrs & Low E.S.R.				●	-55~+125	2000	10~1000	6.5~25	54
CHIP	Surface Mounting Device	CS	5.4mmL, General purpose	●	●			-40~+85	2000	0.1~220	4~50	56
		CA	Low leakage current	●	●			-40~+85	2000	0.1~100	6.3~50	58
		CN	Bi-polar	●	●			-40~+85	2000	0.1~47	6.3~50	60
		CR	Higher capacitance	●				-40~+85	2000	3.3~1500	4~100	62
		CT	Wide temperature range	●	●			-55~+105	1000	0.1~1500	6.3~50	64
		CE	5.4mmL, Low leakage current	●				-40~+105	1000	0.1~100	6.3~50	66
		CP	5.4mmL, Bi-polar	●				-55~+105	1000	0.1~47	6.3~50	68
		CH	Wide temperature range, long life	●			●	-55~+105	2000	0.1~470	4~50	70
		CU	Wide temperature range, long life				●	-55~+105	3000~5000	0.1~1000	6.3~50	72
		CL	5.4mmL, Low impedance		●	●		-55~+105	1000	1~100	6.3~50	74
		CF	Super low impedance		●	●	●	-55~+105	1000~2000	1~1500	6.3~50	76
		CK	Higher ripple & Lower E.S.R.			●		-55~+105	1000~2000	4.7~1500	6.3~50	78
		CZ	Low impedance, Long life			●	●	-40~+105	3000	10~1000	6.3~50	80
		CD	Low impedance, Long life			●	●	-55~+105	2000~5000	4.7~1500	6.3~50	82
		CJ	Low impedance, Long life			●	●	-55~+105	5000	10~470	6.3~50	84
		CB	High temperature 125°C		●			-40~+125	2000	10~330	10~50	86
RADIAL	Miniature Size	SV	5mmL, General purpose		●			-40~+85	1000	1~330	4~50	87
		ST	5mmL, Wide temperature range		●			-55~+105	1000	1~100	4~50	89
		NT	5mmL, Bi-polar		●			-40~+85	1000	1~47	6.3~50	90
		SS	7mmL, General purpose		●			-40~+85	1000	1~330	4~63	91
		SH	7mmL, Wide temperature range	●	●			-55~+105	1000	1~220	6.3~50	92
		SL	7mmL, Low impedance		●	●		-55~+105	1000	4.7~220	6.3~50	93
		SA	5&7mmL, Low impedance, Long life		●	●	●	-40~+105	5000	1~270	6.3~50	95
		NS	7mmL, Bi-polar		●			-40~+85	1000	1~100	6.3~50	97
	Standard	SK	General purpose	●				-40~+85	2000	0.47~22000	6.3~450	98
		TK	Wide temperature range	●				-55~+105	2000	0.47~68000	6.3~450	101
		NK	Bi-polar	●				-40~+85	2000	1~6800	6.3~100	105
		LK	Low leakage current	●				-40~+85	2000	10~1000	10~63	107
	Low Impedance	MZ	Low E.S.R. High ripple current		●	●		-40~+105	2000	470~4700	6.3~25	109
		TE	Low impedance, Long life			●	●	-40~+105	2000~6000	15~15000	6.3~100	111
		TQ	Low impedance, High ripple			●	●	-40~+105	5000~6000	47~8200	6.3~35	115
		TT	Low impedance, Long life			●	●	-40~+105	4000~10000	15~8200	6.3~100	117
		TV	Low impedance, Long life			●	●	-55~+105	4000~10000	10~15000	6.3~100	121

Classification		Series	Features · Application	Standard Type	Miniature Sized	Low Impedance	Long Life	Temperature Range (°C)	Load Life (Hour)	Capacitance Range (μF)	Rated Voltage Range (V.D.C.)	Page
RADIAL	Low Impedance	TU	Low impedance, Long life			●	●	-40~+105	6000~10000	8.2~8200	6.3~100	124
		TP	High temperature and high reliability				●	-55~+105	6000~20000	1~4700	10~35	127
		WL	Low impedance, miniature sized		●	●		-55~+105	1000~2000	4.7~10000	6.3~63	129
		WJ	Ultra low impedance			●		-40~+105	2000	100~4700	6.3~25	134
		WG	Low impedance, high ripple current	●		●	●	-55~+105	2000~3000	47~4700	10~100	136
		TL	Low impedance, high reliability			●	●	-40~+105	2000~5000	10~5600	6.3~63	138
		TZ	Low impedance, high reliability			●	●	-55~+105	2000~5000	10~15000	6.3~63	140
		TC	High voltage, Specially size		●			-40~+105	2000	22~120	400~500	142
		TH	Low impedance, high voltage			●	●	-40~+105	2000~3000	2.2~220	160~450	144
		TX	Low impedance, high voltage, long life			●	●	-40~+105	5000	3.3~330	160~450	146
		TJ	Long life, Specially size				●	-40~+105	5000	33~100	350~450	148
		TF	High ripple current, high voltage, long life				●	-40~+105	8000~10000	6.8~220	160~450	149
		TR	Higher ripple, Long life				●	-40~+105	10000~12000	6.8~560	160~450	151
		TA	Long life, Specially size				●	-40~+105	10000	33~100	350~450	153
	Special Equipment	WB	High temperature, 125°C	●				-55~+125	2000	10~1000	10~50	154
		WE	High temperature, Long life				●	-40~+125	2000~5000	1~4700	10~450	155
		WF	High tem, Low impedance, Ultra long life			●	●	-40~+125	3000~5000	470~6800	25~63	157
		WH	High temperature, 130°C				●	-40~+130	1000~4000	22~4700	10~50	159
		TW	LED Lighting, Ultra long life		●		●	-40~+105	12000~20000	1~33	160~400	161
		NC	Bi-polar, for twinkling light	●				-40~+85	1000	1500~2200	13	163
		RV	No spark with DC overvoltage		●			-25~+105	2000	22~220	200~400	164
LARGE CAN	Snap-in Terminal	LS	General purpose		●			-40~+85	2000	82~100000	16~500	166
		HS	Wide temperature range		●		●	-40~+105	2000	47~56000	16~500	170
		HM	Small case than HS		●			-25~+105	2000	68~3300	160~450	174
		LT	Long life, high ripple current				●	-40~+85	3000	82~33000	16~450	176
		LB	Long life, high ripple current				●	-40~+85	3000	330~270000	16~550	179
		LL	Long life,high voltage,high ripple current				●	-40~+85	5000	47~2200	160~450	182
		HT	Long life, wide temperature range				●	-40~+105	3000	47~33000	16~450	184
		HB	Long life, wide temperature range				●	-40~+105	3000	390~250000	16~500	187
		HV	No sparks with DC overvoltage				●	-25~+105	3000	68~1500	200~400	190
		HL	Long life 5000hrs. wide temperature range			●	●	-40~+105	5000	47~1800	200~450	192
		HF	High voltage, long life				●	-40~+105	7000	47~2200	160~450	194
		HX	High voltage,long life 10000hrs				●	-40~+105	10000	39~1500	200~450	196
	Screw Terminal	KP	High ripple current	●				-40~+85	2000	270~680000	6.3~450	198
		MP	Hight voltage, high reliability				●	-40~+85	5000	1000~18000	350~450	202
		GP	High reliability, A1 can with threaded stud mounting				●	-40~+85	5000	1000~18000	350~450	204
		UP	High reliability, A1 can with threaded stud mounting				●	-40~+85	10000	1000~15000	350~450	206
		WP	High ripple current, high reliability	●				-25~+85	2000	390~39000	160~550	208
		QP	High ripple current, high reliability	●				-25~+105	2000	820~22000	160~500	211
		RP	High ripple, wide temperature range	●				-40~+105	2000	1000~330000	10~450	214
		XP	Long life 5000hrs. high reliability			●	●	-40~+105	5000	680~33000	200~450	217
		BP	High reliability, A1 can with threaded stud mounting				●	-40~+105	5000	1000~15000	350~450	219
		JP	High voltage, high reliability				●	-40~+85	10000	1000~15000	350~450	221
		EP	High voltage, high reliability				●	-40~+105	10000	1000~15000	350~450	223

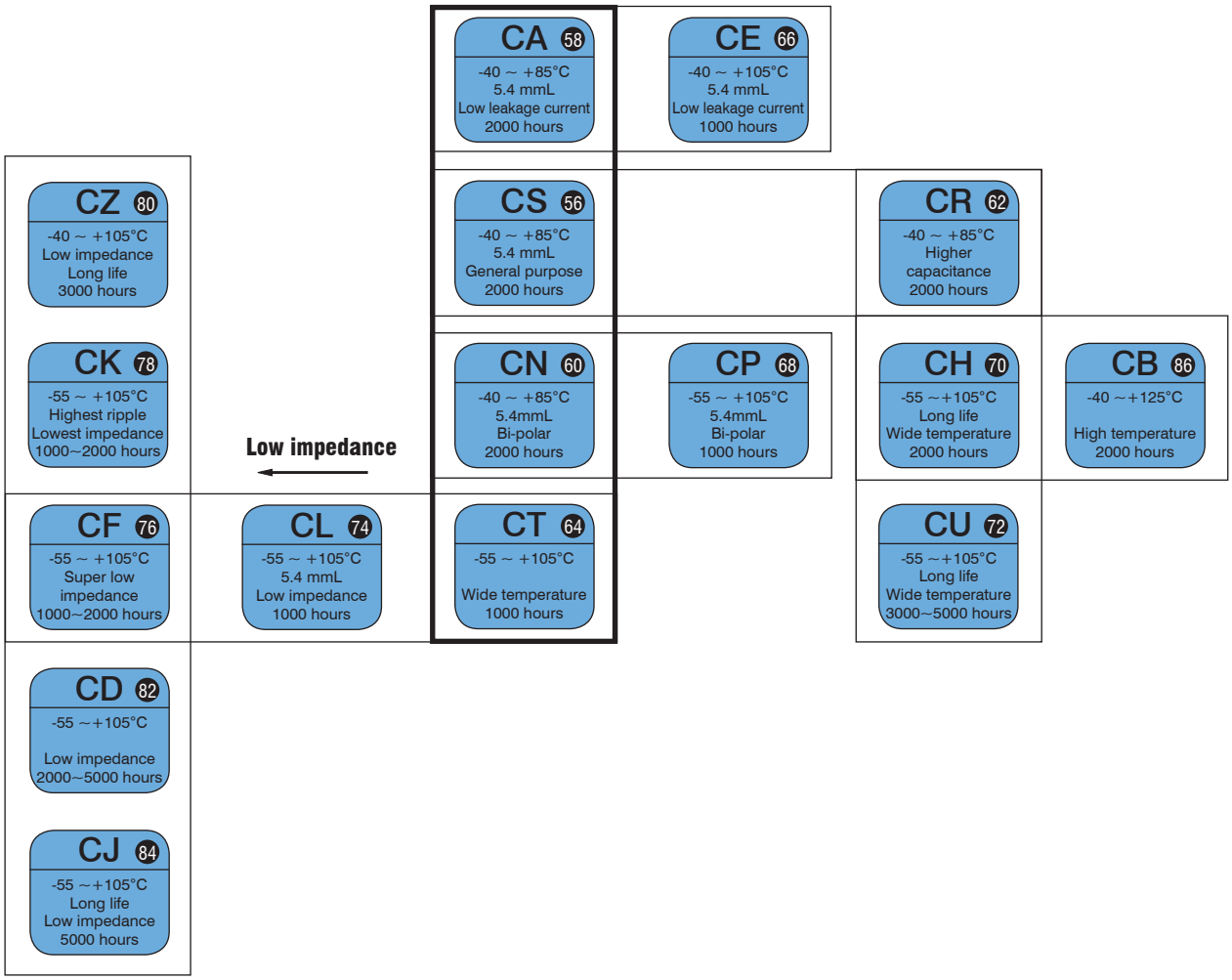
SERIES CHART OF CAPACITORS

JAMICON

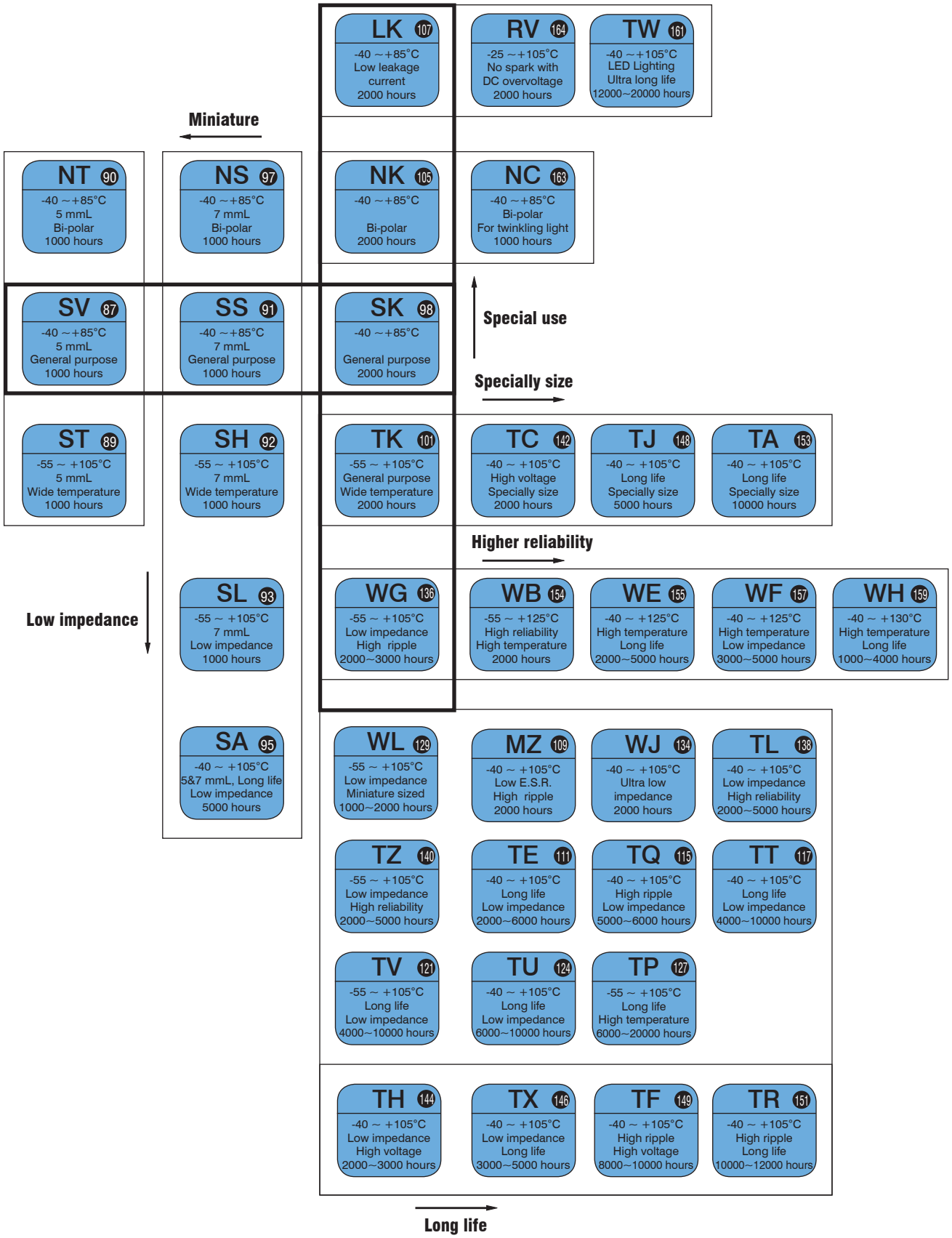
Solid Cap (Aluminum Solid Electrolytic Capacitor With Conductive Polymer)



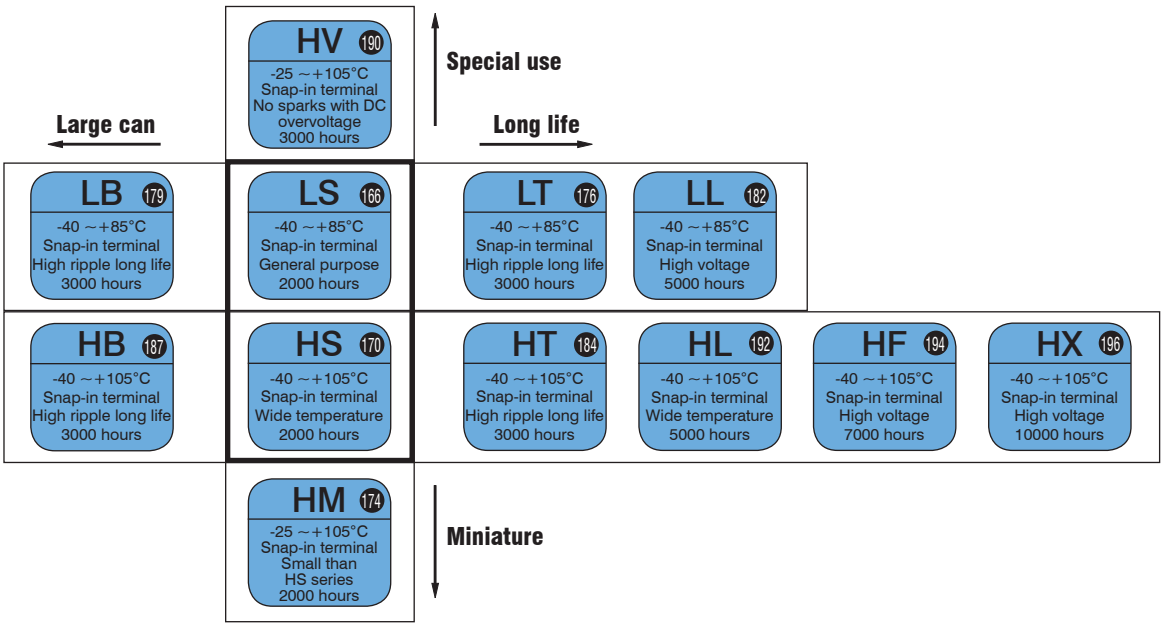
Chip Type (Surface Mounted Device)



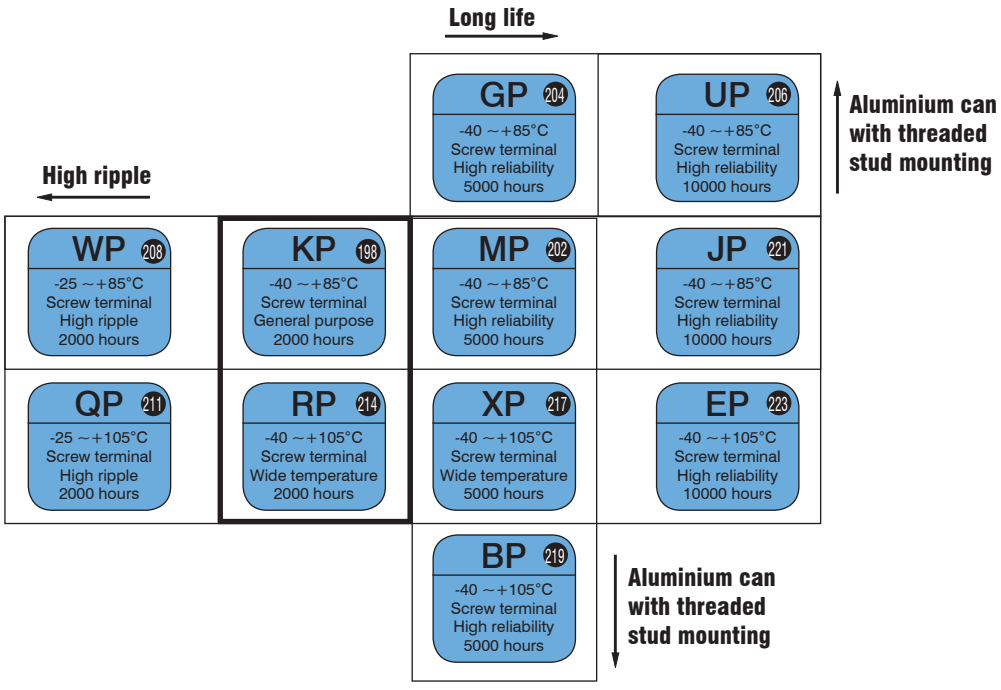
Miniature Type



Large Can Type (Snap-in terminal)

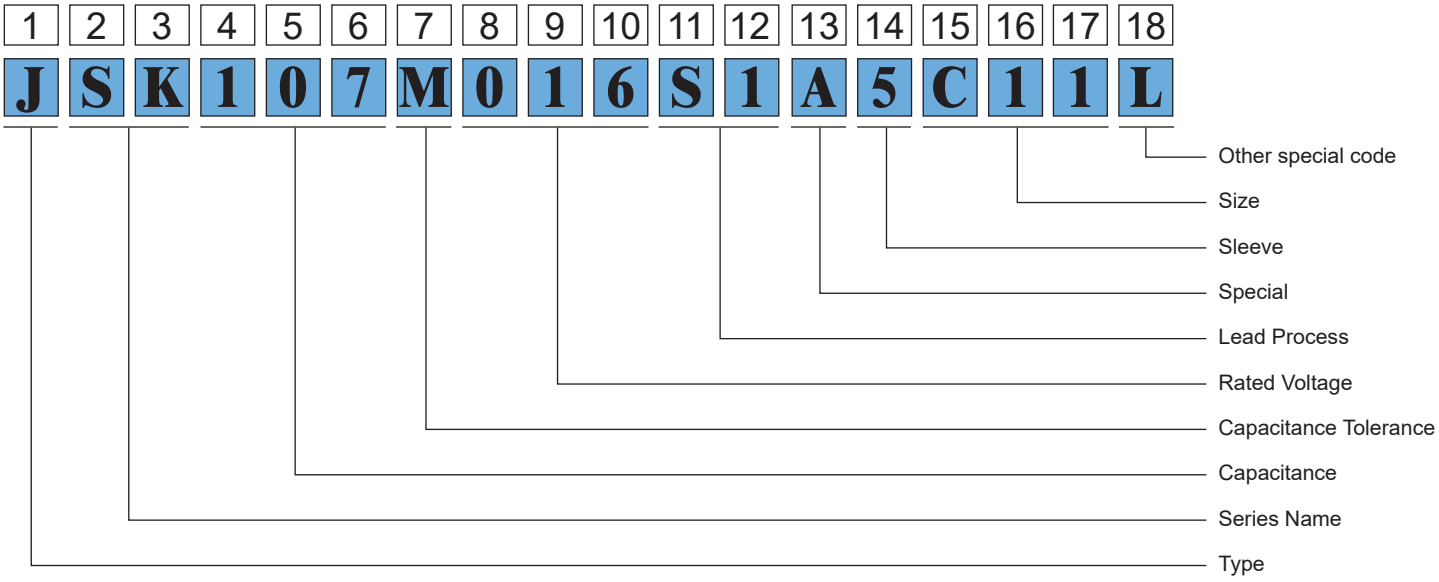


Screw Terminal Type



Recommended Applications	Conductive Polymer Aluminum Solid Capacitor	SURFACE MOUNT	RADIAL LEAD TYPE 6.3~100V	RADIAL LEAD TYPE 160~500V	SNAP-IN TYPE	SCREW TYPE
Lighting Equipment	FG、FF	CB	TV、TT、TU	TH、TA、TW、TJ、TX、TR	—	—
Network Communication	FG、FF	CK、CH、CU、CB	TL、TE、TT、TU	TJ、TX、TF、TA、TR	—	—
Ethernet Router / Switch	FG	CH、CK	WL、TT	—	—	—
Charger	FG、FF、FR、FL	CS、CR、CT、CH、CK、CU	WL、TL	TK	—	—
Power Supply	FG、FF、FR、FT	CS、CR、CT、CH、CK、CU	TK、TE	TK、TX、TJ	—	—
UPS	—	CH	—	—	HM、HF、LB、HB	KP、MP、GP、UP、WP、QP、RP、XP、BP、JP、EP
Control Panel	—	CS、CR、CT、CH	TK、WL	TK	—	—
Intelligent Electric Meters Intelligent Water Meter Intelligent Gas Meter	—	CK、CU、CH	TK、TE、TT	TK、TX、TJ、TC、TH	HS、HT	—
Audio	—	CS、CR、CH、CK 、CU、CP	WL、TK、SK	—	LS、HS、HT、LB、HB	—
Automotive	—	CK、CU、CH	SK、TK、SL、TL、TE、WE、WF	—	—	—
Inverter / Converter (Industrial)	—	CH、CK、CU	—	TX、TR	HT、HL、HX、HF、LB、HB	KP、MP、GP、UP、WP、QP、RP、XP、BP、JP、EP
Inverter (Home Appliances)	—	CH、CK、CU	TK	TF、TA、TR	HS、HT、HL、HX、LT、LL	KP、MP、GP、UP、WP、QP、RP、XP、BP、JP、EP
Servo system	—	CH、CU	—	TX、TJ、TR	HL、HX	KP、MP、GP、UP、WP、QP、RP、XP、BP、JP、EP
Press processing Industrial Equipment	—	—	—	—	HL、HX	KP、MP、GP、UP、WP、QP、RP、XP、BP、JP、EP
Electric Car Equipment Charging pile	—	CH	—	—	HS、HL、HX	KP、MP、GP、UP、WP、QP、RP、XP、BP、JP、EP
Printer Facsimile Machine	—	CH、CK、CU、CF	TK	TC、TH、TX、TJ	HV、HS、HM	—
Elevator	—	CH	SK、TK、TV、TT、TE	TK、TX、TJ、TF、TA	HS、LS、HM、HL、HX、LL	—
Mainboard	—	CS、CR、CT、CH	SK、TK	SK、TK	—	—
Video	—	CF、CS、CL	SK、TL	—	—	—
Commercial and residential Power distribution/ Regulation equipment	—	—	—	—	HT	—
Medical	—	—	—	—	—	KP

PARTS NUMBER SYSTEM



Code 1 Type

Code	Model Type
J	Jamicon Radial Type (PET sleeve)
V	SMD (V-chip) Type (Nylon coating)
T	Jamicon Snap-in Type (PET sleeve)
P	Conductive Polymer Aluminum Solid Capacitor
N	Screw Type (PVC sleeve)
C	Jamicon Radial and Snap-in Type (PVC sleeve)

Code 2~3 Series Name (as content page 2 to page 3)

Code 4~6 Capacitance

Capacitance (μF)	0.47	4.7	47	470	4700	47000	470000	4700000	47000000	470000000
Product code	474	475	476	477	478	479	47A	47B	47C	47D

Code 7 Capacitance Tolerance

A : -8~+32%	B : -5~+10%	C : +10~+30%	D : -40~+0%	W : -15~+0%	X : -15~+5%
G : -30~+0%	H : -5~+15%	I : -20~+0%	J : -5~+5%	Q : -10~+30%	R : -0~+20%
M : -20~+20%	N : -30~+30%	O : -20~+10%	P : -0~+30%	K : -10~+10%	L : 15~+15%
S : -0~+50%	T : -10~+50%	U : -10~+75%	V : -10~+20%	E : 12~+20%	F : -5~+20%
Y : -10~+150%	Z : -20~+80%				

Code 8~10 Rated Voltage

Rated voltage (WV)	2.5	5	6.3	63	100	450
Product code	2R5	005	6R3	063	100	450

Code 11~12 Lead Process

Code / processing form	Code 11	Code 12	Description
Standard	A	1	Screw type standard type
	B	0	Standard SMD type
		1	Standard Dip & Snap-in type
Ammo tape	T	1	Standard ammo tape (pitch 5mm for dia.~13mm)
		2	Ammo tape with straight lead (available for dia.4~8mm)
		4	Ammo formed tape with pitch 2.5mm (available for dia.4~5mm)
Reel tape	R	1	Standard reel tape (pitch 5mm for dia.~10mm)
		2	Reel tape with straight lead (available for dia.4~8mm)
		3	Reel formed tape with pitch 2.5mm (available for dia.4~5mm)
Straight cut	C	3	Straight cut lead with L : 3.2±0.5mm
		5	Straight cut lead with L : 4.0±0.5mm
		7	Straight cut lead with L : 5.0±0.5mm
Kink (Crimp) cut	K	2	Kink cut lead with L : 4.5±0.5mm
Formed cut	F	6	Formed cut lead with L : 4.0±0.5mm (pitch : 5mm)

Code 13 Special Specification

A	Standard	J	SMD is 25pes each row, the bend of SNAP-IN termanal foot is 90°	S	Spacer special DIP special requirement	2	Life & ESR special
B	DF (tanδ) special	K	Above life specified in catalog	T	Length of body special fortolerance	3	Life & impedance special
C	ESR special	L	Pins or wire diameter	U	Pack special	4	Life & Ripple current special
D	Impedance special	M	Customer requirements	V	Sleeve special	5	Life & LC special
E	Ripple current special	N	Pitch special	W	Capacitance special	6	Life & rubber cover or capacitor cover plate
F	LC special	O	LC & ESR or impedance special	X	DF & LC & ESR or impedance special	7	DF & ESR or impedance special
G	GUM or special for capacitor cover plate or non-salient point in bottom	P	Under life specified in catalog	Y	RC & LC & ESR or impedance special	8	DF & RC special
H	Customer requirements	Q	DF & Ripple current & ESR or impedance special	Z	Frquency & ESR or impedance special	9	DF & LC special
I	RC & LC special	R	Shelf is 1000hrs	1	Life & DF special	0	RC & ESR or impedance special

Code 14 Sleeve Code (please contact us if the sleeve code in the form cannot corresponding with your requirement.)

Code	Series	Color
5	NT,SS,SA,NS,SK,NK,TE,TQ,TT,TV,TP,WJ,TR,TW,WE,RV, WH,LS,HS,HM,LB,HB,HF,HX KP,MP,GP,UP,WP,QP,RP,XP,BP,JP,EP	Black with white printing
6	SV,TU,WF	Black with golden printing
7	LT,HT	Green with white printing
9	MZ	Green with silvery printing
A	LK,WB	Green with black printing
B	TL,TZ,TH,LL,HL,HV	Brown with white printing
C	SL,WL,TF	Green with golden printing
M	SH,TK,ST,TC	Black with blue printing
U	WG	Dark purple with white printing
Z	TX,TJ,TA	Brown with silver printing
N	CS,CA,CN,CR,CT,CE,CP,CH,CU,CL,CF,CK,CZ,CD,CJ,CB FG,FP,FR,FF,FS,FH,FT,FL,VP,VB,VS	SMD standard pack & POLYMER
Q	NC	Blue with black printing

Code 15~17 Case Size (please contact us if the case size is required and not shown in the table.)

Code 15 Diameter

Code	A	B	C	D	E	F	G	8	H
Case size	3	4	5	5.5	6.3	7.3	8	8.2	10
Code	9	J	K	L	M	N	7	P	G
Case size	10.2	12	12.5	13	16	18	18.5	20	22
Code	R	S	T	U	V	W	X	Y	Z
Case size	25	30	35	40	45	51	64	77	90

Code 16~17 Length

For ECAP-DIP & POLYMER-DIP & SNAP-IN & SCREW TYPE:

Code	05	07	09	10	1A	11	1B	12	1C	13
Length	05	07	09	10	10.5	11	11.5	12	12.5	13
Code	14	15	16	17	18	20	25	30	3B	32
Length	14	15	16	17	18	20	25	30	31.5	32
Code	35	3F	36	40	45	50	55	60	65	70
Length	35	35.5	36	40	45	50	55	60	65	70
Code	75	80	90	96	A0	B5	C1	D0	E4	F5
Length	75	80	90	96	100	115	121	130	144	155

For V-CHIP SMD

Code	01	02	03	04	05	06	07	08
Length	5.4	6.2	10.2	7.7	13.5	16、16.5	12.5	5.8

For POLYMER SMD

Code	A1	A2	A3	A4	A5	A6	A7	A8	A9
Length	5.8	6.0	6.7	7.7	10.2	10.4	12.0	12.2	9.0

Code 18 Other special code

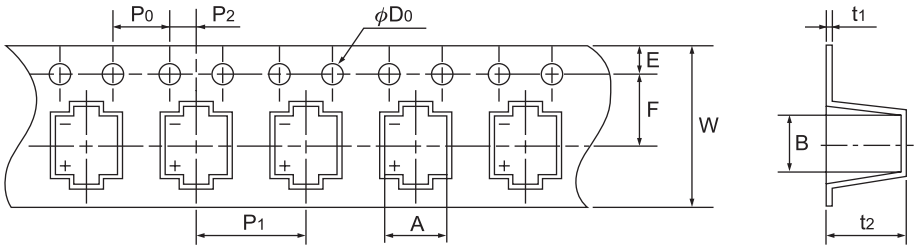
H: Intelligent instrument	R: Medical	X: Weekly date code
L: Jamicon	S: Auto grade	6: Industrial equipment / inverter

LEAD STYLE & TAPING SPECIFICATION

JAMICON

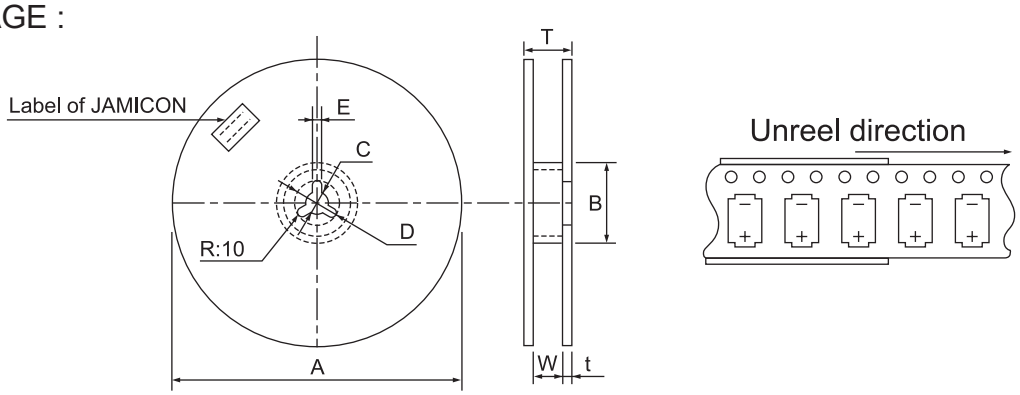
● CHIP TYPE (CS, CA, CN, CR, CT, CE, CP, CH, CU, CL, CF, CK, CZ, CD, CJ, CB, VP, VB, VS Series)

● TAPING :



D x L	W ±0.3	A ±0.2	B ±0.2	P0 ±0.1	P1 ±0.1	P2 ±0.1	F ±0.1	φD0 ±0.1	t1 ±0.1	E ±0.1	t2 ±0.2
4x5.4	12.0	4.7	4.7	4.0	8.0	2.0	5.5	1.5	0.4	1.75	5.7
5x5.4	12.0	5.7	5.7	4.0	12.0	2.0	5.5	1.5	0.4	1.75	5.7
6.3x5.4	16.0	7.0	7.0	4.0	12.0	2.0	7.5	1.5	0.4	1.75	5.7
4x5.8	12.0	4.7	4.7	4.0	8.0	2.0	5.5	1.5	0.4	1.75	6.3
5x5.8	12.0	5.7	5.7	4.0	12.0	2.0	5.5	1.5	0.4	1.75	6.4
6.3x5.8	16.0	7.0	7.0	4.0	12.0	2.0	7.5	1.5	0.4	1.75	6.4
6.3x7.7	16.0	7.0	7.0	4.0	12.0	2.0	7.5	1.5	0.4	1.75	8.2
8x6.2	16.0	8.7	8.7	4.0	12.0	2.0	7.5	1.5	0.4	1.75	6.8
8x9	24.0	8.7	8.7	4.0	16.0	2.0	11.5	1.5	0.4	1.75	10.0
8x10.2	24.0	8.7	8.7	4.0	16.0	2.0	11.5	1.5	0.4	1.75	11.0
10x10.2	24.0	10.7	10.7	4.0	16.0	2.0	11.5	1.5	0.4	1.75	11.0
12.5x13.5	32.0	13.4	13.4	4.0	24.0	2.0	14.2	1.5	0.4	1.75	14.0
12.5x16	32.0	13.4	13.4	4.0	24.0	2.0	14.3	1.5	0.4	1.75	16.2
16x16.5	44.0	17.5	17.5	4.0	28.0	2.0	20.2	1.5	0.4	1.75	16.7

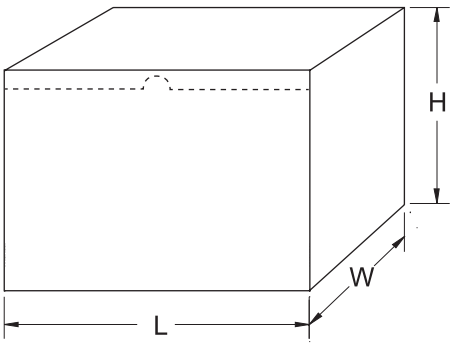
● PACKAGE :



Unit : mm

D x L	A ±2.0	B min	C ±0.5	D ±0.8	E ±0.5	W ±1.0	T ±1.0	t ±0.5
φ4 φ5	380	50	13	21	2.0	14.0	20.0	3.0
φ6.3	380	50	13	21	2.0	18.0	24.0	3.0
8x6.2	380	50	13	21	2.0	18.0	24.0	3.0
8x9	380	50	13	21	2.0	26.0	32.0	3.0
8x10.2	380	50	13	21	2.0	26.0	32.0	3.0
10x10.2	380	50	13	21	2.0	26.0	32.0	3.0
12.5x13.5	380	84	13	42	2.0	32.0	36.0	2.0
12.5x16	380	84	13	42	2.0	32.0	36.0	2.0
16x16.5	380	84	13	42	2.0	44.0	48.0	2.0

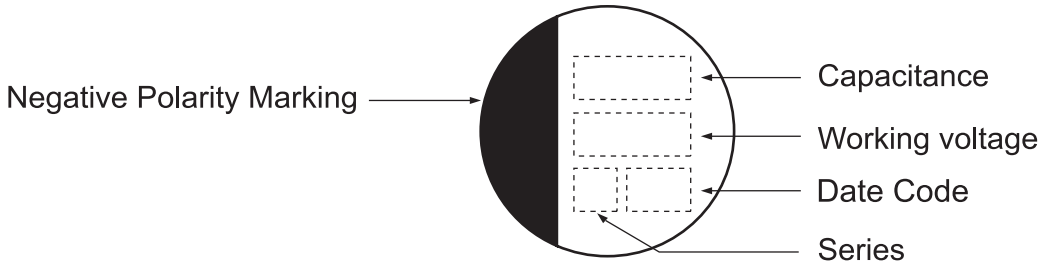
PACKING VOLUME INNER BOX :



D x L	L	W	H
ϕ4	390	195	395
ϕ5	390	195	395
ϕ6.3	390	225	395
8 x 6.2	390	225	395
8 x 10.2	390	245	395
8 x 10.4	390	245	395
10 x 10.2	390	245	395
10 x12.2	390	245	395
12.5 x 13.5	390	255	405
12.5 x 16.0	390	255	405
16 x 16.5	390	255	405

D x L	Pcs / Reel	Reel / Inner Box	Pcs / Inner Box
4 x 5.4	2,000	10	20,000
5 x 5.4	1,000	10	10,000
6.3 x 5.4	1,000	10	10,000
4 x 5.8	2,000	10	20,000
5 x 5.8	1,000	10	10,000
6.3 x 5.8	1,000	10	10,000
6.3 x 7.7	1,000	10	10,000
8 x 6.2	1,000	10	10,000
8 x 10.2	500	8	4,000
8 x 10.4	500	8	4,000
10 x 10.2	500	8	4,000
10 x 12.2	400	8	3,200
12.5 x 13.5	200	6	1,200
12.5 x 16.0	150	6	900
16 x 16.5	125	6	625

MARKING (Non-Conductive polymer)



● RADIAL TYPE

● SPECIFICATION

Lead taping is designed for automatic insertion equipment. Capacitor with case size of 18mm x 36mm or smaller are available in taping type.

■ DIMENSIONS (ϕ4~ϕ10)

(mm)

Item	Symbol	Case Size													Tolerance	Remark
		4 x 5	5 x 5	6.3x5	8 x 5	4 x 7	5 x 7	6.3x7	8 x 7	5 x 11	6.3x11	8 x 11	10x12.5	10x16	10x20	
Lead wire diameter	d	0.45							0.5			0.6				±0.05	
Body height	A	6.0				8.0				12.5		12.5	14	17.5	21.5	max	
Intervals of bodies	P	12.7														±1.0	
Intervals of punched holes	P0	12.7														±0.2	
Distance between holes and lead wire	P1	3.85														±0.7	Fig 1. Fig 2. Fig 3.
		5.35	5.1	5.1			5.35	5.1	5.1			5.1					Fig 5.
		5.6	5.35	5.1	5.1	5.6	5.35	5.1	4.6	5.35	5.1	4.6					Fig 6.
Distance between holes and bodies	P2	6.35														±1.0	
Distance between lead and lead	F	5.0														+0.6 −0.2	Fig 1. Fig 2. Fig 3.
		2.0	2.5	2.5			2.0	2.5	2.5			2.5					Fig 5.
		1.5	2.0	2.5	2.5	1.5	2.0	2.5	3.5	2.0	2.5	3.5					Fig 6.
Base tape width	W	18.0														±0.5	
Adhesive tape width	W0	8.0														min	
Deviation between holes and base tape	W1	9.0														±0.5	
Deviation between adhesive and base tape	W2	2.0														max	
Distance between body bottom and tape center	H	17.5								18.5			18.5			±0.5	Fig 1. Fig 2. Fig 3.
		17.5								18.5							Fig 5. Fig 6.
Lead wire clinched hight	H0	16.0														±0.5	
Punched hole diameter	D0	4.0														±0.3	
Length of not good lead slit	L	11.0														max	
Base and adhesive tape thickness	t	0.6														±0.3	
Deviation of body alignment	Δh	0.2														max	
Deviation of body alignment	ΔP	0.2														max	

Fig 1. :Code To(ϕ4~ϕ6.3 H=17.5), T1(ϕ4~ϕ6.3 H=18.5)

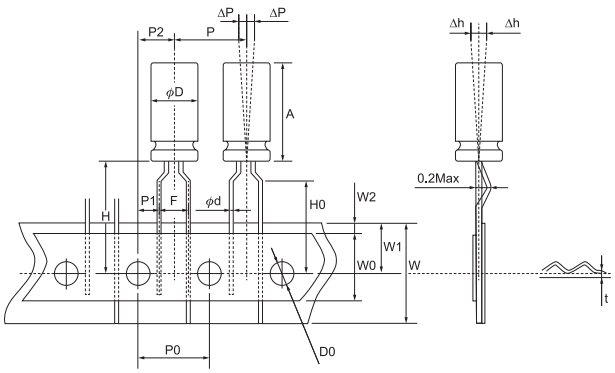


Fig 2. :Code T1(ϕ8)(P3=2.0~2.7, θ=110°±15°)

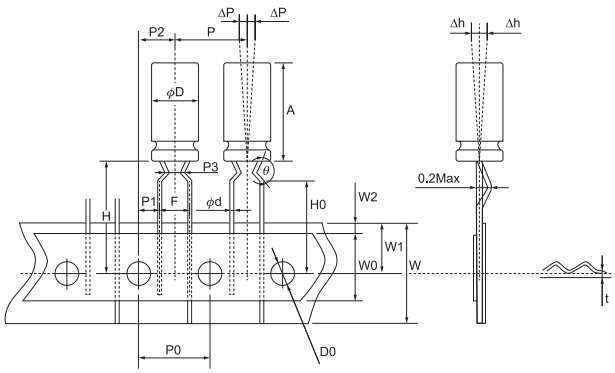


Fig 3. : Code T1(ϕ10~ϕ12.5)

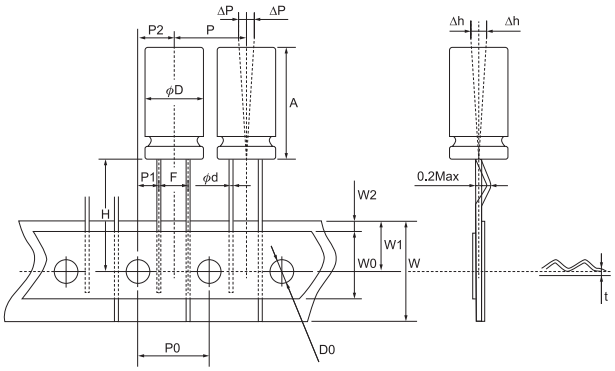
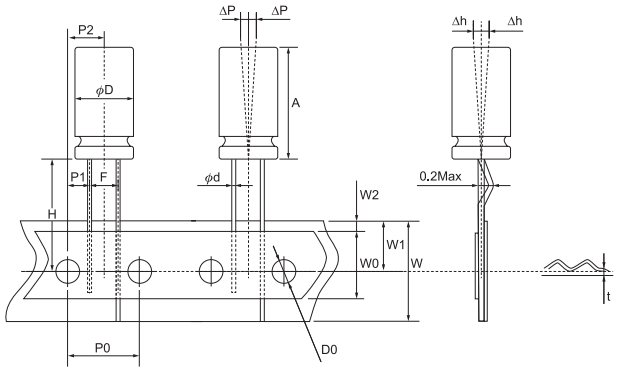


Fig 4. : Code T1(ϕ16~ϕ18)



DIMENSIONS (ϕ12.5~ϕ18)

(mm)

Item	Symbol	Case Size							Tolerance	Remark
		12.5 x 20	12.5 x 25	12.5 x 30	16 x 25	16 x 32	16 x 36	18 x 36		
Lead wire diameter	d	0.6			0.8				±0.05	
Body height	A	22	27	32	27	34	38	38	max	
Intervals of bodies	P	15.0			30.0				±1.0	Fig 3. Fig 4
Intervals of punched 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							±1.3	
Distance between lead and lead	F	5.0			7.5				+0.6 −0.2	
Base tape width	W	18.0							±0.5	
Adhesive tape width	W_0	8.0							min	
Deviation between holes and base tape	W_1	9.0							±0.5	
Deviation between adhesive and base tape	W_2	2.0							max	
Distance between body bottom and tape center	H	18.5			18.5				±0.5	Fig 3. Fig 4
Punched hole diameter	D_0	4.0							±0.3	
Length of not good lead slit	L	11.0							max	
Base and adhesive tape thickness	t	0.6							±0.3	
Deviation of body alignment	△h	0.2							max	
Deviation of body alignment	△P	0.2							max	

LEAD STYLE & TAPING SPECIFICATION

JAMICON

Fig 5. : Code T ∗ (φ4~φ5)

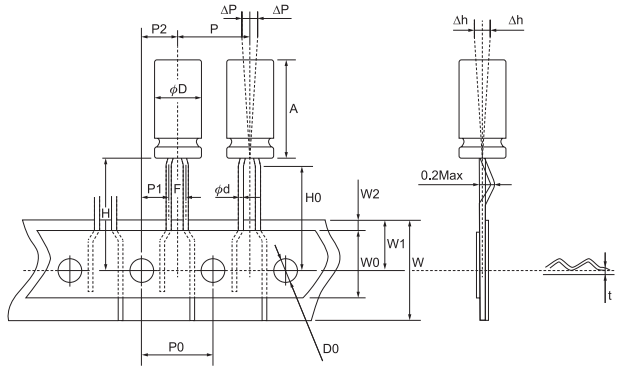
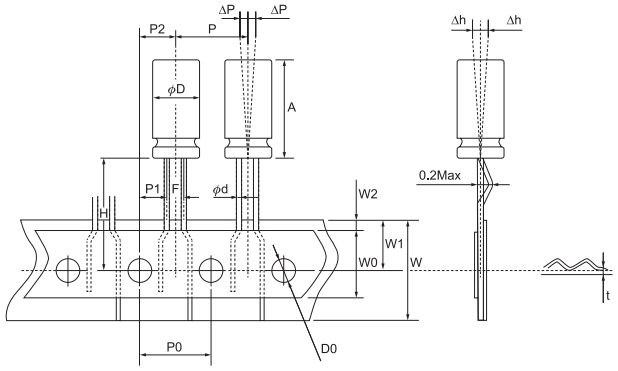


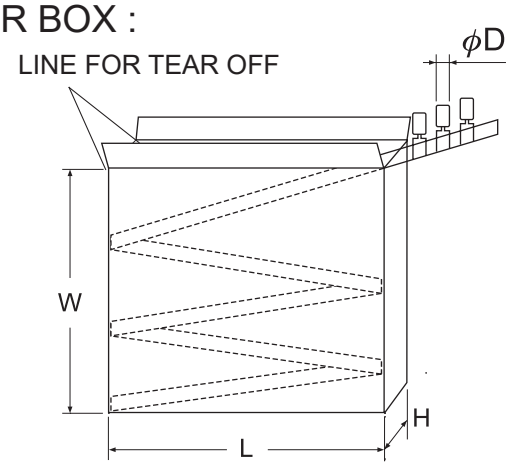
Fig 6. : Code T ∗ (φ4~φ8)



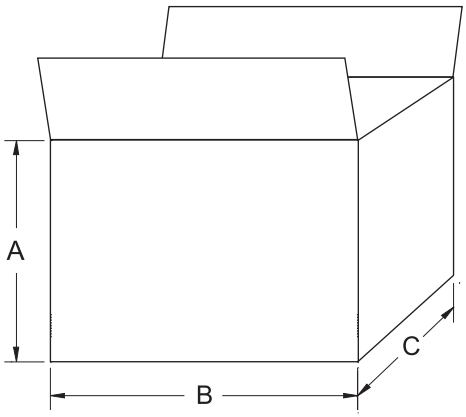
PACKING (Lead Taping)

Available for various automatic equipment. Choosing the ordinal the polarity of capacitor's lead depends on customer's request.

INNER BOX :

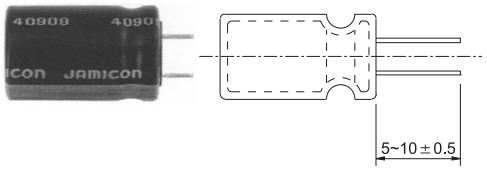
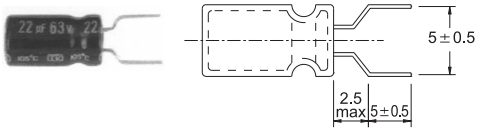
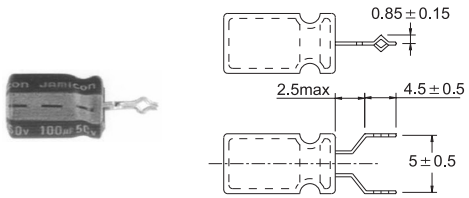
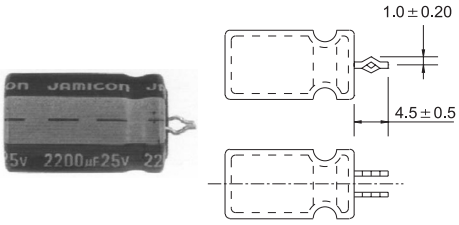


PACKING CARTON :



D×L	INNER BOX				PACKING CARTON				
	W±10(mm)	L±10(mm)	H±10(mm)	Quantity(Pcs)	A±10(mm)	B±10(mm)	C±10(mm)	Inner Box	Quantity(Pcs)
4φ	275	330	50	3,000	290	345	278	5	15,000
5φ	230	330	50	2,000	248	345	280	5	10,000
6.3φ	275	330	50	2,000	290	345	278	5	10,000
8φ x 5~16L	230	330	50	1,000	248	345	280	5	5,000
8φ x 20L	230	330	58	1,000	245	345	320	5	5,000
10φ x 10~17L	230	330	50	600	248	345	280	5	3,000
10φ x 20~25L	230	330	58	600	245	345	320	5	3,000
10φ x 30L	230	330	65	600	245	345	290	4	2,400
12.5φ x 32L below	235	335	65	400	248	352	290	4	1,600
12.5φ x 36L below	235	335	74	400	248	352	325	4	1,600
16φ x 32L below	275	335	65	300	297	355	290	4	1,200
16φ x 36L below	275	335	74	300	297	355	337	4	1,200
18φ x 20~32L below	288	340	63	260	305	360	280	4	1,040

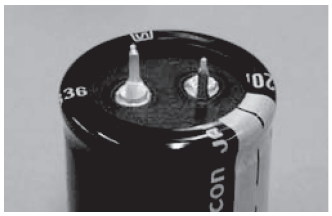
Lead Style

	Iten List	Code	Lead Diameter (mm)	Case Size DxL(mm)	Range	Dimensions
Lead Style	Lead Cut	C＊	0.5~0.8	5 x 11 ⌇ 18 x 40	ϕ5~ϕ18	
	Lead Forming Cut	FF	0.5~0.6	5 x 11 ⌇ 8 x 11.5	ϕ5~ϕ8	
	Snap-in	F8	0.5~0.6	5 x 11 ⌇ 8 x 11.5	ϕ5~ϕ8	
		K2	0.6~0.8	10 x 12.5 ⌇ 18 x 40	ϕ10~ϕ18	

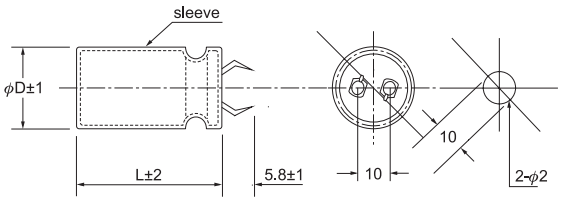
Terminals of Snap-in type

Terminal Type (Part Number Code 11, Code 12, Code 13)

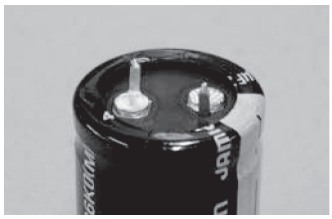
Code : S1A (φ22~35)



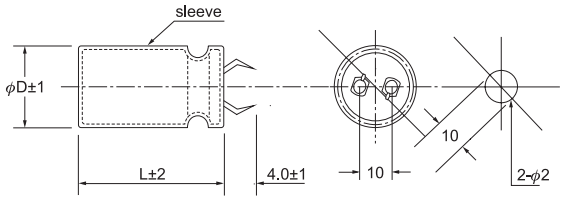
Location of P.C.B. holes



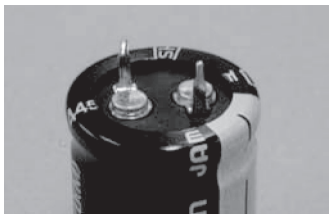
Code : S1G (φ22~35)



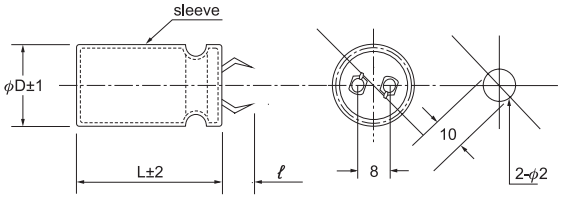
Location of P.C.B. holes



Code : L1* (φ22~35)



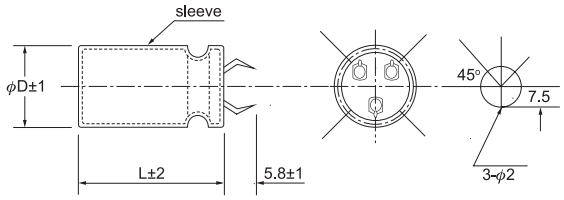
Location of P.C.B. holes



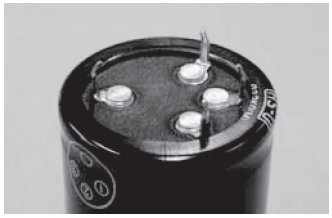
L1A:ℓ=5.8±1 L1G:ℓ=4.0±1

Code : LAA (φ25~30)

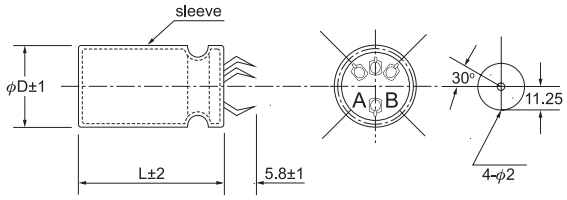
Location of P.C.B. holes



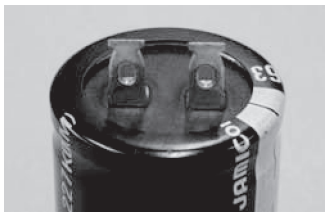
Code : L4A (φ35~45)



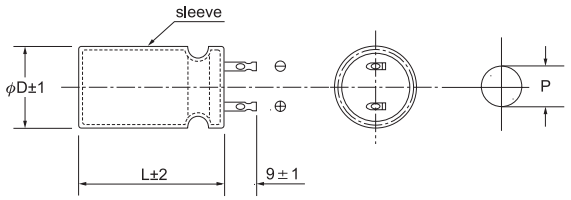
Location of P.C.B. holes



Code : LTA (φ22~35)

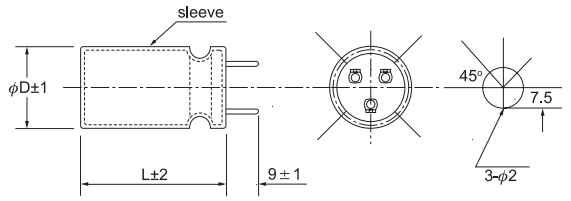


φD	22	25	30	35
P	8	10	10	14



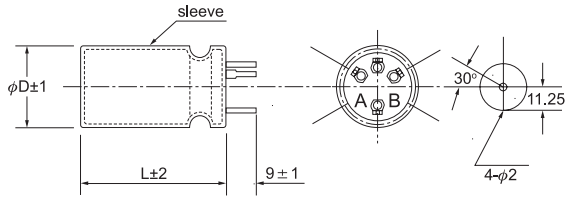
Code : LBA (φ25~30)

Location of P.C.B. holes



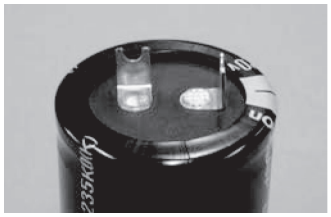
Code : LCA (φ35)

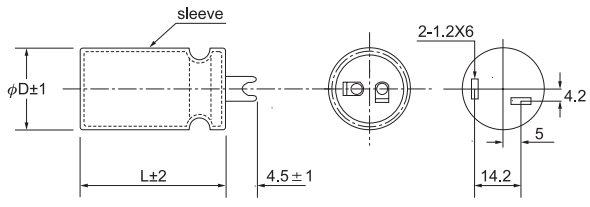
Location of P.C.B. holes



Code : LLG (φ30~35)

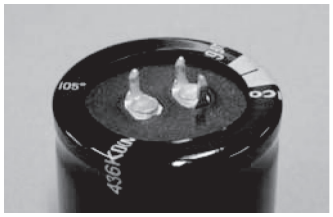
Location of P.C.B. holes

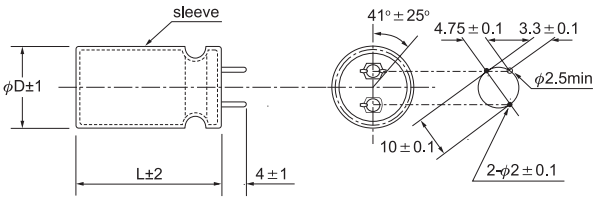




Code : L3G (φ25~35)

Location of P.C.B. holes



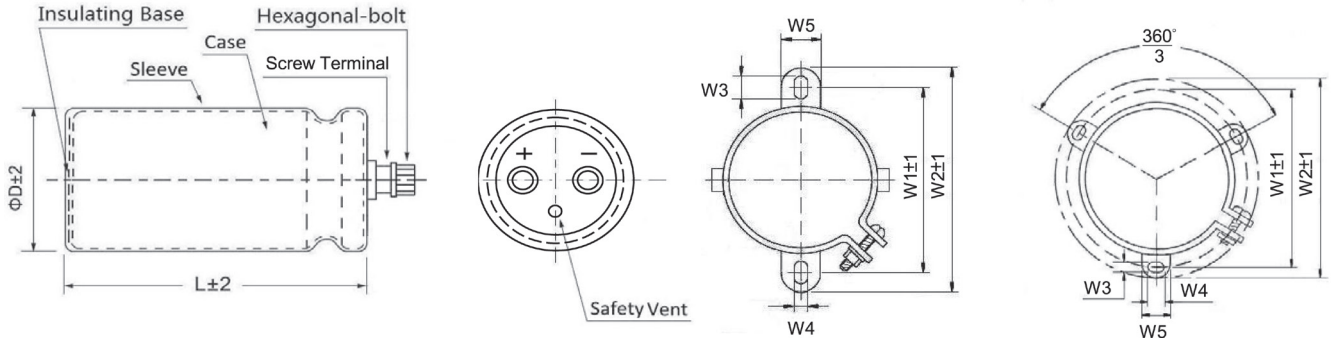


Screw type

Dimensions (ϕ35~90)

ϕD	W1	W2	W3	W4	W5
35	48.0	58.0	6.0	3.5	10
51	63.5	73.0	4.5	7.0	14
64	76.2	85.1	4.5	7.0	14
77	88.9	98.4	4.5	7.0	14
90	101.6	111.1	4.5	7.0	14

($\blacktriangle$ ϕ35)　　($\blacktriangle$ ϕ51, ϕ64, ϕ77, ϕ90)



※ Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

PRECAUTIONS AND GUIDELINES OF ALUMINUM ELECTROLYTIC CAPACITOR (NON-CONDUCTIVE POLYMER)

A. Designing Device Circuits

1. Selecting

Select the capacitors to suit installation of circuit and operating conditions, and use the capacitors to meet the performance limits prescribed in this catalog or the product specifications.

2. Electrical Characteristic

a. Aluminum Electrolytic Capacitors are polarized. Please do not apply either reverse voltage or AC voltage to polarized capacitors. Using reversed polarity causes a short circuit or venting. Before use, please refer to this catalog, product specifications or capacitor body to identify the polarity marking. Use a bi-polar for a type of non-conductive polymer aluminum electrolytic capacitor for a circuit where the polarity is occasionally reversed. However, note that even a bi-polar aluminum electrolytic capacitor must not be used for AC voltage applications.

b. Do not apply a DC voltage which exceeds the specified rated volt age.

DC voltage + peak voltage of a superimposed ripple voltage ≤ specified rated voltage. A surge voltage value, is prescribed in this catalog, but it is a restricted for especially short periods of time.

c. Do not apply over-current which exceeds the specified rated ripple current. An exceed ripple current can increases the rate of heating within the capacitor, which may occur failure mode as shorten lifetime, open vent, short circuit etc. The rated ripple current has been specified at a certain frequency. The rated ripple current at several frequencies must be calculated by multiplying the rated ripple current at the original frequency using the frequency multipliers for each product series

d. For general purpose used capacitor, do not use capacitors in circuits where heavy charge and discharge cycles are frequently repeated. Frequent and sharp heavy discharging cycles will result in decreasing capacitance and damage to the capacitors due to generated heat. Specified capacitors can be designed to meet the requirements of charging-discharging cycles, frequency, operating temperature, etc. Please contact us if you need to install our product in this frequently repeated charge and discharge circuit.

3. Ambient Temperature

Do not apply over temperature which exceeds the maximum operating temperature. Applied under an ambient temperature which exceeds the maximum operating temperature, can considerably shorten the life or cause the capacitor to vent.

4. The life of Capacitor

Select the capacitors to meet the service life of a device. Please be reminded that, the result using the life calculating formula is not guaranteed. During your design stage, please select capacitor which is higher than your actual required life value. Apart from this, if your life calculation is exceeds 15 years, please consider 15 years as the maximum life level.

5. Failure mode of capacitors

Non-solid aluminum electrolytic capacitors, in general, have a lifetime which ends in an open circuit, but depending on conditions of usage or products type, failure mode of capacitors will be venting.

6. Insulating between positive and negative polar

Electrically isolate the following parts of a capacitor from the negative terminal, the positive terminal and the outer casing. The dummy terminal of a non-conductive polymer aluminum capacitor, which is designed for mounting stability, so is isolated with positive and negative terminal too.

7.The sleeve cover

The outer sleeve of a non conductive polymer capacitor is not assured as an insulator (Except for screw type), so please don’t use it as an insulator. Please contact our sales representative if you need any more details in this area.

8.Condition of application

Do not use / expose capacitors to the following conditions.

a. Spay directly by water, salty water, Oil, or storage in damp location.

b. Direct sunlight.

c. Storage in location with toxic gases, such as hydrogen sulfide , sulfurous acid , nitrous acid , chlorine or its compounds , and ammonium.

d. Ozone , ultraviolet rays or radiation condition.

e. Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalogs or the product specification.

9. Mounting

a. Non conductive polymer capacitor

The paper separators and the electrolytic-conductive electrolytes in a non conductive polymer aluminum electrolytic capacitor are flammable. Leaking electrolyte on a printed circuit board can gradually erode the circuit on PC board, possibly causing smoke or burning.

Verify the following points when designing a PC board.

- Provide the appropriate holes spacing on the PC board to match with the terminal pitch of the capacitor.
- Make the following open space over the vent so that the vent can operate correctly.

≤ ϕ16mm : 2mm and above
ϕ18 ~ ϕ35mm : 3mm and above
≥ ϕ40mm : 5mm and above

- Do not place any wires or circuit traces over the vent of the capacitor.
- If Install a capacitor with the vent touching the PC board, needs an appropriate ventilation hole in PC board for vent open.
- Do not pass any circuit traces under the seal side of a capacitor. The trace must pass 1 or 2mm to the side of the capacitor.
- Avoid placing any heat-generating object adjacent to a capacitor or even on the reverse side of the PC board.
- Do not pass any via holes underneath a capacitor on double sided PC board.
- In designing double sided PC board do not locate any copper trace under the seal side of a capacitor.

b. Screw type capacitor

Do not tighten the screw of the terminals and mounting clamps over the specified torque prescribed in the catalog or the production specification. Do not mount the terminal side of a screw mount capacitor downwards

c. Chip type capacitor

For a surface mount capacitor design the solder point, please follow the dimension prescribed in the catalogs or the product specification.

10. Others in safety application

Using capacitor for applications which always consider safety. Consult with our company sales representative before use in applications which can affect human life. (Space equipment, aerial equipment, nuclear equipment, medical equipment, vehicle control equipment, etc)

11. Others

a. The electrical characteristic of capacitors very in respect to temperature and frequency, design the device circuit by taking these changes into consideration.

b. Capacitors mounted in parallel need the current to flow equally through the individual capacitors.

c. Capacitors mounted in series require resistors in parallel with the individual capacitors to balance the voltage, or can install parallel protect resistor with it.

B. Notice of Installing Capacitors

1. Installing

a. Used capacitors are not reusable, except in the case that the capacitor are detached from a device for periodic inspection to measure their electrical characteristics.

b. If the capacitors have self charged, discharge in the capacitors through a resistor of approximately 1kΩ before use.

c. If the capacitors are stored at a temperature of 35˚C or more and more than 75%RH, over the storage limit prescribed in the catalogs or the product specification, the leakage current may increase. In this case, they can be reformed by applying the rated voltage through a resistor of approximately 1kΩ.

d. Verify the specification of the capacitor before installing (rated capacitance and voltage)

e. Verify the polarity of the capacitors.

f. Do not use the capacitors if they have been dropped on the floor.

g. Do not deform the cases of capacitors.

h. Verify that the lead pitch of the capacitor fits the holes spacing in the PC board before installing the capacitors. Some standard pre-formed leads are available for this fitting.

i. For radial or snap in terminals, insert the terminals into PC board and press the capacitor downward until the bottom of the capacitor body reaches PC board surface.

j. Do not apply any mechanical force in excess of the limits prescribed in the catalogs or the product specifications of the capacitors. Please notice that, the capacitors may be damaged by mechanical shocks caused by the vacuum / insertion head, component checker or centering operation of an automatic mounting or insertion machine.

2. Soldering heat and Solderbility

a. When soldering with a soldering iron

- Soldering conditions (temperature and time) should be within the limits prescribed in the catalogs or the product specifications.
- If the terminal pitch of a capacitor does not fit the terminal hole spacing of the PC board, can reform the terminals in a manner to minimize a mechanical stress into the body of the capacitor.
- Do not touch the capacitor body with the hot tip of the soldering iron.

b. Flow soldering

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

c. Reflow soldering

- Soldering conditions (preheat, solder temperature and soldering time) should be within the limits prescribed in the catalogs or the product specifications.
- When setting the temperature infrared heaters, consider that the infrared absorption causes material to be discolored and change in appearance.
- The limit of reflow time is prescribed in the catalogs or the product specifications.
- Make sure capacitors do not come into contact with copper traces.
- Vapor phase soldering (VPS) is not used.

d. Do not re-use surface mount capacitors which have already been soldered.

e. Reflow soldering only for chip type capacitor, others types are not allowed.

3. Handling after soldering

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

a. Do not lean or twist the body of the capacitor after soldering the capacitors onto the PC board.

b. Do not use the capacitor for lifting or carrying the assembly board.

c. Do not hit or poke the capacitor after soldering to PC board. When stacking the assembly board, be careful that other components do not touch the aluminum electrolytic capacitors.

d. Do not drop the assembly PC board.

4. Cleaning PC boards

a. Do not wash capacitors by using the following cleaning agents.

- Halogenated solvents; cause capacitors to fail due to corrosion.
- Alkali system solvents; corrode (dissolve) an aluminum case.
- Petroleum and terpene system solvents; cause the rubber seal material to deteriorate.
- Xylene; causes the rubber seal material to dereriorate.
- Acetone; erases the marking.
- Ultrasound cleaning will accelerate damaging capacitors.

b. Wash capacitors by using the following agents if need.

- Ethyl alcohol
- Buthyl alcohol
- Methyl alcohol
- Propyl alcohol
- Be sure not to expose the capacitor under solvent rich conditions or keep capacitor with an air dryer (temperature should be less than the maximum rate category temperature of the capacitor) over 10 minutes, and be sure the PC board is dried.

5. Fumigation treatment

In many cases when exporting or importing electronic devices, wooden pallet packaging is used. Fumigation treatment is using halogenated chemical, if capacitor body touch with the chemicals, such status is same as cleaning PC board, halogen ion can cause capacitors to fail due to corrosion.

Our company is all using non-fumigation packaging to do exporting or importing.

Customer if need do any exporting or importing electronic devices, semi-product and aluminum electrolytic capacitor, please notice whether with or without fumigation treatment.

Final outer packaging, even using chipboard pallet with plastic bag cover, inner product still have a possible be polluted by halogen gas. Please notice.

C. The Operation notice of Devices

1. Do not touch terminals of capacitor directly with bare hands.
2. Do not short-circuit the terminal of a capacitor by letting it come into contact with any conductive object. Also, do not spill electri-conductive liquid such as acid or alkaline solution over the capacitor.
3. Do not use capacitor in circumstance where they would be subject to exposure to the following materials exist or expose.

   a. Spay directly by water, salty water, Oil, or storage in damp location.

   b. Direct sunlight.

   c. Storage in location with toxic gases, such as hydrogen sulfide , sulfurous acid , nitrous acid , chlorine or its compounds , and ammonium.

   d. Ozone , ultraviolet rays or radiation condition.

   e. Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalogs or the product specification.

D. Maintenance Inspection Notice

1. Make periodic inspections of capacitors that have been used in industrial applications. Before inspection, turn off the power supply and carefully discharge the electricity in the capacitors. When measuring the capacitors with a meter, do not apply any mechanical stress to the terminals of the capacitors.

2. The following item should be checked during the periodic inspections.
   - Visual appearance : venting and electrolyte leakage.
   - Electrical characteristics : leakage current(LC), capacitance(CAP), DF and other characteristics prescribed in our catalogs or product specifications.

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

E. In Case of Emergency

a. For reducing the effect of inner gas pressure exploded, a higher capacitor is with vent mark on top. When venting, it will discharge odors or smoke, please immediately turn off or unplug the main power supply of the device. If we do not switch off the power, PC board may be damaged by the capacitor short-circuit failure, the worst is burn out the device. The gas which comes out from the pressure vent of a capacitor, it is not smoke by flammable, this is the vaporized electrolyte.

b. When venting, inner capacitor blows out gas with a temperature of over 100˚C, never expose the face close to a venting capacitor. If yours eyes should inadvertently become exposed to the spouting gas or you inhale It, immediately flush the open eyes with large amounts of water and gargle with water respectively. If electrolyte is on the skin, wash the electrolyte away from the skin with soap and plenty of water.

F. Storage

We recommend the following condition for storage.

1. Store the capacitor indoors at a temperature of 5 ~35ºC and a relative humidity ≤75%.
   The storage period is 1 years after production, and 2 years for Chip Type.
2. Please keep capacitor in the original package.
3. Please do not keep the capacitors in places,
   a. Spray directly by water, high temperature high humidity, or storage in damp location.
   b. Spray directly by oil, or with oily gas location.
   c. Spray directly by salt water, or salty location.
   d. Storage in location with toxic gases, such as hydrogen sulfide , sulfurous acid , nitrous acid , chlorine or its compounds , and ammonium.
   e. Full with ammonium gas, alkaline toxic gas location.
   f. With acidic and alkaline solvent location.
   g. Directly sunlight, ozone , ultraviolet rays or radiation condition.
   e. Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalogs or the product specification.

G. Disposal

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

Electrolytic capacitors. If burning, please burn it with high temperature (more than 800C).

Low temperature burning, can generate halogen gas which can affect human healthy. Besides that, in order to reduce exploding, please make a hole at the vent or damage it before burning.

H. Catalogs

The ESR value in the catalogs, measure area is the closet area to the capacitor body.

Specifications in catalogs may be subject to change without notice. Catalog data are typical.

This value does not guarantee the performance.

THE PROPER USAGE METHOD OF CONDUCTIVE POLYMER SOLID ALUMINUM ELECTROLYTIC CAPACITOR

I . Lifetime Estimation

Subject series : FR/FH/FG/FF/FS/FL/FT/FP/VB/VP/VS

Conductive polymer aluminum solid capacitors are finite life electronic components like aluminum electrolytic capacitors. The lifetime is The Proper Usage Method of Conductive Polymer Solid Aluminum Electrolytic Capacitor affected by ambient temperature, humidity, ripple current and surge voltage.

The lifetime of aluminum electrolytic capacitors is affected mainly by the loss of electrolyte as the result of the liquid electrolyte evaporating through the rubber seal materials, resulting in capacitance drop and tanδ rise.On the other hand, the lifetime of conductive polymer aluminum solid capacitors is affected mainly by oxidation degradation of the conductive polymer caused by osmose of oxygen or the thermal degradation of the conductive polymer by ambient temperature or self-heating, resulting in ESR rise and tanδ rise.The infiltration rate of the oxygen is depend on the temperature as the liquid electrolyte evaporation and the relationship follows the Arrhenius's Law, too. Similarly, thermal degradation of the conductive polymer by self-heating follows the Arrhenius's Law, too.Therefore, the lifetime estimation has been using the theory of lifetime increasing by 10 times at every 20°C reducing of the ambient temperature.

1. Lifetime Estimation

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

$Lx=L_0X10^{(T0-TX)/20}$----------(1)

Lx : Estimation of actual lifetime (hour)

Lo : Specified lifetime with the rated voltage at the upper limit of the category temperature (hour)

To : Maximum category temperature (°C)

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

Longer lifetime is expected by lowering the ripple current and the ambient temperature.

Please consult us about lifetime equations for the series of the category temperature 125°C.

Subject series : FT

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

$\Delta T=\Delta To\times(Ix/Io)^2$----------(2)

ΔTo : Rise in internal temperature due to the rated ripple current (20°C)The product that the maximum category temperature is less than 105ºC

Ix : Operating ripple current (Arms) actually flowing in the capacitor.

Io : Rated ripple current (Arms), frequency compensated, at the upper limit of the category temperature range.

Please contact us about the product that the maximum category temperature is more than 125ºC.

To determine more accurate values of ΔT, they can be actually measured using a thermocouple.

2. Rated Ripple Current Frequency Multipliers

Self-heat rise is generated by the ripple current even though the conductive polymer aluminum solid capacitors have low ESR compared to liquid based electrolyte aluminum electrolytic capacitor.Longer lifetime is expected by lowering the ripple current and the ambient temperature.

Table 1 shows Frequency Multipliers of Rated ripple current.

Frequency Multipliers

Frequency [Hz]	120	1k	10k	50k	100k~500K
SMD type	0.05	0.3	0.55	0.7	1
Radial lead type	0.1	0.35	0.6	0.8	1

Conductive polymer aluminum solid capacitors have super low ESR characteristic in high-frequency range. On the whole, ESR in lowfrequency range relatively rises. Therefore, they can use only l ripple current in low-frequency range.

3. Restriction of calculated lifetime

(1) The result calculated by the estimated lifetime formula, it is not guaranteed lifetime by Nippon Chemi-Con Corporation.

(2) When designer calculate the lifetime of apparatus, please include an ample margin in consideration to the estimated lifetime of a capacitor.

(3) When calculated lifetime result are over 15 years by using the estimated lifetime formula, please consider 15 years to be a maximum in considering that the sealing rubber characteristics vary during the lifetime.

(4) If 15 years or more may be required as an expected lifetime, please consult us.e. Full with ammonium gas, alkaline toxic gas location.

f. With acidic and alkaline solvent location.

g. Directly sunlight, ozone , ultraviolet rays or radiation condition.

h. Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalogs or the product specification.

II. About failure and shelf-life

Failure rate(failure rate level) subject to 0.5 %/1000 h of JIS C 5003 (Credibility level 60%)

The main failure mode of polymer solid aluminum electrolytic capacitor of is shown below.

1. Random failure

The main cause of failure mold is short-circuit due to heat stress, electrical stressing and mechanical stress in using environment or welding.

(1) applied voltage more than rated voltage.

(2) applied reverse voltage.

(3) Excessive mechanical stress.

(4) Applying fast charging and discharging that more than specifications and cause surge current.

a. If the short circuit current flows through the solid capacitor will cause the following phenomenon.

(1) When the electric current is less after short-circuit (φ10 : about below1 A, φ8 : about below 0.5 A, φ6.3 : about below 0.2 A) PC-CON

body will have little heat but appearance is normal even continuous electricity.

(2) When the short circuit current value exceeds the above numerical, internal temperature will increased, encapsulation adhesive pad summoned and the odorous gases to overflow.

b. In order to ensure the safety in case of occurs short circuit, please take the following countermeasures.

(1) Cut off the main power supply and stop using immediately if overflow the odorous gases.

(2) Due to the different conditions , the odorous gases occurrence generally takes a few seconds to several minutes, When using protection circuits we recommend to start protect function in this period.

(3) Cleaned immediately if the gas enters into eye, gargle immediately if inhalation into mouth.

(4) Don't lick the electrolyte if electrolyte contact with the skin please washing with soap immediately.

(5) PC - CON including combustible material, current value greatly after the short circuit and short circuit parts will have a possibility of spark. In order to protect safety, please pay attention to the design structure and use protection circuit.

2. The wear failure (Shelf life)

Electrical characteristics can make a big change when more than the guarantee time of durability and high temperature and high humidity test, electrolyte will insulation (degradation) formation of open mode eventually.

Even used within the prescribed scope of electrical and mechanical properties, it may also reducing capacitance and increase ESR, so please take care when design.

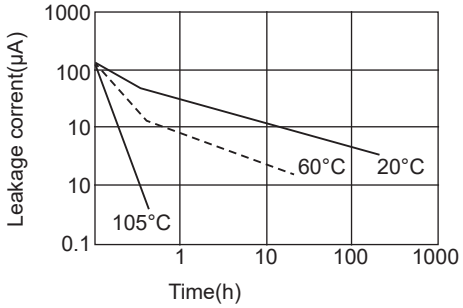
III. Leak Current

The leak current of conductive polymer solid aluminum electrolytic capacitor will increase due to the mechanical stress.

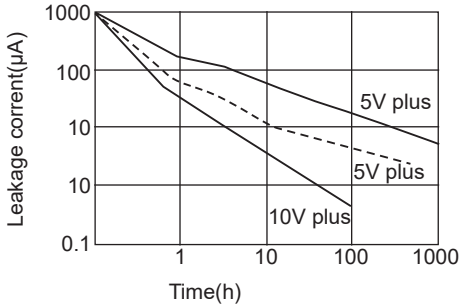
In this case, if the solid capacitor apply voltage below the high using temperature, the repairing effect of leak current will reducing gradually.

If the solid capacitor applies rated voltage within the high using temperature, the repairing speed of leak current will faster.

Conductive polymer solid aluminum electrolytic capacitor
Repiring character of leak current
10μF/16 V.DC (apply 16 V.DC)



Conductive polymer solid aluminum electrolytic capacitor
Repiring character of leak current
33μF/10 V.DC (ambient temperature65°C)
(Test voltage10V.DC)



※ In order to show more clearly said repair of leakage current, we use the sample of apply stress to PC-CON that y p g p pp y increased leak current on purp.

IV.The limited of faster charging and discharging

Faster charging and discharging will lead to large surge current and then result in short-circuit or increase leak current.

When the surge current value as below, we recommend to use protection circuit in order to maintain high reliability.

(1) more than 10 A.

(2) exceed rated ripple current 10times.

V .Correct mounting

1. About the soldering iron soldering

(a) Avoiding applying stress on PC - CON body when it need to process lead due to unconformity between lead gap and circuit board gap of plug-in mounting.

(b) Avoiding applying excessive stress on PC - CON body when soldering.

(c) When need to take out PC-CON after soldering, please melt molten solder sufficient, implement under the condition of not put stress on the PC - CON body.

(d) Don't let the tip of the soldering iron to touch the PC - CON body.

2. Wave-soldering

(a) Do not have wave soldering to SMD product.

(b) Do not dip the PC-CON body into dissolved soldering flux.

(c) Welding parts only limited between the circuit board and the opposite side of the PC - CON.

(d) Don't splash other place expectation rosin.

(e)Avoiding other parts lie down and touching PC-CON when soldering.

3. Reflow soldering

(a) Do not have reflow soldeering to plug-in mounting product .

(b) Please consult us when use VPS for solderinig.

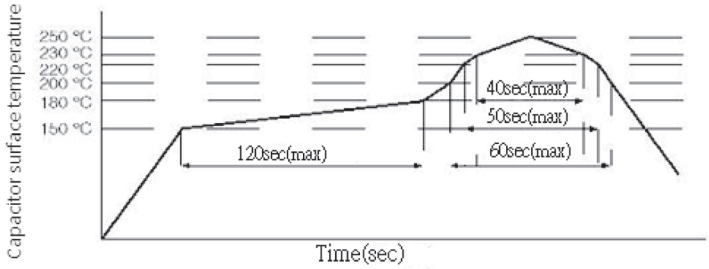
4. Precaution after soldering

Take care for not to apply the following excessive stress for polymer solid aluminum electrolytic capacitor.

(a) Do not tilt down or distorted capacitor.
(b) Mobile circuit board can not handle PC - CON.
(c) Do not crash PC-CON.
(d) Do not make the PC - CON touch PCB circuit boards and other components when stacked.

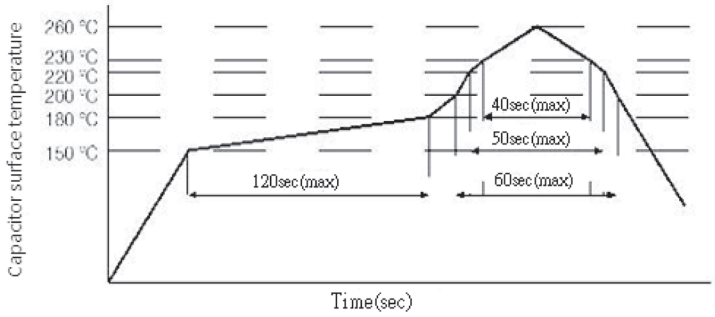
5. Recommended conditions for solder

< peak temperature 250 ℃ lead-free reflow soldering >



Reflow soldering under the condition of the following reflow soldering up to 2 times

< peak temperature 260 ℃ lead-free reflow soldering >



Reflow soldering under the condition of the following reflow soldering up to 1 times

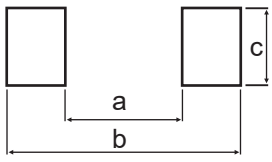
6. Solder iron temperature : less than 400°C±10°C : working hours : whithin 5s

Wave-soldering

	Temperature	Time	Number of Time
Preheat	120°C below(ambient temperature)	less than120s	once
Welding Condition	260°C+5°C below	less than10+1s	less than twice*1

*1 : For 2 times, solder dipping time total of 10 + 1 seconds.

7.Recommend the bonding pad size



Unit : mm

Size Code	a	b	c
ϕ5.0	1.4	7.4	1.6
ϕ6.3	2.1	9.1	1.6
ϕ8.0	2.8	11.1	1.9
ϕ10.0	4.3	13.1	1.9

PRECAUTIONS FOR CONDUCTIVE POLYMER SOLID ALUMINUM ELECTROLYTIC CAPACITOR

I . Device circuits design considerations

1. Prohibited to use circuit

Conductive Polymer Solid Aluminum Electrolytic Capacitor (The following is called capacitor) may cause the leak current occur changing due to the heat stress in welding. Please avoid to use in the below circuit.

① High resistance voltage holding circuit.

② Coupled circuits.

③ The other circuits that affected leakage current larger

2. Circuit design

Please design circuit on the basis of confirming the following content.

① As the change of temperature and frequency, electric property of capacitor will changes.Please design circuit after confirming those changes.

② When more than 2 capacitors in parallel, please consider the balance of current when design circuit.

③ When more than 2 capacitors in series, as the difference of load voltage, it may load overvoltage, so please consulting us when using.

④ Please don't install heating components around the capacitor and the back of the printed wiring board.

3. Using capacitors for significantly safety-oriented applications

Consult us about capacitors for a device application affecting human safety (① Aviation and aerospace ② Nuclear ③ Medical) or for any device whose failure will make an impact on society.

4. Polarity

Our company conductive polymer capacitor is the solid aluminum electrolytic capacitor with polarity. Never apply a reverse voltage or AC voltage.

Connecting with wrong polarity will short-circuit in initial State. About polarity, please confirm product catalogue or the diagram in the product specifications.

5. Operating voltage

Do not apply an over-voltage that exceeds rated voltage, Because even if to load the voltage that more than the rated voltage only for an instant, it can also lead to increased leakage current and short-circuit. The total peak value of the ripple voltage plus the DC voltage must not exceed the rated voltage of the capacitors. In the work, it doesn't need to reduce the voltage. Although capacitors specify a surge voltage, in the temperature range, under the rated voltage, whatever is the environment temperature; it also has limited and does not assure long-term use.

6. Ripple current

Do not apply an overcurrent that exceeds the rated ripple current specified for the capacitors. Excessive ripple current will increase heat production within the capacitors, shortening the life and short-circuit.

7. Operating temperature

If use beyond working temperature range of environment, can lead to aging and failure performance, please use in working temperature range.

8. Charging and discharging

Don not use capacitor in the circuit of rapid charge and discharge repeatedly. If capacitors are used in the circuits that repeat a charge and discharge, capacitance ill decrease and/or the capacitors ill be damaged b internal heat generation. When the peak of c rrent al e more that 20A e recommend to use protect circuit in order to keep the reliability.

9. Leakage current

Sometime the leakage current will increase, but if load voltage in working temperature, it will decrease gradually though self-healing effect. In addition, the more closely to the limit temperature, the faster of the reduce speed of leakage current. The reasons for leakage current increase as below :

① Welddding

② High temperature without load, high temperature and high humidity, rapid temperature change test and so on.

10.Failure mode

① Reduce the failure rate by reducing the surrounding temperature, ripple current and load voltage.

② Electrostatic capacity decreases caused by product temperature rise and opening mode wear caused by ESR rise which are the main failure mode.

Sometimes it will occur short-circuit mode due to the overvoltage and large current.

③ Lead to short-circuit due to load the voltage that more than rated voltage, when the current is larger, the shell will expansion or peeling off, give out bad smell due to the internal pressure rising.

④ The constitute material of products containing flammable materials, the short-circuit parts will fire may due to the spark. The install ways, location, graphic design of the product, please consider the following importance points of design to ensure the absolute safety.

* Setting up protection circuit and protection devices to ensure that equipment safety.
* Setting up long circuit etc. , so that the devices will stabilization even of a single fault.

11.The insulation of the capacitor

The outer sleeve of a capacitor does not assure electrical insulation Please have electrical insulation between the capacitor sleeve and cathode terminal and anode terminal and circuit board.

12.Operating conditions

Do not use/expose capacitors to the following conditions:

① Direct contact with water, salt water or oil, or high condensa-tion environment.

② Direct sunlight.

③ Toxic gases such as hydrogen sulfide, sulfurous acid, nitrousacid, chlorine and its compounds, bromine and its compounds and ammonium.

④ Ozone, ultraviolet rays or radiation.

⑤ Extreme vibration or mechanical shock that exceeds limits in the catalogs or product specifications.

13.Cappacitor Mountingg

① SMD product (mould SMD, SMD) solder graphics of the Capacitor printed wiring board, Please refer to the provisions of the catalogue or specifications for graphic design.

② For radial lead type capacitors, please make sure the terminal spacing of a capacitor equals the holes spacing on the PC board.

③ Do not print any copper trace under the seal (terminal) side of a capacitor. Copper traces should be 1 mm (preferably 2mm or more) spaced apart from the side of the capacitor body.

④ In designing a double-sided PC board, do not locate any through-hole via or unnecessary hole underneath a capacitor.

⑤ In designing a double-sided PC board, do not print any circuit pattern underneath a capacitor.

II. Installation

1. Assembling

① Do not try to reuse the capacitors once assembled and electri- fied.

② Capacitors may have been spontaneously recharged with time by a recovery voltage phenomenon. In this case, discharge the capacitors through a resistor of approximately 1k. before use.

③ If non-solid aluminum electrolytic capacitors have been stored at any conditions more than 35°C and 75%RH for long storage periods of time more than the limits specified in the catalogs or product specifications, they may have high leakage current. In this case, discharge by apply-ing the rated voltage through a resistor of approximately 1kΩ.

④ Confirm the rated capacitance and voltage of capacitorsbefore installation.

⑤ Confirm the polarity of capacitors before installation.

⑥ Do not try to use the capacitors that were dropped to the floorand so forth.

⑦ Do not deform the can case of a capacitor.

⑧ Make sure that the terminal spacing of a capacitor equals theholes spacing on the PC board before installing the capacitor.

⑨ Do not apply excessive mechanical force to capacitors more than the limits prescribed in the catalogs or product

specifications. If apply excessive force, the terminal will break off or deformaiton and affect install, even cause short-circuit,break line, increase LC and demage package.Avoid excessive mechanical force while the capaci- tors are in the process of vacuum-picking, placing and positioning by automatic mounting machines or cutting the lead wires by automatic insertion machines.

2. Soldering and heat resistance

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

1) Verify the following before using a soldering iron:

① That the soldering conditions (temperature and time) are within the ranges specified in the catalog or product specifications.

② That the tip of the soldering iron does not come into contact with the capacitor itself.

2) Verify the following when flow soldering:

① Do not dip the body of a capacitor into the solder bath only dip the terminals in. The soldering must be done on the reverse side of PC board.

② Soldering conditions should be within the limits prescribed in the catalog or the product specifications.

③ Do not apply flux to any part of capacitors other than their terminals.

④ Make sure the capacitors do not come into contact with any other components while soldering. Please note the SMD product (SMD type) non-corresponding wave-soldering.

3) Verify the following when reflow soldering:

① Soldering conditions (preheat, solder temperature and sol- dering time) should be within the limits prescribed in the catalogs or the product specification.

② The heat level should be appropriate. (Note that the ther- mal stress on the capacitor varies depending on the type and position of the heater in the reflow oven and the color and material of the capacitor)

Except for the surface mount type, reflow soldering must not be used for the other capacitors.

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

3. Handling After Soldering

Do not apply any mechanical stress to the capacitor after sol- dering onto the PC board.

① Do not lean or twist the body of the capacitor after solderingthe capacitors onto the PC board.

② Do not use the capacitors for lifting or carrying the assemblyboard.

③ Do not hit or poke the capacitor after soldering to PC board. When stacking the assembly board, be careful that other components do not touch the aluminum electrolytic capaci-tors.

④ Do not drop the assembled board.

4. Cleaning PC boards

1) Do not wash capacitors by using the following cleaning agents. Solvent resistant capacitors are only suitable for washing using the cleaning conditions prescribed in the catalog or the product specification. In particular, ultrasonic cleaning will accelerate damage to capacitors.

* Halogenated solvents →cause capacitors to fail due to corro- sion.
* Alkali system solvents →corrode (dissolve) an aluminum case.
* Petroleum system solvents →ause the rubber seal material to deteriorate.
* Xylene →causes the rubber seal material to deteriorate
* Acetone → erases the markings

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

2) Verify the following points when washing capacitors.

① Monitor conductivity, pH, specific gravity and the water con- tent of cleaning agents. Contamination adversely affects

these characteristics.

② Be sure not to expose the capacitors under solvent rich conditions or keep capacitors inside a closed container. In addition, please dry the solvent sufficiently on the PCboard and the capacitor with an air knife (temperature should be less than the maximum rated category tempera- ture of the capacitor) for 10 minutes. Aluminum electrolytic capacitors can be characteristically and catastrophically damaged by halogen ions, particularly by chlorine ions, though the degree of the damage mainly depends upon the characteristics of the electrolyte and rubber seal material. When halogen ions come into contact with the ca- pacitors, the foil corrodes when a voltage is applied. This corrosion causes an extremely high leakage current which results venting and an open circuit.

3) Verify the following when reflow soldering:

① Higher alcohol cleaning agents. Using these cleaning agents, capacitors are capable of with- standing immersion or ultrasonic cleaning for 10 minutes at a maximum liquid temperature of 60□. Find optimum condition for washing, rinsing, and drying. Be sure not to rub the mark- ing off the capacitor which can be caused by contact with other components or the PC board. Note that shower cleaning ad- versely affects the markings on the sleeve.

② Non-Halogenated Solvent Cleaning. Immersion, ultrasonic or vapor cleaning for 5 minutes. However, from an environmental point of view, these types of solvent will be banned in near future. We would recommend not using them if at all possible.

③ Isopropyl Alcohol (IPA). IPA (Isopropyl Alcohol) is one of the most acceptable cleaning agents; it is necessary to maintain a flux content in the cleaning liquid at a maximum limit of 2 Wt.%.)

5. Precautions for using adhesives and coating materials

1) Do not use any adhesive and coating materials containing.

2) Verify the following before using adhesive and coating material.

① Remove flux and dust left over between the rubber seal and the PC board before applying adhesive or coating materials to the capacitor.

② Dryy and remove any residual cleaningg agents before apply- ingg adhesive and coating materials to the cappacitors. Do not cover over the whole surface of the rubber seal with the adhesive or coating materials.

③ For permissible heat conditions for curing adhesives or coating materials, please consult with us.

④ Covering over the whole surface of the capacitor rubber seal with resin may result in a hazardous condition because the inside pressure cannot be completely released. Also, a large amount of halogen ions in resins will cause the capacitors to fail because the halogen ions penetrate into the rubber seal and the inside of the capacitor.

⑤ Some coating materials, it cannot be implemented to the capacitor.

6. Fumigation

In many cases when exporting or importing electronic devices, such as capacitors, wooden packaging is used. In order to con-trol insects it may become necessary to fumigate the shipment.Precautions during “Fumigation” using halogenated chemical such as Methyl Bromide must be taken. Halogen gas can pen- etrate packaging materials such as cardboard boxes and vinyl bags. Penetration of the halogenated gas can cause corrosion of Electrolytic capacitors. Nippon Chemi-Con gives consideration to the packaging materials not to require the Fumigation. Verify whether the assembled PC board, products and capaci- tors themselves are subjected to Fumigation during their trans- portation or not.

III. The Operation of Devices

1. Do not touch the capacitor terminals directly.

2. Do not short-circuit the terminal of a capacitor by letting it come into contact with any conductive object.

Also, do not spill electric-conductive liquid such as acid or alkaline solu- tion over the capacitor.

3. Please make sure the assembly of the complete circuit of capacitor installation environment.

Do not use capacitors in circumstances where they would be subject to exposure to the following materials

① Oil, water, salty water or damp location.

② Direct sunlight.

③ Ozone, ultraviolet rays or radiation.

④ Toxic gases such as hydrogen sulfide, sulfurous acid, ni- trous acid, chlorine or its compounds, and ammonium.

⑤ Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalog or product specification.

IV. Maintenance Inspection

1. Make periodic inspections of capacitors that have been used in industrial applications.

Before inspection, turn off the pow- er supply and carefully discharge the electricity in the ca- pacitors. Verify the polarity when measuring the capacitors with a volt-ohm meter. Do not apply any mechanical stress to the terminals of the capacitors.

2. The following items should be checked during the periodic inspections.

① Significant damage in appearance.

② Electrical characteristics: leakage current, capacitance,tanδ and other characteristics prescribed in the catalog or product specification.

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

V. Contingencies

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

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

VI. Storage

We recommend the following conditions for storage.

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

The duration, please refer to the table below.

	Before the bag is opened	After the bag is opened
SMD (Resin-Molded chip type)	within six months after delivery	Within 30 days after the bag is opened
Radial lead type	within one year after delivery	Within 7 days after the bag is opened

① SMD products are sealed in a PE plastic bag. Use all capacitors in desposit period once the bag is opened.

② If the bag have open and need to storage, please return unused capacitors to the bag, and seal it with a zipper.

③ Be sure to follow our recommendations for reflow soldering.

2) Store the capacitors in a location free from direct contact with water, salt water, and oil.

3) Store in a location where the capacitor is not exposed to toxic gas, such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine or chlorine compounds, bromine or other hal- ogen gases, methyl bromide or other halogen compounds, ammonia, or similar.

4) Store in a location where the capacitor is not exposed to ozone, ultraviolet radiation, or other radiation.

5) It is recommended to store capacitors in their original pack- aging wherever possible.

VII. Disposal

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

VIII. Reggardingg compppliance for EU REACH Reggulation

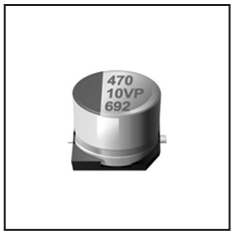
1) According to the content of REACH handbook (Guidance on requirements for substances in articles which is published on May 2008), our electronic components are "articles with- out any intended release". Therefore they are not applicable for "Registration" for EU REACH Regulation Article 7 (1). Reference: Electrolytic Condenser Investigation Society:"Study of REACH Regulation in EU about Electrolytic Capacitor" (publicized on 13 March 2008)

2) Jamicon develops the products without substance of very high concern(SVHC).

IX. Catalogs

Specifications in the catalogs are subject to change without notice. Test data shown in the catalogs are not assured as the whole performance values, but typical values.

- Endurance:105°C, 2000hrs
- Recommended Applications: Standard SMD type product
- Corresponding product to RoHS



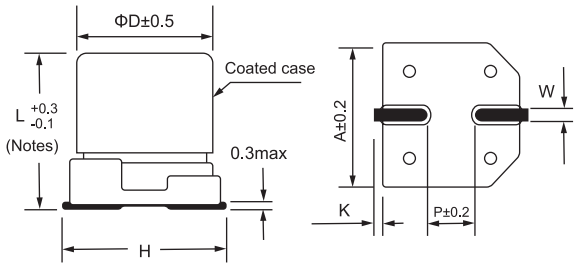
SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	2.5 ~ 25VDV							
Capacitance Tolerance (120Hz 20°C)	±20%							
Leakage Current (2min)	The initial specified value in Characteristic list							
Surge Voltage (20°C)	W.V.	2.5	4	6.3	10	16	20	25
	S.V.	2.8	4.6	7.2	11.5	18.4	23	28.7
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)							
Impedance Ratio	Impedance ratio at 100kHz							
	Rated Voltage (V)	2.5	4	6.3	10	16	20	25
	-25°C / +20°C	≦1.15						
	-55°C / +20°C	≦1.25						
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement							
	Appearance	No significant damage						
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦150% of initial specified value						
	ESR	≦150% of initial specified value						
	Leakage current	≦ initial specified value						
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance							
Resistance to Soldering Heat＊	Capacitance Change	≦±10% of initial value						
	Dissipation Factor	≦130% of initial specified value						
	Equivalent Series Resistance	≦130% of initial specified value						
	Leakage Current	≦ initial specified value						

＊For any doubt about measured values, measure the leakage current again after the following voltage treatment.
Voltage treatment: Applying DC rated voltage to the capacitors for 2 hours at 105°C.

DIMENSIONS (mm)

SIZE	φD x L	A	H (max)	W	P	K
CA1	5 x 5.8	5.3	6.5	0.65±0.15	1.5±0.2	0.35+0.15/-0.2
EA1	6.3 x 5.8	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
EA4	6.3 x 7.7	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
GA6	8 x 10.4	8.3	10	0.9±0.2	3.1±0.2	0.7±0.2
HA5	10 x 10.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2
HA8	10 x 12.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2

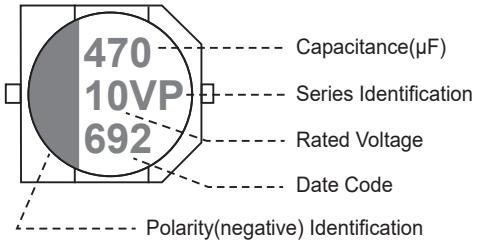


(Notes) φ8 ~ φ10 & 6.3x7.7=L±0.3

MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Leakage Current (μA)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		ϕD	L				
2.5	180	5	5.8	300	0.12	30	1970
		6.3	5.8	300	0.12	25	2200
	220	6.3	5.8	300	0.12	25	2500
	390	6.3	7.7	300	0.12	23	2720
	470	6.3	7.7	300	0.12	23	2720
	1000	8	10.4	500	0.12	18	3950
	1200	10	10.2	600	0.12	12	4000
	1500	10	10.2	750	0.12	13	4000
		10	12.2	750	0.12	12	5500
4	100	6.3	5.8	300	0.12	26	2450
	150	6.3	5.8	300	0.12	26	2450
	330	6.3	7.7	300	0.12	25	2650
	560	8	10.4	448	0.12	18	3950
	820	8	10.4	656	0.12	18	3950
		10	12.2	656	0.12	10	5500
	1200	10	10.2	960	0.12	12	4000
		10	12.2	960	0.12	10	5500
6.3	47	5	5.8	300	0.12	35	1380
	68	6.3	5.8	300	0.12	27	2400
	82	6.3	5.8	300	0.12	27	2400
	100	5	5.8	300	0.12	35	1380
		6.3	5.8	300	0.12	27	2400
	120	6.3	5.8	300	0.12	27	2400
	220	6.3	5.8	300	0.12	27	2400
		6.3	7.7	300	0.12	25	2650
	330	6.3	5.8	415	0.12	27	2400
		6.3	7.7	415	0.12	25	2650
	470	6.3	7.7	592	0.12	25	2650
		8	10.4	592	0.12	21	3610
	680	8	10.4	857	0.12	21	3610
		10	10.2	857	0.12	12	3650
	820	8	10.4	1033	0.12	21	3610
		10	10.2	1033	0.12	12	3650
		10	12.2	1033	0.12	10	5500
	1000	8	10.4	1260	0.12	21	3610
		10	12.2	1260	0.12	10	5500
10	22	5	5.8	300	0.12	40	1270
	33	5	5.8	300	0.12	40	1270
	47	5	5.8	300	0.12	40	1270
		6.3	5.8	300	0.12	31	2250
	56	6.3	5.8	300	0.12	31	2250
	100	6.3	5.8	300	0.12	31	2250
		6.3	7.7	300	0.12	27	2560
	150	6.3	7.7	300	0.12	27	2560
	390	8	10.4	780	0.12	22	3020
	470	10	10.2	940	0.12	14	3500
		10	12.2	940	0.12	12	5300
	560	10	12.2	1120	0.12	12	5300
	1000	10	12.2	2000	0.12	13	5300

CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Leakage Current (μA)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L				
16	22	5	5.8	300	0.12	90	1210
	33	6.3	5.8	300	0.12	37	2050
	39	6.3	5.8	300	0.12	37	2050
	47	6.3	5.8	300	0.12	50	1600
	82	6.3	7.7	300	0.12	30	2420
	100	6.3	7.7	320	0.12	30	2420
	120	6.3	7.7	384	0.12	30	2420
	150	8	10.4	480	0.12	23	3490
	180	8	10.4	576	0.12	23	3490
	220	8	10.4	704	0.12	23	3490
		10	12.2	704	0.12	14	5050
	270	8	10.4	864	0.12	23	3490
	330	10	10.2	1056	0.12	16	3100
		10	12.2	1056	0.12	14	5050
	390	8	10.4	1248	0.12	23	3000
	470	10	10.2	1504	0.12	16	3100
		10	12.2	1504	0.12	14	5050
	560	10	12.2	1792	0.12	14	5050
	680	10	12.2	2176	0.12	14	5050
	820	10	12.2	2624	0.12	14	5050
20	22	6.3	5.8	300	0.12	50	1650
	47	6.3	7.7	300	0.12	45	2000
	100	8	10.4	480	0.12	24	3320
	150	10	12.2	600	0.12	21	4220
25	22	6.3	5.8	300	0.12	65	900
		6.3	7.7	300	0.12	50	1800
	27	6.3	5.8	300	0.12	60	1270
	47	6.3	5.8	300	0.12	65	1300
		6.3	7.7	300	0.12	45	1800
	68	6.3	7.7	340	0.12	45	1800
	100	8	10.4	500	0.12	35	3320
	150	8	10.4	750	0.12	35	3320
	180	10	10.2	900	0.12	30	3100
	220	8	10.4	1100	0.12	35	3320
	270	10	10.2	1350	0.12	30	3320
	330	10	12.2	1650	0.12	28	3500

- Endurance:105°C, 2000hrs
- Recommended Applications: High capacitance & Ultra low ESR Series
- Corresponding product to RoHS

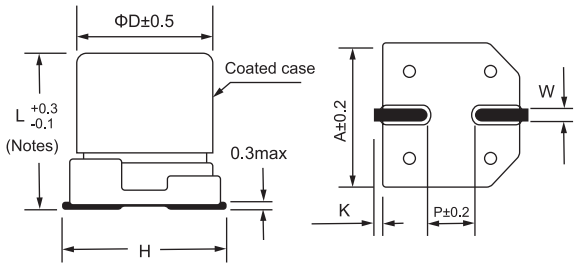
SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	2.5 ~ 25VDC							
Capacitance Tolerance (120Hz 20°C)	±20%							
Leakage Current (2min)	The initial specified value in Characteristic list							
Surge Voltage (20°C)	W.V.	2.5	4	6.3	10	16	20	25
	S.V.	2.8	4.6	7.2	11.5	18.4	23	28.7
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)							
Impedance Ratio	Impedance ratio at 100kHz							
	Rated Voltage (V)	2.5	4	6.3	10	16	20	25
	-25°C / +20°C	≦1.15						
	-55°C / +20°C	≦1.25						
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement							
	Appearance	No significant damage						
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦150% of initial specified value						
	ESR	≦150% of initial specified value						
	Leakage current	≦ initial specified value						
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance							
Resistance to Soldering Heat＊	Capacitance Change	≦±10% of initial value						
	Dissipation Factor	≦130% of initial specified value						
	Equivalent Series Resistance	≦130% of initial specified value						
	Leakage Current	≦ initial specified value						

＊For any doubt about measured values, measure the leakage current again after the following voltage treatment.
Voltage treatment: Applying DC rated voltage to the capacitors for 2 hours at 105°C.

DIMENSIONS (mm)

SIZE	φD x L	A	H (max)	W	P	K
EA1	6.3 x 5.8	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
EA4	6.3 x 7.7	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
GA6	8 x 10.4	8.3	10	0.9±0.2	3.1±0.2	0.7±0.2
HA5	10 x 10.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2
HA8	10 x 12.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2

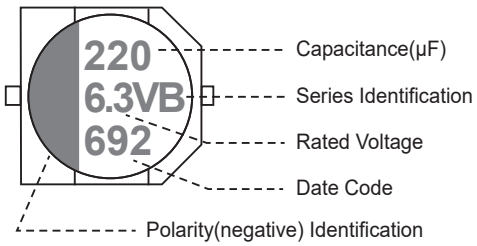


(Notes) φ8 ~ φ10 & 6.3x7.7=L±0.3

MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

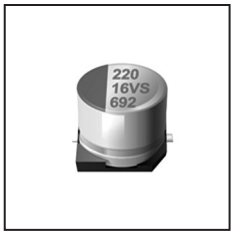
MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Leakage Current (μA)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L				
2.5	330	6.3	5.8	300	0.12	15	3160
	390	6.3	5.8	300	0.12	15	3160
	470	6.3	5.8	300	0.12	15	3160
	560	6.3	5.8	300	0.12	16	3500
		6.3	7.7	300	0.12	13	3600
	820	8	10.4	410	0.12	12	4210
4	270	6.3	5.8	300	0.12	15	3160
	330	6.3	5.8	300	0.12	15	3160
	470	8	10.4	376	0.12	15	4520
	560	8	10.4	448	0.12	15	4520
6.3	100	6.3	5.8	300	0.12	24	2500
	120	6.3	5.8	300	0.12	24	2500
	150	6.3	5.8	300	0.12	22	3160
	220	6.3	5.8	300	0.12	22	3160
	330	6.3	5.8	415	0.12	22	3390
		6.3	7.7	415	0.12	18	3500
		8	10.4	415	0.12	15	4210
	470	6.3	7.7	592	0.12	18	3500
		8	10.4	592	0.12	15	4210
	560	8	10.4	705	0.12	15	4210
		10	10.2	705	0.12	12	5025
	820	8	10.4	1033	0.12	15	4210
		10	10.2	1033	0.12	12	5025
	1200	10	10.2	1512	0.12	12	5025
10	120	6.3	5.8	300	0.12	22	2600
	150	6.3	7.7	300	0.12	21	2880
	330	8	10.4	660	0.12	17	4000
	470	10	10.2	940	0.12	12	5025
16	68	6.3	5.8	300	0.12	25	2440
		6.3	7.7	300	0.12	24	2700
	100	6.3	5.8	320	0.12	25	2440
		6.3	7.7	320	0.12	24	2700
	180	6.3	7.7	576	0.12	22	3320
		8	10.4	576	0.12	18	3890
	220	8	10.4	704	0.12	18	3890
	270	8	10.4	864	0.12	18	3890
	330	10	10.2	1056	0.12	16	4350
	470	10	12.2	1504	0.12	10	6100
25	33	6.3	7.7	300	0.12	45	2500
	47	6.3	7.7	300	0.12	45	2500

- Endurance:105°C, 5000hrs
- Recommended Applications: Long life & Ultra low ESR Series
- Corresponding product to RoHS



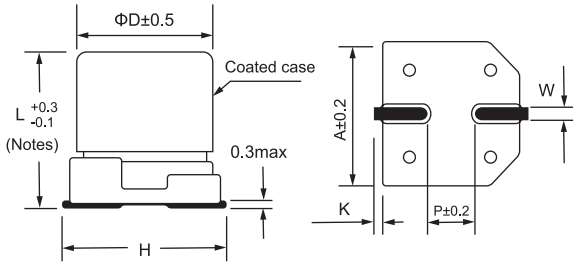
SPECIFICATION

Item		Characteristic						
Operation Temperature Range		-55 ~ +105°C						
Rated Working Voltage		4 ~ 25VDC						
Capacitance Tolerance (120Hz 20°C)		±20%						
Leakage Current	(2min)	The initial specified value in Characteristic list						
Surge Voltage		W.V.	4	6.3	10	16	20	25
	(20°C)	S.V.	4.6	7.2	11.5	18.4	23	28.7
Tangent of loss angle	(120Hz)	The initial specified value or loss (in Characteristic list)						
Impedance Ratio		Impedance ratio at 100kHz						
		Rated Voltage (V)	4	6.3	10	16	20	25
		-25°C / +20°C	≦1.15					
		-55°C / +20°C	≦1.25					
Endurance		After applying rated voltage for 5000 hours at 105°C, the capacitor shall meet the following requirement						
		Appearance	No significant damage					
		Capacitance Change	≦±20% of initial value					
		Dissipation Factor	≦150% of initial specified value					
		ESR	≦150% of initial specified value					
		Leakage current	≦ initial specified value					
Bias Humidity Test		After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance						
Resistance to Soldering Heat＊		Capacitance Change	≦±10% of initial value					
		Dissipation Factor	≦130% of initial specified value					
		Equivalent Series Resistance	≦130% of initial specified value					
		Leakage Current	≦ initial specified value					

＊For any doubt about measured values, measure the leakage current again after the following voltage treatment.
Voltage treatment: Applying DC rated voltage to the capacitors for 2 hours at 105°C.

DIMENSIONS (mm)

SIZE	φD x L	A	H (max)	W	P	K
EA1	6.3 x 5.8	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
EA4	6.3 x 7.7	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
GA6	8 x 10.4	8.3	10	0.9±0.2	3.1±0.2	0.7±0.2
HA5	10 x 10.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2
HA8	10 x 12.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2

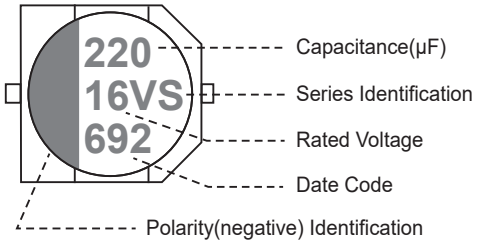


(Notes) φ8 ~ φ10 & 6.3x7.7=L±0.3

MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Leakage Current (μA)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L				
4	150	6.3	5.8	300	0.12	22	2570
	330	6.3	5.8	300	0.12	22	2800
	470	6.3	7.7	376	0.12	20	2800
6.3	100	6.3	5.8	300	0.12	22	2800
	120	6.3	5.8	300	0.12	22	2800
	220	6.3	5.8	300	0.12	22	2800
	470	10	10.2	592	0.12	20	4130
10	47	6.3	5.8	300	0.12	27	2300
	56	6.3	5.8	300	0.12	27	2300
	68	6.3	5.8	300	0.12	27	2300
	120	6.3	5.8	300	0.12	27	2300
	470	8	10.4	940	0.12	22	3000
16	39	6.3	5.8	300	0.12	30	2200
	68	6.3	5.8	300	0.12	30	2200
	330	10	12.2	1056	0.12	14	3800
20	27	6.3	5.8	300	0.12	40	2450
	180	10	10.2	720	0.12	25	3200
25	150	8	10.4	750	0.12	30	1350
	220	10	10.2	1100	0.12	38	1800
	330	10	12.2	1650	0.12	30	2800

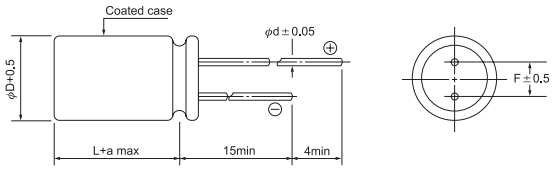
- Endurance:105°C, 2000hrs
- Recommended Applications: Standard
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-55 ~ +105°C								
Rated Working Voltage	2.5 ~ 25VDC								
Capacitance Tolerance (120Hz 20°C)	±20%								
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes							I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
Surge Voltage (20°C)	W.V.	2.5	4	6.3	6.8	7.5	10	16	25
	S.V.	2.8	4.6	7.2	7.8	8.6	11.5	18.4	28.7
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)								
Impedance Ratio	Impedance ratio at 100kHz								
	Rated Voltage (V)	2.5	4	6.3	6.8	7.5	10	16	25
	-25°C / +20°C	≦1.15							
	-55°C / +20°C	≦1.25							
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement								
	Appearance	No significant damage							
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦150% of initial specified value							
	ESR	≦150% of initial specified value							
	Leakage current	≦ initial specified value							
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance								
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance								
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)								

DIMENSIONS (mm)

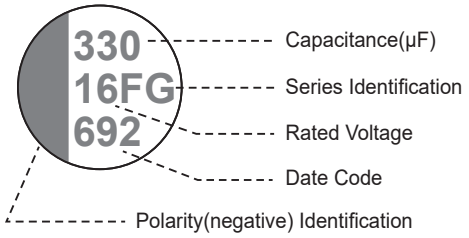
SIZE	φD x L	F	φd	a
C07	5 x 7	2.0	0.5	1.5
C09	5 x 9	2.0	0.5	1.0
E01	6.3 x 5.4	2.5	0.45	1.0
E06	6.3 x 6	2.5	0.5	1.5
E07	6.3 x 7	2.5	0.5	1.5
E08	6.3 x 8	2.5	0.6	1.0
E09	6.3 x 9	2.5	0.5	1.0
E11	6.3 x 11	2.5	0.5	1.0
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
G12	8 x 12	3.5	0.6	1.0
G15	8 x 15	3.5	0.6	1.5
H1A	10 x 10.5	5.0	0.6	1.0
H1C	10 x 12.5	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size φD (mm)	Case size L (mm)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
2.5	560	6.3	6	0.08	10	4000
		6.3	8	0.08	20	3160
	820	6.3	8	0.08	20	3160
		8	11.5	0.08	7	5600
	1500	10	12.5	0.08	7	5600
	2200	10	12.5	0.08	7	5600
4	560	6.3	8	0.08	20	3160
	680	6.3	8	0.08	20	3160
		8	11.5	0.08	7	5600
	820	6.3	9	0.08	20	3160
		10	12.5	0.08	7	5600
	1000	8	11.5	0.08	7	5600
		10	12.5	0.08	7	5600
	1500	8	11.5	0.08	7	5600
	2200	10	12.5	0.08	7	5600
6.3	47	6.3	5.4	0.08	30	1810
	100	6.3	5.4	0.08	40	1810
	180	6.3	5.4	0.08	30	1810
	220	5	7	0.08	11	3500
		6.3	5.4	0.08	30	1810
		6.3	6	0.08	15	3160
	270	5	7	0.08	11	3500
		6.3	7	0.08	11	3500
	330	5	7	0.08	11	3500
		6.3	5.4	0.08	30	1810
		6.3	6	0.08	22	3390
	390	5	9	0.08	11	3500
		6.3	9	0.08	8	3500
	450	5	9	0.08	11	3500
		6.3	6	0.08	22	3390
	470	5	9	0.08	28	3190
		6.3	6	0.08	22	3390
		6.3	8	0.08	10	3800
		8	8	0.08	8	4200
	560	6.3	8	0.08	10	4000
		8	8	0.08	12	4800
	680	6.3	9	0.08	8	3500
		8	11.5	0.08	7	5600
	820	6.3	9	0.08	8	3500
		8	11.5	0.08	7	5600
		10	10.5	0.08	8	5050
		10	12.5	0.08	7	5600
	1000	8	8	0.08	10	4770
		8	11.5	0.08	7	5600
	1200	8	11.5	0.08	7	5600
		10	10.5	0.08	8	5050
	1500	8	11.5	0.08	7	5600
		10	10.5	0.08	8	5050
		10	12.5	0.08	7	5600
	2200	10	12.5	0.08	7	5600
6.8	180	5	7	0.08	20	2300
	220	5	7	0.08	20	2500
	270	5	7	0.08	20	2500
	330	5	9	0.08	15	3100
	390	5	9	0.08	15	3100
	450	6.3	6	0.08	15	3100
	680	6.3	9	0.08	11	3500
	820	6.3	9	0.08	11	3500
	1000	6.3	11	0.08	10	4200

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size φD (mm)	Case size L (mm)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
7.5	270	5	9	0.08	15	2690
	390	5	9	0.08	15	3100
	470	5	9	0.08	15	3100
	500	5	9	0.08	12	3100
	680	6.3	9	0.08	12	3500
10	68	6.3	5.4	0.08	30	1810
	100	5	7	0.08	11	3500
		6.3	5.4	0.08	27	2320
	150	6.3	5.4	0.08	30	2200
	180	6.3	8	0.08	25	2820
	220	6.3	8	0.08	25	2820
	270	6.3	8	0.08	25	2820
	330	6.3	8	0.08	25	2820
		8	8	0.08	11	3500
	470	6.3	9	0.08	25	2820
		8	11.5	0.08	8	5600
		10	10.5	0.08	8	5050
	560	8	11.5	0.08	8	5600
		10	12.5	0.08	8	6100
	680	8	11.5	0.08	8	5600
		10	12.5	0.08	8	6100
	820	8	11.5	0.08	8	5600
		10	12.5	0.08	8	6100
	1200	10	12.5	0.08	8	6100
	1500	10	12.5	0.08	8	6100
16	22	5	7	0.12	30	2200
		6.3	5.4	0.12	30	2200
	33	6.3	5.4	0.12	24	2490
	47	6.3	5.4	0.12	35	1650
		6.3	6	0.12	25	2610
	68	6.3	5.4	0.12	35	1650
	100	6.3	5.4	0.12	24	2490
		6.3	8	0.12	24	2820
	150	6.3	8	0.12	25	2820
		8	8	0.12	22	3150
	180	6.3	8	0.12	25	2820
		8	8	0.12	16	3500
	270	6.3	9	0.12	20	3100
		8	8	0.12	15	3800
		8	11.5	0.12	11	5000
		10	10.5	0.12	14	5050
	330	6.3	9	0.12	20	3100
		8	11.5	0.12	11	5000
		10	10.5	0.12	14	5050
		10	12.5	0.12	10	6100
	470	8	11.5	0.12	11	5000
		10	10.5	0.12	14	5050
		10	12.5	0.12	10	6100
	560	8	11.5	0.12	11	5000
		10	10.5	0.12	11	5050
		10	12.5	0.12	10	6100
	680	8	11.5	0.12	11	5000
		10	12.5	0.12	10	6100
	820	8	12	0.12	10	5000
		10	12.5	0.12	10	5000
	1000	8	15	0.12	10	5000
		10	12.5	0.12	14	5050
25	33	6.3	8	0.12	35	1650
	47	6.3	8	0.12	35	1650
	68	8	8	0.12	35	2980

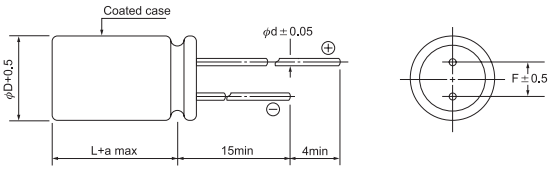
- Endurance:105°C, 2000hrs
- Recommended Applications: High ripple & low ESR Series
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-55 ~ +105°C			
Rated Working Voltage	2.5 ~ 6.3VDC			
Capacitance Tolerance (120Hz 20°C)	±20%			
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes		I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
Surge Voltage (20°C)	W.V.	2.5	4	6.3
	S.V.	2.8	4.6	7.2
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)			
Impedance Ratio	Impedance ratio at 100kHz			
	Rated Voltage (V)	2.5	4	6.3
	-25°C / +20°C	≦1.15		
	-55°C / +20°C	≦1.25		
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement			
	Appearance	No significant damage		
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦150% of initial specified value		
	ESR	≦150% of initial specified value		
	Leakage current	≦ initial specified value		
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance			
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance			
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)			

DIMENSIONS (mm)

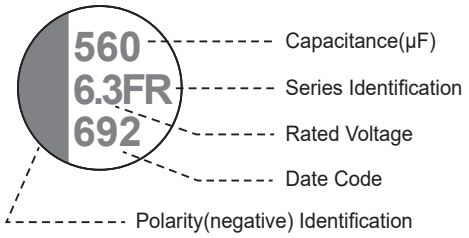
SIZE	φD x L	F	φd	a
E08	6.3 x 8	2.5	0.6	1.0
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
H1C	10 x 12.5	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L			
2.5	560	6.3	8	0.10	7	5000
		8	8	0.10	7	6100
	680	8	8	0.10	7	6100
		8	11.5	0.10	7	6100
	820	6.3	8	0.10	7	5000
		8	8	0.10	7	6100
		8	11.5	0.10	7	6100
	1000	8	8	0.10	7	6100
		8	11.5	0.10	7	6100
	1500	8	11.5	0.10	7	6100
	2700	10	12.5	0.10	8	5600
4	560	6.3	8	0.10	7	5000
		8	8	0.10	7	6100
		8	11.5	0.10	7	6100
	680	8	8	0.10	7	6100
		8	11.5	0.10	7	6100
	1000	8	8	0.10	7	6100
		8	11.5	0.10	7	6100
		10	12.5	0.10	7	6100
	1200	8	8	0.10	7	6100
	1500	8	11.5	0.10	7	6100
	1800	10	12.5	0.10	9	6500
6.3	270	6.3	8	0.10	8	4700
	330	6.3	8	0.10	8	4700
	470	6.3	8	0.10	8	4700
		8	8	0.10	8	5700
	560	6.3	8	0.10	8	4700
		8	8	0.10	8	5700
	680	8	8	0.10	8	5700
		8	11.5	0.10	7	5700
	820	8	8	0.10	8	5700
		8	11.5	0.10	7	5700
	1000	8	8	0.10	8	5700
		8	11.5	0.10	7	5700
		10	12.5	0.10	7	6100
	1500	8	11.5	0.10	7	5700
		10	12.5	0.10	7	6100

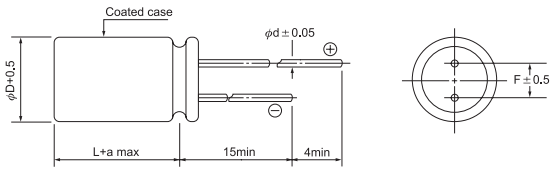
- Endurance:105°C, 2000hrs
- Recommended Applications: High ripple & low ESR Series
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-55 ~ +105°C								
Rated Working Voltage	6.3 ~ 63VDC								
Capacitance Tolerance (120Hz 20°C)	±20%								
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes							I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
Surge Voltage (20°C)	W.V.	6.3	10	16	25	32	35	50	63
	S.V.	7.2	11.5	18.4	28.7	37	40	57.5	72.5
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)								
Impedance Ratio	Impedance ratio at 100kHz								
	Rated Voltage (V)	6.3	10	16	25	32	35	50	63
	-25°C / +20°C	≦1.15							
	-55°C / +20°C	≦1.25							
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement								
	Appearance	No significant damage							
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦150% of initial specified value							
	ESR	≦150% of initial specified value							
	Leakage current	≦ initial specified value							
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance								
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance								
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)								

DIMENSIONS (mm)

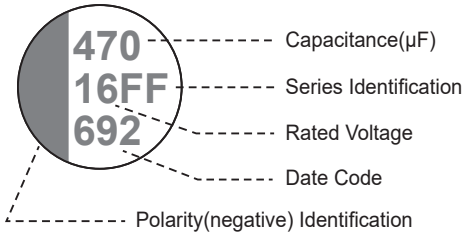
SIZE	φD x L	F	φd	a
E01	6.3 x 5.4	2.5	0.45	1.0
E06	6.3 x 6	2.5	0.5	1.5
E08	6.3 x 8	2.5	0.6	1.0
E11	6.3 x 11	2.5	0.5	1.0
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
H1A	10 x 10.5	5.0	0.6	1.0
H1C	10 x 12.5	5.0	0.6	1.0
H13	10 x 13	5.0	0.6	1.0
H16	10 x 16	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing

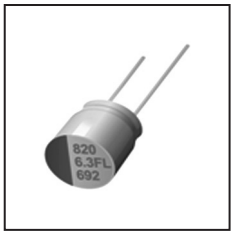


CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm) φD	Case size (mm) L	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
6.3	150	6.3	5.4	0.12	30	1810
	680	6.3	8	0.12	28	2800
	1000	8	8	0.12	10	3000
		8	11.5	0.12	8	4860
	1500	8	11.5	0.12	8	4860
		10	10.5	0.12	8	5000
		10	12.5	0.12	7	5000
	1800	10	12.5	0.12	7	5000
	2200	10	11.5	0.12	7	5600
		10	12.5	0.12	7	5600
10	560	8	8	0.12	12	3000
	680	8	8	0.12	12	3000
		8	11.5	0.12	12	4000
	820	8	11.5	0.12	12	4000
	1000	10	12.5	0.12	12	4360
16	470	8	11.5	0.12	12	4000
	560	8	11.5	0.12	12	4000
	820	10	12.5	0.12	11	4000
	1000	10	12.5	0.12	11	4200
25	22	6.3	5.4	0.12	60	1200
	47	6.3	5.4	0.12	60	1200
		6.3	8	0.12	35	1200
	68	6.3	6	0.12	35	1200
		8	8	0.12	30	1500
	100	6.3	8	0.12	35	1500
		8	8	0.12	30	1500
	120	6.3	8	0.12	35	1500
		8	8	0.12	30	1500
	150	8	8	0.12	28	1600
	220	6.3	11	0.12	20	2000
		8	8	0.12	28	2280
	270	8	11.5	0.12	28	2800
	330	8	11.5	0.12	25	2800
		10	10.5	0.12	25	2800
	470	10	12.5	0.12	25	3050
	560	10	12.5	0.12	25	3050
	680	8	15	0.12	20	2500
		10	13	0.12	20	3500
	820	10	16	0.12	20	3500
	1000	10	16	0.12	20	3500

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm) φD	Case size (mm) L	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
32	22	6.3	8	0.12	60	990
	47	6.3	8	0.12	60	990
	100	8	8	0.12	50	1200
	150	8	8	0.12	50	1500
35	10	6.3	8	0.12	60	990
	22	6.3	8	0.12	60	990
	33	6.3	6	0.12	70	990
		6.3	8	0.12	60	990
	47	6.3	8	0.12	60	990
	68	6.3	8	0.12	60	990
	100	6.3	8	0.12	50	1200
		8	8	0.12	50	2000
		8	11.5	0.12	35	2300
	150	8	11.5	0.12	35	2300
	220	8	11.5	0.12	35	2400
		10	10.5	0.12	35	2400
	270	10	12.5	0.12	25	2500
	330	10	12.5	0.12	25	2500
50	33	8	8	0.12	48	1300
	47	8	8	0.12	48	1300
		8	11.5	0.12	45	1500
	68	8	11.5	0.12	45	1500
	100	10	10.5	0.12	40	2200
		10	12.5	0.12	40	2200
	120	10	12.5	0.12	40	2200
63	10	6.3	8	0.12	80	900
	33	8	8	0.12	65	1100
	47	8	8	0.12	65	1100
	56	10	12.5	0.12	55	1500
	100	10	12.5	0.12	50	2000

- Endurance:105°C, 2000hrs
- Recommended Applications:Special charger series
- Corresponding product to RoHS

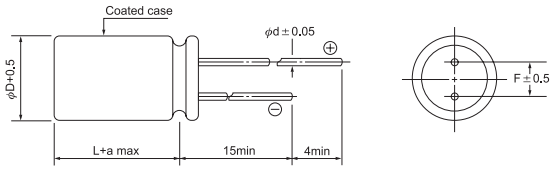


SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-55 ~ +105°C					
Rated Working Voltage	6.3 ~ 16VDC					
Capacitance Tolerance (120Hz 20°C)	±20%					
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	6.8	7.5	10	16
	S.V.	7.2	7.8	8.6	11.5	18.4
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)					
Impedance Ratio	Impedance ratio at 100kHz					
	Rated Voltage (V)	6.3	6.8	7.5	10	16
	-25°C / +20°C	≦1.15				
	-55°C / +20°C	≦1.25				
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement					
	Appearance	No significant damage				
	Capacitance Change	≦±20% of initial value				
	Dissipation Factor	≦150% of initial specified value				
	ESR	≦150% of initial specified value				
	Leakage current	≦ initial specified value				
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance					
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance					
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)					

DIMENSIONS (mm)

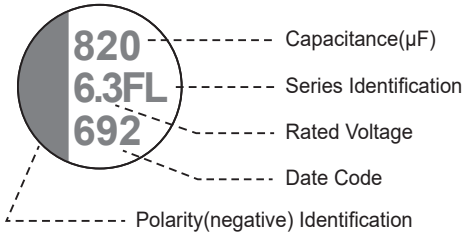
SIZE	φD x L	F	φd	a
C07	5 x 7	2.0	0.5	1.5
C09	5 x 9	2.0	0.5	1.0
E01	6.3 x 5.4	2.5	0.45	1.0
E06	6.3 x 6	2.5	0.5	1.5
E07	6.3 x 7	2.5	0.5	1.5
E08	6.3 x 8	2.5	0.6	1.0
E09	6.3 x 9	2.5	0.5	1.0
E11	6.3 x 11	2.5	0.5	1.0
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
H1A	10 x 10.5	5.0	0.6	1.0
H1C	10 x 12.5	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm) φD	Case size (mm) L	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
6.3	47	6.3	5.4	0.08	30	1810
	100	6.3	5.4	0.08	40	1810
	180	6.3	5.4	0.08	30	1810
	220	5	7	0.08	11	3500
		6.3	5.4	0.08	30	1810
		6.3	6	0.08	15	3160
	270	5	7	0.08	11	3500
	330	5	7	0.08	11	3500
		6.3	5.4	0.08	30	1810
		6.3	6	0.08	22	3390
	390	5	9	0.08	11	3500
		6.3	9	0.08	8	3500
	450	5	9	0.08	11	3500
		6.3	6	0.08	22	3390
	470	5	9	0.08	28	3190
		6.3	6	0.08	22	3390
		6.3	8	0.08	10	3800
		8	8	0.08	8	4200
	560	6.3	8	0.08	10	4000
		8	8	0.08	12	4800
	680	6.3	9	0.08	8	3500
		8	11.5	0.08	7	5600
	820	6.3	9	0.08	8	3500
		8	11.5	0.08	7	5600
		10	10.5	0.08	8	5050
		10	12.5	0.08	7	5600
	1000	8	8	0.08	14	4770
		8	11.5	0.08	7	5600
	1200	8	11.5	0.08	7	5600
		10	10.5	0.08	8	5050
	1500	8	11.5	0.08	7	5600
		10	10.5	0.08	8	5050
		10	12.5	0.08	7	5600
	2200	10	12.5	0.08	7	5600
6.8	180	5	7	0.08	20	2300
	220	5	7	0.08	20	2500
	270	5	7	0.08	20	2500
	330	5	9	0.08	15	3100
	390	5	9	0.08	15	3100
	680	6.3	9	0.08	11	3500
	820	6.3	9	0.08	11	3500
	1000	6.3	11	0.08	10	4200

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm) φD	Case size (mm) L	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
7.5	270	5	9	0.08	15	2690
	390	5	9	0.08	15	3100
	470	5	9	0.08	15	3100
	500	5	9	0.08	12	3100
	680	6.3	9	0.08	12	3500
10	68	6.3	5.4	0.08	30	1810
	100	5	7	0.08	11	3500
		6.3	5.4	0.08	27	2320
	150	6.3	5.4	0.08	30	2200
	180	6.3	8	0.08	25	2820
	220	6.3	8	0.08	25	2820
	270	6.3	8	0.08	25	2820
	330	6.3	8	0.08	25	2820
		8	8	0.08	11	3500
	470	6.3	9	0.08	25	2820
		8x	11.5	0.08	8	5600
		10	10.5	0.08	8	5050
	560	8	11.5	0.08	8	5600
		10	12.5	0.08	8	6100
	680	8	11.5	0.08	8	5600
		10	12.5	0.08	8	6100
	820	8	11.5	0.08	8	5600
		10	12.5	0.08	8	6100
	1200	10	12.5	0.08	8	6100
	1500	10	12.5	0.08	8	6100
16	22	5	7	0.12	30	2200
		6.3	5.4	0.12	30	2200
	33	6.3	5.4	0.12	24	2490
	47	6.3	5.4	0.12	35	1650
		6.3	6	0.12	25	2610
	68	6.3	5.4	0.12	35	1650
	100	6.3	5.4	0.12	24	2490
		6.3	8	0.12	24	2820
	150	6.3	8	0.12	25	2820
		8	8	0.12	22	3150
	180	6.3	8	0.12	25	2820
		8	8	0.12	16	3500
	270	6.3	9	0.12	20	3100
		8	8	0.12	15	3800
		8	11.5	0.12	11	5000
		10	10.5	0.12	14	5050

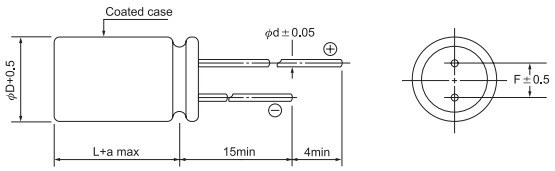
- Endurance:105°C, 5000hrs
- Recommended Applications: Ultra low ESR & Large capacitance Series
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic				
Operation Temperature Range	-55 ~ +105°C				
Rated Working Voltage	20 ~ 50VDC				
Capacitance Tolerance (120Hz 20°C)	±20%				
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)				
Surge Voltage (20°C)	W.V.	20	25	35	50
	S.V.	23	28.7	40	57.5
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)				
Impedance Ratio	Impedance ratio at 100kHz				
	Rated Voltage (V)	20	25	35	50
	-25°C / +20°C	≦1.15			
	-55°C / +20°C	≦1.25			
Endurance	After applying rated voltage for 2000/5000 hours at 105°C, the capacitor shall meet the following requirement				
	Appearance	No significant damage			
	Capacitance Change	≦±20% of initial value			
	Dissipation Factor	≦150% of initial specified value			
	ESR	≦150% of initial specified value			
	Leakage current	≦ initial specified value			
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance				
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance				
Failure rate(MAX)	0.5%per 1,000 hours (confidence level 60% at 105°C)				

DIMENSIONS (mm)

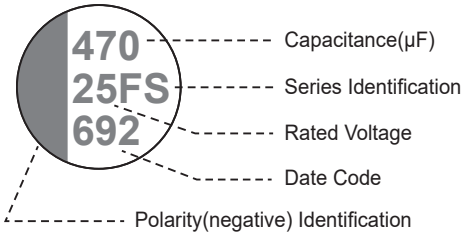
SIZE	φD x L	F	φd	a
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
H1B	10 x 11.5	5.0	0.6	1.0
H1C	10 x 12.5	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size		Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L			
		(mm)				
20	390	8	11.5	0.12	25	1760
	680	10	11.5	0.12	25	2800
25	150	8	11.5	0.12	25	1760
	220	8	11.5	0.12	25	1760
	270	8	11.5	0.12	25	1760
	330	10	12.5	0.12	25	2050
	390	10	12.5	0.12	25	2050
	470	10	12.5	0.12	25	2050
35	39	8	8	0.12	50	1500
	56	8	8	0.12	50	1500
	100	8	8	0.12	50	1500
		8	11.5	0.12	35	1760
	150	8	11.5	0.12	35	1760
	220	8	11.5	0.12	35	1760
	270	10	12.5	0.12	25	2050
50	47	8	11.5	0.12	38	1760
	56	8	11.5	0.12	38	1760
	82	10	12.5	0.12	35	2050
	100	10	12.5	0.12	35	2050

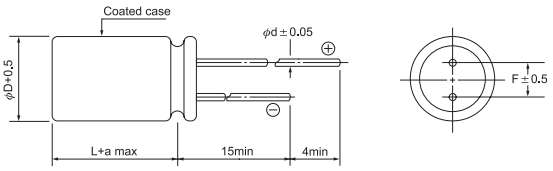
- Endurance:105°C, 3000hrs
- Recommended Applications: standard
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	2.5 ~ 25VDC							
Capacitance Tolerance (120Hz 20°C)	±20%							
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes					I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	2.5	4	6.3	10	16	20	25
	S.V.	2.8	4.6	7.2	11.5	18.4	23	28.7
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)							
Impedance Ratio	Impedance ratio at 100kHz							
	Rated Voltage (V)	2.5	4	6.3	10	16	20	25
	-25°C / +20°C	≦1.15						
	-55°C / +20°C	≦1.25						
Endurance	After applying rated voltage for 3000 hours at 105°C, the capacitor shall meet the following requirement							
	Appearance	No significant damage						
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦150% of initial specified value						
	ESR	≦150% of initial specified value						
	Leakage current	≦ initial specified value						
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance							
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance							
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)							

DIMENSIONS (mm)

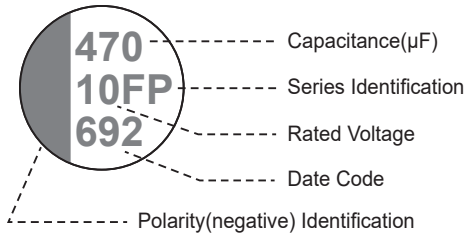
SIZE	φD x L	F	φd	a
E08	6.3 x 8	2.5	0.6	1.0
G08	8 x 8	3.5	0.6	1.5



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L			
2.5	560	6.3	8	0.08	8	4200
		8	8	0.08	8	5600
	820	6.3	8	0.08	8	4200
		8	8	0.08	8	5600
	1200	8	8	0.08	8	5600
6.3	470	6.3	8	0.08	8	4200
		8	8	0.08	8	5600
	560	6.3	8	0.08	8	4200
		8	8	0.08	8	5600
	820	8	8	0.08	8	5600
10	220	6.3	8	0.08	25	2820
		8	8	0.08	11	3500
	270	6.3	8	0.08	25	2820
	330	6.3	8	0.08	25	2820
		8	8	0.08	11	3500
	470	8	8	0.08	11	3500
	560	8	8	0.08	10	5000
16	100	6.3	8	0.12	25	2820
	150	6.3	8	0.12	25	2820
	220	6.3	8	0.12	25	2820
	270	8	8	0.12	11	3500
	330	8	8	0.12	11	3500
	470	8	8	0.12	11	4200
	560	8	8	0.12	11	4200
25	10	6.3	8	0.12	80	1200
	22	6.3	8	0.12	35	1650
	33	6.3	8	0.12	35	1650
	56	8	8	0.12	35	1980
	68	8	8	0.12	35	1980

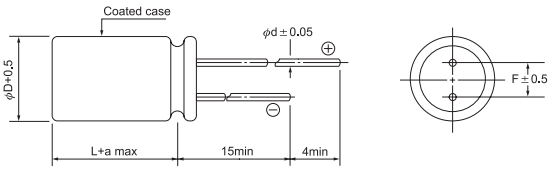
- Endurance:105°C, 5000hrs
- Recommended Applications: Long life & Ultra low ESR Series
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-55 ~ +105°C					
Rated Working Voltage	2.5 ~ 16VDC					
Capacitance Tolerance (120Hz 20°C)	±20%					
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	2.5	4	6.3	10	16
	S.V.	2.8	4.6	7.2	11.5	18.4
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)					
Impedance Ratio	Impedance ratio at 100kHz					
	Rated Voltage (V)	2.5	4	6.3	10	16
	-25°C / +20°C	≦1.15				
	-55°C / +20°C	≦1.25				
Endurance	After applying rated voltage for 5000 hours at 105°C, the capacitor shall meet the following requirement					
	Appearance	No significant damage				
	Capacitance Change	≦±20% of initial value				
	Dissipation Factor	≦150% of initial specified value				
	ESR	≦150% of initial specified value				
	Leakage current	≦ initial specified value				
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance					
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance					
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)					

DIMENSIONS (mm)

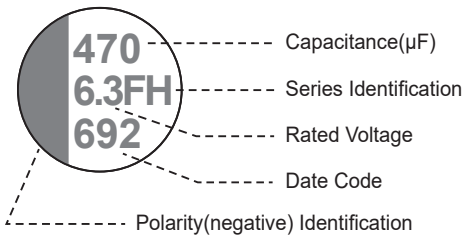
SIZE	φD x L	F	φd	a
E01	6.3 x 5.4	2.5	0.45	1.0
E08	6.3 x 8	2.5	0.6	1.0
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
G15	8 x 15	3.5	0.6	1.5
H1C	10 x 12.5	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)
		φD	L			
2.5	330	6.3	8	0.12	8	3500
	560	6.3	5.4	0.12	16	3000
		6.3	8	0.12	7	3500
	820	6.3	8	0.12	7	3500
		8	8	0.12	7	5000
4	560	6.3	8	0.12	8	3500
		8	8	0.12	8	6100
	680	8	11.5	0.12	7	6100
	1500	10	12.5	0.12	7	6100
6.3	220	6.3	5.4	0.12	45	1700
	330	6.3	8	0.12	10	3500
	470	6.3	8	0.12	10	3500
		8	8	0.12	10	3500
	560	6.3	8	0.12	10	3500
	820	8	11.5	0.12	8	3500
	1200	8	11.5	0.12	8	3500
	1500	10	12.5	0.12	8	4500
	1800	10	12.5	0.12	8	5000
10	220	6.3	8	0.12	15	2500
	270	6.3	8	0.12	15	2800
	330	8	11.5	0.12	10	3500
	560	8	11.5	0.12	10	5000
	680	8	11.5	0.12	10	5000
16	100	6.3	5.4	0.12	24	2490
		6.3	8	0.12	30	2490
	180	6.3	8	0.12	25	2490
	220	8	11.5	0.12	15	3000
	270	6.3	8	0.12	24	2500
		6.3	8	0.12	15	3500
		8	8	0.12	15	3500
		8	11.5	0.12	15	3500
	330	8	8	0.12	15	3500
	470	8	11.5	0.12	15	3500
		10	12.5	0.12	15	4200
	560	8	11.5	0.12	12	3500
		10	12.5	0.12	10	6100
	680	8	15	0.12	11	3500
	820	10	12.5	0.12	11	4000
	1000	10	12.5	0.12	11	4000

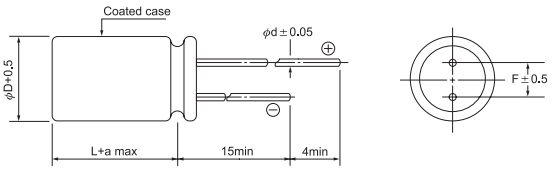
- Endurance:125°C, 2000hrs
- Recommended Applications: High temperature resistant products
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-55 ~ +125°C					
Rated Working Voltage	6.3 ~ 25VDC					
Capacitance Tolerance (120Hz 20°C)	±20%					
Leakage Current (2min)	I≦0.2CV or 300(uA) Whichever is greater after 2 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	20	25
	S.V.	7.2	11.5	18.4	23	28.7
Tangent of loss angle (120Hz)	The initial specified value or loss (in Characteristic list)					
Impedance Ratio	Impedance ratio at 100kHz					
	Rated Voltage (V)	6.3	10	16	20	25
	-25°C / +20°C	≦1.15				
	-55°C / +20°C	≦1.25				
Endurance	After applying rated voltage for 2000 hours at 125°C, the capacitor shall meet the following requirement					
	Appearance	No significant damage				
	Capacitance Change	≦±20% of initial value				
	Dissipation Factor	≦150% of initial specified value				
	ESR	≦150% of initial specified value				
	Leakage current	≦ initial specified value				
Bias Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60°C, the capacitors shall meet the requirement as Endurance					
Surge voltage test	After subjecting to 1000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds,the capacitors shall meet the requirement as Endurance					
Failure rate(MAX)	1%per 1,000 hours (confidence level 60% at 105°C)					

DIMENSIONS (mm)

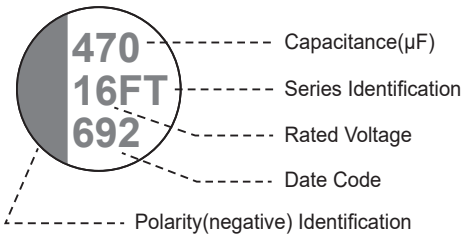
SIZE	φD x L	F	φd	a
E06	6.3 x 6	2.5	0.5	1.5
E08	6.3 x 8	2.5	0.6	1.0
G08	8 x 8	3.5	0.6	1.5
G1B	8 x 11.5	3.5	0.6	1.0
G15	8 x 15	3.5	0.6	1.5
H1C	10 x 12.5	5.0	0.6	1.0



MULTIPLIER FOR RIPPLE CURRENT

Frequency(Hz)	120≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
Coefficient	0.05	0.30	0.70	1.00

MARKING : Case with red printing



CASE SIZE & CHARACTERISTICS LIST

Rated Voltage (V.DC)	Rated Capacitance (μF)	Case size (mm)		Leakage Current (uA)	Tangent of loss angle (max)	E. S. R. at 100kHz (mΩ)	Allowable ripple current (mA.rms)	
		φD	L				Tx:125°C	Tx:105°C
6.3	180	6.3	6	300	0.12	45	537	1700
	220	6.3	6	300	0.12	45	537	1700
	270	6.3	6	340	0.12	45	810	2560
	330	6.3	6	415	0.12	45	810	2560
	470	6.3	8	592	0.12	35	810	2560
		8	8	592	0.12	15	810	2560
	560	8	8	705	0.12	15	1332	4210
	680	8	8	856	0.12	15	1721	5440
	820	8	8	1033	0.12	15	1721	5440
	1000	8	11.5	1260	0.12	15	1721	5440
10	180	6.3	8	360	0.12	45	537	1700
	220	8	8	440	0.12	35	810	2560
	270	8	8	540	0.12	35	810	2560
	330	6.3	8	660	0.12	45	537	1700
		8	8	660	0.12	35	810	2560
	470	8	8	940	0.12	35	810	2560
	560	8	8	1120	0.12	35	810	2560
	680	8	11.5	1360	0.12	15	1332	4210
16	82	6.3	8	300	0.12	50	512	1620
	100	6.3	8	320	0.12	50	512	1620
	120	6.3	8	384	0.12	50	670	2120
	150	6.3	8	480	0.12	50	670	2120
	180	8	8	576	0.12	20	1151	3640
	220	8	8	704	0.12	20	1151	3640
	270	8	11.5	864	0.12	20	1493	4720
	330	8	11.5	1056	0.12	20	1151	3640
		10	12.5	1056	0.12	16	1493	4720
	470	10	12.5	1504	0.12	16	1493	4720
20	47	6.3	8	300	0.12	60	458	1450
	56	6.3	8	300	0.12	60	598	1890
	68	6.3	8	300	0.12	60	598	1890
	82	6.3	8	328	0.12	60	1050	3320
	100	8	11.5	400	0.12	24	1050	3320
	120	8	11.5	480	0.12	24	1367	4320
	150	8	11.5	600	0.12	24	1367	4320
25	10	6.3	8	300	0.12	60	458	1450
	22	6.3	8	300	0.12	60	458	1450
	33	6.3	8	300	0.12	60	458	1450
	47	6.3	8	300	0.12	60	598	1890
	56	6.3	8	300	0.12	60	598	1890
	68	6.3	8	340	0.12	60	1050	3320
	82	6.3	8	410	0.12	60	1050	3320
	100	8	11.5	500	0.12	24	1050	3320
		10	12.5	500	0.12	20	1367	4320
	150	8	11.5	750	0.12	24	1367	4320
	220	8	11.5	1100	0.12	24	1050	3320
	270	8	15	1350	0.12	20	1367	4320
	330	10	12.5	1650	0.12	20	1367	4320

Features

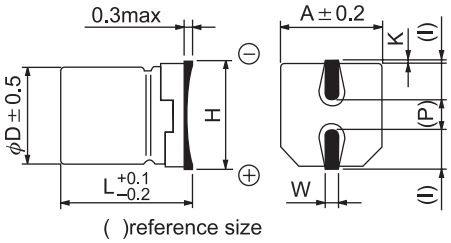
- Height : 5.4mm.
- Load life : 85°C 2000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-40 ~ +85°C							
Rated Working Voltage	4 ~ 50VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	4	6.3	10	16	25	35	50
	S.V.	5	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	4	6.3	10	16	25	35	50
	tan δ	0.35	0.26	0.20	0.16	0.14	0.12	0.12
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	4	6.3	10	16	25	35 ~ 50	
	-25°C / +20°C	7	4	3	2	2	2	
	-40°C / +20°C	15	8	6	4	4	3	
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)							
Resistance to Soldering Heat	Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.							
	Capacitance Change	≦±10% of initial value						
	Dissipation Factor	≦initial specified value						
	Leakage current	≦initial specified value						

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	4		6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1													4x5.4	3
0.22													4x5.4	4
0.33													4x5.4	5
0.47													4x5.4	6
1.0													4x5.4	9
2.2													4x5.4	13
3.3													4x5.4	16
4.7									4x5.4	17	4x5.4	19	5x5.4	21
10							4x5.4	24	5x5.4	29	5x5.4	31	6.3x5.4	36
22			4x5.4	27	5x5.4	36	5x5.4	40	6.3x5.4	49	6.3x5.4	55		
33	4x5.4	29	5x5.4	38	5x5.4	44	6.3x5.4	55	6.3x5.4	60				
47	4x5.4	35	5x5.4	46	6.3x5.4	60	6.3x5.4	65						
100	5x5.4	60	6.3x5.4	70	6.3x5.4	80	6.3x5.4	90						
220	6.3x5.4	80												

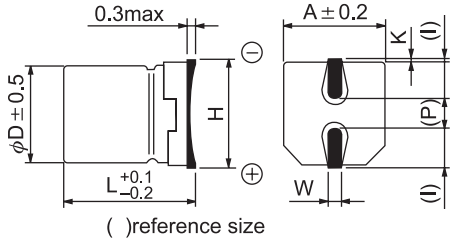
- Height : 5.4mm.
- Load life : 85°C 2000 hours.
- Low leakage current (0.5 μA to 2.0 μA max.)
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +85°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.002CV or 0.5 (μA) *Whichever is greater after 2 minutes				I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δφ	0.24	0.20	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	8	6	4	4	3	3
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 $^{+0.15}_{-0.20}$
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 $^{+0.15}_{-0.20}$
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 $^{+0.15}_{-0.20}$



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / μF / Item	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1											4x5.4	1.0
0.22											4x5.4	2.3
0.33											4x5.4	3.5
0.47											4x5.4	5
1.0											4x5.4	10
2.2											4x5.4	15
3.3											4x5.4	18
4.7							4x5.4	19	4x5.4	20	5x5.4	23
10					4x5.4	25	5x5.4	28	5x5.4	30	6.3x5.4	34
22	4x5.4	31	5x5.4	35	5x5.4	39	6.3x5.4	52	6.3x5.4	54		
33	5x5.4	39	5x5.4	43	6.3x5.4	57	6.3x5.4	63				
47	5x5.4	47	6.3x5.4	59	6.3x5.4	68						
100	6.3x5.4	71	6.3x5.4	76								

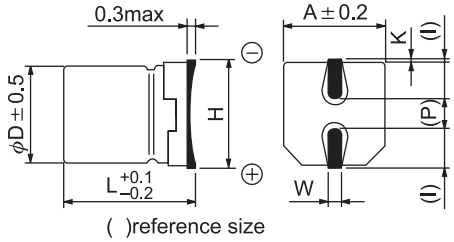
- Height : 5.4mm.
- Load life : 85°C 2000 hours.
- Non polarty series using in polarity circuits
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +85°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.05CV or 10 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δφ	0.26	0.22	0.20	0.20	0.20	0.18
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	8	6	4	4	3	3
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage) (The polarity need to exchange every 250 hours)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 $^{+0.15}_{-0.20}$
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 $^{+0.15}_{-0.20}$
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 $^{+0.15}_{-0.20}$



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / μF / Item	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1											4x5.4	2
0.22											4x5.4	3
0.33											4x5.4	4
0.47											4x5.4	5
1.0											4x5.4	7
2.2									4x5.4	10	5x5.4	12
3.3							5x5.4	13	5x5.4	14	5x5.4	14
4.7					4x5.4	14	5x5.4	16	5x5.4	17	6.3x5.4	19
10			4x5.4	19	5x5.4	23	6.3x5.4	27	6.3x5.4	28		
22	5x5.4	29	6.3x5.4	36	6.3x5.4	39						
33	6.3x5.4	41	6.3x5.4	45	6.3x5.4	48						
47	6.3x5.4	49										

Features

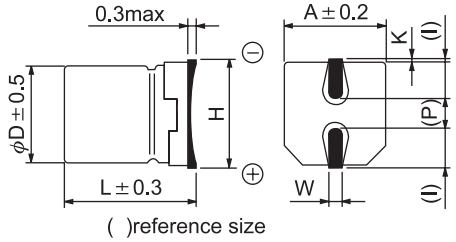
- Higher Capacitance in larger case sizes.
- For general purposes series with 85°C 2000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-40 ~ +85°C								
Rated Working Voltage	4 ~ 100VDC								
Capacitance Tolerance (120Hz 20°C)	±20%(M)								
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)								
Surge Voltage (20°C)	W.V.	4	6.3	10	16	25	35	50	63	100
	S.V.	5	8	13	20	32	44	63	79	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more then 1000 μF									
	W.V.	4	6.3	10	16	25	35	50	63	100
	tan δ	0.35	0.28	0.24	0.20	0.16	0.14	0.12	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz									
	Rated Voltage (V)	4	6.3	10	16	25	35	50	63	100
	-25°C / +20°C	7	4	3	2	2	2	2	2	2
	-40°C / +20°C	15	8	6	4	4	3	3	3	3
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)									
	Capacitance Change	≦±20% of initial value								
	Dissipation Factor	≦200% of initial specified value								
	Leakage current	≦initial specified value								
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)									
Resistance to Soldering Heat	Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.									
	Capacitance Change	≦±10% of initial value								
	Dissipation Factor	≦initial specified value								
	Leakage current	≦initial specified value								

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
8.0	6.2	8.3	9.5MAX	3.4	0.65±0.1	2.2	0.35 $^{+0.15}_{-0.20}$
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.2
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.2



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	4		6.3		10	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
100					8x6.2	130
220			8x6.2	150	8x6.2	190
330	8x6.2	140	8x6.2	180	8x10.2	290
470	8x10.2	210	8x10.2	260	10x10.2	420
1000	8x10.2	300	10x10.2	460	10x10.2	610
1500	10x10.2	440	10x10.2	560		

V(DC) / Item / μF	16		25		35	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
33					8x6.2	120
47			8x6.2	100	8x6.2	140
100	8x6.2	140	8x6.2	150	8x10.2	250
220	8x10.2	260	8x10.2	270	10x10.2	440
330	8x10.2	310	10x10.2	450	10x10.2	540
470	10x10.2	450				

V(DC) / Item / μF	50		63		100	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
3.3					8x6.2	41
4.7					8x10.2	60
10					8x10.2	85
22	8x6.2	110	8x10.2	120	10x10.2	150
33	8x6.2	130	8x10.2	140	10x10.2	180
47	8x10.2	190	10x10.2	190		
100	10x10.2	310	10x10.2	280		
220	10x10.2	460				

Features

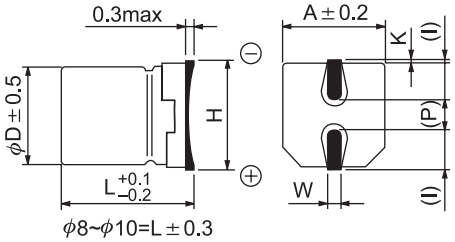
- 105°C 1000hours.
- For high density mounting.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.		6.3	10	16	25	35	50
	S.V.		8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.		6.3	10	16	25	35	50
	tan δ	φ4 ~ φ6.3	0.30	0.22	0.16	0.14	0.12	0.12
		φ8 ~ φ10	0.35	0.26	0.20	0.16	0.14	0.12
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)		6.3	10	16	25	35	50
	-25°C / +20°C		4	3	2	2	2	2
	-40°C / +20°C		8	6	4	4	3	3
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±30% of initial value for 6.3 W.V., ≦±25% of initial value for 10~50 W.V.						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)							
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.							
	Capacitance Change	≦±10% of initial value						
	Dissipation Factor	≦initial specified value						
	Leakage current	≦initial specified value						

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
8.0	6.2	8.3	9.5MAX	3.4	0.65±0.1	2.2	0.35 +0.15 -0.20
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70 ±0.20
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70 ±0.20



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1											4x5.4	2
0.22											4x5.4	4
0.33											4x5.4	4
0.47											4x5.4	5
1.0											4x5.4	8
2.2											4x5.4	11
3.3											4x5.4	14
4.7							4x5.4	14	4x5.4	15	5x5.4	19
10					4x5.4	19	5x5.4	23	5x5.4	25	6.3x5.4	31
22	4x5.4	23	5x5.4	29	5x5.4	32	6.3x5.4	39	6.3x5.4	42	8x6.2	60
33	5x5.4	32	5x5.4	35	6.3x5.4	45	6.3x5.4	48	6.3x5.4 8x6.2	50 70	8x10.2	90
47	5x5.4	38	6.3x5.4	48	6.3x5.4	55	6.3x5.4 8x6.2	60 75	8x10.2	100	8x10.2 10x10.2	110 120
100	6.3x5.4	65	6.3x5.4 8x6.2	70 90	6.3x5.4 8x10.2	80 120	8x10.2	140	8x10.2 10x10.2	150 170	8x10.2 10x10.2	160 180
220	6.3x5.4	95	8x10.2	160	8x10.2 10x10.2	180 210	8x10.2 10x10.2	200 230	8x10.2 10x10.2	220 250	10x10.2	270
330	8x10.2	170			8x10.2 10x10.2	220 260	8x10.2 10x10.2	250 290	10x10.2	300		
470			8x10.2 10x10.2	230 270	8x10.2 10x10.2	270 300	10x10.2	340				
1000	8x10.2 10x10.2	290 340										
1500	10x10.2	410										

CHIP TYPE

Features

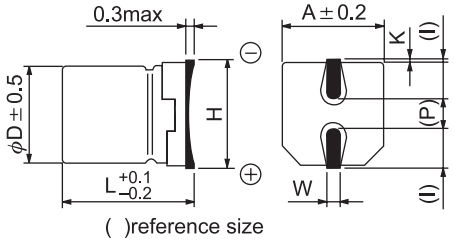
- Height:5.4mm.
- Load life:105°C, 1000hours.
- Low leakage current (0.5μA to 2.0μA max.)
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.002CV or 0.5 (μA) *Whichever is greater after 2 minutes				I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.24	0.20	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	8	6	4	4	3	3
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1											4x5.4	3
0.22											4x5.4	4
0.33											4x5.4	5
0.47											4x5.4	5
1.0											4x5.4	8
2.2											4x5.4	12
3.3											4x5.4	14
4.7							4x5.4	14	4x5.4	15	5x5.4	19
10					4x5.4	20	5x5.4	24	5x5.4	26	6.3x5.4	32
22	4x5.4	24	5x5.4	30	5x5.4	33	6.3x5.4	41	6.3x5.4	44		
33	5x5.4	33	5x5.4	36	6.3x5.4	46	6.3x5.4	50				
47	5x5.4	39	6.3x5.4	50	6.3x5.4	55						
100	6.3x5.4	65	6.3x5.4	70								

CP Series

Aluminum Electrolytic Capacitor
Surface Mounted Device

JAMICON

Features

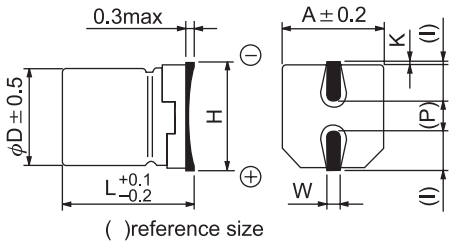
- Height:5.4mm.
- Load life:105°C, 1000hours.
- CP series is Bi-Polar type
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.05CV or 10 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.26	0.22	0.20	0.20	0.20	0.18
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	8	6	4	4	3	3
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage) (The polarity need to exchange every 250 hours)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 500 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

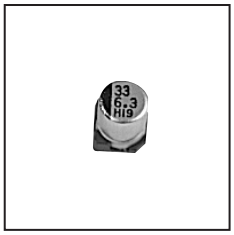
D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 $^{+0.15}_{-0.20}$
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 $^{+0.15}_{-0.20}$
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 $^{+0.15}_{-0.20}$



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1											4x5.4	2
0.22											4x5.4	3
0.33											4x5.4	4
0.47											4x5.4	4
1.0											4x5.4	6
2.2									4x5.4	9	5x5.4	10
3.3							5x5.4	12	5x5.4	13	5x5.4	13
4.7					4x5.4	12	5x5.4	14	5x5.4	15	6.3x5.4	17
10			4x5.4	17	5x5.4	21	6.3x5.4	24	6.3x5.4	25		
22	5x5.4	26	6.3x5.4	32	6.3x5.4	35						
33	6.3x5.4	36	6.3x5.4	40	6.3x5.4	43						
47	6.3x5.4	43										



Features

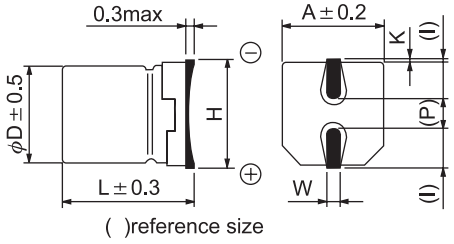
- Load life : 105°C 2000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	4 ~ 50VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	4	6.3	10	16	25	35	50
	S.V.	5	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	4	6.3	10	16	25	35	50
	tan δ φ4 ~ φ6.3	0.50	0.30	0.22	0.16	0.14	0.12	0.12
	tan δ φ8 ~ φ10	0.50	0.35	0.26	0.20	0.16	0.14	0.12
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	4	6.3	10	16	25	35 ~ 50	
	-25°C / +20°C	7	4	3	2	2	2	
	-40°C / +20°C	15	8	6	4	4	3	
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±25% of initial value (4WV±35%)						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)							
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.							
	Capacitance Change	≦±10% of initial value						
	Dissipation Factor	≦initial specified value						
	Leakage current	≦initial specified value						

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.8	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
8.0	6.2	8.3	9.5MAX	3.4	0.65±0.1	2.2	0.35 +0.15 -0.20
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70 ±0.20
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70 ±0.20



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	4		6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.10													4x5.8	3
0.22													4x5.8	4
0.33													4x5.8	5
0.47													4x5.8	6
1.0													4x5.8	8
2.2													4x5.8	12
3.3													4x5.8	15
4.7									4x5.8	15	4x5.8	18	5x5.8	20
6.8									4x5.8	18	5x5.8	22	5x5.8	24
10							4x5.8	20	5x5.8	25	5x5.8	26	6.3x5.8	33
22	4x5.8	20	4x5.8	24	5x5.8	30	5x5.8	34	6.3x5.8	42	6.3x5.8	45	8x10.2	75
33	4x5.8	25	4x5.8	30	5x5.8	37	6.3x5.8	48	6.3x5.8	50	8x6.2	70	8x10.2	90
47	4x5.8	30	5x5.8	41	6.3x5.8	50	6.3x5.8	55	8x6.2	75	8x10.2	100	10x10.2	120
100	5x5.8	49	6.3x5.8	70	6.3x5.8	75	8x10.2	120	8x10.2	140	10x10.2	170		
150	6.3x5.8	70	8x6.2	95	8x6.2	110	8x10.2	150	8x10.2	170				
220	6.3x5.8	85	8x10.2	140	8x10.2	160	10x10.2	210	10x10.2	230				
330	8x10.2	140	8x10.2	170	8x10.2	200	10x10.2	260						
470	8x10.2	170	8x10.2	200	10x10.2	270								

Features

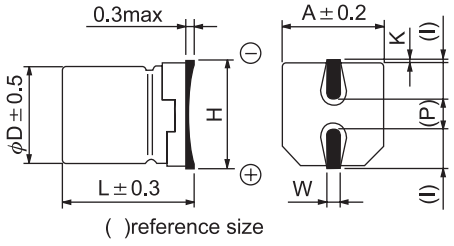
- Load life : 105°C 3000~5000 hours.
- For high density mounting.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF						
	W.V.	6.3	10	16	25	35	50
	tan δ	0.28	0.24	0.20	0.16	0.13	0.12
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-55°C / +20°C	10	7	5	3	3	3
Load Life	After hours (φD≦6.3mm 3000 hours , φD≧8mm 5000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±30% of initial value					
	Dissipation Factor	≦300% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.8	4.3	5.5MAX	1.8	0.65±0.1	1.0	$0.35^{+0.15}_{-0.20}$
5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	$0.35^{+0.15}_{-0.20}$
6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	2.1	$0.35^{+0.15}_{-0.20}$
6.3	7.7	6.6	7.8MAX	2.6	0.65±0.1	2.1	$0.35^{+0.15}_{-0.20}$
8.0	10.2	8.3	10.0MAX	3.4	0.9±0.2	3.1	0.70±0.20
10.0	10.2	10.3	12.0MAX	3.5	0.9±0.2	4.6	0.70±0.20



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.1											4x5.4	2
0.22											4x5.4	3
0.33											4x5.8	4
0.47											4x5.8	5
1.0											4x5.8	7
2.2											4x5.8	11
3.3											4x5.8	13
4.7									4x5.8	17	5x5.8	18
10					4x5.8	18	5x5.8	23	5x5.8	25	6.3x5.8	30
22	4x5.8	23	5x5.8	28	5x5.8	30	6.3x5.8	39	6.3x5.8	43	6.3x7.7	60
33	5x5.8	31	5x5.8	34	6.3x5.8	43	6.3x5.8	48	6.3x7.7	70	8x10.2	90
47	5x5.8	38	6.3x5.8	47	6.3x5.8	50	6.3x7.7	75	8x10.2	100	8x10.2	120
100	6.3x5.8	65	6.3x7.7	85	6.3x7.7	95	8x10.2	140	10x10.2	170	10x10.2	180
220	6.3x7.7	120	8x10.2	170	10x10.2	210	10x10.2	230	10x10.2	260		
330	8x10.2	190	10x10.2	230	10x10.2	260	10x10.2	290				
470	10x10.2	260	10x10.2	280	10x10.2	330						
1000	10x10.2	380										

Features

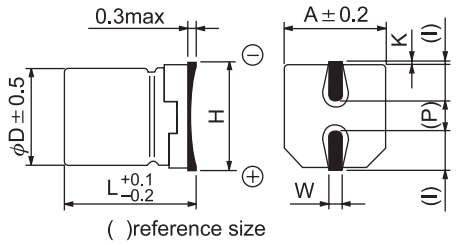
- Load Life : 105°C 1000hours.
- For high density mounting.
- Low impedance at 100kHz.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.22	0.19	0.16	0.14	0.12	0.12
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	2	2	2	2	2	2
	-55°C / +20°C	5	4	4	3	3	3
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±30% of initial value for 6.3 W.V., ≦±20% of initial value for 10~50 W.V.					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
1.0													4x5.4	3.9	60	4x5.4	4.9	30
2.2													4x5.4	3.6	60	4x5.4	4.5	30
3.3													4x5.4	3.0	60	4x5.4	3.7	30
4.7										4x5.4	3.1	60	4x5.4	2.5	60	5x5.4	3.1	41
6.8										4x5.4	2.7	60	5x5.4	2.2	60	6.3x5.4	2.7	55
10							4x5.4	3.3	60	5x5.4	2.4	65	5x5.4	1.9	70	6.3x5.4	2.4	70
22	4x5.4	3.2	60	5x5.4	2.2	65	5x5.4	1.8	85	6.3x5.4	1.3	110	6.3x5.4	1.0	120			
33	5x5.4	2.4	65	5x5.4	1.7	75	6.3x5.4	1.4	120	6.3x5.4	1.0	140						
47	5x5.4	2.0	80	6.3x5.4	1.4	110	6.3x5.4	1.1	140									
68	6.3x5.4	1.5	110	6.3x5.4	1.1	130												
100	6.3x5.4	1.2	130	6.3x5.4	0.9	150												

Features

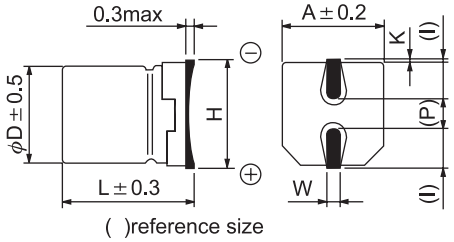
- Load Life : 105°C 1000~2000 hours.
- For high density mounting.
- Low impedance at 100kHz.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichecer is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
	Add 0.02 per 1000 μF for more than 1000 μF						
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ φ4 ~ φ6.3	0.24	0.20	0.16	0.14	0.12	0.12
	tan δ φ8 ~ φ10	0.28	0.24	0.20	0.16	0.14	0.14
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	3	2	2	2	2	2
	-55°C / +20°C	5	4	4	3	3	3
Load Life	After hours (φD≦6.3mm 1000 hours, φD≧8mm 2000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.8	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
6.3	7.7	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.2
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.2



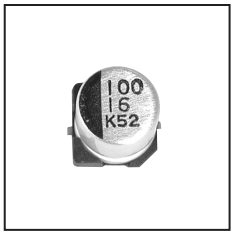
( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
1.0																4x5.8	5.00	30
2.2																4x5.8	5.00	30
3.3																4x5.8	5.00	30
4.7													4x5.8	1.80	80	5x5.8	1.52	85
6.8													5x5.8	1.20	120	5x5.8	1.20	120
10							4x5.8	1.80	80	4x5.8	1.80	80	5x5.8	0.76	150	6.3x5.8	0.88	165
15							4x5.8	1.80	80	5x5.8	0.76	150	5x5.8	0.76	150	6.3x5.8	0.88	165
22				4x5.8	1.80	80	5x5.8	0.76	150	5x5.8	0.76	150	5x5.8	0.76	150	6.3x5.8	0.88	165
27	4x5.8	1.80	80	5x5.8	0.76	150	5x5.8	0.76	150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.68	185
33	5x5.8	0.76	150	5x5.8	0.76	150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.68	185
47	5x5.8	0.76	150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.68	185
56	5x5.8	0.76	150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.34	280	8x10.2	0.34	300
68	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.34	280	8x10.2	0.34	300
100	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.34	300
150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.18	670
220	6.3x5.8	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.18	670
330	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.09	670			
470	8x10.2	0.17	450	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.09	670						
680	8x10.2	0.17	450	10x10.2	0.09	670	10x10.2	0.09	670									
1000	8x10.2	0.17	450	10x10.2	0.09	670												
1500	10x10.2	0.09	670															

- Load life : 105°C 1000~2000 hours.
- For high density mounting.
- Impedance Lower than CF series
- Corresponding product to RoHS

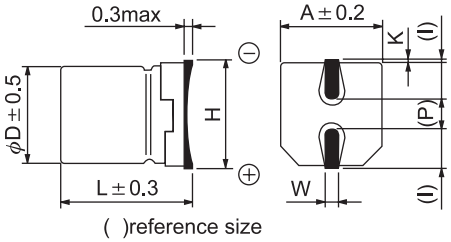


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF						
	W.V.	6.3	10	16	25	35	50
	tan δφ φ4 ~ φ6.3	0.24	0.20	0.16	0.14	0.12	0.12
	tan δφ φ8 ~ φ10	0.28	0.24	0.20	0.16	0.14	0.14
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-40°C / +20°C	3	2	2	2	2	2
	-55°C / +20°C	5	4	4	3	3	3
Load Life	After hours (φD≦6.3mm 1000 hours, φD≧8mm 2000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.8	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
6.3	7.7	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.20
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.20



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
4.7													4x5.8	1.45	90	4x5.8	2.55	64
10										4x5.8	1.45	90	5x5.8	0.70	170	6.3x5.8	0.52	215
15							4x5.8	1.45	90	5x5.8	0.70	170	5x5.8	0.70	170	6.3x5.8	0.52	215
22				4x5.8	1.45	90	5x5.8	0.70	170	5x5.8	0.70	170	5x5.8	0.70	170	6.3x5.8	0.52	215
27	4x5.8	1.45	90	5x5.8	0.70	170	5x5.8	0.76	150	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.44	243
33	5x5.8	0.70	170	5x5.8	0.70	170	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.44	243
47	5x5.8	0.70	170	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.44	243
56	5x5.8	0.70	170	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.30	300	8x10.2	0.22	400
68	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.30	300	8x10.2	0.22	400
100	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.30	300	8x10.2	0.15	600	8x10.2	0.22	400
150	6.3x5.8	0.39	250	6.3x5.8	0.39	250	6.3x7.7	0.30	300	8x10.2	0.15	600	8x10.2	0.15	600	10x10.2	0.13	585
220	6.3x5.8	0.39	250	6.3x7.7	0.30	300	6.3x7.7	0.30	300	8x10.2	0.15	600	8x10.2	0.15	600	10x10.2	0.13	585
330	6.3x7.7	0.30	300	8x10.2	0.15	600	8x10.2	0.15	600	8x10.2	0.15	600	10x10.2	0.08	850			
470	8x10.2	0.15	600	8x10.2	0.15	600	8x10.2	0.15	600	10x10.2	0.08	850						
680	8x10.2	0.15	600	10x10.2	0.08	850	10x10.2	0.08	850									
1000	8x10.2	0.15	600	10x10.2	0.08	850												
1500	10x10.2	0.08	850															

CZ Series

Aluminum Electrolytic Capacitor
Surface Mounted Device

JAMICON

Features

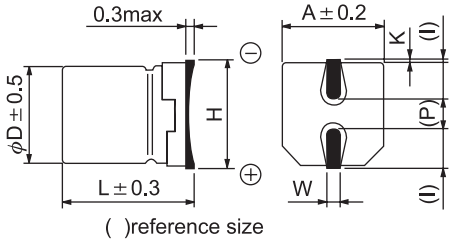
- Load Life : 105°C, 3000hours.
- For high density mounting.
- Low impedance at 100kHz
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.28	0.24	0.22	0.16	0.13	0.12
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	10	7	5	3	3	3
Load Life	After 3000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±30% of initial value					
	Dissipation Factor	≦300% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.8	4.3	5.5MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
6.3	7.7	6.6	7.8MAX	2.6	0.65±0.1	2.1	0.35 +0.15 -0.20
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.2
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.2



( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10													5x5.8	1.30	95	6.3x5.8	2.00	70
22							5x5.8	1.30	95				5x5.8	0.70	140	6.3x5.8	2.00	70
33				5x5.8	1.30	95	6.3x5.8	0.70	140	6.3x5.8	0.70	140	6.3x7.7	0.70	140	6.3x7.7	1.60	100
													8x10.2	0.70	230			
47	5x5.8	1.30	95	6.3x5.8	0.70	140	6.3x5.8	0.70	140	6.3x5.8	0.70	230	6.3x7.7	0.70	230	6.3x7.7	1.60	100
										6.3x7.7	0.70	230				8x10.2	0.34	350
100	6.3x5.8	0.70	140	6.3x5.8	0.70	140	6.3x5.8	0.70	140	6.3x7.7	0.70	230	6.3x7.7	0.70	230	8x10.2	0.34	350
							6.3x7.7	0.70	230	8x10.2	0.16	600	8x10.2	0.16	600	10x10.2	0.18	670
150	6.3x5.8	0.70	140	6.3x5.8	0.70	140	6.3x7.7	0.70	230	8x10.2	0.16	600	8x10.2	0.16	600	10x10.2	0.18	670
220	6.3x5.8	0.70	230	6.3x7.7	0.70	230	6.3x7.7	0.70	230	8x10.2	0.16	600	8x10.2	0.16	600	10x10.2	0.18	670
				8x10.2	0.70	600	8x10.2	0.16	600				10x10.2	0.08	850			
330	6.3x7.7	0.70	230	8x10.2	0.16	600	8x10.2	0.16	600	8x10.2	0.15	600	10x10.2	0.08	850			
	8x10.2	0.16	600							10x10.2	0.08	850						
470	8x10.2	0.16	600	8x10.2	0.16	600	8x10.2	0.16	600									
							10x10.2	0.08	850									
1000	10x10.2	0.08	850															

CHIP TYPE

Features

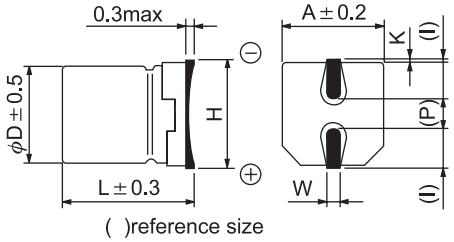
- Load Life : 105°C 2000~5000hours.
- For high density mounting.
- Low impedance at 100kHz.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.28	0.24	0.20	0.16	0.13	0.12
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	3	3	2	2	2	2
	-55°C / +20°C	7	7	5	3	3	3
Load Life	After 5000 hours (φD≦6.3mm 2000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±30% of initial value					
	Dissipation Factor	≦300% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.8	4.3	5.5MAX	1.8	0.65±0.1	1.0	$0.35^{+0.15}_{-0.20}$
5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	$0.35^{+0.15}_{-0.20}$
6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	2.1	$0.35^{+0.15}_{-0.20}$
6.3	7.7	6.6	7.8MAX	2.6	0.65±0.1	2.1	$0.35^{+0.15}_{-0.20}$
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.20
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.20



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
4.7																5x5.8	1.52	85
10													5x5.8	0.76	150	6.3x5.8	0.88	165
22							5x5.8	0.76	150	5x5.8	0.76	150	5x5.8	0.76	150	6.3x5.8	0.88	165
33	5x5.8	0.76	150	5x5.8	0.76	150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.68	185
47	5x5.8	0.76	150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.68	185
100	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.34	300
150	6.3x5.8	0.44	230	6.3x5.8	0.44	230	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.18	670
220	6.3x5.8	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.18	670
330	6.3x7.7	0.34	280	8x10.2	0.17	450	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.09	670			
470	8x10.2	0.17	450	8x10.2	0.17	450	8x10.2	0.17	450	10x10.2	0.09	670						
1000	8x10.2	0.17	450	10x10.2	0.09	670												
1500	10x10.2	0.09	670															

Features

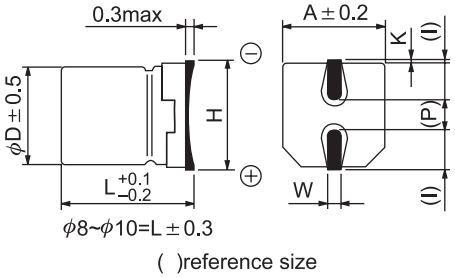
- Load Life : 105°C 5000hours.
- For high density mounting.
- Low impedance at 100kHz.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.32	0.28	0.26	0.16	0.14	0.14
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	3	3	2	2	2	2
	-55°C / +20°C	7	7	5	3	3	3
Load Life	After 5000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±30% of initial value					
	Dissipation Factor	≦300% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						
Resistance to Soldering Heat	Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.						
	Capacitance Change	≦±10% of initial value					
	Dissipation Factor	≦initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5MAX	1.8	0.65±0.1	1.0	$0.35^{+0.15}_{-0.20}$
5.0	5.4	5.3	6.5MAX	2.2	0.65±0.1	1.5	$0.35^{+0.15}_{-0.20}$
6.3	5.4	6.6	7.8MAX	2.6	0.65±0.1	2.1	$0.35^{+0.15}_{-0.20}$
6.3	7.7	6.6	7.8MAX	2.6	0.65±0.1	2.1	$0.35^{+0.15}_{-0.20}$
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.20
10.0	10.2	10.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.20



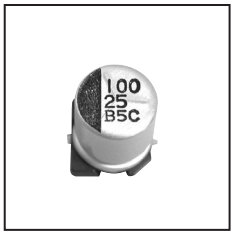
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10													5x5.4	2.20	95			
22							5x5.4	2.20	95	5x5.4	2.20	95	6.3x5.4	1.10	140			
33				5x5.4	2.20	95	6.3x5.4	1.10	140	6.3x5.4	1.10	140	6.3x7.7	1.00	230			
47	5x5.4	2.20	95	6.3x5.4	1.10	140	6.3x5.4	1.10	140	6.3x5.4	1.10	140	6.3x7.7	1.00	230	8x10.2	0.53	350
100	6.3x5.4	1.10	140	6.3x5.4	1.10	140	6.3x7.7	1.10	140	6.3x7.7	1.00	230	8x10.2	0.22	600	8x10.2	0.32	560
220	6.3x5.4	1.00	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.2	0.22	600	10x10.2	0.16	850	10x10.2	0.35	670
330	6.3x7.7	1.00	230	8x10.2	0.22	450	8x10.2	0.22	600	10x10.2	0.16	850						
470	8x10.2	0.22	600															

Features

- Load Life : 125°C 2000 hours.
- For high density mounting.
- Corresponding product to RoHS

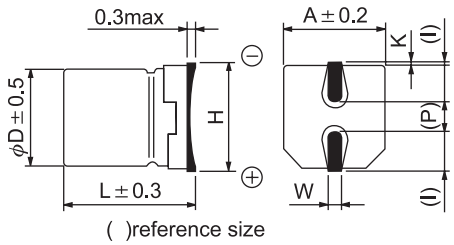


SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-40 ~ +125°C					
Rated Working Voltage	10 ~ 50VDC					
Capacitance Tolerance (120Hz 20°C)	±20%(M)					
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)					
Surge Voltage (20°C)	W.V.	10	16	25	35	50
	S.V.	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	10	16	25	35	50
	tan δ	0.32	0.24	0.21	0.18	0.18
Low Temperature Stability	Impedance ratio at 120Hz					
	Rated Voltage (V)	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2
	-40°C / +20°C	12	8	6	4	4
Load Life	After 2000 hours application of W.V. and +125°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)					
	Capacitance Change	≦±30% of initial value				
	Dissipation Factor	≦300% of initial specified value				
	Leakage current	≦initial specified value				
Shelf Life	At +125°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)					
Resistance to Soldering Heat	Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the folowing conditions after being cooled to room temperature.					
	Capacitance Change	≦±10% of initial value				
	Dissipation Factor	≦initial specified value				
	Leakage current	≦initial specified value				

DIMENSIONS (mm)

D	L	A	H	I	W	P	K
8.0	10.2	8.3	10.0MAX	3.4	0.90±0.2	3.1	0.70±0.20
10.0	10.2	8.3	12.0MAX	3.5	0.90±0.2	4.6	0.70±0.20



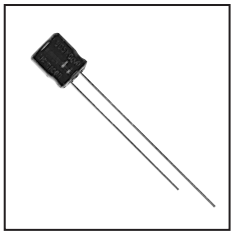
( )reference size

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 125°C 120Hz

V(DC) / Item / μF	10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
10									8x10.2	34
22									8x10.2	50
33									8x10.2	60
47							8x10.2	75	10x10.2	85
100			8x10.2	70	8x10.2	75	10x10.2	120		
220	8x10.2	90	10x10.2	120	10x10.2	120				
330	10x10.2	120								

- For general purposes series with 5mm height
- Corresponding product to RoHS

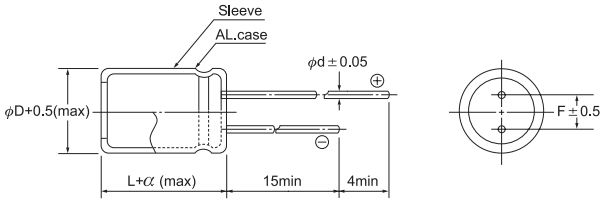


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-40 ~ +85°C							
Rated Working Voltage	4 ~ 50VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	4	6.3	10	16	25	35	50
	S.V.	5	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	4	6.3	10	16	25	35	50
	tan δ	0.35	0.24	0.20	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	4	6.3	10	16	25	35	50
	-25°C / +20°C	7	4	3	2	2	2	2
	-40°C / +20°C	15	8	6	4	4	3	3
Load Life	After 1000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At + 85°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)							

DIMENSIONS (mm)

φD	4	5	6.3	8
F	1.5	2.0	2.5	2.5
d	0.45	0.45	0.45	0.45
α	1.0	1.0	1.0	1.0



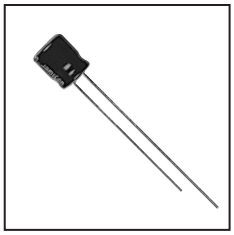
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / μF \ Item	4		6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0												→	4x5	9
2.2												→	4x5	14
3.3												→	4x5	17
4.7						→	4x5	16	4x5	17	4x5	19	4x5	20
6.8				→	4x5	17	4x5	19	4x5	21	5x5	26	6.3x5	32
10		→	4x5	19	4x5	21	4x5	24	4x5	25	5x5	31	6.3x5	39
15		→	4x5	24	4x5	26	5x5	33	5x5	35	6.3x5	44	6.3x5	48
22	4x5	24	4x5	29	4x5(5x5)	31(36)	5x5	40	5x5(6.3x5)	43(49)	6.3x5	55	6.3x5(8x5)	60(70)
33	4x5	29	4x5(5x5)	35(40)	4x5(5x5)	38(44)	5x5(6.3x5)	49(55)	6.3x5	60	6.3x5(8x5)	65(75)	8x5	85
47	4x5	35	5x5	48	5x5(6.3x5)	50(60)	6.3x5	65	6.3x5(8x5)	70(85)	8x5	90		
68	5x5	47	6.3x5	65	6.3x5	70	6.3x5	80	8x5	100				
100	6.3x5	65	6.3x5	80	6.3x5(8x5)	90(100)	6.3x5(8x5)	100(110)	8x5	120				
220	6.3x5	100	8x5	140	8x5	150								
330	8x5	140	8x5	170										

All blank voltage on sleeve marking is the same voltage as" → "point to.

- Wide temperature range series with 5mm height.
- Corresponding product to RoHS

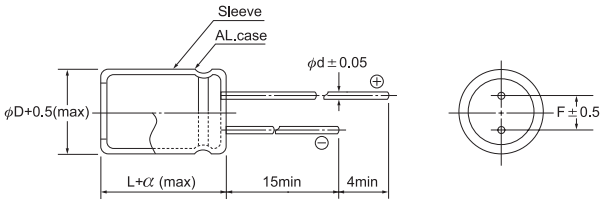


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	4 ~ 50VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	4	6.3	10	16	25	35	50
	S.V.	5	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	4	6.3	10	16	25	35	50
	tan δ	0.37	0.28	0.24	0.20	0.16	0.13	0.12
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	4	6.3	10	16	25	35	50
	-25°C / +20°C	6	3	3	2	2	2	2
	-40°C / +20°C	12	8	5	4	3	3	3
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±25% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At + 105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)							

DIMENSIONS (mm)

φD	4	5	6.3
F	1.5	2.0	2.5
d	0.45	0.45	0.45
α	1.0	1.0	1.0



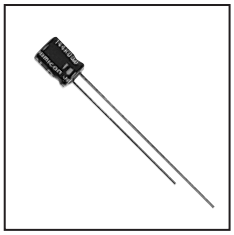
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	4		6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0												→	4x5	8
2.2												→	4x5	11
3.3												→	4x5	14
4.7								→	4x5	14	4x5	15	5x5	19
10						→	4x5	19	5x5	23	5x5	25	6.3x5	31
22	4x5	19	4x5	23	5x5	29	5x5	32	6.3x5	39	6.3x5	42		
33	5x5	26	5x5	32	5x5	35	6.3x5	45	6.3x5	48				
47	5x5	32	5x5	38	6.3x5	48	6.3x5	55						
100	6.3x5	55	6.3x5	65										

All blank voltage on sleeve marking is the same voltage as" → "point to.

- Non polarity series with 5mm height
- Corresponding product to RoHS

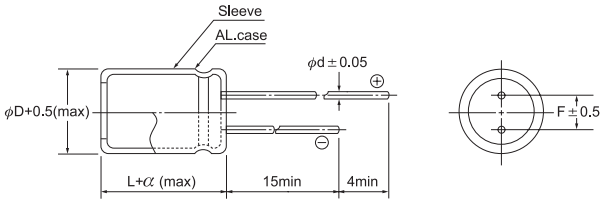


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +85°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.05CV or 10 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.24	0.20	0.17	0.17	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	10	8	6	4	3	3
Load Life	After 1000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage) (The polarity need to exchange every 250 hours)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +85°C no voltage application after 500 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)						

DIMENSIONS (mm)

φD	4	5	6.3
F	1.5	2.0	2.5
d	0.45	0.45	0.45
α	1.0	1.0	1.0



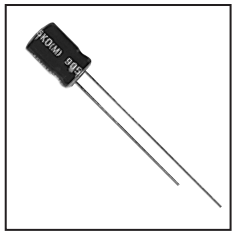
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0										→	4x5	8.4
2.2										→	5x5	13
3.3										→	5x5	17
4.7				→	4x5	12	5x5	16	5x5	18	6.3x5	20
10	4x5	14	4x5	17	5x5	23	6.3x5	27	6.3x5	29		
22	5x5	28	6.3x5	33	6.3x5	37						
33	6.3x5	37	6.3x5	41	6.3x5	49						
47	6.3x5	45										

All blank voltage on sleeve marking is the same voltage as" → "point to.

- For general purposes series with 7mm height
- Corresponding product to RoHS

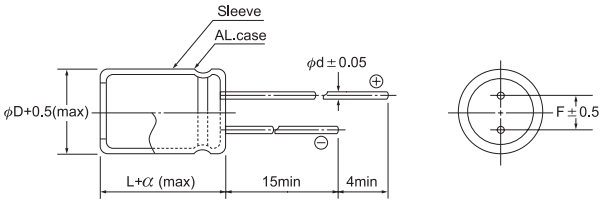


SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-40 ~ +85°C								
Rated Working Voltage	4 ~ 63VDC								
Capacitance Tolerance (120Hz 20°C)	±20%(M)								
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)								
Surge Voltage (20°C)	W.V.	4	6.3	10	16	25	35	50	63
	S.V.	5	8	13	20	32	44	63	79
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	4	6.3	10	16	25	35	50	50~63
	tan δ	0.35	0.24	0.20	0.16	0.14	0.12	0.10	0.10
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	4	6.3	10	16	25	35	50~63	
	-25°C / +20°C	6	4	3	2	2	2	2	
	-40°C / +20°C	12	8	6	4	4	3	3	
Load Life	After 1000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)								
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +85°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)								

DIMENSIONS (mm)

φD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
d	0.45	0.45	0.45	0.50
α	1.0	1.0	1.0	1.0



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	4		6.3		10		16		25		35		50		63	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0												→	4x7	12	4x7	12
2.2												→	4x7	18	4x7	18
3.3												→	4x7	22	5x7	25
4.7								→	4x7	22	4x7	24	4x7	26	6.3x7	34
10						→	4x7	30	4x7	32	5x7	39	6.3x7	49	6.3x7	49
22		→	4x7	36	4x7	40	4x7	44	5x7	55	6.3x7	65	8x7	85		
33	4x7	37	4x7	44	4x7	49	5x7	60	6.3x7	75	8x7	95	8x7	100		
47	4x7	44	5x7	60	5x7	65	5x7	75	8x7	100	8x7	110				
100	5x7	70	6.3x7	100	6.3x7	110	6.3x7	120	8x7	150						
220	6.3x7	120	8x7	170	8x7	190	8x7	210								
330	8x7	170	8x7	210												

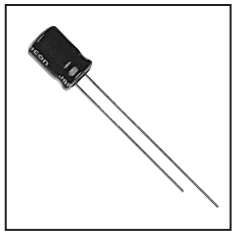
All blank voltage on sleeve marking is the same voltage as" → "point to.

SH Series

7mmL 105°C, Wide Temperature Range

JAMICON

- Wide temperature range series with 7mm height.
- Corresponding product to RoHS

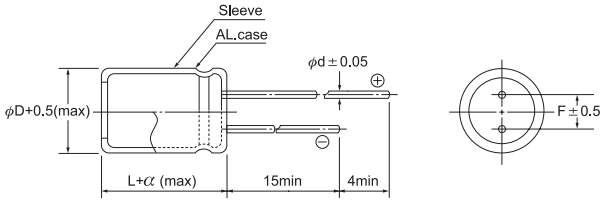


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes				I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.24	0.21	0.18	0.15	0.13	0.12
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	3	2	2	2	2	2
	-40°C / +20°C	6	5	4	3	3	3
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)						

DIMENSIONS (mm)

φD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
d	0.45	0.45	0.45	0.50
α	1.0	1.0	1.0	1.0



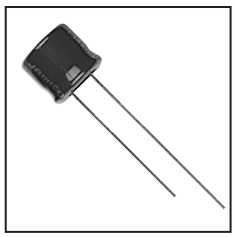
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0										→	4x7	11
2.2										→	4x7	19
3.3										→	4x7	24
4.7								→	4x7	24	5x7	29
10				→	4x7	29	5x7	33	5x7	36	6.3x7	45
22	4x7	34	5x7	41	5x7	46	6.3x7	51	6.3x7	60	8x7	75
33	5x7	46	5x7	50	6.3x7	65	6.3x7	70	8x7	85		
47	5x7	55	6.3x7	70	6.3x7	75	8x7	95				
100	6.3x7	90	6.3x7	100	6.3x7	110						
220	8x7	160	8x7	170								

All blank voltage on sleeve marking is the same voltage as" → "point to.

- High ripple current, low impedance series with 7mm height.
- Corresponding product to RoHS

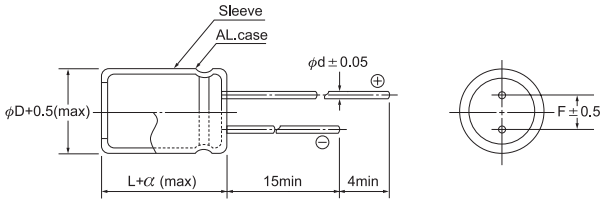


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 3 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	3	3	3	2	2	2
	-55°C / +20°C	6	6	6	4	4	4
Load Life	After 1000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)						

DIMENSIONS (mm)

φD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
d	0.45	0.45	0.45	0.50
α	1.0	1.0	1.0	1.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

Frequency(Hz)	60	120	400	1k	10k	100k
W.V.	Multiplier					
6.3~16V	0.45	0.60	0.83	0.94	0.98	1.00
25~35V	0.38	0.50	0.75	0.90	0.97	1.00
50V	0.36	0.46	0.70	0.88	0.94	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3				10			
	DxL	IMP.		R.C.	DxL	IMP.		R.C.
		20°C	-10°C			20°C	-10°C	
15				→	4x7	1.592	4.775	80
22	4x7	1.191	3.572	80	4x7	1.184	3.552	95
27	4x7	1.051	3.153	90	4x7	1.045	3.135	100
33	4x7	0.926	2.778	100	4x7	0.921	2.763	110
39	4x7	0.839	2.518	110	5x7	0.835	2.505	140
47	5x7	0.629	1.886	130	5x7	0.568	1.705	160
56	5x7	0.561	1.682	150	5x7	0.507	1.521	170
68	5x7	0.489	1.467	160	6.3x7	0.442	1.326	210
82	6.3x7	0.450	1.351	200	6.3x7	0.407	1.222	230
100	6.3x7	0.406	1.219	220	6.3x7	0.367	1.102	260
120	6.3x7	0.346	1.039	250	6.3x7	0.313	0.939	280
150	6.3x7	0.283	0.850	280	8x7	0.256	0.768	370
180	8x7	0.246	0.739	350				
220	8x7	0.210	0.630	390				

V(DC) / Item / μF	16				25			
	DxL	IMP.		R.C.	DxL	IMP.		R.C.
		20°C	-10°C			20°C	-10°C	
10	4x7	1.416	4.249	75	4x7	1.332	3.995	95
15	4x7	1.039	3.116	90	4x7	0.977	2.930	110
18	4x7	0.897	2.692	100	5x7	0.851	2.552	140
22	4x7	0.772	2.317	100	5x7	0.726	2.179	150
27	5x7	0.682	2.046	130	6.3x7	0.641	1.923	190
33	5x7	0.601	1.802	140	6.3x7	0.565	1.695	210
39	6.3x7	0.545	1.634	180	6.3x7	0.512	1.537	220
47	6.3x7	0.482	1.446	190	6.3x7	0.453	1.360	250
56	6.3x7	0.430	1.290	210	8x7	0.404	1.213	310
68	6.3x7	0.375	1.125	230	8x7	0.352	1.057	340
82	6.3x7	0.345	1.036	260				
100	6.3x7	0.312	0.935	280				

V(DC) / Item / μF	35				50			
	DxL	IMP.		R.C.	DxL	IMP.		R.C.
		20°C	-10°C			20°C	-10°C	
4.7				→	4x7	2.758	8.274	90
6.8				→	5x7	2.383	7.149	110
10	5x7	0.998	2.994	110	6.3x7	0.499	1.496	150
15	5x7	0.732	2.195	140	6.3x7	0.366	1.097	180
18	6.3x7	0.638	1.913	170	6.3x7	0.319	0.956	200
22	6.3x7	0.544	1.633	180	8x7	0.272	0.816	240
27	6.3x7	0.480	1.441	200	8x7	0.240	0.720	270
33	8x7	0.423	1.270	250	8x7	0.212	0.635	290
39	8x7	0.384	1.151	270				
47	8x7	0.340	1.019	300				

All blank voltage on sleeve marking is the same voltage as" → "point to.

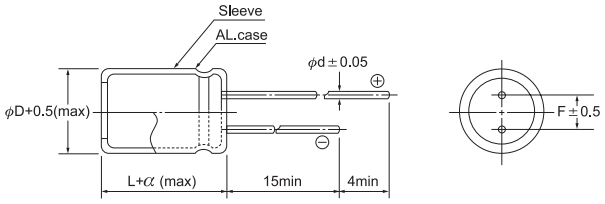
- Endurance : 105°C, 5000hrs
- Recommended Applications : Apply to the requirement of long life, low impedance, high reliability, etc.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.03CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.50	0.40	0.35	0.30	0.25	0.25
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	8	6	4	3	3	3
Load Life	After 5000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±30% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the following limits. (with voltage treatment)						
	Capacitance Change	≦±25% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					

DIMENSIONS (mm)

φD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
d	0.45	0.45	0.45	0.50
α	1.0	1.0	1.0	1.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Multiplier	1.90	1.75	1.40	1.00

Frequency(Hz)	120	1k	10k	100k
1~3.3μF	0.20	0.66	0.90	1.00
4.7~6.8μF	0.35	0.70	0.90	1.00
10~150μF	0.40	0.75	0.90	1.00
220~270μF	0.50	0.85	0.94	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
15							4x5	5.4	37
22				4x5	5.4	37	4x7	4.5	44
							5x5	3.1	57
33	4x5	5.4	37	4x7	4.5	44	5x7	2.5	70
				5x5	3.1	57			
47	4x7	4.5	44	5x7	2.5	70	6.3x5	1.7	82
56	5x5	3.1	57						
68				6.3x5	1.7	82	6.3x7	1.3	116
82	5x7	2.5	70						
100	6.3x5	1.7	82	6.3x7	1.3	116	8x5	1.5	110
150	6.3x7	1.3	116	8x5	1.5	110	8x7	0.9	162
220	8x5	1.5	110	8x7	0.9	162			
270	8x7	0.9	162						

V(DC) / Item / μF	25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
1							4x5	19	18
2.2							4x5	14	22
3.3							4x5	11	26
4.7				4x5	5.4	37	4x7	9	30
							5x5	6	40
6.8				4x7	4.5	44	5x7	4.8	50
10	4x5	5.4	37	5x5	3.1	57	6.3x5	2.9	63
				5x7	2.5	70			
15	4x7	4.5	44				6.3x7	2.2	90
	5x5	3.1	57						
22	5x7	2.5	70	6.3x5	1.7	82	8x5	2.6	84
				6.3x7	1.3	116	8x7	1.6	120
33	6.3x5	1.7	82	8x5	1.5	110			
47				8x7	0.9	162			
56	6.3x7	1.3	116						
68	8x5	1.5	110						
100	8x7	0.9	162						

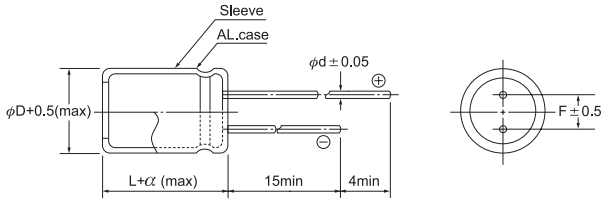
- Non polanity series with 7mm height.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +85°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.05CV or 10 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50
	tan δ	0.24	0.20	0.17	0.15	0.12	0.12
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3	10	16	25	35	50
	-25°C / +20°C	4	3	2	2	2	2
	-40°C / +20°C	10	8	6	4	3	3
Load Life	After 1000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage) (The polarity need to exchange every 250 hours)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦150% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +85°C no voltage application after 500 hours the capacitor shall meet the following limits. (with voltage treatment)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦200% of initial specified value					

DIMENSIONS (mm)

φD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
d	0.45	0.45	0.45	0.5
α	1.0	1.0	1.0	1.0



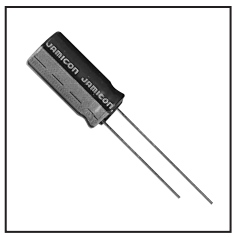
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	6.3		10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0										→	4x7	9
2.2								→	4x7	14	5x7	16
3.3						→	4x7	15	5x7	19	5x7	19
4.7				→	4x7	17	5x7	20	5x7	23	6.3x7	26
10		→	4x7	23	5x7	28	6.3x7	34	6.3x7	38	8x7	44
22	5x7	35	5x7	38	6.3x7	47	6.3x7	50	8x7	65	8x7	65
33	5x7	43	6.3x7	55	6.3x7	60	8x7	70	8x7	80		
47	6.3x7	60	6.3x7	65	6.3x7	70	8x7	85				
100	8x7	100	8x7	110	8x7	120						

All blank voltage on sleeve marking is the same voltage as" → "point to.

- SK series has high value of CV for general purposes.
- Corresponding product to RoHS



SPECIFICATION

Item	Characteristic														
Operation Temperature Range	-40 ~ +85°C							-40 ~ +85°C			-25 ~ +85°C				
Rated Working Voltage	6.3 ~ 100VDC							160 ~ 400VDC			450VDC				
Capacitance Tolerance (120Hz 20°C)	±20%(M)														
Leakage Current (20°C)	6.3~100 VDC I ≦0.01CV or 4 (μA)							160~450 VDC I ≦0.03CV +40 (μA)max							
	*Whichever is greater after 3 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)														
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	S.V.	8	13	20	32	44	63	79	125	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF														
	W.V.	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.08	0.15	0.15	0.15	0.20	0.20	0.20
Low Temperature Stability	Impedance ratio at 120Hz														
	Rated Voltage (V)	6.3		10		16		25		35~100		160~250		350~400	450
	-25°C / +20°C	4		3		2		2		2		3		6	15
	-40°C / +20°C	8		6		4		3		3		6		6	—
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)														
	Capacitance Change	≦±20% of initial value													
	Dissipation Factor	≦150% of initial specified value													
	Leakage current	≦initial specified value													
Shelf Life	At +85°C no voltage application after 1000 hours the capacitor shall meet the following limits. (with voltage treatment)														
	Capacitance Change	≦±20% of initial value													
	Dissipation Factor	≦200% of initial specified value													
	Leakage current	≦200% of initial specified value													

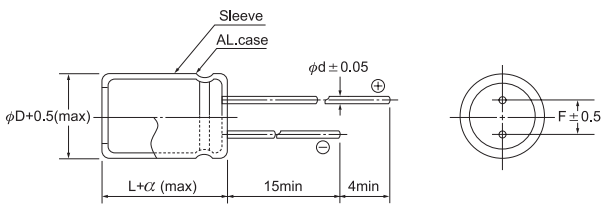
DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0

RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85
Multiplier	1.25	1.14	1.00

Frequency(Hz)	60	120	1k	≧10k
W.V.	Multiplier			
6.3~25V	0.85	1.00	1.10	1.20
35~100V	0.80	1.00	1.15	1.25
160~250V	0.75	1.00	1.25	1.40
350~450V	0.70	1.00	1.30	1.50



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	6.3		10		16	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
47				→	5x11	130
100	5x11	160	5x11	170	6.3x11	210
220	5x11	240	5x11	250	6.3x11	310
	6.3x11	270	6.3x11	290	8x11	370
330	6.3x11	330	6.3x11	350	8x11	450
	8x11	380	8x11	410	10x12.5	470
470	6.3x11	390	6.3x11	420	8x11	540
	8x11	460	8x11	490	10x12.5	560
1000	8x11	670	10x12.5	760	10x16	920
	10x12.5	700	10x16	840	10x20	1010
2200	10x16	1110	10x20	1310	12.5x20	1510
	10x20	1220	12.5x20	1390	12.5x25	1660
3300	10x20	1440	12.5x20	1630	12.5x25	1930
	12.5x20	1530	12.5x25	1800	16x25	1940
4700	12.5x20	1730	12.5x25	2020	16x25	2160
	12.5x25	1910	16x25	2030	16x32	2390
6800	12.5x25	2160	16x25	2270	16x32	2650
	16x25	2170	16x32	2510	18x36	2980
8200	16x25	2280	16x32	2630	16x36	2910
	16x32	2520	18x36	2960	18x40	3280
10000	16x25	2390	16x36	2900	18x36	3230
	16x32	2640	18x36	3090	18x40	3400
15000	16x36	3050	18x36	3360	22x40	4090
	18x36	3260	18x40	3540	22x50	4520
22000	18x40	3680	22x50	4650	25x50	5120

V(DC) / Item / μF	25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
10	5x11	60	5x11	70	5x11	75
22	5x11	95	5x11	100	5x11	110
33	5x11	110	5x11	120	5x11	140
	6.3x11	130	6.3x11	140	6.3x11	150
47	5x11	140	5x11	150	6.3x11	180
	6.3x11	160	6.3x11	170	8x11	210
100	6.3x11	230	6.3x11	240	8x11	310
	8x11	260	8x11	290	10x12.5	330
220	8x11	390	8x11	420	10x12.5	490
	10x12.5	410	10x12.5	450	10x16	540
330	8x11	480	10x12.5	550	10x16	670
	10x12.5	510	10x16	610	10x20	730
470	10x12.5	600	10x16	720	10x20	820
	10x16	670	10x20	800	12.5x20	930
1000	10x20	1080	12.5x20	1240	12.5x25	1500
	12.5x20	1150	12.5x25	1370	16x25	1510
2200	12.5x25	1760	16x25	1890	16x36	2390
	16x25	1770	16x32	2090	18x36	2550
3300	16x25	2040	16x36	2530	18x36	2890
	16x32	2260	18x36	2700	18x40	3050
4700	16x32	2500	18x36	2960	22x45	3880
	18x36	2810	18x40	3120		
6800	18x36	3100	22x45	4020		
	18x40	3270			25x50	4730
8200	22x45	4000	22x50	4350		
10000	22x50	4330	25x50	4800		
15000	25x50	4970				

All blank voltage on sleeve marking is the same voltage as" → "point to.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

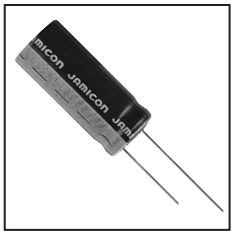
V(DC) / Item / μF	63		100	
	DxL	R.C.	DxL	R.C.
10	5x11	75	6.3x11	95
22	5x11	110	6.3x11	140
	6.3x11	130	8x11	160
33	6.3x11	150	8x11	200
	8x11	180	10x12.5	210
47	6.3x11	180	10x12.5	250
	8x11	210	10x16	280
100	10x12.5	330	10x20	450
	10x16	370	12.5x20	480
220	10x16	540	12.5x25	790
	10x20	600	16x25	790
330	10x20	730	12.5x25	960
	12.5x20	780	16x25	970
470	12.5x20	930	16x25	1160
	12.5x25	1030	16x32	1280
1000	16x25	1510	18x40	2220
	16x32	1670	22x35	2340
2200	22x35	2830	25x50	3900
3300	22x50	3760		
4700	25x50	4370		

All blank voltage on sleeve marking is the same voltage as" ⟶ "point to.

V(DC) / Item / μF	160		200		250	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.47	6.3x11	17	6.3x11	18	6.3x11	20
1	6.3x11	25	6.3x11	27	6.3x11	29
2.2	6.3x11	37	6.3x11	39	6.3x11	43
3.3	6.3x11	45	6.3x11	48	8x11	60
4.7	6.3x11	55	8x11	65	8x11	75
10	8x11	90	10x12.5	100	10x16	120
22	10x16	160	10x20	190	12.5x20	220
33	10x20	210	12.5x20	250	12.5x20	270
47	12.5x20	270	12.5x20	290	12.5x25	350
100	12.5x25	440	16x25	470	16x32	570
220	16x36	760	18x40	920		
	22x30	850	22x30	910	22x35	1060
330	18x40	1050				
	22x30	1040	22x40	1260	22x45	1450
470	22x40	1400	22x45	1590	25x45	1850
560	22x45	1610	22x50	1820	25x50	2120
680	22x50	1860	25x50	2150		
820	25x50	2200				

V(DC) / Item / μF	350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.47	8x11	20	8x11	20	8x11	20
1	8x11	29	8x11	30	8x11	29
2.2	8x11	43	8x11	44	10x12.5	45
3.3	10x12.5	55	10x12.5	55	10x16	60
4.7	10x12.5	65	10x16	75	10x18	75
10	10x20	120	12.5x20	130	12.5x20	130
22	12.5x20	190	12.5x25	210	16x25	210
33	12.5x25	250	16x25	260	16x32	280
47	16x25	300	16x32	350	18x36	380
			22x30	410		
100	18x36	550	18x36	570	18x36	550
	22x35	610	22x40	670		
150	22x40	790	25x50	970		
220	22x50	1060				

- High temperature 105°C and high reliability
- Corresponding product to RoHS



SPECIFICATION

Item	Characteristic														
Operation Temperature Range	-55 ~ +105°C			-40 ~ +105°C					-25 ~ +105°C						
Rated Working Voltage	6.3 ~ 100VDC			160 ~ 400VDC					450VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)														
Leakage Current (20°C)	6.3~100 VDC I ≦0.01CV or 4 (μA)							160~450 VDC I ≦0.03CV +40 (μA)max							
	*Whichever is greater after 3 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)														
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	S.V.	8	13	20	32	44	63	79	125	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF														
	W.V.	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	tan δ	0.24	0.20	0.17	0.15	0.12	0.10	0.10	0.08	0.15	0.15	0.15	0.20	0.20	0.20
Low Temperature Stability	Impedance ratio at 120Hz														
	Rated Voltage (V)	6.3		10		16		25		35~100		160~250		350~400	450
	-25°C / +20°C	4		3		2		2		2		3		6	15
	-40°C / +20°C	10		8		6		4		3		4		10	—
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)														
	Capacitance Change	≦±25% of initial value for 6.3~16 W.V., ≦±20% of initial value for 25~450 W.V.													
	Dissipation Factor	≦200% of initial specified value													
	Leakage current	≦initial specified value													
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)														

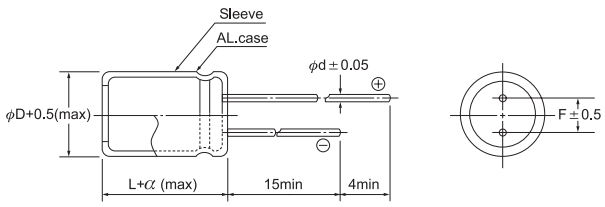
DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18	20	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0	12.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8	1.0	1.0
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0

RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	85	105
Multiplier	1.75	1.40	1.00

Frequency(Hz)	60	120	1k	≧10k
W.V.	Multiplier			
6.3~25V	0.85	1.00	1.10	1.20
35~100V	0.80	1.00	1.15	1.25
160~250V	0.75	1.00	1.25	1.40
350~450V	0.70	1.00	1.30	1.80



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	6.3		10		16	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
47				→	5x11	90
100	5x11	110	5x11	120	5x11	130
220	5x11	160	5x11	180	6.3x11	220
330	6.3x11	220	6.3x11	250	6.3x11	270
					8x11	310
470	6.3x11	270	6.3x11	290	8x11	370
1000	8x11	460	10x12.5	560	10x12.5	600
					10x16	670
2200	10x16	810	10x16	880	12.5x20	1180
			10x20	970		
3300	10x20	1050	12.5x20	1280	12.5x25	1510
4700	12.5x20	1350	12.5x25	1590	16x25	1830
6800	12.5x25	1680	16x25	1940	16x25	2040
					16x32	2120
10000	16x25	2020	16x32	2210	16x36	2430
			16x36	2330	18x36	2590
15000	16x32	2200	16x36	2540	18x40	2960
	16x36	2320	18x36	2710	20x40	3040
22000	18x36	2660	18x40	3050	22x40	3390
	18x40	2810	20x40	3130	22x50	3740
33000	22x40	3230	22x50	3840	25x50	4200
	22x50	3560				
47000	22x50	3700	25x50	4260		
68000	22x50	3820				

V(DC) / Item / μF	25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
1				→	5x11	17
2.2				→	5x11	25
3.3				→	5x11	31
4.7				→	5x11	36
10	5x11	43	5x11	49	5x11	55
22	5x11	65	5x11	70	5x11	80
33	5x11	80	5x11	90	5x11	95
47	5x11	95	5x11	110	6.3x11	130
68	5x11	110	6.3x11	140	6.3x11	160
100	5x11	140	6.3x11	170	8x11	220
	6.3x11	160				
220	6.3x11	230	8x11	300	10x12.5	370
	8x11	270				
330	8x11	330	10x12.5	410	10x16	500
470	10x12.5	440	10x16	550	10x20	660
1000	10x16	710	12.5x20	1000	12.5x25	1210
	10x20	790				
2200	12.5x25	1370	16x25	1640	16x32	1850
					16x36	1950
3300	16x25	1730	16x32	1960	18x36	2360
			16x36	2070		
4700	16x32	1990	16x36	2260		
			18x36	2410		
6800	16x36	2330	18x40	2780	22x50	3490
	18x36	2480				
10000	18x40	2820	22x50	3540	25x50	3930
	20x40	2890				
15000	22x50	3620	22x50	3750		
22000	25x50	4080				

RADIAL TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

μF \ V(DC) / Item	63		100	
	DxL	R.C.	DxL	R.C.
10	5x11	55	5x11	60
			6.3x11	65
22	5x11	80	6.3x11	100
33	6.3x11	110	8x11	140
47	6.3x11	130	8x15	190
			10x12.5	190
68	8x11	180	10x12.5	230
100	8x11	220	10x16	310
	10x12.5	250	10x20	340
220	10x16	410	12.5x20	570
			12.5x25	630
330	10x20	550	12.5x25	780
470	12.5x20	750	16x25	950
1000	16x25	1310	18x36	1630
			18x40	1720
2200	18x36	2080	22x50	2730
4700	22x50	3220		
6800	25x50	3740		

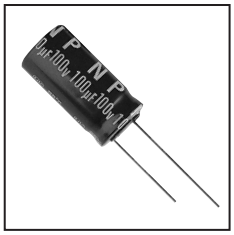
μF \ V(DC) / Item	160		200		250	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.47	6.3x11	12	6.3x11	13	6.3x11	14
1	6.3x11	18	6.3x11	19	6.3x11	21
2.2	6.3x11	26	6.3x11	28	6.3x11	31
3.3	6.3x11	32	6.3x11	34	6.3x11	37
					8x11	44
4.7	6.3x11	38	6.3x11	41	8x11	50
			8x11	48		
10	8x11	65	8x11	70	10x12.5	85
			10x12.5	80	10x16	95
22	10x12.5	110	10x16	130	10x20	150
	10x16	120	10x20	140	12.5x20	170
33	10x16	150	10x20	170	10x25	210
	10x20	160	12.5x20	200	12.5x20	210
47	10x20	190	12.5x20	240	12.5x20	260
	12.5x20	220			12.5x25	280
68	12.5x20	260	12.5x25	310	16x25	350
100	12.5x25	350	16x25	390	16x25	420
					16x32	440
220	16x32	560	16x36	640	18x36	740
	16x36	590	18x40	720		
330	18x36	770	18x40	880	20x40	980
	18x40	820				
470	18x40	970	22x40	1130	22x50	1360
	22x40	1050				
1000	25x50	1820				

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

μF \ V(DC) / Item	350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
0.47	8x11	14	8x11	15	10x12.5	15
1	8x11	21	8x11	21	10x12.5	22
2.2	8x11	31	8x11	32	8x11	29
			10x12.5	35	10x20	39
3.3	8x11	37	8x11	39	10x16	44
	10x12.5	42	10x12.5	43	12.5x20	55
4.7	8x11	45	8x11	46	10x16	50
	10x12.5	50	10x16	55	12.5x20	65
10	10x16	80	10x16	85	10x20	85
	10x20	90	12.5x20	100	16x25	110
22	12.5x20	150	12.5x25	170	12.5x25	160
	12.5x25	170			16x32	170
33	12.5x20	180	16x25	220	16x32	200
	16x25	210	16x32	220	18x36	230
47	16x25	250	16x25	270	16x36	260
	16x36	270	18x36	300		
68	16x32	310	16x32	320	18x36	330
100	18x36	430	18x36	440	18x40	420
	18x40	450	20x40	480		
220	22x50	820	25x50	880	25x50	800
330	25x50	1080				

- Standard non polarity series for using in polarity reversal circuits.
- Corresponding product to RoHS

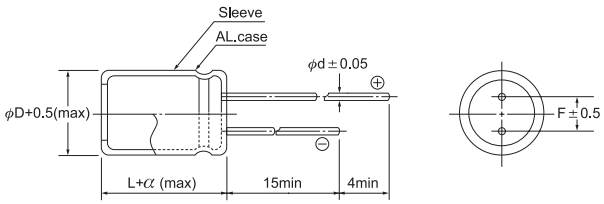


SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-40 ~ +85°C								
Rated Working Voltage	6.3 ~ 100VDC								
Capacitance Tolerance (120Hz 20°C)	±20%(M)								
Leakage Current (20°C)	I ≦0.04CV +4 (μA) *Whichever is greater after 5 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)								
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	100
	S.V.	8	13	20	32	44	63	79	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF								
	W.V.	6.3	10	16	25	35	50	63	100
	tan δ	0.24	0.20	0.17	0.15	0.12	0.12	0.12	0.12
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	6.3	10	16	25	35~100			
	-25°C / +20°C	4	3	2	2	2			
	-40°C / +20°C	10	8	6	4	3			
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage) (The polarity need to exchange every 250 hours)								
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦150% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +85°C no voltage application after 500 hours the capacitor shall meet the following limits. (with voltage treatment)								
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦200% of initial specified value							

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	6.3		10		16	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
10				→	5x11	47
22			5x11	65	6.3x11	80
33	5x11	70	6.3x11	90	8x11	110
47	6.3x11	100	6.3x11	110	8x11	140
100	8x11	170	8x11	180	10x16	230
220	10x12.5	260	10x16	310	10x20	380
330	10x16	350	10x20	420	12.5x20	460
470	10x20	460	12.5x20	500	12.5x25	600
1000	12.5x25	740	16x32	950	16x32	1030
2200	16x32	1240	16x36	1350	16x32	1450
3300	16x25	1540	16x32	1500	18x36	1900
4700	16x32	1660	18x36	2000		
6800	18x36	2120				

V(DC) / Item / μF	25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
1				→	5x11	18
2.2				→	5x11	26
3.3				→	6.3x11	37
4.7	5x11	34	5x11	38	6.3x11	44
10	6.3x11	55	6.3x11	65	8x11	75
22	8x11	100	8x11	110	10x12.5	120
33	8x11	120	10x12.5	140	10x16	160
47	10x12.5	150	10x16	190	10x20	210
100	10x20	270	12.5x20	300	12.5x25	330
220	12.5x20	400	12.5x25	490	16x32	580
330	16x25	570	16x25	640	16x36	750
470	16x32	760	16x32	840	16x32	840
1000	16x32	1100	16x36	1300		
2200	18x36	1730				

V(DC) / Item / μF	63		100	
	DxL	R.C.	DxL	R.C.
10	8x11	75	10x16	85
22	10x16	130	12.5x20	140
33	10x20	170	12.5x25	190
47	12.5x20	210	16x25	240
100	16x25	350	16x32	390
220	16x32	580	18x36	650
330	18x36	800	18x36	800
470	18x36	950	18x40	1000

All blank voltage on sleeve marking is the same voltage as" → "point to.

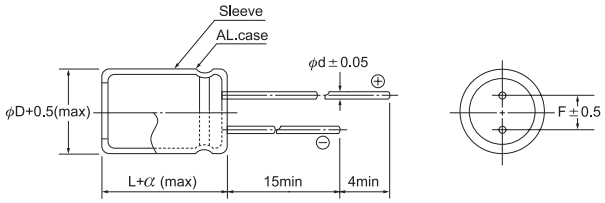
- Standard low leakage current series.
- Suitable for Hi-Fi pre-amplifiers and TV oscillation loop circuits.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +85°C						
Rated Working Voltage	10 ~ 63VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M) +30% -10%(Q)						
Leakage Current (20°C)	I ≦0.002CV or 1 (μA) whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	10	16	25	35	50	63
	S.V.	13	20	32	44	63	79
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	10	16	25	35	50	63
	tan δ	0.20	0.16	0.14	0.12	0.10	0.10
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	10	16	25	35	50	63
	-25°C / +20°C	4	4	4	4	4	4
	-40°C / +20°C	8	8	8	8	8	8
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±15% of initial value					
	Dissipation Factor	≦150% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +85°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)						

DIMENSIONS (mm)

ϕD	5	6.3	8	10	12.5
F	2.0	2.5	3.5	5.0	5.0
d	0.5	0.5	0.6	0.6	0.6
α	1.5	1.5	1.5	1.5	2.0



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 85°C 120Hz

V(DC) / Item / μF	10		16		25	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
10		→	5x11	48	6.3x11	60
22	5x11	65	6.3x11	80	8x11	100
33	6.3x11	90	6.3x11	100	8x11	130
47	6.3x11	110	8x11	140	10x12.5	160
100	8x11	180	10x12.5	210	10x16	250
220	10x16	310	10x20	390	12.5x20	410
330	10x20	420	12.5x20	470	12.5x25	560
470	12.5x20	500	12.5x20	560		
1000	12.5x25	810				

V(DC) / Item / μF	35		50		63	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
10	6.3x11	65	8x11	80	8x11	80
22	8x11	110	10x12.5	130	10x16	140
33	10x12.5	140	10x16	170	10x16	170
47	10x12.5	170	10x16	210	10x20	230
100	10x20	300	12.5x20	330	12.5x25	360
220	12.5x25	490				

All blank voltage on sleeve marking is the same voltage as" → "point to.

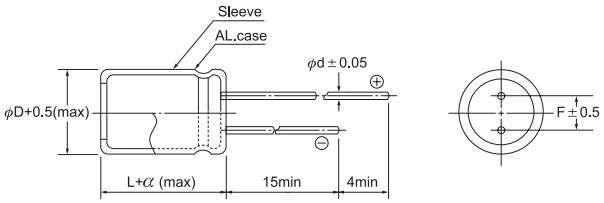
- Has a high ripple current, low IMP & low ESR and long life characteristics.
- Suitable for output of M/B and switching power supplies.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic				
Operation Temperature Range	-40 ~ +105°C				
Rated Working Voltage	6.3 ~ 25VDC				
Capacitance Tolerance (120Hz 20°C)	±20%(M)				
Leakage Current (20°C)	I ≦0.03CV or 3 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)				
Surge Voltage (20°C)	W.V.	6.3	10	16	25
	S.V.	8	13	20	32
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF				
	W.V.	6.3	10	16	25
	tan δ	0.22	0.19	0.16	0.16
Low Temperature Stability	Impedance ratio at 120Hz				
	Rated Voltage (V)	6.3	10	16	25
	-25°C / +20°C	2	2	2	2
	-40°C / +20°C	3	3	3	3
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)				
	Capacitance Change	≦±25% of initial value			
	Dissipation Factor	≦200% of initial specified value			
	Leakage current	≦initial specified value			
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)				

DIMENSIONS (mm)

φD	8	10	12.5
F	3.5	5.0	5.0
d	0.6	0.6	0.6
α	1.5	1.5	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦65	85	105
Multiplier	2.1	1.7	1.0

Frequency(Hz)	120	1k	10k	≧100k
Multiplier	0.50	0.80	0.90	1.00

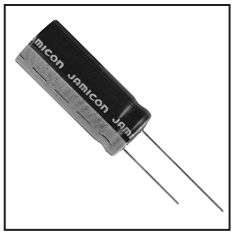
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max E.S.R. : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10		
	DxL	E.S.R.	R.C.	DxL	E.S.R.	R.C.
680				8x14	0.036	1230
820	8x11	0.036	1230			
1000	8x16	0.028	1560	8x16	0.028	1660
				10x12.5	0.028	1700
1200	8x16	0.028	1710			
1500	8x20	0.018	2040	8x20	0.019	2150
	10x12.5	0.020	1760	10x16	0.019	2200
1800	10x16	0.018	2140	10x20	0.013	2660
2200	10x20	0.015	2530	10x23	0.012	3000
3300	10x23	0.012	3110			
3900	10x26	0.012	3480			
4700	12.5x26	0.014	3810			

V(DC) / Item / μF	16			25		
	DxL	E.S.R.	R.C.	DxL	E.S.R.	R.C.
470	8x11	0.036	1160	10x16	0.019	2030
680	8x16	0.028	1610			
	10x12.5	0.028	1640			
1000	8x20	0.019	2160			
	10x16	0.019	2210			
1500	10x20	0.013	2830			
1800	10x23	0.012	3300			

- Features : Low Impedance, high ripple current long life
- Recommended Applications : Used switching requlator applications in computers. Especially for high frequency.
- Corresponding product to RoHS

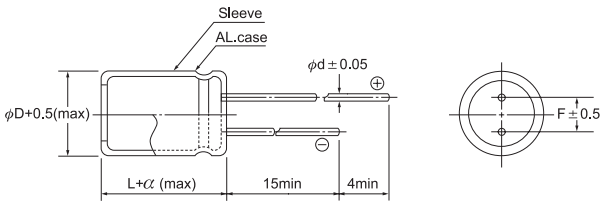


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-40 ~ +105°C							
Rated Working Voltage	6.3 ~ 100VDC							
Capacitance Tolerance (120Hz 20°C)	±20% (M)							
Leakage Current (20°C)	I≦0.01CV or 3(uA) Whichever is greater after 2 minutes					I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	100
	S.V.	8	13	20	32	44	63	79	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF							
	W.V.	6.3	10	16	25	35	50	63	100
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100
	-25°C / +20°C	4	3	2	2	2	2	2	2
	-40°C / +20°C	8	6	4	3	3	3	3	3
Load Life	After 3000~6000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)								
	Dφ	5~6.3φ	8~10φx12.5	10x15~12φ	12.5~18φ				
	Life (hours)	3000hrs	4000hrs	5000hrs	6000hrs				
	* If dimension is down size, Load life will be less 1000 hours than standard.								
	Capacitance Change	≦±25% of initial value							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)								

DIMENSIONS (mm)

φD	5	6.3	8	10	13	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Coefficient	1.90	1.75	1.40	1.00

Frequency(Hz)	120	1k	10k	100k
15~180μF	0.40	0.75	0.90	1.00
220~560μF	0.50	0.85	0.94	1.00
680~1800μF	0.60	0.87	0.95	1.00
2200~3900μF	0.75	0.90	0.95	1.00
≧4700μF	0.85	0.95	0.98	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) Item	6.3			10			16		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
56							5x11	0.580	210
100				5x11	0.580	210	6.3x11	0.230	250
120							6.3x11	0.220	340
150	5x11	0.580	210						
220				6.3x11	0.220	340	6.3x11	0.185	469
							8x11	0.150	582
330	6.3x11	0.220	340				8x11	0.130	640
470	6.3x11	0.160	510	8x11	0.130	640	8x15	0.087	840
							8x20	0.078	950
							10x12.5	0.080	865
							10x16	0.060	1210
680	8x11	0.130	640	8x15	0.087	840	8x20	0.069	1050
							10x16	0.060	1210
820	10x12.5	0.080	865	10x12.5	0.080	865			
1000	8x15	0.087	840	8x20	0.069	1050	8x20	0.069	1050
				10x16	0.060	1210	10x16	0.060	1210
							10x20	0.046	1400
							12.5x16	0.049	1450
1200	8x20	0.069	1050	10x20	0.046	1400	10x25	0.042	1650
	10x16	0.060	1210						
1500	8x20	0.069	1050	10x25	0.042	1650	10x30	0.031	1910
	∗10x16	0.060	1210	12.5x16	0.049	1450	12.5x20	0.035	1900
	10x20	0.046	1400				16x16	0.042	1940
1800	12.5x16	0.049	1450						
2200	∗10x20	0.046	1400	10x30	0.031	1910	12.5x25	0.027	2230
	10x25	0.042	1650	12.5x20	0.042	1900	18x16	0.043	2210
				16x16	0.042	1940			
2700	10x30	0.031	1910	18x16	0.043	2210	12.5x30	0.024	2650
	16x16	0.042	1940				16x20	0.027	2530
3300	10x25	0.042	1650	10x30	0.031	1910	12.5x35	0.020	2880
	12.5x20	0.035	1900	12.5x25	0.027	2230			
3900	12.5x25	0.027	2230	12.5x30	0.024	2650	12.5x40	0.017	3350
	18x16	0.043	2210	16x20	0.027	2530	16x25	0.021	2930
							18x20	0.026	2860
4700	12.5x30	0.024	2650	12.5x35	0.020	2880	16x32	0.017	3450
							18x25	0.019	3140
5600	12.5x35	0.020	2880	12.5x40	0.017	3350	16x36	0.015	3610
	16x20	0.027	2530	16x25	0.021	2930	18x32	0.015	4170
				18x20	0.026	2860			
6800	12.5x40	0.017	3350	16x32	0.017	3450	16x40	0.013	4080
	16x25	0.021	2930	18x25	0.019	3140			
	18x20	0.026	2860						
8200	16x32	0.017	3450	16x36	0.015	3610	18x36	0.014	4220
				18x32	0.015	4170			
10000	16x36	0.015	3610	16x40	0.013	4080	18x40	0.012	4280
	18x25	0.017	3140	18x36	0.014	4220			
12000	18x32	0.015	4170	18x40	0.012	4280			
15000	18x36	0.014	4220						

" ∗ " is down size, Ripple Life is less 1000 hrs than standard.

RADIAL TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
22							5x11	0.700	180
33				5x11	0.580	210	6.3x11	0.490	245
47	5x11	0.580	210	6.3x11	0.390	275	6.3x11	0.520	300
56				6.3x11	0.220	340	6.3x11	0.300	295
68				6.3x11	0.170	500			
82				6.3x11	0.160	540			
100	6.3x11	0.220	340	8x11	0.150	580	8x11	0.170	555
120							8x15	0.120	730
150	8x11	0.160	640	8x11	0.130	640	10x12.5	0.120	760
180							8x20	0.091	910
220	8x11	0.130	640	∗8x15	0.087	840	10x16	0.084	1050
				10x12.5	0.080	865			
270				8x20	0.069	1050	10x20	0.060	1220
							12.5x16	0.061	1260
330	8x15	0.087	840	∗10x16	0.060	1210	∗10x20	0.058	1400
	10x12.5	0.080	865	10x20	0.046	1400	10x25	0.055	1440
470	8x20	0.069	1050	10x20	0.046	1400	10x30	0.043	1690
	∗10x12.5	0.070	1050	12.5x16	0.049	1450	12.5x20	0.045	1660
	10x16	0.060	1210				16x16	0.055	1690
560				10x25	0.042	1650	12.5x25	0.034	1950
							18x16	0.054	1930
680	10x20	0.046	1400	10x30	0.031	1910	12.5x30	0.030	2310
	12.5x16	0.049	1450	12.5x20	0.035	1900			
				16x16	0.042	1940			
820	10x25	0.042	1650	12.5x20	0.035	1900	12.5x35	0.025	2510
							16x20	0.034	2210
1000	10x30	0.031	1910	12.5x25	0.027	2230	12.5x40	0.021	2920
	12.5x20	0.035	1900	18x16	0.043	2210	16x25	0.025	2555
	16x16	0.042	1940				18x20	0.036	2490
1200	18x16	0.043	2210	12.5x30	0.024	2650	16x32	0.022	3010
				16x20	0.027	2530	18x25	0.026	2740
1500	∗12.5x20	0.035	1900	12.5x35	0.020	2880	16x36	0.019	3150
	12.5x25	0.027	2230						
1800	12.5x30	0.024	2650	12.5x40	0.017	3350	16x40	0.016	3710
	16x20	0.027	2530	16x25	0.021	2930	18x32	0.021	3635
				18x20	0.026	2860			
2200	12.5x35	0.020	2880	16x32	0.017	3450	18x36	0.017	3680
	18x20	0.026	2860	18x25	0.019	3140			
2700	12.5x40	0.017	3350	16x36	0.015	3610	18x40	0.014	3800
	16x25	0.021	2930	18x32	0.015	4170			
3300	16x32	0.017	3450	16x40	0.013	4080			
	18x25	0.019	3140	18x36	0.014	4220			
3900	18x32	0.015	4170	18x40	0.012	4280			
4700	18x36	0.014	4220						
5600	18x40	0.012	4280						

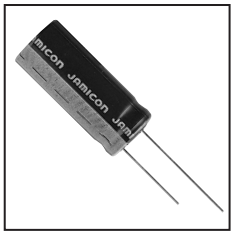
" ∗ " is down size, Ripple Life is less 1000 hrs than standard.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	63			100		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
15	5x11	2.300	55	6.3x11	1.200	115
27				8x12	0.630	232
33	6.3x11	1.200	115			
39				8x15	0.450	300
47				10x12.5	0.430	288
56	8x12	0.630	232	8x20	0.330	362
68				10x16	0.310	357
82	8x15	0.450	300	10x20	0.210	466
	10x12.5	0.430	288	12.5x16	0.230	466
100				10x25	0.200	531
120	8x20	0.330	362	10x30	0.150	663
	10x16	0.310	357	12.5x20	0.160	690
150				16x16	0.140	795
180	10x20	0.210	466	12.5x25	0.120	784
	12.5x16	0.230	466	18x16	0.120	920
220	10x25	0.200	531	12.5x30	0.100	905
				16x20	0.091	1040
270	10x30	0.150	663	12.5x35	0.083	1050
	12.5x20	0.160	690	16x25	0.073	1250
	16x16	0.140	795			
330	12.5x25	0.120	784	12.5x40	0.071	1180
				18x20	0.080	1240
390	18x16	0.120	920	16x32	0.054	1570
				18x25	0.057	1490
470	12.5x30	0.100	905	16x36	0.045	1790
	16x20	0.091	1040	18x32	0.047	1630
560	12.5x35	0.083	1050	16x40	0.040	2020
	16x25	0.073	1250			
680	12.5x40	0.071	1180	18x36	0.040	1790
	18x20	0.080	1240			
820	16x32	0.054	1570	18x40	0.036	2330
	18x25	0.057	1490			
1000	16x36	0.045	1790			
	18x32	0.047	1630			
1200	16x40	0.040	2020			

- High temperature 105°C, 5000~6000hours
- Recommended Applications : AV (TV, Video, Audio) Monitor/Computer/OA/HA
  Communication, Converter/Inverter, Adapter, SMPS
- Corresponding product to RoHS

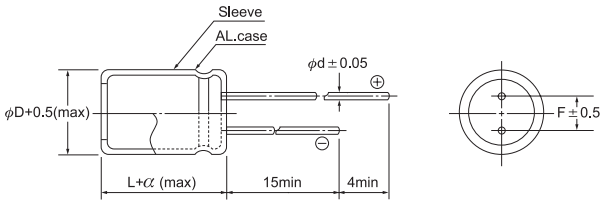


SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-40 ~ +105°C					
Rated Working Voltage	6.3 ~ 35VDC					
Capacitance Tolerance (120Hz 20°C)	±20% (M)					
Leakage Current (20°C)	I≦0.01CV or 3(uA) Whichever is greater after 2 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35
	S.V.	8	13	20	32	44
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF					
	W.V.	6.3	10	16	25	35
	tan δ	0.22	0.19	0.16	0.14	0.12
Low Temperature Stability	Impedance ratio at 120Hz					
	Rated Voltage (V)	6.3	10	16	25	35
	-25°C / +20°C	2	2	2	2	2
	-40°C / +20°C	3	3	3	3	3
Load Life	After 5000~6000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)					
	Dφ	5~6.3φ		8~16φ		
	Life (hours)	5000hrs		6000hrs		
	* If dimension is down size, Endurance will be less 1000 hours than standard.					
	Capacitance Change	≦±30% of initial value for 6.3~10W.V., ≦±25% of initial value for 16~35W.V.				
	Dissipation Factor	≦200% of initial specified value				
	Leakage current	≦initial specified value				
Shelf Life	At +105°C no voltage application after 500 hours the capacitor shall meet the following limits. (With voltage treatment)					

DIMENSIONS (mm)

φD	5	6	8	10	12.5	16
F	2.0	2.5	3.5	5.0	5.0	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦65	85	105
Coefficient	2.00	1.50	1.00

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

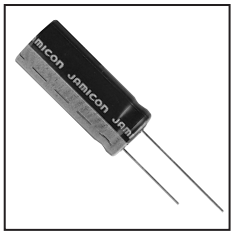
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / μF / Item	6.3			10			16		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
100							5x11	0.240	330
150				5x11	0.240	330			
220	5x11	0.240	330				6.3x11	0.110	500
330				6.3x11	0.110	500			
470	6.3x11	0.110	500				8x12	0.062	900
680				8x12	0.062	900	8x15	0.048	1210
							10x12.5	0.053	1240
820	8x12	0.062	900						
1000				8x15	0.048	1210	8x20	0.041	1410
				10x12.5	0.053	1240	10x16	0.038	1650
1200	8x15	0.048	1210						
	10x12.5	0.053	1240						
1500	8x20	0.041	1410	8x20	0.041	1410	10x20	0.026	1960
				10x16	0.038	1650			
1800	10x16	0.038	1650	10x20	0.026	1960	10x25	0.023	2250
2200	10x20	0.026	1960	10x25	0.023	2250	12.5x20	0.023	2480
2700	10x25	0.023	2250				12.5x25	0.020	2900
3300				12.5x20	0.023	2480	12.5x30	0.017	3450
							16x20	0.018	3250
3900	12.5x20	0.023	2480	12.5x25	0.020	2900	12.5x35	0.016	3570
4700	12.5x25	0.020	2900	12.5x30	0.017	3450	16x25	0.017	3630
				16x20	0.018	3250			
5600	12.5x30	0.017	3450	12.5x35	0.016	3570			
6800	12.5x35	0.016	3570	16x25	0.017	3630			
	16x20	0.018	3250						
8200	16x25	0.017	3630						

V(DC) / μF / Item	25			35		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
47				5x11	0.240	330
68	5x11	0.240	330			
100				6.3x11	0.110	500
150	6.3x11	0.110	500			
220				8x12	0.062	900
270				8x15	0.048	1210
330	8x12	0.062	900	10x12.5	0.053	1240
390	8x15	0.048	1210	8x20	0.041	1410
470	10x12.5	0.053	1240	10x16	0.038	1650
560	8x20	0.041	1410	10x20	0.026	1960
680	10x16	0.038	1650	10x25	0.023	2250
820	10x20	0.026	1960			
1000	10x25	0.023	2250	12.5x20	0.023	2480
1200				12.5x25	0.020	2900
1500	12.5x20	0.023	2480	12.5x30	0.017	3450
				16x20	0.018	3250
1800	12.5x25	0.020	2900	12.5x35	0.016	3570
2200	12.5x30	0.017	3450	16x25	0.017	3630
	16x20	0.018	3250			
2700	12.5x35	0.016	3570			
3300	16x25	0.017	3630			

- High temperature 105°C, 4000~10000hours
- Recommended Applications : Applicable for SMPS, Adaptor, Charger, Monitor/Computer
- Corresponding product to RoHS

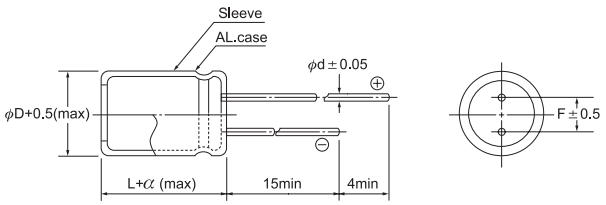


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-40 ~ +105°C							
Rated Working Voltage	6.3 ~ 100VDC							
Capacitance Tolerance (120Hz 20°C)	±20% (M)							
Leakage Current (20°C)	I≦0.01CV or 3(uA) Whichever is greater after 2 minutes					I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	100
	S.V.	8	13	20	32	44	63	79	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF							
	W.V.	6.3	10	16	25	35	50	63	100
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100
	-25°C / +20°C	4	3	2	2	2	2	2	2
	-40°C / +20°C	8	6	4	3	3	3	3	3
Load Life	After 4000~10000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)								
	Dφ	5~6.3φ		8~10φ		12.5~18φ			
	6.3~10(V)	4000hrs		6000hrs		8000hrs			
	16~100(V)	5000hrs		7000hrs		10000hrs			
	Capacitance Change	≦±25% of initial value							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)								

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Coefficient	1.90	1.75	1.40	1.00

Frequency(Hz)	120	1k	10k	100k
15~180μF	0.40	0.75	0.90	1.00
220~560μF	0.50	0.85	0.94	1.00
680~1800μF	0.60	0.87	0.95	1.00
2200~3900μF	0.75	0.90	0.95	1.00
4700μF Higher	0.85	0.95	0.98	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	6.3			10			16		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
56							5x11	0.580	210
100				5x11	0.580	210			
120							6.3x11	0.220	340
150	5x11	0.580	210						
220				6.3x11	0.220	340			
330	6.3x11	0.220	340				8x11	0.130	640
470				8x11	0.130	640	8x15	0.087	840
							10x12.5	0.080	865
680	8x11	0.130	640	8x15	0.087	840	8x20	0.069	1050
				10x12.5	0.080	865	10x15	0.060	1210
820	10x12.5	0.080	865						
1000	8x15	0.087	840	8x20	0.069	1050	10x20	0.046	1400
				10x15	0.060	1210	12.5x16	0.049	1450
1200	8x20	0.069	1050	10x20	0.046	1400	10x25	0.042	1650
	10x15	0.060	1210						
1500	10x20	0.046	1400	10x25	0.042	1650	10x30	0.031	1910
				12.5x16	0.049	1450	12.5x20	0.035	1900
1800	12.5x16	0.049	1450						
2200	10x25	0.042	1650	10x30	0.031	1910	12.5x25	0.027	2230
				12.5x20	0.035	1900			
2700	10x30	0.031	1910				12.5x30	0.024	2650
							16x20	0.027	2530
3300	12.5x20	0.035	1900	12.5x25	0.027	2230	12.5x35	0.020	2880
3900	12.5x25	0.027	2230	12.5x30	0.024	2650	12.5x40	0.017	3350
				16x20	0.027	2530	16x25	0.021	2930
							18x20	0.026	2860
4700	12.5x30	0.024	2650	12.5x35	0.020	2880	16x32	0.017	3450
							18x25	0.019	3140
5600	12.5x35	0.020	2880	12.5x40	0.017	3350	16x36	0.015	3610
	16x20	0.027	2530	16x25	0.021	2930	18x32	0.015	4170
				18x20	0.026	2860			
6800	12.5x40	0.017	3350	16x32	0.017	3450	16x40	0.013	4080
	16x25	0.021	2930	18x25	0.019	3140			
	18x20	0.026	2860						
8200	16x32	0.017	3450	16x36	0.015	3610	18x36	0.014	4220
				18x32	0.015	4170			

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

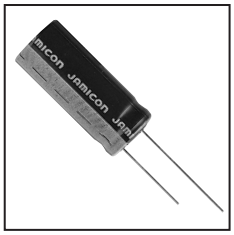
μF \ V(DC) / Item	25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
22							5x11	0.700	180
33				5x11	0.580	210	6.3x11	0.490	245
47	5x11	0.580	210				6.3x11	0.520	300
56				6.3x11	0.220	340	6.3x11	0.300	295
100	6.3x11	0.220	340				8x11	0.170	555
120							8x15	0.120	730
150				8x11	0.130	640	10x12.5	0.120	760
180							8x20	0.091	910
220	8x11	0.130	640	8x15	0.087	840	10x16	0.084	1050
				10x12.5	0.080	865			
270				8x20	0.069	1050	10x20	0.060	1220
							12.5x16	0.061	1260
330	8x15	0.087	840	10x15	0.060	1210	10x25	0.055	1440
	10x12.5	0.080	865						
470	8x20	0.069	1050	10x20	0.046	1400	10x30	0.043	1690
	10x15	0.060	1210	12.5x16	0.049	1450	12.5x20	0.045	1660
							16x16	0.055	1690
560				10x25	0.042	1650	12.5x25	0.034	1950
							18x16	0.054	1930
680	10x20	0.046	1400	10x30	0.031	1910	12.5x30	0.030	2310
	12.5x16	0.049	1450	12.5x20	0.035	1900			
820	10x25	0.042	1650				12.5x35	0.025	2510
							16x20	0.034	2210
1000	10x30	0.031	1910	12.5x25	0.027	2230	12.5x40	0.021	2920
	12.5x20	0.035	1900				16x25	0.025	2555
							18x20	0.036	2490
1200				12.5x30	0.024	2650	16x32	0.022	3010
				16x20	0.027	2530	18x25	0.026	2740
1500	12.5x25	0.027	2230	12.5x35	0.020	2880	16x36	0.019	3150
1800	12.5x30	0.024	2650	12.5x40	0.017	3350	16x40	0.016	3710
	16x20	0.027	2530	16x25	0.021	2930	18x32	0.021	3635
				18x20	0.026	2860			
2200	12.5x35	0.020	2880	16x32	0.017	3450	18x36	0.017	3680
	18x20	0.026	2860	18x25	0.019	3140			
2700	12.5x40	0.017	3350	16x36	0.015	3610	18x40	0.014	3800
	16x25	0.021	2930	18x32	0.015	4170			
3300	16x32	0.017	3450	16x40	0.013	4080			
	18x25	0.019	3140	18x36	0.014	4220			
3900	16x36	0.015	3610	18x40	0.012	4280			
	18x32	0.015	4170						
4700	16x40	0.013	4080						
	18x36	0.014	4220						
5600	18x40	0.012	4280						

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	63			100		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
15	5x11	2.300	55	6.3x11	1.200	115
27				8x12	0.630	232
33	6.3x11	1.200	115			
39				8x15	0.450	300
47				10x12.5	0.430	288
56	8x12	0.630	232	8x20	0.330	362
68				10x16	0.310	357
82	8x15	0.450	300	10x20	0.210	466
	10x12.5	0.430	288	12.5x16	0.230	466
100				10x25	0.200	531
120	8x20	0.330	362	10x30	0.150	663
	10x16	0.310	357	12.5x20	0.160	690
150				16x16	0.140	795
180	10x20	0.210	466	12.5x25	0.120	784
	12.5x16	0.230	466	18x16	0.120	920
220	10x25	0.200	531	12.5x30	0.100	905
				16x20	0.091	1040
270	10x30	0.150	663	12.5x35	0.083	1050
	12.5x20	0.160	690	16x25	0.073	1250
	16x16	0.140	795			
330	12.5x25	0.120	784	12.5x40	0.071	1180
	18x16	0.120	920	18x20	0.080	1240
390				16x32	0.054	1570
				18x25	0.057	1490
470	12.5x30	0.100	905	16x36	0.045	1790
	16x20	0.091	1040	18x32	0.047	1630
560	12.5x35	0.083	1050	16x40	0.040	2020
	16x25	0.073	1250			
680	12.5x40	0.071	1180	18x36	0.040	1790
	18x20	0.080	1240			
820	16x32	0.054	1570	18x40	0.036	2330
	18x25	0.057	1490			
1000	16x36	0.045	1790			
	18x32	0.047	1630			
1200	16x40	0.040	2020			

- Endurance:105°C, 4000～10000hours
- Recommended Applications : Applicable for SMPS, Adaptor, Charger, Monitor/Computer
- Corresponding product to RoHS

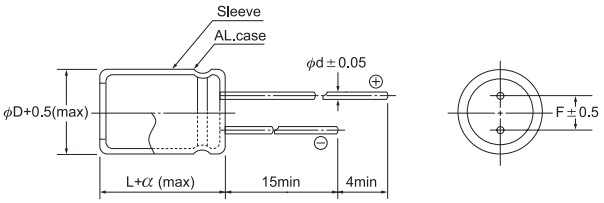


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	6.3 ~ 100VDC							
Capacitance Tolerance (120Hz 20°C)	±20% (M)							
Leakage Current (20°C)	I≦0.01CV or 3(uA) Whichever is greater after 2 minutes					I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	100
	S.V.	8	13	20	32	44	63	79	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF							
	W.V.	6.3	10	16	25	35	50	63	100
	tan δ	0.22	0.19	0.16	0.14	0.12	0.14	0.14	0.14
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100
	-25°C / +20°C	4	3	2	2	2	2	2	2
	-40°C / +20°C	8	6	4	3	3	3	3	3
Load Life	After 4000~10000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)								
	Dφ	5~6.3φ		8~10φ		12.5~18φ			
	6.3~10(V)	4000hrs		6000hrs		8000hrs			
	16~100(V)	5000hrs		7000hrs		10000hrs			
	Capacitance Change	≦±25% of initial value							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)								

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Coefficient	1.90	1.75	1.40	1.00

Frequency(Hz)	120	1k	10k	100k
22~180μF	0.40	0.75	0.90	1.00
220~560μF	0.50	0.85	0.94	1.00
680~1800μF	0.60	0.87	0.95	1.00
2200~3900μF	0.75	0.90	0.95	1.00
≧4700μF	0.85	0.95	0.98	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

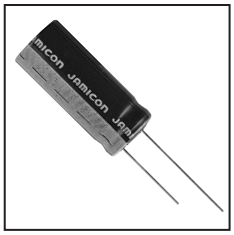
μF \ V(DC)	6.3			10			16		
Item	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
56							5x11	0.720	210
100				5x11	0.720	210	6.3x11	0.380	340
150	5x11	0.720	210						
220				6.3x11	0.380	340	8x11	0.200	640
330	6.3x11	0.380	340				8x15	0.160	701
470				8x11	0.200	640	8x15	0.160	840
680	8x11	0.200	640	8x15	0.160	840	10x15	0.084	1210
820	8x15	0.160	840						
1000	10x12	0.120	865	10x15	0.084	1210	10x20	0.062	1400
1500	8x20	0.110	1050	10x20	0.062	1400	10x25	0.052	1650
	10x15	0.084	1210						
2200	10x20	0.062	1400	10x25	0.052	1650	12.5x25	0.034	2230
2700	10x25	0.052	1650	12.5x20	0.046	1900	12.5x30	0.030	2650
3300	12.5x20	0.046	1900	12.5x25	0.034	2230	12.5x35	0.027	2880
3900	12.5x25	0.034	2230	12.5x30	0.030	2650	12.5x40	0.024	3350
4700	12.5x30	0.030	2650	12.5x35	0.027	2880	16x32	0.028	3450
5600	12.5x35	0.027	2880	12.5x40	0.024	3350	16x36	0.018	3610
				16x25	0.028	2930	18x32	0.015	4170
6800	12.5x40	0.024	3350	16x32	0.025	3450	18x36	0.014	4220
	16x25	0.028	2930						
8200	16x32	0.025	3450	16x36	0.018	3610			
10000	16x36	0.018	3610	18x36	0.014	4220			
12000	18x32	0.015	4170						
15000	18x36	0.014	4220						

μF \ V(DC)	25			35			50		
Item	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10							5x11	3.500	120
22							5x11	2.300	210
33				5x11	0.720	210	6.3x11	1.200	340
47	5x11	0.720	210	6.3x11	0.380	340	6.3x11	1.200	340
100	6.3x11	0.380	340				8x11	0.630	555
120							8x15	0.450	730
150	8x11	0.200	640	8x11	0.200	640	8x20	0.330	910
220	8x11	0.200	640	8x15	0.160	840	10x16	0.310	1050
330	8x15	0.160	840	10x20	0.062	1400	10x20	0.210	1400
470	10x15	0.084	1210	10x25	0.052	1650	10x30	0.150	1690
							12.5x20	0.160	1660
560							12.5x25	0.120	1950
680	10x20	0.062	1400	10x30	0.044	1910	12.5x30	0.100	2310
				12.5x20	0.046	1900			
820	10x25	0.052	1650	12.5x25	0.045	2230	12.5x35	0.083	2510
1000	12.5x20	0.046	1900	12.5x25	0.045	2230	16x25	0.073	2555
1200				12.5x30	0.030	2650	16x32	0.054	3010
1500	12.5x25	0.034	2230	12.5x35	0.027	2880	16x36	0.045	3150
1800				12.5x40	0.024	3350	18x32	0.047	3635
2200	12.5x35	0.027	2880	16x32	0.025	3450	18x36	0.040	3680
2700	16x25	0.028	2930	16x36	0.022	3610	18x40	0.036	3800
3300	16x32	0.025	3450	18x36	0.020	4220			
3900	18x32	0.015	4170						
4700	18x36	0.014	4280						

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	63			100		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10	5x11	2.300	55	6.3x11	5.000	55
15				6.3x11	5.000	70
22				8x11	2.700	85
33	6.3x11	1.200	115	8x11	2.500	95
47				8x15	1.800	150
56	8x11	0.630	232	8x20	1.500	200
68				10x15	1.300	230
82				10x20	1.200	250
100				10x20	0.950	330
120	10x16	0.310	357	10x25	0.800	400
150				12.5x20	0.900	460
180	10x20	0.210	466			
220	10x25	0.200	531	12.5x25	0.600	640
270	10x30	0.150	663			
	12.5x20	0.160	690			
330	12.5x25	0.120	784	16x25	0.570	720
470	12.5x30	0.100	905	16x32	0.550	770
				18x25	0.500	840
560	12.5x35	0.083	1050			
680	12.5x40	0.071	1180	18x36	0.180	1400
820	16x32	0.054	1570	18x40	0.130	1850
1000	16x36	0.045	1790	18x40	0.130	1850
1200	16x40	0.040	2020			



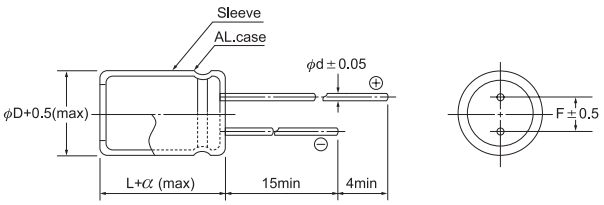
- Endurance:105°C, 6000～10000hours
- Recommended Applications : Applicable for AV (TV, Viodeo, Audio), OA/HA/Communication, SMPS, Adapter, Monitor/Computer, Converter/Inverter
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-40 ~ +105°C								
Rated Working Voltage	6.3 ~ 100VDC								
Capacitance Tolerance (120Hz 20°C)	±20% (M)								
Leakage Current (20°C)	I≦0.01CV or 3(uA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)								
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	80	100
	S.V.	8	13	20	32	44	63	79	100	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF								
	W.V.	6.3	10	16	25	35	50	63	80	100
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100
	-25°C / +20°C	4	3	2	2	2	2	2	2	2
	-40°C / +20°C	8	6	4	3	3	3	3	3	3
Load Life	After applying rated voltage with rated ripple current for6000~10000 hours at 105°C, the capacitors shall meet the following requirements.								
	Dφ	5~6.3φ			8φ			10~18φ	
	Life (hours)	6000hrs			8000hrs			10000hrs	
	Capacitance Change	≦±30% of initial value for 6.3~10W.V., ≦±25% of initial value for 16~100W.V.							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)								

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Coefficient	1.90	1.75	1.40	1.00

Frequency(Hz)	120	1k	10k	100k
8.2~33μF	0.42	0.70	0.90	1.00
47~270μF	0.50	0.73	0.92	1.00
330~680μF	0.55	0.77	0.94	1.00
820~1800μF	0.60	0.80	0.96	1.00
2200~8200μF	0.70	0.85	0.98	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	6.3			10			16		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
100							5x11	0.242	345
150				5x11	0.242	345			
220	5x11	0.242	345				6.3x11	0.103	540
330				6.3x11	0.103	540			
470	6.3x11	0.103	540				8x12	0.062	945
680				8x12	0.062	945	8x16	0.050	1250
							10x12.5	0.043	1330
820	8x12	0.062	945						
1000				8x16	0.050	1250	8x20	0.032	1500
				10x12.5	0.043	1330	10x16	0.031	1760
1200	8x16	0.050	1250						
	10x12.5	0.043	1330						
1500	8x20	0.032	1500	8x20	0.032	1500	10x20	0.022	1960
				10x16	0.031	1760			
1800	10x16	0.031	1760	10x20	0.022	1960	10x25	0.020	2250
2200	10x20	0.022	1960	10x25	0.020	2250	12.5x20	0.019	2480
2700	10x25	0.020	2250				12.5x25	0.017	2900
3300				12.5x20	0.019	2480	12.5x30	0.014	3450
							16x20	0.017	3250
3900	12.5x20	0.019	2480	12.5x25	0.017	2900	12.5x35	0.013	3570
4700	12.5x25	0.017	2900	12.5x30	0.014	3450	16x25	0.014	3630
				16x20	0.017	3250			
5600	12.5x30	0.014	3450	12.5x35	0.013	3570			
6800	16x20	0.017	3250	16x25	0.014	3630			
	12.5x35	0.013	3570						
8200	16x25	0.014	3630						

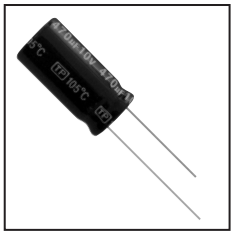
μF \ V(DC) / Item	25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
27							5x11	0.340	238
47				5x11	0.220	345			
56							6.3x11	0.140	385
68	5x11	0.242	345						
100				6.3x11	0.094	540	8x12	0.074	724
120							8x16	0.061	950
150	6.3x11	0.103	540				10x12.5	0.061	979
180							8x20	0.046	1190
220				8x12	0.056	945	10x16	0.042	1370
270				8x16	0.050	1250	10x20	0.030	1580
330	8x12	0.062	945	10x12.5	0.041	1330	10x25	0.028	1870
390	8x16	0.050	1250	8x20	0.032	1500			
470	10x12.5	0.043	1330	10x16	0.030	1760	12.5x20	0.027	2050
560	8x20	0.032	1500	10x20	0.025	1960	12.5x25	0.023	2410
680	10x16	0.031	1760	10x25	0.023	2250	12.5x30	0.021	2860
820	10x20	0.022	1960				12.5x35	0.019	2960
							16x20	0.023	2730
1000	10x25	0.020	2250	12.5x20	0.025	2480	16x25	0.021	3010
1200				12.5x25	0.022	2900			
1500	12.5x20	0.019	2480	12.5x30	0.018	3450			
				16x20	0.020	3250			
1800	12.5x25	0.017	2900	12.5x35	0.018	3570			
2200	12.5x30	0.014	3450	16x25	0.015	3630			
	16x20	0.017	3250						
2700	12.5x35	0.013	3570						
3300	16x25	0.014	3630						

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

μF \ V(DC) / Item	63			80			100		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
8.2							5x11	1.400	163
12				5x11	1.400	163			
18	5x11	1.000	173				6.3x11	0.570	267
33				6.3x11	0.570	267	8x12	0.360	462
47	6.3x11	0.560	278				8x16	0.250	585
56				8x12	0.360	462	10x12.5	0.230	624
68				8x16	0.250	585	8x20	0.190	735
82	8x12	0.264	525	10x12.5	0.230	624	10x16	0.170	780
100	8x16	0.192	688	8x20	0.190	735	10x20	0.120	1040
							12.5x16	0.130	975
120	10x12.5	0.180	725	10x16	0.170	780	10x25	0.110	1170
150	8x20	0.144	861				12.5x20	0.085	1430
180	10x16	0.132	998	10x20	0.120	1040			
				12.5x16	0.130	975			
220				10x25	0.110	1170	12.5x25	0.060	1620
270	10x20	0.094	1200	12.5x20	0.085	1430	12.5x30	0.051	1950
	12.5x16	0.098	1200				16x20	0.058	1750
330	10x25	0.083	1410	12.5x25	0.060	1620	12.5x35	0.043	2140
390	12.5x20	0.072	1570	12.5x30	0.051	1950	12.5x40	0.036	2340
				16x20	0.058	1750	16x25	0.044	2210
							18x20	0.054	1950
470	12.5x25	0.052	1990	12.5x35	0.043	2140	16x32	0.033	2400
							18x25	0.038	2270
560	12.5x30	0.042	2410	12.5x40	0.036	2340	16x36	0.029	2600
	16x20	0.052	2100	16x25	0.044	2210	18x32	0.031	2470
				18x20	0.054	1950			
680	12.5x35	0.040	2620	16x32	0.033	2400	16x40	0.027	2860
							18x36	0.027	2860
820	12.5x40	0.032	2940	16x36	0.029	2600	18x40	0.026	3510
	16x25	0.038	2730	18x25	0.038	2270			
	18x20	0.046	2500						
1000				16x40	0.027	2860			
				18x32	0.031	2470			
1200	16x32	0.029	2990	18x36	0.027	2860			
	18x25	0.037	2800						
1500	16x36	0.025	3040	18x40	0.026	3510			
	18x32	0.030	3300						
1800	16x40	0.023	3570						
	18x36	0.024	3570						
2200	18x40	0.022	3670						

- High temperature 105°C and high reliability.
- Corresponding product to RoHS

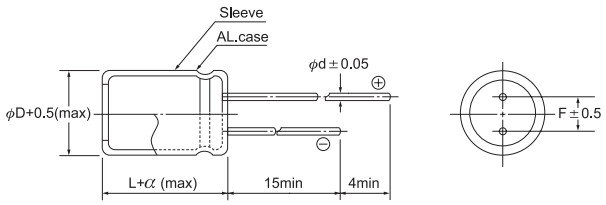


SPECIFICATION

Item	Characteristic				
Operation Temperature Range	-55 ~ +105°C				
Rated Working Voltage	10 ~ 35VDC				
Capacitance Tolerance (120Hz 20°C)	±20%(M)				
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
Surge Voltage (20°C)	W.V.	10	16	25	35
	S.V.	13	20	32	44
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF				
	W.V.	10	16	25	35
	tan δ	0.20	0.16	0.14	0.12
Low Temperature Stability	Impedance ratio at 120Hz				
	Rated Voltage (V)	10	16	25	35
	-25°C / +20°C	3	2	2	2
	-55°C / +20°C	4	4	4	4
Load Life	After hours (φD≦10mm 6000 hours, φD≧12.5mm 10000 hours, φD≧16mm 20000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)				
	Capacitance Change	≦±30% of initial value			
	Dissipation Factor	≦300% of initial specified value			
	Leakage current	≦initial specified value			
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)				

DIMENSIONS (mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8
α	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

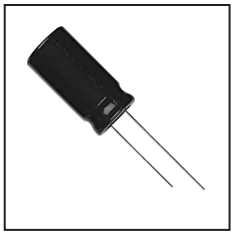
Temperature(°C)	≦65	85	105
Multiplier	2.12	1.69	1.00

Frequency(Hz)	120	1k	10k	100k
Multiplier	0.75	0.80	0.90	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	10		16		25		35	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1							10x12.5	60
2.2							10x12.5	90
3.3							10x12.5	110
4.7							10x12.5	140
10							10x12.5	300
22							10x12.5	350
33							10x12.5	380
47							10x12.5	420
100					10x12.5	420	10x20	670
220			10x16	520	12.5x20	860	12.5x25	1080
330	10x16	510	10x20	680	12.5x25	1170	16x25	1330
470	10x20	680	12.5x20	1000	16x25	1500	16x32	1690
1000	12.5x25	1050	16x25	1410	16x32	1640	18x40	2170
2200	16x32	1740	18x36	2120				
3300	18x36	2050	18x40	2160				
4700	18x40	2290						



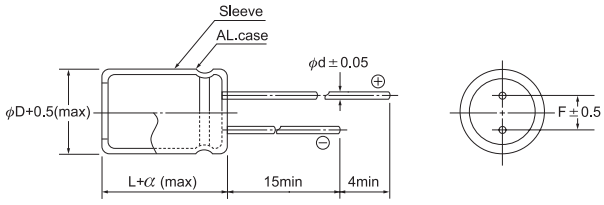
- Smaller case sizes than WG series.
- Lower impedance at high frequency and high ripple current.
- Suitable for output of Motherboard and Switching power supplies.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-55 ~ +105°C						
Rated Working Voltage	6.3 ~ 50VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 3 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50
	S.V.	8	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF						
	W.V.	6.3	10	16	25	35	50
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	6.3~16			25~50		
	-25°C / +20°C	3			2		
	-55°C / +20°C	6			4		
Load Life	After hours (φD≦8mm 1000 hours, φD≧10mm 2000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)						

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

Frequency(Hz)	60	120	400	1k	10k	100k
W.V.	Multiplier					
10~16V	0.45	0.60	0.83	0.94	0.98	1.00
25~35V	0.38	0.50	0.75	0.90	0.97	1.00
50V	0.36	0.46	0.70	0.88	0.94	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3				10			
	DxL	IMP.		R.C.	DxL	IMP.		R.C.
		20°C	-10°C			20°C	-10°C	
100				→	5x11	0.312	0.937	230
120				→	5x11	0.266	0.798	250
150	5x11	0.219	0.656	250	5x11	0.218	0.653	280
180	5x11	0.190	0.571	270	5x15	0.189	0.568	360
				→	6.3x11	0.189	0.568	350
220	5x11	0.162	0.487	300	5x15	0.161	0.484	400
				→	6.3x11	0.161	0.484	390
270	5x15	0.148	0.444	380	5x15	0.147	0.442	440
	6.3x11	0.148	0.444	380	6.3x11	0.147	0.442	430
330	5x15	0.130	0.389	420	6.3x15	0.129	0.387	550
	6.3x11	0.130	0.389	420	8x11	0.129	0.387	560
390	6.3x15	0.117	0.351	520	6.3x15	0.116	0.349	600
	8x11	0.117	0.351	530	8x11	0.116	0.349	610
470	6.3x15	0.106	0.319	570	6.3x15	0.106	0.317	660
	8x11	0.106	0.319	580	8x11	0.106	0.317	670
560	6.3x15	0.094	0.283	620	6.3x15	0.094	0.281	720
	8x11	0.094	0.283	630	8x11	0.094	0.281	730
680	6.3x15	0.084	0.252	680	8x15	0.083	0.250	900
	8x11	0.084	0.252	700	10x12.5	0.083	0.250	950
820	8x15	0.077	0.230	860	8x15	0.076	0.228	990
	10x12.5	0.077	0.230	900	10x12.5	0.076	0.228	1040
1000	8x15	0.069	0.206	950	8x20	0.068	0.204	1240
	10x12.5	0.069	0.206	990	10x16	0.068	0.204	1280
1200	8x20	0.059	0.178	1180	10x20	0.059	0.177	1540
	10x16	0.059	0.178	1210	12.5x15	0.059	0.148	1480
1500	10x20	0.036	0.107	1450	10x25	0.035	0.106	1830
	12.5x15	0.036	0.089	1390	12.5x18	0.035	0.089	1720
1800	10x20	0.031	0.094	1590	10x25	0.031	0.094	2000
	12.5x15	0.031	0.078	1520	12.5x18	0.031	0.078	1880
2200	10x25	0.028	0.083	1880	10x28	0.027	0.082	2250
	12.5x18	0.028	0.069	1770	16x15	0.027	0.068	1960
2700	10x28	0.025	0.075	2140	12.5x20	0.025	0.062	2250
	16x15	0.025	0.063	1870	16x15	0.025	0.062	2100
3300	12.5x20	0.023	0.058	2150	12.5x25	0.023	0.057	2650
	16x15	0.023	0.058	2010	18x15	0.023	0.057	2300
3900	12.5x25	0.022	0.055	2520	12.5x30	0.022	0.055	3030
	18x15	0.022	0.055	2190	16x20	0.022	0.055	2670
4700	12.5x30	0.021	0.053	2860	12.5x35	0.021	0.053	3210
	16x20	0.021	0.053	2520	16x25	0.021	0.053	3050
5600	12.5x35	0.020	0.050	3060	12.5x40	0.020	0.049	3550
	16x25	0.020	0.050	2900	18x20	0.020	0.049	2940
6800	12.5x40	0.019	0.047	3450	16x32	0.019	0.047	3680
	18x20	0.019	0.047	2850	18x25	0.019	0.047	3390
8200	16x32	0.018	0.045	3540	16x36	0.018	0.044	4010
	18x25	0.018	0.045	3260	18x32	0.018	0.044	3870
10000	16x36	0.017	0.043	3880				
	18x32	0.017	0.043	3740	18x36	0.017	0.042	4190

All blank voltage on sleeve marking is the same voltage as" → "point to.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	16				25			
	DxL	IMP.		R.C.	DxL	IMP.		R.C.
		20°C	-10°C			20°C	-10°C	
47				→	5x11	0.283	0.085	220
56	5x11	0.253	0.759	190	5x11	0.253	0.758	240
68	5x11	0.221	0.662	210	5x11	0.220	0.661	270
82	5x11	0.203	0.610	230	5x15	0.203	0.609	340
				→	6.3x11	0.203	0.609	330
100	5x11	0.183	0.550	250	5x15	0.183	0.549	370
				→	6.3x11	0.183	0.549	370
120	5x15	0.156	0.469	320	5x15	0.156	0.468	410
	6.3x11	0.156	0.469	320	6.3x11	0.156	0.468	400
150	5x15	0.128	0.383	360	6.3x15	0.128	0.383	510
	6.3x11	0.128	0.383	350	8x11	0.128	0.383	520
180	5x15	0.111	0.333	390	6.3x15	0.111	0.333	560
	6.3x11	0.111	0.333	390	8x11	0.111	0.333	570
220	5x15	0.095	0.284	430	6.3x15	0.095	0.284	620
	6.3x11	0.095	0.284	430	8x11	0.095	0.284	630
270	6.3x15	0.086	0.259	550	8x15	0.086	0.259	790
	8x11	0.086	0.259	550	10x12.5	0.086	0.259	830
330	6.3x15	0.076	0.227	600	8x15	0.076	0.227	870
	8x11	0.076	0.227	610	10x12.5	0.076	0.227	910
390	8x15	0.068	0.205	750	8x20	0.068	0.205	1080
	10x12.5	0.068	0.205	790	10x16	0.068	0.205	1100
470	8x15	0.062	0.186	820	8x20	0.062	0.186	1180
	10x12.5	0.062	0.186	860	10x16	0.062	0.186	1210
560	8x20	0.055	0.165	1020	8x20	0.055	0.165	1290
	10x16	0.055	0.165	1050	10x16	0.055	0.165	1320
680	8x20	0.049	0.147	1120	10x20	0.049	0.147	1610
	10x16	0.049	0.147	1150	12.5x15	0.049	0.122	1550
820	8x20	0.045	0.134	1230	10x25	0.045	0.134	1950
	10x16	0.045	0.134	1270	12.5x18	0.045	0.112	1830
1000	10x20	0.040	0.120	1540	10x28	0.040	0.120	2270
	12.5x15	0.040	0.100	1480	16x15	0.040	0.100	1980
1200	10x25	0.035	0.104	1870	12.5x20	0.035	0.104	2320
	12.5x18	0.035	0.087	1750	16x15	0.035	0.087	2170
1500	10x28	0.029	0.088	2100	12.5x25	0.029	0.074	2710
	16x15	0.029	0.074	1830	18x15	0.029	0.074	2480
1800	12.5x20	0.026	0.065	2140	12.5x30	0.026	0.065	3230
	16x15	0.026	0.065	2000	16x20	0.026	0.065	2840
2200	12.5x25	0.023	0.057	2500	12.5x35	0.023	0.057	3470
	18x15	0.023	0.057	2170	16x25	0.023	0.057	3290
2700	12.5x30	0.021	0.052	2890	12.5x40	0.021	0.052	3910
	16x20	0.021	0.052	2540	18x20	0.021	0.052	3240
3300	12.5x35	0.019	0.048	3130	16x32	0.019	0.047	4100
	16x25	0.019	0.048	2970	18x25	0.019	0.047	3770
3900	12.5x40	0.018	0.046	3500	16x36	0.018	0.046	4530
	18x20	0.018	0.046	2900	18x32	0.018	0.046	4360
4700	16x32	0.016	0.040	3560				
	18x25	0.016	0.040	3280	18x36	0.016	0.040	4720
5600	16x36	0.015	0.038	3880				
	18x32	0.015	0.038	3740				

All blank voltage on sleeve marking is the same voltage as" → "point to.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	35				50			
	DxL	IMP.		R.C.	DxL	IMP.		R.C.
		20°C	-10°C			20°C	-10°C	
4.7				→	5x11	1.061	3.182	85
6.8				→	5x11	0.916	2.749	100
10	5x11	0.832	2.495	110	5x11	0.831	2.493	130
15	5x11	0.610	1.829	130	5x11	0.609	1.828	150
18	5x11	0.531	1.594	150	5x11	0.531	1.593	170
22	5x11	0.454	1.361	160	5x11	0.453	1.360	190
27	5x11	0.400	1.201	180	5x11	0.400	1.200	210
33	5x11	0.353	1.058	200	5x11	0.353	1.058	230
39	5x11	0.320	0.096	210	5x15	0.320	0.959	290
				→	6.3x11	0.320	0.959	280
47	5x11	0.283	0.849	230	5x15	0.283	0.849	310
				→	6.3x11	0.283	0.849	310
56	5x15	0.252	0.757	290	5x15	0.252	0.757	340
	6.3x11	0.252	0.757	290	6.3x11	0.252	0.757	340
68	5x15	0.220	0.660	320	6.3x15	0.220	0.660	430
	6.3x11	0.220	0.660	320	8x11	0.220	0.660	430
82	5x15	0.203	0.608	360	6.3x15	0.203	0.608	470
	6.3x11	0.203	0.608	350	8x11	0.203	0.608	480
100	6.3x15	0.183	0.549	450	8x15	0.183	0.548	590
	8x11	0.183	0.549	450	10x12.5	0.183	0.548	620
120	6.3x15	0.109	0.327	490	8x15	0.109	0.327	650
	8x11	0.109	0.327	500	10x12.5	0.109	0.327	680
150	6.3x15	0.089	0.268	550	8x20	0.089	0.268	820
	8x11	0.089	0.268	550	10x16	0.089	0.268	840
180	8x15	0.078	0.233	680	8x20	0.078	0.233	900
	10x12.5	0.078	0.233	720	10x16	0.078	0.233	920
220	8x15	0.066	0.198	750	8x20	0.066	0.198	1000
	10x12.5	0.066	0.198	790	10x16	0.066	0.198	1020
270	8x20	0.060	0.181	950	10x20	0.060	0.181	1250
	10x16	0.060	0.181	970	12.5x15	0.060	0.151	1200
330	8x20	0.053	0.159	1050	10x25	0.053	0.159	1530
	10x16	0.053	0.159	1080	12.5x18	0.053	0.132	1430
390	10x20	0.048	0.143	1290	10x25	0.048	0.143	1660
	12.5x15	0.048	0.119	1240	12.5x18	0.048	0.119	1560
470	10x20	0.043	0.130	1420	12.5x20	0.043	0.108	1790
	12.5x15	0.043	0.108	1360	16x15	0.043	0.108	1680
560	10x25	0.038	0.115	1710	12.5x25	0.038	0.096	2150
	12.5x18	0.038	0.096	1610	18x15	0.038	0.096	1870
680	10x28	0.034	0.103	1990	12.5x30	0.034	0.086	2580
	16x15	0.034	0.086	1730	16x20	0.034	0.086	2260
820	10x30	0.031	0.094	2250	12.5x35	0.031	0.078	2880
	16x15	0.031	0.078	1900	16x25	0.031	0.078	2730
1000	12.5x25	0.028	0.070	2480	12.5x40	0.028	0.070	3390
	18x15	0.028	0.070	2150	18x20	0.028	0.070	2800
1200	12.5x30	0.024	0.061	2940	16x32	0.024	0.061	3660
	16x20	0.024	0.061	2590	18x25	0.024	0.061	3370
1500	12.5x35	0.021	0.051	3160	16x36	0.021	0.051	4040
	16x25	0.021	0.051	3000	18x32	0.021	0.051	3890
1800	12.5x40	0.018	0.045	3690				
	18x20	0.018	0.045	3050				
2200	16x32	0.016	0.040	3810				
	18x25	0.016	0.040	3510				

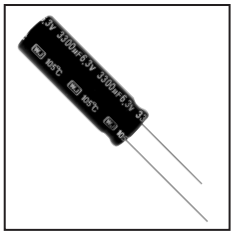
All blank voltage on sleeve marking is the same voltage as" → "point to.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	63			
	DxL	IMP.		R.C.
		20°C	-10°C	
10	5x11	0.997	2.991	130
22	5x11	0.544	1.632	190
	6.3x11	0.544	1.632	210
33	5x15	0.423	1.269	260
	6.3x11	0.423	1.269	260
47	8x11	0.339	1.018	360
68	8x15	0.220	0.660	490
100	10x12.5	0.183	0.548	620
220	10x20	0.094	0.283	1130
330	10x30	0.076	0.227	1660
470	12.5x25	0.062	0.155	1970
680	12.5x35	0.039	0.098	2760
1000	16x25	0.032	0.080	3020

- Enabled high ripple current Ultra low impedance at high frequency range.
- For computer motherboard.
- Corresponding product to RoHS

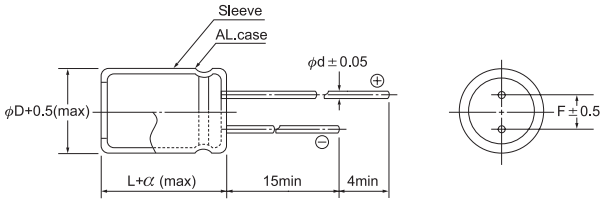


SPECIFICATION

Item	Characteristic				
Operation Temperature Range	-40 ~ +105°C				
Rated Working Voltage	6.3 ~ 25VDC				
Capacitance Tolerance (120Hz 20°C)	±20%(M)				
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) *Whichever is greater after 2 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
Surge Voltage (20°C)	W.V.	6.3	10	16	25
	S.V.	8	13	20	32
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF				
	W.V.	6.3	10	16	25
	tan δ	0.22	0.19	0.16	0.16
Low Temperature Stability	Impedance ratio at 120Hz				
	Rated Voltage (V)	6.3	10	16	25
	-25°C / +20°C	2	2	2	2
	-40°C / +20°C	3	3	3	3
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)				
	Capacitance Change	≦±30% of initial value			
	Dissipation Factor	≦200% of initial specified value			
	Leakage current	≦initial specified value			
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)				

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16
F	2.0	2.5	3.5	5.0	5.0	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

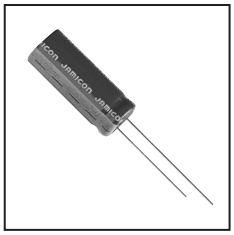
Frequency(Hz)	60	120	400	1k	10k	100k
W.V.	Multiplier					
10~16V	0.45	0.60	0.83	0.94	0.98	1.00
25V	0.38	0.50	0.75	0.90	0.97	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	6.3			10			16			25		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
100	5x11	0.099	320	5x11	0.092	340	5x11	0.073	400	5x15	0.047	620
										6.3x11	0.047	610
120	5x11	0.085	350	5x11	0.078	380	5x15	0.062	510	6.3x11	0.040	670
							6.3x11	0.062	500			
150	5x11	0.069	390				5x15	0.051	570	6.3x15	0.033	860
							6.3x11	0.051	560	8x11	0.033	880
180	5x11	0.060	430	5x15	0.056	530	6.3x11	0.044	610	8x11	0.029	960
				6.3x11	0.056	520						
220				5x15	0.042	590				8x11	0.025	1060
				6.3x11	0.042	580						
270	6.3x11	0.047	600	6.3x11	0.038	640	6.3x15	0.035	860	8x15	0.022	1320
							8x11	0.035	880	10x12.5	0.022	1390
330	6.3x11	0.041	660	6.3x15	0.033	810	8x11	0.030	1390	8x15	0.020	1460
				8x11	0.033	830				10x12.5	0.020	1530
390	6.3x15	0.030	830	6.3x15	0.030	890	8x15	0.027	1380	8x20	0.018	1810
	8x11	0.030	850	8x11	0.030	900	10x12.5	0.027	1370	10x16	0.018	1850
470	6.3x15	0.026	910	8x11	0.029	1320	8x15	0.025	1390	8x20	0.019	1980
	8x11	0.026	930				10x12.5	0.025	1770	10x16	0.019	2030
560	8x11	0.023	1320	8x11	0.025	1400	8x20	0.022	1720	10x16	0.022	2220
							10x16	0.022	1760			
680	8x11	0.021	1380	8x15	0.023	1330	8x20	0.020	2250	10x20	0.020	2700
				10x12.5	0.023	1760	10x16	0.020	2250	12.5x15	0.020	2710
820	8x15	0.022	1380	10x12.5	0.022	1770	8x20	0.018	2280	10x25	0.018	2840
	10x12.5	0.022	1350				10x16	0.018	2270	12.5x15	0.018	2620
1000	10x12.5	0.020	1700	8x20	0.020	2250	10x20	0.018	2920	12.5x20	0.021	3150
				10x16	0.020	2270	12.5x15	0.018	2930	16x15	0.021	3170
1200	8x20	0.021	1770	10x20	0.021	2250	10x25	0.017	2950	12.5x20	0.018	3380
	10x16	0.021	1810	12.5x15	0.021	2260	12.5x15	0.017	2680	16x15	0.018	3400
1500	10x20	0.021	2230	10x25	0.021	2290	10x25	0.018	2760	12.5x25	0.015	3650
	12.5x15	0.021	2240	12.5x15	0.021	2260	16x15	0.018	2960			
1800	10x20	0.021	2280	10x25	0.021	2940	12.5x20	0.018	3160	12.5x30	0.013	3980
	12.5x15	0.021	2200	12.5x15	0.021	2770	16x15	0.018	3120	16x20	0.013	4010
2200	10x20	0.021	2980	10x25	0.020	3000	12.5x25	0.018	3130	12.5x35	0.014	4170
	12.5x15	0.021	2720	16x15	0.020	3270				16x25	0.014	4220
2700	10x25	0.021	2920	12.5x20	0.021	3150	12.5x30	0.017	3370	12.5x40	0.012	4600
	16x15	0.021	3070	16x15	0.021	3230	16x20	0.017	3320			
3300	12.5x20	0.019	3190	12.5x25	0.021	3330	12.5x35	0.017	3500	16x32	0.013	4810
	16x15	0.019	3150				16x25	0.019	3640			
3900	12.5x25	0.018	3170	12.5x30	0.020	3370	12.5x40	0.019	3980	16x36	0.013	5100
	18x15	0.018	3170	16x20	0.020	3330						
4700	12.5x30	0.016	3160	12.5x35	0.019	3360	16x32	0.018	4200			
	16x20	0.016	3240	16x25	0.019	3310						

- High ripple current, low E.S.R. and long life.
- Suitable for output of switching power supplies.
- Corresponding product to RoHS

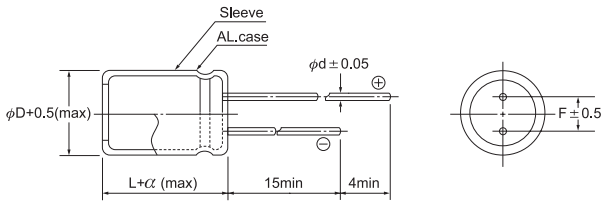


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	10 ~ 100VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M) +50% -10%(T)							
Leakage Current (20°C)	I ≦0.01CV *after 3 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	10	16	25	35	50	63	100
	S.V.	13	20	32	44	63	79	125
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF							
	W.V.	10	16	25	35	50	63	100
	tan δ	0.12	0.10	0.09	0.08	0.07	0.06	0.06
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	10~16	25~100					
	-25°C / +20°C	3	2					
	-55°C / +20°C	6	4					
Load Life	After hours (φD≦8mm 2000 hours, φD≧10mm 3000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At +105°C no voltage application after 1000 hours the capacitor shall meet the following limits. (with voltage treatment)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦200% of initial specified value						

DIMENSIONS (mm)

φD	8	10	12.5	16	18
F	3.5	5.0	5.0	7.5	7.5
d	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

Frequency(Hz)	60	120	400	1k	10k	100k
W.V.	Multiplier					
10~16V	0.45	0.60	0.83	0.94	0.98	1.00
25~35V	0.38	0.50	0.75	0.90	0.97	1.00
50~100V	0.36	0.46	0.70	0.88	0.94	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : A(rms) 105°C 100kHz

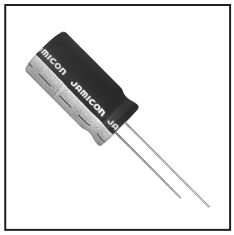
V(DC) / Item / μF	10			16			25		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
100			→	8x11	0.348	0.27	8x11	0.330	0.34
220	8x11	0.190	0.36	8x15	0.180	0.44	10x16	0.170	0.59
330	8x15	0.152	0.50	10x16	0.144	0.57	10x18	0.136	0.76
470	10x16	0.124	0.62	10x18	0.118	0.71	10x20	0.112	0.95
680	10x18	0.098	0.78	10x20	0.093	0.90	12.5x20	0.088	1.21
1000	10x20	0.080	1.00	12.5x20	0.076	1.16	12.5x25	0.072	1.62
2200	12.5x25	0.046	1.61	12.5x30	0.043	1.89	12.5x40	0.041	2.70
3300	12.5x30	0.038	2.00	12.5x40	0.036	2.44	16x40	0.034	3.04
4700	12.5x40	0.032	2.50	16x40	0.031	2.64			

All blank voltage on sleeve marking is the same voltage as" → "point to.

V(DC) / Item / μF	35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
47			→	8x11	0.453	0.29
68	8x11	0.374	0.30	8x15	0.352	0.39
100	8x15	0.311	0.40	10x16	0.292	0.49
220	10x18	0.161	0.66	10x20	0.151	0.80
330	10x25	0.129	0.93	12.5x20	0.121	1.04
470	12.5x20	0.105	1.07	12.5x25	0.099	1.37
680	12.5x25	0.083	1.42	12.5x30	0.078	1.79
1000	12.5x30	0.068	1.87	12.5x40	0.064	2.48
2200	16x40	0.039	2.83			

V(DC) / Item / μF	63			100		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
47	8x15	0.424	0.35	10x25	0.368	0.44
68	10x16	0.330	0.43	12.5x20	0.286	0.51
100	10x18	0.274	0.55	12.5x25	0.238	0.68
220	12.5x20	0.142	0.92	16x36	0.123	1.19
330	12.5x25	0.113	1.24	18x40	0.098	1.64
470	12.5x30	0.093	1.61			
680	16x36	0.073	2.09			

- Low impedance and long life with standing 5000 hours load life.
- Suitable for electronic ballast, adaptor and switching power.
- Corresponding product to RoHS

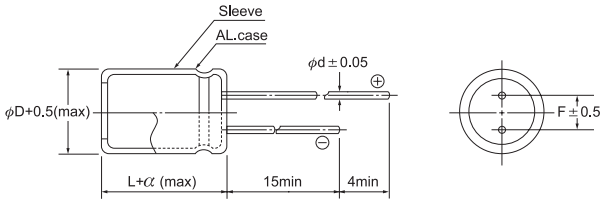


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-40 ~ +105°C							
Rated Working Voltage	6.3 ~ 63VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63
	S.V.	8	13	20	32	44	63	79
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF							
	W.V.	6.3	10	16	25	35	50	63
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	6.3	10	16	25	35	50	63
	-25°C / +20°C	2	2	2	2	2	2	2
	-40°C / +20°C	3	3	3	3	3	3	3
Load Life	After hours (ϕ5~6.3mm 2000 hours, ϕ8mm 3000 hours, ϕD≧10mm 5000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±25% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At + 105°C no voltage application after 1000 hours the capacitor shall meet the following limits. (with voltage treatment)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦200% of initial specified value						

DIMENSIONS (mm)

ϕD	5	6.3	8	10	12.5	16
F	2.0	2.5	3.5	5.0	5.0	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

Frequency(Hz)	60	120	400	1k	10k	100k
W.V.	Multiplier					
6.3~16V	0.45	0.60	0.83	0.94	0.98	1.00
25~35V	0.38	0.50	0.75	0.90	0.97	1.00
50~63V	0.36	0.46	0.70	0.88	0.94	1.00

CASE SIZE & MAX RIPPLE CURRENT

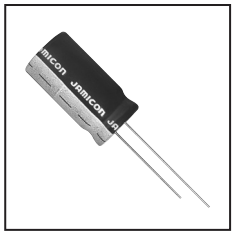
Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : A(rms) 105°C 100kHz

V(DC) / μF \ φD	6.3			10			16		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10							5x11	1.300	0.09
56							5x11	0.300	0.25
100	5x11	0.300	0.25	5x11	0.300	0.25	6.3x11	0.250	0.36
120	6.3x11	0.280	0.26	6.3x11	0.280	0.26	6.3x11	0.130	0.41
220	6.3x11	0.130	0.41	6.3x11	0.130	0.41	8x11	0.120	0.58
330	8x11	0.110	0.54	8x11	0.110	0.54	8x11	0.072	0.76
470	8x11	0.072	0.76	8x11	0.072	0.76	8x15	0.056	1.00
							10x12.5	0.053	1.03
680	8x15	0.056	1.00	8x15	0.056	1.00	8x20	0.041	1.25
	10x12.5	0.053	1.03	10x12.5	0.053	1.03	10x16	0.038	1.43
820	8x20	0.050	1.05	8x20	0.050	1.05	10x20	0.036	1.45
1000	8x20	0.041	1.25	8x20	0.041	1.25	10x20	0.023	1.82
	10x16	0.038	1.43	10x16	0.038	1.43			
1200	10x20	0.023	1.82	10x20	0.023	1.82	10x25	0.022	2.15
1500	10x25	0.022	2.15	10x25	0.022	2.15	12.5x20	0.021	2.36
2200	12.5x20	0.021	2.36	12.5x20	0.021	2.36	12.5x25	0.018	2.77
3300	12.5x25	0.018	2.77	12.5x25	0.018	2.77	12.5x35	0.015	3.40
3900	12.5x30	0.016	3.29	12.5x30	0.016	3.29	16x25	0.016	3.46
	16x20	0.018	3.14	16x20	0.018	3.14			
4700	12.5x35	0.015	3.40	12.5x35	0.015	3.40			
5600	16x25	0.016	3.46	16x25	0.016	3.46			

V(DC) / μF \ φD	25			35		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10	5x11	1.030	0.13	5x11	0.800	0.17
33	5x11	0.500	0.21	5x11	0.300	0.25
47	5x11	0.300	0.25	6.3x11	0.280	0.27
56	5x11	0.280	0.26	6.3x11	0.130	0.41
100	6.3x11	0.130	0.41	8x11	0.125	0.50
120	6.3x15	0.130	0.49	8x11	0.120	0.59
150	8x11	0.110	0.54	8x11	0.072	0.76
220	8x11	0.072	0.76	8x15	0.056	1.00
				10x12.5	0.053	1.03
330	8x15	0.056	1.00	10x16	0.038	1.43
	10x12.5	0.053	1.03			
470	8x20	0.041	1.25	10x20	0.023	1.82
	10x16	0.038	1.43			
560	10x20	0.036	1.50	10x25	0.022	2.15
680	10x20	0.023	1.82	12.5x20	0.021	2.36
820	10x25	0.022	2.15	12.5x20	0.020	2.45
1000	12.5x20	0.021	2.36	12.5x25	0.018	2.77
1200	12.5x20	0.019	2.46	12.5x30	0.016	3.29
				16x20	0.018	3.14
1500	12.5x25	0.018	2.77	12.5x35	0.015	3.40
1800	12.5x30	0.016	3.29	16x25	0.016	3.46
	16x20	0.018	3.14			
2200	12.5x35	0.015	3.40			

V(DC) / μF \ φD	50			63		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
22	5x11	0.340	0.24	6.3x11	0.726	0.22
33	6.3x11	0.320	0.28	6.3x15	0.564	0.30
47	6.3x11	0.310	0.34	8x11	0.453	0.38
56	6.3x11	0.140	0.39	8x11	0.404	0.42
100	8x11	0.074	0.72	10x16	0.264	0.54
120	8x15	0.061	0.95	10x16	0.220	0.73
150	10x12.5	0.061	0.98	10x16	0.187	0.80
180	8x20	0.046	1.19	10x20	0.153	0.90
220	10x16	0.042	1.37	10x25	0.133	1.08
330	10x25	0.028	1.87	12.5x20	0.113	1.33
470	12.5x20	0.027	2.05	12.5x25	0.091	1.66
560	12.5x25	0.023	2.41	16x25	0.074	2.19
680	12.5x30	0.021	2.86	16x25	0.059	2.24
820	12.5x35	0.019	2.96	16x32	0.054	2.72
	16x20	0.023	2.73			
1000	16x25	0.021	3.01	16x36	0.048	3.17

- Low impedance and long life with standing 5000 hours load life.
- Suitable for electronic ballast, adaptor and switching power.
- Corresponding product to RoHS

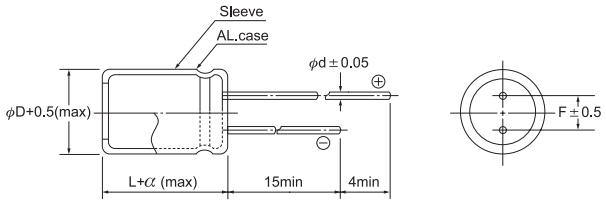


SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-55 ~ +105°C							
Rated Working Voltage	6.3 ~ 63VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.01CV or 3 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)							
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63
	S.V.	8	13	20	32	44	63	79
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF							
	W.V.	6.3	10	16	25	35	50	63
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	6.3	10	16	25	35	50	63
	-25°C / +20°C	2	2	2	2	2	2	2
	-55°C / +20°C	3	3	3	3	3	3	3
Load Life	After hours (ϕ5~6.3mm 2000 hours, ϕ8mm 3000 hours, ϕD≧10mm 5000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At + 105°C no voltage application after 1000 hours the capacitor shall meet the following limits. (with voltage treatment)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦150% of initial specified value						
	Leakage current	≦200% of initial specified value						

DIMENSIONS (mm)

ϕD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

Frequency(Hz)	60	120	400	1k	10k	100k
W.V.	Multiplier					
6.3~16V	0.45	0.60	0.83	0.94	0.98	1.00
25~35V	0.38	0.50	0.75	0.90	0.97	1.00
50~63V	0.36	0.46	0.70	0.88	0.94	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 100kHz
Max ripple current : A(rms) 105°C 100kHz

μF \ V(DC) / φD	6.3				10				16			
	DxL	IMP. 20°C	IMP. -10°C	R.C.	DxL	IMP. 20°C	IMP. -10°C	R.C.	DxL	IMP. 20°C	IMP. -10°C	R.C.
47									5x11	0.568	1.421	0.17
68									5x11	0.500	1.250	0.21
100					5x11	0.500	1.250	0.24	6.3x11	0.367	0.918	0.29
220	6.3x11	0.308	0.769	0.39	6.3x11	0.249	0.623	0.41	8x11	0.190	0.474	0.52
330	6.3x11	0.246	0.615	0.48	8x11	0.169	0.423	0.61	10x12.5	0.114	0.285	0.75
470	8x11	0.178	0.446	0.70	8x11	0.139	0.346	0.73	10x12.5	0.093	0.233	0.90
680	10x12.5	0.081	0.203	1.00	10x12.5	0.077	0.194	1.03	10x16	0.074	0.184	1.20
1000	8x20	0.066	0.166	1.31	10x16	0.063	0.158	1.39	10x20	0.060	0.150	1.60
1200	10x16	0.058	0.144	1.47	10x20	0.055	0.137	1.68	10x25	0.052	0.130	1.94
1500	10x20	0.049	0.123	1.75	10x25	0.047	0.116	2.01	12.5x20	0.044	0.111	2.13
2200	10x25	0.038	0.094	2.27	12.5x20	0.036	0.090	2.41	12.5x25	0.034	0.086	2.75
3300	12.5x20	0.032	0.079	2.69	12.5x25	0.030	0.075	3.05	16x25	0.029	0.057	3.14
4700	12.5x30	0.027	0.067	3.56	16x25	0.025	0.051	3.35	16x32	0.024	0.048	3.24
6800	16x25	0.024	0.048	3.61	16x32	0.023	0.045	3.46	18x36	0.022	0.043	3.75
10000	16x32	0.022	0.043	3.64	18x36	0.021	0.041	3.92	18x40	0.019	0.039	4.20
15000	18x36	0.020	0.041	4.12	18x40	0.019	0.039	4.40				

μF \ V(DC) / φD	25				35			
	DxL	IMP. 20°C	IMP. -10°C	R.C.	DxL	IMP. 20°C	IMP. -10°C	R.C.
10					5x11	1.498	3.745	0.11
22					5x11	0.817	2.043	0.16
33					5x11	0.636	1.589	0.20
47	5x11	0.539	1.348	0.22	6.3x11	0.510	1.275	0.27
68	6.3x11	0.419	1.049	0.30	6.3x11	0.397	0.991	0.33
100	6.3x11	0.349	0.871	0.36	8x11	0.330	0.824	0.49
220	8x11	0.180	0.450	0.65	10x12.5	0.128	0.319	0.85
330	10x12.5	0.108	0.270	0.94	10x16	0.102	0.255	1.15
470	10x16	0.088	0.221	1.25	10x20	0.084	0.209	1.52
680	10x20	0.070	0.175	1.65	12.5x20	0.066	0.165	2.07
1000	12.5x20	0.057	0.143	2.27	12.5x25	0.054	0.135	2.77
1200	12.5x20	0.050	0.124	2.49	12.5x30	0.047	0.117	3.29
1500	12.5x25	0.042	0.105	2.94	16x25	0.040	0.079	3.32
2200	16x25	0.032	0.065	3.42	16x32	0.031	0.077	3.49
3300	16x32	0.027	0.054	3.66	18x36	0.026	0.064	4.17
4700	18x36	0.023	0.046	4.23				

μF \ V(DC) / φD	50				63			
	DxL	IMP. 20°C	IMP. -10°C	R.C.	DxL	IMP. 20°C	IMP. -10°C	R.C.
10	5x11	1.331	3.992	0.13	5x11	1.331	3.992	0.13
22	5x11	0.726	2.177	0.19	6.3x11	0.726	1.814	0.22
33	6.3x11	0.564	1.411	0.26	6.3x15	0.564	1.411	0.30
47	6.3x11	0.453	1.132	0.31	8x11	0.453	1.132	0.38
68	8x11	0.352	0.880	0.46	10x12.5	0.264	0.660	0.54
100	8x20	0.220	0.549	0.71	10x16	0.220	0.549	0.73
220	10x16	0.113	0.283	1.09	10x25	0.113	0.283	1.33
330	10x20	0.091	0.227	1.47	12.5x20	0.091	0.227	1.66
470	12.5x20	0.074	0.186	1.99	12.5x25	0.074	0.186	2.19
680	12.5x25	0.059	0.147	2.63	16x25	0.059	0.117	2.63
1000	16x25	0.048	0.096	3.19	16x36	0.048	0.096	3.17
1200	16x32	0.042	0.083	3.29	18x36	0.042	0.083	3.48
1500	16x36	0.035	0.071	3.44	18x40	0.035	0.071	3.87
2200	18x36	0.027	0.055	4.20				
3300	18x40	0.023	0.046	4.97				

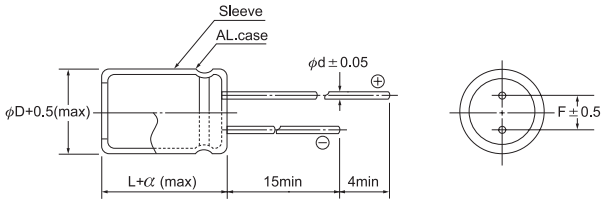
- 105°C high-temperature and high voltage 400~500WV, life 2000hrs.
- Specially Size, 10~18mm diameter.
- For LCD-TV and LCD-Moniter power.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +105°C			
Rated Working Voltage	400 ~ 500VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.03CV +40 (μA) max Whichever is greater after 3 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)			
Surge Voltage (20°C)	W.V.	400	450	500
	S.V.	450	500	550
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	400	450	500
	tan δ	0.20	0.20	0.20
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	400	450	500
	-25°C / +20°C	6	15	15
	-40°C / +20°C	10	–	–
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At + 105°C no voltage application after 1000 hours. the capacitors for load life characteristics. (With voltage treatment)			

DIMENSIONS (mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8
α	2.0	2.5	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	85	105
Multiplier	1.75	1.40	1.00

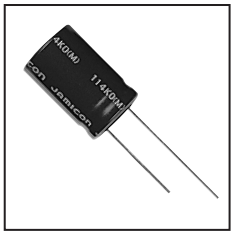
Frequency (Hz)	60	120	1k	≧10k
W.V.	Multiplier			
400~500	0.70	1.00	1.30	1.80

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	400		450		500	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
22	10x30	150	10x35	153	12.5x35	158
33	10x40	192	10x45	198	12.5x45	162
39	10x45	235	10x50	250	12.5x50	168
	12.5x35	250	12.5x40	265		
47	10x50	285	12.5x45	305	16x40	175
	12.5x40	282	16x35	290		
68	12.5x45	340	16x35	490	16x45	180
	16x35	330				
82	12.5x50	365	16x40	490	16x50	190
	16x35	385				
100	16x40	468	16x50	640	18x45	200
120	16x40	550	16x50	650	18x50	220

- High ripple current, low E.S.R. and long life
- Suitable for electronic ballast, adaptor and switching power
- Corresponding product to RoHS

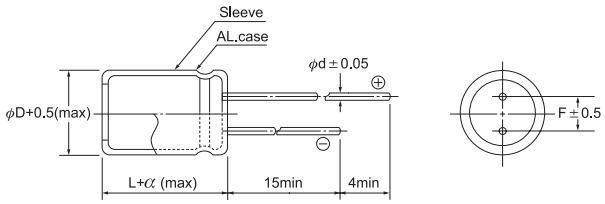


SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-40 ~ +105°C				-25 ~ +105°C	
Rated Working Voltage	160 ~ 400VDC				450VDC	
Capacitance Tolerance (120Hz 20°C)	±20%(M)					
Leakage Current (20°C)	I ≦0.06CV +10 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)					
Surge Voltage (20°C)	W.V.	160	200	250	400	450
	S.V.	200	250	300	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	160	200	250	400	450
	tan δ	0.15	0.15	0.15	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz					
	Rated Voltage (V)	160 ~ 250			400	450
	-25°C / +20°C	3			6	6
	-40°C / +20°C	4			6	—
Load Life	After hours (φD≦8mm 2000 hours, φD≧10mm 3000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)					
	Capacitance Change	≦±20% of initial value				
	Dissipation Factor	≦200% of initial specified value				
	Leakage current	≦initial specified value				
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)					

DIMENSIONS (mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8
α	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	1.80	1.65	1.50	1.25	1.00

Frequency (Hz)	120	1k	10k	100k
W.V.	Multiplier			
160~450	0.50	0.80	0.90	1.00

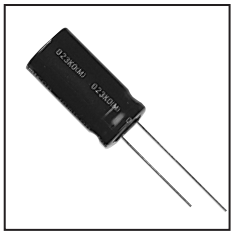
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	160			200			250		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
4.7							10x16	3.45	150
10	10x16	1.47	220	10x16	1.47	220	10x20	2.70	240
22	10x20	0.80	350	10x20	0.80	350	12.5x20	1.47	380
33	10x20	0.62	430	12.5x20	0.62	460	12.5x25	1.15	510
47	12.5x20	0.50	550	12.5x25	0.50	610	16x25	0.92	610
68	12.5x20	0.39	660	12.5x25	0.39	730	16x32	0.71	810
100	16x25	0.32	890	16x32	0.32	980	18x36	0.59	1110
220	16x36	0.17	1540	18x36	0.17	1640	18x40	0.31	1730

V(DC) / Item / μF	400			450		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.
2.2				10x16	4.94	110
3.3	10x20	2.60	170	10x20	4.11	150
4.7	10x25	2.20	220	12.5x20	3.47	190
10	12.5x25	1.72	340	12.5x25	2.72	300
22	16x25	0.94	510	16x32	1.48	500
33	16x32	0.73	690	16x32	1.15	620
47	16x32	0.59	820	18x32	0.92	780
68	16x32	0.46	990			
100	18x32	0.38	1280			
120	18x36	0.32	1480			
150	18x40	0.26	1740			
180	18x40	0.23	1910			

- High ripple current, low E.S.R. and long life
- Suitable for electronic ballast, adaptor and switching power
- Corresponding product to RoHS

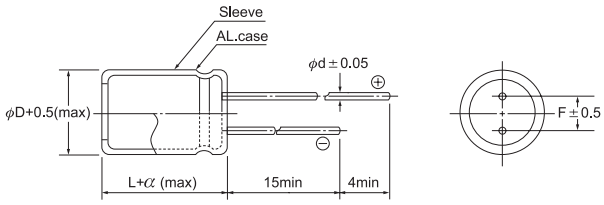


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C				-25 ~ +105°C		
Rated Working Voltage	160 ~ 400VDC				450VDC		
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.06CV +10 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450
	S.V.	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	160	200	250	350	400	450
	tan δ	0.15	0.15	0.15	0.24	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	160 ~ 250			350 ~ 400		450
	-25°C / +20°C	3			6		6
	-40°C / +20°C	4			6		—
Load Life	After hours (φD≦8mm 3000 hours φD≧10mm 5000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At + 105°C no voltage application after 1000 hours. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hrs and not more than 48 hrs before measurement. Cap & DF shall meet the limits for load life characteristics, Leakage current ≦500% of the initial specified value						

DIMENSIONS (mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8
α	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	1.80	1.65	1.50	1.25	1.00

Frequency (Hz)	120	1k	10k	100k
W.V.	Multiplier			
160~450	0.50	0.80	0.90	1.00

CASE SIZE & MAX RIPPLE CURRENT

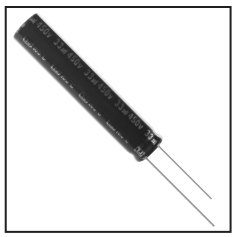
Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	160			200			250		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
10						→	10x20	3.18	240
22	10x20	1.47	350	10x20	1.47	350	12.5x20	1.74	380
33	10x20	1.15	430	12.5x20	1.15	460	12.5x25	1.35	510
47	12.5x20	0.92	550	12.5x20	0.92	550	12.5x25	1.08	610
68	12.5x25	0.71	730	12.5x25	0.71	730	16x25	0.84	730
100	16x25	0.59	890	16x25	0.59	890	16x32	0.70	980
150	16x32	0.41	1210	16x32	0.41	1210	18x32	0.49	1290
220	16x32	0.31	1460	18x36	0.31	1640	18x40	0.36	1730
330	18x36	0.25	2010						

V(DC) / Item / μF	350			400			450		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
3.3						→	10x20	4.47	150
4.7						→	12.5x20	3.77	190
10	10x20	2.94	220	10x20	2.94	290	12.5x25	2.95	300
22	12.5x20	1.60	340	12.5x25	1.60	460	16x25	1.61	450
33	12.5x25	1.25	460	12.5x25	1.25	620	16x32	1.25	620
47	16x25	1.00	560	16x25	1.00	740	18x32	1.01	780
68	16x32	0.78	740	16x32	0.78	990	18x36	0.78	990
100	18x36	0.65	1010	18x36	0.65	1350			

All blank voltage on sleeve marking is the same voltage as" → "point to.

- 105°C high-temperature and high voltage 350~450WV, life 5000hrs.
- Specially Size, 10~16mm diameter.
- For LCD-TV and LCD-Moniter power.
- Corresponding product to RoHS

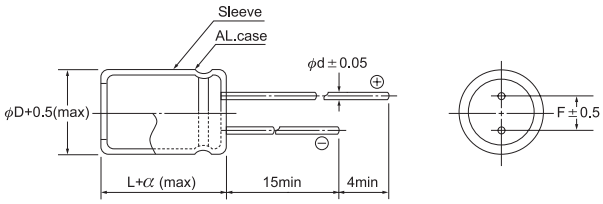


SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +105°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.06CV +10 (μA) max Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	350	400	450
	tan δ	0.24	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350	400	450
	-25°C / +20°C	6	6	6
	-40°C / +20°C	6	6	–
Load Life	After 5000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At + 105°C no voltage application after 1000 hours. the capacitors shall meet the limits for load life characteristics. (With voltage treatment)			

DIMENSIONS (mm)

φD	10	12.5	16
F	5.0	5.0	7.5
d	0.6	0.6	0.8
α	2.0	2.5	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	1.80	1.65	1.50	1.25	1.00

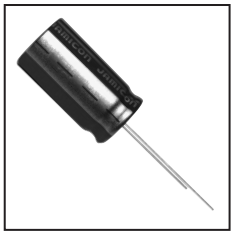
Frequency (Hz)	120	1k	10k	100k
W.V.	Multiplier			
350~450	0.50	0.80	0.90	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
33			10x40	260	12.5x35	300
39	12.5x30	270	10x45	300	12.5x40	360
			12.5x35	310		
47	10x45	300	10x50	330	12.5x50	370
	12.5x35	320	12.5x40	350		
68	12.5x45	400	12.5x45	400	16x40	440
	16x30	430	16x35	420		
82	12.5x50	450	16x40	550	16x45	620
	16x35	500				
100	16x40	530	16x45	720	16x50	760

- Endurance:105°C 8,000 to 10,000 Hours
- Suitable for electronic ballast, adaptor and switching power
- Corresponding product to RoHS

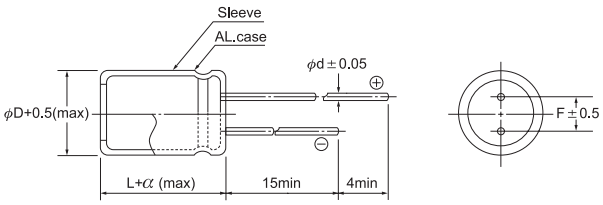


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C				-25 ~ +105°C		
Rated Working Voltage	160 ~ 400VDC				450VDC		
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.06CV +10 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450
	S.V.	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	160	200	250	350	400	450
	tan δ	0.15	0.15	0.15	0.24	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	160 ~ 250			350 ~ 400	450	
	-25°C / +20°C	3			6	6	
	-40°C / +20°C	4			6	—	
Load Life	After hours (φD=10mm 8000 hours φD≧12.5mm 10000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At + 105°C no voltage application after 1000 hours. the capacitors shall meet the limits for load life characteristics. (With voltage treatment)						

DIMENSIONS (mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8
α	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	1.80	1.65	1.50	1.25	1.00

Frequency (Hz)	120	1k	10k	100k
W.V.	Multiplier			
160~450	0.50	0.80	0.90	1.00

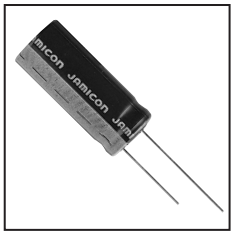
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	160		200		250	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
10	10x16	250	10x16	250	10x20	280
22	10x20	500	10x20	500	12.5x20	600
33	10x20	500	12.5x20	600	12.5x20	600
47	12.5x20	660	12.5x20	660	12.5x25	720
					16x20	720
68	12.5x25	760	12.5x25	760	16x25	920
	16x20	760	16x20	760	18x20	920
100	16x25	1120	16x25	1120	16x32	1200
	18x20	1120	18x20	1120	18x25	1200
150	16x32	1360	16x32	1360	18x32	1500
	18x25	1360	18x25	1360		
220	16x32	1400	18x32	1700		
	18x25	1400				

V(DC) / Item / μF	350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
6.8	10x16	220	10x16	220	10x20	150
10	10x20	280	10x20	280	12.5x20	320
22	12.5x20	350	12.5x25	430	16x25	560
			16x20	430	18x20	560
33	16x20	500	16x25	640	16x32	700
			18x20	640	18x25	700
47	16x25	660	16x32	840	18x32	880
	18x20	660	18x25	840		
68	16x32	850	18x32	1000	18x36	1150
	18x25	850				

- Endurance : 105°C 10000~12000hours
- Recommended Applications : Electronic lighting and power
- Corresponding product to RoHS

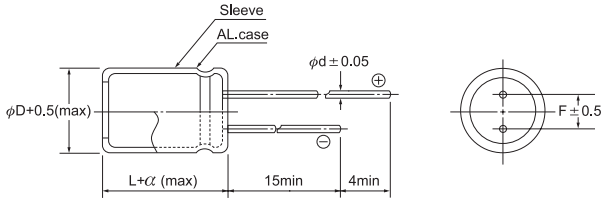


SPECIFICATION

Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C						
Rated Working Voltage	160 ~ 450VDC						
Capacitance Tolerance (120Hz 20°C)	±20% (M)						
Leakage Current (20°C)	I ≦0.04CV or 100 (μA) *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)						
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450
	S.V.	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	160	200	250	350	400	450
	tan δ	0.15	0.15	0.15	0.20	0.20	0.20
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	160	200	250	350	400	450
	-25°C / +20°C	3	3	3	5	5	6
	-40°C / +20°C	6	6	6	6	6	8
Load Life	After 10000~12000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Dφ	10φ			≧12.5φ		
	Life (hours)	10000hrs			12000hrs		
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦200% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)						

DIMENSIONS (mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8
α	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Coefficient	1.90	1.75	1.40	1.00

Frequency(Hz)	120	1k	10k	100k
Coefficient	0.50	0.80	0.90	1.00

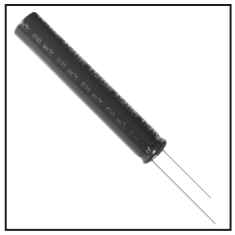
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	160		200		250		350	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
6.8							10x16	280
10					10x16	320	10x20	350
15								
22			10x16	500	10x20	500	12.5x20	650
33	10x16	500	10x20	520	12.5x20	800	12.5x25	900
47	10x20	580	12.5x20	660	12.5x20	980	16x25	1000
68	12.5x20	720	12.5x25	720			16x32	1100
100	12.5x25	970	16x25	1120	16x25	1530		
150	16x25	1120	16x32	1620	18x25	1940		
220	16x32	1300	18x32	2080	18x36	2753		
330	18x36	1380			18x50	3912		
390			18x50	3380				
560	18x50	2086						

V(DC) / Item / μF	400		450	
	DxL	R.C.	DxL	R.C.
6.8	10x16	140		
10	10x20	180	10x20	180
15			12.5x20	380
22	12.5x20	430	12.5x25	500
33	16x25	520	16x25	560
47	16x32	700	16x36	880
68	18x32	870	16x36	1110
100	18x50	1290	18x50	1560

- 105°C high-temperature and high voltage 350~450WV, life 10000hrs.
- Specially Size, 12.5~16mm diameter.
- For LCD-TV and LCD-Moniter power.
- Corresponding product to RoHS

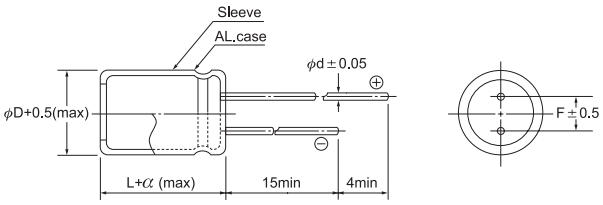


SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +105°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.06CV +10 (μA) max Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	350	400	450
	tan δ	0.24	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350	400	450
	-25°C / +20°C	6	6	6
	-40°C / +20°C	6	6	–
Load Life	After 10000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

DIMENSIONS (mm)

φD	12.5	16
F	5.0	7.5
d	0.6	0.8
α	2.5	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	75	85	95	105
Multiplier	1.80	1.65	1.50	1.25	1.00

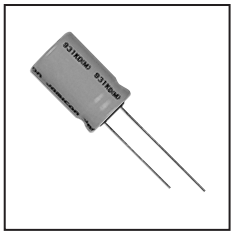
Frequency (Hz)	120	1k	10k	100k
W.V.	Multiplier			
350~450	0.50	0.80	0.90	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 100kHz

V(DC) / Item / μF	350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
33			12.5x30	600	12.5x40	700
39			12.5x35	650	12.5x45	700
47	12.5x35	600	12.5x45	800	12.5x50	880
68	12.5x45	800	12.5x50	900	16x40	1100
82	12.5x50	950	16x40	1100	16x45	1250
100	16x40	1100	16x50	1300	16x50	1550

- High reliability withstanding 2000 hours load life at 125°C.
- Corresponding product to RoHS

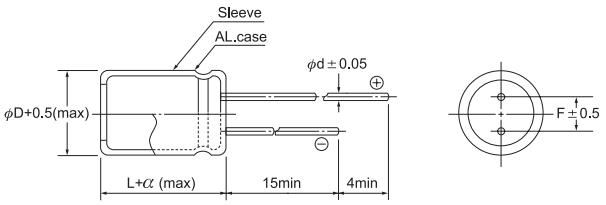


SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-55 ~ +125°C					
Rated Working Voltage	10 ~ 50VDC					
Capacitance Tolerance (120Hz 20°C)	±20%(M)					
Leakage Current (20°C)	I ≦0.01CV or 2 (μA) Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)					
Surge Voltage (20°C)	W.V.	10	16	25	35	50
	S.V.	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	10	16	25	35	50
	tan δ	0.20	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz					
	Rated Voltage (V)	10	16	25	35	50
	-25°C / +20°C	3	2	2	2	2
	-40°C / +20°C	8	6	4	4	4
Load Life	After 2000 hours application of W.V. and +125°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)					
	Capacitance Change	≦±25% of initial value				
	Dissipation Factor	≦200% of initial specified value				
	Leakage current	≦initial specified value				
Shelf Life	At +125°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)					

DIMENSIONS (mm)

φD	6.3	8	10	12.5
F	2.5	3.5	5.0	5.0
d	0.5	0.6	0.6	0.6
α	1.5	1.5	1.5	2.0



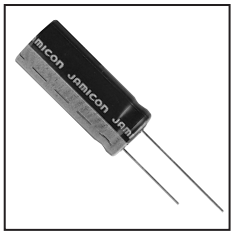
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 125°C 120Hz

V(DC) / Item / μF	10		16		25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
10								→	8x11	70
22				→	6.3x11	70	8x11	100	8x11	110
33		→	6.3x11	75	8x11	110	8x11	120	8x11	130
47	6.3x11	80	6.3x11	90	8x11	130	8x11	140	8x11	150
100	6.3x11	120	8x11	170	8x11	230	10.12.5	270	10x12.5	290
220	8x11	230	10x12.5	330	10x12.5	460	10x16	530	10x20	590
333	10x12.5	360	10x12.5	400	10x16	620	10x20	720	12.5x20	900
470	10x12.5	430	10x16	530	10x20	820	12.5x20	970	12.5x20	960
1000	10x20	760	12.5x20	970	12.5x25	1170				

All blank voltage on sleeve marking is the same voltage as" → "point to.

- Endurance : 125°C, 2000~5000hrs
- Recommended Applications : Applicable for Electronic Ballast, Lighting Ballast
- Corresponding product to RoHS

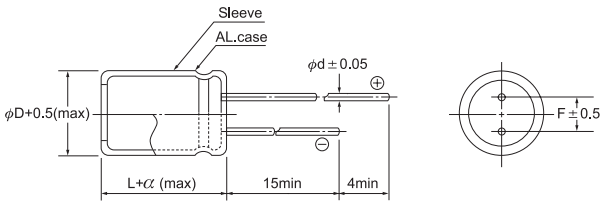


SPECIFICATION

Item	Characteristic												
Operation Temperature Range	-40 ~ +125°C						-25 ~ +125°C						
Rated Working Voltage	10 ~ 63VDC						160 ~ 450VDC						
Capacitance Tolerance (120Hz 20°C)	±20% (M)												
Leakage Current (20°C)	I =0.01CV or 3 μA						I =0.1CV+40μA(CV≦1000) I =0.04CV+100μA(CV＞1000)						
	Whichever is greater after 2 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)												
Surge Voltage (20°C)	W.V.	10	16	25	35	50	63	160	200	250	350	400	450
	S.V.	13	20	32	44	63	79	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF												
	W.V.	10	16	25	35	50	63	160	200	250	350	400	450
	tan δ	0.19	0.16	0.14	0.12	0.14	0.14	0.20	0.20	0.20	0.24	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz												
	Rated Voltage (V)	10	16	25	35	50	63	160	200	250	350	400	450
	-25°C / +20°C	3	2	2	2	2	2	3	3	3	6	6	6
	-40°C / +20°C	6	4	4	4	4	3	–	–	–	–	–	–
Load Life	After 2000~5000 hours application of W.V. at +125°C, the capacitor shall meet the following limits.												
	Rated Voltage Range	10~63VDC						160~450VDC					
	Dφ	8φ		10φ		≧12.5φ		2000hrs					
	Life (hours)	2000hrs		3000hrs		5000hrs							
	Capacitance Change	≦±30% of initial value						Within±20% of initial value					
	Dissipation Factor	≦300% of initial specified value						≦200% of initial specified value					
	Leakage current	≦initial specified value						≦initial specified value					
Shelf Life	At +125°C no voltage application after 1000 hours the capacitor shall meet the following limits. (With voltage treatment)												
	Rated Voltage Range	10~63VDC						160~450VDC					
	Capacitance Change	≦±30% of initial value						Within±20% of initial value					
	Dissipation Factor	≦300% of initial specified value						≦200% of initial specified value					
	Leakage current	≦500% of initial specified value						≦500% of initial specified value					

DIMENSIONS (mm)

φD	8	10	12.5	16	18
F	3.5	5.0	5.0	7.5	7.5
d	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦70	85	105	125
Coefficient	1.9	1.75	1.40	1.00

Frequency(Hz)		120	1k	10k	50~100k
10~63WV	CAP≦10	0.40	0.75	0.90	1.00
	10<CAP≦100	0.50	0.85	0.95	1.00
	100<CAP≦1000	0.60	0.85	0.96	1.00
	1000<CAP	0.75	0.90	0.98	1.00
10~63WV	CAP≦33	1.00	1.50	1.75	1.80
	CAP≦47	1.00	1.30	1.40	1.50

CASE SIZE & MAX RIPPLE CURRENT

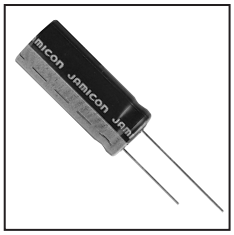
Case size : D x L (mm)
Max ripple current : mA(rms) 125°C 100kHz

V(DC) / Item / μF	10		16		25		35	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
100					8x11	340	10x12.5	340
220	8x11	340	8x11	340	10x12.5	500	10x16	500
330	10x12.5	500	10x12.5	500	10x16	630	10x20	770
470	10x16	630	10x20	770	10x20	770	12.5x20	920
1000	10x20	770	12.5x20	920	12.5x25	1250	16x25	1380
2200	12.5x25	1250	16x25	1380	16x32	1450		
3300	16x25	1380	16x32	1450				
4700	16x32	1450	16x32	1720				

V(DC) / Item / μF	50		63		160		200	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
3.3					8x11	28	8x11	28
4.7					10x12.5	40	10x12.5	40
10					10x16	60	10x20	78
22					10x20	115	10x25	126
33					10x25	154	12.5x20	157
47	8x11	245	8x11	245	12.5x20	187	12.5x25	204
68					12.5x25	245	16x20	250
100	10x12.5	415	10x15	455	16x25	329	16x25	329
150					16x32	434		
220	10x20	491	12.5x20	665				
330	12.5x20	665	12.5x25	995				
470	12.5x25	995	16x25	1000				
1000	16x32	1280						

V(DC) / Item / μF	250		350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0			8x11	25	10x12.5	28	8x16	25
2.2	8x11	28	10x12.5	32	10x16	35	10x16	32
3.3	10x12.5	32	10x16	45	10x16	42	10x20	40
4.7	10x16	45	10x20	53	10x20	53	10x25	58
10	10x20	78	10x25	85	10x25	86	12.5x20	86
22	12.5x20	128	12.5x25	139	12.5x30	142	16x25	154
33	12.5x25	171	16x25	189	16x25	189	16x32	203
47	16x25	225	16x32	243	16x32	243		
68	16x32	292						

- Endurance : 125°C, 3000~5000hrs
- Recommended Applications : Applicable for Electronic Ballast, Lighting Ballast
- Corresponding product to RoHS

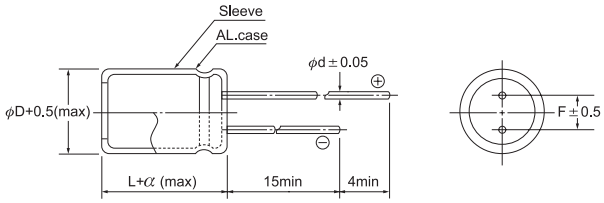


SPECIFICATION

Item	Characteristic				
Operation Temperature Range	-40 ~ +125°C				
Rated Working Voltage	25 ~ 63VDC				
Capacitance Tolerance (120Hz 20°C)	±20% (M)				
Leakage Current (20°C)	I =0.03CV or 4 μA Whichever is greater after 1 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
Surge Voltage (20°C)	W.V.	25	35	50	63
	S.V.	32	44	63	79
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF				
	W.V.	25	35	50	63
	tan δ	0.14	0.12	0.14	0.14
Low Temperature Stability	Impedance ratio at 120Hz				
	Rated Voltage (V)	25	35	50	63
	-25°C / +20°C	2	2	2	2
	-40°C / +20°C	4	4	4	4
Load Life	After 3000~5000 hours application of W.V. at +125°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)				
	L(height)	L≦20mm		L≧25mm	
	Life	3000hrs		5000hrs	
	Capacitance Change	≦±30% of initial value			
	Dissipation Factor	≦300% of initial specified value			
	Leakage current	≦initial specified value			
Shelf Life	At +125°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)				

DIMENSIONS (mm)

φD	12.5	16	18
F	5.0	7.5	7.5
d	0.6	0.8	0.8
α	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦70	85	105	125
Coefficient	1.9	1.75	1.40	1.00

Frequency(Hz)		120	1k	10k	100k
25~63WV	CAP:47~560μF	0.50	0.85	0.94	1.00
	CAP:620~1800μF	0.60	0.87	0.95	1.00
	CAP:2200~3900μF	0.75	0.90	0.95	1.00
	CAP:4700~6800μF	0.85	0.95	0.98	1.00

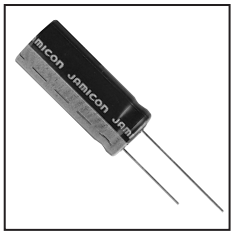
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max impedance : Ω 20°C 100kHz
Max ripple current : mA(rms) 125°C 100kHz

μF \ V(DC) / Item	25			35			50		
	DxL	IMP.	R.C.	DxL	IMP.	R.C.	DxL	IMP.	R.C.
470							12.5x20	0.095	1500
680				12.5x20	0.046	1820	12.5x25	0.078	1900
							16x20	0.073	2040
820							12.5x30	0.071	2150
1000				12.5x25	0.040	2280	12.5x35	0.064	2510
							16x25	0.061	2620
							18x20	0.069	2240
1200	12.5x20	0.046	1820	12.5x30	0.031	2560	12.5x40	0.058	2870
				16x20	0.036	2280	16x30	0.057	2940
							18x25	0.059	2750
1500				12.5x35	0.027	2970	16x36	0.053	3300
				18x20	0.036	2490			
1800	12.5x25	0.040	2280	12.5x40	0.023	3340	18x30	0.056	3140
	16x20	0.036	2280	16x25	0.028	2860			
2200	13x30	0.031	2560	16x30	0.025	3160	16x40	0.050	3720
				18x25	0.026	3010	18x36	0.052	3510
2700	12.5x35	0.027	2970	16x36	0.022	3590	18x40	0.048	3940
	16x25	0.028	2860	18x30	0.022	3390			
	18x20	0.036	2490						
3300	12.5x40	0.023	3340	16x40	0.018	3970			
	16x30	0.025	3160	18x36	0.020	3840			
3900	16x36	0.022	3590						
	18x25	0.026	3010						
4700	18x30	0.022	3390	18x40	0.017	4230			
5600	16x40	0.018	3970						
	18x36	0.020	3840						
6800	18x40	0.017	4230						

μF \ V(DC) / Item	63		
	DxL	IMP.	R.C.
470	16x20	0.105	1790
680	16x25	0.085	2030
	18x20	0.095	1910
820	16x30	0.073	2330
1000	16x36	0.064	2580
	18x25	0.069	2280
1200	16x40	0.056	2900
	18x30	0.061	2580
1500	18x36	0.055	2890
1800	18x40	0.050	3210

- Endurance : 130°C, 1000~4000hrs
- Recommended Applications : Applicable for Electronic Ballast, Lighting Ballast
- Corresponding product to RoHS

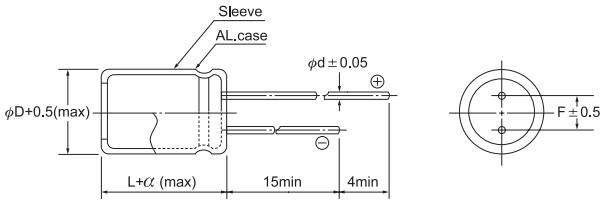


SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-40 ~ +130°C					
Rated Working Voltage	10 ~ 50VDC					
Capacitance Tolerance (120Hz 20°C)	±20% (M)					
Leakage Current (20°C)	I =0.03CV or 4 μA Whichever is greater after 1 minutes			I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	10	16	25	35	50
	S.V.	13	20	32	44	63
Dissipation Factor (tan δ) (120Hz 20°C)	Add 0.02 per 1000 μF for more than 1000 μF					
	W.V.	10	16	25	35	50
	tan δ	0.20	0.16	0.14	0.12	0.10
Low Temperature Stability	Impedance ratio at 120Hz					
	Rated Voltage (V)	10	16	25	35	50
	-25°C / +20°C	3	2	2	2	2
	-40°C / +20°C	6	4	4	4	4
Load Life	After 1000~4000 hours application of W.V. at +130°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)					
	Dφ	5~6.3φ		8~10φ		≧12.5φ
	Life	1000hrs		2000hrs		4000hrs
	Capacitance Change	≦±30% of initial value				
	Dissipation Factor	≦300% of initial specified value				
	Leakage current	≦initial specified value				
Shelf Life	At +130°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)					

DIMENSIONS (mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	1.5	1.5	1.5	1.5	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦70	85	105	130
Coefficient	1.9	1.75	1.40	1.00

Frequency(Hz)		120	1k	10k	≧100k
10~50WV	22~47μF	0.55	0.75	0.90	1.00
	68~330μF	0.70	0.85	0.95	1.00
	470~1500μF	0.75	0.90	0.98	1.00
	2200~4700μF	0.80	0.95	1.00	1.00

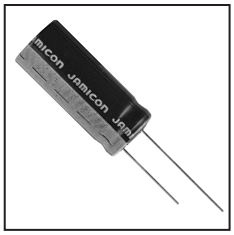
CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 130°C 100kHz

V(DC) / Item / μF	10		16		25		35	
	DxL	R.C.	DxL	R.C.	DxL	R.C.	DxL	R.C.
47					5x11	130		
68					6.3x11	170		
100							8x11	360
220					8x11	360	10x12.5	620
330	8x11	360	8x11	360	10x12.5	620	10x16	800
470	10x12.5	620	10x12.5	620	10x20	800	10x20	960
1000	10x20	960	10x20	960	12.5x25	1100	10x12.5	1430
2200	12.5x25	1430	12.5x25	1430	16x30	2300	16x35	2550
3300	16x25	1900	16x30	2300	16x35	2500	18x35	2800
4700	16x30	2300	16x35	2550				

V(DC) / Item / μF	50	
	DxL	R.C.
22	5x11	200
33	6.3x11	250
47	8x11	300
	6.3x12	260
100	10x12.5	520
220	10x20	890
330	12.5x20	1000
470	12.5x25	1200
1000	16x30	2180
2200	18x40	2800

- Endurance : 105°C, 12000~20000hrs
- Recommended Applications : For LED Lightingr
- Corresponding product to RoHS

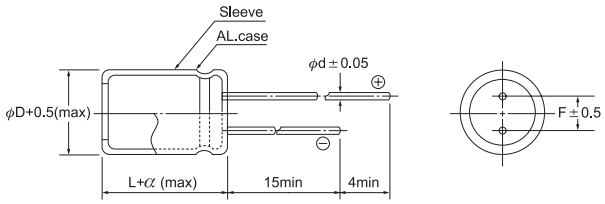


SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +105°C			
Rated Working Voltage	160 ~ 400VDC			
Capacitance Tolerance (120Hz 20°C)	±20% (M)			
Leakage Current (20°C)	CV≦1000	CV＞1000	I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)	
	I =0.1CV+40 μA(1 minute)	I =0.04CV+100 μA(1 minute)		
	I =0.03CV+15 μA(5 minute)	I =0.02CV+25 μA(5 minute)		
Surge Voltage (20°C)	W.V.	160	200	400
	S.V.	200	250	450
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	160	200	400
	tan δ	0.24	0.24	0.24
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	160	200	400
	-25°C / +20°C	3	3	6
	-40°C / +20°C	8	8	10
Load Life	After 12000~20000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	φDxL	6.3x11, 8x9,10x9	8x11,10x12.5	10x16
	Life	12000hrs	15000hrs	20000hrs
	Capacitance Change	≦±30% of initial value		
	Dissipation Factor	≦300% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

DIMENSIONS (mm)

φD	6.3	8	10
F	2.5	3.5	5.0
d	0.5	0.6	0.6
α	2.0	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	≦50	70	85	105
Coefficient	1.90	1.75	1.40	1.00

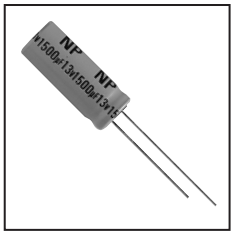
Frequency(Hz)		120	1k	10k	≧100k
Coefficient	1~5.6μF	1.00	1.60	1.80	2.00
	6.8~18μF	1.00	1.50	1.70	1.90
	22~33μF	1.00	1.40	1.60	1.80

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	160		200		400	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
1.0					6.3x11	24
1.2					8x9	28
1.5					8x9	30
1.8					8x9	33
2.2			6.3x11	36	8x9	36
					8x11	40
2.7					8x11	43
3.3			6.3x11	42	8x11	47
					10x9	48
3.9					10x12.5	57
4.7			6.3x11	49	10x12.5	61
5.6	6.3x11	52	8x9	56		
6.8			8x9	62	10x16	85
8.2			8x9	66		
10	8x9	70	8x11	80		
12			10x9	88		
15	8x11	92				
	10x9	95				
18			10x12.5	113		
22	10x12.5	121				
27			10x16	149		
33	10x16	158				

- Suitable for the direction light of automobile and motorcycle.
- Corresponding product to RoHS

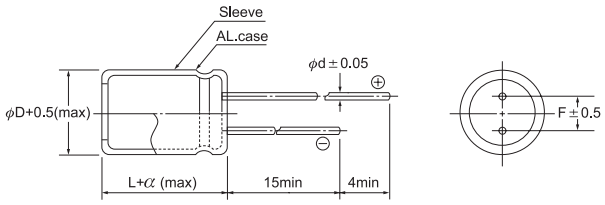


SPECIFICATION

Item	Characteristic
Operation Temperature Range	-40 ~ +85°C
Rated Working Voltage	13VDC
Capacitance Tolerance (120Hz 20°C)	±10%(K) ±20%(M) +20% -10%(V)
Leakage Current (20°C)	I ≦ 1000 (μA) Under 100Ω resister series and rated voltage applied whichever after 3 minutes. I : Leakage Current (μA) C : Rated Capacitance(μF) V : Working Voltage (V)
Dissipation Factor (tan δ) (120Hz 20°C)	tan δ ≦ 0.50

DIMENSIONS (mm)

ϕD	10	12.5
F	5.0	5.0
d	0.6	0.6
α	1.5	2.0

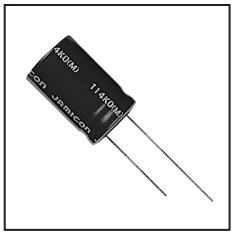


CASE SIZE & MAX RIPPLE CURRENT

Case size: D x L (mm)

μF \ V(DC) / Item	13
	DxL
1500	10x25
1700	12.5x20
2200	12.5x25

- No sparks with specified DC overvoltage applied.
- Withstanding 2000 hours application of rate ripple current at 105°C
- Corresponding product to RoHS

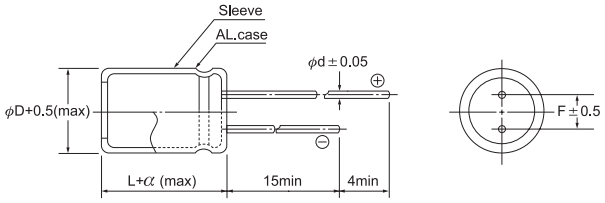


SPECIFICATION

Item	Characteristic		
Operation Temperature Range	-25 ~ +105°C		
Rated Working Voltage	200 ~ 400VDC		
Capacitance Tolerance (120Hz 20°C)	±20%(M)		
Leakage Current (20°C)	I ≦0.06CV +10 μA *Whichever is greater after 2 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)		
Surge Voltage (20°C)	W.V.	200	400
	S.V.	250	450
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	200	400
	tan δ	0.15	0.24
Low Temperature Stability	Impedance ratio at 120Hz		
	Rated Voltage (V)	200	400
	-25°C / +20°C	4	6
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)		
	Capacitance Change	≦±20% of initial value	
	Dissipation Factor	≦200% of initial specified value	
	Leakage current	≦initial specified value	
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)		

DIMENSIONS (mm)

φD	16	18
F	7.5	7.5
d	0.8	0.8
α	2.0	2.0



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	65	85	105
Multiplier	1.80	1.50	1.00

Frequency(Hz)	60	120	1k	10k	100k
W.V.	Multiplier				
200V	0.80	1.00	1.30	1.40	1.60
400V	0.75	1.00	1.50	1.75	1.85

CASE SIZE & MAX RIPPLE CURRENT

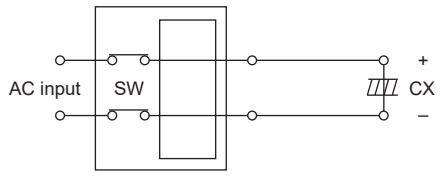
Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

V(DC) / Item / μF	200		400	
	DxL	R.C.	DxL	R.C.
22			16x25	170
33			16x25	210
39			16x32	260
			18x25	250
47			16x32	280
56			16x40	340
			18x32	330
68			18x36	380
82			18x40	440
100	16x25	400		
120	16x32	480		
	18x25	470		
150	16x32	540		
	18x25	520		
180	16x40	660		
	18x32	630		
220	18x36	730		
	18x40	770		

DC OVERVOLTAGE TEST CONDITION

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

Rated Voltage	Current	Test DC Voltage
200 VDC	4A	300 / 375 VDC
400 VDC	2A	500 / 600 VDC



Constant DC voltage/current power supply

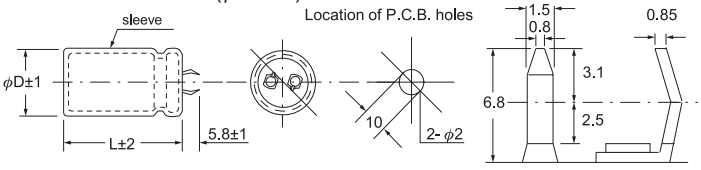
- Withstanding 2000 hours application of high ripple current at 85°C.
- Corresponding product to RoHS

SPECIFICATION

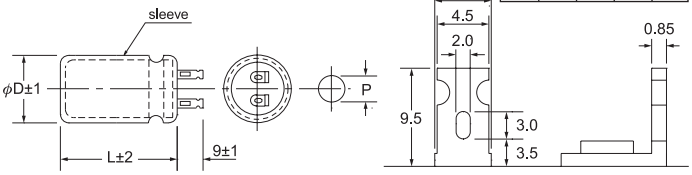
Item	Characteristic																
Operation Temperature Range	-40 ~ +85°C																
Rated Working Voltage	16 ~ 500VDC																
Capacitance Tolerance (120Hz 20°C)	±20%(M)																
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)																
Surge Voltage (20°C)	W.V.	16	25	35	50	63	80	100	160	180	200	250	350	350	400	450	500
	S.V.	20	32	44	63	79	100	125	200	225	250	300	400	400	450	500	550
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	16		25		35		50		63		80		100		≧160	
	Capacitance	≦47,000	≧56,000	≦33,000	≧47,000	≦22,000	≧33,000	≦6,800	≧10,000	≦6,800	≧10,000	≦2,200	≧3,300	≦3,300	≧4,700	—	
	tan δ	0.50	0.60	0.40	0.50	0.35	0.40	0.30	0.35	0.25	0.35	0.20	0.25	0.20	0.25	0.15	
Low Temperature Stability	Impedance ratio at 120Hz																
	Rated Voltage (V)	16~100				160~250				350~500							
	-25°C / +20°C	4				6				8							
	-40°C / +20°C	15				—				—							
Load Life	After 2000 hours application of W.V. at +85°C the capacitor shall meet the following limits.																
	Capacitance Change	≦±15% of initial value															
	Dissipation Factor	≦175% of initial specified value															
	Leakage current	≦initial specified value															
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)																

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



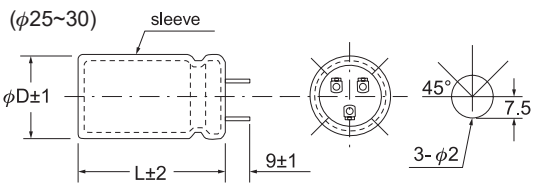
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

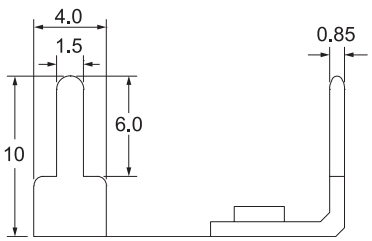


φD	22	25	30	35
P	8	10	10	14

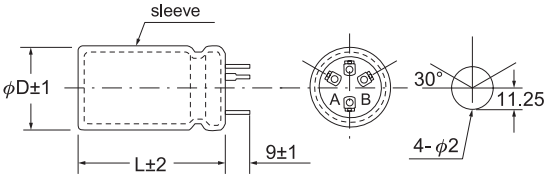
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)





(φ35)
A.B. blank terminals



※ For φ45 dimension, refer to page 16.

RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85
Multiplier	1.80	1.40	1.20	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≦100V	0.80	1.00	1.10	1.20	1.20
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A (rms)
(R.C.) : 85°C 120Hz

V(DC) / μF / φD	16					25					35				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
3300											25				
											2.04				
4700						25					30	25			
						2.25					2.41	2.23			
6800	25					30	25				35	30	25		
	2.40					2.69	2.56				2.82	2.70	2.66		
10000	30	25				35	30	25			45	35	30	25	
	2.81	2.67				3.09	2.97	2.92			3.34	3.06	3.04	3.28	
15000	40	30	25			45	35	30	25			50	35	30	
	3.43	3.11	3.07			3.70	3.39	3.37	3.63			4.06	3.67	3.98	
22000		45	30	25			45	35	30				45	40	
		4.25	3.78	4.09			4.48	4.25	4.61				4.94	5.41	
33000			45	35				50	40					50	
			5.48	5.67				6.05	6.33					7.27	
56000															55
															10.27
68000										55					60
										11.47					11.73
82000					50					60					
					10.83					13.06					
100000					60										L(mm)
					12.90										R.C.

V(DC) / μF / φD	50					63					80					100				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
1000											25					30	25			
											1.50					1.71	1.63			
1200																35	30			
																2.01	1.93			
1500						25					30	25				35	30	25		
						1.66					1.88	1.79				2.11	2.03	2.00		
1800																45	35	30		
																2.59	2.37	2.35		
2200	25					30	25				40	30	25			50	40	30	25	
	1.92					2.08	1.98				2.45	2.22	2.19			2.84	2.64	2.47	2.66	
3300	30	25				35	30	25			50	40	30	25			50	40	30	
	2.35	2.24				2.51	2.41	2.38			3.05	2.83	2.65	2.86			3.25	3.11	3.19	
4700	35	30	25			45	35	30	25			50	40	30				50	40	
	2.72	2.62	2.58			3.04	2.79	2.77	2.99			3.36	3.21	3.30				3.65	3.82	
6800	50	40	30	25			50	35	30				50	40					50	
	3.45	3.20	3.00	3.23			3.53	3.19	3.46				3.80	3.98					4.48	
10000		50	35	30				45	40											
		3.70	3.35	3.64				3.72	4.08											
12000																				60
																				5.83
15000			50	40					50						55					70
			4.61	4.83					5.30						6.29					6.96
18000				45																
				5.55																
22000				50						55					65					
				6.42						6.95					8.17					
27000										65										
										8.26										
33000					55															
					8.51															
39000					65															L(mm)
					9.26															R.C.

LARGE CAN TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A (rms)
(R.C.) : 85°C 120Hz

V(DC) / μF / φD	160					180					200					250				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
220											25					25				
											1.25					1.31				
270											25					30	25			
											1.67					1.57	1.57			
330						25					30	25				35	30			
						1.31					1.66	1.66				1.85	1.87			
390	25					30	25				30	25				35	30	25		
	1.44					1.54	1.54				1.80	1.80				2.01	2.03	2.10		
470	30	25				30	25				35	30	25			40	35	25	25	
	1.70	1.70				1.69	1.69				2.11	2.13	2.21			2.34	2.38	2.31	2.54	
560	35	30				35	30	25			40	35	25			50	40	30	25	
	1.99	2.23				1.97	1.99	2.06			2.44	2.48	2.41			2.82	2.74	2.71	2.78	
680	40	30	25			40	35	25			45	35	30	25			45	35	30	
	2.32	2.21	2.29			2.30	2.34	2.27			2.83	2.73	2.85	2.92			3.19	3.18	3.28	
820	45	35	30			45	40	30	25			40	30	25			50	40	30	
	2.68	2.58	2.70			2.67	2.72	2.68	2.75			3.17	3.13	3.21			3.67	3.69	3.60	
1000	50	40	30	25			45	35	25			50	35	30				45	35	
	3.11	3.02	2.98	3.05			3.16	3.15	3.04			3.87	3.68	3.80				4.28	4.22	
1200		45	35	30			50	40	30				40	35				50	40	
		3.49	3.48	3.59			3.63	3.65	3.56				4.26	4.42				4.91	4.88	
1500			40	35				45	35					40					50	
			4.11	4.26				4.15	4.09					5.02					5.74	
1800			45	35					40					50						
			4.73	4.67					4.73					6.04						
2200																				50
																				5.81
2700															50					60
															6.44					6.94
3300										50					60					
										6.44					7.68					
3900					50					60										
					7.00					7.55										
4700					60															L(mm)
					8.29															R.C.

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A (rms)
(R.C.) : 85°C 120Hz

μF \ V(DC) / φD	350					400					450					500				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
82						25					30	25				35	30	25		
						0.76					0.83	0.83				0.73	0.74	0.76		
100	25					30	25				35	30	25			40	30	25		
	0.73					0.91	0.91				0.97	0.98	1.02			0.85	0.81	0.84		
120	30	25				30	25				40	30	25			45	35	30		
	0.86	0.86				1.00	1.00				1.13	1.08	1.12			0.99	0.95	0.99		
150	30	25				35	30	25			45	35	30			50	40	35	30	
	0.96	0.96				1.19	1.20	1.25			1.33	1.28	1.34			1.15	1.12	1.18	1.22	
180	35	30	25			40	35	25			50	40	30	25			45	40	30	
	1.13	1.14	1.18			1.38	1.40	1.37			1.53	1.49	1.47	1.50			1.30	1.37	1.33	
220	40	35	25			50	40	30	25			45	35	30			50	45	35	
	1.32	1.34	1.30			1.69	1.64	1.62	1.66			1.73	1.72	1.78			1.50	1.59	1.57	
270	50	40	30	25			45	35	30				40	35				50	45	
	1.61	1.57	1.55	1.59			1.92	1.91	1.97				2.02	2.10				1.84	1.92	
330		45	35	30			50	40	30				45	35					45	
		1.82	1.82	1.88			2.22	2.23	2.18				2.35	2.32					2.13	
390		50	40	30				45	35					40					50	
		2.08	2.10	2.04				2.55	2.52					2.66					2.42	
470			40	35					40					45						
			2.30	2.38					2.92					3.07						
560			50	40					45											
			2.76	2.75					3.34											
680				45					50						50					
				3.18					3.85						3.70					
820										50					55					
										4.06					4.22					
1000					50					55										
					4.14					4.66										
1500					60															L(mm)
					4.43															R.C.

LARGE CAN TYPE

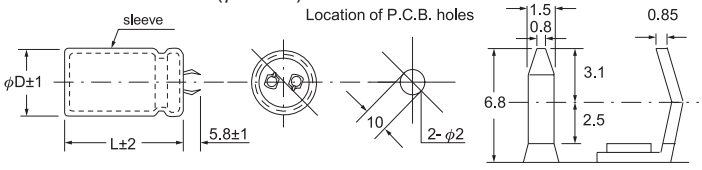
- Withstanding 2000 hours application of high ripple current at 105°C.
- Corresponding product to RoHS

SPECIFICATION

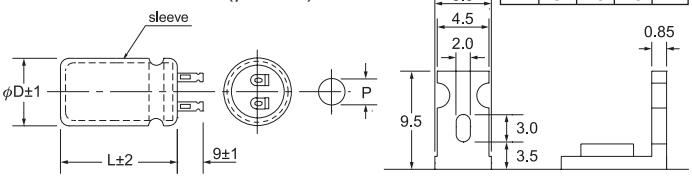
Item	Characteristic														
Operation Temperature Range	-40 ~ +105°C														
Rated Working Voltage	16 ~ 500VDC														
Capacitance Tolerance (120Hz 20°C)	±20%(M)														
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)														
Surge Voltage (20°C)	W.V.	16	25	35	50	63	80	100	160	180	200	250	350	400	450	500
	S.V.	20	32	44	63	79	100	125	200	225	250	300	400	450	500	550
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	16		25		35		50		63		80		100		≧160
	Capacitance	≦33,000	≧47,000	≦33,000	≧47,000	≦22,000	≧27,000	≦6,800	≧10,000	≦6,800	≧10,000	≦3,300	≧4,700	≦3,300	≧4,700	—
	tan δ	0.50	0.60	0.40	0.50	0.35	0.40	0.30	0.35	0.25	0.35	0.20	0.25	0.20	0.25	0.15
Low Temperature Stability	Impedance ratio at 120Hz															
	Rated Voltage (V)	16		25		35		50		63~100		160~250		350~500		
	-25°C / +20°C	6		6		6		4		3		4		6		
	-40°C / +20°C	15		15		10		8		6		—		—		
Load Life	After 2000 hours application of W.V. at +105°C the capacitor shall meet the following limits.															
	Capacitance Change	≦±20% of initial value														
	Dissipation Factor	≦175% of initial specified value														
	Leakage current	≦initial specified value														
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)															

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



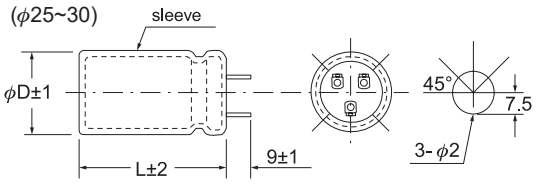
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

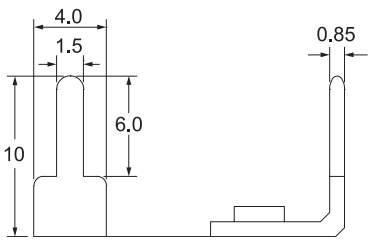


φD	22	25	30	35
P	8	10	10	14

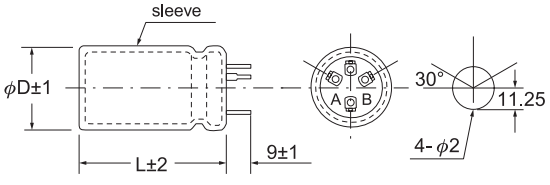
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)





(φ35)
A.B. blank terminals



※ For φ45 dimension, refer to page 16.

RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≦100V	0.80	1.00	1.10	1.20	1.20
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A (rms)
(R.C.) : 105°C 120Hz

μF \ V(DC) / φD	16					25					35					50				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
1500																25				
																1.05				
2200											25					30	25			
											1.17					1.31	1.25			
3300						25					30	25				35	30	25		
						1.34					1.43	1.36				1.58	1.52	1.50		
4700	25					30	25				35	30	25			45	35	30	25	
	1.36					1.58	1.51				1.65	1.58	1.56			1.90	1.74	1.73	1.86	
6800	35	30				35	30	25			50	40	30	25			50	35	30	
	1.74	1.67				1.85	1.78	1.75			2.09	1.94	1.82	1.96			2.19	1.98	2.15	
10000	45	35	25			45	35	30	25			50	35	30				45	40	
	2.09	1.92	1.77			2.19	2.01	2.00	2.15			2.24	2.03	2.20				2.39	2.62	
15000		45	35	30			45	35	30				50	40					50	
		2.29	2.17	2.36			2.54	2.41	2.61				2.79	2.92					3.52	
22000			45	35				45	40											55
			2.86	2.97				3.24	3.55											4.62
27000															50					65
															4.49					5.49
33000				50					50						55					
				4.21					4.78						5.16					
47000					50					50										
					5.24					5.24										
56000					55					60										L(mm)
					5.65					6.17										R.C.

μF \ V(DC) / φD	63					80					100					160				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
330																25				
																0.88				
390																30	25			
																1.03	1.03			
470																30	25			
																1.14	1.13			
560																35	30	25		
																1.32	1.33	1.38		
680																40	35	25		
																1.55	1.57	1.53		
820																45	40	30	25	
																1.79	1.82	1.80	1.84	
1000	25					30	25				30	25					45	35	25	
	0.91					1.04	0.99				1.11	1.06					2.12	2.12	2.04	
1200																	50	35	30	
																	2.43	2.32	2.39	
1500	30	25				35	30	25			40	35	25					45	35	
	1.14	1.08				1.28	1.23	1.21			1.44	1.39	1.29					2.88	2.84	
1800																			40	
																			3.28	
2200	35	30	25			50	40	30	25			45	35							
	1.40	1.35	1.33			1.72	1.60	1.50	1.61			1.77	1.68							
3300	45	40	30	25			50	40	30				45	35						50
	1.77	1.72	1.61	1.73			1.97	1.78	1.93				2.07	2.15						4.52
3900																				55
																				5.11
4700		50	35	30				50	40					45						
		2.03	1.84	2.00				2.11	2.31					2.52						
6800			45	40					50											
			2.20	2.41					2.72											
8200															60					
															3.27					
10000				50											65					
				2.87											3.73					
12000										60										
										3.95										
15000					60					65										
					3.95					4.57										
18000					65															L(mm)
					4.48															R.C.

LARGE CAN TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A (rms)
(R.C.) : 105°C 120Hz

V(DC) / μF / φD	180					200					250				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
220						25					30	25			
						0.85					0.91	0.91			
270	25					25					35	25			
	0.80					0.94					1.07	1.01			
330	30	25				30	25				35	30	25		
	0.95	0.95				1.12	1.12				1.19	1.20	1.24		
390	30	25				35	25				40	35	25		
	1.03	1.04				1.31	1.22				1.37	1.39	1.35		
470	35	30	25			40	30	25			50	40	30	25	
	1.21	1.22	1.27			1.52	1.45	1.50			1.66	1.61	1.59	1.63	
560	40	30	25			45	35	30				45	35	25	
	1.40	1.34	1.39			1.75	1.68	1.76				1.85	1.85	1.78	
680	45	35	30	25		50	40	30	25			50	35	30	
	1.63	1.57	1.64	1.68		2.02	1.96	1.94	1.98			2.14	2.04	2.10	
820	50	40	30	25			45	35	30				45	35	
	1.88	1.83	1.80	1.85			2.27	2.26	2.33				2.49	2.45	
1000		45	35	30			50	40	30					40	
		2.12	2.12	2.18			2.63	2.64	2.58					2.86	
1200			40	30				45	35					45	
			2.45	2.39				3.04	3.00					3.29	
1500			50	35					45					50	
			2.91	2.74					3.58					3.68	
1800				40					50						
				3.17					4.10						
2200															55
															4.29
2700										50					65
										4.43					5.10
3300					55					60					
					4.70					5.28					
3900					65										L(mm)
					5.48										R.C.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A (rms)
(R.C.) : 105°C 120Hz

V(DC) / μF / φD	350					400					450					500				
	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45	22	25	30	35	45
47											25					25				
											0.39					0.27				
68						25					30	25				30	25			
						0.47					0.50	0.50				0.35	0.35			
82	25					30	25				35	30				35	30			
	0.43					0.56	0.56				0.59	0.60				0.41	0.41			
100	30	25				30	25				40	35	25			40	35	30		
	0.51	0.51				0.61	0.61				0.69	0.70	0.68			0.47	0.48	0.50		
120	30	25				35	30	25			45	35	30	25		50	40	35	25	
	0.55	0.55				0.72	0.73	0.75			0.80	0.77	0.80	0.82		0.57	0.56	0.59	0.56	
150	35	30	25			40	35	30				45	35	30			45	40	30	
	0.66	0.67	0.69			0.85	0.86	0.90				0.96	0.96	0.99			0.66	0.69	0.68	
180	40	35	30			45	40	30	25			50	35	30			50	40	35	
	0.77	0.78	0.82			0.98	1.00	0.99	1.01			1.10	1.05	1.08			0.75	0.76	0.79	
220	50	40	30	25			45	35	30				40	35				45	40	
	0.94	0.91	0.90	0.92			1.17	1.16	1.20				1.22	1.27				0.88	0.92	
270		45	35	30			50	40	30				50	40				50	45	
		1.07	1.06	1.10			1.35	1.36	1.33				1.49	1.48				1.02	1.07	
330		50	40	30				45	35					45					50	
		1.23	1.24	1.21				1.58	1.56					1.72					1.23	
390			45	35					40					50						
			1.42	1.40					1.79					1.96						
470				40					45											
				1.62					2.07											
560				45					50											
				1.86					2.36											
680															55					
															2.49					
820										50					65					
										2.72					2.93					
1000					55					60										
					2.59					3.24										
2200					65															L(mm)
					4.12															R.C.

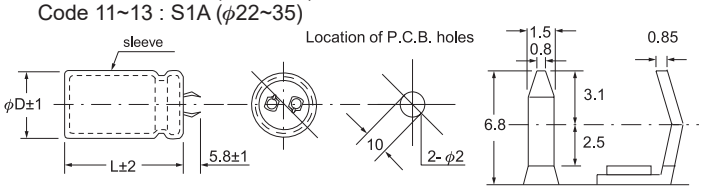
- Small case sized than HS series.
- Withstanding 2000 hours application of high ripple current at 105°C.
- Corresponding product to RoHS

SPECIFICATION

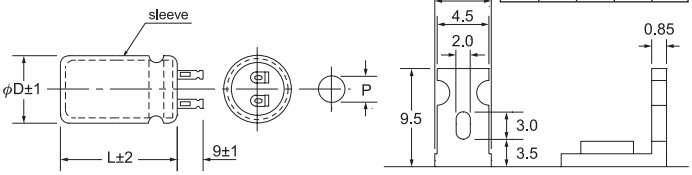
Item	Characteristic						
Operation Temperature Range	-25 ~ +105°C						
Rated Working Voltage	160 ~ 450VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)						
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450
	S.V.	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	160	200	250	350	400	450
	tan δ	0.15	0.15	0.15	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage (V)	160~250			350~450		
	-25°C / +20°C	4			6		
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦175% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



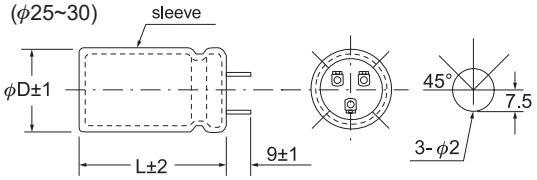
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)



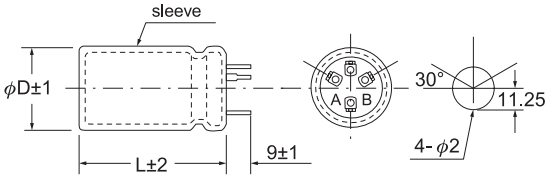
φD	22	25	30	35
P	8	10	10	14

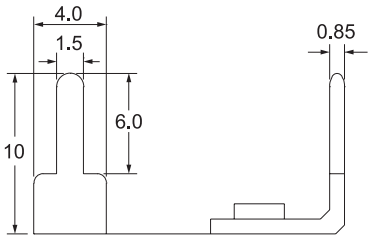
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)



(φ35)
A.B. blank terminals





RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	160				200				250			
	22	25	30	35	22	25	30	35	22	25	30	35
220									25			
									0.89			
270									25			
									0.94			
330									30	25		
									1.12	1.12		
390					25				35	25		
					1.29				1.30	1.21		
470	25				30				40	30	25	
	1.44				1.44				1.42	1.36	1.41	
560	30				30	25			45	35	25	
	1.48				1.48	1.48			1.54	1.49	1.44	
680	30	25			40	30			50	40	30	25
	1.63	1.63			1.84	1.75			1.78	1.73	1.71	1.75
820	35	30	25		45	35	25			45	35	30
	1.84	1.85	1.92		2.05	1.98	1.92			1.93	1.92	1.98
1000	40	35	25		50	45	30	25			40	30
	2.10	2.13	2.07		2.31	2.37	2.22	2.28			2.19	2.13
1200		40	30	25		50	35	30			45	35
		2.30	2.27	2.33		2.54	2.42	2.49			2.35	2.32
1500		45	35	30			40	30				45
		2.42	2.41	2.49			2.55	2.49				2.56
1800		50	40	30			45	40				50
		2.56	2.58	2.52			2.71	2.82				2.71
2200			45	35				45				
			2.89	2.85				3.16				
2700			50	40								
			3.13	3.11								
3300				50								L(mm)
				3.77								R.C.

μF \ V(DC) / φD	350				400				450			
	22	25	30	35	22	25	30	35	22	25	30	35
68									25			
									0.47			
82									30			
									0.55			
100					25				30	25		
					0.61				0.61	0.61		
120	25				30				35	30		
	0.58				0.72				0.71	0.72		
150	30				30	25			40	30	25	
	0.71				0.80	0.80			0.85	0.81	0.84	
180	30	25			35	30			45	40	30	
	0.73	0.73			0.89	0.90			0.93	0.95	0.93	
220	35	30			45	35	25			45	30	25
	0.87	0.87			1.10	1.06	1.03			1.10	1.03	1.06
270	40	30	25		50	40	30	25		50	40	30
	0.96	0.92	0.95		1.21	1.18	1.16	1.19		1.21	1.22	1.19
330	45	40	30			45	35	30			45	35
	1.12	1.15	1.13			1.37	1.37	1.41			1.42	1.40
390		45	35			50	40	30			50	40
		1.31	1.31			1.56	1.58	1.54			1.61	1.60
470		50	35	30			45	35				45
		1.42	1.36	1.40			1.72	1.69				1.75
560			45	35			50	40				50
			1.55	1.53			1.85	1.84				1.88
680			50	40				45				
			1.79	1.78				2.12				
820				45								L(mm)
				1.97								R.C.

- Same case sized as LS series.
- Withstanding 3000 hours application of high ripple current at 85°C.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic
Operation Temperature Range	-40 ~ +85°C
Rated Working Voltage	16 ~ 450VDC
Capacitance Tolerance (120Hz 20°C)	±20%(M)
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)

Surge Voltage (20°C)

W.V.	16	25	35	50	63	80	100	160	180	200	250	350	400	450
S.V.	20	32	44	63	79	100	125	200	225	250	300	400	450	500

Dissipation Factor (tan δ) (120Hz 20°C)

Rated Voltage (V)	16	25	35		50		63		80		100		≧160
Capacitance	—	—	≦22,000	≧33,000	≦6,800	≧10,000	≦6,800	≧10,000	≦2,200	≧3,300	≦3,300	≧4,700	—
tan δ	0.50	0.40	0.35	0.40	0.30	0.35	0.25	0.35	0.20	0.25	0.20	0.25	0.15

Low Temperature Stability

Impedance ratio at 120Hz

Rated Voltage (V)	16~100	160~250	350~450
-25°C / +20°C	4	6	8
-40°C / +20°C	15	—	—

Load Life

After 3000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)

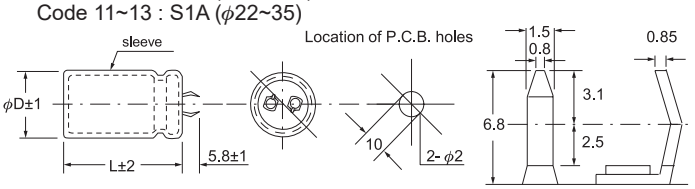
Capacitance Change	≦±15% of initial value
Dissipation Factor	≦175% of initial specified value
Leakage current	≦initial specified value

Shelf Life

At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)

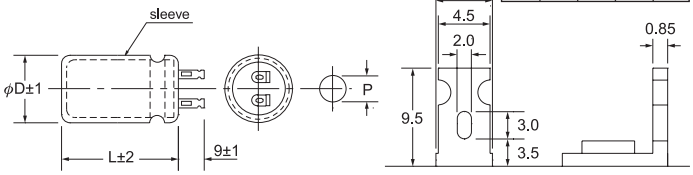
TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



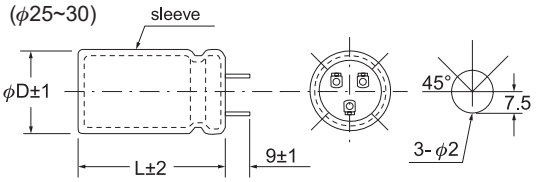
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

φD	22	25	30	35
P	8	10	10	14

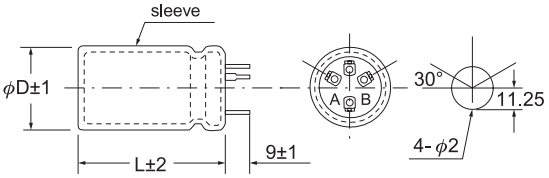


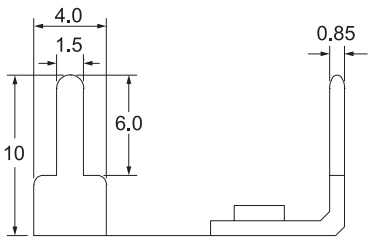
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)



(φ35)
A.B. blank terminals





RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85
Multiplier	1.80	1.40	1.20	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≦100V	0.80	1.00	1.10	1.20	1.20
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / μF / φD	16				25				35			
	22	25	30	35	22	25	30	35	22	25	30	35
3300									25			
									2.04			
4700					25				30	25		
					2.25				2.41	2.23		
6800	25				30	25			35	30	25	
	2.40				2.69	2.56			2.82	2.70	2.66	
10000	30	25			35	30	25		45	35	30	25
	2.81	2.67			3.09	2.97	2.92		3.34	3.06	3.04	3.28
15000	40	30	25		45	35	30	25		50	35	30
	3.43	3.11	3.07		3.70	3.39	3.37	3.63		4.06	3.67	3.98
22000		45	30	25		45	35	30			45	40
		4.25	3.78	4.09		4.48	4.25	4.61			4.94	5.41
33000			45	35			50	40			L(mm)	50
			5.48	5.67			6.05	6.33			R.C.	7.27

V(DC) / μF / φD	50				63				80				100			
	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
1000									25				30	25		
									1.50				1.71	1.63		
1200													35	30		
													2.01	1.93		
1500					25				30	25			35	30	25	
					1.66				1.88	1.79			2.11	2.03	2.00	
1800													45	35	30	
													2.59	2.37	2.35	
2200	25				30	25			40	30	25		50	40	30	25
	1.92				2.08	1.98			2.45	2.22	2.19		2.84	2.64	2.47	2.42
3300	30	25			35	30	25		50	40	30	25		50	40	30
	2.35	2.24			2.51	2.41	2.38		3.05	2.83	2.65	2.86		3.25	3.11	3.19
4700	35	30	25		45	35	30	25		50	40	30			50	40
	2.72	2.62	2.58		3.04	2.79	2.77	2.99		3.36	3.21	3.30			3.65	3.82
6800	50	40	30	25		50	35	30			50	40				50
	3.45	3.20	3.00	3.23		3.53	3.19	3.46			3.80	3.98				4.48
10000		50	35	30			45	40								
		3.70	3.35	3.64			3.72	4.08								
15000			50	40				50								L(mm)
			4.61	4.83				5.30								R.C.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / μF \ φD	160				180				200				250			
	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
220									25				25			
									1.25				1.31			
270									25				30	25		
									1.67				1.57	1.57		
330					25				30	25			35	30		
					1.31				1.66	1.66			1.85	1.87		
390	25				30	25			30	25			35	30	25	
	1.44				1.54	1.54			1.80	1.80			2.01	2.03	2.10	
470	30	25			30	25			35	30	25		40	35	25	25
	1.70	1.70			1.69	1.69			2.11	2.13	2.21		2.34	2.38	2.31	2.54
560	35	30			35	30	25		40	35	25		50	40	30	25
	1.99	2.23			1.97	1.99	2.06		2.44	2.48	2.41		2.82	2.74	2.71	2.78
680	40	30	25		40	35	25		45	35	30	25		45	35	30
	2.32	2.21	2.29		2.30	2.34	2.27		2.83	2.73	2.85	2.92		3.19	3.18	3.28
820	45	35	30		45	40	30	25		40	30	25		50	40	30
	2.68	2.58	2.70		2.67	2.72	2.68	2.75		3.17	3.13	3.21		3.67	3.69	3.60
1000	50	40	30	25		45	35	25		50	35	30			45	35
	3.11	3.02	2.98	3.05		3.16	3.15	3.04		3.87	3.68	3.80			4.28	4.22
1200		45	35	30		50	40	30			40	35			50	40
		3.49	3.48	3.59		3.63	3.65	3.56			4.26	4.42			4.91	4.88
1500			40	35			45	35				40				50
			4.11	4.26			4.15	4.09				5.02				5.74
1800			45	35				40				50				L(mm)
			4.73	4.67				4.73				6.04				R.C.

V(DC) / μF \ φD	350				400				450			
	22	25	30	35	22	25	30	35	22	25	30	35
82					25				30	25		
					0.76				0.83	0.83		
100	25				30	25			35	30	25	
	0.73				0.91	0.91			0.97	0.98	1.02	
120	30	25			30	25			40	30	25	
	0.86	0.86			1.00	1.00			1.13	1.08	1.12	
150	30	25			35	30	25		45	35	30	
	0.96	0.96			1.19	1.20	1.25		1.33	1.28	1.34	
180	35	30	25		40	35	25		50	40	30	25
	1.13	1.14	1.18		1.38	1.40	1.37		1.53	1.49	1.47	1.50
220	40	35	25		50	40	30	25		45	35	30
	1.32	1.34	1.30		1.69	1.64	1.62	1.66		1.73	1.72	1.78
270	50	40	30	25		45	35	30			40	35
	1.61	1.57	1.55	1.59		1.92	1.91	1.97			2.02	2.10
330		45	35	30		50	40	30			45	35
		1.82	1.82	1.88		2.22	2.23	2.18			2.35	2.32
390		50	40	30			45	35				40
		2.08	2.10	2.04			2.55	2.52				2.66
470			40	35				40				45
			2.30	2.38				2.92				3.07
560			50	40				45				
			2.76	2.75				3.34				
680				45				50				L(mm)
				3.18				3.85				R.C.

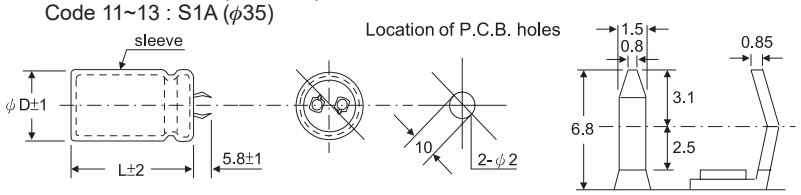
- Same case sized as LS series.
- Withstanding 3000 hours application of high ripple current at 85°C
- Corresponding product to RoHS.

SPECIFICATION

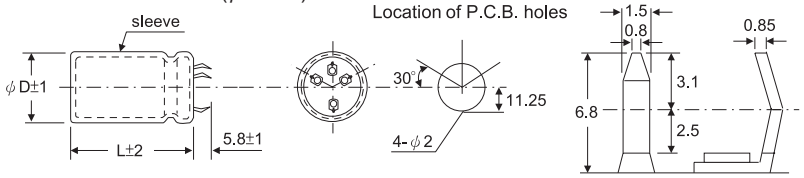
Item	Characteristic																
Operation Temperature Range	-40 ~ +85°C									-25 ~ +85°C							
Rated Working Voltage	16 ~ 450VDC									500 ~ 550VDC							
Capacitance Tolerance (120Hz 20°C)	±20% (M)																
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)																
Surge Voltage (20°C)	W.V.	16	25	35	50	63	80	100	160	180	200	250	350	400	450	500	550
	S.V.	20	32	44	63	79	100	125	200	225	250	300	400	450	500	550	600
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)		16	25	35	50	63		80		100		160~450		500	550	
	Capacitanc		–	–	–	–	≦27,000	>27,000	≦15,000	>15,000	–		–		–	–	
	tan δ	φ35	0.80	0.60	0.50	0.40	0.35	0.40	0.25	0.30	0.25		0.15		0.20	0.20	
		φ40	0.90	0.70	0.60	0.45	0.35	0.40	0.25	0.30	0.25		0.15		0.20	0.20	
		φ45	1.00	0.80	0.70	0.50	0.35	0.40	0.25	0.30	0.25		0.15		0.20	0.20	
		φ50	1.20	1.00	0.75	0.55	0.35	0.40	0.25	0.30	0.25		0.15		0.20	0.20	
Low Temperature Stability	Impedance ratio at 120Hz																
	Rated Voltage (V)		16~100				160~250				350~550						
	-25°C / +20°C		4				6				8						
	-40°C / +20°C		15				–				–						
Load Life	After 3000 hours application of WV at +85°C the capacitor shall meet the following limits.																
	Rated Voltage Range		≦±20% of initial value														
	Capacitance Change		≦175% of initial specified value														
	Dissipation Factor		≦initial specified value														
Shelf Life	At +85°C no voltage application after 1000 hours , the capacitor shall meet the limits for load life characteristics. (With voltage treatment)																

TERMINAL TYPE

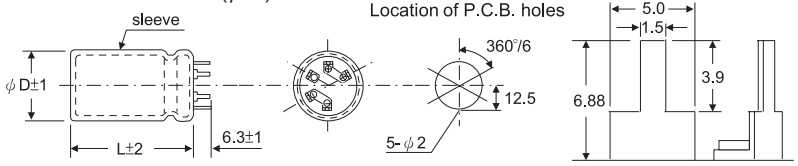
▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ35)



▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : L4A (φ35~45)



▲ P.C.B. TERMINAL
Code 11~13 : L5A (φ50)



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85
Multiplier	1.80	1.40	1.20	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≦100V	0.80	1.00	1.10	1.20	1.20
>100V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / μF / φD	15				25				35				50			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
27000									60				80	51	50	
									7.97				9.14	8.16	8.23	
33000									60				80	61	60	50
									7.97				9.41	9.11	9.18	10.73
39000									60	51			90	81	70	60
									8.00	8.22			9.99	10.44	9.92	11.52
47000									80	61	50		100	91	70	60
									9.56	9.74	8.88		10.59	11.18	10.09	11.88
56000					60	51			90	81	60	50		101	90	80
					8.81	9.12			10.53	10.83	9.76	10.97		11.77	11.31	12.75
68000					80	61	50		100	91	70	60			100	90
					10.62	10.48	9.66		11.07	11.64	11.08	12.23			12.50	13.70
82000	60	51			90	71	60	50		101	90	80				100
	10.25	10.38			11.35	11.02	10.26	12.54		12.33	12.07	13.22				14.50
100000	80	61	50		100	81	70	60			100	90				
	11.15	11.60	10.84		12.06	12.41	11.63	13.68			12.81	14.22				
120000	80	81	60	50		91	80	80				100				
	12.39	12.47	11.10	13.47		13.75	12.96	15.38				15.02				
150000		91	70	60		101	90	90								
		13.55	12.23	14.83		14.10	13.36	16.29								
180000		101	80	80			100	100								
		14.92	13.61	16.05			14.61	17.31								
220000			90	90												
			15.16	17.35												
270000				100												L (mm)
				17.81												R.C.

V(DC) / μF / φD	63				80				100				160			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
3300													60	51		
													6.33	6.38		
3900													80	61	50	
													7.43	7.48	7.37	
4700													90	81	60	50
													8.38	8.37	7.85	8.40
5600													100	81	60	60
													8.30	8.37	7.86	9.12
6800									60	51				101	80	70
									7.22	7.45				8.34	8.02	9.82
8200									70	61	50				90	80
									8.07	8.40	8.28				8.24	10.04
10000					60				90	71	60	50			100	90
					7.26				9.21	8.67	8.63	9.00			8.75	10.46
12000					70	51	50		100	81	70	60				100
					8.26	7.77	8.26		8.83	8.92	8.94	10.34				12.00
15000	60	51			80	61	60			101	80	70				
	7.74	8.46			8.91	8.52	9.06			10.30	9.91	10.96				
18000	80	61	50		90	81	70	50			90	80				
	9.63	9.47	9.33		10.34	10.61	10.64	10.13			10.25	11.12				
22000	90	71	60		100	91	80	60				100				
	10.27	9.94	9.89		10.18	10.49	10.58	11.36				12.59				
27000	100	81	70	50		101	90	80								
	10.44	10.94	10.97	11.15		11.75	11.90	12.43								
33000		101	80	60			100	90								
		12.08	11.62	11.67			12.26	13.44								
39000			90	70				100								
			11.93	12.22				14.71								
47000			100	80												
			12.67	13.19												
56000				100												L (mm)
				14.05												R.C.

LARGE CAN TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / μF / φD	180				200				250				350			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
1000													60	51		
													3.84	3.86		
1200													80	61	50	50
													4.67	4.46	4.39	5.22
1500													80	71	60	60
													5.09	5.20	5.18	6.03
1800									60	51			100	81	80	80
									4.56	4.59			6.03	5.90	6.26	3.97
2200	60				60	51			80	61	50			101	90	90
	4.91				5.69	5.47			5.29	5.06	4.98			7.03	7.12	7.93
2700	70	61			70	61	50		80	81	60	50			100	100
	5.06	5.14			5.83	5.91	5.83		5.86	6.34	5.95	6.86			8.06	8.98
3300	80	61	50		80	61	60	50	100	81	70	60				
	5.58	5.68	5.59		6.48	6.19	6.58	7.58	7.17	7.01	7.03	7.97				
3900	90	71	60	50	90	71	60	60		101	80	70				
	5.78	6.56	6.16	7.06	7.22	6.99	6.96	8.87		8.19	7.87	8.57				
4700	100	81	70	60		91	70	70			90	80				
	6.18	6.74	6.33	7.89		7.84	7.45	9.90			8.84	9.69				
5600		101	80	70		101	80	70			100	90				
		7.85	7.55	8.37		8.13	7.82	10.26			9.82	10.84				
6800			90	80			90	80				100				
			8.45	8.51			8.13	11.66				12.16				
7500							100	90								
							8.26	12.54								
8200			100	90				100								
			8.64	8.74				13.36								
10000				100												L (mm)
				9.27												R.C.

V(DC) / μF / φD	400				450				500				550			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
330													60	51		
													2.52	2.62		
390									60	51			70	61	50	
									2.83	2.94			2.83	2.97	2.93	
470									60	51	50		80	71	60	50
									2.59	2.71	2.88		3.18	3.36	3.35	3.19
560					60				80	61	60	50	90	81	70	60
					2.94				3.66	3.13	3.33	3.54	3.52	3.75	3.76	3.61
680					70	51	50		80	81	70	60	100	91	80	70
					3.39	3.19	3.39		3.25	4.52	4.53	4.13	3.92	4.19	4.23	4.08
820	60	51			80	61	60	50	100	81	80	70		101	90	80
	3.55	3.58			3.95	3.77	4.01	5.04	4.04	3.95	4.20	4.57		4.27	4.33	4.55
1000	80	61	50	50	90	81	70	60		101	90	80			100	90
	4.26	4.26	4.29	4.77	4.39	4.50	4.51	5.03		4.82	4.88	5.13			4.14	5.07
1200	80	61	60	60	100	81	80	80			100	90				100
	4.56	4.56	5.07	5.51	4.80	4.70	4.99	5.83			5.61	5.79				5.56
1500	100	81	80	80		101	90	90				100				
	5.51	5.52	6.14	6.66		5.80	5.88	6.70				6.64				
1800		101	90	90			100	100								
		6.67	6.92	7.51			6.75	7.51								
2200			100	100												L (mm)
			7.46	8.50												R.C.

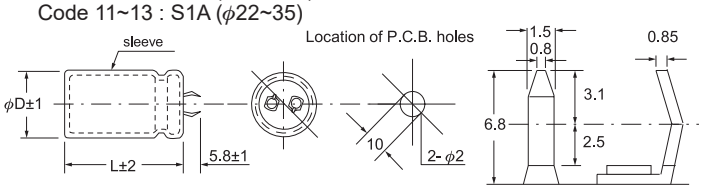
- Withstanding 5000 hours application of high ripple current at 85°C.
- Corresponding product to RoHS

SPECIFICATION

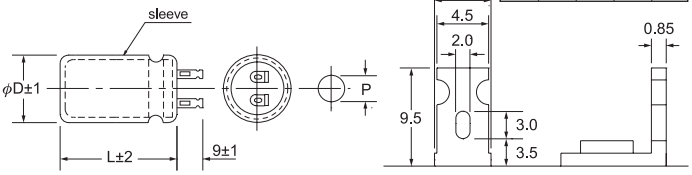
Item	Characteristic							
Operation Temperature Range	-40 ~ +85°C							
Rated Working Voltage	160 ~ 450VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)							
Surge Voltage (20°C)	W.V.	160	200	250	350	385	400	420	450
	S.V.	200	250	300	400	420	450	470	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	160	200	250	350	385	400	420	450
	tan δ	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	160~250				350~450			
	-25°C / +20°C	4				6			
Load Life	After 5000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦175% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)							

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



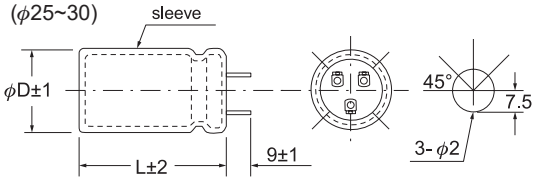
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)



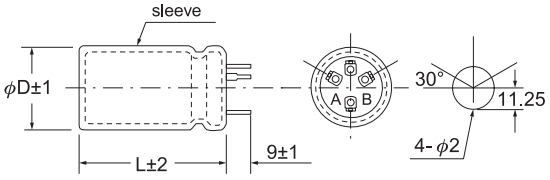
φD	22	25	30	35
P	8	10	10	14

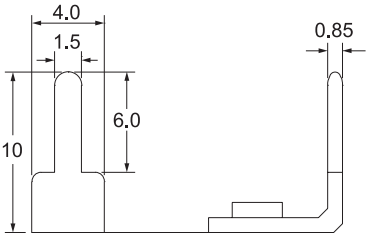
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)



(φ35)
A.B. blank terminals





RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85
Multiplier	1.80	1.40	1.20	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / μF / φD	160				200				250				350			
	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
68													25			
													0.63			
100													30	25		
													0.81	0.82		
150									25				40	30		
									0.94				1.13	1.03		
220	25				25				30	25			50	40	30	
	1.13				1.13				1.24	1.24			1.44	1.44	1.44	
330	30				30	25			40	30				50	40	30
	1.44				1.44	1.55			1.65	1.65				1.96	1.96	1.96
470	35	30			40	30	25			40	30				50	40
	1.85	1.85			1.96	1.96	1.96			2.16	2.06				2.58	2.58
560										45	35	25				45
										2.50	2.50	2.50				2.88
680	45	35	30			40	30				40	30				50
	2.47	2.47	2.47			2.58	2.47				2.78	2.78				3.12
1000		45	35	30			40	35				40				
		3.19	3.19	3.19			3.40	3.61				3.71				
1500			45	40				45								
			4.33	4.33				4.74								
2200				50												L(mm)
				5.97												R.C.

V(DC) / μF / φD	385				400				420				450			
	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
47													25			
													0.53			
68	25				25								30	25		
	0.63				0.63								0.67	0.68		
100	30	25			30	25			30	25			40	30	25	
	0.81	0.82			0.81	0.82			0.81	0.82			0.91	0.89	0.93	
120					35	30			40	30						
					0.95	0.95			0.97	0.97						
150	40	30			40	35	25		45	35	25		50	40	30	
	1.13	1.03			1.13	1.13	1.13		1.11	1.14	1.15		1.20	1.24	1.13	
180						40	30		50	35	30			45	35	30
						1.24	1.24		1.30	1.25	1.30			1.34	1.34	1.34
220	50	40	30			40	35			40	35				40	30
	1.44	1.44	1.44			1.44	1.55			1.45	1.50				1.55	1.55
270						45	35	25		50	35	30			45	35
						1.65	1.65	1.65		1.70	1.67	1.76			1.85	1.85
330		50	40	30			45	35			45	35				40
		1.96	1.96	1.96			2.06	2.06			2.02	2.04				2.16
390							50	40			50	40				
							2.27	2.27			2.29	2.29				
470			50	40				45				45				50
			2.58	2.58				2.68				2.66				2.78
560				45				50				50				
				2.88				2.99				3.02				
680				50												L(mm)
				3.12												R.C.

- Same case sized as HS series.
- Withstanding 3000 hours application of high ripple current at 105°C
- Corresponding product to RoHS.

SPECIFICATION

Item	Characteristic
Operation Temperature Range	-40 ~ +105°C
Rated Working Voltage	16 ~ 450VDC
Capacitance Tolerance (120Hz 20°C)	±20%(M)
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)

Surge Voltage (20°C)

W.V.	16	25	35	50	63	80	100	160	180	200	250	350	400	450
S.V.	20	32	44	63	79	100	125	200	225	250	300	400	450	500

Dissipation Factor (tan δ) (120Hz 20°C)

Rated Voltage (V)	16	25	35	50		63		80		100		≧160
Capacitance	—	—	—	≦6,800	≧10,000	≦6,800	≧10,000	≦3,300	≧4,700	≦3,300	≧4,700	—
tan δ	0.50	0.40	0.35	0.30	0.35	0.25	0.35	0.20	0.25	0.20	0.25	0.15

Low Temperature Stability

Impedance ratio at 120Hz

Rated Voltage (V)	16	25	35	50	63~100	160~250	350~450
-25°C / +20°C	6	6	6	4	3	4	6
-40°C / +20°C	15	15	10	8	6	—	—

Load Life

After 3000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)

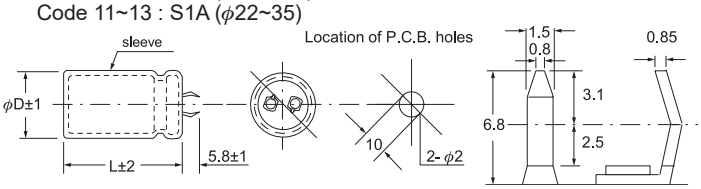
Capacitance Change	≦±20% of initial value
Dissipation Factor	≦175% of initial specified value
Leakage current	≦initial specified value

Shelf Life

At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)

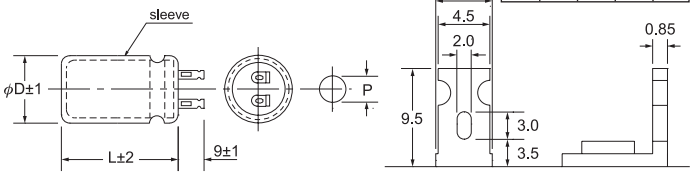
TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



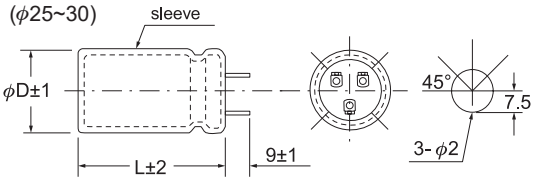
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

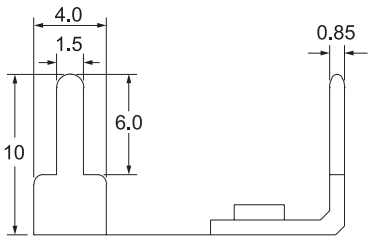
φD	22	25	30	35
P	8	10	10	14



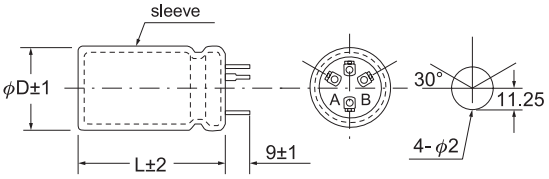
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)





(φ35)
A.B. blank terminals



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≦100V	0.80	1.00	1.10	1.20	1.20
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

V(DC) / μF / φD	16				25				35				50			
	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
1500													25			
													1.05			
2200									25				30	25		
									1.17				1.31	1.25		
3300					25				30	25			35	30	25	
					1.34				1.43	1.36			1.58	1.52	1.50	
4700	25				30	25			35	30	25		45	35	30	25
	1.36				1.58	1.51			1.65	1.58	1.56		1.90	1.74	1.73	1.86
6800	35	30			35	30	25		50	40	30	25		50	35	30
	1.74	1.67			1.85	1.78	1.75		2.09	1.94	1.82	1.96		2.19	1.98	2.15
10000	45	35	25		45	35	30	25		50	35	30			45	40
	2.09	1.92	1.77		2.19	2.01	2.00	2.15		2.24	2.03	2.20			2.39	2.62
15000		45	35	30		45	35	30			50	40				50
		2.29	2.17	2.36		2.54	2.41	2.61			2.79	2.92				3.52
22000			45	35			45	40								
			2.86	2.97			3.24	3.55								
33000				50				50								L(mm)
				4.21				4.78								R.C.

V(DC) / μF / φD	63				80				100				160			
	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
330													25			
													0.88			
390													30	25		
													1.03	1.03		
470													30	25		
													1.14	1.13		
560													35	30	25	
													1.32	1.33	1.38	
680													40	35	25	
													1.55	1.57	1.53	
820													45	40	30	25
													1.79	1.82	1.80	1.84
1000	25				30	25			30	25				45	35	25
	0.91				1.04	0.99			1.11	1.06				2.12	2.12	2.04
1200														50	35	30
														2.43	2.32	2.39
1500	30	25			35	30	25		40	35	25				45	35
	1.14	1.08			1.28	1.23	1.21		1.44	1.39	1.29				2.88	2.84
1800																40
																3.28
2200	35	30	25		50	40	30	25		45	35					
	1.40	1.35	1.33		1.72	1.60	1.50	1.61		1.77	1.68					
3300	45	40	30	25		50	40	30			45	35				
	1.77	1.72	1.61	1.73		1.97	1.78	1.93			2.07	2.15				
4700		50	35	30			50	40				45				
		2.03	1.84	2.00			2.11	2.32				2.52				
6800			45	40				50								
			2.20	2.41				2.72								
10000				50												L(mm)
				2.87												R.C.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

V(DC) / μF / φD	180				200				250			
	22	25	30	35	22	25	30	35	22	25	30	35
220					25				30	25		
					0.85				0.91	0.91		
270	25				25				35	25		
	0.80				0.94				1.07	1.01		
330	30	25			30	25			35	30	25	
	0.95	0.95			1.12	1.12			1.19	1.20	1.24	
390	30	25			35	25			40	35	25	
	1.03	1.04			1.31	1.22			1.37	1.39	1.35	
470	35	30	25		40	30	25		50	40	30	25
	1.21	1.22	1.27		1.52	1.45	1.50		1.66	1.61	1.59	1.63
560	40	30	25		45	35	30			45	35	25
	1.40	1.34	1.39		1.75	1.68	1.76			1.85	1.85	1.78
680	45	35	30	25	45	40	30	25		50	35	30
	1.63	1.57	1.64	1.68	1.92	1.96	1.94	1.98		2.14	2.04	2.10
820	50	40	30	25		45	35	30			45	35
	1.88	1.83	1.80	1.85		2.27	2.26	2.33			2.49	2.45
1000		45	35	30		50	40	30				40
		2.12	2.12	2.18		2.63	2.64	2.58				2.86
1200			40	30			45	35				45
			2.45	2.39			3.04	3.00				3.29
1500			50	35				45				50
			2.91	2.74				3.58				3.68
1800				40				50				L(mm)
				3.17				4.10				R.C.

V(DC) / μF / φD	350				400				450			
	22	25	30	35	22	25	30	35	22	25	30	35
47									25			
									0.39			
68					25				30	25		
					0.47				0.50	0.50		
82	25				30	25			35	30		
	0.43				0.56	0.56			0.59	0.60		
100	30	25			30	25			40	35	25	
	0.51	0.51			0.61	0.61			0.69	0.70	0.68	
120	30	25			35	30	25		45	35	30	25
	0.55	0.55			0.72	0.73	0.75		0.80	0.77	0.80	0.82
150	35	30	25		40	35	30			45	35	30
	0.66	0.67	0.69		0.85	0.86	0.90			0.96	0.96	0.99
180	40	35	30		45	40	30	25		50	35	30
	0.77	0.78	0.82		0.98	1.00	0.99	1.01		1.10	1.05	1.08
220	50	40	30	25		45	35	30			40	35
	0.94	0.91	0.90	0.92		1.17	1.16	1.20			1.22	1.27
270		45	35	30		50	40	30			50	40
		1.07	1.06	1.10		1.35	1.36	1.33			1.49	1.48
330		50	40	30			45	35				45
		1.23	1.24	1.21			1.58	1.56				1.72
390			45	35				40				50
			1.42	1.40				1.79				1.96
470				40				45				
				1.62				2.07				
560				45				50				L(mm)
				1.86				2.36				R.C.

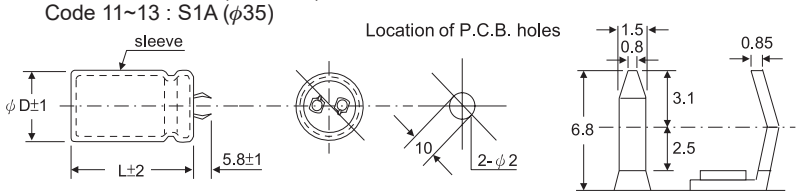
- Withstanding 3000 hours application of high ripple current at 105°C.
- Corresponding product to RoHS.

SPECIFICATION

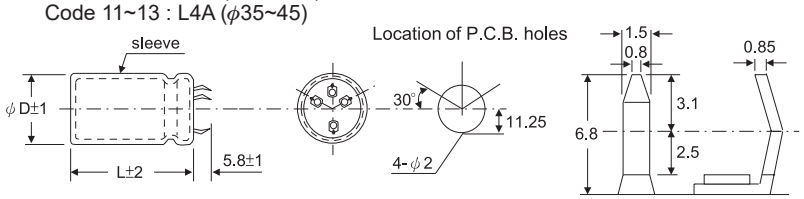
Item	Characteristic															
Operation Temperature Range	-40 ~ +105°C									-25 ~ +105°C						
Rated Working Voltage	16 ~ 450VDC									500VDC						
Capacitance Tolerance (120Hz 20°C)	±20% (M)															
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)															
Surge Voltage (20°C)	W.V.	16	25	35	50	63	80	100	160	180	200	250	350	400	450	500
	S.V.	20	32	44	63	79	100	125	200	225	250	300	400	450	500	550
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)		16	25	35	50	63		80		100		160~450		500	
	Capacitanc		–	–	–	–	≦27,000	>27,000	≦15,000	>15,000	–		–		–	
	tan δ	φ35	0.80	0.60	0.50	0.40	0.35	0.40	0.25	0.30	0.25		0.15		0.20	
		φ40	0.90	0.70	0.60	0.45	0.35	0.40	0.25	0.30	0.25		0.15		0.20	
		φ45	1.00	0.80	0.70	0.50	0.35	0.40	0.25	0.30	0.25		0.15		0.20	
		φ50	1.20	1.00	0.75	0.55	0.35	0.40	0.25	0.30	0.25		0.15		0.20	
Low Temperature Stability	Impedance ratio at 120Hz															
	Rated Voltage (V)		16~100				160~250				350~500					
	-25°C / +20°C		4				6				8					
	-40°C / +20°C		15				–				–					
Load Life	After 3000 hours application of WV at +105°C the capacitor shall meet the following limits.															
	Rated Voltage Range		≦±20% of initial value													
	Capacitance Change		≦175% of initial specified value													
	Dissipation Factor		≦initial specified value													
Shelf Life	At +105°C no voltage application after 1000 hours , the capacitor shall meet the limits for load life characteristics. (With voltage treatment)															

TERMINAL TYPE

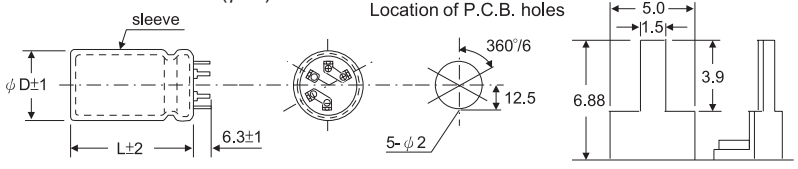
▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ35)



▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : L4A (φ35~45)



▲ P.C.B. TERMINAL
Code 11~13 : L5A (φ50)



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≦100V	0.80	1.00	1.10	1.20	1.20
>100V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

V(DC) / μF / φD	16				25				35				50			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
15000													60	51		
													5.17	4.91		
18000													60	61		
													5.44	6.03		
22000													80	61		
													6.83	5.64		
27000									60	51			80	71	60	
									5.71	5.70			6.30	6.68	6.30	
33000									70	61			100	81	70	60
									6.46	6.80			7.33	6.40	7.44	8.67
39000					60	51			80	71	50			101	80	70
					6.26	6.09			6.78	7.27	6.20			7.26	6.62	9.31
47000					60	51			100	81	60	50			90	80
					6.57	6.69			8.23	8.09	7.03	8.53			7.66	9.52
56000					80	61	50			91	70	60			100	90
					7.78	7.22	6.65			8.88	8.56	9.31			8.76	9.94
68000	60	51			90	81	60	50		101	80	80				100
	6.85	7.39			8.62	9.00	7.91	8.57		9.28	9.56	11.14				10.91
82000	80	61			100	81	70	50			100	90				
	8.16	7.70			8.94	8.99	8.43	8.71			11.07	11.33				
100000	80	71	50			101	80	60				100				
	8.15	8.67	7.59			9.87	9.86	9.95				11.92				
120000	100	81	60	50			100	80								
	8.84	9.11	8.54	9.23			10.74	11.28								
150000		101	70	60												
		10.07	9.18	10.19												
180000			80	80				100								
			10.06	11.47				12.47								
220000			100	90												
			10.84	12.01												
250000				100												L (mm)
				12.67												R.C.

V(DC) / μF / φD	63				80				100				160			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
2200													60	51		
													3.36	3.39		
2700													70	61	50	
													3.83	3.89	3.83	
3300													80	71	60	50
													4.32	4.41	4.39	4.33
3900													90	81	70	60
													4.95	5.08	5.09	5.07
4700									60	51			100	91	80	70
									4.10	4.13			5.23	5.39	5.43	5.44
5600									70	61				101	90	80
									4.62	4.69				5.61	5.68	5.72
6800									80	61	50				100	90
									5.40	5.17	5.09				5.90	5.97
8200					60	51			90	81	60	60				100
					4.64	4.67			5.56	6.18	5.80	6.65				6.11
10000					70	61	50		100	81	70	60				
					5.48	5.57	5.48		6.45	6.83	6.84	7.08				
12000	60	51			80	71	60	50		101	80	70				
	4.74	4.78			6.11	6.24	6.21	6.13		7.63	7.33	7.66				
15000	70	51			100	81	70	60			100	80				
	5.20	4.90			6.91	6.76	6.77	6.74			8.30	8.34				
18000	80	61	50	50		101	80	80				100				
	6.05	5.79	5.70	6.07		7.11	6.83	7.25				9.24				
22000	90	81	60	60			100	90								
	7.06	7.24	6.80	7.23			7.92	8.02								
27000		91	70	60				100								
		8.07	7.68	7.64				8.82								
33000		101	80	80												
		7.91	7.61	8.08												
39000			100	90												
			8.66	8.76												
47000				100												L (mm)
				9.51												R.C.

LARGE CAN TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

V(DC) / μF / φD	180				200				250				350			
	35	40	45	50	35	40	45	50	35	40	45	50	35	40	45	50
820													60	51		
													2.76	2.78		
1000													70	61	50	50
													2.99	3.03	2.99	3.58
1200													80	71	60	50
													3.26	3.32	3.31	3.70
1500									70				100	81	70	60
									3.20				4.57	3.81	3.82	4.19
1800	60	51			60	51			80	61	50			101	80	80
	3.27	3.30			3.27	3.06			3.72	3.56	3.50			5.24	5.04	5.84
2200	70	61	50		80	61	50		80	81	60	50			100	100
	3.87	3.93	3.88		4.11	3.65	3.60		3.97	4.29	4.03	4.42			6.15	6.72
2700	80	71	60	50	80	81	60		100	81	70	60				
	4.39	4.49	4.46	4.41	4.56	4.58	4.30		4.86	4.76	4.77	5.10				
3300	90	81	70	60	90	71	70	50		101	80	70				
	4.74	4.87	4.88	4.86	4.93	4.78	5.08	5.23		5.59	5.38	5.81				
3900	100	91	80	70	100	81	80	60			90	80				
	5.20	5.35	5.40	5.41	6.06	5.51	5.85	5.92			6.16	6.21				
4700		101	90	80		101	90	80			100	100				
		5.65	5.72	5.76		6.42	6.50	7.07			6.82	7.22				
5600			100	90			100	90								
			5.95	6.02			7.44	7.83								
6800				100				100								L (mm)
				6.26				9.04								R.C.

V(DC) / μF / φD	400				450				500			
	35	40	45	50	35	40	45	50	35	40	45	50
390									60	51		
									1.60	1.61		
470					60				70	61	50	
					2.03				1.88	1.91	1.88	
560					70	51			80	71	60	50
					2.37	2.23			2.18	2.23	2.22	2.32
680	60	51			80	61	50	50	100	81	70	60
	2.37	2.39			2.78	2.66	2.62	3.03	2.66	2.60	2.61	2.75
820	70	61	50	50	90	71	60	60		101	80	70
	2.79	2.83	2.79	3.42	3.22	3.11	3.10	3.59		2.88	3.04	3.22
1000	80	61	60	60		91	70	70			90	80
	3.27	3.13	3.32	4.07		3.84	3.65	4.22			3.53	3.77
1200	100	81	70	60		101	80	80			100	90
	3.96	3.88	3.88	4.45		4.41	4.24	4.90			4.06	4.35
1500		101	80	80			90	90				100
		4.79	4.60	5.62			4.65	6.12				4.74
1800			100	100			100	100				L (mm)
			5.57	6.80			5.24	6.04				R.C.

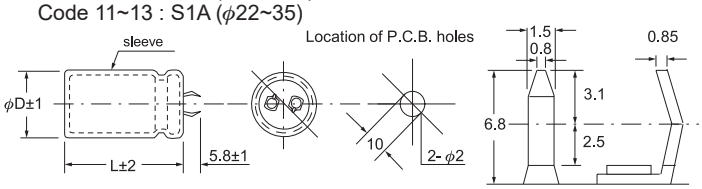
- No sparks with specified DC overvoltage applied.
- Withstanding 3000 hours application of rate ripple current at 105°C.
- Corresponding product to RoHS

SPECIFICATION

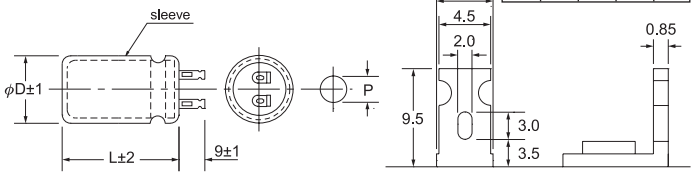
Item	Characteristic		
Operation Temperature Range	-25 ~ +105°C		
Rated Working Voltage	200 , 400VDC		
Capacitance Tolerance (120Hz 20°C)	±20%(M)		
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)		
Surge Voltage (20°C)	W.V.	200	400
	S.V.	250	450
Dissipation Factor (tan δ) (120Hz 20°C)	≦0.15		
Low Temperature Stability	Impedance ratio at 120Hz		
	Rated Voltage (V)	200	400
	-25°C / +20°C	4	6
DC Overvoltage Test	When an excessive DC voltage is applied to the capacitors under the test condition on next page, the vent shall operate and then the capacitors shall become open-circuit without burning material.		
Load Life	After 3000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)		
	Capacitance Change	≦±20% of initial value	
	Dissipation Factor	≦175% of initial specified value	
	Leakage current	≦initial specified value	
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)		

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



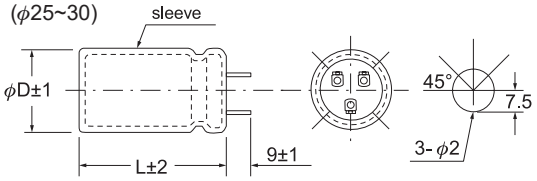
▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)



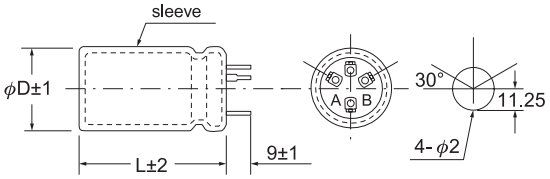
φD	22	25	30	35
P	8	10	10	14

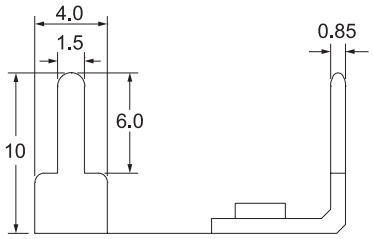
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)



(φ35)
A.B. blank terminals





RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
200V	0.80	1.00	1.10	1.30	1.40
400V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	200				400			
	22	25	30	35	22	25	30	35
68					25			
					0.46			
82					30	25		
					0.55	0.52		
100					35	30		
					0.65	0.62		
120					40	30	25	
					0.76	0.68	0.67	
150					45	35	30	
					0.89	0.82	0.81	
180					50	40	30	25
					1.03	0.95	0.89	0.91
220						45	35	30
						1.11	1.04	1.08
270	25					50	40	35
	0.89					1.28	1.22	1.27
330	30	25					45	35
	1.06	1.01					1.42	1.40
390	35	30					50	40
	1.24	1.18					1.62	1.61
470	40	30	25					45
	1.44	1.30	1.34					1.86
560	45	35	30					
	1.65	1.51	1.58					
680	50	40	35					
	1.91	1.76	1.85					
820		50	35	30				
		2.13	2.03	2.03				
1000			45	35				
			2.50	2.38				
1200			50	40				
			2.86	2.75				
1500				45				L(mm)
				3.11				R.C.

DC Overvoltage Test Condition

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

Rated Voltage	Capacitance	Current	Test DC Voltage
200 VDC	< 330 μF	4A	300 / 375 VDC
	330 ≦ C < 470 μF	5A	
	≧ 470 μF	7A	
400 VDC	<100 μF	2A	500 / 600 VDC
	100 ≦ C < 220 μF	4A	
	≧ 220 μF	7A	

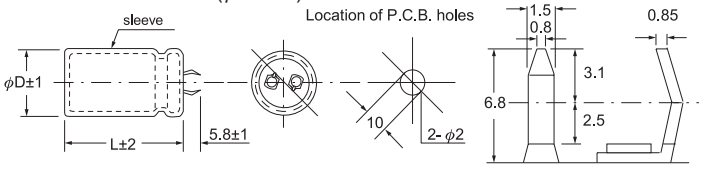
- Withstanding 5000 hours application of high ripple current at 105°C.
- Corresponding product to RoHS

SPECIFICATION

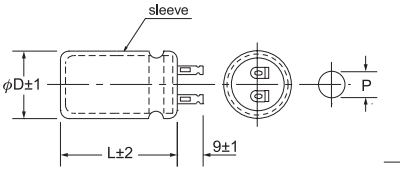
Item	Characteristic				
Operation Temperature Range	-40 ~ +105°C				
Rated Working Voltage	200 ~ 450VDC				
Capacitance Tolerance (120Hz 20°C)	±20%(M)				
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)				
Surge Voltage (20°C)	W.V.	200	250	400	450
	S.V.	250	300	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	200	250	400	450
	tan δ	0.15	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz				
	Rated Voltage (V)	200~250		400~450	
	-25°C / +20°C	4		6	
Load Life	After 5000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)				
	Capacitance Change	≦±20% of initial value			
	Dissipation Factor	≦175% of initial specified value			
	Leakage current	≦initial specified value			
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)				

TERMINAL TYPE

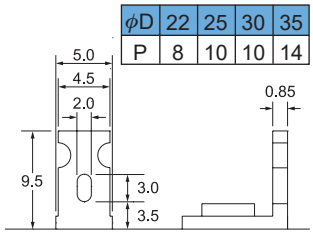
▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)



▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

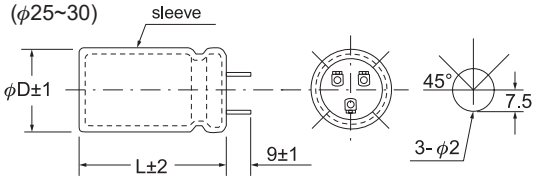


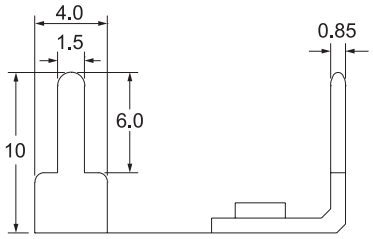
φD	22	25	30	35
P	8	10	10	14



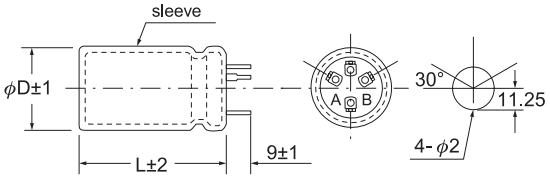
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)





(φ35)
A.B. blank terminals



RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≧200V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

V(DC) / μF \ φD	200								250							
	22		25		30		35		22		25		30		35	
150										25						
										0.69						
180									25	30		25				
									0.76	0.82		0.82				
220		25							30	35		30				
		0.85							0.91	0.97		0.98				
270		30		25					30	35	25	30				
		1.02		1.02					1.01	1.07	1.01	1.08				
330	30	35	25	30					35	40	30	35		25		
	1.12	1.20	1.12	1.21					1.19	1.26	1.20	1.28		1.24		
390	35	35	30	35		25			40	45	35	40	30	35		
	1.31	1.31	1.32	1.40		1.37			1.37	1.44	1.39	1.47	1.45	1.54		
470	40	45	30	35	25	30			50		40	45	30	35		25
	1.52	1.60	1.45	1.54	1.50	1.61			1.66		1.61	1.70	1.59	1.69		1.63
560	45	50	35	40	30	35					45		35	40		30
	1.75	1.83	1.68	1.78	1.76	1.87					1.85		1.85	1.95		1.91
680			40	50	30	35		25			50		40	45		30
			1.96	2.16	1.94	2.06		1.98			1.94		2.15	2.26		2.10
820			45		35	40		30					45	50		35
			2.27		2.26	2.39		2.33					2.49	2.60		2.45
1000					40	45	35	35					55			40
					2.64	2.78	2.74	2.74					3.00			2.86
1200					45	50	40	45							50	55
					3.04	3.19	3.17	3.33							3.44	3.58
1500							45	50							55	
							3.72	3.75							4.00	
1800								50								L(mm)
								4.10								R.C.

V(DC) / μF \ φD	400								450							
	22		25		30		35		22		25		30		35	
47										25						
										0.39						
56									25	30						
									0.42	0.46						
68		25							30	35	25					
		0.47							0.50	0.54	0.50					
82	25	30							30	35	25	30				
	0.52	0.56							0.55	0.59	0.55	0.60				
100	30	35	25	30					35	40	30	35		25		
	0.62	0.66	0.62	0.66					0.65	0.69	0.66	0.70		0.68		
120	35	40	30	35		25			40	50	35	40	25	30		25
	0.72	0.76	0.73	0.77		0.75			0.76	0.84	0.77	0.81	0.75	0.80		0.82
150	40	45	30	40	25	30			50		40	45	30	35		30
	0.85	0.90	0.81	0.92	0.84	0.90			0.94		0.91	0.96	0.90	0.96		0.99
180	45	50	35	40	30	35		25			45		35	40		30
	0.98	1.03	0.95	1.06	0.99	1.06		1.01			1.05		1.05	1.11		1.08
220	50		40	50	30	35		30					40	45	30	35
	1.14		1.11	1.22	1.09	1.16		1.20					1.22	1.29	1.19	1.27
270			45		35	45	30	35					45	50	35	40
			1.29		1.29	1.43	1.33	1.41					1.43	1.49	1.41	1.48
330					40	50	35	40					50		40	45
					1.51	1.66	1.56	1.65					1.65		1.64	1.72
390					45		35	45							45	
					1.72		1.70	1.88							1.87	
470							40	50								
							1.97	2.16								
560							45									L(mm)
							2.26									R.C.

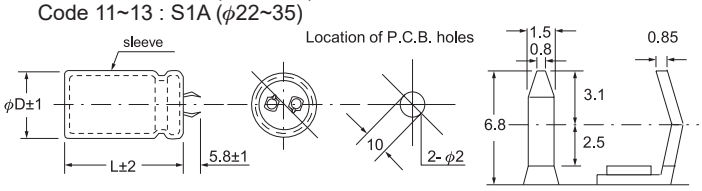
- Withstanding 7000 hours application of high ripple current at 105°C.
- Corresponding product to RoHS

SPECIFICATION

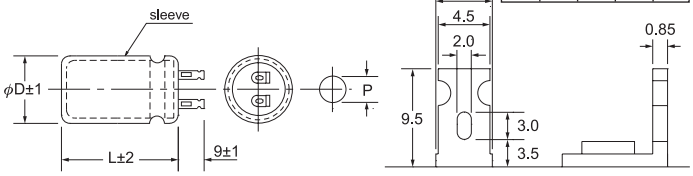
Item	Characteristic						
Operation Temperature Range	-40 ~ +105°C						
Rated Working Voltage	160 ~ 450VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)						
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)						
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450
	S.V.	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage	160	200	250	350	400	450
	tan δ	0.15	0.15	0.15	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz						
	Rated Voltage	160 ~ 250V			350 ~ 450V		
	-25°C / +20°C	4			6		
Load Life	After 7000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)						
	Capacitance Change	≦±20% of initial value					
	Dissipation Factor	≦175% of initial specified value					
	Leakage current	≦initial specified value					
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)						

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)

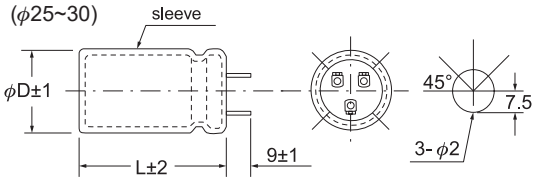


▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

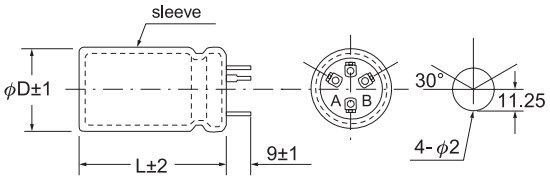


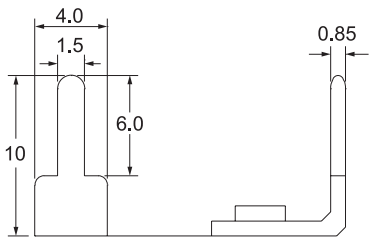
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)



(φ35)
A.B. blank terminals





RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≧160V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	160				200				250			
	22	25	30	35	22	25	30	35	22	25	30	35
180									25			
									0.84			
220					25				30			
					0.89				0.92			
270					30				35	25		
					1.06				1.09	1.02		
330	25				30	25			40	30		
	1.13				1.17	1.17			1.27	1.21		
390	30				35	30			45	35	25	
	1.27				1.30	1.31			1.39	1.34	1.30	
470	30	25			40	30	25		50	40	30	
	1.39	1.39			1.51	1.44	1.49		1.60	1.56	1.54	
560	35	30			45	35	30			45	35	
	1.55	1.56			1.65	1.59	1.66			1.70	1.70	
680	40	35	25			40	30			50	40	30
	1.80	1.83	1.78			1.86	1.83			1.97	1.98	1.93
820	50	40	30			45	35				45	35
	2.08	2.02	2.00			2.04	2.03				2.17	2.14
1000		45	35				45	30				40
		2.35	2.35				2.50	2.32				2.50
1200		50	40	30			50	40				50
		2.56	2.57	2.51			2.71	2.70				2.84
1500			45	35				45				
			2.90	2.86				3.04				
1800			50	40				50				
			3.32	3.30				3.48				
2200				50								L(mm)
				3.85								R.C.

μF \ V(DC) / φD	350				400				450			
	22	25	30	35	22	25	30	35	22	25	30	35
47									25			
									0.45			
56									30			
									0.53			
68					25				30	25		
					0.56				0.58	0.58		
82					30				35	30		
					0.66				0.68	0.69		
100	25				30	25			40	30	25	
	0.63				0.67	0.67			0.74	0.70	0.73	
120	30	25			35	30			45	35	30	
	0.74	0.74			0.79	0.80			0.85	0.82	0.85	
150	35	30			40	30	25			40	35	
	0.88	0.89			0.94	0.89	0.92			0.97	1.02	
180	40	30	25		45	35	30			45	35	30
	1.02	0.98	1.01		1.08	1.04	1.09			1.12	1.11	1.15
220	45	35	30			40	35				40	35
	1.09	0.99	1.10			1.12	1.17				1.19	1.24
270		40	35			50	40	30			50	40
		1.24	1.30			1.36	1.37	1.34			1.46	1.45
330		45	35	30			45	35				45
		1.44	1.44	1.48			1.60	1.57				1.68
390			40	35			50	40				50
			1.58	1.63			1.73	1.72				1.82
470			50	40				45				
			1.90	1.89				1.99				
560				40				50				
				1.97				2.16				
680				50								L(mm)
				2.38								R.C.

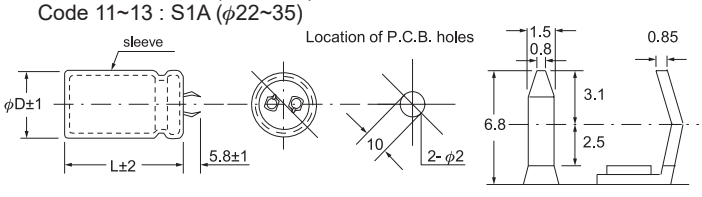
- Withstanding 10000 hours application of high rate ripple current at 105°C.
- Corresponding product to RoHS

SPECIFICATION

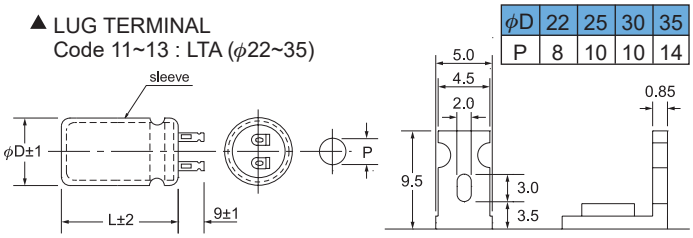
Item	Characteristic				
Operation Temperature Range	-40 ~ +105°C				
Rated Working Voltage	200 ~ 450VDC				
Capacitance Tolerance (120Hz 20°C)	±20%(M)				
Leakage Current (20°C)	I ≦0.02CV or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)				
Surge Voltage (20°C)	W.V.	200	250	400	450
	S.V.	250	300	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage	200	250	400	450
	tan δ	0.15	0.15	0.25	0.25
Low Temperature Stability	Impedance ratio at 120Hz				
	Rated Voltage	200 ~ 250V		400 ~ 450V	
	-25°C / +20°C	4		6	
Load Life	After 10000 hours application of W.V. and +105°C the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)				
	Capacitance Change	≦±20% of initial value			
	Dissipation Factor	≦175% of initial specified value			
	Leakage current	≦initial specified value			
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)				

TERMINAL TYPE

▲ P.C.B. TERMINAL (SNAP IN)
Code 11~13 : S1A (φ22~35)

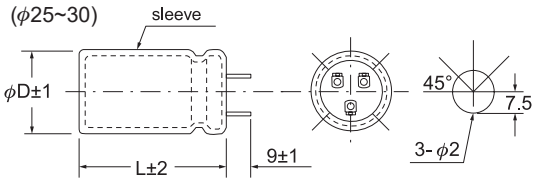


▲ LUG TERMINAL
Code 11~13 : LTA (φ22~35)

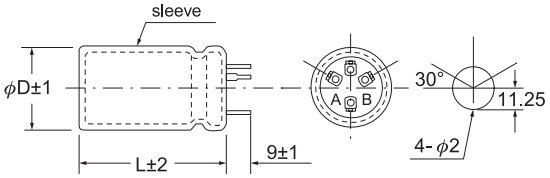


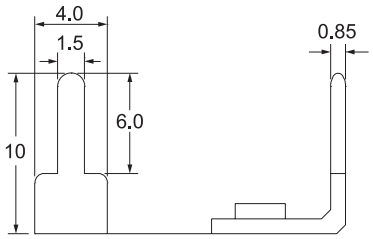
▲ P.C.B. TERMINAL
Code 11~13 : LBA (φ25~30), LCA (φ35)

(φ25~30)



(φ35)
A.B. blank terminals





RIPPLE CURRENT COEFFICIENTS

Temperature(°C)	40	60	70	85	105
Multiplier	2.50	2.20	2.00	1.80	1.00

Frequency(Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≧200V	0.80	1.00	1.10	1.30	1.40

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	200				250			
	22	25	30	35	22	25	30	35
150					25			
					0.62			
180					30	25		
					0.73	0.70		
220	25				35	30		
	0.76				0.86	0.83		
270	30	25			40	30		
	0.90	0.86			1.00	0.92		
330	35	30			45	35	25	
	1.05	1.01			1.16	1.07	1.03	
390	35	30	25		50	40	30	
	1.15	1.10	1.13		1.32	1.23	1.20	
470	45	35	25			45	35	30
	1.40	1.29	1.24			1.42	1.39	1.40
560	50	40	30			50	40	35
	1.59	1.48	1.44			1.62	1.58	1.60
680		45	35	30			45	40
		1.70	1.67	1.67			1.83	1.85
820		50	40	30			50	45
		1.94	1.92	1.83			2.09	2.11
1000			45	35				50
			2.22	2.15				2.43
1200			50	40				
			2.53	2.44				
1500				40				L(mm)
				2.85				R.C.

μF \ V(DC) / φD	400				450			
	22	25	30	35	22	25	30	35
39					25			
					0.32			
47					30	25		
					0.38	0.36		
56	25				35	30		
	0.37				0.43	0.43		
68	30				40	30		
	0.44				0.50	0.46		
82	35	25			40	35	25	
	0.51	0.47			0.55	0.54	0.51	
100	40	30			50	40	30	
	0.60	0.55			0.67	0.62	0.60	
120	45	35	25			45	35	30
	0.70	0.64	0.62			0.72	0.69	0.70
150	50	40	30	25		50	40	30
	0.82	0.76	0.74	0.75		0.83	0.81	0.78
180		45	35	30			45	35
		0.87	0.85	0.86			0.93	0.91
220		50	40	30			50	40
		1.00	0.99	0.94			1.07	1.05
270			45	35				45
			1.15	1.11				1.21
330			50	40				
			1.32	1.28				
390				45				
				1.45				
470				50				L(mm)
				1.66				R.C.

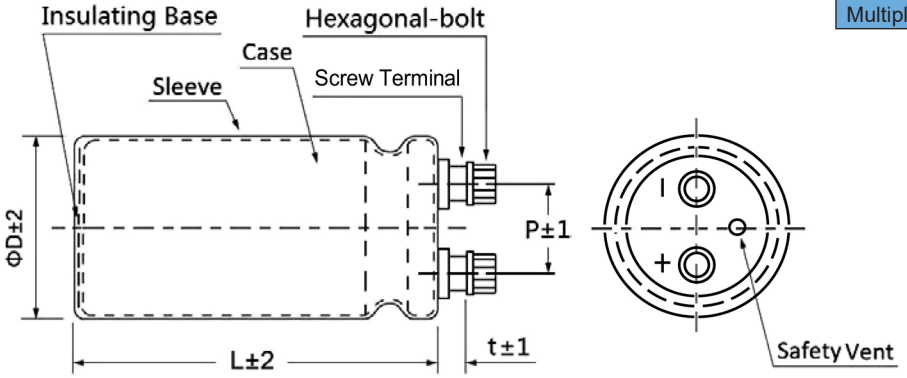
- High ripple current characteristic.
- Long life for 2000 hours at 85°C.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic															
Operation Temperature Range	-40 ~ +85°C								-25 ~ +85°C							
Rated Working Voltage	6.3 ~ 100VDC								160 ~ 450VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)															
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)															
Surge Voltage (20°C)	W.V.	6.3	10	16	25	35	50	63	80	100	160	200	250	350	400	450
	S.V.	8	13	20	32	44	63	79	100	125	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	6.3	10	16	25	35	50	63	80	100	160	200	250	350	400	450
	tan δ φ35	0.75	0.75	0.60	0.40	0.30	0.25	0.20	0.20	0.15	0.15	0.15	0.15	0.20	0.20	0.20
	tan δ φ51	1.00	1.00	0.70	0.50	0.50	0.30	0.25	0.20	0.20	0.15	0.15	0.15	0.20	0.20	0.20
	tan δ φ64	1.30	1.30	0.80	0.70	0.60	0.50	0.30	0.25	0.25	0.20	0.20	0.20	0.25	0.25	0.25
	tan δ φ77	1.50	1.50	1.00	0.80	0.70	0.60	0.40	0.30	0.25	0.20	0.20	0.20	0.25	0.25	0.25
	tan δ φ90	1.50	1.50	1.00	0.80	0.70	0.60	0.40	0.30	0.25	0.20	0.20	0.20	0.25	0.25	0.25
Low Temperature Stability	Impedance ratio at 120Hz															
	Rated Voltage (V)	6.3~100									160~450					
	-25°C / +20°C										8					
	-40°C / +20°C	12														
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)															
	Capacitance Change	≦±15% of initial value														
	Dissipation Factor	≦175% of initial specified value														
	Leakage current	≦initial specified value														
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (With voltage treatment)															

TERMINAL TYPE

φD	P	t	Hexagonal-bolt
35	12.7	6.3	M5 × 0.8 × 10
51	21.8	6.3	M5 × 0.8 × 10
64	28.2	6.3	M5 × 0.8 × 10
77	31.4	5.8	M5 × 0.8 × 10
90	31.4	5.8	M5 × 0.8 × 10



RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	1k	10k	100k
W.V.	Multiplier				
6.3 ~ 35V	0.90	1.00	1.05	1.10	1.10
50 ~ 100V	0.90	1.00	1.10	1.15	1.15
160 ~ 450V	0.80	1.00	1.20	1.40	1.40

Temperature(°C)	≦60	70	85
Multiplier	1.80	1.60	1.00

※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / Item / μF	6.3		10		16	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
22000					35x50	4.16
33000			35x50	4.14	35x60	5.51
39000			35x50	4.50	35x80	6.80
47000	35x50	4.94	35x60	5.35	35x80	7.47
56000	35x60	4.96	35x80	6.63	35x100	9.03
68000	35x60	5.47	35x80	7.31	35x121	9.88
82000	35x80	6.82	35x80	8.02	35x121	10.85
100000	35x80	7.53	35x121	9.21	51x80	10.86
120000	35x121	9.15	51x80	9.23	51x90	11.74
150000	51x80	9.51	51x80	10.32	51x121	12.48
180000	51x80	10.42	51x90	11.50	51x121	13.67
220000	51x100	12.39	51x121	13.66	64x100	14.75
270000	64x100	13.68	51x121	15.13	64x115	17.37
330000	64x100	15.12	64x121	17.25	77x121	18.19
390000	64x121	16.97	64x121	18.75	77x121	19.78
470000	64x121	18.63	77x121	19.25		
560000	77x121	18.80	77x121	21.01		
680000	77x121	20.71				

V(DC) / Item / μF	25		35		50	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
6800					35x50	3.26
8200					35x50	3.58
10000			35x50	3.53	35x60	4.27
12000			35x50	3.87	35x60	4.68
15000			35x60	3.96	35x80	5.94
18000	35x50	3.35	35x60	4.34	35x80	6.51
22000	35x60	4.01	35x80	4.93	35x121	6.70
27000	35x80	5.04	35x80	5.46	35x121	7.42
33000	35x80	5.58	35x121	7.20	51x80	7.55
39000	35x80	6.06	35x121	7.83	51x80	8.20
47000	35x121	7.54	51x80	8.26	51x100	9.80
56000	35x121	8.23	51x80	9.02	51x100	10.70
68000	51x100	9.13	51x100	10.35	64x100	11.34
82000	51x100	10.03	51x100	11.36	64x100	12.46
100000	51x121	11.26	64x100	11.48	64x144	12.81
120000	51x121	12.33	64x121	13.13	64x144	14.03
150000	64x100	12.68	64x144	15.42	77x144	15.86
180000	64x100	13.89	64x144	16.89		
220000	64x144	16.05	77x144	17.79		
270000	77x115	17.80				
330000	77x144	20.38				

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / Item / μF	63		80		100	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
2200					35x50	2.15
2700					35x50	2.38
3300					35x50	2.64
3900					35x60	3.10
4700			35x50	2.72	35x80	3.87
5600	35x50	2.97	35x60	3.22	35x80	4.22
6800	35x50	3.28	35x80	4.03	35x100	5.15
8200	35x60	3.89	35x80	4.42	35x121	5.83
10000	35x80	4.77	35x100	5.41	51x80	6.03
12000	35x80	5.23	35x121	6.47	51x80	6.60
15000	35x100	5.88	51x80	7.63	51x121	8.86
18000	35x121	6.16	51x80	8.35	51x121	9.71
22000	51x80	7.73	51x100	8.76	64x100	9.79
27000	51x80	8.56	51x100	9.70	64x100	10.85
33000	51x100	8.76	64x100	10.22	64x144	12.80
39000	51x121	10.22	64x100	11.11	77x115	13.11
47000	64x100	11.88	64x144	14.33	77x144	14.81
56000	64x100	12.96	64x144	15.64		
68000	64x144	13.63	77x144	16.27		
100000	77x144	15.86				

V(DC) / Item / μF	160		200		250	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
470					35x50	1.66
560					35x50	1.81
680			35x50	1.99	35x50	1.99
820			35x50	2.19	35x60	2.37
1000			35x60	2.62	35x80	2.87
1200	35x50	2.64	35x60	2.87	35x80	3.15
1500	35x60	3.20	35x80	3.52	35x100	3.49
1800	35x70	3.63	35x80	3.85	35x100	3.83
2200	35x80	4.26	35x100	4.23	51x70	4.28
2700	35x100	4.68	35x121	4.72	51x70	4.74
3300	35x121	5.22	51x70	5.24	51x90	5.38
3900	51x70	5.70	51x70	5.70	51x115	6.23
4700	51x70	6.26	51x90	6.42	64x96	7.06
5600	51x90	7.00	51x115	7.47	64x96	7.71
6800	51x90	7.72	51x130	8.70	64x115	9.19
8200	51x115	9.04	64x96	9.33	64x115	10.09
10000	64x96	10.30	64x96	10.30	64x130	11.76
12000	64x96	11.29	77x96	12.56	77x115	13.01
15000	64x130	13.83	77x96	14.04	77x130	14.70
18000	64x130	15.15	77x130	16.80	77x155	17.40
22000	77x130	18.57	77x155	20.07	90x157	20.19
27000	77x130	20.58	90x131	21.62		
33000	90x131	23.90	90x157	25.85		
39000	90x157	28.10				

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

V(DC) / Item / μF	350		400		450	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
270					35x50	1.45
330			35x80	1.97	35x80	1.97
390	35x50	1.74	35x80	2.14	35x80	2.14
470	35x80	2.35	35x80	2.35	35x80	2.35
560	35x80	2.57	35x80	2.57	35x100	2.63
680	35x80	2.83	35x100	2.90	35x100	2.90
820	35x100	3.18	35x100	3.18	51x70	3.26
1000	35x100	3.51	51x70	3.60	51x70	3.60
1200	51x70	3.94	51x70	3.94	51x90	4.39
1500	51x70	4.41	51x90	4.91	51x115	5.17
1800	51x90	5.38	51x90	5.38	51x130	5.64
2200	51x90	5.95	51x130	6.23	64x96	6.40
2700	51x130	6.91	64x96	7.09	64x115	7.25
3300	51x130	7.63	64x115	8.01	64x130	8.22
3900	64x115	8.71	64x130	8.94	77x115	9.40
4700	64x130	9.81	77x115	10.32	77x130	10.88
5600	77x115	11.26	77x130	11.87	77x155	12.83
6800	77x130	13.08	77x155	14.14	90x157	14.60
8200	77x155	15.53	90x157	16.03	90x157	16.03
10000	90x157	17.71	90x157	17.71	90x196	19.53
12000	90x157	19.40	90x196	21.40	90x236	23.28
15000	90x196	23.93	90x236	26.02		
18000	90x236	28.51				

- High temperature 85°C, high ripple current and high reliability.
- Long life for 5000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +85°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	350	400	450
	tan δ	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350~450		
	-25°C / +20°C	8		
Load Life	After 5000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +85°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

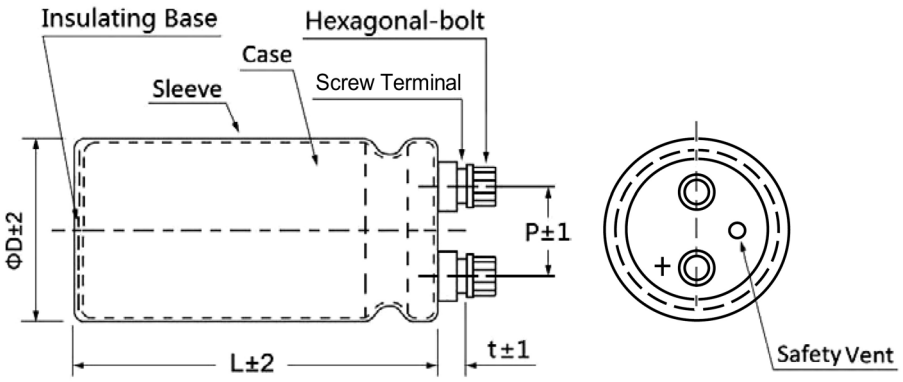
TERMINAL TYPE

φD	P	t	Hexagonal-bolt
51	22.2	6.3	M5 × 0.8 × 10
64	28.5	6.3	M5 × 0.8 × 10
77	31.8	5.8	M5 × 0.8 × 10
90	31.6	5.8	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85
Multiplier	1.89	1.67	1.00



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000					75				75			
					4.76				4.99			
1200	75				75				96			
	5.21				5.21				6.09			
1500	75				96				115			
	5.82				6.48				7.38			
1800	96				96				130			
	7.10				7.10				8.54			
2200	96				130					96		
	7.85				8.99					8.93		
2700	130					96				115		
	9.97					9.64				10.69		
3300	130					115				130		
	11.02					11.53				12.48		
3900		115				130				155	115	
		12.53				13.23				14.68	13.56	
4700		130				155	115			195	130	
		14.53				15.72	14.10			17.91	15.69	
5600		155	115			195	130				155	
		17.16	15.39			19.06	16.23				18.51	
6800		195	130				155					157
		21.00	17.88				19.33					21.21
8200			155					157				157
			21.22					22.64				23.29
10000				157				157				196
				25.00				25.00				28.37
12000				157				196				236
				27.39				30.22				33.80
15000				196				236				
				33.78				36.74				
18000				236								L(mm)
				40.25								R.C.

- High temperature 85°C, high ripple current and high reliability.
- Aluminum can with threaded stud mounting.
- Long life for 5000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +85°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	350	400	450
	tan δ	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350~450		
	-25°C / +20°C	8		
Load Life	After 5000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

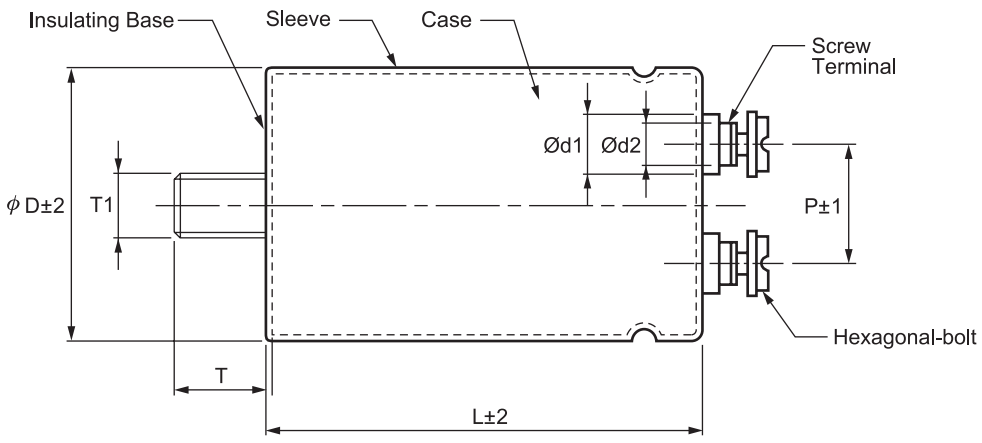
TERMINAL TYPE

φD	P	d1(max)	d2	T	T1	Hexagonal-bolt
51	22.0	11	7.88	16	12	M5 × 0.8 × 10
64	28.5	12	7.88	16	12	M5 × 0.8 × 10
77	31.8	12	7.88	16	12	M5 × 0.8 × 10
90	31.6	14	13.0	17	12	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85
Multiplier	1.89	1.67	1.00



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000					75				75			
					6.66				7.00			
1200	75				75				96			
	7.29				7.29				8.53			
1500	75				96				115			
	8.15				9.08				10.3			
1800	96				96				130			
	9.94				9.94				12.0			
2200	96				130					96		
	11.0				12.6					12.5		
2700	130					96				115	96	
	14.0					13.5				15.0	14.6	
3300	130					115				130	96	
	15.4					16.1				17.5	16.2	
3900		115				130				155	115	
		17.5				18.5				20.6	19.0	
4700		130				155	115			195	130	
		20.3				22.0	19.7			25.1	22.0	
5600		155	115			195	130				155	
		24.0	21.6			26.7	22.7				25.9	
6800		195	130				155					157
		29.4	25.0				27.1					29.7
8200			155					157				157
			29.7					31.7				32.6
10000				157				157				196
				35.0				35.0				39.7
12000				157				196				236
				38.3				42.3				47.3
15000				196				236				
				47.3				51.4				
18000				236								L(mm)
				56.4								R.C.

- High temperature 85°C, high ripple current and high reliability.
- Aluminum can with threaded stud mounting.
- Long life for 10000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +85°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	350	400	450
	tan δ	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350~450		
	-25°C / +20°C	8		
Load Life	After 10000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

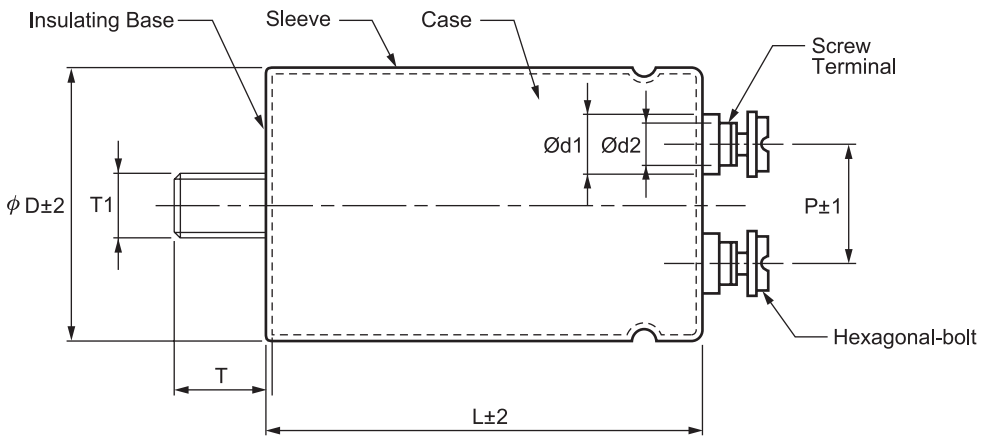
TERMINAL TYPE

φD	P	d1(max)	d2	T	T1	Hexagonal-bolt
51	22.0	11	7.88	16	12	M5 × 0.8 × 10
64	28.5	12	7.88	16	12	M5 × 0.8 × 10
77	31.8	12	7.88	16	12	M5 × 0.8 × 10
90	31.6	14	13.0	17	12	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85
Multiplier	1.89	1.67	1.00



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000	75				75				96			
	7.99				6.39				8.30			
1200	75				96				115			
	8.75				7.79				9.86			
1500	96				115				130			
	10.9				9.45				11.6			
1800	96				130					96		
	11.9				10.9					12.3		
2200	130					96				115		
	15.1					11.6				14.7		
2700		96				115				130	115	
		16.1				13.9				17.2	17.5	
3300		115				130				155	130	
		19.2				16.3				20.5	20.4	
3900		130				155	115			195		
		22.1				19.1	18.0			24.8		
4700		155	115			195	130				155	
		26.2	24.7			23.3	20.8				25.4	
5600		195	130			195	155				195	157
		30.8	28.4			24.6	23.7				30.7	29.3
6800			155					157				196
			32.7					27.7				35.7
8200				157				157				196
				38.0				30.4				39.2
10000				157				196				236
				42.0				35.7				45.4
12000				196				236				
				50.8				42.6				
15000				236								L(mm)
				59.5								R.C.

- High temperature 85°C, high ripple current and high reliability.
- Long life for 2000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic								
Operation Temperature Range	-25 ~ +85°C								
Rated Working Voltage	160 ~ 550VDC								
Capacitance Tolerance (120Hz 20°C)	±20%(M)								
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)								
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450	500	550
	S.V.	200	250	300	400	450	500	550	600
Dissipation Factor (tan δ)(MAX) (120Hz 20°C)	W.V.	160	200	250	350	400	450	500	550
	tan δ	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20
Low Temperature Stability	Impedance ratio at 120Hz								
	Rated Voltage (V)	160~550							
	-25°C / +20°C	8							
Load Life	After 2000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)								
	Capacitance Change	≦±20% of initial value							
	Dissipation Factor	≦200% of initial specified value							
	Leakage current	≦initial specified value							
Shelf Life	At +85°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)								

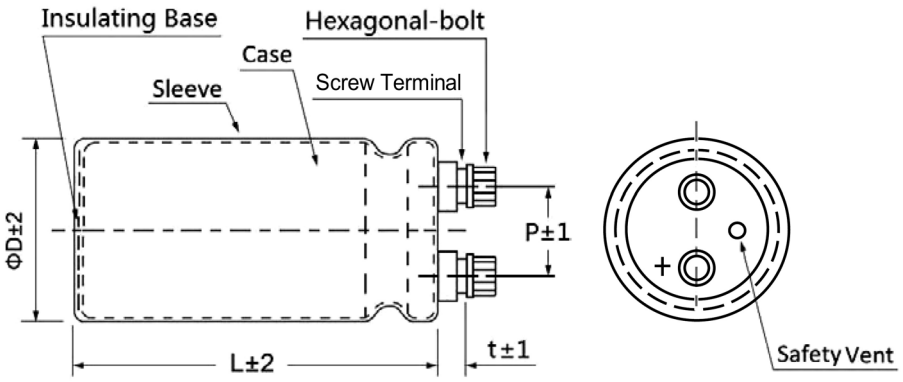
TERMINAL TYPE

φD	P	t	Hexagonal-bolt
51	22.2	6.3	M5 × 0.8 × 10
64	28.5	6.3	M5 × 0.8 × 10
77	31.8	5.8	M5 × 0.8 × 10
90	31.6	5.8	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85
Multiplier	1.89	1.67	1.00



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

μF \ V(DC) / φD	160				200				250			
	51	64	77	90	51	64	77	90	51	64	77	90
2200									75			
									5.64			
2700									75			
									6.25			
3300					75				96			
					6.91				7.69			
3900	75				75				115			
	7.51				7.51				9.07			
4700	75				96					96		
	8.25				9.18					9.79		
5600	96				115					96		
	10.02				10.86					10.68		
6800	96				130					115		
	11.04				12.65					12.73		
8200	115					96				115		
	13.15					12.93				13.98		
10000		96				100				130		
		14.27				14.53				16.30		
12000		96					96				115	
		15.64					16.82				18.15	
15000		130					96				130	
		19.96					18.80				21.40	
18000		130					130				155	
		21.87					23.44				25.33	
22000			130				155					157
			25.91				28.00					29.67
27000			130					131				
			28.71					30.39				
33000				131				157				
				33.60				36.33				
39000				157								L(mm)
				39.50								R.C.

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
820									75			
									4.31			
1000					75				80			
					4.76				4.89			
1200	75				80				96			
	5.21				5.36				5.80			
1500	80				96				115			
	5.99				6.48				7.03			
1800	96				96				130			
	7.10				7.10				8.14			
2200	96				130					100		
	7.85				9.00					8.86		
2700	130					96				115		
	9.97					9.64				10.43		
3300	130	96				115				130		
	11.02	10.66				11.53				12.17		
3900		115				130	96				115	
		12.53				13.23	11.90				12.85	
4700		130	96				115				130	
		14.53	13.07				14.10				14.87	
5600			115				130				155	
			15.39				16.23				17.54	
6800			130				155					157
			17.89				19.32					20.62
8200			155					157				157
			21.22					22.64				22.64
10000				157				157				196
				25.00				25.00				27.58
12000				157				196				236
				27.39				30.22				32.87
15000				196				236				
				33.78				36.74				
18000				236								L(mm)
				40.25								R.C.

μF \ V(DC) / φD	500				550			
	51	64	77	90	51	64	77	90
390					75			
					2.70			
470	75							
	2.96							
560					96	96		
					3.60	4.00		
680	96				115	115		
	3.97				4.30	4.76		
820	115				130	130		
	4.72				4.99	5.52		
1000	130	96						
	5.52	5.34						
1200							96	
							6.04	
1500		115	96				115	
		7.08	6.75				7.28	
1800		130					130	
		8.18					8.41	
2200			115				155	
			8.82				10.05	
2700			155					
			11.13					
3300								157
								13.15
3900				157				L(mm)
				14.29				R.C.

- High temperature 105°C, high ripple current and high reliability.
- Long life for 2000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic							
Operation Temperature Range	-25 ~ +105°C							
Rated Working Voltage	160 ~ 500VDC							
Capacitance Tolerance (120Hz 20°C)	±20%(M)							
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)							
Surge Voltage (20°C)	W.V.	160	200	250	350	400	450	500
	S.V.	200	250	300	400	450	500	550
Dissipation Factor (tan δ)(MAX) (120Hz 20°C)	W.V.	160	200	250	350	400	450	500
	tan δ	0.15	0.15	0.15	0.15	0.15	0.15	0.20
Low Temperature Stability	Impedance ratio at 120Hz							
	Rated Voltage (V)	160~500						
	-25°C / +20°C	8						
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)							
	Capacitance Change	≦±20% of initial value						
	Dissipation Factor	≦200% of initial specified value						
	Leakage current	≦initial specified value						
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)							

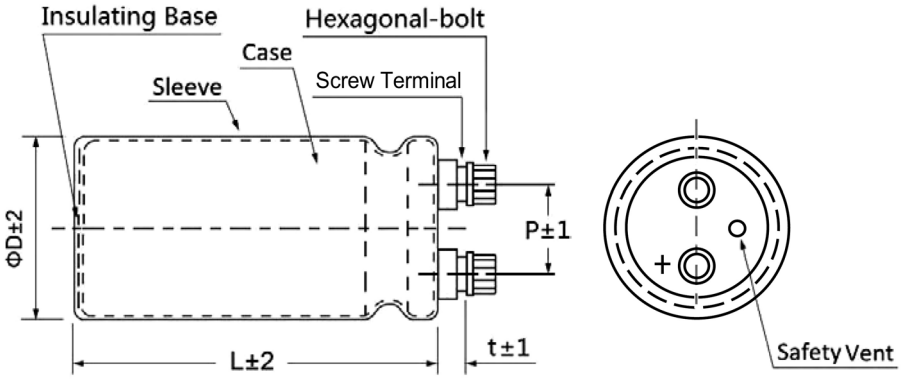
TERMINAL TYPE

φD	P	t	Hexagonal-bolt
51	22.2	6.3	M5 × 0.8 × 10
64	28.5	6.3	M5 × 0.8 × 10
77	31.8	5.8	M5 × 0.8 × 10
90	31.6	5.8	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85	105
Multiplier	2.44	2.16	2.00	1.00



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	160				200				250			
	51	64	77	90	51	64	77	90	51	64	77	90
2200									75			
									4.53			
2700												
3300					80				96			
					5.23				6.18			
3900										96		
										6.69		
4700	80				96					115		
	6.81				6.76					7.94		
5600	96					96					96	
	8.05					7.99					8.91	
6800		96				115					115	
		8.80				9.52					10.60	
8200		96					96				130	
		9.66					10.27				12.27	
10000			96				115				155	
			11.34				12.24				14.65	
15000			130					131				157
			15.81					16.47				17.81
22000				131								
				19.87								

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000	75				75				96			
	4.08				4.08				4.54			
1200	75				96				115			
	4.47				4.97				5.39			
1500	96				96				115			
	5.56				5.56				6.02			
1800	96											
	6.09											
2200	115					96				115		
	7.29					7.65				8.28		
2700		96										
		8.48										
3300		115				130				130		
		10.13				10.70				10.70		
3900		115				155					121	
		11.02				12.59					12.50	
4700		130					130				144	
		12.77					14.16				14.81	
5600			130				155					145
			15.46				16.70					15.49
6800			130					157				196
			17.03					16.83				19.50
8200			155					157				196
			18.11					18.48				21.41
10000				157				196				
				21.94				22.52				

LARGE CAN TYPE

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	500			
	51	64	77	90
820	115			
	3.86			
1000	130	96		
	4.50	4.37		
1200		115		
		5.18		
1500		130	96	
		6.12	5.66	
1800			115	
			6.69	
2700			155	
			9.33	
3900				157
				11.70
6800				236
				18.54

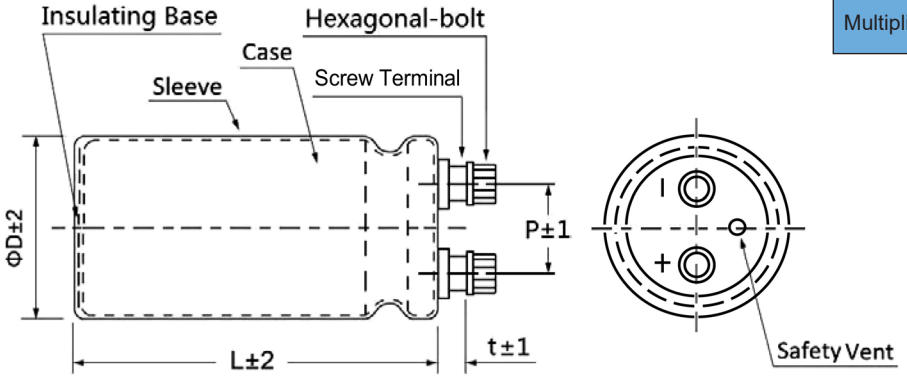
- High temperature 105°C, high ripple current and high reliability.
- Long life for 2000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic													
Operation Temperature Range	-40 ~ +105°C							-25 ~ +105°C						
Rated Working Voltage	10 ~ 100VDC							160 ~ 450VDC						
Capacitance Tolerance (120Hz 20°C)	±20%(M)													
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)													
Surge Voltage (20°C)	W.V.	10	16	25	35	50	63	100	160	200	250	350	400	450
	S.V.	13	20	32	44	63	79	125	200	250	300	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	φD / L \ W.V.	10	16	25	35	50	63	100	160	200	250	350	400	450
	φ35 ≦96	0.80	0.70	0.35	0.30	0.25	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	φ35 ≧100	0.80	0.70	0.40	0.35	0.30	0.25	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	φ51 ≦96	1.00	0.90	0.40	0.45	0.35	0.25	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	φ51 ≧100	1.00	0.90	0.50	0.50	0.40	0.30	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	φ64 ≦96	1.20	1.00	0.60	0.55	0.40	0.30	0.20	0.15	0.15	0.15	0.15	0.15	0.15
	φ64 ≧100	1.20	1.00	0.80	0.60	0.45	0.35	0.20	0.15	0.15	0.15	0.15	0.15	0.15
	φ77 ≧96	2.00	1.20	1.00	0.70	0.50	0.40	0.25	0.15	0.15	0.15	0.15	0.15	0.15
	φ90 ≧96	2.00	1.20	1.00	0.70	0.50	0.40	0.25	0.15	0.15	0.15	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz													
	Rated Voltage (V)	10~100							160~450					
	-25°C / +20°C								8					
	-40°C / +20°C	12												
Load Life	After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)													
	Capacitance Change	≦±20% of initial value												
	Dissipation Factor	≦200% of initial specified value												
	Leakage current	≦initial specified value												
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)													

TERMINAL TYPE

φD	P	t	Hexagonal-bolt
35	12.7	6.3	M5 × 0.8 × 10
51	21.8	6.3	M5 × 0.8 × 10
64	28.2	6.3	M5 × 0.8 × 10
77	31.4	5.8	M5 × 0.8 × 10
90	31.4	5.8	M5 × 0.8 × 10



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	1k	10k	100k
W.V.	Multiplier				
10 ~ 35V	0.90	1.00	1.05	1.10	1.10
50 ~ 100V	0.90	1.00	1.10	1.15	1.15
160 ~ 450V	0.80	1.00	1.20	1.30	1.35

Temperature(°C)		45	55	70	85	105
Multiplier	≦250V	3.00	2.50	2.00	1.40	1.00
	≧350V	2.50	2.00	1.50	1.20	1.00

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / Item	10		16		25	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
22000			35x50	3.25	35x60	4.59
33000	35x50	3.72	35x60	4.31	35x80	6.39
47000	35x60	4.81	35x80	5.84	35x90	8.04
56000	35x70	5.61	35x90	6.72	51x70	8.31
68000	35x80	6.57	51x70	6.66	51x90	10.21
100000	51x70	7.67	51x90	9.00	64x96	11.28
150000	51x90	10.46	64x96	11.22	64x115	12.94
220000	64x96	13.53	64x115	14.69	77x115	14.83
330000	64x115	17.92	77x115	18.24	90x131	19.94

μF \ V(DC) / Item	35		50		63	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
6800					35x70	3.31
8200			35x60	3.18	35x80	3.86
10000			35x70	3.75	35x90	4.50
15000	35x60	4.09	35x80	4.88	51x70	4.95
22000	35x80	5.63	51x70	5.57	51x90	6.68
33000	51x70	6.56	51x90	7.60	64x96	8.73
47000	51x80	8.29	64x96	9.48	64x115	10.43
56000	51x90	9.53	64x96	10.34	77x96	10.96
68000	51x115	11.11	64x115	11.62	77x115	13.03
100000	64x115	12.20	77x115	14.14	90x131	17.36
150000	77x115	13.90	90x131	19.02		
220000	90x131	17.42				

μF \ V(DC) / Item	100		160		200	
	DxL	R.C.	DxL	R.C.	DxL	R.C.
1000			35x50	1.50	35x60	1.62
1500			35x60	1.98	35x70	2.12
2200			35x70	2.57	35x90	2.88
3300			35x90	3.52	51x80	3.49
4700			51x80	4.54	51x90	4.38
5600	35x90	4.59	51x90	5.22	64x96	5.34
6800	51x70	5.16	64x96	5.89	64x115	6.37
8200	51x80	6.00	64x96	6.46	77x96	6.85
10000	51x90	6.97	77x96	7.56	77x115	8.16
15000	64x96	7.57	77x130	10.54	90x131	10.98
22000	77x96	8.69	90x131	13.30		
33000	77x130	12.11				
47000	90x131	15.05				

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

V(DC) / Item / μF	250		350	
	DxL	R.C.	DxL	R.C.
1000	35x70	1.73	51x65	2.40
1500	35x90	2.38	51x70	3.03
2200	51x70	2.94	51x96	4.21
3300	51x90	4.01	64x96	5.47
3900	64x96	4.46	64x115	6.43
4700	64x115	5.29	64x130	7.45
5600	77x96	5.94	77x115	7.94
6800	77x115	7.07	77x130	9.23
8200	77x130	8.18	77x155	10.95
10000	77x155	9.76	90x157	12.25
15000	90x157	11.87		

V(DC) / Item / μF	400		450	
	DxL	R.C.	DxL	R.C.
1000	51x70	2.47	51x90	2.94
1500	51x90	3.38	51x115	4.02
2200	64x96	4.46	64x115	5.17
3300	64x130	6.24	64x130	6.69
3900	64x155	7.34	77x121	7.82
4700	77x130	7.97	77x144	9.26
5600	77x155	9.39	90x145	11.06
6800	90x157	10.94	90x196	13.93
8200	90x157	12.01		
10000	90x196	14.64		

- High temperature 105°C, high ripple current and high reliability.
- Long life for 5000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic					
Operation Temperature Range	-40 ~ +105°C					
Rated Working Voltage	200 ~ 450VDC					
Capacitance Tolerance (120Hz 20°C)	±20%(M)					
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)					
Surge Voltage (20°C)	W.V.	200	250	350	400	450
	S.V.	250	300	400	450	500
Dissipation Factor (tan δ)(MAX) (120Hz 20°C)	W.V.	200	250	350	400	450
	tan δ	0.20	0.20	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz					
	Rated Voltage (V)	200~450				
	-25°C / +20°C	8				
Load Life	After 5000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)					
	Capacitance Change	≦±20% of initial value				
	Dissipation Factor	≦200% of initial specified value				
	Leakage current	≦initial specified value				
Shelf Life	At +105°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)					

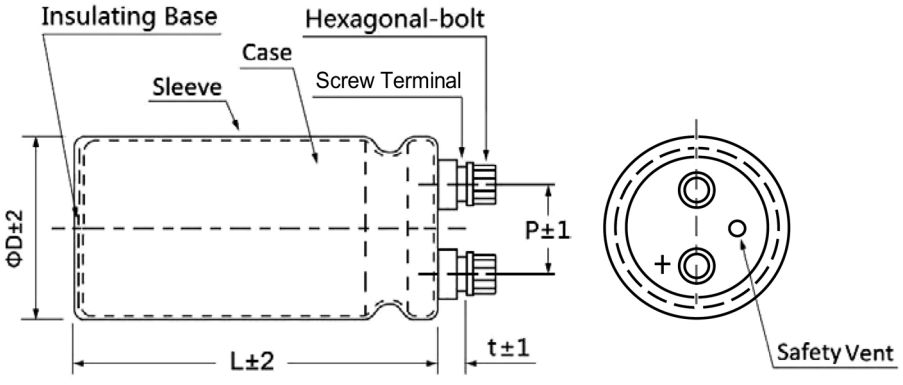
TERMINAL TYPE

φD	P	t	Hexagonal-bolt
51	22.2	6.3	M5 × 0.8 × 10
64	28.5	6.3	M5 × 0.8 × 10
77	31.8	5.8	M5 × 0.8 × 10
90	31.6	5.8	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85	105
Multiplier	2.44	2.16	2.00	1.00



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	200				250				350			
	51	64	77	90	51	64	77	90	51	64	77	90
680												
1000									75			
									3.06			
1200									75			
									3.35			
1500					80				96			
					2.41				4.17			
1800									96			
									4.57			
2200	80				100				130			
	2.92				3.21				5.78			
2700										96		
										6.00		
3300	100					100				115		
	3.94					4.47				7.18		
3900										130		
										8.24		
4700		100				121				155	115	
		5.13				5.80				9.79	8.95	
5600										195	130	
										11.87	10.30	
6800		121					121				155	
		6.71					7.15				12.27	
8200												157
												13.86
10000			121					145				157
			8.31					9.39				15.31
12000												196
												18.50
15000			144					171				236
			10.98					12.36				22.50
22000				145				236				
				11.40				17.30				
33000				236								L(mm)
				17.34								R.C.

μF \ V(DC) / φD	400				450			
	51	64	77	90	51	64	77	90
1000	75				96			
	3.40				4.25			
1200	96				115			
	4.14				5.05			
1500	115				130			
	5.02				5.97			
1800	130					96		
	5.81					6.20		
2200	130	96				115		
	6.43	6.22				7.41		
2700		115				130	115	
		7.45				8.67	8.69	
3300		130				155	130	
		8.69				10.37	10.14	
3900		155	115			195		
		10.23	9.18			12.53		
4700		195	130				155	
		12.47	10.62				13.07	
5600		195	155				195	157
		13.61	12.53				15.82	14.89
6800				157				196
				14.73				18.10
8200				157				196
				16.17				19.88
10000				196				236
				19.70				23.88
12000				236				L(mm)
				23.48				R.C.

- High temperature 105°C, high ripple current and high reliability.
- Aluminum can with threaded stud mounting.
- Long life for 5000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +105°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	Rated Voltage (V)	350	400	450
	tan δ	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350~450		
	-25°C / +20°C	8		
Load Life	After 5000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

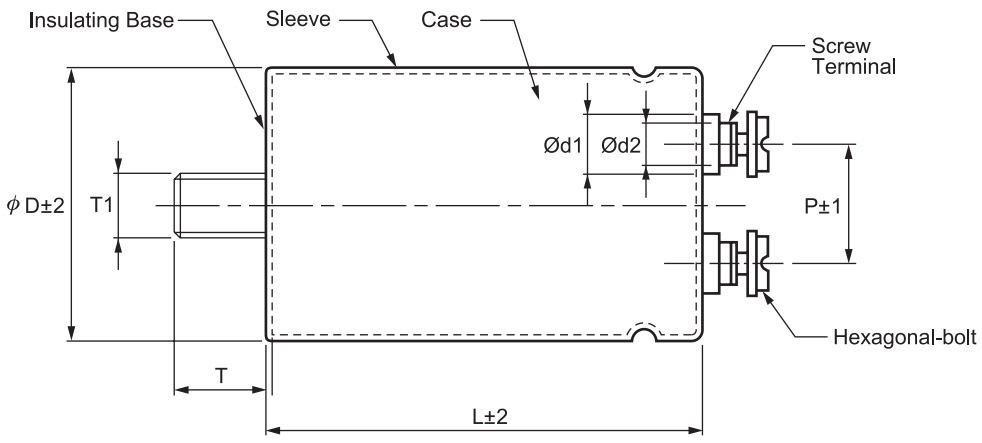
TERMINAL TYPE

φD	P	d1(max)	d2	T	T1	Hexagonal-bolt
51	22.0	11	7.88	16	12	M5 × 0.8 × 10
64	28.5	12	7.88	16	12	M5 × 0.8 × 10
77	31.8	12	7.88	16	12	M5 × 0.8 × 10
90	31.6	14	13.0	17	12	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85	105
Multiplier	2.44	2.16	2.00	1.00



CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000	75				75				96			
	4.3				4.3				4.8			
1200	75				96				115			
	4.7				5.2				5.7			
1500	96				115				130			
	5.8				6.3				6.7			
1800	96				130					96		
	6.4				7.3					6.9		
2200	130					96				115		
	8.1					7.6				8.2		
2700		96				115				130	115	
		8.4				9.1				9.6	9.8	
3300		115				130				155	130	
		10.1				10.6				11.5	11.4	
3900		130				155	115			195		
		11.5				12.5	11.8			13.9		
4700		155	115			195	130				155	
		13.7	12.9			15.2	13.6				14.7	
5600		195	130			195	155				195	157
		16.6	14.9			16.6	16.1				17.8	16.6
6800			144					157				196
			17.1					18.3				20.1
6800			155									
			17.7									
8200				157				157				196
				20.1				20.1				22.1
10000				157				196				236
				22.1				24.4				26.6
12000				196				236				
				26.8				29.1				
15000				236								
				32.5								

- High temperature 85°C, high ripple current and high reliability.
- Long life for 10000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +85°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ) (120Hz 20°C)	W.V.	350	400	450
	tan δ	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350~450		
	-25°C / +20°C	8		
Load Life	After 10000 hours application of W.V. and +85°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +85°C no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

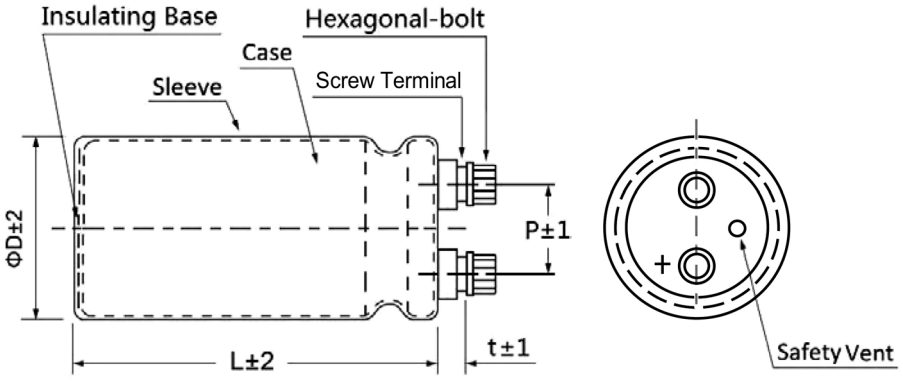
TERMINAL TYPE

φD	P	t	Hexagonal-bolt
51	22.2	6.3	M5 × 0.8 × 10
64	28.5	6.3	M5 × 0.8 × 10
77	31.8	5.8	M5 × 0.8 × 10
90	31.6	5.8	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85
Multiplier	1.89	1.67	1.00



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : A(rms) 85°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000	75				75				96			
	5.7				4.6				5.9			
1200	75				96				115			
	6.3				5.6				7.0			
1500	96				115				130			
	7.8				6.7				8.3			
1800	96				130					96		
	8.5				7.8					8.7		
2200	130					96				115		
	10.8					8.3				10.5		
2700		96				115				130	115	
		11.5				9.9				12.2	12.5	
3300		115				130				155	130	
		13.7				11.6				14.6	14.5	
3900		130				155	115			195		
		15.8				13.6	12.8			17.7		
4700		155	115			195	130				155	
		18.7	17.6			16.6	14.9				18.1	
5600		195	130			195	155				195	157
		22.0	20.3			17.6	17.0				21.9	21.0
6800			155					157				196
			23.4					19.8				25.4
8200				157				157				196
				27.2				21.7				28.0
10000				157				196				236
				30.0				25.5				32.4
12000				196				236				
				36.3				30.4				
15000				236								
				42.5								

- High temperature 105°C, high ripple current and high reliability.
- Long life for 10000 hours.
- Corresponding product to RoHS

SPECIFICATION

Item	Characteristic			
Operation Temperature Range	-40 ~ +105°C			
Rated Working Voltage	350 ~ 450VDC			
Capacitance Tolerance (120Hz 20°C)	±20%(M)			
Leakage Current (20°C)	I ≦0.02CV or 5 (mA) *Whichever is smaller after 5 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V)			
Surge Voltage (20°C)	W.V.	350	400	450
	S.V.	400	450	500
Dissipation Factor (tan δ)(MAX) (120Hz 20°C)	W.V.	350	400	450
	tan δ	0.15	0.15	0.15
Low Temperature Stability	Impedance ratio at 120Hz			
	Rated Voltage (V)	350~450		
	-25°C / +20°C	8		
Load Life	After 10000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≦ rate working voltage)			
	Capacitance Change	≦±20% of initial value		
	Dissipation Factor	≦200% of initial specified value		
	Leakage current	≦initial specified value		
Shelf Life	At +105°C, no voltage application after 1000 hours, the capacitor shall meet the limits for load life characteristics. (with voltage treatment)			

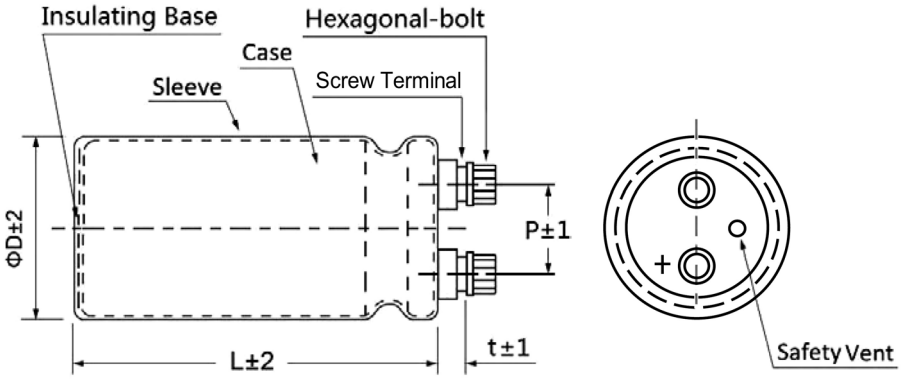
TERMINAL TYPE

φD	P	t	Hexagonal-bolt
51	22.2	6.3	M5 × 0.8 × 10
64	28.5	6.3	M5 × 0.8 × 10
77	31.8	5.8	M5 × 0.8 × 10
90	31.6	5.8	M6 × 1.0 × 10

RIPPLE CURRENT COEFFICIENTS

Frequency(Hz)	60	120	300	1k	≧10k
Multiplier	0.70	1.00	1.10	1.30	1.40

Temperature(°C)	40	60	85	105
Multiplier	2.44	2.16	2.00	1.00



※Clamp enclosed and Hexagonal-bolt with box, not locked to cap body

CASE SIZE & MAX RIPPLE CURRENT

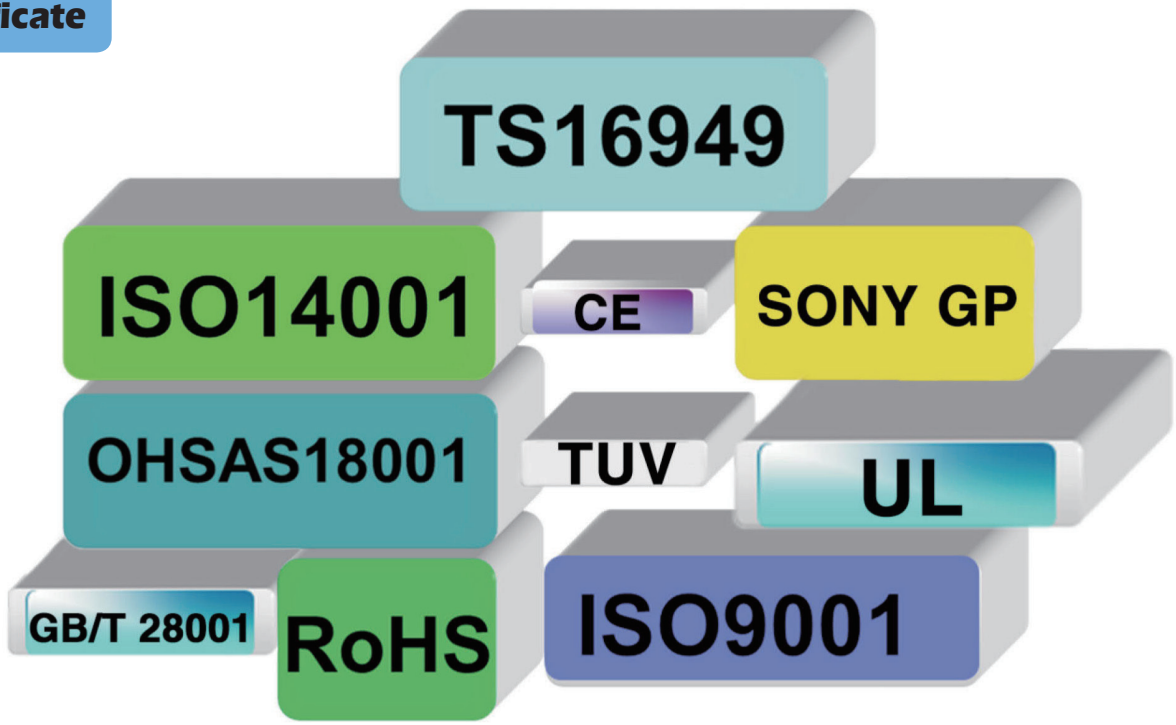
Case size : D x L (mm)
Max ripple current : A(rms) 105°C 120Hz

μF \ V(DC) / φD	350				400				450			
	51	64	77	90	51	64	77	90	51	64	77	90
1000	75				75				96			
	5.6				5.6				6.2			
1200	75				96				115			
	6.1				6.8				7.4			
1500	96				115				130			
	7.6				8.2				8.7			
1800	96				130					115		
	8.3				9.5					9.7		
2200	130					96				115		
	10.5					9.7				10.7		
2700		96				115				130	115	
		10.9				11.8				12.5	12.7	
3300		115				130				155	130	
		13.1				13.8				14.9	14.8	
3900		130				155	115			195		
		15.0				16.2	15.3			18.0		
4700		155	115			195	130				155	
		17.8	16.8			19.8	17.7				19.1	
5600		195	130			195	155				195	157
		21.6	19.3			21.6	20.9				23.2	21.5
6800			144					157				196
			22.3					23.7				26.2
8200				157				157				196
				26.1				26.1				28.8
10000				157				196				236
				28.8				31.8				34.5
12000				196				236				
				34.8				37.8				
15000				236								
				42.3								

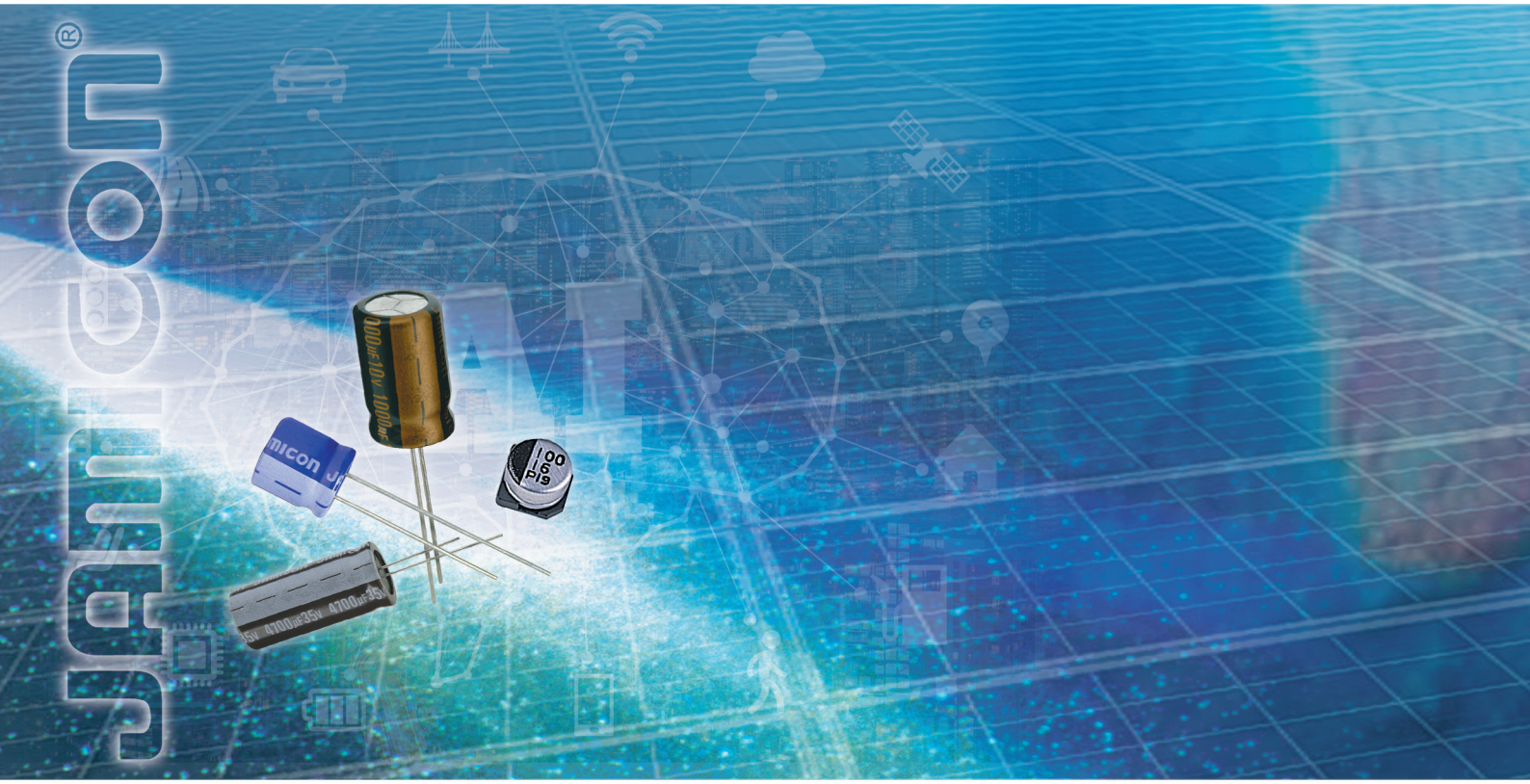
CERTIFICATE

JAMICON

Certificate



Global Footprint



JAMICON®

KAIMEI ELECTRONIC CORP. (Headquarters)

13th Fl., No. 81, Sec. 1, Xintai 5th Rd., Xizhi Dist.,
New Taipei City, 22101, Taiwan R.O.C.
TEL ：886-2-2698-1010
FAX ：886-2-2698-0386
URL ：http://www.jamicon.com.tw
E-mail:capacitor@jamicon.com.tw (Capacitors Business)
fan@jamicon.com.tw (Fan Business)

凱美電機股份有限公司

新北市汐止區新台五路一段81號13樓