1 Conductive Polymer Aluminum Solid Capacitors

Series		Features	Endurance	Voltage (VDC)	Competitor's Corresponding Series				
TEAPO	LUXON				Rubycon	Chemi-con	Nichicon	LELON	ELITE
CP	CP	8 mm height & Ultra Low ESR	105℃ 3000Hrs	2.5 ~25	--	--	--	--	--
CG	CG	Ultra Low ESR	105℃ 2000Hrs	2.5 ~25	--	PSA , PS	IS,NU,F8,N	OCR,OCRZ	GP,UP,RP
CR	CR	Ultra Low ESR & High Ripple Current	105℃ 2000Hrs	2.5 ~6.3	--	PSC	R7,S8,LF	OCRZ	UP,UPS
CF	CF	Super Low ESR & Large Capacitance	105℃ 2000Hrs	6.3 ~35	--	--	LF	--	--
CY	CY	Ultra Low ESR with sleeve	105℃ 2000Hrs	6.3 ~16	--	--	--	--	--
CX	CX	Ultra Low ESR & High Ripple Current with bright Aluminum case	105℃ 2000Hrs	2.5 ~28	--	--	--	--	--
CZ	CZ	Ultra Low ESR with Small size	105℃ 2000hrs	2.5 ~16V	--	--	--	--	--
CH	CH	Ultra Low ESR & Long Life	105℃ 5000hrs	2.5 ~16V	--	PSF		OCRK	--
CT	CT	High Temperature	125℃ 1000hrs	6.3 ~25V	--	PXH	HT	OCRU	--
CS	CS	Large capacitance & Long Life & High Voltage	105℃ 5000hrs	25 ~50V	--	--	--	--	--
VP	VP	SMD Strandard	105℃ 2000hrs	2.5-25V	--	PXA	--	OCV	--
VB	VB	SMD & High capacitance & Super low ESR	105℃ 2000hrs	2.5-16V	--	PXE	SS,SA,SB	OCVZ	--
VS	VS	SMD & Long life and Ultra low ESR	105℃ 2000hrs	4-16V	--	PXS	--	OVK	--

2 Chip Type Aluminum Electrolytic Capacitors

Series		Features	Endurance	Voltage (VDC)	Competitor's Corresponding Series				
TEAPO	LUXON				Rubycon	Chemi-con	Nichicon	LELON	ELITE
GV	GV	Low profile	85℃ 2000Hrs	4~100	JEV	MVA,MV	WX,WJ	VE	--
FV	FV	Long life	85℃ 3000~5000Hrs	4~100	--	--	--	--	--
SV	SV	Low profile	105℃ 1000Hrs	4~100	JKV	MVE,MVK	WT,WZ	VES	--
DV	DV	Long life	105℃ 2000Hrs	6.3~100	SGV,JGV	MVE,MVK	UT	VEJ	--
ZV	ZV	Low impedance	105℃ 1000Hrs	4~50	--	--	WF	VEZ	--
EV	EV	Ultra Low impedance	105℃ 2000Hrs	6.3~35	TZV	MZA	--	VEH	--
HV	HV	Higher temperature range	125℃ 2000Hrs	6.3~50	TXV	MHB	UB	VUA	--
XV	XV	Ultra Low impedance	105℃ 3000~5000Hrs	6.3~50	SJV	MVL	UD,UA,WD	VZH	--
YV	YV	Low impedance V-Chip	105℃ 1000~2000hrs	6.3~50	--	MVY	--	--	--
JV	JV	Low profile vertical chip	105℃ 2000hrs	6.3~35	TZV	MZA	--	VEH	--

3 Miniature Aluminum Electrolytic Capacitors

Series		Features	Endurance	Voltage (VDC)	Competitor's Corresponding Series				
TEAPO	LUXON				Rubycon	Chemi-con	Nichicon	LELON	ELITE
SK	GR	General purpose	85℃ 2000Hrs	6.3~500	PK,WA	SMQ,SMG	VR,VK	REA	SM
SEK	SE	General purpose	105℃ 1000Hrs	6.3~450	PX,AX	KMG,KMQ	VZ,VY		PS
SH	SM	Miniature General purpose	105℃ 2000Hrs	6.3~450	WXA,PX	KMG,KMQ	--	RGA,RJA	PF
TH	TH	Slim Type	105℃ 2000Hrs	160~450	QXW	PAG	--	RGL	--
TG	TG	Slim Type and long life	105℃ 5000Hrs	160~450	CXW	--	--	RPL	--
TP	TP	Slim Type and long life	105℃ 10000Hrs	160~450	TXW	KXJ	--	RQL	--
AH	AH	High Temperature	125℃ 2000Hrs	10~63	--	--	--	--	--
S5	FX	5 mm height	105℃ 1000Hrs	4~50	MH5	KRE	MT	SSG	SB-H
H5	H5	5 mm height	105℃ 2000Hrs	4~50	--	--	--	--	--
S7	SX	7 & 9 mm height	105℃ 1000Hrs	4~63	MH7	KMA,KRG	ST	SG	SS-H
H7	H7	7 & 9 mm height	105℃ 2000Hrs	4~63	--	--	--	SJA	--
SC	LZ	Low ESR and high frequency	105℃ 1000~3000Hrs	6.3~100	--	--	PS	RXY,RXJ	ES,EL
SJ	LU	Low impedance and high ripple	105℃ 1000~5000Hrs	6.3~100	ZL	KZE	HD	RZD	EM,ED
SY	LT	Low impedance and long life	105℃ 2000~6000Hrs	6.3~100	YXG	LXV,LXZ	PM	RXW,RXK	EJ,EG
ST	ST	Low impedance and long life	105℃ 4000~10000Hrs	6.3~63	YXJ	--	--	--	--
SZ	LW	Ultra low ESR	105℃ 1000~2000Hrs	6.3~16	--	--	HM	RXZ	EB
AK	AK	High Temperature & Low ESR and Long Life	125℃ 2000-5000Hrs	10~63	ZT	GXE	-	RUK	--
SQ	LB	High ripple and high voltage	105℃ 2000Hrs	160~450	--	PAG	PZ	RXC	PW,LF
SG	LC	High ripple and long life	105℃ 3000~5000Hrs	160~450	CFX	--	PT	RXB	LL/PV
SP	SP	High ripple and long life	105℃ 8000~10000Hrs	160~450	BXF	KXG	CS,CY	RXQ	--
TA	TA	Low impedance and long life	105℃ 4000~10000Hrs	6.3~35	YXH	KY	HE	RZW	EY

4 Large Can Type Aluminum Electrolytic Capacitors

Series		Features	Endurance	Voltage (VDC)	Competitor's Corresponding Series				
TEAPO	LUXON				Rubycon	Chemi-con	Nichicon	LELON	ELITE
LH	TW	General purpose	85℃ 2000Hrs	6.3~500	USG	SMQ,SMH	LN,KG	LS,LS2,LV	GM,GR
LG	HW	General purpose	105℃ 2000Hrs	6.3~450	MXG	KMQ,KMH	AK,AQ	LSG,LVG	PL,PH
LF	LF	Long life	85℃ 3000Hrs	10~450	USC	SMM	LU,LS	--	GS,GH
LJ	LJ	Long life	105℃ 3000Hrs	10~450	MXC,MXG	KMM	GU,AD	LSM	PK,PD
LQ	LQ	Long life	105℃ 5000Hrs	160~450	VXG	LXG,LXQ	--	LSK	PG

Company Profile

Established: February 1956

Factory Area: 74,950M^2 (Mainland China factory / Suzhou)

85,000M^2 (Mainland China factory / Dongguan)

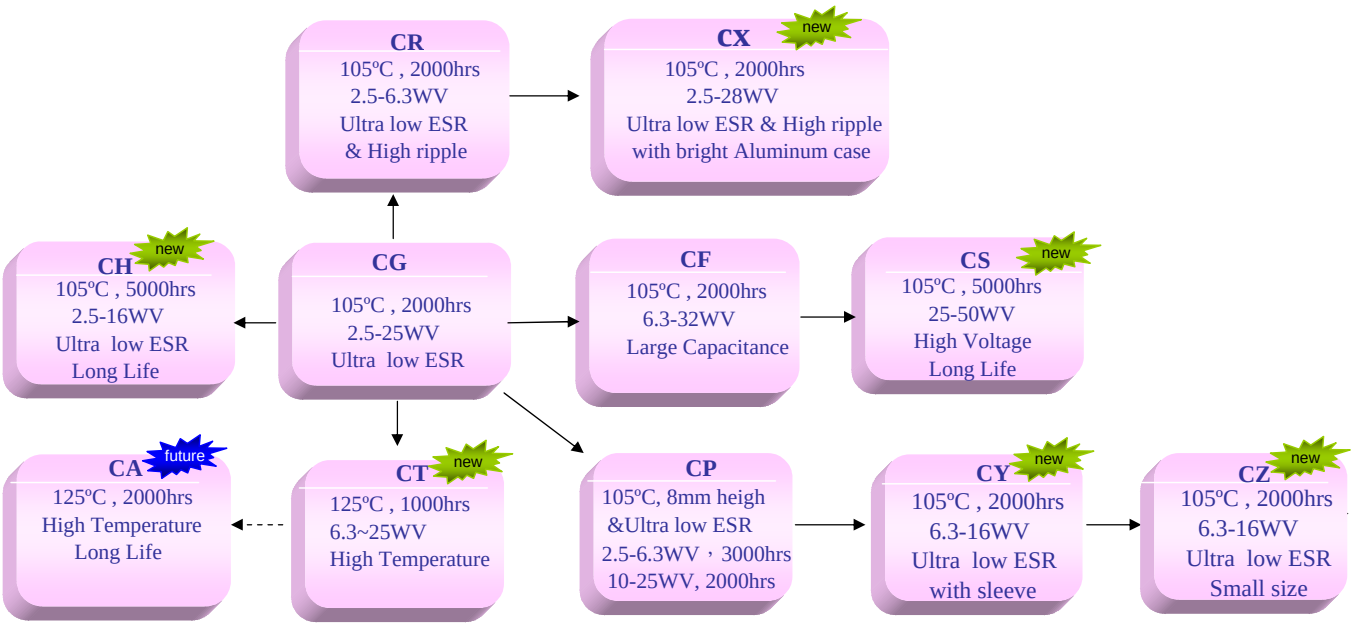
Capial: US$108,000,000

Milestones:

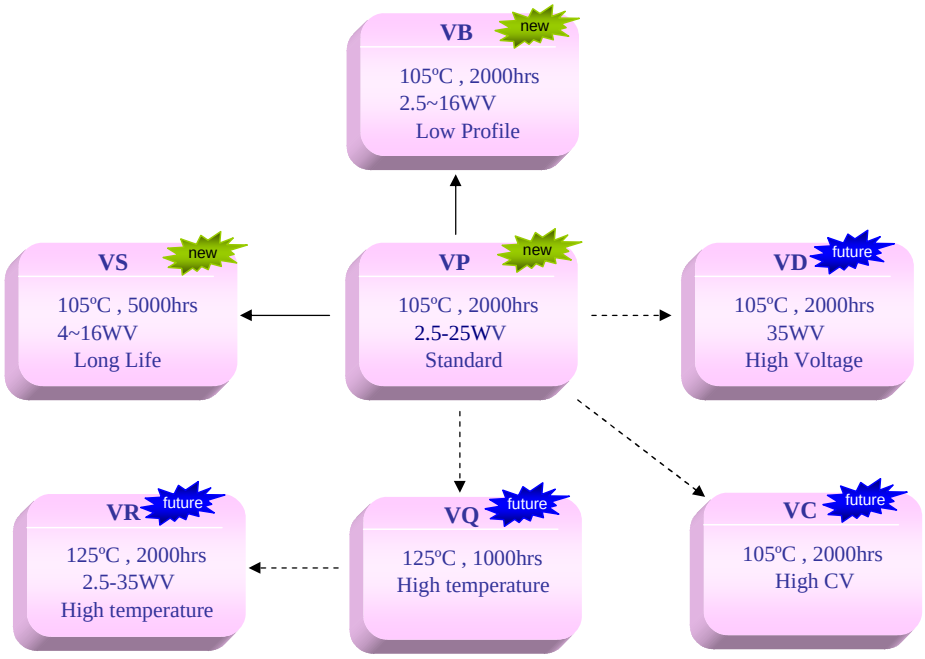
1956	Set-up Aluminum Capacitor Division at SAMPO Electronic
1965	Joint venture with Elna Japan
1966	Joint venture with Hitachi Japan
1971	Joint venture with Shinyei Japan
1975	First development and mass production at Low ESR product in Taiwan
1978	Foundation of Teapo Electronic Corporation at current Tu-cheng factory.
1987	Certified by IECQ
1988	Tu-cheng factory certified by ISO 9002
1993	Established Teapo Thailand Factory
1998	Company stock listed in OTC market Established Teapo Dongguan Factory
2000	Tu-cheng factory certified by QS9000
2001	2001 Dongguan factory certified by ISO9001
2003	Established Teapo Suzhou Factory and certified by ISO9001
2004	Suzhou Factory certified by ISO-14000
2005	Merge G-LUXON Electronic Corporation

Systematic Diagram of Teapo Capacitor

Conductive Polymer Aluminum Solid Capacitors :Dip

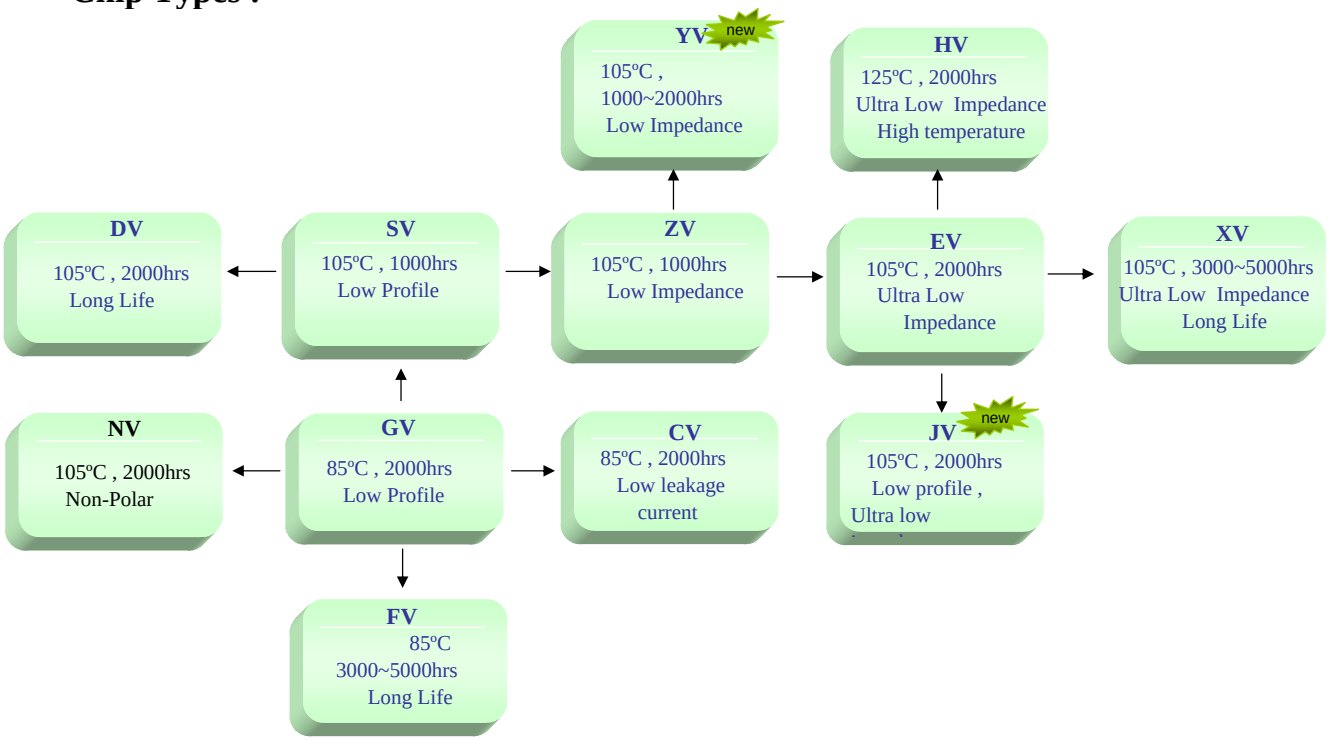


Conductive Polymer Aluminum Solid Capacitors :SMD



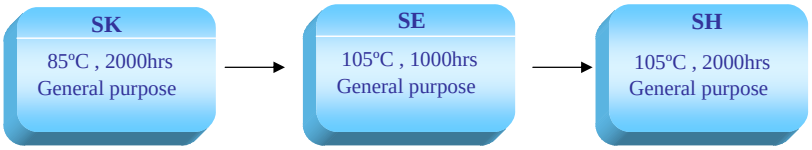
Systematic Diagram of Teapo Capacitor

Chip Types :

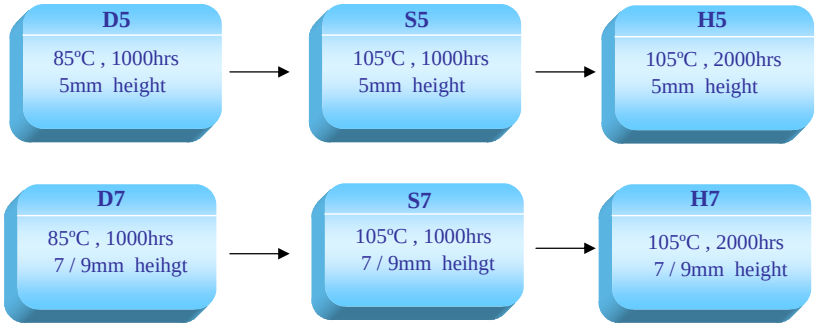


Miniature Radial Lead Types

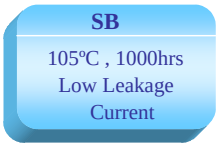
(General Purpose) :



(Low Profile) :



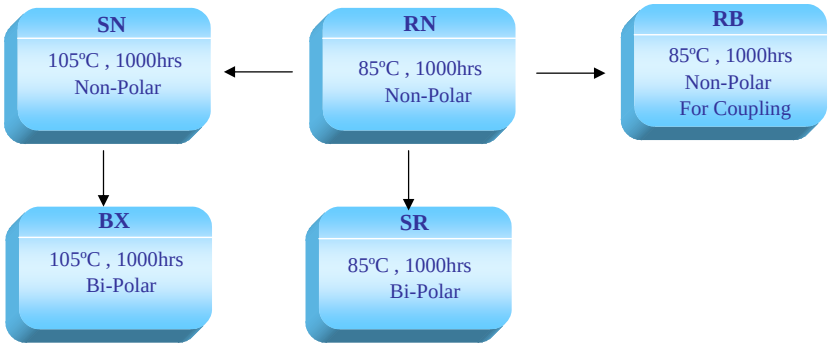
(Low Leakage Current) :



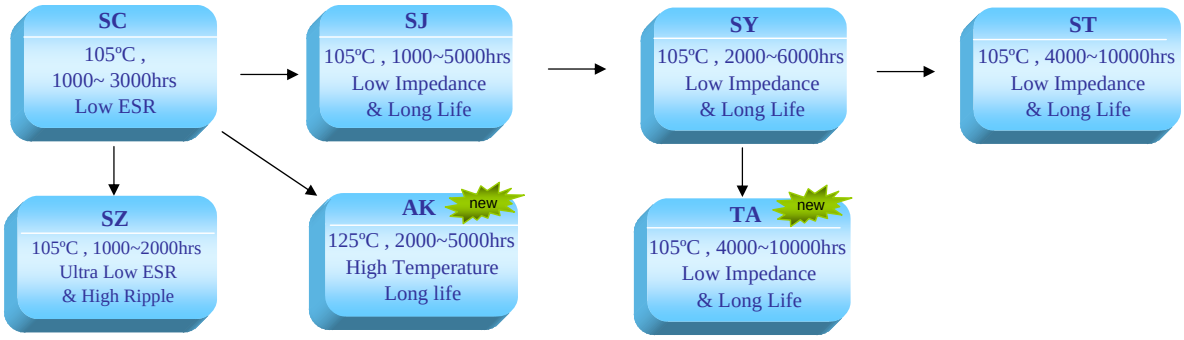
Systematic Diagram of Teapo Capacitor

Miniature Radial Lead Types :

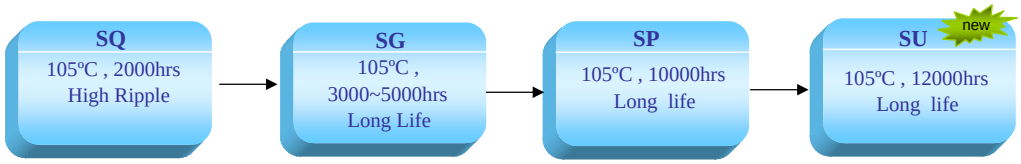
(Bi / Non-polar) :



(Low Impedance) :

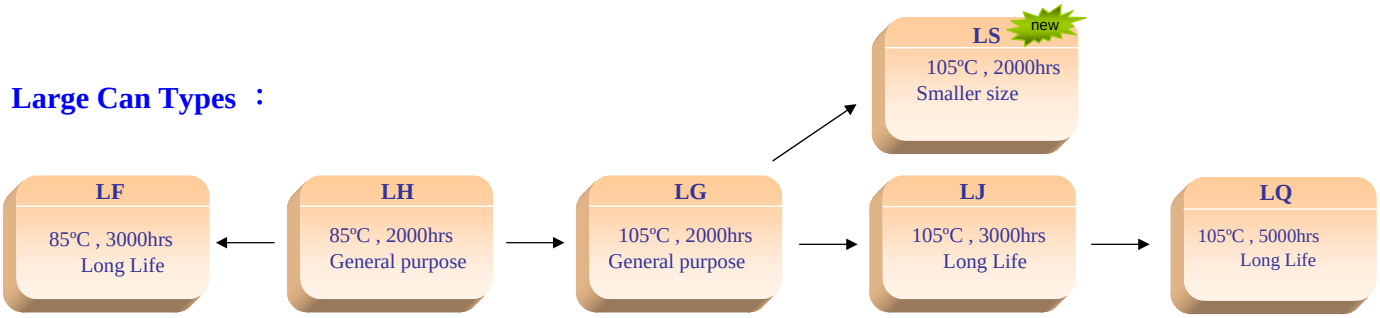


(High Ripple) :



(Slim Types) :

Large Can Types :



Recommended Applications	Conductive Polymer	Chip Type	Miniature Aluminum 6.3~100V	Miniature Aluminum 160~500V	Large Can Type
Automotives	CT	HV	AK,ST	SP	LQ
Battery Charge	CF,CR,CG	Whole Series	Whole Series	Whole Series	--
Display	CG	Whole Series	Whole Series	Whole Series	Whole Series
Digital Still Camera	VP,CG	--	--	--	--
Home Appliance	CG	Whole Series	Whole Series	Whole Series	Whole Series
Lighting	CG,CF	XV,HV	SJ,SY,ST,AK	SQ,SG,SP	--
MB	CR,CG,CX	Whole Series	Whole Series	Whole Series	--
NB	VP	--	--	--	--
Networks	CG,CF	XV,HV	SJ,SY,ST	SG,SP	--
Power	CG,CF,CR,CT	Whole Series	Whole Series	Whole Series	Whole Series
TFT frame	--	SV,DV	SH,SC	SH	--
Gaming	VP	GV,SV	SK,SH	SK,SH	LH,LG
Audio(stereo)	--	--	Whole Series	Whole Series	Whole Series
Vedio (DVD)	VP,CG	--	S5,S7,SK,SH,SC,SY	SK,SH	--
Toys	VP	--	SK	SK	LH

1 Conductive Polymer Aluminum Solid Electrolytic Capacitors

Series		Features	Endurance (+R=With ripple)	Voltage Range (VDC)	Capacitance Range (uF)	Page
TEAPO	LUXON					
CG	CG	Ultra Low ESR	105℃ 2000hours	2.5 ~25V	33 ~ 2700	25
CP	CP	8 mm height & Ultra Low ESR	105℃ 3000hours	2.5 ~25V	10 ~ 1200	28
CY	CY	Ultra Low ESR with sleeve NEW	105℃ 2000hours	6.3 ~16V	150 ~ 1800	30
CZ	CZ	Ultra Low ESR with Small size NEW	105℃ 2000hours	2.5 ~16V	10 ~ 2200	32
CR	CR	Ultra Low ESR & Higher Ripple Current	105℃ 2000hours	2.5 ~6.3V	470 ~ 2700	34
CX	CX	Ultra Low ESR & Higher Ripple Current with bright Aluminum case NEW	105℃ 2000hours	2.5 ~28V	33~ 820	36
CF	CF	Super Low ESR & Large Capacitance	105℃ 2000hours	6.3 ~32V	68~ 1800	38
CS	CS	High Voltage & Long Life NEW	105℃ 5000hours	25~50V	56~390	40
CH	CH	Ultra Low ESR & Long Life NEW	105℃ 5000hours	2.5 ~16V	270 ~ 820	42
CT	CT	High Temperature NEW	125℃ 1000hours	6.3 ~25V	33 ~ 1000	44
VP	VP	SMD Strandard NEW	105℃ 2000hours	2.5-25V	22 ~ 1500	46
VB	VB	SMD Low Profile NEW	105℃ 2000hours	2.5~16V	68~560	49
VS	VS	SMD Long life and Ultra low ESR NEW	105℃ 5000hours	4~16V	39~330	51

2 Surface Mount Aluminum Electrolytic Capacitors

Series			Features	Endurance (+R=With ripple)	General	Low leakage	Low Profile	Low Impedance	Long Life	Voltage Range (VDC)	Capacitance Range (uF)	Page
TYPE	TEAPO	LUXON										
Vertical Chip	GV	GV	Low profile V-Chip	85℃ 2000hours	*		*			4~100	1~1000	53
	FV	FV	Long life V-Chip	85℃ 3000~5000hours					*	4~100	1~1000	55
	SV	SV	Low profile V-Chip	105℃ 1000hours	*		*			4~100	1~1000	57
	DV	DV	Long life V-Chip	105℃ 2000hours					*	6.3~100	1~1000	59
	ZV	ZV	Low impedance V-Chip	105℃ 1000hours+R				*		4~50	1~1000	61
	YV	YV	Low impedance V-Chip NEW	105℃ 1000~2000hours+R				*		6.3~50	1~1500	63
	EV	EV	Ultra Low impedance V-Chip	105℃ 2000hours+R				*		6.3~35	4.7~1500	65
	JV	JV	Low profile vertical chip NEW	105℃ 2000hours+R				*		6.3~35	10~1800	67
	XV	XV	Ultra Low impedance V-Chip	105℃ 3000~5000 hours+R				*	*	6.3~50	1~1000	69
	HV	HV	Higher temperature range V-Chip	125℃ 2000hours				*		6.3~50	47~1000	71
	CV	CV	Low leakage current V-Chip	85℃ 2000hours		*				6.3~50	1~1000	73
	NV	NV	Non-polarized V-Chip	105℃ 2000 hours	*					6.3~35	1~47	75

3 Miniature Aluminum Electrolytic Capacitors

Series			Features	Endurance (+R=With ripple)	General	Minlature	Long Life	Low impedance	Voltage Range (VDC)	Capacitance Range (uF)	Page
TYPE	TEAPO	LUXON									
Gerenal Type	SK	GR	General purpose	85℃ 2000hours	*				6.3~500	1~22000	77
	SE (SEK)	SE	General purpose	105℃ 1000hours	*				6.3~450	1~15000	80
	SH	SM	Miniature General purpose	105℃ 2000hours	*				6.3~450	1~22000	83
Low Profile	D5	SF	5 mm height	85℃ 1000hours		*			4~50	1~330	86
	S5	FX	5 mm height	105℃ 1000hours		*			4~50	1~470	88
	H5	H5	5 mm height	105℃ 2000hours		*	*		4~50	1~330	90
	D7	SS	7 & 9 mm height	85℃ 1000hours		*			4~63	1~470	92
	S7	SX	7 & 9 mm height	105℃ 1000hours		*			4~63	1~470	94
	H7	H7	7 & 9 mm height	105℃ 2000hours		*	*		4~63	1~470	96

Series			Features	Endurance (+R=With ripple)	General	Miniature	Long Life	Low Impedance	High Ripple	Voltage Range (VDC)	Capacitance Range (uF)	Page
TYPE	TEAPO	LUXON										
Bi/Non - polar	RN	RN	Non-polar	85℃ 1000hours	*	*				4~250	1~6800	98
	SN	RX	Non-polar	105℃ 1000hours	*	*				6.3~250	1~2200	100
	RB	RB	Non-polar for crossover	85℃ 1000hours	*					25~100	1~100	102
	SR	BP	Bi-polar, Horizontal correction	85℃ 1000hours	*					25~50	1~33	104
	BX	BX	Bi-polar, Horizontal correction	105℃ 1000hours	*					25~50	1~33	106
	SB	LX	Low leakage current	105℃ 1000hours	*					6.3~100	1~4700	108
Low Impedance	SC	LZ	Low ESR and high frequency	105℃ 1000~3000hours+R				*		6.3~100	4.7~15000	112
	SJ	LU	Low impedance and high ripple	105℃ 1000~5000hours+R			*	*		6.3~100	5.6~6800	115
	SY	LT	Low impedance and long life	105℃ 2000~6000hours+R			*	*		6.3~100	22~15000	118
	TA	TA	Low impedance and long life NEW	105℃ 4000~10000hours+R			*	*		6.3~35	33~8200	122
	ST	ST	Low impedance and long life	105℃ 4000~10000hours+R			*	*		6.3~63	6.8~15000	124
	SZ	LW	Ultra low ESR	105℃ 1000~2000hours+R				*		6.3~16	470~3300	126
	AK	AK	High Temperature & Long Life NEW	125℃ 2000-5000hours			*	*		10~450	1-4700	128
High Ripple	SQ	LB	High ripple and high voltage	105℃ 2000hours+R					*	160~450	2.2~220	130
	SG	LC	High ripple and long life	105℃ 3000~5000hours+R			*		*	160~450	3.3~330	132
	SP	SP	High ripple and long life	105℃ 8000~10000hours+R			*		*	160~450	3.3~330	134
	SU	SU	High ripple and long life NEW	105℃ 10000~12000hours+R			*		*	160~450	3.3~330	136
Slim capacitors	TH	TH	General purpose NEW	105℃ 2000hours	*					250~450	10~150	138
	TG	TG	High ripple and long life NEW	105℃ 3000~5000hours+R			*		*	250~450	10~150	140
	TP	TP	High ripple and long life NEW	105℃ 8000~10000hours+R			*		*	160~450	10~330	142

4 Large Can Type Aluminum Electrolytic Capacitors

Series			Features	Endurance (+R=With ripple)	General	Minlature	Long Life	Sohenl Rroof	Voltage Range (VDC)	Capacitance Range (uF)	Page
TYPE	TEAPO	LUXON									
Snap-in	LH	TW	General purpose	85℃ 2000hours+R		*			6.3~500	56~120000	144
	LG	HW	General purpose	105℃ 2000hours+R	*				6.3~450	47~82000	149
	LF	LF	Long life	85℃ 3000hours+R			*		10~450	56~56000	154
	LJ	LJ	Long life	105℃ 3000hours+R			*		10~450	270~68000	159
	LQ	LQ	Long life	105℃ 5000hours+R			*		160~450	270~2200	164
	LS	LS	Smaller size	105℃ 2000hours+R	*				160~450	100~3300	167

1-1 Precautions in Using Aluminum Electrolytic Capacitors

Please note the following recommendations when using capacitors:

1. Electrolytic capacitors for DC applications require polarization .
   Confirm the polarity before use . The circuit life may be shortened or the capacitor may be damaged if insert in reversed polarity . For use on circuits whose polarity is occasionally reversed , or whose polarity is unknown , use non-polar capacitors . Also note that the electrolytic capacitors cannot be used for AC applications .

2. Do not apply a voltage exceeding the capacitor's voltage rating .
   If a voltage exceeding the capacitor's voltage rating is applied , the capacitor may be damaged by increased leakage current . When using the capacitor with AC voltage do not exceed the rated voltage .

3. Do not allow excessive ripple current passing.
   Use the electrolytic capacitor at current value within the permissible ripple range . If the ripple exceeds the specified value , request capacitors for high ripple current applications .

4. Ascertain the operation temperature range .
   Use the electrolytic capacitors according to the specified operation temperature range . Use at room temperature will ensure a longer life .

5. The electrolytic capacitor is not suitable for circuits which are charged and discharged repeatedly .
   If used in circuits which are charged and discharged repeatedly , the capacitance value may drop or the capacitor may be damaged .
   Please consult our engineering department for assistance in these applications .

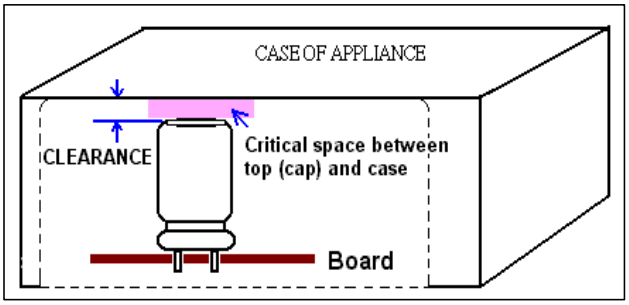
6. When capacitors have been left unused for long time , use them only after due voltage treatments . Long storage of capacitors tends to rise their leakage current levels . In such cases , be sure to provide the necessary voltage treatment before use .

7. Be careful of temperature and time when soldering .
   When soldering a printed circuit board with various components , care must be taken that the soldering temperature is not too high and that the dipping time is not too long .
   Otherwise , there will be adverse effect on the electrical characteristics and insulation sleeve of electrolytic capacitors . In the case of small -size electrolytic capacitors , nothing abnormal will be occurred if dipping is performed at less than 260℃ for less than 10 seconds .

8. Cleaning circuit boards after soldering .
   Halogenated hydrocarbon cleaning solvents are not recommended for use in cleaning capacitors supplied with exposed end seals . Where cleaning with a halogenated solvent is desired , capacitors should be ordered with an Epoxy-coated end seal .

9. Do not apply excessive force to the lead wires or terminals .
   If excessive force is applied to the lead wires and terminals , they may be broken or their connections on the internal elements may be affected . (For strength of terminals , please refer to JIS C5102 and C5141 .)

10. Keep the following clearance between the vent of the capacitor and the case of the appliance . Do not block the operation of the vent , unless otherwise described on the catalogues or product specifications . The narrower clearance may adversely affect the vent operation and result in an explosion of the capacitor .



Case diameter	Clearance
ϕ 6.3 to ϕ 16 mm	2 mm minimum
ϕ 18 to ϕ 35 mm	3 mm minimum
ϕ 40 mm & up	5 mm minimum

Fig.1-1

Attention

- The description in this catalogue is subject to change without prior notice for product improvement . Therefore , please confirm the specification before ordering products .
- The general characteristics , reliability data , etc ., described in this catalogue should not be construed as guaranteed values , they are merely standard values .
- Before using the products , please read the notes in this catalogue carefully for proper use .

1-2 Technical Concepts

1. The material and structure of Electrolytic Capacitors

Electrolytic Capacitor is a simple module . It simply contains an insulator between relative conductors in an electrode. The major internal raw material contains an element constructed by an separator paper wrap around the anode foil and cathode foil , which is then impregnated with the electrolyte , inserted into an aluminum case and sealed.

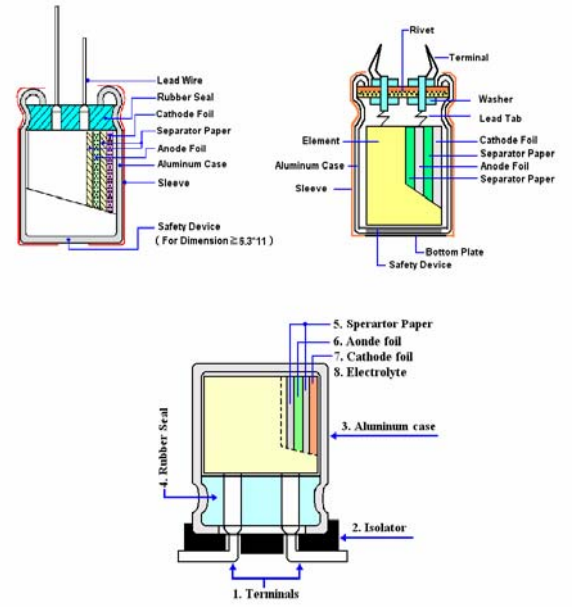


Fig.1-2

2. Production Processes

1. Etching : The process to increase surface area of aluminum foil by using chemical erosion or chemical corrosion method is called Etching . Normally chemical corrosion method uses the ripple current of electrolyte , combination of the liquid and temperature to determine the size, shape , and quantity of the dense network of microscopic channels on the aluminum foil surface .
2. Forming : The production process of the anode aluminum foil of electrolytic capacitors is by anodic oxidation of the etched aluminum foil . The production of the cathode aluminum foil sometimes involves oxidation in special purposes . This anodic oxidation process is called Forming . Boric acid or organic acid is used for high voltage forming and phosphoric acid or ammonium adipate is used for low voltage forming in order to obtain stable natural oxide layer of Al_2O_3 .
3. Slitting : The cutting of the aluminum foil and separator paper according to the required length .
4. Winding : The stitching or cold welding of cut anode and cathode foils and tab terminal , and wrap the electrolytic paper in between the anode and cathode , then fix the end with glue or sticky tape , and attached leads is called the capacitor "element" .
5. Impregnation : The process of eliminating water from the elements by pressurizes or vacuum in order to soak the element with the electrolyte is called Impregnation . The elements fully filled with electrolyte is then centrifuged to remove excess electrolyte .
6. Assembly : The elements seal with rubber to stop the leakage of electrolyte then slip into a sleeve to form the final product .
7. Aging : The purpose of Aging is to repair the oxide film damage by recharging and electrolyte .

1-3 The Function of Electrolytic Capacitors

The electrolytic capacitors could be widely used in appliance (ie. TV , radio , audio equipment , washing machine and air conditioner……etc .) , computer equipment (mother board, image device & the peripherals such as the printer , drawing device, scanner…etc) , communication equipment , estate equipment , measure instrument and also the industrial instrument , airplane , firebomb , satellite…etc. as a piloting equipment.

*According to the inflict electric wave & using purpose , it basically with some classified purposes as below :

1. DC Voltage :

a. For Momentary High Voltage : For using to the impulse generator such as the shock wave resistance test of the heavy electric machine .
b. For High Electric Current : For using to the welding machine , X- Ray facility , copy machine and discharge processing device .
c. For DC High Voltage : The electrolytic capacitor and rectifier composing , a special DC high voltage been happened after charged , for using to the power of electronic microscope and accelerator .
d. For Integration & Memory : For either memory circuit or compare circuit inside the calculator .

2. The DC voltage that with alternate ingredient :

a. For Wave Filter : Combination with the chip resistor & inductor as a internet , to be past by DC current or some frequency to closure or decline some other frequency .
b. For Bypass : A parallel track that outside from the circuit element , the IC (integrated circuit) has been rapidly developing in this years and thus a miniaturization or chip of electrolytic capacitors for by pass was conducted .
c. For Coupling : Combination of the electrolytic capacitor , chip resistor and inductor and thus coupling together .
d. For Arising of Toothed Wave : Composing of RC charge/ discharge circuit through the electrolytic capacitor as well as the resistor and a toothed wave to be created by the RC charge/discharge circuit .
e. For Reverse (Change) of Circuit : The equipment for change the AC voltage to DC voltage .

3. For AC voltage :

a. For Power Improving : Connect the end loading of layout transporting & electrolytic capacitor for power improving .
b. For Wave Filter : Prevention of external interference in SCR circuit , use the LC wave filter circuit to inhibit or erase the interference .
c. For Phase Across : Phase change of the inductive electromotor (motor) with single phase .

4. Impedance (Z)

The impedance of an electrolytic capacitor results from here below circuit formed by the following individual equivalent series components :

Fig 1-11

Co = Aluminum oxide capacitance (surface and thickness of the dielectric)
Re = Resistance of electrolyte and paper mixture (other resistances not depending on the frequency are not considered : tabs , plates , and so on)
Ce = Electrolyte soaked paper capacitance
L = Inductive reactance of the capacitor winding and terminals.

The impedance of an electrolytic capacitor is not a constant quantity that retains its value under all the conditions : it changes depending on the frequency and the temperature .

The impedance as a function of frequency (sinusoidal waveform) for a certain temperature can be represented as follows :

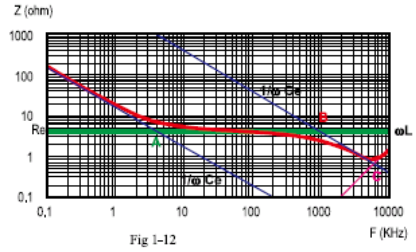


Fig 1-12

- Capacitive reactance predominates at low frequencies
- With increasing frequency , the Capacitive reactance Xc=1/ωCo decreases until it reaches the order of magnitude of the electrolyte resistance Re (A)
- At even higher frequencies , the resistance of the electrolyte predominates : Z= Re (A - B)
- When the capacitor's resonance frequency is reached (ω0) , capacitive and cancel each other 1/ωCinductive reactance mutually cancel each other 1/ωCe =ωL ,ω0=SQR(1/LCe)(C) .
- Above this frequency , the inductive reactance of the winding and its terminals (XL=Z=ωL) becomes effective and leads to an increase in impedance .

Generally speaking it can be estimated that Ce ≒ 0.01 Co .

The impedance as a function of frequency (sinusoidal waveform) for different temperature values can be represented as follows (typical values) :

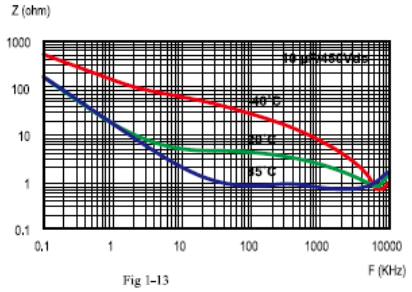


Fig 1-13

Re is the most temperature dependant component of electrolytic capacitor equivalent circuit . The electrolyte resistivity will decrease if the temperature rises . In order to obtain a low impedance value all over the temperature range , Re must be as little as possible , but too low Re values means a very aggressive electrolyte and then a shorter life of the electrolytic capacitor at the high temperatures . A compromise must be reached .

5. Leakage current (L.C.)

Duetothealuminum oxidelayer that serves as adielectric , a small current will continueto flow even after a DC voltage has been applied for long periods . This current is called leakage current . A high leakage current flows after applying a voltage to the capacitor and then decreases in few minutes (e.g. after a prolonged storage without any applied voltage) . In the course of the continuous operation , the leakage current will decrease and reach an almost constant value .

After avoltage free storage the oxide layer may deteriorate , especially at high temperature . Since there are no leakage current to transport oxygen ions to the anode , the oxide layer is not regenerated . The result is that ahigher thannormal leakagecurrent will flow whenavoltageis appliedafter prolongedstorage . As the oxide layer is regenerated in use , the leakage current will gradually decrease to its normal level .

The relationship between the leakage current and the voltage applied at constant temperature can be shown schematically as follows :

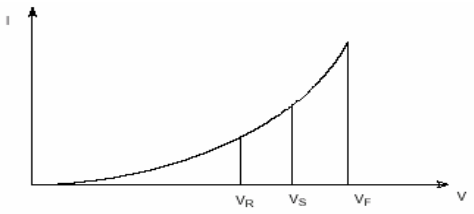


Fig 1-14

Where :

VF = Forming voltage

If this level is exceeded a large quantity of heat and gas will be generated and the capacitor could be damaged .

VR = Rated Voltage

This level represents the top of the linear part of the curve .

VS = Surge voltage

It lies between VR and VF: the capacitor can be subjected to VS for short periods only .

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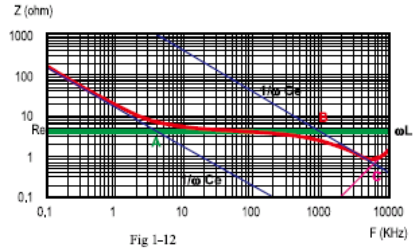

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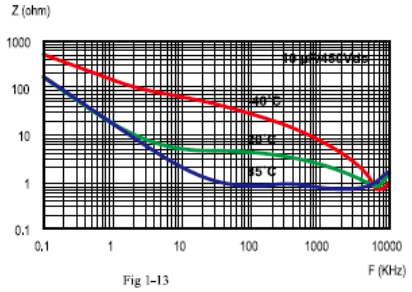

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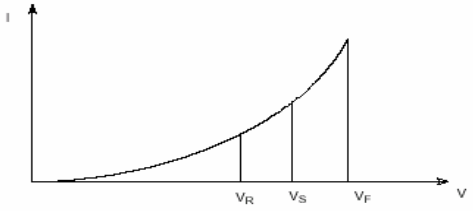

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This level represents the top of the linear part of the curve .

VS = Surge voltage

It lies between VR and VF: the capacitor can be subjected to VS for short periods only .

1-5 Reliability

(1)The bathtub curve：

Aluminum electrolytic capacitors feature failure rates shown by the following bathtub curve.

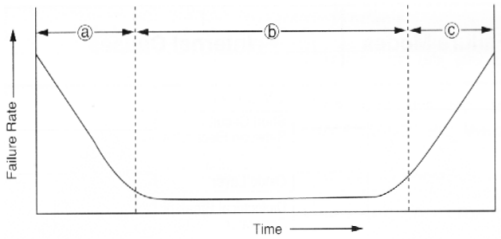


Fig.1-15 Bathtub curve

a. Initial failure period

Deficient Capacitors include any products before dispatch that may have some deficiency caused by the design, production process or used in inappropriate environments.

b. Random failure period

The capacitors have a low defect ratio in the period after it has been stabilized.

c. Wear out failure period

The performance of capacitors will decrease with an increase in usage period.The malfunction rate may vary due to the structural design.

1-6 Circuit Design

(1) Environmental and Mounting Conditions

★ Please make sure the environmental and mounting conditions to which the capacitor will be exposed to are within the conditions specified in TEAPO's catalog.

(2) Operating Temperature, Equivalent Series Resistance(ESR), Ripple Current and Load Life

★ MTTF(Mean-Time-TO-Failure) means the useful life at room temperature 25℃

Load life:

If the capacitor's max. operating temperature is at 105℃(85℃), then after applying capacitor's rated voltage (WV) for L_0 hours at 105℃(85℃), the capacitor shall meet the requirements in detail specification. where L_0 is called "load life" or "useful life (lifetime) at 105℃(85℃)" .

$$L_x = L_0 \times 2^{(To-Tx)/10} \times K^{-\triangle Tx/5}$$

where $\triangle Tx = \triangle T_0 \times (Ix / I_0)^2$, $Ix > I_0, K=4$; $Ix \leqq I_0, K=2$

Ripple life:

If the capacitor's max. operating temperature is at 105℃(85℃), then after applying capacitor's rated voltage (WV) with the ripple current for L_r hours at 105℃(85℃), the capacitor shall meet the requirements in detail specification. where L_r is called "ripple life" or "useful ripple life (ripple lifetime) at 105℃(85℃)" .

$$L_x = L_r \times 2^{(To-Tx)/10} \times K^{(\triangle To - \triangle Tx)/5}$$

where $\triangle Tx = \triangle T_0 \times (Ix / I_0)^2$, $Ix > I_0, K=4$; $Ix \leqq I_0, K=2$

The (ripple) life expectancy at a lower temperature than the specified maximum temperature may be estimated by the following equation, but this expectancy formula does not apply for ambient below +40℃.

L_0 = Expected life period (hrs) at maximum operating temperature allowed

L_r = Expected ripple life period (hrs) at maximum operating temperature allowed

L_x = Expected life period (hrs) at actual operating temperature

T_0 = Maximum operating temperature (℃) allowed

T_x = Actual operating ambient temperature (℃)

I_x = Actual applied ripple current (mArms) at operating frequency f_0 (Hz)

I_0 = Rated maximum permissible ripple current I_R(mArms) x frequency multiplier (C_f) at f_0 (Hz)

※Ripple Current calculation: no need Temperature Multiplying Factor

※For Ripple life，Ix Should be 80% equal or more of Io,if less than 80%, calculate with 80%.

$\triangle T_0 \leqq 5$℃ = Maximum temperature rise (℃) for applying I_0 (mArms)

$\triangle Tc$ =Temperature rise (℃) of capacitor case for applying Ix (mA/rms)

$\triangle T_x$ = Temperature rise (℃) of capacitor element for applying I_x (mArms)

$= K_c \triangle T_c = K_c(T_c - T_x)$

where T_c is the surface temperature (℃) of capacitor case

T_x is ditto.

K_c is transfer coefficient between element and case of capacitor from table below：

Dia	≦8 ϕ	10 ϕ	12.5 ϕ 13 ϕ	16 ϕ	18 ϕ	22 ϕ	25 ϕ	30 ϕ	35 ϕ
K_c	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.50	1.65

※ The estimated life is limited to 15 years, if it exceeds 15 years, take 15 years as standard.

★ The formula of Equivalent Series Resistance (ESR)

The operating frequency of ESR, DF, f & C must be the same, usually, they test at 120 Hz.

$$ESR = DF / 2\pi f C \cdots\cdots\cdots\cdots (2)$$

Where DF: Dissipation Factor(tan δ)

f : Operating frequency(Hz)

C: Capacitance(F)

★ Estimation of life considering the ripple current

The ripple current affects the life of a capacitor because the internal loss (ESR) generates heat.The generated heat will be:

$$P = I^2 R \text{-------(3)}$$

Where I : Ripple current(Arms.)

R: ESR(Ω)

At this time the increase in the capacitor temperature will be:

$$\triangle T = I^2 R / AH \text{------(4)}$$

Where △T: Temperature increase in the capacitor core(degree)

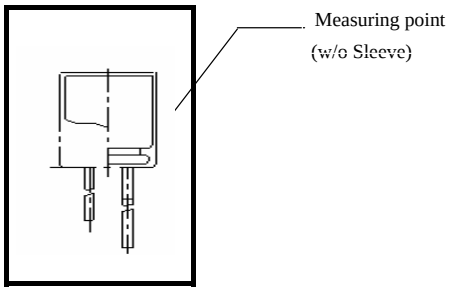
I : Ripple current(Arms)

R: ESR(Ω)

A: Surface area of the capacitor (cm^2)

H: Radiation coefficient(Approx.$1.5 \sim 2.0 \times 10^{-3}$ W/ $cm^2 \cdot$ ℃)

The above equation (4) shows that the temperature of a capacitor increases in proportion to the square of the applied ripple current and ESR, and in inverse proportion to the surface area. Therefore, the amount of the ripple current determines the heat generation, which affects the life. The values of △T varies depending on the capacitor types and operating conditions. The usage is generally desirable if △T remains less than 5℃.The measuring point for temper-ature increase due to ripple current is shown below.



(3) Application

★ Aluminium Electrolytic Capacitors are normally polarized. Reverse voltage or AC Voltage should not be applied. When polarity may flip over, non-polar type capacitors should be used, but the non-polar type cannot be used for AC circuits.

(4) Applied Voltage

★ Do not exceed the rated voltage of capacitor.

(5) Insulation

★ Aluminum Electrolytic Capacitors should be electrically isolated from among the following points.

a. Aluminum case, cathode lead wire, anode lead wire and circuit pattern.
b. Auxiliary terminals of snap-in type, anode terminal, outward terminal and circuit pattern.

(6) Conditions of use

★ Aluminum Electrolytic Capacitors must not be used under the following conditions:

a. Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations
b. Ambient conditions that include toxic gasses such as hydrogen sulfide, sulfurous acid , nitrous acid, chlorine, ammonium, etc.
c. Ambient conditions that expose the capacitors to ozone, ultraviolet rays and radiation.
d. Severe vibration or shock that exceeds the conditions specified in the catalog or specifications sheets.

(7) Recommended design considerations

★ When designing a circuit board. Please pay attention to the following:

a. Make the hole spacing on the PC board match the lead space of the capacitor.
b. There should not be any circuit pattern or circuit wire above the capacitors.
c. In case the capacitor's vent is facing the PC board, make a gas release hole on PC board.
d. Do not install screw terminal capacitor with end seal side down. When you install a screw terminal capacitor in a horizontal mount, the positive terminal must be in the upper position.
e. Do not locate any wiring and circuit patterns directly above the capacitor's vent.

1-7 Caution for Mounting

(1) Caution before assembly

★ Aluminum Electrolytic Capacitors cannot be recycled after mounting and applying electricity in unit. The capacitors that are removed from PC board for the purpose of measuring electrical characteristics at a periodical inspection should only berecycled to the same position.

★ Aluminum Electrolytic Capacitors may accumulate charge naturally during storage. In this case, discharge through a 1KΩ resistor before use.

★ Leakage current of Aluminum Electrolytic Capacitors may be increase during long storage time. In this case, the capacitors should be subject to voltage treatment through a 1KΩ resistor before use.

(2) In the assembly process

★ Please confirm ratings before installing capacitors on the PC board.
★ Please confirm polarity before installing capacitors on the PC board.
★ Do not drop capacitors on the floor, nor use a capacitor that was dropped.
★ Be careful not to deform the capacitor during installation.
★ Please confirm that the lead spacing of the capacitor matches the hole spacing of the PC board prior to installation.
★ The snap-in type of capacitors should be mounted firmly on the PC board without a gap between the capacitor body and the surface of PC board.
★ Avoid excessive force when clinching lead wire during auto-insertion process.
★ Avoid excessive shock to capacitors by automatic insertion machine, during mounting, parts inspection or centering operations.
★ Please utilize supporting material such as strap or adhesive to mount capacitors to PC board when it is anticipated that vibration or shock is applied.

(3) Soldering

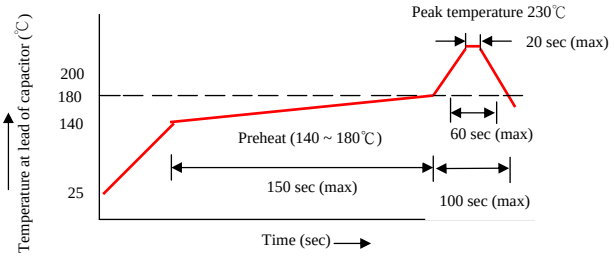
★ All TEAPO's cp wires of electrolytic capacitors are without lead (Pb).
★ Soldering conditions(temperatures, times) should be within the specified conditions which are described in the catalog or specification sheets.
★ If it is necessary that the leads must be formed due to a mismatch of the lead space to hole space on the board, bend the lead prior to soldering without applying too much stress to the capacitor.
★ If soldering capacitor has to be withdrawn from the PW board by soldering iron, the capacitor should be removed after the solder has melted sufficiently in order to avoid stress to the capacitor or lead wires.
★ Soldering iron should never touch the capacitor's body.

(4) Flow soldering

★ Do not dip capacitor's body into melted solder.
★ Din of flow soldering for the capacitors should be limited at 260℃,10sec.
★ Flux should not be adhered to capacitor's body but only to its terminals.
★ Other devices which are mounted near capacitors should not touch the capacitors.

(5) Reflow soldering condition

★ For reflow, use a thermal condition system such as infrared radiation or hot blast. Vapor heat transfer systems are not recommended.
★ Observe proper soldering conditions(temperature, time, etc. Do not exceed the specified limits.
★ Repeated reflowing :
*Avoid reflowing twice if possible.
*If repeated reflowing is unavoidable,contact us after measuring the first and the second reflow profiles and reflow interval at your side.
*Do not attempt to reflow three times.



(6) Lead free type reflow soldering condition

For Aluminum Electrolytic Capacitors

★ For reflow, use a thermal condition system such as infrared radiation or hot blast. Vapor heat transfer systems are not recommended.
★ Observe proper soldering conditions(temperature, time, etc. Do not exceed the specified limits.
★ Repeated reflowing :
*Avoid reflowing twice if possible.
*If repeated reflowing is unavoidable,contact us after measuring the first and the second reflow profiles and reflow interval at your side.
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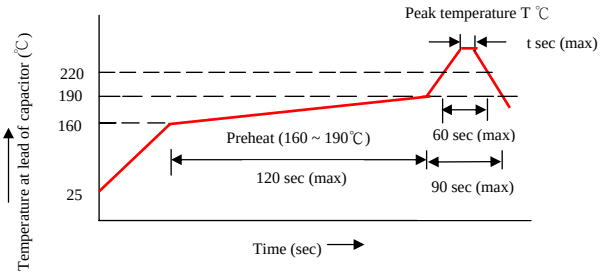


Size	T	t
φ4～φ5 (4V～50V)	250	10
	260	5
φ6.3～φ10 (4V～50V)	250	5
φ4～φ10 63～100V	250	5

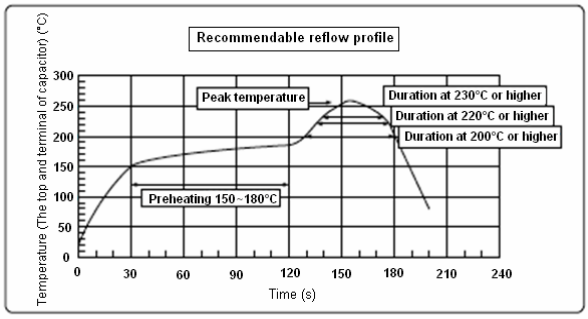
For Conductive Polymer Aluminum Solid Capacitors

Resistance to soldering heat condition
Test condition
A) Vapor phase soldering method
Solder paste should be applied to the printed wiring boards and then the capacitors are mounted on it. After that, the capacitor should be maintained in the vapor phase bath at a temperature of 230 ±2 ˚C for 75 ±1 seconds.in the vapor phase bath at a temperature of 230 ±2 ˚C for 75 ±1 seconds.
B) Soldering iron method
Temperature: 400 ±10 ˚C
Duration: 3^{+1}_{-0} seconds

Performance: The capacitors shall meet the following specification after A or B test.

Item	Performance
Capacitance change	Within ±10 % of initial capacitance (2.5V: Within ±15 % of initial capacitance)
Tangent of loss angle	Less than or equal to 1.3 times of the value
E.S.R.	Less than or equal to 1.3 times of the value
Leakage current	Less than or equal to the value

Recommendable reflow condition
Reflow profile



Peak temperature of the top and terminals of a capacitor	250 °C or less	260 °C or less
Preheating	150°C to 180°C 90 ± 30 seconds	
Time of being at 200 °C and higher	Within 60 seconds	Within 60 seconds
Time of being at 220 °C and higher	Within 50 seconds	Within 50 seconds
Time of being at 230 °C and higher	Within 40 seconds	Within 40 seconds
The number of reflow	Twice or less	Only 1 time

Note:
*Measurement position of temperature: The top surface of capacitor and board's surface nearby terminal.
*Measurement method: Thermo-junction is fixed on measurement position by silver paste or an adhesive of resin.
Thermo-junction is Classification K, material CA with diameter 0.1mm.
*An interval of reflow: In case two times reflow is necessary, CP-CAP shall be taken into reflow when its return to normal temperature.
*Heat stress to CP-CAP will be influenced by the different of reflow equipment, board material, size, and numbers of mounting. The following action must be practice through a practical test mounting before mass-production.

(1) Check your reflow condition whether it is within the above TEAPO Recommendable Reflow Condition or not.

(2) Confirm CP-CAP's electric characteristic change before and after reflow.

(7) Cleaning

★ Satisfied characteristic of JIS C 5101.
★ Aluminum Electrolytic Capacitors may be damaged by corrosion which is caused by any halogenated hydrocarbon solvents (Ex:HCH(Cl)2…). All of our products are non-solvent-proof, we recommend cleaning method as following:
Applicable : Any type,any ratings
Cleaning agents : Pine Alpha ST-100S, Clean Through 750H/750L/710M,Sanelek B-12, Aqua Cleaner 210SEP, Techno Care FRW14~17 , Iso- propyl Alcohol
Cleaning conditions: Total cleaning time shall be within 5 minutes by immersion, ultrasonic or other method. (Temperature of the cleaning agent shall be 60℃ or lower.) After cleaning, capacitors should be dried using hot air for minimum of 10 minutes along with the PC board.
Hot air temperature should be below the maximum operating temperature of the capacitor. Insufficient dries dry after water rinse may cause appearance problems, sleeve may shrink, or the bottom-plate may bulge,etc…

Please let us know in advance the solvent name and conditions for your PWB Cleaning .

1-8 Emergency Action

(1) If you see smoke due to the operation of safety vent, turn off the main switch or pull out the plug from the outlet.

(2) Do not put your face near the safety vent as gas which in over 100℃ will be emitted when the safety vent operates. If the gas has entered your eyes, please flush your eyes immediately in pure water. If you breathed the gas, immediately wash out your mouth and throat with water. Do not ingest electrolyte. If your skin is exposed to electrolyte, please wash it away using soap and water.

1-9 Storage Condition

(1) Aluminum electrolytic capacitors should not be stored in high temperatures or where there is a high level of humidity. The suitable storage condition is 5~35℃ and less than 75% in relative humidity.

(2) Aluminum electrolytic capacitors should not be stored in damp conditions such as water, saltwater spray or oil spray.

(3) Do not store aluminum electrolytic capacitors in an environment full of hazardous gas (hydrogen sulfide , sulfurous acid gas, nitrous acid, chlorine gas, ammonium, etc.)

(4) Aluminum electrolytic capacitors should not be stored under exposure to ozone, ultraviolet rays or radiation.

(5) If a capacitor has been stored for more than one year under normal temperature (shorter if high temperature) and it shows increased leakage current, then a treatment by voltage application is recommended

1-10 Environment - Related Substances

All TEAPO's capacitors comply to RoHS (Restricition of Hazardous Substances) requirements where Chromium VI (Cr^{+6}),Cadmium(Cd), Mercury(Hg),Lead(pb),polybrominated biphenyls (PBBs) and Polybrominated bipheny1/dipheny1 ethers (PBBEs / PBDEs) have not detected (lower than MDL(Method Detection Limit)) per SGS certification test report.

1-11 Disposal

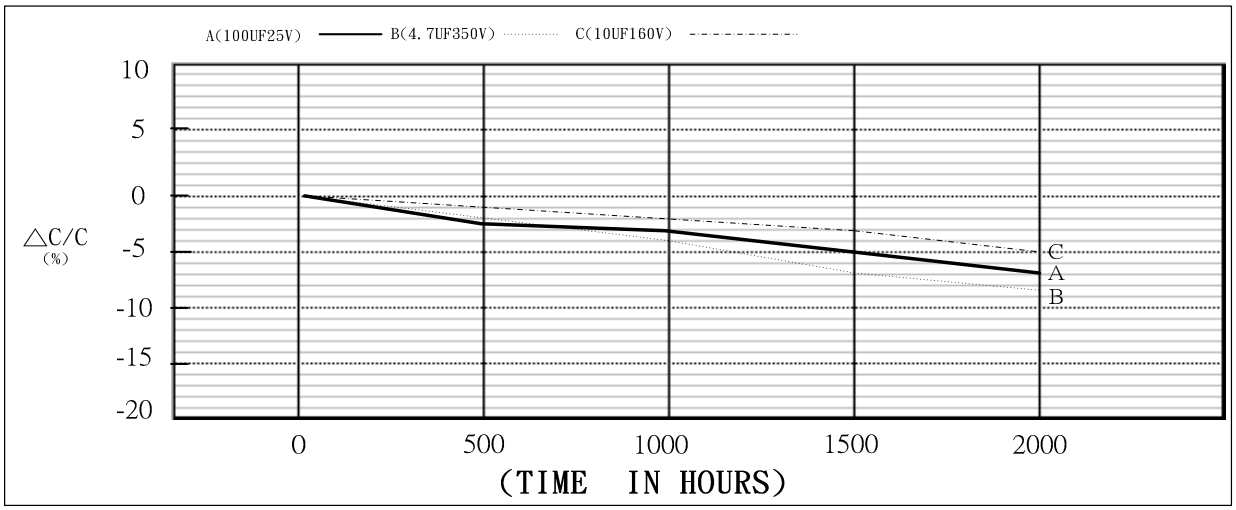
Please dispose capacitors in either of the following ways:

(1) Incinerate capacitors after crushing parts of making a hole on the capacitor body.

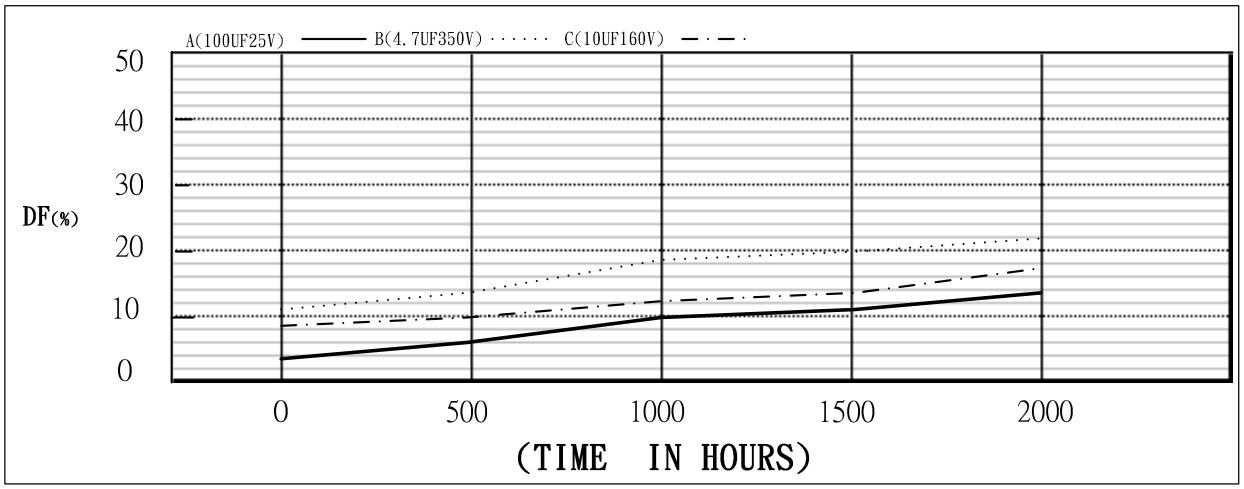
(2) Bury capacitors in the ground . Please have a disposal specialist do it.

The Characterisitics of Endurance Test

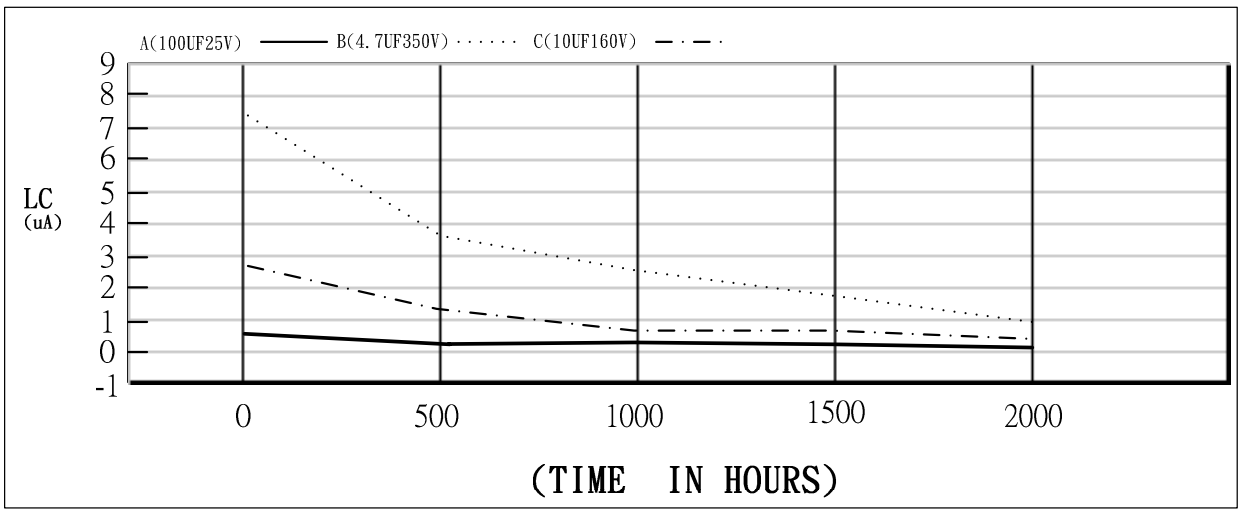
Capacitance Change Ratio



Dissipation Factor Change

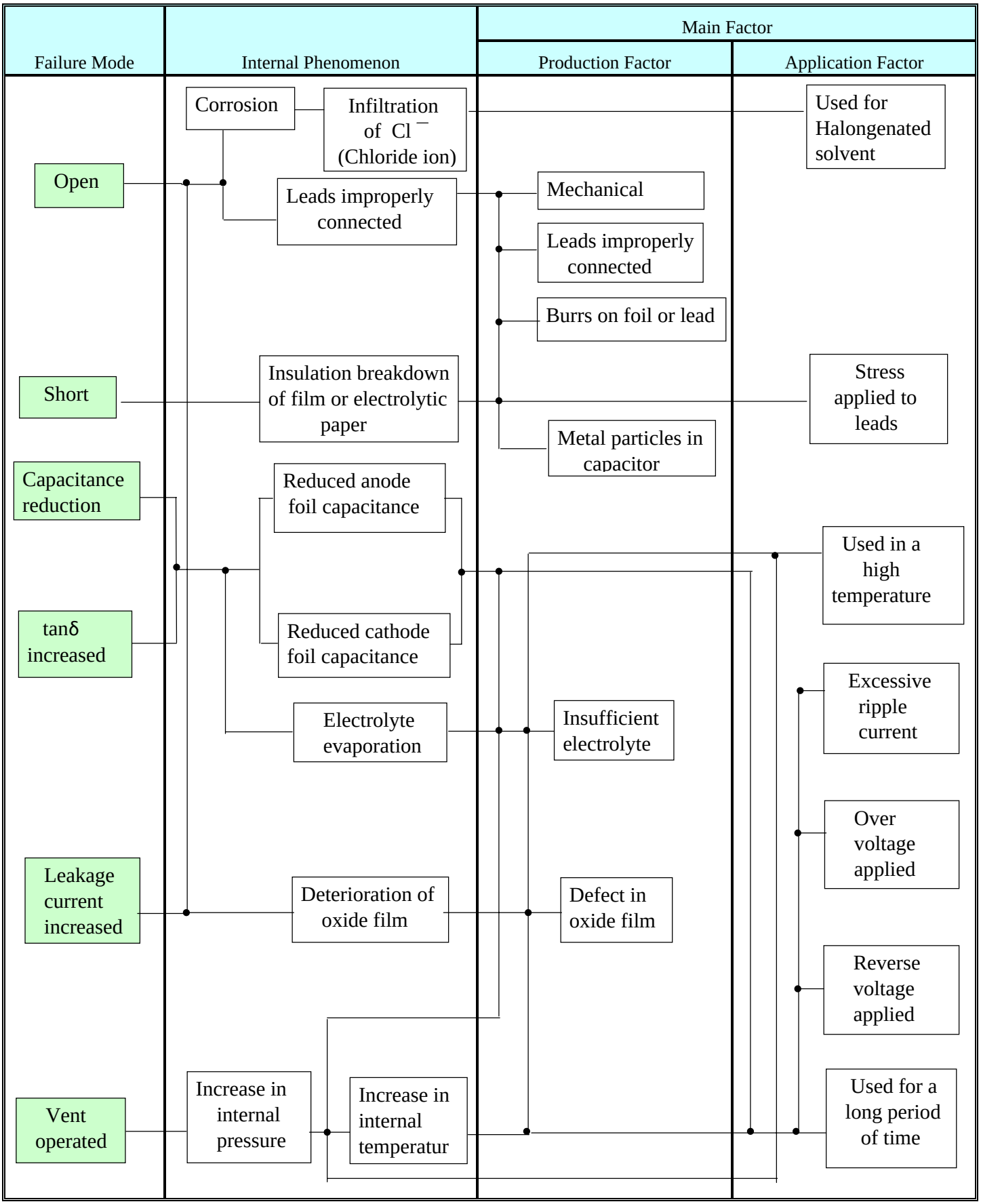


Leakage Current Change



ALUMINUM ELECTROLYTIC CAPACITORS

Typical Failure Modes and Their Factors



ALUMINUM ELECTROLYTIC CAPACITORS

Part Number Instruction

1	2~3	4~6	7	8~10	11~12	13	14	15	16~17	18
D	**SK**	**107**	**M**	**6R3**	**S1**	**A**	**1**	**C**	**11**	**K**
TYPE	SERIES	CAP	TOL.	VOLTAGE	LEAD	SPEC.	SLEEVE	CASE SIZE	LENGTH	OTHERS

Code 1 Type

Code	Model Type
D	Standard Dip Type (PVC sleeve)
K	Standard Dip Type (PET sleeve)
V	SMD (V-chip) Type (Nylon coating)
L	Snap-in Type (PVC sleeve)
S	Snap-in Type (PET sleeve)
P	Conductive Polymer Aluminum Solid Capacitor

Code 2~3 Series Name (as content page 5)

Code 4~6 Capacitance

0.47 μF	=	474
4.7 μF	=	475
47 μF	=	476
470 μF	=	477
4700 μF	=	478

Code 7 Tolerance M = ±20% , K = ±10% ,V = +20～－10%

Code 8~10 Voltage

2.5V	=	2R5	100V = 100
5V	=	005	450V = 450
6.3V	=	6R3	
63V	=	063	

Code 11~12 Lead Process

Explanation for code 11

S : Standard T : Ammo tape R : Reel tape
C : Straight cut K : Kink(Crimp)cut F : Formed cut

Code 11&12		Description
S	0	Standard SMD type
	1	Standard Dip & Snap-in type
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)
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)

Code 11&12		Description
C	3	Straight cut lead with L : 3.2+/-0.2mm
	5	Straight cut lead with L : 4.0+/-0.2mm
	7	Straight cut lead with L : 5.0+/-0.2mm
K	2	Kink cut lead with L : 4.5+/-0.5mm
F	6	Forming cut lead with L : 4.0+/-0.3 (Pitch : 5mm)

Code 13 Special specification

A : Standard
B : DF (tanδ)
C : ESR
D : Impedance
E : Ripple current
F : Leakage current

Code 14 Sleeve code

Code	Series	Color
1	SK	Dark blue with white printing
5	S5,D5,H5,S7,D7,H7,SH,SG,SP,SB,SY, SJ,RN,SN,RB, U	Black with white printing
B	SE	Brown with white printing
C	SC	Green with golden printing
H	SZ	Royal blue with golden printing
N	GV,FV,SV,DV,RV,ZV,EV,JV,CV, CG,CP,CR,CF,CY,CZ,CT,CX,CH,VP	(SMD standard pack & POLYMER)

Code 15~17 Size code

Code 15：Case Size

CODE	A	B	C	D	E	F	G	H	J
Case Size	3	4	5	6	6.3	7	8	10	12

CODE	K	L	M	N	P	Q	R	S	T
Case Size	12.5	13	16	18	20	22	25	30	35

Code 16~17：Length

For ECAP-DIP & POLYMER-DIP & SNAP-IN

CODE	05	07	09	10	11	12	1C	13	14	15
LENGTH	05	07	09	10	11	12	12.5	13	14	15

CODE	16	17	20	25	30	32	35	36	40	50
LENGTH	16	17	20	25	30	32	35	36	40	50

Note: for the part hasn't been mentioned above, the CODE is the same with LENGTH.

For V-CHIP SMD

CODE	01	02	03	04
LENGTH	5.4	6.2	10.2	7.7

For POLYMER SMD

CODE	A1	A2	A3	A4	A5	A6	A7	A8
LENGTH	5.8	6.0	6.7	7.7	10.0	10.4	12.0	12.2

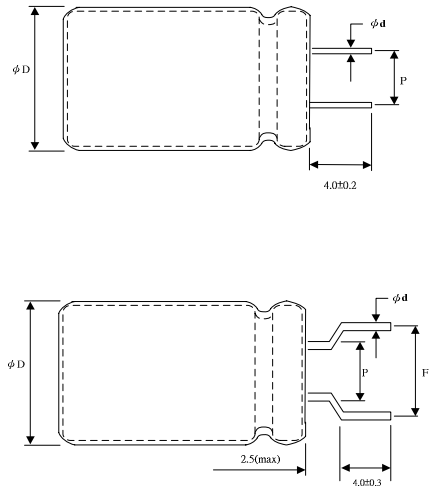
e.g.（For Code15~17)：

Code	Size	Description
B01	4*5.4	For V-CHIP SMD
C11	5*11	For ECAP-DIP & POLYMER-DIP
Q25	22*25	For SNAP-IN
EA1	6.3*5.8	For POLYMER SMD

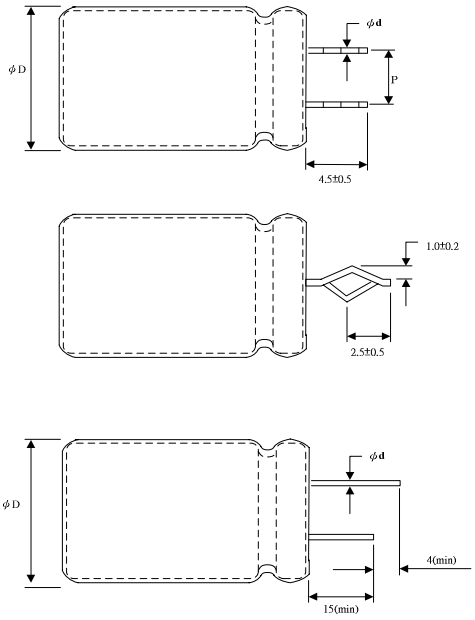
Code 18 Other special instructions (“K”for TEAPO standard,“ 0 ” for LUXON standard)

ALUMINUM ELECTROLYTIC CAPACITORS

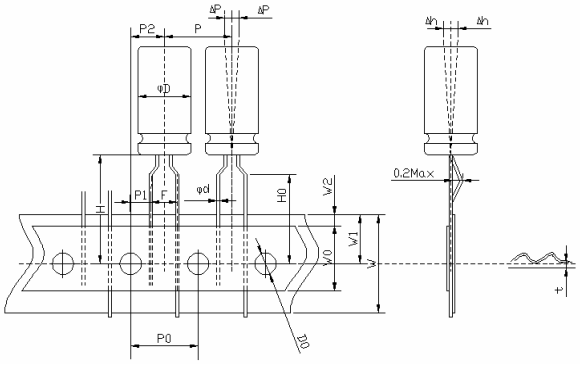
Code C5：Straight Cut



Code K2：Kink cut, & Crimping

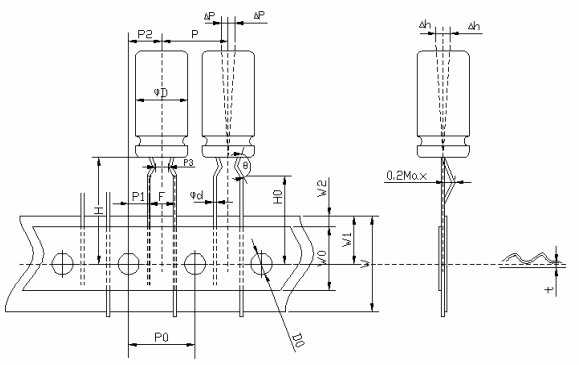


Code T1/R1 : Ammo / Reel Tape (ϕ 4 – ϕ 6.3)



SYMBOL	CASE SIZE			TOLERANCE
	4x5	5x5~11	6.3x5~11	
φ d	0.45	0.45 or 0.5		±0.05
P	12.7			±1.0
P0	12.7			±0.3
P1	3.85			±0.5
P2	6.35			±1.0
F	5.0			+0.6 / –0.2
W	18.0			±0.5
W0	12.0 min			-
W1	9.0			±0.5
W2	2.0 max			-
H	18.5			±0.75
H0	16.0			±0.5
D0	4.0			±0.3
△P	0.2 max			-
△h	0.2 max			-
t	0.6			±0.3

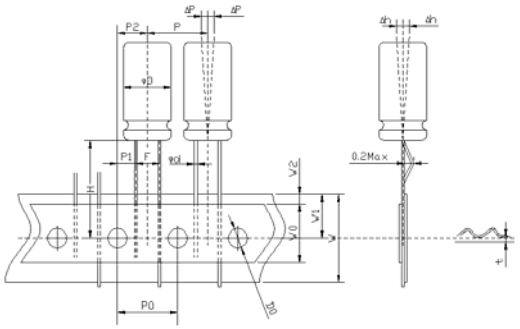
Code T1/R1 : Ammo / Reel Tape (ϕ 8)



SYMBOL	CASE SIZE	TOLERANCE
	8x5~20	
φ d	0.45~0.6	±0.05
P	12.7	±1.0
P0	12.7	±0.3
P1	3.85	±0.7
P2	6.35	±1.0
P3	2.5	+0.2 / –0.5
θ	110°	±15°
F	5.0	+0.6 / –0.2
W	18.0	±0.5
W0	12.0 min	-
W1	9.0	±0.5
W2	2.0 max	-
H	18.5	±0.75
H0	16.0	±0.5
D0	4.0	±0.3
△P	0.2 max	-
△h	0.2 max	-
t	0.6	±0.3

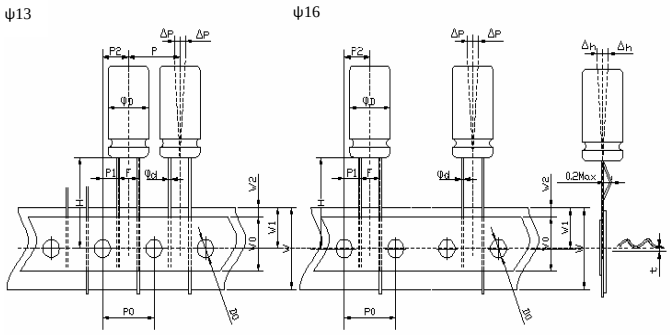
ALUMINUM ELECTROLYTIC CAPACITORS

Code T1/R1 : Ammo / Reel Tape (ϕ 10)



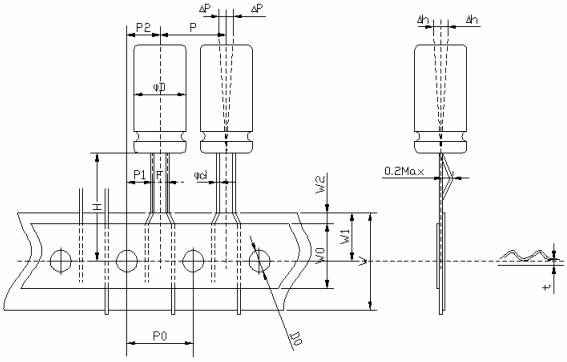
SYMBOL	CASE SIZE	TOLERANCE
	10x10~30	
φ d	0.6	±0.05
P	12.7	±1.0
P0	12.7	±0.3
P1	3.85	±0.5
P2	6.35	±1.0
F	5.0	+0.6 / –0.2
W	18.0	±0.5
W0	12.0 min	-
W1	9.0	±0.5
W2	2.0 max	-
H	18.5	±0.75
D0	4.0	±0.3
△P	0.2 max	-
△h	0.2 max	-
t	0.7	±0.2

Code T1 : Ammo Tape (ϕ 13~ ϕ 16)



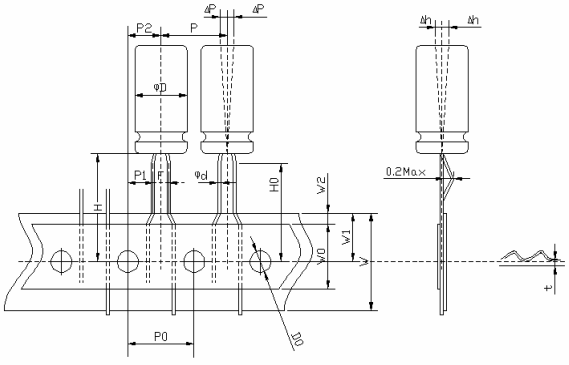
SYMBOL	CASE SIZE			TOLERANCE
	12.5x15~25	13x13~40	16x16~40	
φ d	0.6	0.6	0.8	±0.05
P	15.0		30.0	±1.0
P0	15.0			±0.3
P1	5.0		3.75	±0.7
P2	7.5			±1.3
F	5.0		7.5	+0.6 / –0.2
W	18			±0.5
W0	12.0 min			-
W1	9.0			±0.5
W2	2.0 max			-
H	18.5			±0.75
D0	4.0			±0.3
△P	0.2 max			-
△h	0.2 max			-
t	0.7			±0.3

Code T2/R2 : Ammo / Reel Tape with straight lead



SYMBOL	CASE SIZE				TOLERANCE
	4x5～7	5x5～11	6.3x5～11	8x7～14	
φ d	0.45	0.45 or 0.5		0.6	±0.05
F	1.5	2.0	2.5	3.5	+0.6 / –0.2
P1	5.6	5.35	5.1	4.6	±0.5
P0	12.7				±0.3
P	12.7				±1.0
P2	6.35				±1.0
W	18.0				±0.5
W0	12.0 min				-
W1	9.0				±0.5
W2	3.0 max				-
H	18.5				±0.75
D0	4.0				±0.3
△p	0.2 max				-
t	0.6				±0.2

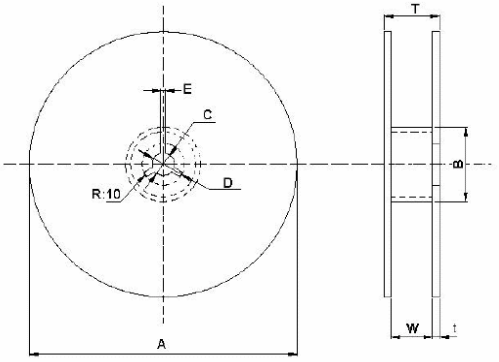
Code T4/R3 : Ammo / Reel Formed Tape (ϕ 4～ ϕ 5／pitch 2.5mm)



SYMBOL	Case SIZE		Tolerance
	4x5~4x7	5x5~5x11	
φ d	0.45	0.45 or 0.5	±0.05
P	12.7		±1.0
P0	12.7		±0.3
P1	5.1		±0.5
P2	6.35		±1.0
F	2.5		+0.6 / –0.2
W	18.0		±0.5
W0	12.0 min		-
W1	9.0		±0.5
W2	2.0 max		-
H	18.5		±0.75
H0	17.0		±0.5
D0	4.0		±0.3
△P	0.2 max		-
△h	0.2 max		-
t	0.6		±0.2

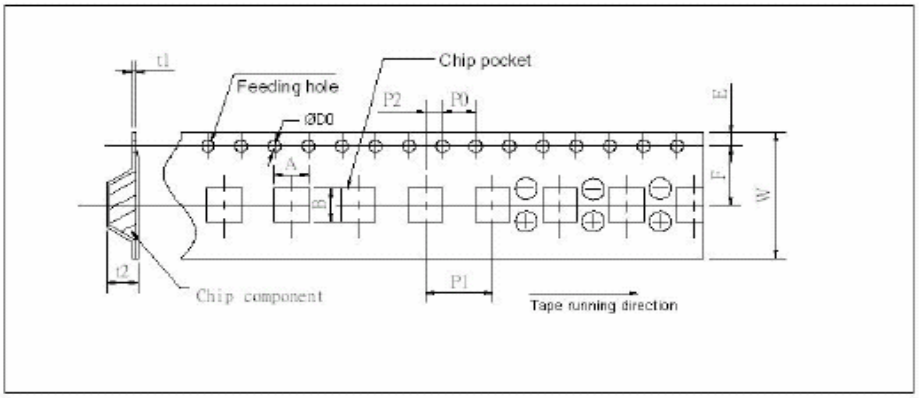
V-chip Packing Specifications

· **Reel Dimensions in mm(not to scale)**



Size	A	B	C	D	E	W	T	t
4 ϕ ~ 5 ϕ	380±2	50min	13.0±0.5	21.0±0.8	2.0±0.5	14±1	20±1	3.0
6.3 ϕ ~ 8x 6.2	380±2	50min	13.0±0.5	21.0±0.8	2.0±0.5	18±1	24±1	3.0
8×10.2 ~ 10 ϕ	380±2	50min	13.0±0.5	21.0±0.8	2.0±0.5	26±1	32±1	3.0

Reel Tape **Taping Dimensions in mm (not to scale)**



***Ask factory for technical specifications.**

Symbol / Size	W	A	B	Po±0.1	P1	P2±0.1	F	ϕ Do	t1	E	t2
4x5.4	12.0	4.7	4.7	4.0	8.0	2.0	5.5	1.5+0.1-0	0.4	1.75	5.8
5x5.4	12.0	5.7	5.7	4.0	12.0	2.0	5.5	1.5+0.1-0	0.4	1.75	5.8
6.3x5.4	16.0	7.0	7.0	4.0	12.0	2.0	7.5	1.5+0.1-0	0.4	1.75	5.8
6.3x7.7	16.0	7.0	7.0	4.0	12.0	2.0	7.5	1.5+0.1-0	0.4	1.75	8.3
8x6.2	16.0	8.7	8.7	4.0	12.0	2.0	7.5	1.5+0.1-0	0.4	1.75	6.8
8x10.2	24.0	8.7	8.7	4.0	16.0	2.0	11.5	1.5+0.1-0	0.4	1.75	11.0
10x10.2	24.0	10.7	10.7	4.0	16.0	2.0	11.5	1.5+0.1-0	0.4	1.75	11.0

Packaging Specification

Size (mm)	Q'ty per reel	Inner box / measurement (mm)		Outer carton / measurement (mm)		Min. ordering amount
4x5.4	2000	20,000	390x195x395	40,000	420x410x414	10kpcs
5x5.4	1000	10,000	390x195x395	20,000	420x410x414	10kpcs
6.3x5.4 & 6.3x7.7	1000	10,000	390x235x405	20,000	420x410x492	10kpcs
8x6.2	1000	10,000	390x235x405	20,000	420x410x492	10kpcs
8x10.2	500	4,000	390x255x405	8,000	420x410x530	8kpcs
10x10.2	500	4,000	390x255x405	8,000	420x410x530	8kpcs

ALUMINUM ELECTROLYTIC CAPACITORS

PACKAGING SPECIFICATION

Miniature Aluminum Electrolytic Capacitors

For Bulk: Standard Cutting & Forming

Classification	Standard Bulk				Cutting & Forming				Min. ordering amount
Case size D*L(mm)	Vinyl bag	inner box 289*168*279 (mm)	outer carton 355*297*290 (mm)	gross weight (kg)	Vinyl bag	inner box 289*168*135 (mm)	outer carton 355*297*290 (mm)	gross weight (kg)	kpcs
4×5	2,000	24,000	48,000	13	2,000	20,000	80,000	20	25
4×7	2,000	20,000	40,000	11	2,000	16,000	64,000	17	25
5×5	2,000	20,000	40,000	12	2,000	16,000	64,000	18	25
5×7	2,000	16,000	32,000	13	2,000	16,000	64,000	23	25
5×11	1,000	12,000	24,000	13	1,000	10,000	40,000	22	25
6.3×5	2,000	16,000	32,000	11	2,000	10,000	40,000	16	20
6.3×7	2,000	12,000	24,000	10	2,000	10,000	40,000	15	20
6.3×11	1,000	10,000	20,000	14	1,000	7,000	28,000	17	20
8x7	500	10,000	20,000	14	500	6,500	26,000	16	15
8×9,8×11	500	7,500	15,000	17	500	4,000	16,000	18	15
8×14	500	5,000	10,000	12	500	3,000	12,000	14	15
8×16	500	5,000	10,000	16	500	2,000	8,000	13	15
8×20	200	4,000	8,000	14	200	2,000	8,000	14	15
10×12.5	200	4,000	8,000	15	200	2,000	8,000	15	12
10×15	200	3,600	7,200	16	200	2,000	8,000	18	12
10×17	200	3,600	7,200	17	200	1,600	6,400	15	12
10×20	200	3,000	6,000	19	200	1,400	5,600	17	12
10×25	200	2,400	4,800	17	200	1,200	4,800	16	12
13×13,13×15	200	2,400	4,800	15	200	800	3,200	13	10
13×18,13×20	200	1,800	3,600	15	200	600	2,400	10	10
13×25	200	1,200	2,400	14	200	600	2,400	14	10
13×30	100	1,200	2,400	16	100	500	2,000	14	10
13×34,13×36	100	1,000	2,000	14	100	300	1,200	12	10
13×38,13×40	100	800	1,600	15	100	300	1,200	15	10

Classification	Standard Bulk				Cutting & Forming				Min. ordering amount
Case size D*L(mm)	Vinyl bag	inner box (mm)	outer carton (mm)	gross weight (kg)	Vinyl bag	inner box (mm)	outer carton (mm)	gross weight (kg)	kpcs
16X15、16X20	200	1000	2000	22	200	1000	2000	22	5
16X25	200	1000	2000	24	-	500	4000	44	5
16X30、16X32、	200	800	1600	20	-	500	3000	37	5
16X36、16X40	200	600	1200	22	-	500	3000	55	5
16X45	100	500	1000	22	-	-	-	-	5
18X15、18X20	200	800	1600	21	-	-	-	-	2.5
18X22、18X25	200	800	1600	23	-	500	2000	28	2.5
18X30	100	600	1200	25	-	-	-	-	2.5
18X32、18X36、18X40	100	500	1000	25	-	500	1000	25	2.5
18X45、18X50	100	300	600	21	-	600	1200	40	2.5
20X25	-	-	-	-	-	400	800	20	1.5
22X32	-	-	-	-	-	320	1920	55	1.5
22X30	-	-	-	-	-	400	800	25	1.5
22X35、22X40	100	300	600	21	-	400	800	27	1.5

ALUMINUM ELECTROLYTIC CAPACITORS

For Taping Ammo & Reel

Classification	Ammo Tape					Reel Tape			Min. ordering amount
Case size D ϕ (mm)	inner box (mm)	quantity (pcs)	outer carton (mm)	quantity (pcs)	gross weight (kg)	inner carton 350*350*110 (mm)	outer carton 370*370*600 (mm)	gross weight (kg)	kpcs
4 ϕ	340×275×50	3,000	355×297×290	15,000	6	3,000	15,000	8	25
5 ϕ	340×230×50	2,000	355×252×290	10,000	6 ~ 7	2,400	12,000	8	25
6.3 ϕ	340×275×50	2,000	355×297×290	10,000	8	2,000	10,000	6	20
8 ϕ ×5-16L	340×230×50	1,000	355×252×290	5,000	7	1,600	8,000	12	15
8 ϕ ×20L	340×230×58	1,000	355×252×315	5,000	7	1,000	5,000	12	15
10 ϕ x10~17L	340×230×50	600	355×252×290	3,000	7				12
10 ϕ x20~25L	340×230×58	600	355×252×315	3,000	7	-	-	-	12
10 ϕ x30L	340×230×65	600	355×252×290	2,400	7	-	-	-	12
13 ϕ x32L below	315×275×65	400	355×297×290	1,600	5	-	-	-	10
13 ϕ x36L above	315×275×74	400	355×297×337	1,600	5	-	-	-	10
16 ϕ x32L below	315×275×65	300	355×297×290	1,200	5	-	-	-	5
16 ϕ x36L above	315×275×74	300	355×297×337	1,200	5	-	-	-	5

Note：For 10 ϕ Reel Tape：

size	inner carton(pcs)	outer carton(pcs)
10 ϕ x10~16L	1,200	6,000
10 ϕ x17~20L	1,000	5,000

Large Can Type Aluminum Electrolytic Capacitors

Dimension D×L (mm)	weighe (g/pcs)	inner box 254*254*150 (mm)	outer carton 530*270*320 (mm)	Min. ordering amount
22×25 to 30	20 ~ 25	300	1200	1.5kpcs
22×35 to 50	25 ~ 30	200	800	1.5kpcs
25×25 to 30	25 ~ 30	240	960	1.2kpcs
25×35 to 50	30 ~ 35	160	640	1.2kpcs
30×25 to 30	30 ~ 35	135	540	1.0kpcs
30×35 to 50	35 ~ 40	90	360	1.0kpcs
30 x 70	45~50	80	320	1.0kpcs
35×25 to 30	40 ~ 45	105	420	1.0kpcs
35×35to 50	45 ~ 50	70	280	1.0kpcs

Note: The dimension of 30x70 inner box is 254*254*190, the dimension of 30x70 outer carton is 530*270*400

Conductive Polymer Aluminum Solid Capacitor

For Bulk: Standard Cutting & Forming

Classification	Standard Bulk				Cutting & Forming				Min. ordering amount
Case size D*L(mm)	Vinyl bag	inner box 289*168*279 (mm)	outer carton 355*297*290 (mm)	gross weight (kg)	Vinyl bag	inner box 289*168*135 (mm)	outer carton 355*297*290 (mm)	gross weight (kg)	kpcs
6.3×5.4	2,000	16,000	32,000	11	2,000	10,000	40,000	16	20
6.3×8	2,000	12,000	24,000	10	2,000	10,000	40,000	15	20
6.3×10.5	1,000	10,000	20,000	14	1,000	7,000	28,000	17	20
8×8, 8×10, 8x11.5	500	7,500	15,000	17	500	4,000	16,000	18	15
10×12.5	200	4,000	8,000	15	200	2,000	8,000	15	12

For Taping Ammo & Reel

Classification	Ammo Tape					Reel Tape			Min. ordering amount
Case size D ϕ (mm)	inner box (mm)	quantity (pcs)	outer carton (mm)	quantity (pcs)	gross weight (kg)	inner carton 350*350*110 (mm)	outer carton 370*370*600 (mm)	gross weight (kg)	kpcs
6.3 ϕ	340×275×50	2,000	355×297×290	10,000	8	2,000	10,000	6	20
8 ϕ ×5-16L	340×230×50	1,000	355×252×290	5,000	7	1,600	8,000	12	15
10 ϕ x10~17L	340×230×50	600	355×252×290	3,000	7	1,000	5,000	14	12

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CG

Ultra low ESR
Series

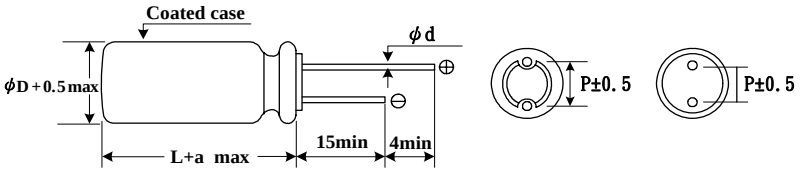
Adapter , SPS ,VCR , camcorder , DSC , PDA, HD Drive ,MO Drive ,
DVD Drive, Navigation system,Portable Communication Devices

■ Corresponding product to RoHS

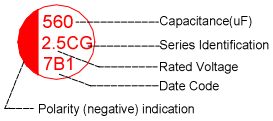
■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 25VDC
Rated Capacitance Range	10 ~ 2200㎌ F
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV or 300μA whichever is greater (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)	WV: 2.5 ~ 10V: 16~25V tan δ: 0.08: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 25V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	ϕD X L	P	ϕd	a
B01	4X5.4	1.5	0.45	1.0
C01	5X5.4	2.0	0.45	1.0
C07	5X7	2.0	0.5	1.0
E01	6.3X5.4	2.5	0.45	1.0
E08	6.3X8	2.5	0.6	1.0
E1A	6.3X10.5	2.5	0.6	1.0
G1B	8X11.5	3.5	0.6	1.0
H1A	10X10.5	5.0	0.6	1.0
H1C	10X12.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CG

Ultra low ESR
Series

■ **Dimensions,Rated Ripple Current,Equivalent Series Resistance**

Capacitance (uF)	Rated Voltage								
	2.5V			4V			6.3V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
120							6.3X5.4	1810	30
150							4X7	1810	30
							6.3X5.4	1810	30
220							5X7	3500	9
							6.3x5.4	1810	30
270							5X7	3500	11
330							5X7	3500	11
							6.3x5.4	1810	30
							6.3X10.5	3190	28
390							6.3X10.5	3190	28
							8X11.5	4770	12
470							6.3x6	3390	22
							6.3X10.5	3190	28
							8x11.5	5600	7
560	6.3X10.5	3160	20	6.3X10.5	3160	20	6.3X10.5	3190	28
680	6.3X10.5	3160	20	6.3X10.5	3160	20	8x11.5	5600	7
	8x11.5	5600	7						
820	6.3X10.5	3160	20	6.3X10.5	3160	20	8x11.5	5600	7
	8x11.5	5600	7	10X12.5	5600	7	10x12.5	5600	7
1000	8x11.5	5600	7	8x11.5	5600	7	8x11.5	5600	7
							10X12.5	5600	7
1200	8x11.5	5600	7	8x11.5	5600	7	8x11.5	5600	7
							10X10.5	5050	7
							10X12.5	5600	7
1500							10X10.5	5050	7
	8x11.5	5600	7	8x11.5	5600	7	10X12.5	5600	7
1800	10x12.5	5600	7	10X12.5	5600	7	10X12.5	5600	7
2200	10x12.5	5600	7	10X12.5	5600	7			

Capacitance (uF)	Rated Voltage								
	10V			16V			20V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
10	4X5.4	1200	45						
22				6.3X5.4	2200	30			
33	5x5.4	1670	45	5X5.4	2070	45			
47				6.3X5.4	1650	35			
				6.3X7	2610	25			
68							8X11.5	2980	30
100				6.3X5.4	2490	24	8X11.5	3320	30
				6.3X10.5	4680	10			
120				6.3X10.5	2820	25			
150				6.3X10.5	2820	25			
180				6.3X10.5	2820	25			
	8x11.5	5600	7	8X11.5	4360	16			
				8X11.5	5000	11			
220	6.3X10.5	2820	25	6.3X10.5	2820	25			
				8X11.5	5000	11			
270	6.3X10.5	2820	25	6.3X10.5	3100	20			
	8x11.5	5600	7	8X11.5	5000	11			
330	6.3X10.5	2820	25	8X11.5	5000	8			
				10X12.5	6100	10			
390	8x11.5	5600	7	10X12.5	6100	10			
470	8x11.5	5600	7	8X11.5	5000	11			
				10X12.5	6100	10			
560	8x11.5	5600	7	10X12.5	6100	10			
	10X12.5	6100	7						
680	10X12.5	6100	7	10X12.5	6100	10			
820	8x11.5	5600	7	10X12.5	5000	8			
1000	10X12.5	6100	7						
1200	10X12.5	6100	7						

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CG

Ultra low ESR
Series

■ **Dimensions,Rated Ripple Current,Equivalent Series Resistance**

Capacitance (uF)	Rated Voltage								
	25V								
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
10	6.3X8	1200	80						
33	6.3X8	1650	35						
	6.3X10.5	1980	35						
	8X11.5	2980	30						
47	6.3X10.5	1980	35						
	8X11.5	2980	30						
56	6.3X10.5	1980	35						
	8X11.5	2980	30						
100	8X11.5	2980	30						
	10X12.5	2980	30						
	10X12.5	4320	30						
150	10X12.5	4320	30						

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CP

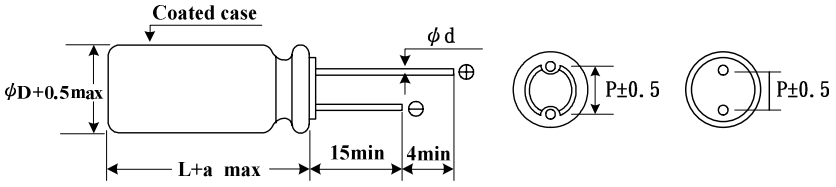
8 mm height & Ultra low ESR Series

■ Features: 105℃,3000hrs, 8mm height & Ultra Low ESR
■ Recommended Applications: Motherboard, DC/DC Converter , Adapter , SPS ,VCR , camcorder , DSC , PDA, HD Drive , MO Drive , DVD Drive, Navigation system, Portable Communication Devices
■ Corresponding product to RoHS

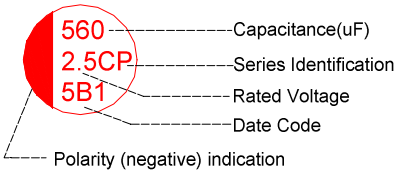
■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 25VDC
Rated Capacitance Range	10 ~ 1200㎌
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV or 300μA whichever is greater (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 2.5 ~ 25V tan δ: 0.08
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 25V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 3000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value WV: 2.5 ~ 6.3V / 10~25V Life: 3000 / 2000
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	φD X L	P	φd	a
E08	6.3X8	2.5	0.6	1.0
G08	8X8	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CP

8 mm height & Ultra low ESR Series

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (uF)	Rated Voltage								
	2.5V			4V			6.3V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	**SIZE**	RIPPLE	ESR
470							8x8	5600	8
560	6.3x8	4200	6	6.3x8	4200	7	6.3x8	4200	8
	8x8	5600	6	8x8	5600	7	8x8	5600	8
820	6.3x8	4200	6						
	8x8	5600	6				8x8	5600	8
1200	8x8	5600	6	8x8	5600	7			

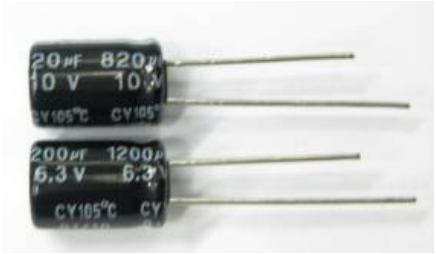
Capacitance (uF)	Rated Voltage								
	10V			16V			25V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
10							6.3x8	1200	80
33							6.3x8	1650	35
							8x8	1980	35
56							8x8	1980	35
100				6.3x8	2820	25			
150	6.3x8	2820	25	6.3x8	2820	25			
180				6.3x8	2820	25			
220	6.3x8	2820	25						
270	6.3x8	2820	25	8x8	3500	11			
				8x8	5000	11			
330	8x8	3500	11	8x8	3500	11			
				8x8	5000	11			
470	8x8	3500	11						
560	8x8	5000	10						

☆ SIZE： ϕ DxL(mm) ☆tan δ :20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CY

Large capacitance
Series

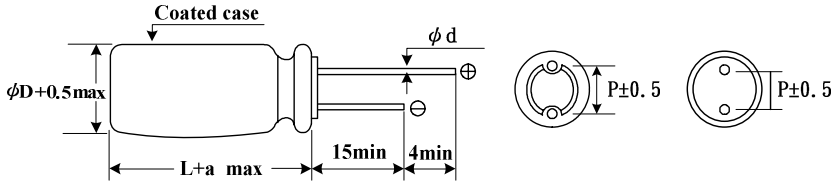


■ Features: 105℃,2000hrs, Low ESR & large capacitance
■ Recommended Applications: Used switching requlator applications in computer. Especially for high frequency.

■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	6.3 ~16VDC
Rated Capacitance Range	150 ~ 1800㎌ F
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 6.3 ~ 16V tan δ: 0.08
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 6.3 ~ 16V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



Size code	φD X L	P	φd	a
E08	6.3X8	2.5	0.6	1.0
G08	8X8	3.5	0.6	1.5
G1B	8X11.5	3.5	0.6	1.0
H1C	10X12.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CY

Large capacitance
Series

■ Features: 105℃,2000hrs, Low ESR & large capacitance
■ Recommended Applications: Used switching requlator applications in computer.
Especially for high frequency.

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (uF)	Rated Voltage								
	6.3V			10V			16V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
150							6.3X8	2820	30
180							6.3X8	2820	30
220				6.3X8	2820	30	8X8	4500	20
270	6.3X8	3000	30	6.3X8	2820	30	8X8	4500	20
							8X11.5	5000	12
330	6.3X8	3000	30	6.3X8	2820	30	8X8	4500	20
							8X11.5	5000	12
470	6.3X8	3000	30	8X8	4500	20	8X11.5	5000	12
560	8X8	5000	20	8X8	4500	20	10X12.5	5600	14
				8X11.5	5000	12			
680	8X8	5000	20	8X11.5	5000	12	10X12.5	5600	14
820	8X8	5000	20	8X11.5	5000	12	10X12.5	5600	14
	8X11.5	5600	12						
1000	8X11.5	5600	12	10X12.5	5600	10			
1200	8X11.5	5600	12	10X12.5	5600	10			
1500	10X12.5	6100	10						
1800	10X12.5	6100	10						

☆ SIZE： ϕDxL(mm) ☆tan δ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CZ

Small Size & Low ESR Series

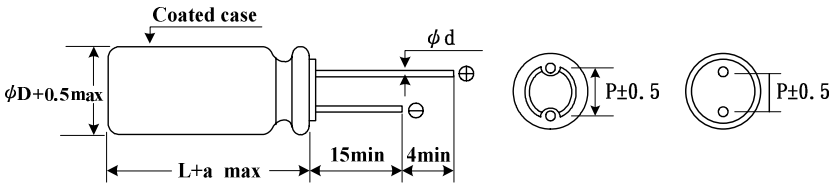
■ Features: 105℃,2000hrs, Low ESR
■ Recommended Applications: Used switching requlator applications in computer. Especially for high frequency.

■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 16VDC
Rated Capacitance Range	10 ~ 2200㎌ F
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV or 300μA whichever is greater (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 2.5 ~ 16V tan δ: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 16V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing

Size code	φD X L	P	φd	a
B01	4X5.4	1.5	0.45	1.0
E01	6.3X5.4	2.5	0.45	1.0
E08	6.3X8	2.5	0.6	1.0
G08	8X8	3.5	0.6	1.5
G1B	8X11.5	3.5	0.6	1.0
H1A	10X10.5	5.0	0.6	1.0
H1C	10X12.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CZ

Small Size & Low ESR
Series

■ **Dimensions,Rated Ripple Current,Equivalent Series Resistance**

Capacitance (uF)	Rated Voltage								
	2.5V			4V			6.3V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
100							6.3x8	4700	18
220							6.3x5.4	1810	80
330							6.3x8	4700	18
470							6.3x8	4700	18
							8x8	5000	14
560	6.3x8	5000	18	6.3x8	5000	18	6.3x8	4700	18
	8x8	5600	14	8x8	5600	14	8x8	5000	14
680	8x11.5	5600	12						
820	6.3x8	5000	18				8x11.5	5600	12
	8x8	5600	14	8x8	5600	14			
	8x11.5	5600	12	8x11.5	5600	12			
1000	8x8	5600	14	8x8	5600	14	8x8	5000	14
	8x11.5	5600	12	8x11.5	5600	12	8x11.5	5600	12
1200	8x8	5600	14	8x8	5600	14	8x11.5	5600	12
	8x11.5	5600	12	8x11.5	5600	12	10x12.5	5600	10
				10x12.5	5600	10			
1500	8x11.5	5600	12	8x11.5	5600	12	10x12.5	5600	10
1800	10x12.5	5600	10	10x12.5	5600	10	10x12.5	5600	10
2200	10x12.5	5600	10	10x12.5	5600	10			

Capacitance (uF)	Rated Voltage								
	10V			16V					
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR			
10	4x5.4	700	80						
100				6.3x8	2820	35			
150				6.3X8	2820	35			
180				6.3X8	2820	35			
220				6.3X10.5	2820	35			
	6.3X8	2820	30	8X8	4500	20			
270	6.3X8	2820	30	8X8	4500	20			
				8X11.5	5000	12			
				10X10.5	4400	18			
330				8X8	4500	20			
	6.3X8	2820	30	8X11.5	5000	12			
470	8X8	4500	20	8X11.5	5000	12			
	8X11.5	5000	12						
560	8X8	4500	20	10X12.5	5600	14			
	8X11.5	5000	12						
680	8X11.5	5000	12	10X12.5	5600	14			
820	8X11.5	5000	12	10X12.5	5600	14			
1000	10X12.5	5600	10						
1200	10X12.5	5600	10						

☆ SIZE： ϕDxL(mm) ☆tan δ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CR

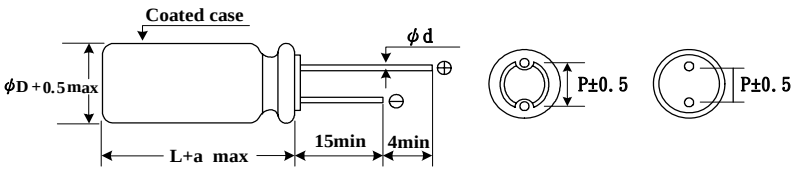
High ripple & low ESR
Series

- Features: 105℃,2000hrs, High Ripple & Low ESR
- Recommended Applications: Motherboard, DC/DC Converter ,Adapter , SPS ,VCR Camcorder , DSC , PDA, HD Drive , MO Drive , DVD Drive, Navigation system,Portable Communication Devices
- Corresponding product to RoHS

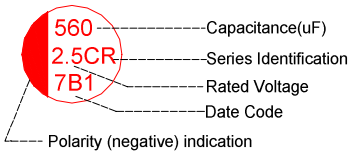
Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 6.3VDC
Rated Capacitance Range	470 ~ 2700μF
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV or 500μA whichever is greater (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)	WV: 2.5 ~ 6.3V tan δ: 0.10
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 6.3V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

Diagram of Dimensions



Marking : case with red printing



Size code	φD X L	P	φd	a
E08	6.3X8	2.5	0.6	1.0
G08	8X8	3.5	0.6	1.5
G1B	8X11.5	3.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CR

High ripple & low ESR
Series

■ **Dimensions,Rated Ripple Current,Equivalent Series Resistance**

Capacitance (uF)	Rated Voltage								
	2.5V			4V			6.3V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR
470							6.3X8	4700	8
							8X8	5700	8
560	6.3X8	5000	7	6.3X8	5000	7	6.3X8	4700	8
	8X8	6100	7	8X8	6100	7	8X8	5700	8
				8X11.5	6100	7			
680							6.3X8	4700	8
							8x8	5700	8
	8X8	6100	7	8X8	6100	7	8X11.5	5700	7
				8X11.5	6100	7			
820	6.3X8	5000	7	8X8	6100	7	8X8	5700	8
	8X8	6100	7				8X11.5	5700	7
	8X11.5	6100	7				10X12.5	6100	7
1000	8X8	6100	7	8X8	6100	7			
				8X11.5	6100	7	8X11.5	5700	7
	8X11.5	6100	7	10X12.5	6100	6			
1200	8X8	6100	7	8X8	6100	7	8X11.5	5700	7
	8X11.5	6100	7	8X11.5	6100	7			
1500	8X11.5	6100	7	8X11.5	6100	7	10X12.5	5560	10
2700	10X12.5	5560	8						

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CX

Large capacitance Series

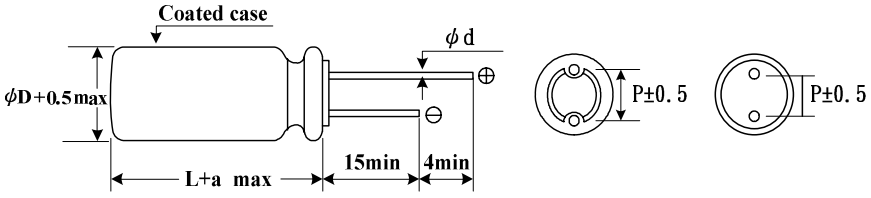
■ Features: 105℃,2000hrs, Low ESR & large capacitance
■ Recommended Applications: Used switching requlator applications in computer. Especially for high frequency.

■ Specifications

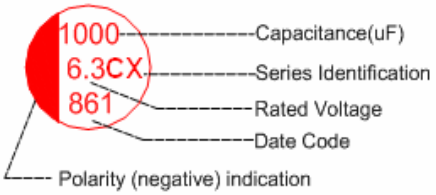
Item		Characteristics		
Category Temperature Range		-55 ~ +105℃		
Rated Voltage Range		2.5 ~28VDC		
Rated Capacitance Range		33 ~ 820㎌		
Capacitance Tolerance		±20% at 120Hz , 20℃		
Surge Voltage		2.5V~25V Rated voltage (V) x 1.15, 28V Products is 28V at 25℃		
Leakage Current (MAX) (20℃)		I≦0.2 CV (After rated voltage applied for 2 minutes)		
		I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)		
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)		WV	2.5 ~ 6.3V	16 ~ 28V
		tan δ	0.08	0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)		WV / Z(100KHz)	2.5 ~ 28V	
		Z-25℃ / Z+20℃	≦1.15	
		Z-55℃ / Z+20℃	≦1.25	
Endurance	105℃, 2000hrs, Rated Voltage applied **(28V-->25V)※1**	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement.		
		Appearance	No significant damage	
		Capacitance Change	Within ±20% of the initial value	
		Dissipation Factor	Not more than 150% of the initial specified value	
		Equivalent Series Resistance	Not more than 150% of the initial specified value	
		Leakage Current	Not more than the initial specified value	
Humidity Test		After subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.		
Surge Voltage Test		After subjecting to 1,000 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℃)		

※1Please reduce 0.15V per 1℃ from over 85℃ for 28V products

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	φD X L	P	φd	a
E08	6.3X8	2.5	0.6	1.0
G08	8X8	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CX

Large capacitance
Series

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (uF)	Rated Voltage								
	2.5V			4V			6.3V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	**SIZE**	RIPPLE	ESR
470							8x8	5700	8
560				6.3x8	5000	7	6.3x8	4700	8
				8x8	6100	7	8x8	5700	8
820	6.3x8	5000	7						
	8x8	6100	7						

Capacitance (uF)	Rated Voltage								
	16V			28V					
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	**SIZE**	RIPPLE	ESR
33				6.3x8	1650	35			
56				8x8	1980	35			
100	6.3x8	2820	25						
270	8x8	5000	11						

☆ SIZE：ϕDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CF

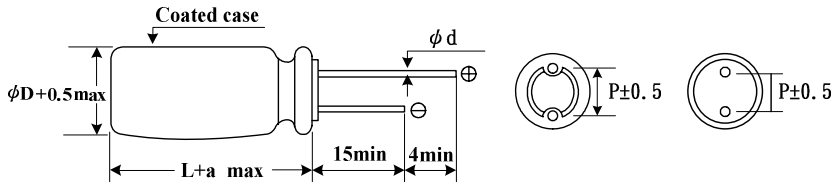
Large capacitance
Series

■ Features: 105℃,2000hrs, Super Low ESR & large capacitance
■ Recommended Applications: Motherboard, DC/DC Converter ,
Adapter , SPS ,VCR , camcorder , DSC , PDA,
HD Drive , MO Drive , DVD Drive, Navigation system,
Portable Communication Devices
■ Corresponding product to RoHS

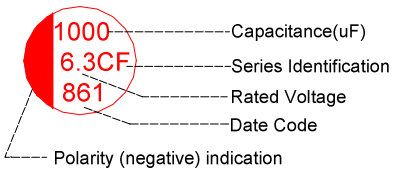
■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~35VDC
Rated Capacitance Range	22 ~ 1800㎌
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	Less than or equal to the value of Table. (After rated voltage applied for 2 minutes)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Less than or equal to the value of Table.
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 6.3 ~ 35V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	ϕD X L	P	ϕd	a
C09	5X9	2	0.5	1.0
E08	6.3X8	2.5	0.6	1.0
E1A	6.3X10.5	2.5	0.6	1.0
G08	8X8	3.5	0.6	1.5
G10	8X10	3.5	0.6	1.5
G1B	8X11.5	3.5	0.6	1.0
H1A	10X10.5	5.0	0.6	1.0
H1C	10X12.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CF **Large capacitance Series**

■STANDARD RATINGS

Size code	WV (Vdc)	Cap	tan δ	ESR	Ripple current	Leakage current
		(μF)	(120Hz ,20℃)	(mΩmax/20℃,100KHz)	105℃,100KHz,(mA/rms)	(μA max)
C09	6.3	330	0.08	25	2400	300
		390	0.08	25	2400	300
	2.5	560	0.08	7	4350	300
E08	32	22	0.08	40	990	300
E1A	25	68	0.08	35	1500	340
	6.3	680	0.08	28	2800	857
G08	32	82	0.08	35	1200	525
	25	56	0.08	30	1500	300
		120	0.08	35	1500	600
	16	330	0.08	12	3000	1056
	10	560	0.08	10	3000	1120
		680	0.08	10	3000	1360
	6.3	1000	0.08	9	3000	1260
G10	32	100	0.08	35	1600	640
	25	150	0.08	35	1980	750
	10	680	0.08	14	3500	1360
	6.3	820	0.08	7	4000	1033
G1B	35	100	0.08	25	1760	700
	32	120	0.08	30	1800	768
	25	180	0.08	30	2280	900
	16	470	0.08	12	4000	1504
	10	820	0.08	12	4000	1640
	6.3	1000	0.08	10	4860	1260
		1200	0.08	10	4860	1512
		1500	0.08	10	4860	1890
H1A	32	220	0.08	30	1800	1408
	25	180	0.08	30	3000	900
	20	180	0.08	30	3000	720
	10	560	0.08	7	5000	1120
	6.3	1500	0.08	7	5000	1890
H1C	35	270	0.08	30	2400	1890
		100	0.08	30	2400	700
	32	180	0.08	30	2400	1152
	25	470	0.08	30	2050	2350
		390	0.08	30	3000	1950
		330	0.08	30	3000	1650
		220	0.08	30	3000	1100
	20	330	0.08	30	3000	1320
	16	820	0.08	11	4000	2624
	10	1200	0.08	12	4360	2400
	6.3	1500	0.08	7	5000	1890
		1800	0.08	7	5000	2268

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CS

Large capacitance & Long Life & High Voltage Series

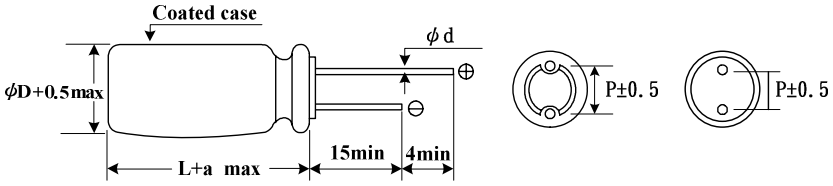
■ Features: 105℃,5000hrs & Large capacitance & Long Life & High Voltage
■ Recommended Applications : LED Driver , LED Power Supply.

■ Corresponding product to RoHS

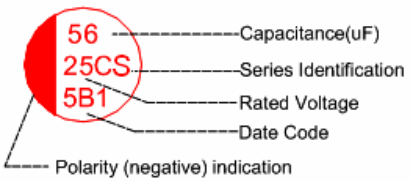
■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	25 ~50VDC
Rated Capacitance Range	56 ~ 390 μF
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15(at room temperature or at 25℃)
Leakage Current (MAX) (20℃)	Less than or equal to the value of Table. (After rated voltage applied for 2 minutes)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Less than or equal to the value of Table.
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 25~50V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 5000 hours at 105℃ the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	After subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	φD X L	P	φd	a
G1B	8X11.5	3.5	0.6	1.0
H1C	10X12.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CS **Large capacitance & Long Life & High Voltage Series**

■STANDARD RATINGS

Size code	WV (Vdc)	Cap	tan δ	ESR	Ripple current	Leakage current
		(μF)	(120Hz ,20℃)	(mΩmax/20℃,100KHz)	105℃,100KHz,(mA/rms)	(μA max)
G08	35	56	0.12	29	1500	392
		100	0.12	29	1500	700
G1B	50	56	0.12	25	1760	560
	35	150	0.12	25	1760	1050
	25	220	0.12	25	1760	1100
		270	0.12	25	1760	1350
	20	390	0.12	25	1760	1560
H1C	50	100	0.12	25	2050	2350
		82	0.12	25	2050	820
	35	270	0.12	25	2050	1890
	25	330	0.12	25	2050	1650
		390	0.12	25	2050	1950
		470	0.12	25	2050	2350

☆ SIZE：ϕDxL(mm) ☆tan δ :20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CH

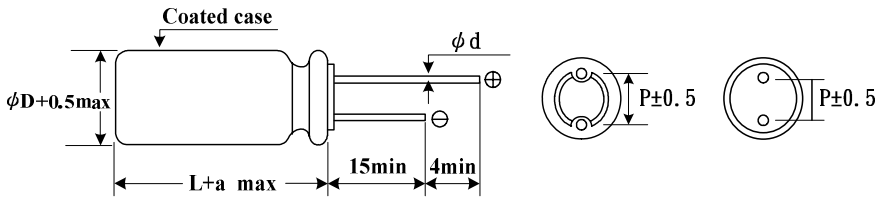
Long life & Ultra low ESR Series

■ Features: 105℃,5000hrs, Ultra Low ESR
■ Recommended Applications: Motherboard, DC/DC Converter ,
Adapter , SPS ,VCR , camcorder , DSC , PDA,
HD Drive , MO Drive , DVD Drive, Navigation system,
Portable Communication Devices
■ Corresponding product to RoHS

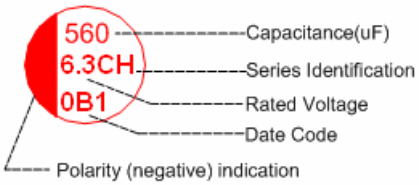
■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 16VDC
Rated Capacitance Range	270 ~ 820μF
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV or 300μA whichever is greater (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 2.5 ~ 16V tan δ: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 16V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 5000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value WV: 2.5 ~ 16V Life: 5000
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	φD X L	P	φd	a
C09	5X9	2.0	0.5	1.0
E01	6.3X5.4	2.5	0.45	1.0
E08	6.3X8	2.5	0.6	1.0
G1B	8X11.5	3.5	0.6	1.0
H1C	10X12.5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CH **Long life & Ultra low ESR Series**

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (uF)	Rated Voltage								
	2.5V			4V			6.3V		
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR	**SIZE**	RIPPLE	ESR
470							6.3x8	3500	7
560	5X9	4350	7						
	6.3X5.4	3000	16						
	6.3x8	3500	7	6.3x8	3500	7	6.3x8	3500	7
820	6.3x8	3500	**7**						
1200							8x11.5	3500	7
1500							10x12.5	3500	7
1800							10x12.5	3500	7

Capacitance (uF)	Rated Voltage								
	10V			16V					
	SIZE	RIPPLE	ESR	SIZE	RIPPLE	ESR			
100				6.3X8	2490	12			
270				8X8	3500	10			
				8x11.5	3500	10			
330	8x11.5	3500	10						
470				8x11.5	3500	10			
820				10x12.5	4000	11			

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CT

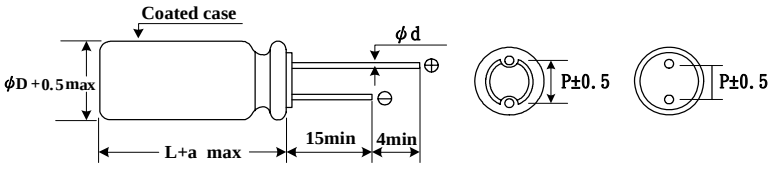
125℃ 1000hrs / 105℃ 5000hrs & Low ESR Series

■ Features: 125℃,1000hrs & 105℃,5000hrs,Low ESR
■ Recommended Applications: Motherboard, DC/DC Converter ,Adapter , SPS ,VCR , Camcorder , DSC , PDA, HD Drive , MO Drive , DVD Drive, Navigation system,Portable Communication Devices
■ Corresponding product to RoHS

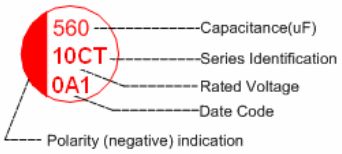
■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +125℃
Rated Voltage Range	6.3 ~ 25VDC
Rated Capacitance Range	10 ~ 1000 μF
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	I≦0.2 CV or 300μA whichever is greater (After rated voltage applied for 2 minutes) Please see the attached characteristics list I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)	WV: 6.3 ~ 25V tan δ: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 6.3 ~ 25V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 1000 hours at 125℃ & 5000 hours at 105℃ , the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Surge Voltage Test	After subjecting to 1,000 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℃)

■ Diagram of Dimensions



■ Marking : case with red printing



Size code	φD X L	P	φd	a
E08	6.3X8	2.5	0.6	1.0
G08	8X8	3.5	0.6	1.5
G1B	8X11.5	3.5	0.6	1.0
H1C	10X12.5	5	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	0.3	0.7	1

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

CT

125℃ 1000hrs / 105℃ 5000hrs & Low ESR Series

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (uF)	Rated Voltage									
	6.3V					10V				
	SIZE	RIPPLE		ESR	LC(μA)(max) after 2mins	SIZE	RIPPLE		ESR	LC(μA)(max) after 2mins
		105℃<Tx≦125℃	Tx≦105℃				105℃<Tx≦125℃	Tx≦105℃		
180	6.3X8	537	1700	45	300	6.3X8	537	1700	45	360
220	6.3X8	537	1700	45	300	8X8	810	2560	35	440
270	8X8	810	2560	35	340	8X8	810	2560	35	540
330	8X8	810	2560	35	416	8X11.5	1250	3950	17	660
470	8X8	810	2560	35	592	10X12.5	1655	5230	13	705
	8X11.5	1332	4210	15	592					
560	8X11.5	1332	4210	15	706	10X12.5	1655	5230	13	840
680	10X12.5	1721	5440	12	643	10X12.5	1655	5230	13	1020
820	10X12.5	1721	5440	12	775					
1000	10X12.5	1721	5440	12	945					

Capacitance (uF)	Rated Voltage									
	16V					20V				
	SIZE	RIPPLE		ESR	LC(μA)(max) after 2mins	SIZE	RIPPLE		ESR	LC(μA)(max) after 2mins
		105℃<Tx≦125℃	Tx≦105℃				105℃<Tx≦125℃	Tx≦105℃		
47						6.3X8	458	1450	60	300
56						8X8	598	1890	45	300
68						8X8	598	1890	45	300
82	6.3X8	512	1620	50	300	8X11.5	1050	3320	24	328
100	6.3X8	512	1620	50	320	8X11.5	1050	3320	24	400
120	8X8	670	2120	40	384	10X12.5	1367	4320	20	480
150	8X8	670	2120	40	480	10X12.5	1367	4320	20	600
180	8X11.5	1151	3640	20	576					
220	8X11.5	1151	3640	20	704					
270	10X12.5	1493	4720	16	648					
330	10X12.5	1493	4720	16	792					

Capacitance (uF)	Rated Voltage									
	25V									
	SIZE	RIPPLE		ESR	LC(μA)(max) after 2mins	SIZE	RIPPLE		ESR	LC(μA)(max) after 2mins
		105℃<Tx≦125℃	Tx≦105℃				105℃<Tx≦125℃	Tx≦105℃		
10	6.3X8	458	1450	60	300					
22	6.3X8	458	1450	60	300					
33	6.3X8	458	1450	60	300					
47	8X8	598	1890	45	300					
56	8X8	598	1890	45	300					
68	8X11.5	1050	3320	24	340					
82	8X11.5	1050	3320	24	410					
100	8X11.5	1050	3320	24	500					
	10X12.5	1367	4320	20	500					
120	10X12.5	1367	4320	20	600					
150	10X12.5	1367	4320	20	750					

☆ Tx：Ambient temperature☆ SIZE：ψDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VP

Standard SMD type product

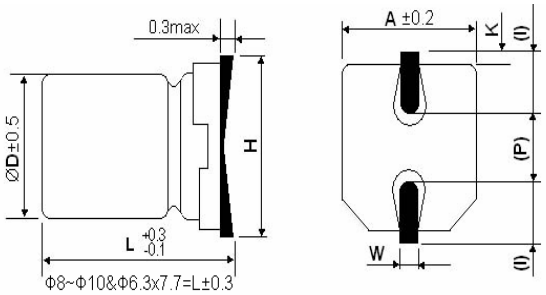
■ Features: 105℃,2000hrs, Standard SMD type product
■ Recommended Applications: Motherboard, DC/DC Converter ,
Adapter , SPS ,VCR , camcorder , DSC , PDA,
HD Drive , MO Drive , DVD Drive, Navigation system,
Portable Communication Devices
■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 25VDC
Rated Capacitance Range	22 ~ 1500μF
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)＊	Less than or equal to the value of Table.(After rated voltage applied for 2 minutes at 20℃)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 2.5 ~ 25V tan δ: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 25V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value WV: 2.5 ~ 25V Life: 2000
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Resistance to Soldering Heat＊	Capacitance Change: Within ±10% of the initial value Dissipation Factor: Not more than 130% of the initial specified value Equivalent Series Resistance: Not more than 130% of the initial specified value Leakage Current: Not more than the 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 oC.

■ Diagram of Dimensions



ΦD	L	A	H	I	W	P	K	
5	5.8	5.3	6.5 Max	2.2	0.65±0.15	1.5±0.2	0.35	+0.15 -0.2
6.3	5.8	6.6	7.8 Max	2.6	0.65±0.15	1.8±0.2	0.35	+0.15 -0.2
6.3	7.7	6.6	7.8 Max	2.6	0.65±0.15	1.8±0.2	0.35	+0.15 -0.2
8	6.7	8.3	9.5 Max	3.4	0.65±0.15	2.2±0.2	0.35	+0.15 -0.2
8	10.4	8.3	10.0 Max	3.4	0.90±0.2	3.1±0.2	0.70±0.20	
10	10.0	10.3	12.0 Max	3.5	0.90±0.2	4.6±0.2	0.70±0.20	
10	12.2	10.3	12.0 Max	3.5	0.90±0.2	4.6±0.2	0.70±0.20	

■ Multiplier for Ripple Current

Frequency (Hz)	120≦F＜1K	1K≦F＜10K	10K≦F＜100K	100K≦F≦500K
Coefficient	0.05	0.3	0.7	1

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VP

Standard SMD type product

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (μF)	Rated Voltage							
	2.5V				4V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
100					6.3x5.8	2450	26	300
120					5x5.8	1490	30	300
150					6.3x5.8	2450	26	300
180	6.3x5.8	2200	25	300				
220	6.3x5.8	2500	25	300				
330					6.3x7.7	2650	25	300
390	6.3x7.7	2720	23	300				
470	6.3x7.7	2720	23	300				
820					8x10.4	3950	18	656
					10x12.2	5500	10	656
1000	8x10.4	3950	18	500				
1200	10x10.0	4000	12	600	10x10.0	4000	12	960
					10x12.2	5500	10	960
1500	10x10.0	4000	12	750				
	10x12.2	5500	10	750				

Capacitance (μF)	Rated Voltage							
	6.3V				10V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
22					5x5.8	1270	40	300
33					5x5.8	1270	40	300
47	5x5.8	1380	35	300	5x5.8	1270	40	300
					6.3x5.8	2250	31	300
56					6.3x5.8	2250	31	300
68	6.3x5.8	2400	27	300				
82	6.3x5.8	2400	27	300				
100	5x5.8	1380	35	300				
	6.3x5.8	2400	27	300				
120	6.3x5.8	2400	27	300	6.3X7.7	2560	27	300
					8X6.7	2800	27	300
150					6.3x7.7	2560	27	300
220	6.3x5.8	2400	27	300				
	6.3x7.7	2650	25	300				
270	6.3x7.7	2650	25	340				
330	6.3x7.7	2650	25	416				
390					8x10.4	3020	22	780
470	6.3X7.7	2650	25	592	10x10.0	3500	14	940
	8X10.4	3610	21	592	10x12.2	5300	12	940
560					10x12.2	5300	12	1120
680	8x10.4	3610	21	857				
	10x10.0	3650	12	857				
	10x12.2	5500	10	857				
820	10x10.0	3650	12	1033				
	10x12.2	5500	10	1033				
1000					10x12.2	4800	13	2000

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VP **Standard SMD type product**

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (μF)	Rated Voltage							
	16V				25V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
22	5x5.8	1210	45	300				
33	6.3x5.8	2050	37	300	8X10.4	2500	30	300
39	6.3x5.8	2050	37	300				
47	6.3x5.8	1600	50	300				
82	6.3x7.7	2420	30	300				
	8X6.7	2700	30	300				
100	6.3x7.7	2420	30	320				
180	8x10.4	3490	23	576				
220	8x10.4	3490	23	704				
	10x12.2	5050	14	704				
270	8x10.4	3490	23	864				
330	10x10.0	3100	16	1056				
	10x12.2	5050	14	1056				
680	10X12.2	5050	14	1056				

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VB

High capacitance and Super low ESR

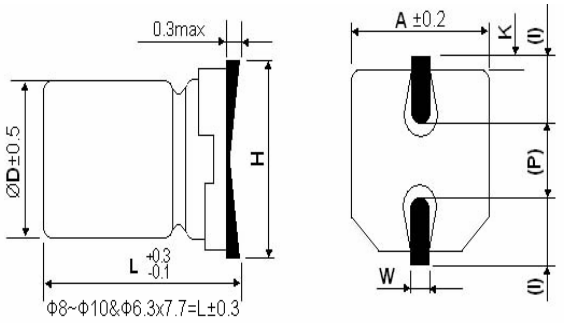
■ Features: 105℃,2000hrs, High capacitance and Super low ESR
■ Recommended Applications: Motherboard, DC/DC Converter ,
Adapter , SPS ,VCR , camcorder , DSC , PDA,
HD Drive , MO Drive , DVD Drive, Navigation system,
Portable Communication Devices
■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	2.5 ~ 16VDC
Rated Capacitance Range	68 ~ 1200㎌
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	Less than or equal to the value of Table.(After rated voltage applied for 2 minutes at 20℃)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 2.5 ~ 16V tan δ: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 2.5 ~ 16V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value WV: 2.5 ~ 16V Life: 2000
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Resistance to Soldering Heat＊	Capacitance Change: Within ±10% of the initial value Dissipation Factor: Not more than 130% of the initial specified value Equivalent Series Resistance: Not more than 130% of the initial specified value Leakage Current: Not more than the 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 oC.

■ Diagram of Dimensions



ΦD	L	A	H	I	W	P	K
6.3	5.8	6.6	7.8 Max	2.6	0.65±0.15	1.8±0.2	0.35 +0.15 -0.2
6.3	7.7	6.6	7.8 Max	2.6	0.65±0.15	1.8±0.2	0.35 +0.15 -0.2
8	6.7	8.3	9.5 Max	3.4	0.65±0.15	2.2±0.2	0.35 +0.15 -0.2
8	10.4	8.3	10.0 Max	3.4	0.90±0.2	3.1±0.2	0.70±0.20
10	10.0	10.3	12.0 Max	3.5	0.90±0.2	4.6±0.2	0.70±0.20

■ Multiplier for Ripple Current

Frequency (Hz)	120≦F＜1K	1K≦F＜10K	10K≦F＜100K	100K≦F≦500K
Coefficient	0.05	0.3	0.7	1

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VB

High capacitance and Super low ESR

■ Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (μF)	Rated Voltage							
	2.5V				4V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
270					6.3x5.8	3160	15	300
330					6.3x5.8	3160	15	300
390	6.3x5.8	3160	15	300				
560	6.3x5.8	3500	16	300				
	6.3X7.7	3600	13	300	8X6.7	3220	22	300
	8X6.7	4100	13	300				

Capacitance (μF)	Rated Voltage							
	6.3V				10V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
120	6.3x5.8	2500	24	300	6.3x5.8	2600	22	300
150					6.3x7.7	2880	21	300
220	6.3X5.8	3160	15	300	8X6.7	3220	22	540
270					8X6.7	3220	22	540
330	6.3x5.8	3390	17	415				
	6.3X7.7	3470	14	415				
	8X6.7	3950	14	415	8X10.4	4000	17	660
390	8X10.4	4210	15	491				
470	8X10.4	4210	15	592	10x10	5025	12	940
560	10X10	5025	12	705				
820	10X10	5025	12	1033				
1200	10X10	5025	12	1510				

Capacitance (μF)	Rated Voltage							
	16V							
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
68	6.3x5.8	2440	25	300				
100	6.3x5.8	2440	25	300				
	6.3x7.7	2700	24	320				

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VS

Long life and Ultra low ESR

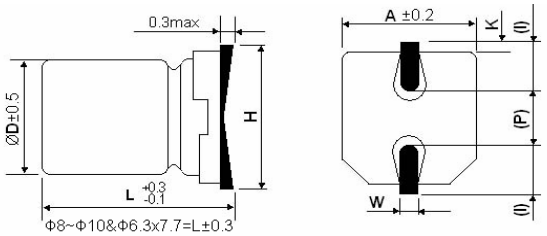
■ Features: 105℃,5000hrs, Long life and Ultra low ESR
■ Recommended Applications: Motherboard, DC/DC Converter ,
Adapter , SPS ,VCR , camcorder , DSC , PDA,
HD Drive , MO Drive , DVD Drive, Navigation system,
Portable Communication Devices
■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Category Temperature Range	-55 ~ +105℃
Rated Voltage Range	4 ~ 16VDC
Rated Capacitance Range	39 ~ 330㎌
Capacitance Tolerance	±20% at 120Hz , 20℃
Surge Voltage	Rated voltage (V) x 1.15
Leakage Current (MAX) (20℃)	Less than or equal to the value of Table.(After rated voltage applied for 2 minutes at 20 ℃)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 4 ~ 16V tan δ: 0.12
Low Temperature Stability Impedance Ratio (MAX) (20℃)	WV / Z(100KHz): 4 ~ 16V Z-25℃ / Z+20℃: ≦1.15 Z-55℃ / Z+20℃: ≦1.25
Endurance	After applying rated voltage for 5000 hours at 105℃, the capacitor shall meet the following requirement. Appearance: No significant damage Capacitance Change: Within ±20% of the initial value Dissipation Factor: Not more than 150% of the initial specified value Equivalent Series Resistance: Not more than 150% of the initial specified value Leakage Current: Not more than the initial specified value WV: 2.5 ~ 16V Life: 5000
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60℃. the capacitors shall meet the requirement as Endurance.
Resistance to Soldering Heat＊	Capacitance Change: Within ±10% of the initial value Dissipation Factor: Not more than 130% of the initial specified value Equivalent Series Resistance: Not more than 130% of the initial specified value Leakage Current: Not more than the 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 oC.

■ Diagram of Dimensions



ΦD	L	A	H	I	W	P	K
6.3	5.8	6.6	7.8 Max	2.6	0.65±0.15	1.8±0.2	0.35 +0.15 -0.2
8	10.4	8.3	10.0 Max	3.4	0.90±0.2	3.1±0.2	0.70±0.20
10	12.2	10.3	12.0 Max	3.5	0.90±0.2	4.6±0.2	0.70±0.20

■ Multiplier for Ripple Current

Frequency (Hz)	120≦F＜1K	1K≦F＜10K	10K≦F＜100K	100K≦F≦500K
Coefficient	0.05	0.3	0.7	1

SURFACE MOUNT CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

VS **Long life and Ultra low ESR**

■ **Dimensions,Rated Ripple Current,Equivalent Series Resistance**

Capacitance (μF)	Rated Voltage							
	4V				6.3V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
100					6.3x5.8	2800	22	300
120					6.3x5.8	2800	22	300
150	6.3x5.8	2570	22	300				
220					6.3x5.8	2800	20	277
330	6.3x5.8	2800	20	264				

Capacitance (μF)	Rated Voltage							
	10V				16V			
	SIZE	RIPPLE	ESR	LC(μA max/2min)	SIZE	RIPPLE	ESR	LC(μA max/2min)
39					6.3x5.8	2200	30	300
56	6.3x5.8	2300	27	300				
68	6.3x5.8	2300	27	300	6.3x5.8	2200	30	300
120	6.3x5.8	2300	27	300				
330					10x12.2	3800	14	1056
470	8x10.4	3000	22	940				

☆ SIZE：φDxL(mm) ☆tanδ:20℃,120Hz. ☆Ripple Current:(mA/rms),105℃ .100KHz ☆ ESR(mΩ).20℃.100KHz

SURFACE MOUNT ALUMINUM ELECTROLYTIC

GV General purpose Series

●Features : 85℃ 2000 hours & Low profile vertical chip
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer, Home appliance, OA/HA/Communication
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range (WV)	4 ~ 100VDC
Capacitance Range	1 ~ 1500 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120HZ)	4	6.3	10	16	25	35	50	63	100
Z(-25℃) / Z(20℃)	7	4	3	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	15	8	6	4	4	3	3	3	3

Endurance

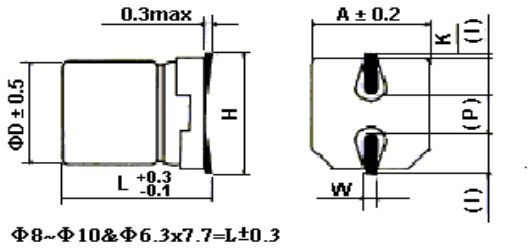
After applying rated voltage for 2000hrs at 85℃,
the capacitors shall meet the following requirements.

Capacitance Change	Within ±20% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

Shelf Life

After placed at 85℃ without voltage applied for 1000 hours,
the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	1K	10K
Coefficient	0.80	1.00	1.15	1.25

SURFACE MOUNT ALUMINUM ELECTROLYTIC

GV General purpose Series

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current

Capacitance (μF)	Rated (Surge) Voltage											
	4(5)			6.3(8)			10(13)			16(20)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
4.7										4x5.4	0.16	20
10										4x5.4	0.16	28
22				4x5.4	0.26	20	4x5.4	0.30	28	4x5.4	0.26	28
										5x5.4	0.16	39
33	4x5.4	0.35	26	4x5.4	0.26	22	4x5.4	0.30	29	5x5.4	0.26	45
							5x5.4	0.20	43	6.3x5.4	0.16	66
47	4x5.4	0.35	34	4x5.4	0.26	36	5x5.4	0.30	43	5x5.4	0.16	45
				5x5.4	0.26	46				6.3x5.4	0.16	70
100	5x5.4	0.35	61	5x5.4	0.26	47	6.3x5.4	0.26	70	6.3x5.4	0.20	70
				6.3x5.4	0.26	71				6.3x7.7	0.20	85
220	6.3x5.4	0.35	82	6.3x5.4	0.35	74	6.3x7.7	0.26	250	6.3x7.7	0.20	162
				6.3x7.7	0.35	235				8x10.2	0.20	280
330	6.3x5.4	0.35	80	6.3x7.7	0.35	280	8x10.2	0.26	330	8x10.2	0.20	320
										10x10.2	0.20	380
470	6.3x7.7	0.35	200	8x10.2	0.35	380	8x10.2	0.26	390	8x10.2	0.20	350
							10x10.2	0.26	400	10x10.2	0.20	420
1000				8x10.2	0.35	500	10x10.2	0.26	580			
				10x10.2	0.35	700						
1500				10x10.2	0.35	750						

Capacitance (μF)	Rated (Surge) Voltage								
	25(32)			35(44)			50(63)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
1							4x5.4	0.12	10
2.2				4x5.4	0.12	8	4x5.4	0.12	16
3.3				4x5.4	0.12	10	4x5.4	0.12	16
4.7	4x5.4	0.14	22	4x5.4	0.12	22	4x5.4	0.14	18
							5x5.4	0.12	23
10	4x5.4	0.20	24	4x5.4	0.16	24	5x5.4	0.14	27
	5x5.4	0.14	28	5x5.4	0.12	30	6.3x5.4	0.12	35
22	5x5.4	0.20	35	5x5.4	0.16	36	6.3x5.4	0.14	40
	6.3x5.4	0.14	55	6.3x5.4	0.12	60	6.3x7.7	0.12	90
33	5x5.4	0.20	42	6.3x5.4	0.16	60	6.3x7.7	0.12	90
	6.3x5.4	0.14	65	6.3x7.7	0.14	130	8x10.2	0.12	120
47	6.3x5.4	0.20	70	6.3x5.4	0.16	70	6.3x7.7	0.12	90
	6.3x7.7	0.16	96	6.3x7.7	0.14	165	8x10.2	0.12	120
100	6.3x7.7	0.16	143	6.3x7.7	0.14	140	8x10.2	0.12	200
	8x10.2	0.16	180	8x10.2	0.14	180	10x10.2	0.12	250
220	8x10.2	0.16	230	8x10.2	0.14	200	10x10.2	0.12	300
	10x10.2	0.16	310	10x10.2	0.14	310			
330	8x10.2	0.16	270	10x10.2	0.14	350			
	10x10.2	0.16	340						
470	10x10.2	0.16	380						

Capacitance (μF)	Rated (Surge) Voltage					
	63(79)			100(125)		
	Size	tan δ	Ripple	Size	tan δ	Ripple
3.3				6.3x7.7	0.18	50
4.7	6.3x5.4	0.18	20	6.3x7.7	0.18	50
10	6.3x5.4	0.18	20	6.3x7.7	0.18	50
				8x10.2	0.18	55
22	6.3x7.7	0.18	40	8x10.2	0.18	55
	8x10.2	0.18	40	10x10.2	0.18	85
33	8x10.2	0.18	45	10x10.2	0.18	90
47	8x10.2	0.18	45			
100	10x10.2	0.18	60			

☆Size:D φ x L(mm).☆tan δ :20℃,120Hz.☆Ripple Current: 85℃,120Hz,(mA/rms).

SURFACE MOUNT ALUMINUM ELECTROLYTIC

FV Long Life Series

●Features : 85℃ 3000~5000 hours,Longer life than GV, Low profile vertical chip
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer, OA/HA/Communication
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range (WV)	4 ~ 100VDC
Rated Capacitance Range	1 ~ 1000 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120HZ)	4	6.3	10	16	25	35	50	63	100
Z(-25℃) / Z(20℃)	7	4	3	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	15	8	6	4	4	3	3	3	3

Endurance

After applying rated voltage for 3000~5000 hours at 85℃,
the capacitors shall meet the following requirements.

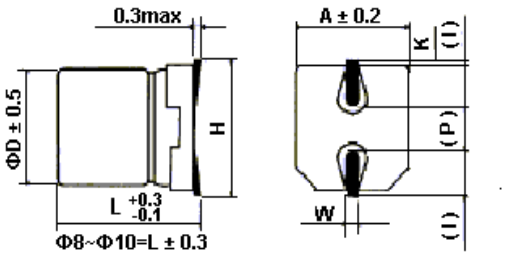
Capacitance Change	Within ±20% of the initial value
Dissipation Factor	Not move than 200% of the specified value
Leakage Current	Not more than the specified value

Case (φ)	Life time (hrs)
φD≦6.3	3000
φD≧8	5000

Shelf Life

After placed at 85℃without voltage applied for 1000 hours,
the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	1K	10K
Coefficient	0.80	1.00	1.15	1.25

SURFACE MOUNT ALUMINUM ELECTROLYTIC

FV Long Life Series

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current

Capacitance (μF)	Rated (Surge) Voltage											
	4(5)			6.3(8)			10(13)			16(20)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
4.7										4x5.4	0.16	20
10										4x5.4	0.16	28
22	4x5.4	0.35	19	4x5.4	0.26	20	4x5.4	0.30	28	4x5.4	0.26	27
										5x5.4	0.16	39
33	4x5.4	0.35	26	5x5.4	0.26	22	4x5.4	0.30	29	5x5.4	0.26	45
							5x5.4	0.20	43	6.3x5.4	0.16	66
47	4x5.4	0.35	34	5x5.4	0.26	46	5x5.4	0.30	43	6.3x5.4	0.16	70
100	5x5.4	0.35	61	6.3x5.4	0.26	71	6.3x5.4	0.26	70	6.3x5.4	0.20	70
220	6.3x5.4	0.35	82	6.3x7.7	0.35	250	6.3x7.7	0.26	250	8x10.2	0.20	280
330				6.3x7.7	0.35	300	8x10.2	0.26	330	10x10.2	0.20	380
470				8x10.2	0.35	380	10x10.2	0.26	400	10x10.2	0.20	420
1000				10x10.2	0.35	700	10x10.2	0.26	580			

Capacitance (μF)	Rated (Surge) Voltage								
	25(32)			35(44)			50(63)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
1							4x5.4	0.12	10
2.2				4x5.4	0.12	8	4x5.4	0.12	16
3.3				4x5.4	0.12	10	4x5.4	0.12	16
4.7	4x5.4	0.14	22	4x5.4	0.12	22	5x5.4	0.12	23
10	4x5.4	0.20	24	4x5.4	0.16	24	6.3x5.4	0.12	35
	5x5.4	0.14	28	5x5.4	0.12	30			
22	6.3x5.4	0.14	55	6.3x5.4	0.12	60	6.3x7.7	0.12	110
33	6.3x5.4	0.14	65	6.3x7.7	0.14	130	8x10.2	0.12	120
47	6.3x5.4	0.20	70	6.3x7.7	0.14	165	10x10.2	0.12	130
	6.3x7.7	0.16	96						
100	8x10.2	0.16	180	10x10.2	0.14	210	10x10.2	0.12	190
220	10x10.2	0.16	310	10x10.2	0.14	310			

Capacitance (μF)	Rated (Surge) Voltage					
	63(79)			100(125)		
	Size	tan δ	Ripple	Size	tan δ	Ripple
3.3				8x10.2	0.18	30
4.7	8x10.2	0.18	25	8x10.2	0.18	80
10	8x10.2	0.18	25	8x10.2	0.18	85
22	8x10.2	0.18	45	10x10.2	0.18	85
33	10x10.2	0.18	45	10x10.2	0.18	90
47	10x10.2	0.18	55			

☆Size:D φ x L(mm).☆tan δ :20℃,120Hz.☆Ripple Current: 85℃,120Hz,(mA/rms).

SURFACE MOUNT ALUMINUM ELECTROLYTIC

SV General Purpose Series

●Features : 105℃ 1000 hours , Higher temperature range Than GV, Low profile vertical chip
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer, OA/HA/Communication
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range (WV)	4 ~ 100VDC
Capacitance Range	1 ~ 1500 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

WV / Z(120HZ)	4	6.3	10	16	25	35	50	63	100
Z(-25℃) / Z(20℃)	7	4	3	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	15	8	6	4	4	3	3	3	3

Endurance

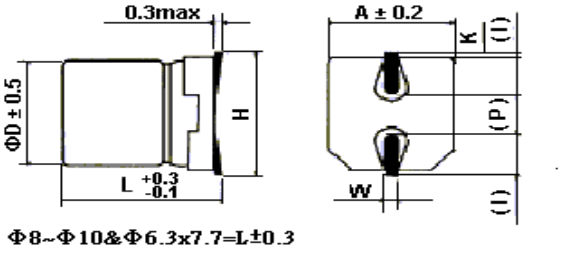
After applying rated voltage for 1000hrs at 105℃,
the capacitors shall meet the following requirements.

Capacitance Change	Within ±20% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

Shelf Life

After placed at 105℃without voltage applied for 1000 hours,
the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



Φ8~Φ10&Φ6.3x7.7=L±0.3

( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	1K	10K
Coefficient	0.85	1.00	1.15	1.25

SURFACE MOUNT ALUMINUM ELECTROLYTIC

SV General Purpose Series

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current

Capacitance (μF)	Rated (Surge) Voltage											
	4(5)			6.3(8)			10(13)			16(20)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
4.7										4x5.4	0.16	20
10							4x5.4	0.30	24	4x5.4	0.16	28
22	4x5.4	0.35	20	4x5.4	0.30	29	4x5.4	0.30	36	5x5.4	0.16	39
33	4x5.4	0.35	26	4x5.4	0.3	43	4x5.4	0.30	45	5x5.4	0.20	39
							5x5.4	0.30	46	6.3x5.4	0.20	65
47	4x5.4	0.35	34	4x5.4	0.30	43	5x5.4	0.30	46	5x5.4	0.20	39
				5x5.4	0.30	46	6.3x5.4	0.30	70	6.3x5.4	0.20	70
100	5x5.4	0.35	61	5x5.4	0.35	47	6.3x5.4	0.30	71	6.3x5.4	0.20	70
				6.3x5.4	0.35	71	6.3x7.7	0.30	110	6.3x7.7	0.20	130
220	6.3x5.4	0.35	82	6.3x5.4	0.35	74	6.3x7.7	0.30	115	6.3x7.7	0.20	105
				6.3x7.7	0.35	120	8x10.2	0.26	160	8x10.2	0.20	150
330				6.3x7.7	0.35	175	8x10.2	0.26	200	8x10.2	0.20	170
				8x10.2	0.35	230				10x10.2	0.20	230
470				8x10.2	0.35	300	8x10.2	0.26	230	8x10.2	0.20	230
							10x10.2	0.26	270	10x10.2	0.20	340
680										10x10.2	0.20	380
1000				8x10.2	0.35	300	10x10.2	0.26	390			
				10x10.2	0.35	400						
1500				10x10.2	0.35	480						

Capacitance (μF)	Rated (Surge) Voltage								
	25(32)			35(44)			50(63)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
1							4x5.4	0.12	10
2.2				4x5.4	0.12	15	4x5.4	0.12	16
3.3				4x5.4	0.12	18	4x5.4	0.12	16
4.7	4x5.4	0.14	22	4x5.4	0.12	22	5x5.4	0.12	23
10	4x5.4	0.14	22	4x5.4	0.12	25	6.3x5.4	0.12	35
	5x5.4	0.14	28	5x5.4	0.12	30			
22	5x5.4	0.14	35	5x5.4	0.14	35	6.3x7.7	0.12	65
	6.3x5.4	0.14	55	6.3x5.4	0.14	60			
33	5x5.4	0.14	45	6.3x5.4	0.14	60	6.3x7.7	0.12	70
	6.3x5.4	0.16	65	6.3x7.7	0.14	84	8x10.2	0.12	91
47	6.3x5.4	0.16	70	6.3x7.7	0.14	84	6.3x7.7	0.12	75
	6.3x7.7	0.16	91	8x10.2	0.14	98	8x10.2	0.12	95
100	6.3x7.7	0.16	95	6.3x7.7	0.14	105	8x10.2	0.12	110
	8x10.2	0.16	130	8x10.2	0.14	120	10x10.2	0.12	145
220	8x10.2	0.16	160	8x10.2	0.14	170	10x10.2	0.12	210
	10x10.2	0.16	273	10x10.2	0.14	240			
330	8x10.2	0.16	180	10x10.2	0.14	250			
	10x10.2	0.16	340						
470	10x10.2	0.16	360						

Capacitance (μF)	Rated (Surge) Voltage					
	63(79)			100(125)		
	Size	tan δ	Ripple	Size	tan δ	Ripple
3.3				8x10.2	0.18	30
4.7	6.3x5.4	0.18	20	8x10.2	0.18	50
10	6.3x5.4	0.18	20	8x10.2	0.18	55
22	8x10.2	0.18	30	10x10.2	0.18	60
33	8x10.2	0.18	30	10x10.2	0.18	65
47	8x10.2	0.18	45	10x10.2	0.18	65
100	10x10.2	0.18	60			

☆Size:D φ x L(mm).☆tan δ :20℃,120Hz.☆Ripple Current: 105℃,120Hz,(mA/rms).

SURFACE MOUNT ALUMINUM ELECTROLYTIC

DV Long Life Series

●Features : 105℃ 2000 hours , Longer life than SV, Low profile vertical chip
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer, OA/HA/Communication
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 100VDC
Rated Capacitance Range	1 ~ 1500 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard ratings

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120HZ)	6.3	10	16	25	35	50	63	100
Z(-25℃) / Z(20℃)	4	3	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	8	6	4	4	3	3	3	3

Endurance

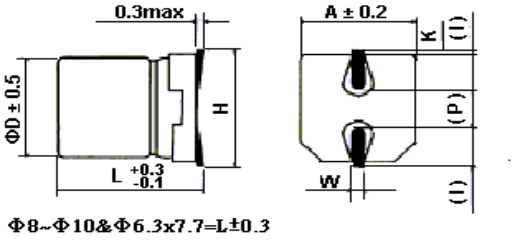
After applying rated voltage for 2000hrs at 105℃,
the capacitors shall meet the following requirements.

Case (φ)	φ4 to φ6.3	φ8 to φ10
Capacitance Change	Within ±25% of the initial value	Within ±20% of the initial value
Dissipation Factor	Not more than 200% of the specified value	
Leakage Current	Not more than the specified value	

Shelf Life

After placed at 105℃without voltage applied for 1000 hours,
the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



Φ8~Φ10&Φ6.3x7.7=L±0.3

( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	1K	10K
Coefficient	0.85	1.00	1.15	1.25

SURFACE MOUNT ALUMINUM ELECTROLYTIC

DV Long Life Series

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current

Capacitance (μF)	Rated (Surge) Voltage								
	6.3(8)			10(13)			16(20)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
10							4x5.4	0.16	28
22	4x5.4	0.3	26	4x5.4	0.22	23	4x5.4	0.16	29
							5x5.4	0.16	39
33	4x5.4	0.30	29	5x5.4	0.22	45	5x5.4	0.16	40
47	4x5.4	0.30	31	5x5.4	0.22	60	5x5.4	0.16	42
	5x5.4	0.30	46	6.3x5.4	0.22	70	6.3x5.4	0.16	70
100	6.3x5.4	0.30	71	6.3x5.4	0.30	71	6.3x5.4	0.20	71
				6.3x7.7	0.30	110	6.3x7.7	0.20	130
220	6.3x5.4	0.35	80	6.3x7.7	0.30	120	8x10.2	0.20	150
	6.3x7.7	0.35	120	8x10.2	0.26	260	10x10.2	0.20	210
330	6.3x7.7	0.35	140	8x10.2	0.30	290	10x10.2	0.20	230
	8x10.2	0.35	290						
470	8x10.2	0.35	290	8x10.2	0.30	320	8x10.2	0.20	240
	10x10.2	0.35	380	10x10.2	0.26	380	10x10.2	0.20	380
1000	10x10.2	0.35	410	10x10.2	0.26	410			
1500	10x10.2	0.35	460						

Capacitance (μF)	Rated (Surge) Voltage								
	25(32)			35(44)			50(63)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
1							4x5.4	0.12	10
2.2							4x5.4	0.12	16
3.3							4x5.4	0.12	16
4.7	4x5.4	0.14	22	4x5.4	0.12	22	5x5.4	0.12	23
6.8	4x5.4	0.14	25	4x5.4	0.12	25	5x5.4	0.12	30
10	4x5.4	0.14	25	5x5.4	0.12	30	5x5.4	0.12	35
	5x5.4	0.14	28				6.3x5.4	0.12	40
22	5x5.4	0.14	28	6.3x5.4	0.14	60	6.3x5.4	0.12	42
	6.3x5.4	0.14	55				6.3x7.7	0.12	65
33	6.3x5.4	0.14	65	6.3x7.7	0.14	80	6.3x7.7	0.12	91
47	6.3x5.4	0.16	65	6.3x7.7	0.14	100	6.3x7.7	0.12	110
	6.3x7.7	0.16	91	8x10.2	0.14	210	8x10.2	0.12	210
100	6.3x7.7	0.16	100	8x10.2	0.14	240	8x10.2	0.12	240
	8x10.2	0.16	230	10x10.2	0.14	310	10x10.2	0.12	320
220	8x10.2	0.16	270	8x10.2	0.14	260	10x10.2	0.12	330
	10x10.2	0.16	310	10x10.2	0.14	350			
330	10x10.2	0.16	340	10x10.2	0.14	370			
470	10x10.2	0.16	380						

Capacitance (μF)	Rated (Surge) Voltage					
	63(79)			100(125)		
	Size	tan δ	Ripple	Size	tan δ	Ripple
10						
22				8x10.2	0.18	100
33	8x10.2	0.18	140	8x10.2	0.18	120
				10x10.2	0.18	150
47	8x10.2	0.18	170	10x10.2	0.18	170
100	10x10.2	0.18	340			
150	10x10.2	0.18	360			

☆Size:D φ x L(mm).☆tan δ :20℃,120Hz.☆Ripple Current: 105℃,120Hz,(mA/rms).

SURFACE MOUNT ALUMINUM ELECTROLYTIC

ZV Low Impedance Series

●Features : 105℃ 1000 hours , Wide temperature range, Low profile vertical chip,Low impedance
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer, Battery charger, DC/DC converter,SMPS,Noise filter
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-55~ +105℃
Rated Voltage Range (WV)	4 ~ 50VDC
Capacitance Range	1 ~ 1500 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

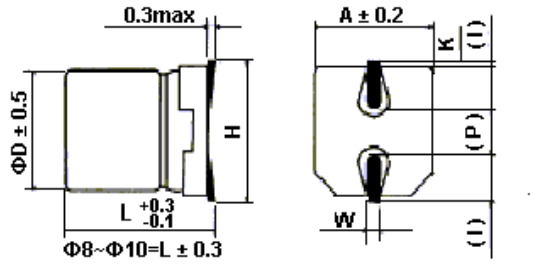
WV / Z(120HZ)	4	6.3	10	16	25	35	50
Z(-25℃) / Z(20℃)	4	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	8	4	4	3	3	3	3

Endurance: After applying rated voltage with rated ripple current for 1000hrs at 105℃, the capacitors shall meet the following requirements.

Capacitance Change	Within ±20% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

Shelf Life: After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.7	0.8	0.9	1.0

SURFACE MOUNT ALUMINUM ELECTROLYTIC

ZV Low Impedance Series

■Dimensions,Max Permissible Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage															
	4(5)				6.3(8)				10(13)				16(20)			
	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z
10	4x5.4	0.35	60	4.0					4x5.4	0.22	60	4.0	4x5.4	0.16	60	4.0
22	4x5.4	0.35	60	4.0	4x5.4	0.26	60	4.0	5x5.4	0.22	95	2.6	5x5.4	0.16	95	2.6
33	4x5.4	0.35	60	4.0	5x5.4	0.26	95	2.6	5x5.4	0.22	95	2.6	5x5.4	0.16	95	2.6
47	4x5.4	0.35	60	4.0	5x5.4	0.26	95	2.6	6.3x5.4	0.22	95	1.3	6.3x5.4	0.16	140	1.3
68	4x5.4	0.35	60	4.0	6.3x5.4	0.26	140	1.3	6.3x5.4	0.22	140	1.3	6.3x7.7	0.20	230	0.8
100	5x5.4	0.35	95	3.0	6.3x5.4	0.26	140	1.3	6.3x5.4	0.22	140	1.3	6.3x7.7	0.20	230	0.8
150	6.3x5.4	0.35	140	2.6	6.3x7.7	0.35	230	0.8	6.3x7.7	0.26	230	0.8	8x10.2	0.20	450	0.5
220	6.3x5.4	0.35	140	2.6	6.3x7.7	0.35	230	0.8	6.3x7.7	0.26	230	0.8	8x10.2	0.20	450	0.5
330					8x10.2	0.35	450	0.5	8x10.2	0.26	450	0.5	10x10.2	0.20	670	0.3
470					10x10.2	0.35	670	0.3	10x10.2	0.26	670	0.3	10x10.2	0.20	670	0.3
1000					10x10.2	0.35	670	0.3	10x10.2	0.26	670	0.3				
1500					10x10.2	0.35	670	0.3								

Capacitance (μF)	Rated (Surge) Voltage											
	25(32)				35(44)				50(63)			
	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z
1					4x5.4	0.12	60	4.0	4x5.4	0.12	60	5.0
2.2					4x5.4	0.12	60	4.0	4x5.4	0.12	60	5.0
3.3					4x5.4	0.12	60	4.0	4x5.4	0.12	60	5.0
4.7	4x5.4	0.14	60	4.0	4x5.4	0.12	60	4.0	5x5.4	0.12	95	4.0
6.8	4x5.4	0.14	60	4.0	5x5.4	0.12	95	2.6	6.3x5.4	0.12	140	2.6
10	5x5.4	0.14	95	2.6	5x5.4	0.12	95	2.6	6.3x5.4	0.12	140	2.6
22	6.3x5.4	0.14	140	1.3	6.3x5.4	0.12	140	1.3	6.3x7.7	0.12	230	1.3
33	6.3x5.4	0.14	140	1.3	6.3x7.7	0.14	230	0.8	8x10.2	0.12	300	1.1
47	6.3x5.4	0.14	140	1.3	6.3x7.7	0.14	230	0.8	10x10.2	0.12	670	0.8
68	8x10.2	0.16	450	0.5	8x10.2	0.14	450	0.5	10x10.2	0.12	670	0.8
100	8x10.2	0.16	450	0.5	10x10.2	0.14	670	0.3	10x10.2	0.12	670	0.8
220	10x10.2	0.16	670	0.3	10x10.2	0.14	670	0.3	10x10.2	0.12	670	0.8
330	10x10.2	0.16	670	0.3	10x10.2	0.14	670	0.3				
470	10x10.2	0.16	670	0.3								

☆Size:Dϕx L(mm)☆Ripple Current: 105℃,100KHz,(mA/rms)☆Impedance: 20℃,100KHz,Z(Ω).

SURFACE MOUNT ALUMINUM ELECTROLYTIC

YV Low Impedance Series

●Features : 105℃ 1000~2000 hours , Wide temperature range, Low profile vertical chip,Low impedance
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer, Battery charger, DC/DC converter,SMPS,Noise filter
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-55 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 50VDC
Capacitance Range	0.1 ~ 1500μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120HZ)	6.3	10	16	25	35	50
Z(-25℃) / Z(20℃)	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	4	4	3	3	3	3

Endurance

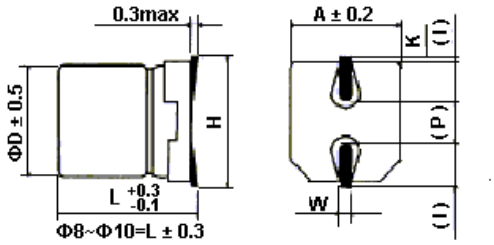
After applying rated voltage with rated ripple current for 1000~2000hrs at 105℃, the capacitors shall meet the following requirements.

Capacitance Change	6.3VF Within ±30% of the initial value,10-50VFWithin ±20% of the initial value	
Dissipation Factor	Not more than 200% of the specified value	
Leakage Current	Not more than the specified value	
DΦ	4x5.4~6.3x7.7	8x10.2~10x10.2
Life	1000hrs	2000hrs

Shelf Life

After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.7	0.8	0.9	1.0

SURFACE MOUNT ALUMINUM ELECTROLYTIC

YV Low Impedance Series

■Dimensions,Max Permissible Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage											
	6.3(8)				10(13)				16(20)			
	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z
10									4x5.4	0.16	60	3.0
22	4x5.4	0.26	60	3.0	5x5.4	0.22	95	1.8	5x5.4	0.16	95	1.8
33	5x5.4	0.26	95	1.8	5x5.4	0.22	95	1.8	6.3x5.4	0.16	140	1.0
47	5x5.4	0.26	95	1.8	6.3x5.4	0.22	140	1.0	6.3x5.4	0.16	140	1.0
100	6.3x5.4	0.26	140	1.0	6.3x5.4	0.22	140	1.0	6.3x5.4	0.16	140	1.0
220	6.3x5.4	0.26	140	1.0	6.3x7.7	0.22	280	0.34	6.3x7.7	0.16	280	0.34
330	6.3x7.7	0.26	280	0.34	8x10.2	0.26	450	0.3	8x10.2	0.20	450	0.3
470	8x10.2	0.35	450	0.3	8x10.2	0.26	450	0.3	8x10.2	0.20	450	0.3
680	8x10.2	0.35	450	0.3	10x10.2	0.26	670	0.15	10x10.2	0.20	670	0.15
1000	8x10.2	0.35	450	0.3	10x10.2	0.26	670	0.15				
1500	10x10.2	0.35	670	0.15								

Capacitance (μF)	Rated (Surge) Voltage											
	25(32)				35(44)				50(63)			
	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z	Size	tan δ	Ripple	Z
1									4x5.4	0.12	30	5.0
2.2									4x5.4	0.12	30	5.0
3.3									4x5.4	0.12	30	5.0
4.7					4x5.4	0.12	60	3.0	5x5.4	0.12	50	3.0
10	5x5.4	0.14	95	1.8	5x5.4	0.12	95	1.8	6.3x5.4	0.12	70	2.0
22	6.3x5.4	0.14	140	1.0	6.3x5.4	0.12	140	1.0	6.3x5.4	0.12	70	2.0
33	6.3x5.4	0.14	140	1.0	6.3x5.4	0.12	140	1.0	6.3x7.7	0.12	170	1.3
47	6.3x5.4	0.14	140	1.0	6.3x5.4	0.12	140	1.0	6.3x7.7	0.12	170	1.3
68	6.3x7.7	0.14	280	0.34	6.3x7.7	0.12	280	0.34	8x10.2	0.12	300	0.6
100	6.3x7.7	0.14	280	0.34	8x10.2	0.14	450	0.3	8x10.2	0.12	300	0.6
220	8x10.2	0.16	450	0.3	8x10.2	0.14	450	0.3	10x10.2	0.12	500	0.34
330	8x10.2	0.16	450	0.3	10x10.2	0.14	670	0.15				
470	10x10.2	0.16	670	0.15								

☆Size:D φ x L(mm)☆Ripple Current: 105℃,100KHz,(mA/rms)☆Impedance: 20℃,100KHz,Z(Ω).

SURFACE MOUNT ALUMINUM ELECTROLYTIC

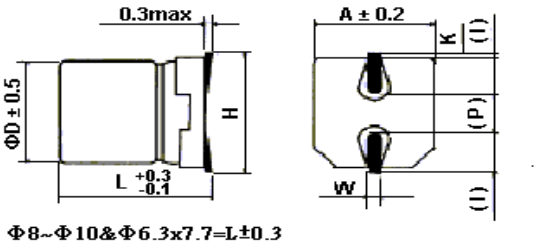
EV Ultra Low Impedance Series

●Features : 105℃ 2000 hours , Low profile vertical chip, Ultra low impedance
●Recommended Applications: AV(TV,Video,Audio) ,Monitor/Computer,
OA/HA/Communication ,SMPS
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-55 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 35VDC
Capacitance Range	4.7 ~ 1500 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3 μA whichever is greater(After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120HZ): 6.3 / 10 / 16 / 25 / 35 Z(-25℃) / Z(20℃): 2 / 2 / 2 / 2 / 2 Z(-40℃) / Z(20℃): 3 / 3 / 3 / 3 / 3
Endurance	After applying rated voltage with rated ripple current for 2000 hours at 105℃, the capacitor shall meet the following requirement. Capacitance Change: Within±30% of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



Φ8~Φ10&Φ6.3x7.7=L±0.3

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.70	0.80	0.90	1.00

SURFACE MOUNT ALUMINUM ELECTROLYTIC

EV Ultra Low Impedance Series

■Case Size / tan δ / Max Ripple Current / Impedance

Capacitance (μF)	Rated (Surge) Voltage											
	6.3(8)				10(13)				16(20)			
	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z
22	4x5.4	0.26	90	1.93	4x5.4	0.19	90	1.93	4x5.4	0.16	90	1.93
									5x5.4	0.16	160	1.00
33	4x5.4	0.26	90	1.93	4x5.4	0.19	90	1.93	5x5.4	0.16	160	1.00
					5x5.4	0.19	160	1.00				
47	4x5.4	0.26	90	1.93	6.3x5.4	0.19	190	0.52	5x5.4	0.16	160	1.00
	5x5.4	0.26	160	1.00					6.3x5.4	0.16	240	0.52
100	5x5.4	0.26	160	1.00	6.3x5.4	0.19	190	0.52	6.3x5.4	0.16	240	0.52
	6.3x5.4	0.26	240	0.52								
150	6.3x7.7	0.26	240	0.30	6.3x7.7	0.19	240	0.34	6.3x7.7	0.16	280	0.34
220	6.3x7.7	0.26	240	0.30	6.3x7.7	0.19	280	0.34	6.3x7.7	0.16	280	0.34
									8x10.2	0.16	370	0.22
330	6.3x7.7	0.26	280	0.34	8x10.2	0.19	600	0.16	8x10.2	0.16	600	0.16
470	8x10.2	0.26	600	0.16	8x10.2	0.19	600	0.16	8x10.2	0.16	600	0.16
680	8x10.2	0.26	600	0.16	10x10.2	0.19	600	0.12	10x10.2	0.16	850	0.08
1000	8x10.2	0.26	600	0.16	10x10.2	0.19	850	0.08				
1500	10x10.2	0.26	850	0.08								

Capacitance (μF)	Rated (Surge) Voltage							
	25(32)				35(44)			
	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z
4.7					4x5.4	0.12	90	1.93
10	4x5.4	0.14	90	1.93	4x5.4	0.12	90	1.93
					5x5.4	0.12	160	1.00
22	5x5.4	0.14	160	1.00	5x5.4	0.12	160	1.00
33	5x5.4	0.14	160	1.00	6.3x5.4	0.12	240	0.52
	6.3x5.4	0.14	240	0.52				
47	6.3x5.4	0.14	240	0.52	6.3x5.4	0.12	240	0.52
68	6.3x5.4	0.14	240	0.52	6.3x7.7	0.12	280	0.34
100	6.3x7.7	0.14	280	0.34	6.3x7.7	0.12	280	0.34
					8x10.2	0.12	600	0.16
150	8x10.2	0.14	600	0.16	8x10.2	0.12	600	0.16
220	8x10.2	0.14	600	0.16	8x10.2	0.12	600	0.16
330	8x10.2	0.14	600	0.16	10x10.2	0.12	850	0.08
470	10x10.2	0.14	850	0.08				

☆CASE SIZE：φDxL(mm)、 MAX DISSIPATION FACTOR ：tan δ / 120Hz,20℃ 、
MAX PERMISSIBLE RIPPLE CURRENT：RC(mArms) / 100KHz,105℃ 、
MAX IMPEDANCE：Z(Ω) / 100KHz,20℃

SURFACE MOUNT ALUMINUM ELECTROLYTIC

JV Ultra Low Impedance Series

●Features : 105℃ 2000 hours , Low profile vertical chip, Ultra low impedance
●Recommended Applications: AV(TV,Video,Audio) ,Monitor/Computer,
OA/HA/Communication ,SMPS
●Corresponding product to RoHS

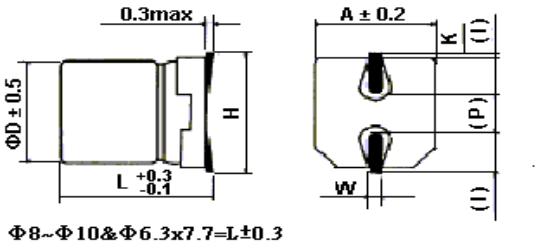
■ Specifications

Item	Characteristics
Operating Temperature Range	-55 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 35VDC
Capacitance Range	10~ 1800 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3 μA whichever is greater(After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

WV / Z(120HZ)	6.3	10	16	25	35
Z(-25℃) / Z(20℃)	2	2	2	2	2
Z(-40℃) / Z(20℃)	3	3	3	3	3

Endurance	After applying rated voltage with rated ripple current for 2000 hours at 105℃, the capacitor shall meet the following requirement.
Capacitance Change	Within±30% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



Φ8~Φ10&Φ6.3x7.7=L±0.3

( ) : Reference size

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.70	0.80	0.90	1.00

SURFACE MOUNT ALUMINUM ELECTROLYTIC

JV Ultra Low Impedance Series

■Case Size / tan δ / Max Ripple Current / Impedance

Capacitance (μF)	Rated (Surge) Voltage											
	6.3(8)				10(13)				16(20)			
	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z
22									4x5.4	0.16	90	1.93
33					4x5.4	0.19	90	1.93	4x5.4	0.16	90	1.93
47	4x5.4	0.26	90	1.93	4x5.4	0.19	90	1.93	4x5.4	0.16	90	1.93
					5x5.4	0.19	160	1.00	5x5.4	0.16	160	1.00
68	4x5.4	0.26	90	1.93	4x5.4	0.19	90	1.93	5x5.4	0.16	160	1.00
					5x5.4	0.19	160	1.00				
100	5x5.4	0.26	160	1.00	5x5.4	0.19	160	1.00	6.3x5.4	0.16	240	0.52
					6.3x5.4	0.19	240	0.52				
150	5x5.4	0.26	160	1.00	5x5.4	0.19	160	1.00	6.3x5.4	0.16	240	0.52
	6.3x5.4	0.26	240	0.52	6.3x5.4	0.19	240	0.52	6.3x7.7	0.16	280	0.34
220	6.3x5.4	0.26	240	0.52	6.3x5.4	0.19	240	0.52	6.3x7.7	0.16	280	0.34
					6.3x7.7	0.19	280	0.34				
330	6.3x5.4	0.26	240	0.52	6.3x7.7	0.19	280	0.34	6.3x7.7	0.16	280	0.34
	6.3x7.7	0.26	280	0.34					8x10.2	0.16	600	0.16
470	6.3x7.7	0.26	280	0.34	6.3x7.7	0.19	280	0.34	8x10.2	0.16	600	0.16
					8x10.2	0.19	600	0.16				
680	8x10.2	0.26	600	0.16	8x10.2	0.19	600	0.16	8x10.2	0.16	600	0.16
									10x10.2	0.16	850	0.08
1000	8x10.2	0.26	600	0.16	8x10.2	0.19	600	0.16	10x10.2	0.16	850	0.08
					10x10.2	0.19	850	0.08				
1200	8x10.2	0.26	600	0.16	10x10.2	0.19	850	0.08				
	10x10.2	0.26	850	0.08								
1500	10x10.2	0.26	850	0.08								
1800	10x10.2	0.26	850	0.08								

Capacitance (μF)	Rated (Surge) Voltage							
	25(32)				35(44)			
	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z
10	4x5.4	0.14	90	1.93	4x5.4	0.12	90	1.93
22	4x5.4	0.14	90	1.93	5x5.4	0.12	160	1.00
	5x5.4	0.14	160	1.00				
33	5x5.4	0.14	160	1.00	5x5.4	0.14	160	1.00
					6.3x5.4	0.12	240	0.52
47	5x5.4	0.14	160	1.00	6.3x5.4	0.12	240	0.52
	6.3x5.4	0.14	240	0.52				
68	6.3x5.4	0.14	240	0.52	6.3x5.4	0.12	240	0.52
					6.3x7.7	0.12	280	0.34
100	6.3x5.4	0.14	240	0.52	6.3x7.7	0.12	280	0.34
	6.3x7.7	0.14	280	0.34				
150	6.3x7.7	0.14	280	0.34	8x10.2	0.12	600	0.16
220	8x10.2	0.14	600	0.16	8x10.2	0.12	600	0.16
330	8x10.2	0.14	600	0.16	10x10.2	0.12	850	0.08
470	10x10.2	0.14	850	0.08				
560	10x10.2	0.14	850	0.08				

☆CASE SIZE：φDxL(mm)、 MAX DISSIPATION FACTOR ：tan δ / 120Hz,20℃ 、
MAX PERMISSIBLE RIPPLE CURRENT：RC(mArms) / 100KHz,105℃ 、
MAX IMPEDANCE：Z(Ω) / 100KHz,20℃

SURFACE MOUNT ALUMINUM ELECTROLYTIC

XV Ultra Low Impedance & Long Life Series

●Features : 105℃ 3000~5000 hours , Low profile vertical chip, Ultra low impedance
●Recommended Applications: AV(TV,Video,Audio) ,Monitor/Computer,
OA/HA/Communication ,SMPS
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-55 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 50VDC
Capacitance Range	1.0 ~ 1000 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3 μA whichever is greater(After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

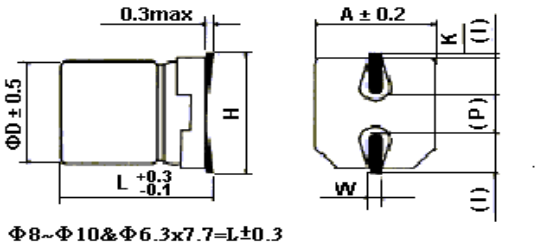
WV / Z(120HZ)	6.3	10	16	25	35	50
Z(-25℃) / Z(20℃)	2	2	2	2	2	2
Z(-40℃) / Z(20℃)	3	3	3	3	3	3

Endurance: After applying rated voltage with rated ripple current for 3000~5000 hours at 105℃, the capacitor shall meet the following requirement.

Capacitance Change	Within±30% of the initial value	
Dissipation Factor	Not more than 200% of the specified value	
Leakage Current	Not more than the specified value	
DΦ	4x5.4~6.3x7.7	8x10.2~10x10.2
Life	3000hrs	5000hrs

Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



Φ8~Φ10&Φ6.3x7.7=L±0.3

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

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.70	0.80	0.90	1.00

SURFACE MOUNT ALUMINUM ELECTROLYTIC

XV

Ultra Low Impedance & Long Life Series

■Case Size / tan δ / Max Ripple Current / Impedance

Capacitance (μF)	Rated (Surge) Voltage											
	6.3(8)				10(13)				16(20)			
	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z
22	4x5.4	0.26	90	1.93	4x5.4	0.19	90	1.93	5x5.4	0.16	160	1.00
33	4x5.4	0.26	90	1.93	5x5.4	0.19	160	1.00	6.3x5.4	0.16	240	0.52
47	5x5.4	0.26	160	1.00	6.3x5.4	0.19	190	0.52	6.3x5.4	0.16	240	0.52
100	6.3x5.4	0.26	240	0.52	6.3x5.4	0.19	190	0.52	6.3x7.7	0.16	280	0.34
150	6.3x7.7	0.26	240	0.30	6.3x7.7	0.19	240	0.34	8x10.2	0.16	370	0.22
220	6.3x7.7	0.26	240	0.30	8x10.2	0.19	600	0.16	8x10.2	0.16	370	0.22
330	8x10.2	0.26	600	0.16	8x10.2	0.19	600	0.16	8x10.2	0.16	600	0.16
470	8x10.2	0.26	600	0.16	10x10.2	0.19	850	0.12	10x10.2	0.16	850	0.12
680	10x10.2	0.26	850	0.12	10x10.2	0.19	850	0.12				
1000	10x10.2	0.26	850	0.12								

Capacitance (μF)	Rated (Surge) Voltage											
	25(32)				35(44)				50(63)			
	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z	φDxL	tan δ	RC	Z
1									4x5.4	0.12	60	5.00
2.2									4x5.4	0.12	60	5.00
3.3									4x5.4	0.12	60	5.00
4.7					4x5.4	0.12	90	1.93	5x5.4	0.12	95	4.00
10	4x5.4	0.14	90	1.93	5x5.4	0.12	160	1.00	6.3x5.4	0.12	140	2.60
22	5x5.4	0.14	160	1.00	5x5.4	0.12	160	1.00	6.3x7.7	0.12	230	1.30
33	6.3x5.4	0.14	240	0.52	6.3x5.4	0.12	240	0.52	8x10.2	0.12	350	0.50
47	6.3x5.4	0.14	240	0.52	6.3x7.7	0.12	280	0.34	10x10.2	0.12	670	0.34
68	6.3x7.7	0.14	280	0.34	6.3x7.7	0.12	280	0.34	10x10.2	0.12	670	0.34
100	6.3x7.7	0.14	300	0.34	8x10.2	0.12	600	0.16	10x10.2	0.12	670	0.34
150	8x10.2	0.14	600	0.16	10x10.2	0.12	850	0.12				
220	8x10.2	0.14	600	0.16	10x10.2	0.12	850	0.12				
330	10x10.2	0.14	850	0.12								

☆CASE SIZE：φDxL(mm)、 MAX DISSIPATION FACTOR ：tan δ / 120Hz,20℃、
MAX PERMISSIBLE RIPPLE CURRENT：RC(mArms) / 100KHz,105℃、
MAX IMPEDANCE：Z(Ω) / 100KHz,20℃

SURFACE MOUNT ALUMINUM ELECTROLYTIC

HV Ultra Low Impedance & High temperature Series

●Features : 125℃1000~ 2000 hours ,Higher temperature range
●Recommended Applications: Automatic Mounting and Reflow Soldering
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +125℃
Rated Voltage Range (WV)	10 ~ 50VDC
Capacitance Range	47 ~ 1000 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3 μA whichever is greater(After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

WV / Z(120HZ)	10	16	25	35	50
Z(-25℃) / Z(20℃)	2	2	2	2	2
Z(-40℃) / Z(20℃)	3	3	3	3	3

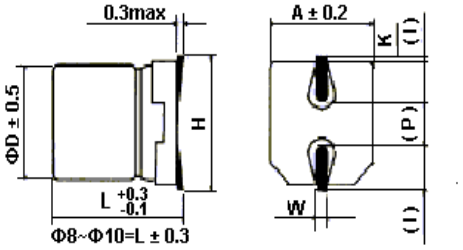
Endurance

After applying rated voltage for 1000~2000 hours at 125℃,
the capacitor shall meet the following requirement.

Capacitance Change	Within±30% of the initial value	
Dissipation Factor	Not more than 300% of the specified value	
DΦ	6.3x7.7-8x6.2	≧8x10.2
Life	1000hrs	2000hrs
Leakage Current	Not more than the specified value	

Shelf Life	After placed at 125℃without voltage applied for 1000 hours(500 hours for 8x6.2), the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



( ) : Reference size

φD	L	A	H	I	W	P	K	
8.0	6.2	8.3	9.5 Max	3.4	0.65±0.1	2.2±0.2	0.35	+0.15 -0.20
8.0	10.2	8.3	10.0 Max	3.4	0.90±0.2	3.1±0.2	0.70±0.2	
10.0	10.2	10.3	12.0 Max	3.5	0.90±0.2	4.6±0.2	0.70±0.2	

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.70	0.80	0.90	1.00

SURFACE MOUNT ALUMINUM ELECTROLYTIC

HV High temperature Series

■Case Size / tan δ / Max Ripple Current

Capacitance (μF)	Rated (Surge) Voltage								
	10(13)			16(20)			25(32)		
	φDxL	tan δ	RC	φDxL	tan δ	RC	φDxL	tan δ	RC
47				6.3x7.7	0.20	70	6.3x7.7	0.18	70
							8x6.2	0.18	75
100	8x6.2	0.26	75	6.3x7.7	0.20	70	6.3x7.7	0.18	70
							8x6.2	0.18	75
				8x6.2	0.20	75	8x10.2	0.18	130
150	6.3x7.7	0.26	70	8x10.2	0.20	130	8x10.2	0.18	130
	8x6.2	0.26	75						
220	8x10.2	0.26	130	8x10.2	0.20	130	10x10.2	0.18	180
330	8x10.2	0.26	130	8x10.2	0.20	180	10x10.2	0.18	180
470	10x10.2	0.26	180	10x10.2	0.20	180			
680	10x10.2	0.26	180						
1000	10x10.2	0.26	180						

Capacitance (μF)	Rated (Surge) Voltage					
	35(44)			50(63)		
	φDxL	tan δ	RC	φDxL	tan δ	RC
22	6.3x7.7	0.14	70	8x6.2	0.12	75
33	6.3x7.7	0.14	70	8x10.2	0.12	130
	8x6.2	0.14	75			
47	8x6.2	0.14	75	8x10.2	0.12	130
	8x10.2	0.14	130			
100	8x10.2	0.14	130	10x10.2	0.12	180
150	10x10.2	0.14	180			
220	10x10.2	0.14	180			
330						

☆CASE SIZE：φDxL(mm)、 MAX DISSIPATION FACTOR ：tan δ / 120Hz,20℃、
MAX PERMISSIBLE RIPPLE CURRENT：RC(mArms) / 120Hz,125℃、

SURFACE MOUNT ALUMINUM ELECTROLYTIC

CV Low Leakage Series

●Features : 85℃ 2000 hours , Low profile vertical chip,
Low Leakage current (0.5μA to 2.0μA max.)
●Recommended Applications: Security System , Backup Battery
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range (WV)	6.3 ~ 50VDC
Capacitance Range	1 ~ 100μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.002CV or 0.5μA whichever is greater(After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

WV / Z(120HZ)	6.3	10	16	25	35	50
Z(-25℃) / Z(20℃)	4	3	2	2	2	2
Z(-40℃) / Z(20℃)	8	6	4	4	3	3

Endurance

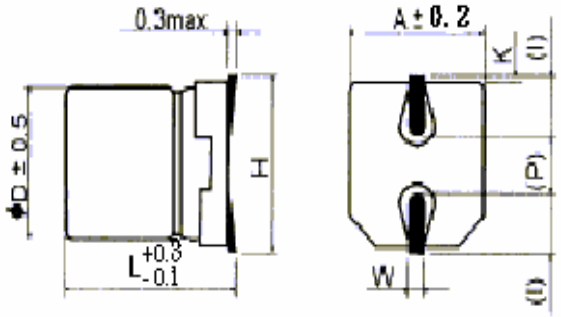
After applying rated voltage for 2000 hours at 85℃,
the capacitor shall meet the following requirement.

Capacitance Change	Within ±25% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

Shelf Life

After placed at 85℃without voltage applied for 1000 hours,
the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



φD	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5 Max	1.8	0.65±0.1	1.0±0.2	0.35 +0.15 -0.20
5.0	5.4	5.3	6.5 Max	2.2	0.65±0.1	1.5±0.2	0.35 +0.15 -0.20
6.3	5.4	6.6	7.8 Max	2.6	0.65±0.1	1.8±0.2	0.35 +0.15 -0.20

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	1K	10K
Coefficient	0.8	1.0	1.15	1.25

SURFACE MOUNT ALUMINUM ELECTROLYTIC

CV **Low Leakage Series**

■Case Size / tan δ / Max Ripple Current / ESR

Capacitance (μF)	Rated (Surge) Voltage								
	6.3(8)			10(13)			16(20)		
	φDxL	tan δ	RC	φDxL	tan δ	RC	φDxL	tan δ	RC
10							4x5.4	0.16	28
22	4x5.4	0.26	20	4x5.4	0.30	28	5x5.4	0.16	39
33	5x5.4	0.26	22	5x5.4	0.20	43	6.3x5.4	0.16	66
47	5x5.4	0.26	46	5x5.4	0.30	43	6.3x5.4	0.16	70
100	6.3x5.4	0.26	71	6.3x5.4	0.26	70			

Capacitance (μF)	Rated (Surge) Voltage								
	25(32)			35(44)			50(63)		
	φDxL	tan δ	RC	φDxL	tan δ	RC	φDxL	tan δ	RC
1							4x5.4	0.12	10
2.2							4x5.4	0.12	16
3.3							4x5.4	0.12	16
4.7	4x5.4	0.14	22	4x5.4	0.12	22	5x5.4	0.12	23
10	5x5.4	0.14	28	5x5.4	0.12	30	6.3x5.4	0.12	35
22	6.3x5.4	0.14	55	6.3x5.4	0.12	60			
33	6.3x5.4	0.14	65						

☆CASE SIZE：φDxL(mm)、 MAX DISSIPATION FACTOR ：tan δ / 120Hz,20℃、
MAX PERMISSIBLE RIPPLE CURRENT：RC(mArms) / 120Hz,85℃、

SURFACE MOUNT ALUMINUM ELECTROLYTIC

NV Non-polar Series

●Features :105℃ 2000 hours,Non-polarized,Low profile vertical chip, 5.5mm height (≦ φ 6.3)
●Recommended Applications: Suitable for AV(TV,Video,Audio),Monitor/Computer,
OA/HA/Communication,Reversed polarity circuit
●Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 35VDC
Capacitance Range	1 ~ 47 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Shown in the table of standard rating
Low Temperature Stability Impedance Ratio (MAX)	

WV / Z(120HZ)	6.3	10	16	25	35	50
Z(-25℃) / Z(20℃)	4	3	2	2	2	2
Z(-40℃) / Z(20℃)	8	6	4	4	3	3

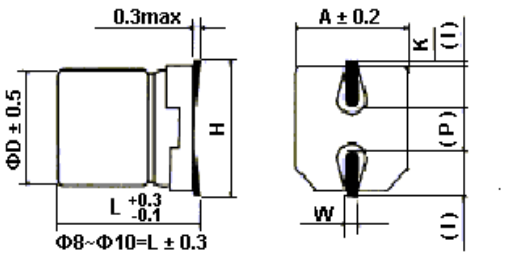
Endurance

After applying rated voltage for 2000hrs at 105℃,
the capacitors shall meet the following requirements. (The polarity shall be reversed every 250 hours)

Capacitance Change	Within ±20% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions(mm)



( ) : Reference size

φD	L	A	H	I	W	P	K
4.0	5.4	4.3	5.5 Max	1.8	0.65±0.1	1.0±0.2	0.35 +0.15 -0.20
5.0	5.4	5.3	6.5 Max	2.2	0.65±0.1	1.5±0.2	0.35 +0.15 -0.20
6.3	5.4	6.6	7.8 Max	2.6	0.65±0.1	1.8±0.2	0.35 +0.15 -0.20

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	1K	10K
Coefficient	0.85	1.00	1.10	1.20

SURFACE MOUNT ALUMINUM ELECTROLYTIC

NV Non-polar Series

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current

Capacitance (μF)	Rated (Surge) Voltage											
	6.3(8)			10(13)			16(20)			25(32)		
	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple	Size	tan δ	Ripple
2.2												
3.3										4x5.4	0.28	12
4.7							4x5.4	0.32	20	5x5.4	0.28	21
10				4x5.4	0.40	25	5x5.4	0.32	25	6.3x5.4	0.28	28
22	5x5.4	0.52	29	6.3x5.4	0.40	39	6.3x5.4	0.32	39			
33	6.3x5.4	0.52	43	6.3x5.4	0.40	43						
47	6.3x5.4	0.52	46									

Capacitance (μF)	Rated (Surge) Voltage					
	35(44)			50(63)		
	Size	tan δ	Ripple	Size	tan δ	Ripple
1				4x5.4	0.24	10
2.2	4x5.4	0.24	12	5x5.4	0.24	16
3.3	5x5.4	0.24	21	5x5.4	0.24	21
4.7	5x5.4	0.24	22	6.3x5.4	0.24	31
10	6.3x5.4	0.24	30			

☆Size:D φ x L(mm).☆tan δ :20℃,120Hz.☆Ripple Current: 105℃,120Hz,(mA/rms).

ALUMINUM ELECTROLYTIC CAPACITORS

SK General purpose Series

■ Features: 85℃ 2000 hours
■ Recommended Applications: For general purpose , decoupling , by pass and filtering circuit in entertainment electronics
■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40~+85℃ / -25~+85℃
Rated Voltage Range	6.3 ~ 100VDC / 160 ~ 500VDC
Rated Capacitance Range	1 ~ 22000μF / 1 ~ 470μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3μA whichever is greater. / I=0.03CV+10(μA) (After rated voltage applied for 2 minutes)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	See table below
Low Temperature Stability Impedance Ratio (MAX)	See table below
Endurance	See table below
Shelf Life	After placed at 85℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	6.3	10	16	25	35	50	63	100	160~250	350~500
tan δ	0.24	0.20	0.16	0.14	0.12	0.10	0.10	0.10	0.20	0.24

When nominal capacitance is over 1000uF，
tan δ shall be added 0.02 to the listed value with increase of every 1000uF。

Low Temperature Stability Impedance Ratio (MAX)

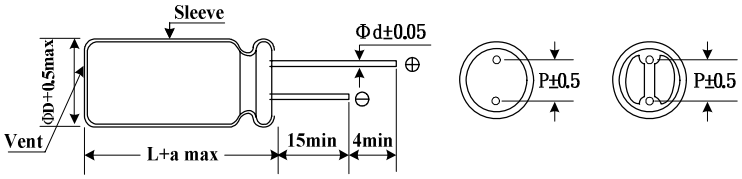
WV / Z(120Hz)	6.3	10	16	25	35~100	160~250	315~350	400~500
Z-25℃ / Z+20℃	8	6	5	3	3	7	10	15
Z-40℃ / Z+20℃	10	8	6	4	3	—	—	—

Endurance

After applying rated voltage for 2000 hours at 85℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

■ Diagram of Dimensions



φD	5	6.3	8	10	13	16	18	22
P	2.0	2.5	3.5	5.0		7.5		10.0
φd	0.5	0.5	0.6	0.6		0.8		0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
6.3 ~ 100V Below 68 μF	1.00	1.20	1.30	1.50
6.3 ~ 100V 100 ~ 680 μF	1.00	1.10	1.15	1.20
6.3 ~ 100V 1000 ~ 22000 μF	1.00	1.05	1.10	1.15
160 ~ 450V Below 220 μF	1.00	1.25	1.40	1.40
160 ~ 450V 220 μF Above	1.00	1.10	1.13	1.13
500V	1.00	1.05	1.10	1.10

ALUMINUM ELECTROLYTIC CAPACITORS

SK **General purpose Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0											5x11	10	5x11	10
2.2											5x11	23	5x11	29
3.3											5x11	35	5x11	40
4.7			5x11	20	5x11	25	5x11	30	5x11	35	5x11	40	5x11	45
6.8											5x11	50		
10			5x11	35	5x11	40	5x11	50	5x11	60	5x11	65	5x11	70
22	5X11	35	5x11	55	5x11	75	5x11	90	5x11	95	5x11	100	5x11	95
													6.3x11	115
33	5X11	55	5x11	80	5x11	110	5x11	115	5x11	120	5x11	105	6.3x11	130
47	5x11	75	5x11	95	5x11	130	5x11	135	5x11	120	6.3x11	140	6.3x11	190
68					5x11	150	5x11	145						
100	5x11	130	5x11	180	5x11	165	6.3x11	160	6.3x11	185	8x11	230	10x12.5	300
150					6.3x11	205								
220	5x11	200	6.3x11	250	6.3x11	260	8x11	290	8x11	290	10x12.5	380	10x15	410
	6.3x11	240											10x20	490
330	6.3x11	260	6.3x11	265	6.3x11	290	8x11	315	10x12.5	420	10x15	490	10x20	540
					8x11	360								
470	6.3x11	330	6.3x11	320	8x11	400	8x15	420	10x15	430	10x20	610	13x20	755
							10x12.5	460						
680	8x11	410	8x11	410	10x12.5	510	10x15	550	10x20	550			13x25	965
1000	8x11	460	10x12.5	580	10x15	630	10x20	760	13x20	950	13x25	1100	16x25	1310
	10x12.5	580					13x16	760						
2200	10x20	840	10x20	880	13x20	1100	13x25	1300	16x25	1600	16x36	1850	18x36	2200
											18x32	1850		
3300	10x20	1000	13x20	1250	13x25	1400	16x25	1660	16x36	1970	18x36	2170	22x40	2500
									18x32	2050				
4700	13x20	1300	13x25	1500	16x25	1800	16x32	1950	18x36	2400	22X40	2500		
6800	13x25	1550	16x25	1900	16x32	1980	18x36	2550	22x40	2600				
10000	16x25	1900	16x36	2225	18x36	2700	22x40	2800						
			18x32	2225										
15000	16x36	2500	18x36	2950	22x40	3150	22x40	3200						
22000	18x40	3650	22x40	3700	22x40	3800								

☆ Size: Dϕx L (mm) ☆ Ripple Current: (mA/rms). 85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SK **General purpose Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage															
	100 (125)		160 (200)		200 (250)		250 (300)		350 (400)		400 (450)		450 (500)		500(550)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0	5x11	21	5x11	17	5x11	19	5x11	17	6.3x11	19	6.3x11	16	8x11	19		
			6.3x11	17			6.3x11	19			8x11	19				
2.2	5x11	30	6.3x11	26	6.3x11	22	6.3x11	24	8x11	33	6.3x11	20	10x12.5	33		
							8x11	30			8x11	26			10x12.5	33
3.3	5x11	45	6.3x11	30	6.3x11	30	8x11	30	8x11	33	8x11	35	10X12.5	40	10x15	43
4.7	5x11	50	6.3x11	32	6.3x11	35	8x11	36	10x12.5	39	8x11	38	10X12.5	45		
											10x12.5	42				
6.8	5x11	55			8x11	40	8x11	40			8x15	42	10x15	50	10x20	70
											10x12.5	45				
10	5x11	65	8x11	50	8x11	45	10x12.5	65	10x15	70	10x15	50	10x20	58	13x20	93
	6.3x11	75											13x20	60		
22	6.3x11	105	10x15	110	10x15	120	10x20	130	13x20	130	13x20	100	13x25	98	16x25	105
	8x11	130														
33	8x11	140	10x15	135	10x20	160	13x20	140	13x25	170	13x25	140	16x25	145	16x25	200
			10x20	150												
47	10x12.5	190	10x20	160	10x20	170	13x25	210	16x25	220	16x25	180	16x32	165	18x32	185
					13x20	200							18x25	160		
68	10x15	280	13x20	200	13x25	230					16X32	250	18X32	265	18x36	370
											18X25	220				
100	10x20	400	13x25	250	16x25	330	16x25	250	16x36	320	18X32	320	18x40	330		
									18x32	300						
150	13x20	500	16x25	330			16x32	330			18X40	420	22X35	420		
220	13x25	710	16x32	450	16x32	505	18x36	540								
					18x25	485										
330	13x25	720	18x36	540	16x40	710										
					18x32	685										
470	16x25	1100	18x40	750	18x40	750										
680	16x36	1260														
1000	18x40	1350														
2200																

☆ Size: Dϕx L (mm) ☆ Ripple Current: (mA/rms). 85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SE General Purpose Series

■ Features: 105℃ 1000 hours
■ Recommended Applications: For general purpose coupling,decoupling , by pass , and filtering circuit in entertainment electronics
■ Corresponding product to RoHS

SH
↑
SE Long Life

■ Specifications

Item	Characteristics		
Operating Temperature Range	-40~+105℃	-40~+105℃	-25~+105℃
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 250VDC	350 ~ 450VDC
Rated Capacitance Range	1 ~ 15000μF	1 ~ 470μF	1 ~ 150μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃		
Leakage Current (MAX)(20℃)	I=0.01CV or 3(μA) ,whichever is greate	I=0.03CV+10(μA)	
	(After rated voltage applied for 2 minutes)		

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	6.3	10	16	25	35	50	63~100	160~250	350~450
tan δ	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.15	0.20

When nominal capacitance is over 1000uF ，
tan δ shall be added 0.02 to the listed value with increase of every 1000uF 。

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	6.3	10	16	25	35~100	160~250	315~350	400~450
Z-25℃ / Z+20℃	8	6	5	3	3	7	10	15
Z-40℃ / Z+20℃	10	8	6	4	3	7	—	—

Endurance

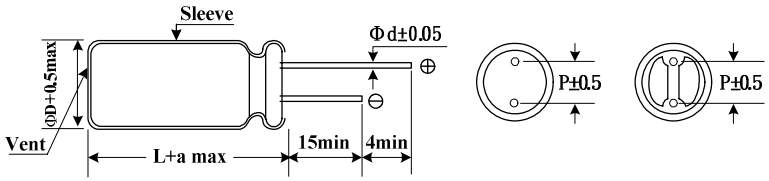
After applying rated voltage for 1000 hours at 105℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After leaving capacitors under no load at 105℃ for 500 hours.
the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	5	6.3	8	10	13	16	18	22
P	2.0	2.5	3.5	5.0		7.5		10.0
φd	0.5	0.5	0.6	0.6		0.8		0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
6.3 ~ 100V Below 68μF	1.00	1.20	1.30	1.45
6.3 ~ 100V 100 ~ 680μF	1.00	1.10	1.15	1.25
6.3 ~ 100V 1000 ~ 22000μF	1.00	1.05	1.10	1.15
160 ~ 450V ALL Cap (μF)	1.00	1.05	1.10	1.50

ALUMINUM ELECTROLYTIC CAPACITORS

SE General Purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0											5x11	12	5x11	13
2.2											5x11	18	5x11	20
3.3											5x11	25	5x11	27
4.7							5x11	20	5x11	25	5x11	30	5x11	34
6.8							5x11	25	5x11	30	5x11	32	5x11	37
10					5x11	25	5x11	30	5x11	40	5x11	50	5x11	55
15					5x11	40	5x11	45	5x11	50	5x11	60	5x11	65
22			5x11	45	5x11	55	5x11	60	5x11	65	5x11	75	6.3x11	90
33			5x11	60	5x11	70	5x11	75	5x11	85	5x11	95	6.3x11	110
47	5X11	60	5x11	75	5x11	85	5x11	90	5x11	95	6.3x11	105	8x11	155
68	5x11	75	5x11	80	5x11	100	6.3x11	125	6.3x11	125	8x11	159		
100	5x11	100	5x11	110	5x11	110	6.3x11	145	6.3x11	150	8x11	160	8X15	230
													10x12.5	260
150	5x11	120	5x11	110	6.3x11	175	8x11	200	8x11	200	10x12.5	289	10x15	330
220	5x11	140	6.3x11	180	6.3x11	180	8x11	200	8x11	230	10x12.5	340	10x15	400
	6.3x11	165							10x12.5	315			10x20	460
330	6.3x11	160	6.3x11	205	8x11	285	8x11	265	8X15	345	10x20	535	10x20	520
							8X15	320	10x12.5	380				
470	6.3x11	220	6.3x11	245	8x11	310	8X15	365	10x15	415	10x20	580	13x20	700
			8x11	305							13x20	730		
680	8x11	255	8x11	335	10x12.5	455	10x15	650	10x20	680	13x25	860	13x25	840
			10x12.5	420										
1000	8x11	370	8X15	450	8x20	600	10x20	680	13x20	850	13x25	930	16x25	1020
	10x12.5	470	10x12.5	490	10x15	590								
1500	10x15	600	10x20	750	10x20	680	13x20	880	13x25	935	16x25	1220	16x32	1300
2200	10x20	740	10x20	800	13x20	990	13x25	1030	16x25	1230	16x36	1360	18x36	1455
3300	13x20	1100	10x25	950	13x25	1140	16x25	1230	16x36	1470	18x36	1540		
			13x20	1050										
4700	13x25	1100	13x25	1190	16x25	1330	16x32	1420	18x36	1580				
6800	13x25	1250	16x25	1370	16x32	1580	18x36	1850						
10000	16x25	1560	16x36	1760	18x36	2150								
15000	18x32	2100	18x36	2150										

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SE General Purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	100 (125)		160 (200)		200 (250)		250 (300)		350 (400)		400 (450)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0	5x11	15	5x11	17	5x11	19	6.3x11	19	6.3x11	20	6.3x11	16	6.3x11	16
											8x11	20	8x11	20
2.2	5x11	22	6.3x11	25	6.3x11	22	6.3x11	23	8x11	35	6.3x11	20	8x11	28
											8x11	28	10x12.5	35
3.3	5x11	29	6.3x11	30	6.3x11	32	8x11	33	8x11	37	8x11	38	10x12.5	49
4.7	5x11	37	6.3x11	34	8x11	40	8x11	41	8X11	47	8x11	40	10x12.5	55
											10x12.5	49		
6.8	5x11	46	8X11	50	8X11	56	8X11	57			8x15	50	10x15	65
											10x12.5	52		
10	5x11	55	8x11	56	10x12.5	69	10x12.5	78	10x15	95	10x15	65	10x20	75
	6.3x11	65												
15	6.3x11	72	10x12.5	80	10x15	110	10x15	120	10x20	140	10x20	100	13X20	125
22	8x11	115	10x15	130	10x15	140	10x20	155	13x20	165	13x20	150	13x25	160
33	8x11	120	10x20	180	10x20	190	13x20	170	13x25	220	13x25	190	16x25	210
											16x20	195		
47	10x12.5	180	10X20	230	13x20	240	13x25	330	16x25	340	16x25	280	16x32	270
											18x20	275		
68	10x15	241	13X20	270	13x25	330	13x25	340			16x32	320	18x32	305
											18x25	305		
100	10x20	385	13x25	330	16x25	410	16x25	415	18x32	430	18x32	430	18x36	380
120											18x32	440		
150	13x20	414	16x25	410	16x32	430	16X32	435	18x40	480	18X36	450		
											18X40	460		
180											18X45	480		
220	13x25	590	16x32	550	16X36	520	18X36	600						
					18x32	520								
330	13x25	600	18x36	770	18x36	705								
470	16x25	740	18X40	800										
680	16x36	1200												
1000	18x40	1340												

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SH Miniature and general purpose Series

■ Features: 105℃ 2000 hours
■ Recommended Applications: For high quality , reliability application, high CV product
■ Corresponding product to RoHS

SH ↑ Long Life
SE

■ Specifications

Item	Characteristics		
Operating Temperature Ran	-40~+105℃	-25~+105℃	
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 450VDC	500VDC
Rated Capacitance Range	1~ 15000μF	1 ~ 470μF	2.2~82μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃		
Leakage Current (MAX)(20℃	I=0.01CV or 3(μA) ,whichever is greater.	I=0.03CV+10(μA)	I=0.04CV+100(uA)
	(After rated voltage applied for 2 minutes)		

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	6.3	10	16	25	35	50	63~100	160~250	350~450	500
tan δ	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.15	0.20	0.25

When nominal capacitance is over 1000uF ,
tan δ shall be added 0.02 to the listed value with increase of every 1000uF 。

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	6.3	10	16	25~100	160~250	350~450	500
Z-25℃ / Z+20℃	4	3	2	2	4	4	6
Z-40℃ / Z+20℃	8	6	4	3	-	-	-

Endurance

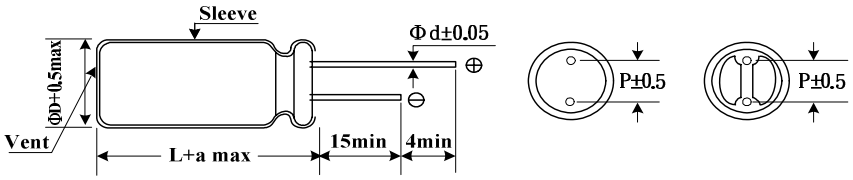
After applying rated voltage for 2000 hours at 105℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After leaving capacitors under no load at 105℃ for 1000 hours.
the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	5	6.3	8	10	13	16	18	22
p	2.0	2.5	3.5	5.0		7.5		10.0
φd	0.5	0.5	0.6	0.6		0.8		0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
6.3 ~ 100V Below 68 μF	1.00	1.30	1.57	2.00
6.3 ~ 100V 100 ~ 470 μF	1.00	1.23	1.34	1.50
6.3 ~ 100V 471 ~ 22000 μF	1.00	1.10	1.13	1.15
160 ~ 450V ALL Cap (μF)	1.00	1.25	1.40	1.60
500V ALL Cap (μF)	1.00	1.05	1.10	1.15

ALUMINUM ELECTROLYTIC CAPACITORS

SH **Miniature and general purpose Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage															
	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)		100 (125)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0											5x11	12	5x11	12	5x11	15
2.2											5x11	18	5x11	20	5x11	22
3.3											5x11	25	5x11	27	5x11	29
4.7											5x11	30	5x11	34	5x11	37
6.8											5x11	30	5x11	37	5x11	46
10									5x11	44	5x11	50	5x11	55	6.3x11	65
15									5x11	50	5x11	50	5x11	65	6.3x11	75
22							5x11	60	5x11	65	5x11	75	6.3x11	90	8x11	115
33					5x11	70	5x11	75	5x11	85	5x11	95	6.3x11	100	8X11	140
47			5x11	75	5x11	85	5x11	90	5X11	100	6.3x11	115	8x11	155	10X12.5	185
68			5x11	80	5x11	100	6.3x11	125	6.3X11	130	8x11	159	10x12.5	198	10X15	240
100	5x11	100	5x11	110	5x11	130	6.3x11	145	6.3x11	170	8X11	200	10x12.5	260	10x20	305
150	5x11	120	5x11	120	6.3x11	175	8x11	200	8X11	220	10x12.5	289	10x15	330	13X20	370
220	6.3x11	165	6.3x11	180	6.3x11	220	8X11	240	10x12.5	315	10x12.5	360	10x20	465	13x25	520
											10X15	415				
330	6.3X11	200	6.3x11	235	8X11	280	8X11	300	10x12.5	400	10x20	535	13x20	650	16x25	720
			8x11	255			10x12.5	355								
470	6.3x11	230	6.3x11	250	8x11	375	8X15	420	10x15	480	10x20	630	13x20	700	16x32	875
			8x11	305			10X12.5	440			13x20	730				
680	8X11	350	8x11	365	8X15	450	10x15	560	10X20	650	13x20	800	16x25	1000	16x36	1200
			10x12.5	420	10x12.5	480										
1000	8X15	445	8X15	480	10X15	640	10X20	740	13X20	900	13x25	1060	16x32	1200		
	10x12.5	470	10x12.5	540												
1500	10x15	600	10x20	800	10x20	830	13X20	920	13X25	1050	16x25	1300	16x36	1450		
2200	10X20	800	10x20	870	13x20	1050	13X25	1230	16X25	1370	16X36	1600	18X36	1650		
3300	13x20	1100	13x20	1100	13x25	1250	16x25	1500	16x36	1680	18X36	1780				
4700	13X20	1180	13X25	1380	16x25	1650	16X32	1800	18X36	1920						
6800	13X25	1490	16x25	1700	16X32	1900	18X36	2050								
10000	16x32	1830	16x36	1950	18X36	2070										
15000	16X36	2090	18X36	2180												
22000	18X40	2350														

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SH **Miniature and general purpose Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage															
	160 (200)		200 (250)		250 (300)		350 (400)		400 (450)		420 (470)		450 (500)		500 (550)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0	5x11	17	6.3x11	17	6.3x11	17	6.3x11	16	6.3x11	17	6.3x11	17	6.3x11	18		
													8x11	22		
2.2	6.3x11	25	6.3x11	25	6.3x11	29	8x11	31	8x11	31	8x11	29	8x11	30	8x11	25
													10x12.5	37		
3.3	6.3x11	36	6.3x11	36	8X11	42	8x11	35	8x11	35	8x11	34	8X15	42	8X16	30
													10x12.5	40		
4.7	6.3x11	43	8x11	50	8x11	52	8x11	45	8x11	45	10X12.5	55	10x12.5	52	8X16	34
									10X12.5	55					10X12.5	38
6.8	8X11	54	8X11	60	8x11	62			8X15	60	10X15	68	10X15	62	10X16	50
									10X12.5	65						
8.2															10X20	65
10	8X11	70	10X12.5	80	10x12.5	80	10x15	80	10X15	80	10X20	98	10X20	85	10X20	70
															13x20	85
15	10X12.5	90	10x15	110	10X15	110			10X20	100	13X20	130	13X20	120	13X25	100
22	10X15	115	10x20	140	10X20	140	13X20	150	13x20	150	13X25	155	13X25	150	13X25	115
															16X25	130
33	10X20	160	13x20	200	13X20	200	13X25	200	13X25	200	16x25	205	16X25	210	18X25	180
47	10x20	195	13x20	220	13X25	240	16X25	260	16x25	265	16x25	235	16X25	260	16X32	180
															18X30	230
68	13x20	255	13x25	280	13x25	290			16X32	410	16X32	400	18X32	370	18X32	250
									18x25	390	18x25	380			18X36	290
82															18X40	335
100	13X25	350	16x25	350	16X25	380	18x32	400	18X32	500	18X36	490	18X36	495		
120									18X32	520	18x40	530	18X40	565		
									18x36	550						
150	16X25	435	16x32	480	16X32	420			18x40	620	18x45	570	18X45	650		
220	16x32	550	16x36	675	18X36	680										
			18X32	685												
330	18x36	800	18x36	750												
470	18x40	900														
680																

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

D5 5mm height Series

■ Features : 85℃,1000hrs, Low profile/Ultra Miniature, 5mm height
■ Recommended Applications : AV(TV, Video, Audio), Monitor/Computer, OA/HA/Communication, Small signal
■Corresponding product to RoHS

S5
↑ High Temperature
D5

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range	4 ~ 50VDC
Rated Capacitance Range	1 ~ 220 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	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 (MAX)

WV / Z(120Hz)	4	6.3	10	16	25	35	50
Z(-25℃) / Z(+20℃)	6	4	3	2	2	2	2
Z(-40℃) / Z(+20℃)	12	8	6	4	4	4	4

Endurance

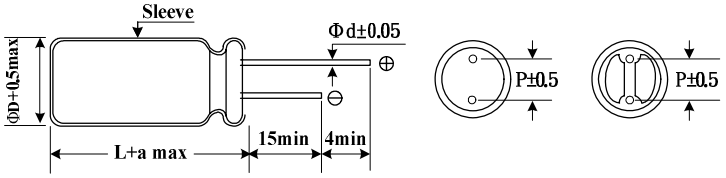
After applying rated voltage for 1000 hours at 85℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than in specified value

Shelf Life

After placed at 85℃without voltage applied for 500 hours,
the capacitors shall meet the same requirement as Endurance.

■ Dimensions



φD	4	5	6.3
P	1.5	2	2.5
φd	0.45	0.45	0.45
a	1.0	1.0	1.0

■ Multiplier for Ripple Current

Frequency coefficient

Freq.(Hz) / WV(VDC)	50	120	1K	10K
4 ~ 16	0.8	1.0	1.1	1.2
25 ~ 50	0.8	1.0	1.5	1.7

ALUMINUM ELECTROLYTIC CAPACITORS

D5 5mm height Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1													4x5	10
2.2													4x5	15
3.3													4x5	20
4.7							4x5	10	4x5	15	4x5	20	5x5	25
10			4x5	20	4x5	20	4x5	25	4x5	30	5x5	35	6.3x5	40
22	4x5	25	4x5	30	5x5	30	5x5	35	5x5	40	6.3x5	55	6.3x5	60
33	4x5	30	5x5	35	5x5	40	5x5	45	6.3x5	60				
47	5x5	35	5x5	40	6.3x5	50	6.3x5	60						
100	6.3x5	60	6.3x5	70	6.3x5	75	6.3x5	95						
220	6.3x5	80	6.3x5	95										

☆ Size: Dϕx L (mm) ☆ Ripple Current : mA/rms,85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

S5 5mm height Series

■ Features: 105℃ 1000 hours , 5.0mm height
■ Recommended Applications: Applicable for VTR , Camera , Car Audio , Miniaudio and other industrial /commercial applications
■Corresponding product to RoHS

S5
↑High Temperature
D5

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	4 ~ 50VDC
Rated Capacitance Range	1 ~ 470μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	4	6.3	10	16	25	35	50
tan δ	0.35	0.24	0.20	0.17	0.15	0.12	0.10

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	4	6.3	10	16	25	35	50
Z(-25℃) / Z(+20℃)	6	4	3	2	2	2	2
Z(-40℃) / Z(+20℃)	12	8	6	4	4	3	3

Endurance

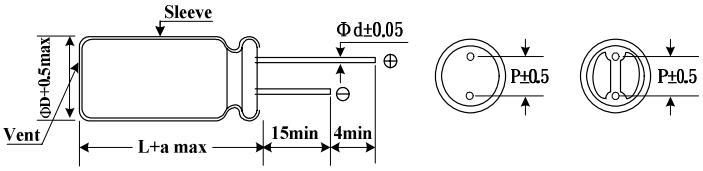
After apply rated voltage for 1000 hrs at 105℃ ,
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After placed at 105℃without voltage applied for 500 hours,
the capacitors shall meet the same requirement as Endurance.

■ Dimensions



φD	4.0	5.0	6.3	8.0
P	1.5	2.0	2.5	3.5
φd	0.45			
a	1.0			

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
1~47 μF	1.00	1.20	1.30	1.50
100~330 μF	1.00	1.10	1.15	1.20

ALUMINUM ELECTROLYTIC CAPACITORS

S5 5mm height Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0													4x5	9
2.2													4x5	13
3.3													4x5	17
4.7							4x5	20	4x5	16	4x5	18	4x5	17
													5x5	20
10			4x5	18	4x5	20	4x5	23	4x5	20	5x5	30	6.3x5	33
									5x5	27				
22	4x5	20	4x5	28	5x5	33	4x5	29	6.3x5	42	6.3x5	48	6.3x5	55
							5x5	37						
33	4x5	25	4x5	33	4x5	34	5x5	44	5x5	45				
					5x5	41	6.3x5	49	6.3x5	53				
47	5x5	30	4x5	35	5x5	46	5x5	54	5x5	55				
			5x5	45			6.3x5	58	6.3x5	65				
68					6.3x5	54								
100	6.3x5	50	5x5	55	6.3x5	80	6.3x5	85	8x5	90				
			6.3x5	70										
220	6.3x5	70	6.3x5	90										
330	8x5	110	8x5	115										
470			8x5	100										

☆ Size: Dϕx L (mm) ☆ Ripple Current: (mA/rms), 105℃,120H

ALUMINUM ELECTROLYTIC CAPACITORS

H5 5mm height Series

■ Features:105℃ 2000 hours , Higher temperature range, long life than S5
Low profile/miniature, 5mm height

■ Recommended Applications: Monitor/Computer, AV(TV,Video,Audio), OA/HA/Communication, Small signal

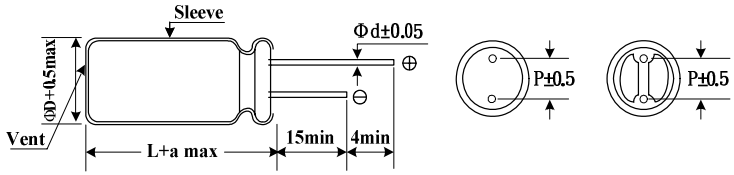
■Corresponding product to RoHS

H5 ↑ Long Life
S5

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	4 ~ 50VDC
Rated Capacitance Range	1 ~ 330 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20℃)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 4 / 6.3 / 10 / 16 / 25 / 35 / 50 tan δ: 0.37 / 0.26 / 0.24 / 0.20 / 0.16 / 0.13 / 0.12 Down size tanδ add 3%.
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz): 4 / 6.3 / 10 / 16 / 25 / 35 / 50 Z-25℃ / Z+20℃: 6 / 4 / 3 / 2 / 2 / 2 / 2 Z-40℃ / Z+20℃: 12 / 8 / 6 / 4 / 4 / 4 / 4
Load Life	After applying rated voltage for 2000 hours at 105℃ the capacitors shall meet the following requirements. Capacitance Change: Within ± 20 % of initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: initial specified value or less
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as load life.

■ Diagram of Dimensions



φD	4.0	5.0	6.3	8.0
P	1.5	2.0	2.5	3.5
φd	0.45	0.45	0.45	0.45
a	1.0	1.0	1.0	1.0

■ Multiplier for Ripple Current

Frequency coefficient

WV(VDC) \ Freq. (Hz)	50	120	1K	10K
4~16	0.80	1.00	1.10	1.20
25~50	0.80	1.00	1.50	1.70

ALUMINUM ELECTROLYTIC CAPACITORS

H5

5mm height
Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0													4x5	10
2.2													4x5	15
3.3													4x5	15
4.7							4x5	10	4x5	15	4x5	15	5x5	20
10			4X5	15	4X5	20	4x5	20	4x5	25	5x5	30	6.3X5	35
22	4X5	20	4X5	25	5X5	25	5x5	30	6.3X5	40	6.3X5	45	6.3X5	55
33	4X5	25	5X5	30	5X5	35	5x5	40	6.3X5	50				
47	5X5	30	5X5	35	6.3X5	45	6.3X5	55						
100	6.3X5	50	6.3X5	60	6.3X5	70	6.3X5	90						
220	6.3X5	70	8X5	95										
330	8X5	110	8X5	120										

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

D7 7mm/9mm height Series

■ Features: 85℃,1000hrs, Low profile/Miniature, 7mm/9mm height
■ Recommended Applications: AV(TV, Video, Audio), Monitor/Computer, OA/HA/Communication, Small signal
■Corresponding product to RoHS

S7
↑ High Temperature
D7

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range	4 ~ 63VDC
Rated Capacitance Range	1 ~ 470 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	4	6.3	10	16	25	35	50	63
tan δ	0.35	0.24	0.20	0.16	0.14	0.12	0.10	0.08

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	4	6.3	10	16	25	35	50	63
Z(-25℃) / Z(+20℃)	6	4	3	2	2	2	2	2
Z(-40℃) / Z(+20℃)	12	8	6	4	4	4	4	4

Endurance

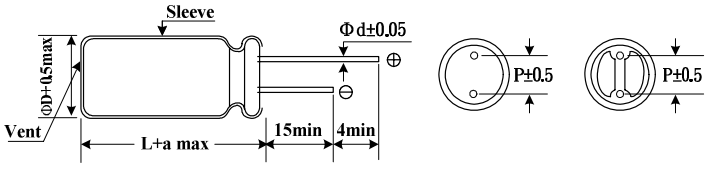
After applying rated voltage for 1000 hours at 85℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than in specified value

Shelf Life

After placed at 85℃without voltage applied for 500 hours,
the capacitors shall meet the same requirement as Endurance.

■ Dimensions



φD	4	5	6.3	8
P	1.5	2	2.5	3.5
φd	0.45	0.45	0.45	0.5
a	1.0	1.0	1.0	1.0

■ Multiplier for Ripple Current

Frequency coefficient

WV(VDC) \ Freq.(Hz)	50	120	1K	10K
4 ~ 16	0.8	1.0	1.1	1.2
25 ~35	0.8	1.0	1.5	1.7
50 ~ 63	0.8	1.0	1.6	1.9

ALUMINUM ELECTROLYTIC CAPACITORS

D7

7mm/9mm height
Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage											
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
2.2							4x7	10				
3.3							4x7	10				
4.7							4x7	20	4x7	20	4x7	25
10							4x7	30	4x7	35	4x7	40
22					4x7	35	4x7	40	5x7	50	5x7	60
33	4x7	35	4x7	40	4x7	45	4x7	50	5x7	65	6.3x7	75
47	4x7	40	4x7	50	4x7	60	5x7	70	6.3x7	75	6.3x7	80
100	5x7	65	5x7	80	5x7	90	6.3x7	110	8x7	120	8x7	145
220	6.3x7	110	6.3x7	120	6.3x7	135	8x7	180				
330			8x7	170	8x9	170	8x9	230				
470			8x9	230	8x9	240	8x9	280				

Capacitance (μF)	Rated (Surge) Voltage			
	50 (63)		63 (79)	
	Size	Ripple	Size	Ripple
1	4x7	10	4x7	10
2.2	4x7	20	4x7	20
3.3	4x7	25	4x7	30
4.7	4x7	35	5x7	40
10	5x7	45	6.3x7	55
22	6.3x7	70		
33	8x7	85		
47	8x7	100		

☆ Size: Dϕx L (mm) ☆ Ripple Current : mA/rms,85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

S7 7mm height Series

■ Features : 105℃ 1000 hours , 7.0/9.0mm height
■ Recommended Applications : For Portable Micro Computer , Disk Driver , Small Calculator and Audio equipment…etc
■Corresponding product to RoHS

S7
↑ High Temperature
D7

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	4 ~ 63VDC
Rated Capacitance Range	1 ~ 470μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	4	6.3	10	16	25	35	50	63
tan δ	0.35	0.24	0.20	0.17	0.15	0.12	0.10	0.08

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	4	6.3	10	16	25	35	50	63
Z-25℃ / Z+20℃	6	4	3	2	2	2	2	2
Z-40℃ / Z+20℃	12	8	6	4	4	3	3	3

Endurance

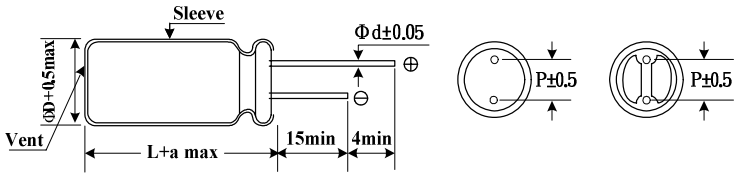
After applying rated voltage for 1000 hours at 105℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After placed at 105℃without voltage applied for 500 hours,
the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	4.0	5.0	6.3	8.0
P	1.5	2.0	2.5	3.5
φd	0.45	0.45	0.45	0.5
a	1.0	1.0	1.0	1.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	50	120	300	1K	10K
1~47μF	0.75	1.00	1.20	1.30	1.50
100~330μF	0.75	1.00	1.10	1.15	1.20

ALUMINUM ELECTROLYTIC CAPACITORS

S7 7mm height Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage															
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0													4x7	10	4x7	13
2.2							4x7	7					4x7	19	4x7	21
3.3							4x7	13					4x7	24	4x7	26
4.7							4x7	19	4x7	24	4x7	24	4x7	29	4x7	26
											5x7	24	5x7	31	6.3x7	33
10							4x7	29	4x7	33	4x7	34	4x7	37	5x7	42
									5x7	35	5x7	36	5x7	45	6.3x7	50
									6.3x7	35			6.3x7	45		
22			4x7	37	4x7	31	4x7	36	4x7	43	5x7	48	6.3x7	65		
					5x7	38	5x7	44	5x7	51	6.3x7	57				
									6.3x7	53						
33	4X7	30	5x7	42	4x7	39	4x7	50	5x7	55	6.3x7	70				
					5x7	47	5x7	57	6.3x7	65						
47	4X7	35	4x7	46	4x7	50	5x7	75	5x7	67	6.3x7	81				
			5x7	55	5x7	60	6.3x7	77	6.3x7	79						
					6.3x7	60										
68							5x7	84								
100	5X7	55	5x7	75	5x7	85	5x7	94	6.3x7	120						
			6.3x7	90	6.3x7	100	6.3x7	110	8x7	120						
150							6.3x7	120								
220	6.3X7	95	6.3x7	130	6.3x7	135	8x7	140								
							8x9	140								
330			8x7	140			8x9	155								
470					8x9	165	8x9	165								

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

H7 7mm/9mm height Series

■ Features : 105℃ 2000 hours , Higher temperature range, Long life than S7
Low profile/miniature, 7mm/9mm height
■ Recommended Applications : Monitor/Computer, AV(TV,Video,Audio),
OA/HA/Communication, Small signal
■Corresponding product to RoHS

H7
↑ Long Life
S7

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	4 ~ 63VDC
Rated Capacitance Range	1 ~ 470μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20℃)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	4	6.3	10	16	25	35	50	63
tan δ	0.35	0.24	0.20	0.18	0.15	0.13	0.12	0.10

Down size tanδ add 3%.

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	4	6.3	10	16	25	35	50	63
Z-25℃ / Z+20℃	6	4	3	2	2	2	2	2
Z-40℃ / Z+20℃	12	8	6	4	4	4	4	4

Load Life

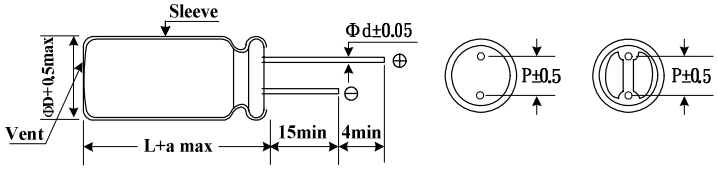
After applying rated voltage for 2000 hours at 105℃
the capacitors shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After placed at 105℃without voltage applied for1000 hours,
the capacitors shall meet the same requirement as load life.

■ Diagram of Dimensions



φD	4.0	5.0	6.3	8.0
P	1.5	2.0	2.5	3.5
φd	0.45	0.45	0.45	0.5
a	1.0	1.0	1.0	1.0

■ Multiplier for Ripple Current

Frequency coefficient

Freq. (Hz) / WV(VDC)	50	120	1K	10K
4~16	0.8	1.0	1.1	1.2
25~35	0.8	1.0	1.5	1.7
50~63	0.8	1.0	1.6	1.9

ALUMINUM ELECTROLYTIC CAPACITORS

H7 7mm/9mm height Series

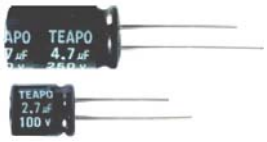
■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage															
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0													4x7	10	4x7	10
2.2							4x7	10					4x7	20	4x7	20
3.3							4x7	10					4x7	25	4x7	25
4.7							4x7	15	4x7	20	4x7	25	4x7	30	5x7	35
10							4x7	25	4x7	30	4x7	35	5x7	35	6.3x7	50
22					4x7	30	4x7	35	5x7	50	5x7	60	6.3x7	65		
33	4X7	30	4x7	35	4x7	40	5x7	50	6.3x7	65	6.3x7	70	8x7	80		
47	4X7	35	5x7	50	5x7	60	6.3x7	70	6.3x7	70	8x7	80	8x9	100		
100	5X7	55	5x7	70	6.3x7	90	6.3x7	110	8x7	115	8x9	145				
220	6.3X7	95	6.3x7	110	6.3x7	135	8x9	180								
330			8x7	150	8x9	160	8x9	210								
470			8x9	200	8x9	210										

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

RN Non-polar Series



■ Features: 85℃,1000hrs, Non-polarized/Polarity reversing

■ Recommended Applications:

Small crossover network, Reversed polarity circuit, Coupling

■Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃ -25~+85℃
Rated Voltage Range	4 ~ 100VDC 160~250VDC
Rated Capacitance Range	1 ~ 6800 μF 1~100 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.03CV+4 μA ; L=7mm,I≦0.05CV or 10 μA whichever is greater (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	4	6.3	10	16	25	35	50	63	80	100	160	200	250
tan δ	0.35	0.24	0.2	0.17	0.15	0.15	0.15	0.10	0.10	0.10	0.20	0.20	0.20

When nominal capacitance is over 1000μF

tanδ shall be added 0.02 to the listed value with increase of every 1000μF.

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	4	6.3	10	16	25	35	50	63	80	100	160	200	250
Z(-25℃) / Z(+20℃)	6	4	3	2	2	2	2	2	2	2	6	6	6
Z(-40℃) / Z(+20℃)	12	8	6	4	4	3	3	3	3	3	-	-	-

Endurance

After applying rated voltage for 1000 hours at 85℃,the capacitors shall meet the following requirements.

(The polarity shall be reversed every 250 hours)

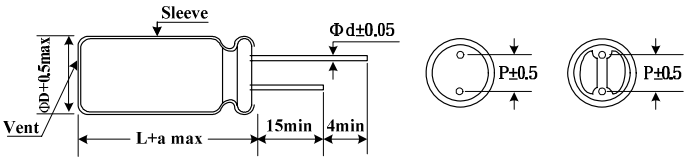
Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

Shelf Life

After placed at 85℃without voltage applied for 500 hours,

the capacitors shall meet the same requirements as load life.

■ Diagram of Dimensions



φD	4	5	6.3	8	10	13	16	18
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.45	(0.45) 0.5	(0.45) 0.5	0.6	0.6	0.6	0.8	0.8
a	1.0	(1.0) 1.5	(1.0) 1.5	1.5	1.5	2.0	2.0	2.0

( ) : L = 7

■ Multiplier for Ripple Current

Frequency coefficient

WV(VDC) \ Freq.(Hz)	50	120	1K	10K
4 ~ 16	0.8	1.0	1.1	1.2
25 ~35	0.8	1.0	1.5	1.7
50 ~ 100	0.8	1.0	1.6	1.9
160 ~ 250	0.8	1.0	1.5	1.6

ALUMINUM ELECTROLYTIC CAPACITORS

RN **Non-polar Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage															
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0													4x7	10	4x7	15
													5x11	10	5x11	10
2.2											4x7	15	4x7	20	5x7	25
													5x11	20	5x11	20
3.3									4x7	15	5x7	20	5x7	25	6.3x7	30
													5x11	30	5x11	30
4.7											5x7	25	6.3x7	30	6.3x7	35
							4x7	20	5x7	20	5x11	30	5x11	30	6.3x11	35
10							5x7	30	5x11	40	5x11	40				
					4x7	25	5x11	40	6.3x7	35	6.3x7	40	6.3x11	45	6.3x11	55
22					5x7	40	5x11	55	6.3x7	50						
			5x7	35	5x11	50	6.3x7	45	6.3x11	65	6.3x11	70	8x11	80	8x11	90
33	5x7	35	5x7	40	5x11	65	5x11	70	6.3x7	65						
			5x11	60	6.3x7	50	6.3x7	60	6.3x11	80	8x11	100	8x11	105	10x12.5	135
47			5x11	70	5x11	75	6.3x7	70								
	5x7	40	6.3x7	50	6.3x7	60	6.3x11	95	6.3x11	95	8x11	120	8x15	140	10x16	180
100	6.3x7	60	6.3x11	115	6.3x11	125	8x11	160	8x11	160	10x16	230	10x20	265	13x20	320
220			8x11	205	8x11	215	10x12.5	275	10x16	305	13x20	410	13x25	480	16x25	575
330			8x11	265	10x16	345	10x16	375	13x20	450	13x20	505	16x25	650	16x32	750
470			10x12.5	370	10x16	410	10x20	485	13x20	540	13x25	655	16x32	835	18x36	965
1000			10x20	650	13x20	720	13x25	855	16x25	950	16x32	1140				
2200			13x25	1160	16x25	1280	16x32	1510	18x36	1620						
3300			16x25	1570	16x32	1690	18x36	1980								
4700			16x32	2020	18x36	2160										
6800			18x36	2600												

Capacitance (μF)	Rated (Surge) Voltage									
	80 (100)		100 (125)		160 (200)		200 (250)		250 (300)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1			5x11	10	6.3x11	15	6.3x11	15	8x11	15
2.2	5x11	30	6.3x11	25	8x11	20	8x11	20	10x12.5	25
3.3	6.3x11	35	6.3x11	35	10x12.5	30	10x12.5	30	10x12.5	30
4.7	6.3x11	40	6.3x11	40	10x12.5	35	10x16	40	10x16	40
10	8x11	65	8x11	70	10x16	55	13x20	70	13x20	70
22	10x16	105	10x16	135	13x25	105	13x25	120	16x25	135
33	10x16	160	13x20	220	16x25	165	16x25	165	16x32	180
47	10x20	215	13x20	240	16x26	200	16x32	220	16x36	230
100	13x25	385	16x25	425	18x36	360				
220	16x32	690	18x36	720						
330	18x36	860								

☆ Size: Dϕ x L (mm) ☆ Ripple Current : mArms/85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SN Non-polar Series

■ Features: 105℃ 1000 hours

■Recommended Application: Non-polar miniature type for used in reversing polarity DC voltage circuits

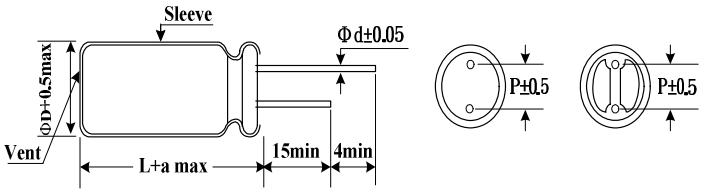
SN ↑ High Temperat RN

■Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃ -25~+105℃
Rated Voltage Range	6.3 ~ 100VDC 160~250VDC
Rated Capacitance Range	1 ~ 2200 μF 1~100μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.03CV+ 3μA (After rated voltage applied for 2 minutes)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV 6.3 10 16 25 35 50 63 80 100 160 200 250 tan δ 0.24 0.20 0.17 0.15 0.14 0.12 0.10 0.10 0.10 0.20 0.20 0.20 When nominal capacitance is over 1000uF， tan δ shall be added 0.02 to the listed value with increase of every 1000uF。
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz): 6.3 10 16 25 35 50 63 80 100 160-250 Z-25℃ / Z+20℃: 4 3 2 2 2 2 2 2 2 6 Z-40℃ / Z+20℃: 10 8 6 4 3 3 3 3 3 -
Endurance	After applying rated voltage for 1000 hours at 105℃, (The polarity shall be reversed every 250 hrs.) Capacitance Chang: Within ± 25 % of initial value Dissipation Factor: Not more than 200% of specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 105℃ without voltage applied for 500 hours, the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	4.0	5.0	6.3	8.0	10.0	13.0	16.0	18.0
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.45	0.5	0.5	0.6	0.6	0.6	0.8	0.8
a	1.0	1.5	1.5	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	300	1K	10K
Factor	0.75	1.00	1.20	1.32	1.65

ALUMINUM ELECTROLYTIC CAPACITORS

SN Non-polar Series

■Dimensions,Rated Ripple Current

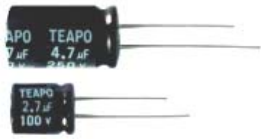
Capacitance (μF)	Rated (Surge) Voltage																	
	6.3(8)		10(13)		16(20)		25(32)		35(44)		50(63)		63(79)		80(100)		100(125)	
	SIZE	R.C	SIZE	R.C	SIZE	R.C	SIZE	R.C	SIZE	R.C	SIZE	R.C	SIZE	R.C	SIZE	R.C	SIZE	R.C
1											5x11	17	5x11	17	5x11	17	5x11	21
2.2											5x11	25	5x11	25	5x11	29	6.3x11	34
3.3											6.3x11	31	6.3x11	37	6.3x11	39	8x11	49
4.7									5x11	34	5x11	34	5x11	37	8x11	47	8x11	58
											6.3x11	41	6.3x11	44				
10					6.3x11	45	5x11	42	6.3x11	54	6.3x11	56	8x11	74	10x12.5	88	8x11	80
							6.3x11	50			8x11	70					10x12.5	100
22			5x11	57	5x11	59	6.3x11	69	8x11	94	6.3x11	75	8x11	95	10x20	150	13x20	180
					6.3x11	69	8x11	86			8x11	97	10x16	130				
											10x12.5	115						
33	5x11	63	6.3x11	77	8x11	98	8x11	105	10x12.5	125	8x11	110	8x11	115	13x20	205	13x20	220
											10x16	150	10x20	175				
47	6.3x11	84	6.3x11	93	8x11	115	10x12.5	140	10x16	165	8x11	130	13x20	230	13x20	245	13x25	285
											10x20	190						
100	8x11	140	8x11	193	8x11	140	10x20	240	13x20	285	13x20	310	16x25	410	16x25	435	16x32	510
					10x12.5	175												
					10x16	205												
220	10x12.5	235	10x16	255	10x20	330	13x20	390	16x25	520	16x25	570	16x32	660				
330	10x16	310	10x20	380	13x20	445	16x25	580	16x25	630	16x36	790						
470	10x20	400	13x20	470	13x25	570	16x25	690	16x32	820								
1000	13x25	690	16x25	885	16x32	1020												
2200	16x32	1250	16x36	1450														

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

Capacitance (μF)	Rated (Surge) Voltage					
	160(200)		200(250)		250(300)	
	SIZE	R.C	SIZE	R.C	SIZE	R.C
1	6.3x11	21	6.3x11	21	8x11	25
2.2	8x11	34	8x11	34	10x12.5	38
3.3	10x12.5	49	10x12.5	49	10x12.5	49
4.7	10x12.5	58	10x15	62	10x17	66
10	10x17	80	13x20	100	13x20	100
22	13x25	180	13x25	180	16x26	200
33	16x26	220	16x26	220	16x32	250
47	16x26	285	16x32	315	16x36	330
100	18x36	510				

ALUMINUM ELECTROLYTIC CAPACITORS

RB Non-Polar Series



■ Features: 85℃,1000hrs, Non-polarized/Polarity reversing, High ripple current

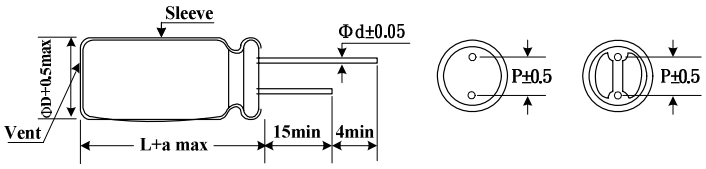
■ Recommended Applications: Crossover/Speaker network,Reversed polarity circuit

■Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range	25 ~ 100VDC
Rated Capacitance Range	1 ~ 100μF
Capacitance Tolerance	± 10 % at 1KHz , 20℃
Leakage Current (MAX) (20℃)	I≦0.03CV or 3μA whichever is greater (After rated voltage applied for 2 minutes)
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 25 / 35 / 50 / 63 / 80 / 100 tan δ: 0.17 / 0.15 / 0.15 / 0.12 / 0.10 / 0.10
Endurance	After applying rated voltage for 1000 hours at 85℃,the capacitors shall meet the following requirements. (The polarity shall be reversed every 250 hours) Capacitance Change: Within ± 20 % of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 85℃without voltage applied for 500 hours, the capacitors shall meet the same requirement as Endurance.

■ Dimensions



φD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

WV(VDC) \ Freq.(Hz)	50	120	1K	10K	100K
25 ~35	0.8	0.9	1.0	1.6	1.8
50 ~ 100	0.8	0.9	1.0	1.7	2.0

ALUMINUM ELECTROLYTIC CAPACITORS

RB **Non-Polar Series**

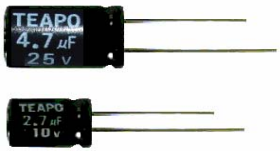
■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage											
	25 (32)		35 (44)		50 (63)		63 (79)		80 (100)		100 (125)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1											6.3x11	70
1.5											6.3x11	85
2.2									6.3x11	95	8x11	110
3.3							6.3x11	105	8x11	130	8x11	140
4.7							8x11	145	8x11	155	10x12.5	200
5.6					6.3x11	130	8x11	160	10x12.5	200	10x12.5	215
6.8					8x11	170	8x11	180	10x12.5	220	10x12.5	235
8.2					8x11	185	8x11	195	10x12.5	245	10x16	290
10			6.3x11	170	8x11	205	10x12.5	255	10x12.5	270	10x16	320
15	6.3x11	200	8x11	240	10x12.5	295	10x12.5	310	10x16	390	10x20	445
22	8x11	280	10x12.5	340	10x12.5	360	10x16	420	10x20	505	13x20	625
33	8x11	340	10x12.5	420	10x16	515	10x20	580	13x20	720	13x25	845
47	10x12.5	480	10x16	555	10x20	660	13x20	805	13x25	945	16x25	1155
56	10x12.5	520	10x16	640	13x20	835	13x20	880	13x25	1030	16x25	1260
68	10x16	635	10x16	705	13x20	920	13x25	1070	16x25	1300	16x32	1520
82	10x16	700	10x20	830	13x20	1010	13x25	1175	16x25	1430	16x36	1765
100	10x16	820	13x20	1065	13x25	1230	16x36	1480	16x36	1820	18x36	2080

☆ Size: Dϕx L (mm) ☆ Ripple Current : mA/rms,85℃,1KHz

ALUMINUM ELECTROLYTIC CAPACITORS

SR Bi-polar horizontal deflection Series



■ Features: 85℃ 1000 hours

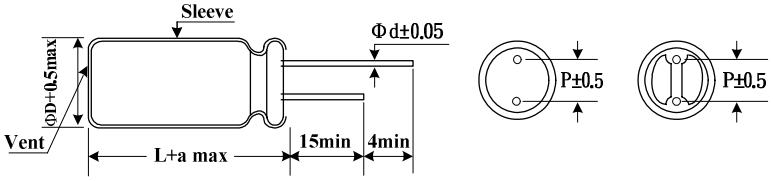
■Recommended Application:Non-polar capacirors for horizontal deflection circuits of TV sets,Correction at high frequency and high ripple currents

■Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃
Rated Voltage Range	25~ 50VDC
Rated Capacitance Range	2.2 ~ 47 μF
Capacitance Tolerance	± 10 %(K) at 120Hz , 20℃
Leakage Current (MAX) (20℃)	DC Leakage current ：100μA Max .(After 2 minutes both direction)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 25 / 35 / 50 tan δ: 0.05 / 0.05 / 0.05
Endurance	After applying rated voltage for 1000hrs at 85℃, (Polarity inverted every 250 hrs.) the capacitors shall meet the following requirements. Capacitance Change: Within ± 20 % of initial value Dissipation Factor: Not more than 150% of specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 85℃ without voltage applied for 500 hours, the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	13.0	16.0	18.0	22.0
P	5.0	7.5		10.0
φd	0.6	0.8		0.8
a	2.0			

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	400 ~ 1 K	15.75 K
25~50 V	0.4	0.4	0.8	1.0

ALUMINUM ELECTROLYTIC CAPACITORS

SR

Bi-polar horizontal deflection Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage					
	25 (32)		35 (44)		50 (63)	
	SIZE	RIPPLE	SIZE	RIPPLE	SIZE	RIPPLE
2.2	16X25	6	16X25	6	16X25	6
3.3	16X25	7	16X25	7	16X25	7
4.7	16X25	7	16X25	7	16X25	7
5.6	16X32	7	16X32	7	16X32	7
6.8	16X36	8	16X36	8	16X36	8
8.2	16X36	8	16X36	8	16X36	8
10	18X40	12	18X40	12	18X40	12
13	18X40	12	18X40	12	18X40	12
15	18X40	12	18X40	12	18X40	12
18	22X40	13	22X40	13	22X40	13
20	22X40	13	22X40	13	22X40	13
22	22X40	13	22X40	13	22X40	13
25	22X40	13	22X40	13	22X40	13
47	22X40	13	22X40	13	22X40	13

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (Ap-p) / Sawtooth waveform 15.75KHz,85℃

ALUMINUM ELECTROLYTIC CAPACITORS

BX Bi-Polar Series

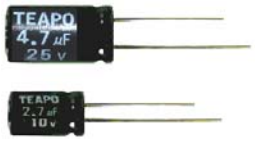
■ Features: 105℃,1000hrs, Bi-polarized/Polarity reversing

■ Recommended Applications: TV/Monitor, Horizontal deflection correction

■Corresponding product to RoHS

BX
↑
SR

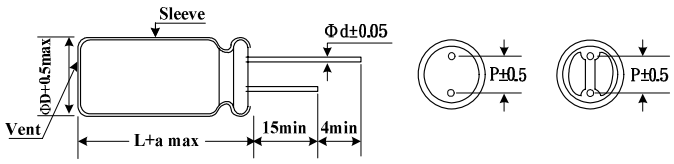
High Temperature



■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	25 ~ 50VDC
Rated Capacitance Range	1 ~ 33 μF
Capacitance Tolerance	± 10 % (K) at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦100μA (After rated voltage applied for 2 minutes) I= Leakage Current (μA)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 25 / 35 / 50 tan δ: 0.05 / 0.05 / 0.05
Endurance	After applying rated voltage for 1000 hours at 105℃,the capacitors shall meet the following requirements. (The polarity shall be reversed every 250 hours) Capacitance Change: Within ± 15 % of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 105℃ without voltage applied for 500 hours,the capacitor shall meet the same requirement as Enduran

■ Dimensions



φD	10	13	16	18	22	25
P	5.0	5.0	7.5	7.5	10.0	12.5
φd	0.6	0.6	0.8	0.8	0.8	1.0
a	1.5	2.0	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	60	120	400 ~ 1 K	15.75 K
25~50 V	0.4	0.4	0.8	1.0

ALUMINUM ELECTROLYTIC CAPACITORS

BX **Bi-Polar Series**

■Dimensions,Rated Ripple Current,Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage								
	25 (32)			35 (44)			50 (63)		
	Size	Ripple	ESR	Size	Ripple	ESR	Size	Ripple	ESR
1							10x20	1.4	66.4
1.2				10x20	1.5	55.3	13x20	1.8	55.3
1.5				10x20	1.8	44.3	13x20	2.0	44.3
1.8	10x20	1.9	36.9	13x20	2.2	36.9	13x20	2.2	36.9
2.2	13x20	2.5	30.2	13x20	2.5	30.2	13x20	2.5	30.2
2.7	13x20	2.7	24.6	13x20	2.7	24.6	13x25	3.0	24.6
3.3	13x20	3.1	20.1	13x25	3.3	20.1	16x25	3.8	20.1
3.9	13x20	3.3	17	13x25	3.6	17	16x25	4.0	17.0
4.7	13x25	4.0	14.1	16x25	4.5	14.1	16x25	4.5	14.1
5.6	16x25	5.0	11.9	16x25	5.0	11.9	16x32	5.4	11.9
6.8	16x25	5.5	9.76	16x32	6.0	9.76	16x36	6.8	9.76
8.2	16x25	6.0	8.09	16x32	6.5	8.09	18x36	7.4	8.10
10	16x32	7.3	6.64	16x36	7.6	6.64	18x40	8.5	6.64
12	16x36	8.5	5.53	18x36	8.5	5.53	22x40	9.3	5.53
15	18x36	9.3	4.43	18x40	10	4.43	22x40	11	4.43
18	18x40	11	3.69	22x40	12	3.69	25x40	14	3.69
22	22x40	13	3.02	22x40	14	3.02	25x40	15	3.02
27	22x40	15	2.46	25x40	16	2.46			
33	25x40	18	2.01						

☆ Size: Dϕx L (mm) ☆ Max Ripple Current [RC(Ap-p) / Sawtooth waveform 15.75KHz,105℃] ☆ESR:(Ω),120Hz,20℃

ALUMINUM ELECTROLYTIC CAPACITORS

SB Low leakage current Series

■ Features: 105℃ 1000 hours
■ Recommended Applications:
in where low leakage current is essential as in coupling of pre-amplifies
Remaining of very low leakage current even after prolonged storage
■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	6.3 ~ 100VDC
Rated Capacitance Range	1 ~ 4700 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.002CV or 0.4 μA ,whichever is greater. (After rated voltage applied for 2 minutes)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	6.3	10	16	25	35	50	63	80	100
tan δ	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.10	0.10

When nominal capacitance is over 1000 μF,
tan δ shall be added 0.02 to the listed value with increase of every 1000 μF.

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	6.3	10	16	25	35	50	63	80	100
Z(-25℃)/ Z(+20℃	4	3	2	2	2	2	2	1.5	1.5
Z(-40℃)/ Z(+20℃	8	6	4	4	3	3	3	2	2

Endurance

After applying rated voltage for 1000 hours at 105℃,
the capacitors shall meet the following requirements.

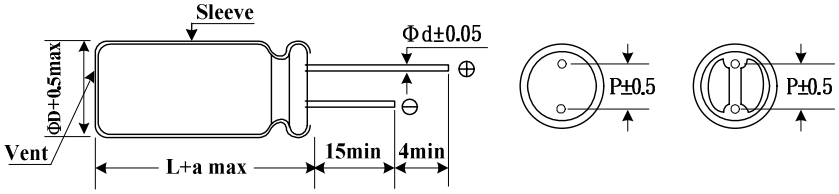
Capacitance Change	Within ± 25 % of initial value
Dissipation Factor	Not more than 200% of specified value
Leakage Current	Not more than the specified value

Shelf Life

After 500 hrs at 105℃ without applying rated voltage

Capacitance Change	Within ± 25 % of initial value
Dissipation Factor	Not more than 200% of specified value
Leakage Current	Not more than 200% of specified value

■ Diagram of Dimensions



φD	4	5	6.3	8	10	13	16	18	22
P	1.5	2	2.5	3.5	5	5	7.5	7.5	10
φd	0.45	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
a	1.0	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	50	120	300	1K	10K
6.3 ~ 25 V	0.85	1.00	1.04	1.08	1.19
35~ 50 V	0.80	1.00	1.30	1.40	1.43
63 ~ 100 V	0.77	1.00	1.34	1.43	1.48

ALUMINUM ELECTROLYTIC CAPACITORS

SB

Low leakage current
Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage					
	6.3V (8)		10V (13)		16V (20)	
	SIZE	Ripple	SIZE	Ripple	SIZE	Ripple
1						
2.2						
3.3						
4.7						
10					5x11	40
22			5x11	50	5x11	55
33	5x11	55	5x11	60	5x11	70
47	5x11	65	5x11	75	5x11	85
100	5x11	95	5x11	110	6.3x11	140
220	6.3x11	165	6.3x11	180	8x11	230
330	6.3x11	195	8x11	250	8x11	280
470	8x11	270	8x11	300	10x12.5	400
1000	10x12.5	465	10x17	600	10x17	660
2200	13x20	925	13x20	1000	13x25	1210
3300	13x20	1100	13x25	1300	16x26	1610
4700	16x26	1600	16x26	1700	16x32	2020
6800	16x26	1810	16x32	2100	18x36	2520
10000	16x32	2210	18x36	2630	18x40	2910
15000	18x36	2760				

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SB

Low leakage current
Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage					
	25V (32)		35V (44)		50V (63)	
	SIZE	Ripple	SIZE	Ripple	SIZE	Ripple
1					5x11	10
2.2					5x11	20
3.3					5x11	30
4.7	5x11	30	5x11	35	5x11	35
10	5x11	40	5x11	45	5x11	55
22	5x11	60	5x11	65	5x11	75
33	5x11	75	5x11	80	6.3x11	100
47	5x11	90	6.3x11	110	6.3x11	120
100	6.3x11	140	8x11	180	8x11	200
220	8x11	250	10x12.5	320	10x17	400
330	10x12.5	360	10x17	450	10x20	520
470	10x17	490	10x20	570	13x20	730
1000	13x20	880	13x25	1060	16x26	1330
2200	16x26	1550	16x32	1700	18x36	2100
3300	16x32	1860	18x36	2200		
4700	18x36	2380	18x40	2610		
6800	18x40	2770				
10000						
15000						

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SB

Low leakage current
Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage					
	63V (79)		80V (100)		100V (125)	
	SIZE	Ripple	SIZE	Ripple	SIZE	Ripple
1					5x11	10
2.2					5x11	20
3.3					5x11	30
4.7	5x11	35			5x11	40
10	5x11	50	6.3x11	60	6.3x11	65
22	6.3x11	80	8x11	110	8x11	115
33	6.3x11	100	8x11	130	10x12.5	160
47	8x11	140	10x12.5	180	10x17	230
100	10x12.5	230	10x17	310	13x20	410
220	10x20	430	13x20	560	16x26	750
330	13x20	610	13x25	750	16x26	920
470	13x25	800	16x26	10x20	16x32	1200
1000	16x32	1460	18x36	1830		
2200						
3300						
4700						
6800						
10000						
15000						

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

SC Low Impedance and high frequency Series

■ Features: 105℃ 1000~3000 hours,Low impedance , high permissible ripple currer at high frequency and high operation temperature (-40 ~ +105℃)

■ Recommended Applications: Applicable for switching regulator of computer , especially for high frequency

■Corresponding product to RoHS

SY
↑ Long Life
SC

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	6.3 ~ 100VDC
Rated Capacitance Range	4.7 ~ 15000 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX)(20℃)	I=0.01CV or 3μA ,whichever is greater. (After rated voltage applied for 2 minutes)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	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

When nominal capacitance is over 1000μF,
tan δ shall be added 0.02 to the listed value with increase of every 1000μF.

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	6.3	10	16	25	35	50	63	100
Z-25℃ / Z+20℃	4	3	3	3	3	2	2	2
Z-40℃ / Z+20℃	8	6	4	4	4	4	4	4

Endurance

After applying rated voltage with ripple current for 3000 hours at 105℃,
the capacitors shall meet the following requirements.
If dimension is down size , Endurance will be less 1000 hours than standard

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of specified value
Leakage Current	Not more than the specified value

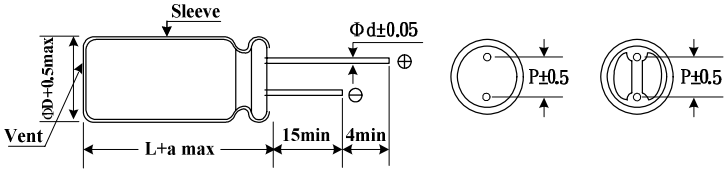
Case Dia	5 x 11 ~ 10 x 12.5	10 x 15 higher
Life	2000	3000

* If dimension is down size,Endurance will be less 1000hrs than standard.

Shelf Life

After placed at 105℃ without voltage applied for 1000 hours,
the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	5	6.3	8	10	13	16	18	22
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
φd	0.50	0.5	0.6	0.6	0.6	0.8	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	50	120	300	1K	10K	100K
Below 4.7 μF	0.30	0.40	0.50	0.70	0.80	1.00
5.6 ~ 33 μF	0.40	0.50	0.60	0.80	0.90	1.00
34 ~ 330 μF	0.60	0.70	0.80	0.90	0.95	1.00
331 ~ 1000 μF	0.65	0.90	0.90	0.98	1.00	1.00
1200 μF Above	0.85	0.90	0.95	0.98	1.00	1.00

ALUMINUM ELECTROLYTIC CAPACITORS

SC **Low Impedance and high frequency Series**

■Dimensions,Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage											
	6.3V (8)			10V (13)			16V (20)			25V (32)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
4.7												
6.8												
10												
										5x11	50	0.550
22												
33												
47										5x11	150	0.450
56							5x11	100	0.630	5x11	150	0.420
68							5x11	150	0.420	6.3x11	200	0.370
100				5x11	150	0.420	5x11	200	0.370	6.3x11	250	0.220
120				5x11	200	0.370	6.3x11	250	0.320	8x11	300	0.200
150	5x11	200	0.420	6.3x11	250	0.320	6.3x11	300	0.220	8x11	550	0.140
220	6.3x11	250	0.320	6.3x11	300	0.220	8x11	550	0.140	*8x11	620	0.120
										8x15	750	0.100
270	*6.3x11	300	0.220									
330	*6.3x11	320	0.230	8x11	550	0.140	*8x11	620	0.120	*8x15	660	0.100
	8x11	400	0.180				8x15	750	0.100	8x20	800	0.069
							10x12.5	688	0.080	10x16	900	0.086
470	*6.3x11	440	0.180	*8x11	620	0.120	*8x15	730	0.093	*8x20	1000	0.067
	8x11	550	0.140	8x15	750	0.100	10x12.5	800	0.085	*10x12.5	900	0.086
										10x16	1050	0.064
680	*8x11	580	0.120	*8x11	640	0.110	10x16	1050	0.064	10x20	1100	0.039
	8x15	700	0.100	10x12.5	800	0.085						
820	8x20	750	0.085	10x16	1050	0.064	10x20	1100	0.044	10x20	1250	0.039
1000	*8x11	580	0.150	8x20	1080	0.065	*10x16	1140	0.043	*10x20	1160	0.047
	*8x15	670	0.085	*10x12.5	930	0.075	10x20	1250	0.039	*10x25	1310	0.042
	8x20	800	0.069	10x16	990	0.085				13x20	1450	0.038
	10x12.5	690	0.080	10x20	1100	0.050						
1200	10x16	1000	0.064	10x20	1250	0.044	*10x25	1310	0.042	13x25	1600	0.035
							13x20	1450	0.038			
1500	*8x15	980	0.085	10x20	1450	0.039	*10x20	1200	0.045	*13x30	1750	0.032
	*8x20	1070	0.051				13x20	1600	0.034	16x25	2000	0.028
	*10x16	1070	0.055									
	10x20	1250	0.044									
2200	*10x20	1220	0.051	*10x20	1330	0.047	*10x30	1780	0.032	*13x30	1810	0.029
	*10x25	1310	0.048	*10x25	1450	0.039	*13x20	1720	0.033	*16x25	1660	0.032
	13x20	1450	0.043	13x20	1600	0.038	13x25	2000	0.028	16x32	2200	0.024
3300	*10x25	1400	0.043	*10x30	1740	0.032	*13x40	2200	0.026	*16x36	2540	0.019
	13x25	1700	0.035	13x25	2000	0.028	16x25	2200	0.024	18x36	2550	0.019
3900	13x25	1750	0.032									
4700	*13x30	1570	0.033	*13x25	1860	0.028	16x36	2550	0.019	18x36	2800	0.019
	*13x25	1520	0.032	16x25	2200	0.024						
	16x25	1800	0.028									
6800	16x32	2000	0.024	16x36	2550	0.019	18x36	2800	0.019	18x36	2800	0.019
8200	16x32	2350	0.019	18x36	2800	0.019						
10000	16x36	2550	0.019									
15000	18x36	3000	0.019									

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆Impedance (Ω),20℃,100KHz

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

ALUMINUM ELECTROLYTIC CAPACITORS

SC

Low Impedance and high frequency
Series

■Dimensions,Rated Ripple Current,Max Impedance

Capacitance (μF)	RATED (SURAGE) VOLTAGE											
	35V (44)			50V (63)			63V (79)			100V (125)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
4.7	5x11	115	1.200	5x11	115	2.000	5x11	115	2.200	5x11	120	2.000
6.8	5x11	120	1.000	5x11	120	1.850	5x11	120	2.000	5x11	140	1.850
10	5x11	140	0.900	5x11	140	1.700	5x11	140	1.850	6.3x11	200	1.500
15	5x11	170	0.690	5x11	180	1.200	5x11	200	1.700	6.3x11	250	1.200
22	5x11	190	0.420	5x11	200	0.700	6.3x11	250	1.200	8x11	300	0.790
33	5x11	200	0.420	6.3x11	250	0.600	6.3x11	300	0.900	8x15	450	0.590
47	6.3x11	250	0.370	6.3x11	300	0.520	8x11	450	0.700	10x16	550	0.350
68	6.3x11	300	0.220	8x11	450	0.350	8x11	550	0.520	10x20	650	0.240
100	*6.3x11	360	0.180	*8x11	480	0.290	8x20	650	0.350	13x20	800	0.180
	8x11	450	0.140	8x15	550	0.250						
120	8x11	550	0.130	8x20	650	0.210	10x16	800	0.300	13x25	1050	0.150
150	8x15	650	0.100	10x12.5	800	0.160	10x16	1050	0.200	13x25	1300	0.110
220	*8x15	730	0.100	*10x16	1050	0.100	10x20	1300	0.150	16x25	1400	0.071
	10x12.5	800	0.069	10x25	1050	0.068						
330	*10x16	900	0.052	10x20	1300	0.072	13x20	1400	0.100	16x32	1550	0.049
	10x20	1050	0.044									
470	10x20	1300	0.039	*10x20	1390	0.075	13x25	1550	0.064	18x36	1770	0.038
				13x20	1400	0.060						
680	13x20	1400	0.038	13x25	1550	0.050	16x25	1700	0.052			
820	13x20	1550	0.034	16x25	1700	0.040	16x32	1900	0.048			
1000	13x25	1700	0.029	16x25	1900	0.039	16x32	2100	0.042			
1200	16x25	1900	0.028	16x32	2100	0.025	16x36	2550	0.036			
1500	16x25	2100	0.024	16x36	2550	0.025	18x36	2800	0.033			
2200	*16x32	2300	0.021	18x40	2800	0.025						
	16x36	2550	0.019									
3300	18x36	2880	0.019									
3900												
4700												
6800												
8200												
10000												
15000												

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆Impedance (Ω),20℃,100KHz

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

ALUMINUM ELECTROLYTIC CAPACITORS

SJ

Low Impedance and High ripple Series

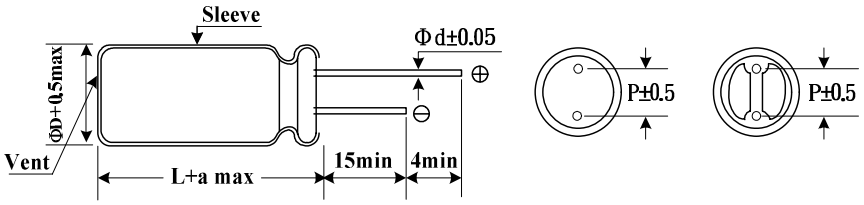
■ Features: 105℃, 1000～5000hrs Low Impedance and High ripple
■ Recommended Applications : AV(TV, Video, Audio), Monitor/Computer, OA/HA/Communication,Converter/Inverter,Adapter, SMPS
■ Corresponding product to RoHS

SJ
↑ High ripple
SC

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range (WV)	6.3 ~ 100VDC
Rated Capacitance Range	5.6 ~ 6800 μF
Capacitance Tolerance (20℃)	± 20 % at 120Hz
Leakage Current (MAX) (20℃)	I≦0.01CV or 3μA ,whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 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 When nominal capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.
Low Temperature Stability Impedance Ratio (Max)	WV / Z(120Hz): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 Z(-25℃) / Z(20℃): 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 Z(-40℃) / Z(20℃): 3 / 3 / 3 / 3 / 3 / 3 / 3 / 3
Endurance	After applying rated voltage with max ripple current for 1000~5000 hours at 105℃, the capacitor shall meet the following requirement. Capacitance Change: Within±25% of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value Case (ψ) / Life time (hrs): L=7 / 1000; L≧11: φD≦6.3 / 2000; φD = 8 / 3000; φD = 10 / 4000; φD≧13 / 5000 *If dimension is down size,Endurance will be less 1000 hours than standard.
Shelf Life	After placed at 105℃without voltage applied for 1000 hours (500 hours for L=7), the capacitor shall meet the same requirement as Endurance.

■ Dimensions [mm]



φD	4	5	6.3	8	10	13	16	18
P	1.5	2	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.45	0.5 (0.45)	0.5 (0.45)	0.6 (0.5)	0.6	0.6	0.8	0.8
a	1.0	1.5 (1.0)	1.5 (1.0)	1.5 (1.0)	1.5	2.0	2.0	2.0

( ) : L = 7

■ Multiplier for Ripple Current

Frequency coefficient

Freq. (Hz) / Cap (μF)	50	120	1K	10K	100K
5.6 ~ 390	0.60	0.70	0.85	0.95	1.00
470 ~ 1000	0.65	0.75	0.90	0.98	1.00
1200 ~ 6800	0.75	0.80	0.95	1.00	1.00

ALUMINUM ELECTROLYTIC CAPACITORS

SJ Low Impedance and High ripple Series

■Dimensions, Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surage) Voltage														
	6.3V (8)			10V (13)			16V (20)			25V (32)			35V (44)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
10													4x7	130	0.96
15										4x7	130	0.94	5x7	190	0.57
18							4x7	130	0.92	5x7	170	0.69	5x7	210	0.47
27				4x7	130	0.89	5x7	190	0.61	5x7	210	0.46	5x11	230	0.37
33				5x7	160	0.75	5x7	210	0.45	5x11	220	0.42	5x11	250	0.30
39	4x7	130	0.85	5x7	175	0.64	5x11	220	0.43	5x11	230	0.36	6.3x7	300	0.25
47	5x7	175	0.7	5x7	190	0.53	5x11	230	0.36	5x11	250	0.3	6.3x11	380	0.15
													8x7	350	0.19
56	5x7	190	0. 56	5x7	210	0.44	5x11	250	0.3	6.3x7	300	0.24	6.3x11	410	0.13
													8x7	380	0.16
68	5x7	210	0.43	5x11	210	0.44	6.3x7	300	0.24	6.3x11	340	0.19	8x11	510	0.12
										8x7	310	0.22			
100	5x11	200	0.43	5x11	250	0.3	6.3x11	370	0.16	6.3x11	410	0.13	8x11	620	0.105
	6.3x7	240	0.35				8x7	350	0.18	8x7	380	0.15			
120	5x11	220	0.38	6.3x7	300	0.23	6.3x11	410	0.13	8x11	560	0.12	8x11	680	0.088
	6.3x7	270	0.29				8x7	380	0.15						
150	5x11	250	0.3	8x7	350	0.18	8x11	510	0.12	8x11	630	0.105	8x11	760	0.072
	6.3x7	300	0.23												
180	8x7	340	0.18	8x7	380	0.15	8x11	560	0.11	8x11	690	0.088	8x15	910	0.068
													10x12.5	930	0.065
220	8x7	380	0.15	6.3x11	410	0.13	8x11	620	0.1	8x11	760	0.072	10x12.5	1030	0.053
270	6.3x11	370	0.16	8x11	580	0.12	8x11	690	0.088	8x15	900	0.068	8x20	1250	0.041
										10x12.5	930	0.065			
330	6.3x11	410	0.13	8x11	640	0.1	8x11	760	0.072	10x12.5	1030	0.053	10x16	1430	0.038
470	8x11	680	0.086	8x11	760	0.072	8x15	1000	0.056	8x20	1250	0.041	10x20	1820	0.026
							10x12.5	1030	0.053	10x16	1430	0.038			
560	8x11	760	0.072	8x15	910	0.068	8x20	1140	0.049	10x20	1650	0.032	10x25	2150	0.023
				10x12.5	940	0.064	10x16	1300	0.046						
680	8x15	900	0.062	10x12.5	1030	0.053	8x20	1250	0.041	10x20	1820	0.026	13x20	2360	0.023
							10x16	1430	0.038						
820	8x15	1000	0.056	8x20	1130	0.05	10x20	1650	0.032	10x25	2150	0.023	13x25	2510	0.02
				10x16	1300	0.046									
1000	10x12.5	1030	0.053	8x20	1250	0.041	10x20	1820	0.026	13x20	2360	0.021	13x25	2770	0.018
				10x16	1430	0.038									
1200	8x20	1250	0.041	10x20	1820	0.026	10x25	2150	0.023	13x25	2510	0.02	13x30	3290	0.016
	10x16	1430	0.038										16x20	3140	0.018
1500	10x20	1820	0.026	10x25	2150	0.023	13x20	2360	0.021	13x25	2770	0.018	13x35	3400	0.015
1800	10x25	1940	0.025	13x20	2230	0.022	13x25	2510	0.02	13x30	3290	0.016	16x25	3460	0.016
										16x20	3140	0.018			
2200	10x25	2150	0.023	13x20	2360	0.021	13x25	2770	0.018	13x35	3400	0.015			
2700	13x20	2230	0.022	13x25	2510	0.02	13x30	3290	0.016	16x25	3460	0.016			
							16x20	3140	0.018						
3300	13x20	2360	0.021	13x25	2770	0.018	13x35	3400	0.015						
3900	13x25	2770	0.018	13x30	3290	0.016	16x25	3460	0.016						
				16x20	3140	0.018									
4700	13x30	3290	0.016	13x35	3400	0.015									
5600	13x35	3400	0.015	16x25	3460	0.016									
	16x20	3140	0.018												
6800	16x25	3460	0.016												

☆ Size: Dϕx L (mm) ☆ Ripple Current : mA/rms,105℃,100KHz ☆Impedance : Z(Ω),20℃,100KHz

ALUMINUM ELECTROLYTIC CAPACITORS

SJ Low Impedance and High ripple Series

■Dimensions, Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surage) Voltage								
	50V (63)			63V (79)			100V (125)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
5.6	4x7	130	1						
6.8	5x7	170	0.74				5x11	125	1.4
10	5x7	210	0.5				6.3x11	170	0.95
15	6.3x7	220	0.38	5x11	136	1.19	6.3x 11	210	0.57
	5x11	215	0.48						
22	6.3x7	300	0.26	6.3x11	176	0.88	8x11	330	0.44
	5x11	240	0.34						
27	8x7	340	0.21	6.3x11	192	0.58	8x11	360	0.36
33	8x7	380	0.17	6.3x11	216	0.47	8x15	375	0.3
39	6.3x11	330	0.16	8x11	308	0.42	8x15	450	0.25
47	6.3x11	360	0.15	8x11	336	0.35	10x12.5	450	0.24
56	6.3x11	390	0.14	8x11	400	0.35	8x20	570	0.19
68	8x11	600	0.11	8x15	488	0.26	10x16	580	0.18
				10x12.5	500	0.24			
82	8x11	660	0.09	8x15	536	0.22	10x20	750	0.13
				10x12.5	552	0.20	13x16	740	0.13
100	8x11	730	0.074	10x16	640	0.16	10x25	880	0.12
120	8x15	950	0.065	8x20	656	0.16	13x20	1050	0.094
				10x16	760	0.15			
150	10x12.5	980	0.061	10x20	808	0.13	13x25	1100	0.085
				13x16	832	0.13			
180	8x20	1190	0.046	10x20	880	0.11	13x25	1200	0.071
				13x16	912	0.11			
220	10x16	1370	0.042	10x25	1040	0.099	13x30	1410	0.063
							16x20	1300	0.071
270	10x20	1580	0.03	13x20	1200	0.081	13x35	1560	0.052
							16x25	1600	0.053
							18x20	1470	0.069
330	10x25	1870	0.028	13x25	1480	0.058	13x40	1700	0.046
390	13x20	1870	0.028	13x30	1640	0.063	16x32	1750	0.041
				16x20	1448	0.073	18x25	1620	0.049
470	13x20	2050	0.027	13x30	1800	0.061	16x36	1890	0.033
				16x20	1592	0.061	18x32	1780	0.039
560	13x25	2410	0.023	13x35	1960	0.047	16x40	2080	0.03
				16x25	2040	0.043	18x36	2060	0.031
680	13x30	2860	0.021	13x40	2224	0.039	18x40	2570	0.028
				18x20	1960	0.051			
820	13x35	2960	0.019	16x32	2248	0.035			
	16x20	2730	0.023	18x25	2224	0.042			
1000	16x32	3350	0.021	16x36	2272	0.028			
				18x32	2616	0.034			
1200				16x40	2672	0.026			
				18x36	2648	0.027			
1500				18x40	2736	0.024			

☆ Size: Dϕ x L (mm) ☆ Ripple Current : mA/rms,105℃,100KHz ☆Impedance : Z(Ω),20℃,100KHz

ALUMINUM ELECTROLYTIC CAPACITORS

SY Low Impedance & Long Life Series

■ Features : Low Impedance , high permissible ripple current at high frequency and long life than SC

SY ↑ Long Life SC

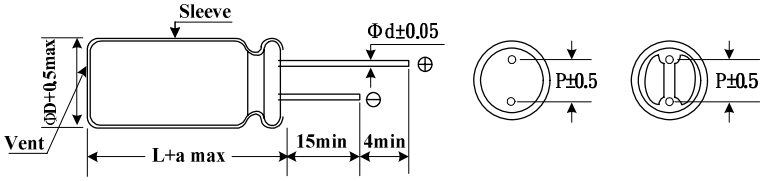
■ Recommended Applications:
Used switching requlator applications in computers. Especially for high frequency.

■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	6.3 ~ 100VDC
Rated Capacitance Range	2.2 ~ 15000 μF
Capacitance Tolerance	±20% at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3μA ,whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 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 When nominal capacitance is over 1000 μF, tan δ shall be added 0.02 to the listed value with increase of every 1000 μF.
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 Z-25℃ / Z+20℃: 4 / 3 / 2 / 2 / 2 / 2 / 2 / 2 Z-40℃ / Z+20℃: 8 / 6 / 4 / 3 / 3 / 3 / 3 / 3
Endurance	After applying rated voltage with rated ripple current for 6000 hours at 105℃, the capacitors shall meet the following requirements. Capacitance Change: Within ± 25% of initial value Dissipation Factor: Not more than 200% of specified value Leakage Current: Not more than the specified value Dφ: 5φ~6.3φ / 8φ~10φx12.5 / 10φx15~12φ / 13φ~18φ Life: 3000 hrs / 4000 hrs / 5000 hrs / 6000 hrs *If dimension is down size,Endurance will be less 1000 hours than standard.
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

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

ALUMINUM ELECTROLYTIC CAPACITORS

SY **Low Impedance & Long Life Series**

■Dimensions,Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage								
	6.3V (8)			10V (13)			16V (20)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
56							5x11	210	0.580
100				5x11	210	0.580	6.3x11	250	0.230
120							6.3x11	340	0.220
150	5x11	210	0.580						
220							6.3x11	469	0.185
				6.3x11	340	0.220	8x11	582	0.150
330	6.3x11	340	0.220				8x11	640	0.130
470	6.3x11	510	0.160	8x11	640	0.130	*8x15	840	0.087
							8x20	950	0.078
							*10x12.5	865	0.080
							10X16	1210	0.060
680	8x11	640	0.130	8x15	840	0.087	8x20	1050	0.069
							10X16	1210	0.060
820	10x12.5	865	0.080	10x12.5	865	0.080			
1000	8x15	840	0.087	8x20	1050	0.069	8x20	1050	0.069
				10X16	1210	0.060	*10X16	1210	0.060
							10x20	1400	0.046
							13x16	1450	0.049
1200	8x20	1050	0.069	10x20	1400	0.046	10x25	1650	0.042
	10X16	1210	0.060						
1500	8x20	1050	0.069	10x25	1650	0.042	10x30	1910	0.031
	*10X16	1210	0.060	13x16	1450	0.049	13x20	1900	0.035
	10x20	1400	0.046				16x16	1940	0.042
1800	13x16	1450	0.049						
2200	*10x20	1400	0.046	10x30	1910	0.031	13x25	2230	0.027
	10x25	1650	0.042	13x20	1900	0.042	18x16	2210	0.043
				16x16	1940	0.042			
2700	10x30	1910	0.031	18x16	2210	0.043	13x30	2650	0.024
	16x16	1940	0.042				16x20	2530	0.027
3300	10x25	1650	0.042	10x30	1910	0.031			
	13x20	1900	0.035	13x25	2230	0.027	13X35	2880	0.020
3900	13x25	2230	0.027	13x30	2650	0.024	13x40	3350	0.017
	18x16	2210	0.043	16x20	2530	0.027	16x25	2930	0.021
							18x20	2860	0.026
4700	13x30	2650	0.024	13X35	2880	0.020	16x32	3450	0.017
							18x25	3140	0.019
5600	13X35	2880	0.020	13x40	3350	0.017	16X36	3610	0.015
	16x20	2530	0.027	16x25	2930	0.021	18x32	4170	0.015
				18x20	2860	0.026			
6800	13x40	3350	0.017	16x32	3450	0.017	16x40	4080	0.013
	16x25	2930	0.021	18x25	3140	0.019			
	18x20	2860	0.026						
8200	16x32	3450	0.017	16X36	3610	0.015	18x36	4220	0.014
				18x32	4170	0.015			
10000	16X36	3610	0.015	16x40	4080	0.013	18x40	4280	0.012
	18x25	3140	0.017	18x36	4220	0.014			
12000	18x32	4170	0.015	18x40	4280	0.012			
15000	18x36	4220	0.014						

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆Impedance (Ω),20℃,100KHz

" * " is down size, Ripple life is less 1000 hrs than standard.

ALUMINUM ELECTROLYTIC CAPACITORS

SY **Low Impedance & Long Life Series**

■Dimensions,Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage								
	25V (32)			35V (44)			50V (63)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
2.2							5x11	85	2.280
4.7				5x11	95	2.400	5x11	100	2.000
10				5x11	130	1.600	5x11	135	1.200
22							5x11	180	0.700
33				5x11	210	0.580	6.3x11	245	0.490
47	5x11	210	0.580	6.3x11	275	0.390	6.3x11	300	0.520
56				6.3x11	340	0.220	6.3x11	295	0.300
68				6.3x11	500	0.170			
82				6.3x11	540	0.160			
100	6.3x11	340	0.220	8x11	580	0.150	8x11	555	0.170
120							8x15	730	0.120
150	8x11	640	0.160	8x11	640	0.130	10x12.5	760	0.120
180							8x20	910	0.091
220	8x11	640	0.130	*8x15	840	0.087	10X16	1050	0.084
				10x12.5	865	0.080			
270				8x20	1050	0.069	10x20	1220	0.060
							13x16	1260	0.061
330	8x15	840	0.087	*10X16	1210	0.060	*10x20	1400	0.058
	10x12.5	865	0.080	10x20	1400	0.046	10x25	1440	0.055
470	8x20	1050	0.069	10x20	1400	0.046	10x30	1690	0.043
	*10x12.5	1050	0.070	13x16	1450	0.049	13x20	1660	0.045
	10X16	1210	0.060				16x16	1690	0.055
560				10x25	1650	0.042	13x25	1950	0.034
							18x16	1930	0.054
680	10x20	1400	0.046	10x30	1910	0.031	13x30	2310	0.030
	13x16	1450	0.049	13x20	1900	0.035			
				16x16	1940	0.042			
820	10x25	1650	0.042	13x20	1900	0.035	13X35	2510	0.025
							16x20	2210	0.034
1000				13x25	2230	0.027	13x40	2920	0.021
	10x30	1910	0.031	18x16	2210	0.043	16x25	2555	0.025
	13x20	1900	0.035				18x20	2490	0.036
	16x16	1940	0.042						
1200	18x16	2210	0.043	13x30	2650	0.024	16x32	3010	0.022
				16x20	2530	0.027	18x25	2740	0.026
1500	*13x20	1900	0.035	13X35	2880	0.020	16X36	3150	0.019
	13x25	2230	0.027						
1800	13x30	2650	0.024	13x40	3350	0.017	16x40	3710	0.016
	16x20	2530	0.027	16x25	2930	0.021	18x32	3635	0.021
				18x20	2860	0.026			
2200	13X35	2880	0.020	16x32	3450	0.017	18x36	3680	0.017
	18x20	2860	0.026	18x25	3140	0.019			
2700	13x40	3350	0.017	16X36	3610	0.015	18x40	3800	0.014
	16x25	2930	0.021	18x32	4170	0.015			
3300	16x32	3450	0.017	16x40	4080	0.013			
	18x25	3140	0.019	18x36	4220	0.014			
3900	18x32	4170	0.015	18x40	4280	0.012			
4700	18x36	4220	0.014						
5600	18x40	4280	0.012						

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆Impedance (Ω),20℃,100KHz

" * " is down size, Ripple life is less 1000 hrs than standard.

ALUMINUM ELECTROLYTIC CAPACITORS

SY **Low Impedance & Long Life Series**

■Dimensions,Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage								
	63V (79)			100V (125)					
	SIZE	Ripple	Z	SIZE	Ripple	Z			
6.8				5×11	55	2.3			
15	5×11	55	2.3	6.3×11	115	1.2			
27				8×12	232	0.63			
33	6.3×11	115	1.2						
39				8×15	300	0.45			
47				10×12.5	288	0.43			
56	8×12	232	0.63	8×20	362	0.33			
68				10×16	357	0.31			
82	8×15	300	0.45	10×20	466	0.21			
	10×12.5	288	0.43	13×16	466	0.23			
100				10×25	531	0.2			
120	8×20	362	0.33	10×30	663	0.15			
	10×16	357	0.31	13×20	690	0.16			
150				16×16	795	0.14			
180	10×20	466	0.21	13×25	784	0.12			
	13×16	466	0.23	18×16	920	0.12			
220	10×25	531	0.2	13×30	905	0.1			
				16×20	1040	0.091			
270	10×30	663	0.15						
	13×20	690	0.16	13X35	1050	0.083			
	16×16	795	0.14	16×25	1250	0.073			
330	13×25	784	0.12	13×40	1180	0.071			
				18×20	1240	0.08			
390				16×32	1570	0.054			
	18×16	920	0.12	18×25	1490	0.057			
470	13×30	905	0.1	16×36	1790	0.045			
	16×20	1040	0.091	18×32	1630	0.047			
560	13X35	1050	0.083						
	16×25	1250	0.073	16×40	2020	0.04			
680	13×40	1180	0.071						
	18×20	1240	0.08	18×36	1790	0.04			
820	16×32	1570	0.054						
	18×25	1490	0.057	18×40	2330	0.036			
1000	16×36	1790	0.045						
	18×32	1630	0.047						
1200	16×40	2020	0.04						

☆ Size: Dϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆Impedance (Ω),20℃,100KHz

ALUMINUM ELECTROLYTIC CAPACITORS

TA Low Impedance & Long Life Series

■ Features：105℃ 4000~10000hrs Low Impedance and long Life
■ Recommended Applications:
Applicable for SMPS, Adaptor,Charger,Monitor/Computer
■ Corresponding product to RoHS

TA
↑ Long Life
SY

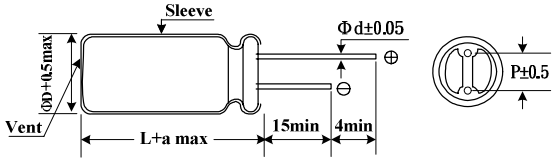
■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	6.3~35VDC
Rated Capacitance Range	33 ~ 8200μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20℃)
Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)	WV: 6.3 / 10 / 16 / 25 / 35 tanδ: 0.22 / 0.19 / 0.16 / 0.14 / 0.12 When nominal capacitance is over 1000uF,Tanδ shall be added 0.02 to the listed value with increase of every 1000uF.
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz): 6.3 / 10 / 16 / 25 / 35 Z-25℃ / Z+20℃: 4 / 3 / 2 / 2 / 2 Z-40℃ / Z+20℃: 8 / 6 / 4 / 3 / 3
Endurance	After applying rated voltage with rated ripple current for 4000~10000hours at 105℃, the capacitors shall meet the following requirements. Capacitance Change: Within ± 25 % of initial value Dissipation Factor: 200% or less of initial specified value Leakage Current: initial specified value or less

VDC	φ5~6.3φ	φ8~10φ	φ12.5~18φ
6.3~10(V)	4000hrs	6000hrs	8000hrs
16~100(V)	5000hrs	7000hrs	10000hrs

Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as load life.

■ Diagram of Dimensions



ψD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ψd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Freq. (Hz) / Cap(μF)	120	1K	10K	100K
6.8 to 180	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 1800	0.60	0.87	0.95	1.00
2200 to 3900	0.75	0.90	0.95	1.00
4700μF Higher	0.85	0.95	0.98	1.00

ALUMINUM ELECTROLYTIC CAPACITORS

TA Low Impedance & Long Life Series

■Dimensions,Rated Ripple Current,Max Impedance

Capacitance (μF)	Rated (Surge) Voltage														
	6.3V (8)			10V (13)			16V (20)			25V (32)			35V (44)		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
33													5x11	210	0.58
47										5x11	210	0.58			
56							5x11	210	0.58				6.3x11	340	0.22
100				5x11	210	0.58				6.3x11	340	0.22			
120							6.3x11	340	0.22						
150	5x11	210	0.58										8x11	640	0.13
220				6.3x11	340	0.220				8x11	640	0.13	8x15	840	0.087
													10x12.5	865	0.080
270													8x20	1050	0.069
330	6.3x11	340	0.22				8x11	640	0.130	8x15	840	0.087	10x15	1210	0.060
										10x12.5	865	0.080			
470				8x11	640	0.130	8x15	840	0.087	8x20	1050	0.069	10x20	1400	0.046
							10x12.5	865	0.080	10x15	1210	0.060	13x16	1450	0.049
560													10x25	1650	0.042
680	8x11	640	0.13	8x15	840	0.087	8x20	1050	0.069	10x20	1400	0.046	10x30	1910	0.031
				10x12.5	865	0.080	10X15	1210	0.060	13x16	1450	0.049	13x20	1900	0.035
820	10x12.5	865	0.080							10x25	1650	0.042			
1000	8x15	840	0.087	8x20	1050	0.069	10x20	1400	0.046	10x30	1910	0.031	13x25	2230	0.027
				10X15	1210	0.060	13x16	1450	0.049	13x20	1900	0.035			
1200	8x20	1050	0.069	10x20	1400	0.046	10x25	1650	0.042				13x30	2650	0.024
	10X15	1210	0.060										16x20	2530	0.027
1500	10x20	1400	0.046	10x25	1650	0.042	10x30	1910	0.031	13x25	2230	0.027	13x35	2880	0.020
				13x16	1450	0.049	13x20	1900	0.035						
1800	13x16	1450	0.049							13x30	2650	0.024	13x40	3350	0.017
										16x20	2530	0.027	16x25	2930	0.021
													18x20	2860	0.026
2200	10x25	1650	0.042	10x30	1910	0.031	13x25	2230	0.027	13x35	2880	0.020	16x32	3450	0.017
				13x20	1900	0.035				18x20	2860	0.026	18x25	3140	0.019
2700	10x30	1910	0.031				13x30	2650	0.024	13x40	3350	0.017	16x36	3610	0.015
							16x20	2530	0.027	16x25	2930	0.021	18x32	4170	0.015
3300	13x20	1900	0.035	13x25	2230	0.027	13x35	2880	0.020	16x32	3450	0.017	16x40	4080	0.013
										18x25	3140	0.019	18x36	4220	0.014
3900	13x25	2230	0.027	13x30	2650	0.024	13x40	3350	0.017	16x36	3610	0.015	18x40	4280	0.012
				16x20	2530	0.027	16x25	2930	0.021	18x32	4170	0.015			
							18x20	2860	0.026						
4700	13x30	2650	0.024	13x35	2880	0.020	16x32	3450	0.017	16x40	4080	0.013			
							18x25	3140	0.019	18x36	4220	0.014			
5600	13x35	2880	0.020	13x40	3350	0.017	16x36	3610	0.015	18x40	4280	0.012			
	16x20	2530	0.027	16x25	2930	0.021	18x32	4170	0.015						
				18x20	2860	0.026									
6800	13x40	3350	0.017	16x32	3450	0.017	16x40	4080	0.013						
	16x25	2930	0.021	18x25	3140	0.019									
	18x20	2860	0.026												
8200	16x32	3450	0.017	16x36	3610	0.015	18x36	4220	0.014						
				18x32	4170	0.015									

☆ Size: Dϕx L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆Impedance (Ω),20℃,100KHz

ALUMINUM ELECTROLYTIC CAPACITORS

ST Low Impedance & Long Life Series

■ Features：105℃ 4000~10000hrs Low Impedance and long Life
■ Recommended Applications:
Applicable for SMPS, Adaptor,Charger,Monitor/Computer
■ Corresponding product to RoHS

ST
↑ Long Life
SY

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	6.3~63VDC
Rated Capacitance Range	10 ~ 15000μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) , whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20℃)

Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)

WV	6.3	10	16	25	35	50	63
tanδ	0.22	0.19	0.16	0.14	0.12	0.14	0.14

When nominal capacitance is over 1000uF,Tanδ shall be added 0.02 to the listed value with increase of every 1000uF.
Down size tanδ add 3%.

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	6.3	10	16	25	35	50	63
Z-25℃ / Z+20℃	4	3	2	2	2	2	2
Z-40℃ / Z+20℃	8	6	4	3	3	3	3

Endurance

After applying rated voltage with rated ripple current for 4000~10000hours at 105℃,
the capacitors shall meet the following requirements.

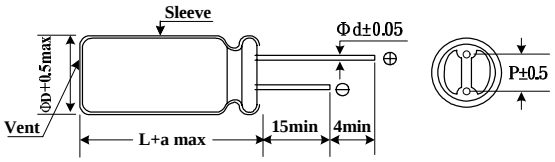
Capacitance Change	Within ± 25 % of initial value
Dissipation Factor	200% or less of initial specified value
Leakage Current	initial specified value or less

VDC	φ5~6.3φ	φ8~10φ	φ12.5~18φ
6.3~10(V)	4000hrs	6000hrs	8000hrs
16~100(V)	5000hrs	7000hrs	10000hrs

Shelf Life

After placed at 105℃without voltage applied for 1000 hours,
the capacitors shall meet the same requirement as load life.

■ Diagram of Dimensions



ψD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ψd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Cap(μF) \ Freq. (Hz)	120	1K	10K	100K
6.8to180	0.40	0.75	0.90	1.00
220to560	0.50	0.85	0.94	1.00
680to1800	0.60	0.87	0.95	1.00
2200to3900	0.75	0.90	0.95	1.00
4700μF Higher	0.85	0.95	0.98	1.00

ALUMINUM ELECTROLYTIC CAPACITORS

ST **Low Impedance & Long Life Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated Voltage(V)											
	6.3			10			16			25		
	Size	Ripple	ESR	Size	Ripple	ESR	Size	Ripple	ESR	Size	Ripple	ESR
47										5x11	210	0.720
56							5x11	210	0.720			
100				5x11	210	0.72	6.3x11	340	0.380	6.3x11	340	0.380
150	5x11	210	0.720							8x11	640	0.200
220				6.3x11	340	0.38	8x11	640	0.200	8x11	640	0.200
330	6.3x11	340	0.380				8x15	701	0.160	8x15	840	0.160
470				8x11	640	0.200	8x15	840	0.160	10x15	1210	0.084
680	8x11	640	0.200	8x15	840	0.160	10x15	1210	0.084	10x20	1400	0.062
820	8x15	840	0.160							10x25	1650	0.052
1000	10x12	865	0.120	10x15	1210	0.084	10x20	1400	0.062	13x20	1900	0.046
1500	8x20	1050	0.110	10x20	1400	0.062	10x25	1650	0.052	13x25	2230	0.034
	10x15	1210	0.084									
2200	10x20	1400	0.062	10x25	1650	0.052	13x25	2230	0.034	13x35	2880	0.027
2700	10x25	1650	0.052	13x20	1900	0.046	13x30	2650	0.030	16x25	2930	0.028
3300	13x20	1900	0.046	13x25	2230	0.034	13x35	2880	0.027	16x32	3450	0.025
3900	13x25	2230	0.034	13x30	2650	0.030	13x40	3350	0.024	18x32	4170	0.015
4700	13x30	2650	0.030	13x35	2880	0.027	16x32	3450	0.028	18x36	4280	0.014
5600	13x35	2880	0.027	13x40	3350	0.024	16X36	3610	0.018			
				16x25	2930	0.028	18x32	4170	0.015			
6800	13x40	3350	0.024	16x32	3450	0.025	18x36	4220	0.014			
	16x25	2930	0.028									
8200	16x32	3450	0.025	16X36	3610	0.018						
10000	16X36	3610	0.018	18x36	4220	0.014						
12000	18x32	4170	0.015									
15000	18x36	4220	0.014									

Capacitance (μF)	Rated Voltage(V)								
	35			50			63		
	Size	Ripple	ESR	Size	Ripple	ESR	Size	Ripple	ESR
10				5x11	120	3.50	5x11	55	2.300
22				5x11	210	2.300			
33	5x11	210	0.720	6.3x11	340	1.200	6.3x11	115	1.200
47	6.3x11	340	0.380	6.3x11	340	1.200			
56							8x11	232	0.630
100				8x11	555	0.630			
120				8x15	730	0.450	10x16	357	0.310
150	8x11	640	0.200	8x20	910	0.330			
180							10x20	466	0.210
220	8x15	840	0.160	10x16	1050	0.310	10x25	531	0.200
270							10x30	663	0.150
							13x20	690	0.160
330	10x20	1400	0.062	10x20	1400	0.210	13x25	784	0.120
470	10x25	1650	0.052	10x30	1690	0.150	13x30	905	0.100
				13x20	1660	0.160			
560				13x25	1950	0.120	13x35	1050	0.083
680	10x30	1910	0.044	13x30	2310	0.100	13x40	1180	0.071
	13x20	1900	0.046						
820	13x25	2230	0.034	13x35	2510	0.083	16x32	1570	0.054
1000	13x25	2230	0.034	16x25	2555	0.073	16X36	1790	0.045
1200	13x30	2650	0.030	16x32	3010	0.054	16x40	2020	0.040
1500	13x35	2880	0.027	16X36	3150	0.045			
1800	13x40	3350	0.024	18x32	3635	0.047			
2200	16x32	3450	0.025	18x36	3680	0.040			
2700	16X36	3610	0.018	18x40	3800	0.036			
3300	18x36	4220	0.014						

☆ Size: Dϕ x L (mm) ☆ Ripple Current: 105℃,100KHz(mA/rms) ☆ESR(Ω):25℃ ,100KHz

ALUMINUM ELECTROLYTIC CAPACITORS

SZ Ultra Low ESR Series

■ Features: 105℃ 1000~2000 hours ,Lower ESR and higher ripple current

■ Recommended Applications: Applicable for switching regulator of computer, especially for high frequency

■ Corresponding product to RoHS

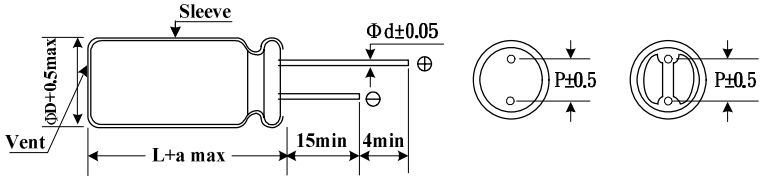
SZ ↑ Low E.S.R

SC

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃
Rated Voltage Range	6.3 ~ 16VDC
Rated Capacitance Range	470 ~ 3300 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX)(20℃)	I=0.03CV ,(After rated voltage applied for 2 minutes)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 6.3 / 10 / 16 tan δ: 0.22 / 0.19 / 0.16 When nominal capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz): 6.3 / 10 / 16 Z-25℃ / Z+20℃: 2 / 2 / 2 Z-40℃ / Z+20℃: 3 / 3 / 3
Endurance	After applying rated voltage with ripple current for 2000 hours at 105℃, the capacitors shall meet the following requirements. Capacitance Change: Within ± 25 % of initial value Dissipation Factor: Not more than 200% of specified value Leakage Current: Not more than the specified value *If dimension is down size,Endurance will be less 1000 hours than standard.
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	8	10
P	3.5	5.0
φd	0.6	0.6
a	1.5	1.5

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Factor	0.5	0.8	0.9	1.0

ALUMINUM ELECTROLYTIC CAPACITORS

SZ **Ultra Low ESR Series**

■Dimensions,Rated Ripple Current,Equivalent Series Resistance

Rated (Surge) Voltage 6.3V (8)			
CAP	D x L	Ripple Current	ESR
(μF)	(mm)	(mA/ rms 105℃ / 100KHz)	(mΩ Max 20℃ / 100KHz)
820	8 x 11	1036	43
1200	8 x 15	1355	34
1500	8 x 20	1740	25
	10 x 12.5	1400	31
1800	10 x 16	1818	23
2200	10 x 20	2318	15
3300	10 x 25	2364	14

Rated (Surge) Voltage 10V (13)			
CAP	D x L	Ripple Current	ESR
(μF)	(mm)	(mA/ rms 105℃ / 100KHz)	(mΩ Max 20℃ / 100KHz)
680	8 x 11	1036	43
1000	8 x 15	1355	34
	10 x 12.5	1400	31
1500	8 x 20	1700	25
	10 x 16	1818	23
1800	10 x 20	2318	16
2200	10 x 25	2545	14

Rated (Surge) Voltage 16V (20)			
CAP	D x L	Ripple Current	ESR
(μF)	(mm)	(mA/ rms 105℃ / 100KHz)	(mΩ Max 20℃ / 100KHz)
470	8 x 11	1036	43
680	8 x 15	1355	34
	10 x 12.5	1400	31
1000	8 x 20	1700	25
	10 x 16	1818	23
1500	10 x 20	2318	16
1800	10 x 25	2546	14

☆ Size: D ϕ x L (mm) ☆ Ripple Current: (mA/rms), 105℃,100KHz ☆ESR (mΩ),20℃,100KHz

ALUMINUM ELECTROLYTIC CAPACITORS

AK Higher temperature range & Long Life Series

■ Features：125℃ 2000~5000hrs， High Temperature and Long Life

■ Recommended Applications:
Applicable for Electronic Ballast,Lighting Ballast

■ Corresponding product to RoHS

AH ↑ Higher temperature
AH

■ Specifications

Item	Characteristics	
Operating Temperature Range	-40 ~ +125℃	-25 ~ +125℃
Rated Voltage Range	10~63VDC	160~450VDC
Rated Capacitance Range	47~ 4700 μF	1~150μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃	
Leakage Current (MAX) (20℃)	I=0.01CV or 3(μA) ,whichever is greater.	I=0.1CV+40 uA (CV≦1000) I=0.04CV+100 uA (CV>1000)
	(After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20℃)	

Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)

WV	10	16	25	35	50	63	160~250	350~450
tanδ	0.20	0.16	0.14	0.12	0.10	0.09	0.20	0.24

When nominal capacitance is over 1000uF,
tan δ shall be added 0.02 to the listed value with increase of every 1000uF.

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	10	16	25	35	50	63	160~250	350~450
Z-25℃ / Z+20℃	3	2	2	2	2	2	3	6
Z-40℃ / Z+20℃	6	4	4	4	4	3	-	-

Endurance

After applying rated voltage for 2000~5000hours at 125℃,
the capacitors shall meet the following requirements.

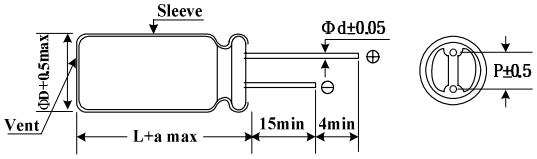
Capacitance Change	Within ± 30 % of initial value		Within ± 20 % of initial value
Dissipation Factor	≦300% of initial specified value		≦ 200% of the initial specified value
Leakage Current	≦initial specified value or less		≦ initial specified value
8Φ	10Φ	≧13Φ	2000Hrs
2000Hrs	3000Hrs	5000Hrs	

Shelf Life

After leaving capacitors under no load at 125℃ for 1000 hours.

Capacitance Change	Within ± 30 % of initial value	Within ± 20 % of initial value
Dissipation Factor	≦300% of initial specified value	≦ 200% of the initial specified value
Leakage Current	≦500% of initial specified value	≦ 500% of the initial specified value

■ Diagram of Dimensions



ψD	8	10	13	16	18
P	3.5	5.0	5.0	7.5	7.5
ψd	0.6	0.6	0.6	0.8	0.8
a	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coeffcient

Frequency (Hz)		120	1K	10K	50K~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	0.88	0.96	1.00
	1000<CAP	0.75	0.90	0.98	1.00
160~450WV	CAP≦33	1.00	1.50	1.75	1.80
	CAP≧47	1.00	1.30	1.40	1.50

ALUMINUM ELECTROLYTIC CAPACITORS

AK Higher temperature range & Long Life Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated Voltage(V)											
	10(13)			16(20)			25(32)			35(44)		
	Size	Ripple	ESR	Size	Ripple	ESR	Size	Ripple	ESR	Size	Ripple	ESR
100							8x11	340	0.200	10x12.5	340	0.140
220	8x11	340	0.200	8x11	340	0.200	10x12.5	500	0.140	10x16	500	0.090
330	10x12.5	500	0.140	10x12.5	500	0.140	10x16	630	0.090	10x20	770	0.070
470	10x16	630	0.090	10x20	770	0.070	10x20	770	0.070	13x20	920	0.042
1000	10x20	770	0.070	13x20	920	0.042	13x25	1250	0.038	16x25	1380	0.028
2200	13x25	1250	0.038	16x25	1380	0.028	16x32	1450	0.025			
3300	16x25	1380	0.028	16x32	1450	0.025						
4700	16x32	1450	0.025	18x32	1720	0.018						

Capacitance (μF)	Rated Voltage(V)					
	50(63)			63(79)		
	Size	Ripple	ESR	Size	Ripple	ESR
47	8x11	245	0.680	8x11	245	0.680
100	10x12.5	415	0.360	10x15	455	0.300
220	10x20	491	0.180	13x20	665	0.120
330	13x20	665	0.120	13x25	995	0.100
470	13x25	995	0.100	16x25	1000	0.084
1000	16x32	1280	0.078			

Capacitance (μF)	Rated Voltage(V)											
	160(200)		200(250)		250(300)		350(400)		400(450)		450(500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1.0							8x11	25	10x12.5	28	8x16	25
2.2					8x11	28	10x12.5	32	10x16	35	10x16	32
3.3	8x11	28	8x11	28	10x12.5	32	10x16	45	10x16	42	10x20	40
4.7	10x12.5	40	10x12.5	40	10x16	45	10 × 20	53	10 × 20	53	10 × 25	58
10	10x16	60	10 × 20	78	10 × 20	78	10 × 25	85	10 × 25	86	13 × 20	86
22	10 × 20	115	10 × 25	126	13 × 20	128	13 × 25	139	13 × 30	142	16 × 25	154
33	10 × 25	154	13 × 20	157	13 × 25	171	16 × 25	189	16 × 25	189	16 × 32	203
47	13 × 20	187	13 × 25	204	16 × 25	225	16 × 32	243	16 × 32	243		
68	13 × 25	245	16 × 20	250	16 × 32	292						
100	16 × 25	329	16 × 25	329								
150	16 × 32	434										

☆ Size: D ϕ x L (mm) ☆ Ripple Current: 125℃,100KHz(mA/rms) ☆ESR(Ω):20℃,100KHz

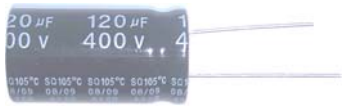
ALUMINUM ELECTROLYTIC CAPACITORS

SQ

For adapter and power supply applications Series

■ Features: 105℃ 2000 hours ;Wide temperature range;High Ripple
■ Recommended Applications :AV(TV, Video, Audio); Monitor/Computer; OA/HA/Communication; Converter/Inverter; Energy saving lamp; PFC circuit; SMPS; Ballast; Adapter
■ Corresponding product to RoHS

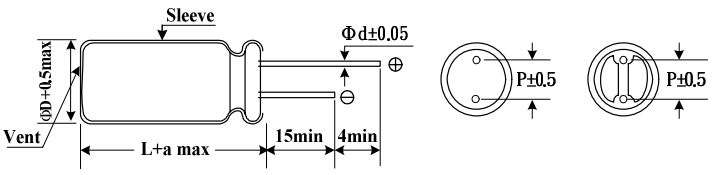
SQ
↑ High Ripple
SH



■ **Specifications**

Item	Characteristics
Operating Temperature Range	-40~+105℃
Rated Voltage Range(WV)	160 ~ 450VDC
Rated Capacitance Range	2.2 ~ 220 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.03CV +10 μA (After rated voltage applied for 3 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz,20℃)	WV: 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 (MAX)	WV / Z (120Hz): 160 / 200 / 250 / 350 / 400 / 450 Z(-25℃) / Z(20℃): 3 / 3 / 3 / 3 / 3 / 3 Z(-40℃) / Z(20℃): 6 / 6 / 6 / 6 / 6 / 6
Endurance	After apply rated voltage with rated ripple current for 2000hrs at 105℃ , the capacitors shall meet the following requirements. Capacitance Change: Within ± 20 % of initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not More than the specified value
Shelf Life	After leaving capacitors under no load at 105℃ for 1000 hours, the capacitors shall meet the same requirement as Endurance.

■ **Diagram of Dimensions**



φD	10	13	16	18
P	5	5	7.5	7.5
φd	0.6	0.6	0.8	0.8
a	1.5	2	2	2

■ **Multiplier for Ripple Current**

Frequency coefficient

Frequency (Hz)		50	120	1K	10K	100K
Coefficient	＜33 μF	0.80	1.00	1.36	1.54	1.80
	≧33 μF	0.85	1.00	1.28	1.35	1.40

Frequency (Hz)		50	120	1K	10K	100K
Coefficient	＜33 μF	0.45	0.55	0.75	0.85	1.00
	≧33 μF	0.60	0.70	0.90	0.95	1.00

ALUMINUM ELECTROLYTIC CAPACITORS

SQ **For adapter and power supply applications Series**

■Dimensions, Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage								
	160(200)			200(250)			250(300)		
	φ DxL	Ripple		φ DxL	Ripple		φ DxL	Ripple	
		120Hz	100KHz		120Hz	100KHz		120Hz	100KHz
10							10x20	120	220
22	10x20	195	350	10x20	195	350	13x25	165	300
33	13x20	315	450	13x20	365	520	13x25	280	400
47	13x25	420	600	13x25	420	600	16x25	505	720
68	13x25	420	600	16x25	665	950	16x32	570	810
100	16x25	665	950	16x32	840	1200	18x36	735	1050
220	18x36	980	1400						

Capacitance (μF)	Rated (Surge) Voltage								
	350(400)			400(450)			450(500)		
	φ DxL	Ripple		φ DxL	Ripple		φ DxL	Ripple	
		120Hz	100KHz		120Hz	100KHz		120Hz	100KHz
2.2	10x16	30	50	10x16	80	140	10x16	60	110
3.3	10x16	35	60	10x20	110	195	10x20	75	135
4.7	10x20	45	78	10x25	120	220	13x20	105	190
10	13x20	75	130	10x16	135	243	13x25	140	250
				13x25	200	360			
22	16x25	115	205	13x20	240	432	13x20	180	324
				13x25	265	477	13x25	200	360
				16x25	315	570	16x32	265	480
33	16x32	180	255	16x32	490	700	16x25	350	500
							18x36	455	650
47	18x32	225	320	16x25	350	490	16x25	380	532
				18x32	600	860			
68				16x30	510	714	18x25	470	658
				16x32	550	770			
82							18x36	520	720
100	18x45	370	530	18x32	680	952	18x40	620	860
120				18x32	750	1050	18x40	650	910
							18x45	720	1000
150				18x36	800	1120			

☆ Size: D φ x L (mm) ☆ Ripple Current : mA/rms,105℃

ALUMINUM ELECTROLYTIC CAPACITORS

SG High Ripple and long life Series

■ Features: High temperature life time 5000 hours at 105℃

■ Recommended Applications : High ripple current for Electronic Ballast , Power Supply…etc

■ Corresponding product to RoHS

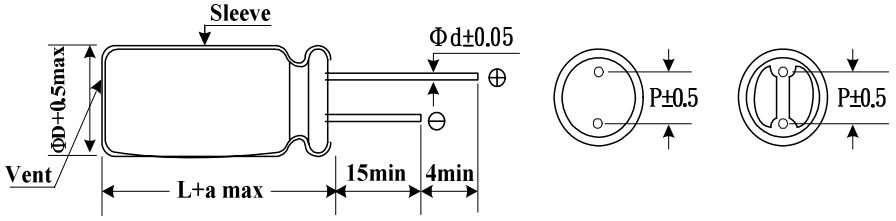
SG ↑ Long Life

SQ

■ Specifications

Item	Characteristics						
Operating Temperature Range	-40~+105℃		-25~+105℃				
Rated Voltage Range	160 ~ 400VDC		450VDC				
Rated Capacitance Range	4.7 ~ 330μF		3.3 ~ 100μF				
Capacitance Tolerance	± 20 % at 120Hz , 20℃						
Leakage Current (MAX) (20℃)	I=0.06CV + 10(μA) , (After rated voltage applied for 2 minutes)						
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV	160	200	250	350	400	450
	tan δ	0.15	0.15	0.15	0.20	0.24	0.24
Low Temperature Stability Impedance Ratio (MAX)	WV / Z (120Hz)	160	200	250	350	400	450
	Z-25℃ / Z+20℃	3	3	3	5	5	6
	Z-40℃ / Z+20℃	6	6	6	6	6	—
Endurance	After applying rated voltage with rated ripple current for 5000 hours at 105℃ , the capacitors shall meet the following requirements.						
	Capacitance Change	Within ± 20 % of initial value					
	Dissipation Factor	Not more than 200% of the specified value					
	Leakage Current	initial specified value or less					
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.						

■ Diagram of Dimensions



φD	10	13	16	18	22
P	5.0	5.0	7.5	7.5	10.0
φd	0.6	0.6	0.8	0.8	0.8
a	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	50,60	120	300	1K	10K~100K
Coefficient	0.80	1.00	1.20	1.40	1.60

ALUMINUM ELECTROLYTIC CAPACITORS

SG **High Ripple and long life Series**

■Dimensions, Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage					
	160 (200)		200 (250)		250 (300)	
	Size	Ripple	Size	Ripple	Size	Ripple
10			※10x16	80	※10x16	85
					10X20	100
15			※10x16	100		
22	10X20	160	10X20	160	※10x25	145
					13x20	160
33	10X20	210	※10X20	160	13x20	210
			13x20	210		
47	13x20	260	13x20	260	13x25	270
					16x20	275
68	13x25	360	13x25	360	16x25	380
	16x20	430	16x20	430	18x20	375
100	16x25	475	16x25	475	16x32	520
	18x20	465	18x20	465	18x25	500
150	16x32	650	18x25	650	18x32	650
	18x25	625				
220	16x32	750	18x32	780	18x40	820
	18x25	725				
330	18x32	960				

Capacitance (μF)	Rated (Surge) Voltage					
	350 (400)		400 (450)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple
3.3					10X20	60
4.7			※10x16	60	13x20	80
6.8			※10x16	72	※10X20	90
10	10X20	100	※10x16	85	13x20	110
			10X20	100	13x25	110
22	13x20	160	13x20	145	13x20	145
			13x25	170	16x25	190
			16x20	200	18x20	200
33	13x25	230	16x25	230	16x25	235
	16x20	250	18x20	250	16x32	275
					18x25	280
47	16x25	300	16x25	255		
	18x20	315	16x32	300	18x32	340
			18x25	325		
68	16x32	400	16x30	340	18x25	335
	18x25	380	16x32	350	18x32	395
			18x36	420	18x40	460
100	18x32	530	18x32	465	22x40	580
			18x40	545		
150			18x36	525		
			22x40	650		

☆ Size： Dϕ x L (mm) ☆ Ripple Current： mA/rms. 105℃,120Hz

※ Down Size：3000 Hrs

ALUMINUM ELECTROLYTIC CAPACITORS

SP Miniature and long life Series

■ Features: High temperature and long life at 105℃ for 8000 to 10000 hours

■ Recommended Applications:Applicable for Electronic Ballast

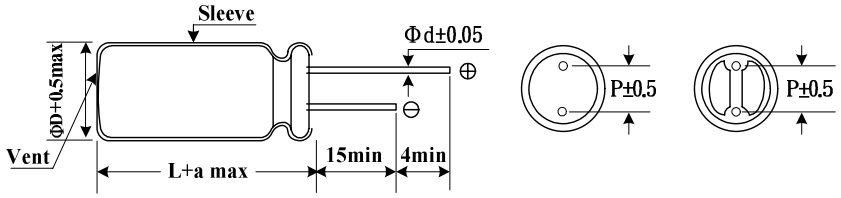
■Corresponding product to RoHS

SP
↑ Long Life
SG

■ Specifications

Item	Characteristics				
Operating Temperature Range	-40~+105℃		-25~+105℃		
Rated Voltage Range	160 ~ 400VDC		450VDC		
Rated Capacitance Range	3.3 ~ 330μF				
Capacitance Tolerance	± 20 % at 120Hz , 20℃				
Leakage Current(MAX)(20℃)	I=0.04CV + 100(μA) ,(After rated voltage applied for 2 minutes)				
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV	160	200	400	450
	tan δ	0.20	0.20	0.24	0.24
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz)	160	200	400	450
	Z-25℃ / Z+20℃	3	3	5	6
	Z-40℃ / Z+20℃	6	6	6	—
Endurance	The follwing sprcifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the max ripple current is applies for 10000 hours (8000 hours for φ10) at 105℃.				
	Capacitance Change	Within ± 20 % of initial value			
	Dissipation Factor	Not more than 200% of the specified value			
	Leakage Current	initial specified value or less			
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.				

■ Diagram of Dimensions



φD	10	12.5	13	16	18
P	5.0	5.0		7.5	7.5
φd	0.6	0.6		0.8	0.8
a	1.5	2.0		2.0	2.0

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	1.0	1.6	1.8	2.0

ALUMINUM ELECTROLYTIC CAPACITORS

SP **Miniature and long life Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surage) Voltage					
	160 (200)			200 (250)		
	Size	Ripple		Size	Ripple	
		120Hz	100KHz		120Hz	100KHz
22				10x20	220	440
33	10x20	250	500	10x20	260	520
				12.5x20	290	580
47	10x20	290	580	13x20	330	660
	12.5x20	330	660			
68	13x25	360	720	13x25	360	720
	16x20	380	760	16x20	380	760
100	13x25	485	970	16x25	560	1120
	16x20	560	1120			
	16x25	560	1120			
	18x20	560	1120			
150	16x25	600	1200	16x32	640	1280
	16x32	650	1300			
	18x25	650	1300			
220	16x32	650	1300			
	18x25	650	1300			
330	18x36	690	1380			

Capacitance (μF)	Rated (Surage) Voltage					
	400 (450)			450 (500)		
	Size	Ripple		Size	Ripple	
		120Hz	100KHz		120Hz	100KHz
3.3				10x16	50	100
4.7				10x20	70	140
6.8	10x20	75	150	10x20	75	150
				12.5x20	90	180
10	10x20	90	180	12.5x20	155	310
22	16x20	150	300	16x25	280	560
				18x20	275	550
33	16x25	260	520	16x32	310	620
				18x25	295	590
47	16x32	350	700	16x36	440	880
				18x32	440	880
68	18x32	435	870			

☆ Size： D ϕ x L (mm) ☆ Ripple Current: (mA/rms),105℃

ALUMINUM ELECTROLYTIC CAPACITORS

SU Long Life Series

■ 105℃ 10000~12000hrs long Life

■ Recommended Applications: Electronic lighting and power

SU → Long Life

SP

■ Specifications

Item	Characteristics
Category Temperature Range	-25 ~ +105℃
Rated Voltage Range	160~450VDC
Rated Capacitance Range	3.3 ~ 330μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.04CV +100μA , whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20℃)

Dissipation Factor (MAX) (tanδ) (120Hz ,20℃)

WV	160	200	250	350	400	450
tanδ	0.15	0.15	0.15	0.20	0.20	0.20

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	160	200	250	350	400	450
Z-25℃ / Z+20℃	3	3	3	5	5	6

Endurance

After applying rated voltage with rated ripple current for 10000~12000hours at 105 ℃,
the capacitors shall meet the following requirements.

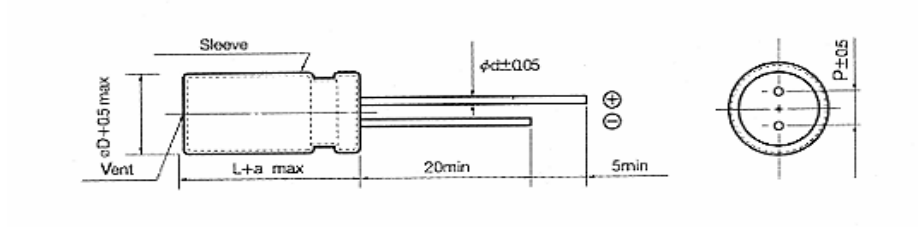
Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	200% or less of initial specified value
Leakage Current	initial specified value or less

ΦD×L	Life Time(hrs)
10Φ	10000
≧13Φ	12000

Shelf Life

After placed at 105℃without voltage applied for 1000 hours,
the capacitors shall meet the same requirement as load life.

■ Diagram of Dimensions



ψD	10.0	13.0	16.0	18.0
P	5.0	5.0	7.5	7.5
ψd	0.6	0.6	0.8	0.8
a	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Frequency coeffcient

Frequency (Hz)	120	1K	10K	100K
Coefficient	0.5	0.8	0.9	1.0

ALUMINUM ELECTROLYTIC CAPACITORS

SU **Long Life Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated Voltage(V)					
	160		200		250	
	Size	Ripple	Size	Ripple	Size	Ripple
10					10×16	320
22			10×16	500	10×20	500
33	10×16	500	10×20	520	13×20	800
47	10×20	580	13×20	660	13×20	980
68	13×20	720	13×25	720		
100	13×25	970	16×25	1120	16×25	1530
150	16×25	1120	16×32	1620	18×25	1940
220	16×32	1300	18×32	2080	18×36	2753
330	18×36	1380			18×50	3912
390			18×50	3380		
470						
560	18×50	2086				

Capacitance (μF)	Rated Voltage(V)					
	350		400		450	
	Size	Ripple	Size	Ripple	Size	Ripple
6.8	10×16	280	10×16	140		
10	10×20	350	10×20	180	10×20	180
15					13×20	380
22	13×20	650	13×20	430	13×25	500
33	13×25	900	16×25	520	16×25	560
47	16×25	1000	16×32	700	16×36	880
68	16×32	1100	18×32	870	16×36	1110
100			18×50	1290	18×50	1560

☆ Size: Dψx L (mm) ☆ Ripple Current: 105℃,100KHz(mA/rms)

ALUMINUM ELECTROLYTIC CAPACITORS

TH

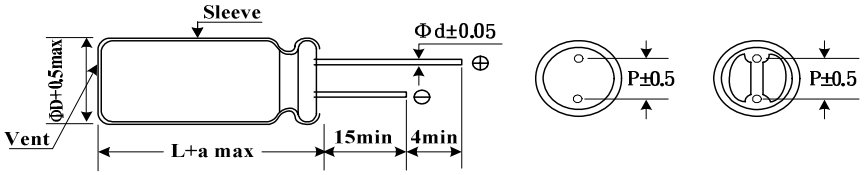
Miniature and general purpose Series

■ Features: 105℃ 2000 hours
■ Recommended Applications: For high quality , reliability application, high CV product
■ Suitable for slim application
■Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-25~+105℃
Rated Voltage Range	250 ~ 450VDC
Rated Capacitance Range	10 ~ 150μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX)(20℃)	I=0.03CV+10(μA) ,After rated voltage applied for 2 minutes
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 250 / 350~450 tan δ: 0.15 / 0.20
Low Temperature Stability Impedance Ratio (MAX)	WV / Z(120Hz): 250 / 350~450 Z-25℃ / Z+20℃: 4 / 6
Endurance	After applying rated voltage for 2000 hours at 105℃ the capacitors shall meet the following requirements. Capacitance Change: Within ± 20 % of initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: initial specified value or less
Shelf Life	After leaving capacitors under no load at 105℃ for 1000 hours. the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	8	10.0	12.5
p	3.5	5.0	5.0
φd	0.6	0.6	0.6
a	2.0	2.0	2.5

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
160 ~ 450V ALL Cap (μF)	1.00	1.25	1.40	1.60

ALUMINUM ELECTROLYTIC CAPACITORS

TH Miniature and general purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage									
	250 (300)		350 (400)		400 (450)		420(470)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
10										
12									8x30	115
15			8x30	140	8x35	170	8x35	150	8x35	135
22	8x30	200	8x35	180	8x40	220	8x40	195	8x42	190
									10x30	190
27	8x35	215	8x40	210	8x45	250	8x45	220	8x45	210
					10x35	250	10x35	220	10x35	210
33	8x35	240	8x42	240	8x50	295	8x50	285	8x52	290
					10x40	295	10x40	285	10x42	290
39	8x40	260	10x40	280	8x52	320	10x42	310	10x45	320
	10x30	275			10x40	320	12.5x35	320	12.5x40	330
47	8x45	310	10x45	325	10x45	355	10x45	350	10x50	360
					12.5x40	365	12.5x40	350	12.5x42	370
56	10x40	350	10x50	380	10x50	405	10x52	390	12.5x45	415
					12.5x40	405	12.5x42	390		
68	10x40	400	12.5x40	430	10x55	460	12.5x45	450	12.5*50	475
					12.5x45	460				
82	10x45	450	12.5x45	500	12.5x50	525	12.5x52	535	12.5x55	535
100	10x50	525	12.5x50	630	12.5x55	620				
150	12.5x45	725								

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms). 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

TG

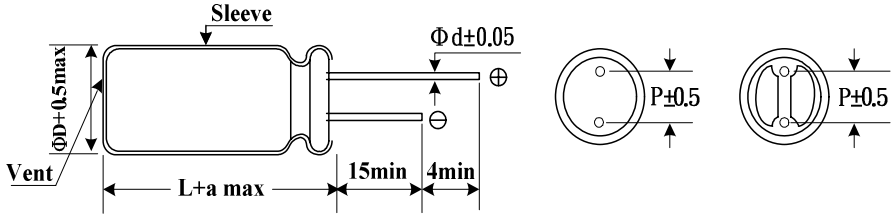
High Ripple and long life Series

■ Features: High temperature life time 5000 hours at 105℃
■ Recommended Applications : High ripple current for Electronic Ballast , Power Supply…etc
■ Suitable for slim application
■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-25~+105℃
Rated Voltage Range	250 ~ 450VDC
Rated Capacitance Range	10 ~ 150μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I=0.06CV + 10(μA) , (After rated voltage applied for 2 minutes)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	WV: 250 / 350 / 400 / 420、450 tan δ: 0.15 / 0.20 / 0.24 / 0.24
Low Temperature Stability Impedance Ratio (MAX)	WV: 250 / 350 / 400 / 420、450 Z (120Hz) Z-25℃ / Z+20℃: 3 / 5 / 5 / 6
Endurance	After applying rated voltage with rated ripple current for 5000 hours at 105℃ , the capacitors shall meet the following requirements. Capacitance Change: Within ± 20 % of initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: initial specified value or less
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	8	10	12.5
P	3.5	5.0	5.0
φd	0.6	0.6	0.6
a	2.0	2.0	2.5

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	50,60	120	300	1K	10K~100K
Coefficient	0.80	1.00	1.20	1.40	1.60

ALUMINUM ELECTROLYTIC CAPACITORS

TG **High Ripple and long life Series**

■Dimensions, Rated Ripple Current

Capacitance (μF)	Rated (Surage) Voltage									
	250 (300)		350 (400)		400 (450)		420 (470)		450(500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
10										
12									8x35	110
15			8x35	120	8x35	110	8x35	105	8x40	130
22	8x30	130	8x40	150	8x40	140	8x40	135	8x45	165
									10x35	165
27	8x32	150	8x45	170	8x45	165	8x45	155	8x52	195
					10x35	165	10x35	155	10x40	195
33	8x35	170	8x50	200	8x50	190	8x50	185	10x45	230
					10x40	190	10x40	185	12.5x35	230
39	8x42	200	10x45	235	10x45	220	10x45	215	10x50	265
							12.5x35	215	12.5x40	265
47	8x45	220	10x50	270	10x50	255	10x50	245	10X52	295
					12.5x40	255	12.5x40	245	12.5x45	310
56	10x42	300	12.5x40	300	12.5x45	300	12.5x45	290	12.5x50	355
68	10x45	330	12.5x45	350	12.5X50	350	12.5x50	335	12.5x55	410
82	10x50	390	12.5x50	400	12.5x55	400	12.5x55	385		
100	12.5x42	440	12.5x55	460						
120	12.5x45	490								
150	12.5x50	560								

☆ Size： Dϕ x L (mm) ☆ Ripple Current：mA/rms. 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

TP Miniature and long life Series

■ Features: High temperature and long life at 105℃ for 8000 to 10000 hours

■ Recommended Applications:Applicable for Electronic Ballast

■Suitable for slim application

■Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40~+105℃ -25~+105℃
Rated Voltage Range	160 ~ 400VDC 450VDC
Rated Capacitance Range	10 ~ 330μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current(MAX)(20℃)	I=0.04CV + 100(μA) ,(After rated voltage applied for 2 minutes)

Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)

WV	160	200	250	400	420、450
tan δ	0.20	0.20	20	0.24	0.24

Low Temperature Stability Impedance Ratio (MAX)

WV / Z(120Hz)	160	200	250	400	420、450
Z-25℃ / Z+20℃	3	3	3	5	6
Z-40℃ / Z+20℃	6	6	6	6	—

Endurance

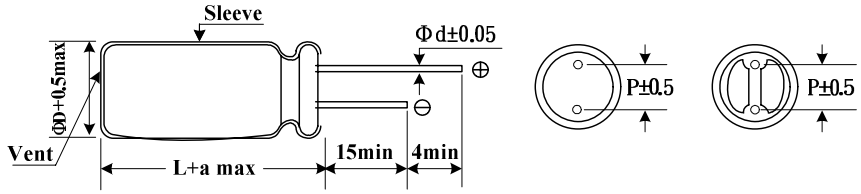
The follwing sprcifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the max ripple current is applies for 10000 hours (8000 hours for φ10) at 105℃.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After placed at 105℃ without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.

■ Diagram of Dimensions



φD	10	12.5
P	5.0	5.0
φd	0.6	0.6
a	2.0	2.5

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	1K	10K	100K
Coefficient	1.0	1.6	1.8	2.0

ALUMINUM ELECTROLYTIC CAPACITORS

TP **Miniature and long life Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surage) Voltage											
	160 (200)		200 (250)		250(300)		400(450)		420(470)		450(500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
10												
22											10×40	250
27									10×40	200	10×42	270
33									10X45	235	10*45	300
39							10×45	260	10X50	270	10×50	340
											12.5*40	350
47							12.5x40	310	12.5×42	310	12.5×45	420
56							10×52	340	12.5×45	330	12.5×50	480
							12.5x45	360				
68							12.5×50	400	12.5x50	390	12.5×55	530
82					10x52	390	12.5×55	460	12.5X55	450		
100			10x45	330	12.5x42	470						
120			10×50	430	12.5x45	480						
150	10×45	410	12.5x45	510	12.5×50	540						
180	10×50	470	12.5x50	590	12.5×55	650						
220	12.5x45	550	12.5×52	650								
270	12.5×50	640	12.5×55	750								
330	12.5×55	740										

☆ Size： Dϕ x L (mm) ☆ Ripple Current: (mA/rms),105℃，120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LH General Purpose Series

- Endurance : 85℃ 2000 hours
- Ideally suitable for using in Switching Power Supplies and orther industrial /commercial applications
- Corresponding product to RoHS

Specifications

Item	Characteristics
Operating Temperature Range	-40~+85℃ -25~+85℃
Rated Voltage Range	6.3 ~ 100VDC 160 ~ 500VDC
Capacitance Range	820 ~ 120000 μF 47 ~ 2200 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX)	I=0.02CV or 3(mA) , whichever is smaller. (After 5 minutes application of rated voltage at 20℃)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	

Rated voltage(V)	6.3	10	16	25	35	50	63~100	160~400	420~500
tan δ	0.60	0.55	0.55	0.45	0.35	0.30	0.25	0.15	0.20

Low Temperature Stability Impedance Ratio (MAX)

Measurement frequency : 120Hz

Rated voltage(V)	6.3~16	25	35	50~63	80~100	160~400	420-500
Z-25℃ / Z+20℃	3	3	3	2	2	4	8
Z-40℃ / Z+20℃	12	10	8	6	5		

Endurance

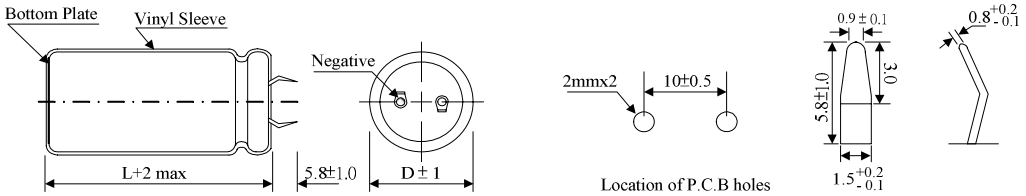
After applying rated voltage with rated Ripple current for 2000hrs at 85℃, the capacitor shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After placed at 85℃without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

Diagram of Dimensions



Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	50	60	120	1K	10K
6.3~100V	0.88	0.90	1.00	1.15	1.16
160~250V	0.75	0.78	1.00	1.30	1.50
350~450V	0.74	0.76	1.00	1.35	1.45
500V	0.72	0.74	1.00	1.20	1.30

ALUMINUM ELECTROLYTIC CAPACITORS

LH **General Purpose Series**

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	6.3 (8)		10 (13)		16 (20)		25 (32)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
5600							22x25	2.20
6800							22x30	2.40
							25x25	2.45
8200					22x25	2.60	22x35	2.70
							25x25	2.75
10000					22x30	2.70	22x40	3.10
					25x25	2.75	25x30	3.15
							30x25	3.20
12000			22x25	2.40	22x30	2.90	22x45	3.50
					25x25	2.95	25x35	3.45
							30x30	3.50
							35x25	3.55
15000	22x25	2.44	22x30	2.75	22x35	3.30	22x50	4.00
			25x25	2.75	25x30	3.45	25x40	3.95
					30x25	3.50	30x35	4.00
							35x30	4.05
18000	22x30	2.60	22x35	3.15	22x40	3.70	25x45	4.45
	25x25	2.62	25x25	3.05	25x35	3.75	30x35	4.45
					30x30	3.80	35x30	4.60
22000	22x30	3.06	22x40	3.55	22x50	4.35	30x40	5.20
	25x25	3.07	25x30	3.50	25x40	4.30	35x35	5.15
			30x25	3.55	30x30	4.25	30x45	5.95
					35x25	4.20	35x40	5.90
27000	22x35	3.49	22x45	4.05	25x45	4.70		
	25x30	3.52	25x35	4.00	30x35	4.65	30x50	6.70
	30x25	3.57	30x30	4.05	35x30	4.65	35x45	6.75
33000	22x40	3.97	22x50	4.60	30x40	5.35		
	25x35	4.02	25x40	4.55	35x30	5.40		
	30x30	4.05	30x30	4.50			35x50	7.55
	35x25	4.10	35x25	4.50				
39000	22x50	4.56	25x45	5.10	30x45	6.00	35x45	7.56
	25x40	4.50	30x35	5.05	35x35	5.95		
	30x30	4.46	35x30	5.05				
	35x25	4.51						
47000	25x45	5.09	25x50	5.75	30x50	6.80	35x50	8.30
	30x35	5.06	30x40	5.70	35x40	6.75		
	35x30	5.03	35x30	5.65				
56000	25x50	5.71	30x45	6.45	35x45	7.60		
	30x40	5.70	35x35	6.40				
	35x30	5.75						
68000	30x45	6.48	30x50	7.05	35x50	8.00		
	35x35	6.42	35x40	7.10				
82000	30x50	7.32	35x50	7.50	35x60	8.50		
	35x40	7.29						
100000	35x45	8.31						
120000	35x50	8.60						

☆ Size: Dϕ x L (mm) ☆ Ripple Current ： A/rms. 85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LH General Purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	35 (44)		50 (63)		63 (79)		80 (100)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1200							22x25	1.65
1500							22x30	1.90
							25x25	1.90
1800					22x25	1.85	22x35	2.20
							25x30	2.20
							30x25	2.20
2200			22x25	1.90	22x30	2.30	22x40	2.45
					25x25	2.30	25x30	2.45
							30x25	2.50
2700			22x30	2.10	22x35	2.45	22x45	2.80
			25x25	2.20	25x30	2.45	25x35	2.80
					30x25	2.50	30x30	2.85
							35x25	2.85
3300			22x30	2.35	22x40	2.60	22x50	3.15
			25x25	2.35	25x30	2.65	25x40	3.20
					30x25	2.70	30x30	3.20
							35x25	3.20
3900	22x25	2.20	22x35	2.65	22x45	2.95	25x45	3.60
			25x30	2.65	25x35	2.95	30x35	3.60
			30x25	2.65	30x30	3.00	35x30	3.60
4700	22x30	2.40	22x40	3.00	22x50	3.40	25x50	4.05
	25x25	2.40	25x35	3.00	25x40	3.35	30x40	4.05
			30x25	2.95	30x30	3.35	35x35	4.10
					35x25	3.40		
5600	22x35	2.75	22x45	3.35	25x45	3.70	30x45	4.55
	25x25	2.75	25x40	3.35	30x35	3.75	35x35	4.50
			30x30	3.35	35x30	3.75		
			35x25	3.40				
6800	22x40	2.85	22x50	3.80	30x40	4.25	30x50	5.15
	25x30	2.85	25x40	3.80	35x30	4.20	35x40	5.15
	30x25	2.90	30x30	3.80				
			30x35	3.85				
			35x30	3.85				
8200	22x45	3.15	25x50	4.35	30x45	4.80	35x45	5.85
	25x35	3.10	30x40	4.35	35x35	4.80		
	30x30	3.15	35x30	4.40				
10000	22x50	3.55	30x45	5.00	30x50	5.50	35x50	6.60
	25x40	3.50	35x35	4.95	35x40	5.45		
	30x30	3.45						
	35x25	3.40						
12000	25x45	3.95	30x50	5.60	35x45	6.20		
	30x35	4.00	35x40	5.55				
	35x30	4.05						
15000	25x50	4.95	35x45	6.45				
	30x40	4.95						
	35x35	5.00						
18000	30x45	5.50	35x50	6.70				
	35x40	5.55						
22000	30x50	6.00						
	35x45	6.05						
27000	35x50	6.90						

☆ Size: D ϕ x L (mm) ☆ Ripple Current ： A/rms. 85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LH General Purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	100 (125)		160 (200)		180 (225)		200 (250)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
180					22x20	1.00	22x25	0.95
220					22x25	1.10	22x25	1.10
270			22x25	1.15	22x25	1.25	22x25	1.25
					25x20	1.25	22x30	1.25
							25x25	1.25
330			22x25	1.40	22x25	1.40	22x25	1.45
			25x20	1.35	22x30	1.40	22x30	1.45
					25x25	1.40	25x25	1.45
390			22x30	1.55	22x30	1.60	22x30	1.60
			25x25	1.55	25x25	1.60	25x25	1.55
			30x25	1.50				
470			22x30	1.75	22x35	1.80	22x35	1.80
			25x25	1.75	25x30	1.80	25x30	1.80
			30x25	1.70	30x25	1.80	30x25	1.80
560			22x30	1.95	22x35	2.00	22x40	2.00
			25x30	1.95	22x40	2.00	25x35	2.00
			30x25	1.90	25x30	1.95	30x25	2.00
					30x25	2.00		
680			22x40	2.20	22x45	2.25	22x45	2.35
			25x30	2.20	25x35	2.20	25x35	2.30
			30x25	2.15	30x30	2.20	30x30	2.30
					35x25	2.20	35x25	2.30
820	22x25	1.85	22x45	2.50	22x50	2.55	25x40	2.60
			25x35	2.55	25x40	2.55	25x45	2.60
			30x30	2.50	30x30	2.60	30x30	2.60
			35x25	2.50	30x35	2.60	30x35	2.60
					35x25	2.60	35x30	2.60
1000	22x30	2.10	22x50	2.85	25x45	2.85	25x45	3.00
	25x25	2.10	25x40	2.80	30x35	2.85	25x50	3.00
			30x35	2.80	35x30	2.90	30x35	3.05
			35x25	2.80			30x40	3.05
							35x30	3.00
1200	22x35	2.40	25x45	3.15	30x40	3.25	25x50	3.30
	25x30	2.45	30x35	3.15	35x30	3.30	30x40	3.30
			35x30	3.20	35x35	3.30	30x45	3.30
							35x30	3.30
							35x35	3.30
1500	22x40	2.70	30x45	3.75	30x45	3.85	30x45	3.80
	25x30	2.75	35x30	3.70	35x35	3.80	30x50	3.80
	30x25	2.75	35x35	3.70	35x40	3.80	35x35	3.80
							35x40	3.80
1800	22x45	3.10	30x50	4.20	35x40	4.30	35x40	4.35
	25x35	3.15	35x40	4.20	35x45	4.30	35x45	4.35
	30x30	3.15						
	35x25	3.15						
2200	22x50	3.50	35x40	4.60	35x45	4.90	35x45	4.95
	25x40	3.55	35x45	4.80	35x50	4.90	35x50	4.95
	30x30	3.55						
	35x25	3.60						
2700	25x45	4.10	35x50	5.45				
	30x35	4.05						
	35x30	4.05						
3300	25x50	4.50						
	30x40	4.55						
	35x30	4.50						
3900	30x45	5.15						
	35x35	5.10						
4700	35x40	5.75						
5600	35x50	6.20						

☆ Size: D ϕ x L (mm) ☆ Ripple Current ： A/rms. 85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LH General Purpose Series

■Dimensions,Rated Ripple Cu

Capacitance (μF)	Rated (Surge) Voltage											
	250 (300)		350 (400)		400 (450)		420（470）		450 (500)		500(550)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
47									22x25	0.50	25x20	0.50
56					22x20	0.55			22x25	0.65		
68			22x20	0.55	22x25	0.60			22x25	0.67		
					25x20	0.60			22x30	0.70		
									25x25	0.70		
82			22x25	0.65	22x25	0.80			22x30	0.80		
			25x20	0.65	25x20	0.80			25x25	0.80		
100			22x30	0.90	22x25	0.85			22x30	0.85	22x40	1.00
			25x20	0.90	22x30	0.90			22x35	0.95	30x25	0.90
					25x25	0.90			25x30	0.95		
									30x25	0.95		
120	22x20	0.78	22x30	1.00	22x30	0.95	22x30	0.95	22x30	0.95	30x30	1.00
			25x25	1.00	22x35	1.05			22x40	1.05	35x25	1.00
					25x25	1.05			25x30	1.05		
									30x25	1.05		
150	22x25	0.90	22x35	1.15	22x35	1.15	22x35	1.05	22x35	1.05	22x50	1.40
			25x30	1.15	25x30	1.15	25x30	1.05	22x45	1.20	30x35	1.20
			30x25	1.15	30x25	1.15	30x25	1.05	25x35	1.20		
									30x30	1.20		
180	22x25	1.05	22x40	1.30	22x40	1.20	22x40	1.35	25x40	1.35	30x40	1.40
	25x20	1.00	25x30	1.25	22x45	1.30			30x35	1.35	35x30	1.30
			30x25	1.25	25x35	1.30			35x25	1.35		
					30x30	1.35						
220	22x30	1.15	22x45	1.45	22x50	1.50	22x45	1.40	22x45	1.40		
	22x35	1.15	25x35	1.45	25x40	1.50	22x50	1.55	25x50	1.55	30x45	1.60
	25x25	1.15	30x30	1.45	30x30	1.50	25x40	1.50	30x40	1.55	35x35	1.50
			35x25	1.45	35x25	1.50	25x45	1.60	35x30	1.55		
270	22x30	1.30	25x40	1.65	22x50	1.60	25x40	1.50	25x50	1.55	30x50	1.80
	25x25	1.30	30x35	1.65	25x40	1.65	30x40	1.60	30x45	1.75	35x40	1.70
			35x25	1.65	30x35	1.65			35x35	1.70		
					35x30	1.65						
330	22x30	1.50	25x50	1.80	25x45	1.75	25x45	1.75	30x40	1.75		
	25x25	1.50	30x40	1.80	25x50	1.90	25x50	1.85	30x50	2.00	35x45	2.00
	30x25	1.50	35x30	1.80	30x40	1.90	30x40	1.75	35x40	2.00		
					35x30	1.85	30x45	1.90				
390	22x35	1.65	30x40	2.00	30x40	1.95	30x45	1.90	30x45	2.00	35x50	2.30
	25x35	1.65	35x30	2.00	30x45	2.15			35x45	2.25		
	30x25	1.65			35x35	2.10						
470	22x40	1.85	30x45	2.25	30x45	2.20	30x45	2.10	30x50	2.30		
	25x35	1.85	35x35	2.25	30x50	2.40	30x50	2.20	35x50	2.50		
	30x30	1.90			35x40	2.40						
	35x25	1.90										
560	22x45	2.10	35x40	2.50	30x50	2.45	30x50	2.30	35x50	2.70		
	25x40	2.10			35x45	2.70	35x45	2.30				
	30x30	2.10										
	35x25	2.10										
680	25x45	2.45	35x45	2.90	35x50	2.90			35x60	2.90		
	30x35	2.45										
	35x25	2.45										
820	30x45	2.75										
	35x30	2.75										
1000	30x45	3.30										
	35x35	3.30										
1200	35x40	3.55										
1500	35x45	4.05										

☆ Size: Dϕx L (mm)　☆ Ripple Current ： A/rms. 85℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LG High temperature and general purpose Series

- Endurance : 105℃ 2000 hours,high temperature than TW
- Ideally suitable for using in Switching Power Supplies and orther industrial /commercial applications
- Corresponding product to RoHS

LG
↑ High temperature
LH

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃ -25 ~ +105℃
Rated Voltage Range	6.3 ~ 100VDC 160 ~ 450VDC
Capacitance Range	560 ~ 82000 μF 47 ~ 2200 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX)	I=0.02CV,L=20m/m,I=0.03CV or 3mA , whichever is smaller.(At 20℃,After 5 minutes) Where, I :Leakage Current (μA) ; C:Nominal Capacitance(μF) ; V:Rated Voltage(v)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	

Rated voltage(V)	6.3	10	16	25	35	50	63~100	160~400	420~450
tan δ	0.60	0.55	0.55	0.45	0.35	0.30	0.25	0.15	0.20

Low Temperature Stability Impedance Ratio (MAX)

Measurement frequency : 120Hz

Rated voltage(V)	6.3~16	25	35	50~63	80~100	160~400	420~450
Z-25℃ / Z+20℃	4	3	3	2	2	4	8
Z-40℃ / Z+20℃	15	10	8	6	5		

Endurance

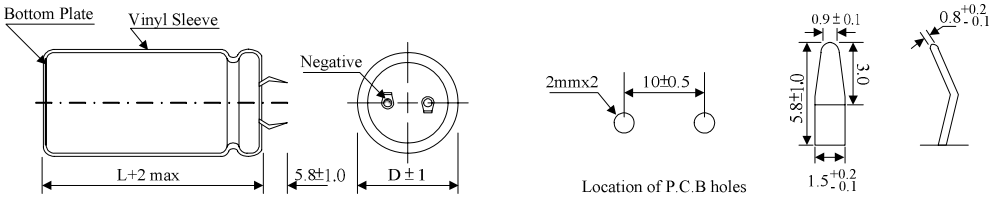
After applying rated voltage with rated Ripple current for 2000hrs at 105℃,
the capacitor shall meet the following requirements.

Capacitance Change	Within ± 20 % of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	initial specified value or less

Shelf Life

After placed at 105℃without voltage applied for 1000 hours,
the capacitor shall meet the same requirement as Endurance.

■ Diagram of Dimensions



■ Multiplier for Ripple Current

Frequency coefficient

Frequency	50	60	120	1K	10K
6.3~100V	0.88	0.90	1.00	1.15	1.16
160~250V	0.85	0.88	1.00	1.30	1.50
315~450V	0.88	0.9	1.00	1.35	1.45

ALUMINUM ELECTROLYTIC CAPACITORS

LG High temperature and general purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	6.3 (8)		10 (13)		16 (20)		25 (32)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
4700							22x25	1.50
5600							22x30	1.65
							25x25	1.65
6800					22x25	1.55	22x30	1.85
							25x25	1.85
8200					22x30	1.70	22x35	2.10
					25x25	1.70	25x30	2.10
							30x25	2.15
10000			25x25	1.55	22x30	1.95	22x40	2.40
					25x25	1.95	25x35	2.40
							30x30	2.40
							35x25	2.40
12000	22x25	1.55	22x30	1.75	22x35	2.20	22x45	2.70
					25x30	2.25	25x40	2.75
					30x25	2.30	30x30	2.70
							35x25	2.75
15000	22x30	1.70	22x30	1.90	22x40	2.55	25x45	3.15
	25x25	1.70	25x25	1.90	25x35	2.60	30x35	3.15
					30x30	2.60	35x30	3.25
					35x25	2.65		
18000	22x30	1.95	22x35	2.20	22x45	2.90	25x50	3.55
	25x25	1.95	25x30	2.25	25x40	2.90	30x40	3.55
					30x30	2.90	35x35	3.55
					35x25	2.95		
22000	22x35	2.25	22x40	2.50	25x45	3.30	30x45	4.05
	25x30	2.25	25x35	2.55	30x35	3.30	35x35	3.80
	30x25	2.25	30x25	2.45	35x30	3.30		
27000	22x40	2.55	22x50	2.95	25x50	3.80	35x45	4.70
	25x35	2.55	25x40	2.90	30x40	3.75		
	30x30	2.55	30x30	2.85	35x30	3.75		
	35x25	2.55	35x25	2.80				
33000	22x45	2.90	25x45	3.30	30x45	4.30	35x50	5.40
	25x40	2.95	30x35	3.30	35x35	4.25		
	30x30	2.90	35x30	3.30				
	35x25	2.95						
39000	25x50	3.25	25x50	3.70	30x50	4.80	35x45	5.50
	30x35	3.25	30x40	3.7	35x40	4.80		
	35x30	3.30	35x30	3.65				
47000	25x50	3.70	30x45	4.20	35x45	5.45	35x50	6.00
	30x40	3.70	35x35	3.80				
56000	30x45	4.15	30x50	4.65	35x45	5.65		
	35x35	4.10	35x40	4.65				
68000	30x50	4.70	35x50	5.50	35x50	6.20		
	35x40	4.70						
82000	35x45	5.30						

☆ Size: D ϕ x L (mm) ☆ Ripple Current ： A/rms. 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LG High temperature and general purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	35 (44)		50 (63)		63 (79)		80 (100)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
820							22x25	1.10
1000							22x30	1.20
							25x25	1.20
1200					22x25	1.20	22x30	1.40
							25x25	1.40
1500					22x30	1.30	22x35	1.60
					25x25	1.30	25x30	1.60
							30x25	1.65
1800			22x25	1.30	22x30	1.50	22x40	1.80
					25x25	1.50	25x35	1.85
							30x25	1.80
2200			22x30	1.55	22x35	1.70	22x45	2.05
			25x25	1.55	25x30	1.75	25x35	2.00
					30x25	1.80	30x30	2.05
							35x25	2.05
2700			22x30	1.70	22x40	2.00	25x45	2.35
			25x25	1.70	25x35	2.00	30x35	2.35
					30x25	1.95	35x30	2.35
3300	22x25	1.40	22x35	1.95	22x50	2.30	25x50	2.70
			25x30	1.85	25x40	2.30	30x40	2.70
					30x30	2.25	35x30	2.55
					35x25	2.10		
3900	22x30	1.55	22x40	2.15	25x45	2.55	30x45	3.00
	25x25	1.55	25x35	2.20	30x35	2.55	35x35	3.00
			30x25	1.95	35x30	2.55		
4700	22x35	1.80	22x45	2.45	25x50	2.85	30x50	3.40
	25x25	1.80	25x40	2.45	30x40	2.85	35x40	3.40
			30x30	2.45	35x30	2.80		
			35x25	2.50				
5600	22x35	1.95	22x50	2.75	30x45	3.20	35x45	3.80
	25x30	1.95	25x40	2.70	35x35	3.20		
	30x25	2.00	30x35	2.75				
			35x30	2.75				
6800	22x40	2.20	25x50	3.30	30x50	3.65	35x50	3.90
	25x35	2.25	30x40	3.30	35x40	3.65		
	30x30	2.30	35x30	3.25				
	35x25	2.35						
8200	22x50	2.55	30x45	3.60	35x45	3.90		
	25x40	2.50	35x35	3.55				
	30x30	2.75						
	35x25	2.75						
10000	25x45	2.85	30x50	4.05	35x50	4.40		
	30x35	2.90	35x40	4.00				
	35x30	2.95						
12000	25x50	3.25	35x45	4.55				
	30x40	3.25						
	35x30	3.15						
15000	30x45	3.70						
	35x35	3.65						
18000	35x40	4.35						
22000	35x50	4.90						

☆ Size: Dϕ x L (mm) ☆ Ripple Current ： A/rms. 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LG

High temperature and general purpose Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	100 (125)		160 (200)		180 (225)		200 (250)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
150							22x20	0.65
180					22x20	0.75	22x20	0.70
220			22x20	0.80	22x25	0.85	22x25	0.80
							25x20	0.80
270			22x25	1.00	22x25	0.95	22x25	0.85
					25x20	0.90	25x25	0.85
330			22x25	1.20	22x25	1.20	22x30	1.20
			25x20	1.15	22x30	1.10	25x25	1.20
					25x25	1.10		
390			22x30	1.30	22x30	1.30	22x30	1.30
			25x25	1.30	25x25	1.30	22x35	1.30
							25x30	1.30
							30x25	1.30
470			22x30	1.30	22x30	1.30	22x35	1.40
			22x35	1.40	22x35	1.35	22x40	1.40
			25x25	1.40	25x30	1.40	25x30	1.40
					30x25	1.40	30x25	1.50
560	22x25	1.05	22x40	1.50	22x40	1.50	22x45	1.55
			25x30	1.50	25x35	1.55	25x35	1.55
			30x25	1.50	30x25	1.50	30x30	1.55
680	22x25	1.20	22x45	1.70	22x45	1.70	22x50	1.75
			25x35	1.70	22x50	1.70	25x40	1.75
			30x25	1.70	25x35	1.70	30x30	1.75
					25x40	1.75	35x25	1.70
					30x30	1.70		
					35x25	1.70		
820	22x30	1.30	22x50	1.95	22x50	1.95	25x50	2.05
	25x25	1.33	25x40	2.00	25x40	2.00	30x35	2.00
			30x30	2.00	25x45	2.00	35x30	2.05
			35x25	1.90	30x35	2.00		
					35x25	1.90		
1000	22x35	1.50	25x45	2.20	25x45	2.20	30x40	2.30
	25x30	1.50	30x35	2.20	25x50	2.20	30x45	2.30
			35x30	2.20	30x35	2.25	35x30	2.30
					30x40	2.25	35x35	2.30
					35x30	2.25		
1200	22x40	1.70	25x50	2.45	25x50	2.45	30x50	2.60
	25x35	1.70	30x40	2.45	30x40	2.45	35x40	2.65
	30x25	1.70	35x30	2.45	30x45	2.50		
					35x35	2.50		
1500	22x45	1.95	30x45	2.80	30x45	2.80	35x45	3.10
	25x40	2.00	35x35	2.80	30x50	2.90		
	30x30	1.95			35x40	2.90		
	35x25	2.00						
1800	25x45	2.20	30x50	3.30	30x50	3.30	35x50	3.15
	30x35	2.50	35x45	3.30	35x50	3.30		
	35x30	2.45						
2200	25x50	2.55	35x50	3.75	35x50	3.60		
	30x40	2.70						
	35x30	2.55						
2700	30x45	2.90						
	35x35	2.85						
3300	30x50	3.25						
	35x40	3.25						
3900	35x45	3.70						
4700	30x50	3.80						
	35x50	3.80						

☆ Size: Dϕ x L (mm) ☆ Ripple Current ： A/rms. 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LG **High temperature and general purpose Series**

■Dimensions,Rated Ripple Curren

Capacitance (μF)	Rated (Surge) Voltage									
	250 (300)		350 (400)		400 (450)		420(470)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
47					22x20	0.35			22x25	0.38
56			22x20	0.40	22x20	0.40			22x25	0.40
68			22x25	0.45	22x25	0.50			22x30	0.50
					25x20	0.50			25x25	0.50
82			22x25	0.55	22x25	0.52			22x30	0.52
			25x20	0.50	22x30	0.60			22x35	0.55
					25x25	0.65			25x30	0.55
									30x25	0.55
100			22x30	0.70	22x30	0.60			22x30	0.55
			25x25	0.70	22x35	0.65			22x40	0.65
					25x30	0.65			25x30	0.60
									30x25	0.65
120	22x20	0.60	22x35	0.75	22x30	0.62			22x35	0.60
			25x30	0.75	22x35	0.70			22x45	0.70
			30x25	0.75	25x30	0.70			25x35	0.70
					30x25	0.75			30x30	0.70
									35x25	0.70
150	22x25	0.65	22x40	0.80	22x35	0.72	22x35	0.58	22x40	0.68
			25x30	0.80	22x40	0.80	22x40	0.65	22x50	0.80
			30x25	0.85	25x30	0.85	25x30	0.70	25x40	0.80
					25x35	0.85			30x30	0.75
					30x30	0.85			35x25	0.75
					35x25	0.80				
180	22x25	0.80	22x45	0.90	22x40	0.81	22x40	0.68	22x45	0.75
	25x20	0.75	25x35	0.90	22x50	0.95	25x35	0.68	25x45	0.85
			30x30	0.90	25x40	0.95			30x35	0.85
					30x30	0.90			35x30	0.85
220	22x30	0.95	22x50	1.05	25x45	1.05	25x40	0.85	22x50	0.85
	25x25	0.95	25x40	1.05	30x35	1.05	25x45	0.95	25x50	1.00
			30x30	1.00	35x30	1.10	30x40	0.95	30x40	1.00
			35x25	1.05					35x30	1.00
270	22x35	1.15	25x45	1.20	25x45	1.10	25x45	1.05	25x50	1.05
	25x30	1.15	30x35	1.20	25x50	1.20	30x40	1.05	30x45	1.15
	30x25	1.15	35x30	1.20	30x40	1.20	35x30	1.05	35x35	1.15
					35x35	1.20				
330	22x40	1.25	30x40	1.35	25x50	1.25	25x50	1.15	30x45	1.25
	25x30	1.20	35x35	1.35	30x45	1.40	30x40	1.15	30x50	1.40
	30x25	1.25			35x35	1.35	35x35	1.15	35x40	1.40
390	22x45	1.5	30x45	1.50	30x45	1.42	30x45	1.25	30x50	1.40
	25x35	1.50	35x35	1.50	30x50	1.55			35x45	1.55
	30x30	1.50			35x40	1.55				
470	22x50	1.55	35x40	1.70	30x45	1.45	30x50	1.40	35x45	1.68
	25x40	1.55			35x40	1.65	35x40	1.35	35x50	1.70
	30x30	1.55			30x50	1.75				
	35x25	1.55			35x45	1.75				
560	25x45	1.80	35x45	1.90	35x45	1.80	35x45	1.65	35x50	1.80
	30x35	1.80			30x60	1.90			35x60	2.10
	35x30	1.80			35x50	1.90				
680	25x50	1.95			35x50	2.10				
	30x40	2.00			35x60	2.15				
	35x35	2.00								
820	30x45	2.15								
	35x35	2.10								
1000	35x40	2.30								
1500	35x50	3.63								

☆ Size: Dϕ x L (mm) ☆ Ripple Current ： A/rms. 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LF Long Life Series

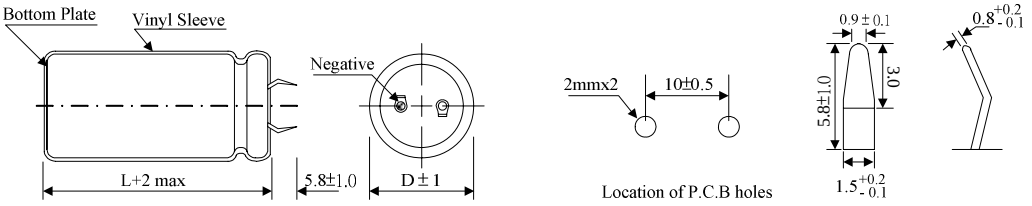
■ Features : 85℃ 3000 hours , Longer life than LH, Snap-in terminal, High ripple current
■ Recommended Applications: Smoothing circuit, TV/Monitor, Adapter, SMPS
■ Corresponding product to RoHS

LF ↑ Long Life
LH

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +85℃ -25 ~ +85℃
Rated Voltage Range	10 ~ 100VDC 160 ~ 450VDC
Capacitance Range	820 ~ 56000 μF 56 ~ 2200 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.02CV or 3mA whichever is smaller(After rated voltage applied for 5 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Dissipation Factor(tan δ)shall not exceed the values showed in the table of standard rating
Endurance	After applying rated voltage with rated Ripple current for 3000hrs at 85℃, the capacitor shall meet the following requirement. Capacitance Change: Within±20% of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 85℃without voltage applied for 1000 hours, the capacitor shall meet the same requirements as Endurance.

■ Diagram of Dimensions



■ Multiplier for Ripple Current

Frequency coefficient

Freq. (Hz)	50	60	120	400	1K	2.4K	5K	10K
Coefficient	0.8	0.85	1.0	1.14	1.23	1.3	1.36	1.4

ALUMINUM ELECTROLYTIC CAPACITORS

LF **Long Life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	10(13)						16(20)					
	φ DxL Ripple Current				tan δ	ESR	φ DxL Ripple Current				tan δ	ESR
8200							22x25 2.45				0.55	0.089
10000							22x30 2.60				0.55	0.073
12000	22x25 2.45				0.55	0.061	22x35 3.10	25x25 2.90			0.55	0.061
15000	22x30 2.80				0.55	0.049	22x40 3.46	25x30 3.30	30x25 3.40		0.55	0.049
18000	22x35 3.34	25x25 3.15			0.55	0.041	22x45 3.81	25x35 3.70	30x30 3.85		0.55	0.041
22000	22x40 3.67	25x30 3.50	30x25 3.60		0.55	0.033	22x50 4.32	25x45 4.40	30x30 4.15	35x25 4.23	0.55	0.033
27000	22x45 4.12	25x35 4.00	30x30 4.16		0.55	0.027		25x45 4.65	30x35 4.65	35x30 4.79	0.55	0.027
33000	22x50 4.63	25x40 4.49	30x30 4.45	35x25 4.54	0.55	0.022			30x40 5.25	35x35 5.41	0.55	0.022
39000		25x45 4.90	30x35 4.90	35x30 5.05	0.55	0.019			30x45 5.86	35x35 5.80	0.55	0.019
47000		25x50 5.55	30x40 5.61	35x30 5.50	0.55	0.016				35x40 6.45	0.55	0.016
56000			30x45 6.11	35x35 6.05	0.55	0.013						

Capacitance (μF)	Rated (Surge) Voltage											
	25(32)						35(44)					
	φ DxL Ripple Current				tan δ	ESR	φ DxL Ripple Current				tan δ	ESR
3900							22x25 2.10				0.40	0.136
4700							22x30 2.30	25x25 2.30			0.40	0.113
5600	22x25 2.20				0.45	0.107	22x35 2.60	25x30 2.62	30x25 2.70	35x25 2.99	0.40	0.095
6800	22x30 2.45	25x25 2.45			0.45	0.088	22x40 2.90	25x35 2.93	30x30 3.07	35x25 3.13	0.40	0.078
8200	22x35 2.75	25x30 2.75			0.45	0.073	22x45 3.30	25x35 3.20	30x30 3.33	35x25 3.42	0.40	0.065
10000	22x40 3.25	25x30 3.10	30x25 3.19		0.45	0.060	22x50 3.74	25x40 3.64	30x30 3.60	35x25 3.67	0.40	0.053
12000	22x45 3.50	25x35 3.40	30x30 3.54	35x25 3.64	0.45	0.050		25x45 4.00	30x35 4.00	35x30 4.12	0.40	0.044
15000		25x40 3.90	30x35 4.10	35x30 4.21	0.45	0.040			30x40 4.60	35x35 4.74	0.40	0.035
18000		25x45 4.30	30x40 4.51	35x30 4.39	0.45	0.033			30x45 5.10	35x40 5.30	0.40	0.029
22000			30x45 4.90	35x35 4.85	0.45	0.027				35x45 5.70	0.40	0.024
27000			30x50 5.45	35x40 5.45	0.45	0.022				35x50 6.45	0.40	0.020
33000				35x45 6.15	0.45	0.018						

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 85℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω)

ALUMINUM ELECTROLYTIC CAPACITORS

LF **Long Life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	50(63)						63(79)					
	φDxL / Ripple Current				tan δ	ESR	φDxL / Ripple Current				tan δ	ESR
1800							22x25 1.80				0.30	0.221
2200	22x25 1.80				0.35	0.211	22x30 2.00	25x25 2.00			0.30	0.181
2700	22x30 1.95				0.35	0.172	22x35 2.30	25x30 2.30			0.30	0.147
3300	22x35 2.33	25x25 2.20			0.35	0.141	22x40 2.68	25x30 2.55	30x25 2.63		0.30	0.121
3900	22x40 2.52	25x30 2.40			0.35	0.119	22x45 2.88	25x35 2.80	30x30 2.91		0.30	0.102
4700	22x45 2.78	25x35 2.70	30x30 2.82	35x25 2.89	0.35	0.099	22x50 3.28	25x40 3.18	30x30 3.15	35x25 3.21	0.30	0.085
5600		25x35 3.00	30x30 3.12	35x25 3.21	0.35	0.083		25x45 3.50	30x35 3.50	35x30 3.60	0.30	0.071
6800		25x40 3.35	30x35 3.52	35x30 3.62	0.35	0.068		25x50 3.94	30x40 3.98	35x30 3.90	0.30	0.059
8200		25x50 3.74	30x40 3.77	35x30 3.70	0.35	0.057			30x45 4.39	35x35 4.35	0.30	0.049
10000			30x45 4.24	35x35 4.20	0.35	0.046			30x50 4.90	35x40 4.90	0.30	0.040
12000			30x50 4.65	35x40 4.65	0.35	0.039				35x50 5.45	0.30	0.033
15000				35x45 5.30	0.35	0.031						
18000				35x50 5.90	0.35	0.026						

Capacitance (μF)	Rated (Surge) Voltage											
	80(100)						100(125)					
	φDxL / Ripple Current				tan δ	ESR	φDxL / Ripple Current				tan δ	ESR
820							22x25 1.70				0.25	0.404
1000							22x30 1.95	25x25 1.95			0.25	0.332
1200	22x25 1.70				0.25	0.276	22x35 2.15	25x30 2.15			0.25	0.276
1500	22x30 1.95	25x25 1.95			0.25	0.221	22x40 2.57	25x30 2.45	30x25 2.52		0.25	0.221
1800	22x35 2.15	25x30 2.15			0.25	0.184	22x45 2.83	25x35 2.75	30x30 2.86		0.25	0.184
2200	22x40 2.57	25x30 2.45	30x25 2.52		0.25	0.151	22x50 3.17	25x40 3.08	30x30 3.05	35x25 3.11	0.25	0.151
2700	22x45 2.83	25x35 2.75	30x30 2.86		0.25	0.123		25x45 3.45	30x35 3.45	35x30 3.55	0.25	0.123
3300	22x50 3.22	25x40 3.13	30x30 3.10	35x25 3.16	0.25	0.100		25x50 3.94	30x40 3.98	35x30 3.90	0.25	0.100
3900		25x45 3.40	30x35 3.40	35x30 3.50	0.25	0.085			30x45 4.34	35x35 4.30	0.25	0.085
4700		25x50 3.84	30x40 3.88	35x35 4.04	0.25	0.071				35x40 4.75	0.25	0.071
5600			30x45 4.24	35x40 4.43	0.25	0.059				35x50 5.30	0.25	0.059
6800			30x50 4.70	35x45 4.93	0.25	0.049						
8200				35x50 5.25	0.25	0.040						

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 85℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LF **Long Life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	160(200)						180(225)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
270							22x25 1.10				0.15	0.737
330	22x25 1.15				0.15	0.603	22x30 1.25				0.15	0.603
390	22x30 1.30				0.15	0.510	22x30 1.40	25x25 1.40			0.15	0.510
470	22x35 1.59	25x30 1.62			0.15	0.423	22x35 1.60	25x30 1.60			0.15	0.423
560	22x35 1.70	25x30 1.70			0.15	0.355	22x40 1.89	25x30 1.80	30x25 1.85		0.15	0.355
680	22x40 1.97	25x35 1.99	30x25 1.95		0.15	0.293	22x45 2.11	25x35 2.05	30x30 2.13		0.15	0.292
820	22x50 2.32	25x40 2.28	30x30 2.24		0.15	0.243	22x50 2.34	25x40 2.27	30x30 2.25	35x30 2.45	0.15	0.243
1000		25x45 2.58	30x35 2.57	35x30 2.65	0.15	0.199		25x50 2.67	30x35 2.55	35x30 2.63	0.15	0.199
1200		25x50 2.78	30x40 2.80	35x35 2.92	0.15	0.166			30x40 2.85	35x35 2.93	0.15	0.166
1500			30x45 3.03	35x40 3.17	0.15	0.133			30x50 3.10	35x40 3.10	0.15	0.130
1800			30x50 3.50	35x45 3.67	0.15	0.111				35x45 3.60	0.15	0.111
2200				35x50 4.08	0.15	0.090						

Capacitance (μF)	Rated (Surge) Voltage											
	200(250)						250(300)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
180							22x25 1.00				0.15	1.110
220	22x25 1.00	25x25 1.08			0.15	0.905	22x30 1.15	25x25 1.15			0.15	0.905
270	22x30 1.15	25x25 1.15			0.15	0.737	22x30 1.30	25x25 1.30			0.15	0.737
330	22x30 1.29	25x25 1.30			0.15	0.603	22x35 1.45	25x30 1.45			0.15	0.603
390	22x35 1.45	25x30 1.45	30x25 1.51		0.15	0.510	22x40 1.62	25x35 1.63	30x25 1.60		0.15	0.510
470	22x40 1.67	25x35 1.68	30x25 1.65		0.15	0.423	22x45 1.80	25x40 1.84	30x30 1.80	35x25 1.85	0.15	0.423
560	22x45 1.94	25x35 1.87	30x30 1.96		0.15	0.355		25x40 2.00	30x35 2.10	35x30 2.20	0.15	0.355
680	22x50 2.14	25x45 2.21	30x35 2.20	35x30 2.27	0.15	0.293		25x50 2.32	30x40 2.35	35x30 2.30	0.15	0.293
820		25x50 2.32	30x35 2.22	35x30 2.30	0.15	0.243			30x45 2.57	35x35 2.55	0.15	0.243
1000			30x45 2.63	35x35 2.60	0.15	0.199			30x50 2.90	35x40 2.90	0.15	0.199
1200			30x50 2.90	35x40 2.90	0.15	0.166				35x45 3.25	0.15	0.166
1500				35x45 3.11	0.15	0.133						

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 85℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LF **Long Life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	315(365)						350(400)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
82							22x25				0.15	2.426
							0.70					
100	22x25				0.15	1.989	22x30				0.15	1.989
	0.75						0.80					
120	22x30				0.15	1.658	22x30	25x25			0.15	1.658
	0.80						0.85	0.85				
150	22x30	25x25			0.15	1.326	22x35	25x25			0.15	1.326
	1.00	1.00					1.11	1.05				
180	22x35	25x30			0.15	1.105	22x40	25x35	30x25		0.15	1.105
	1.10	1.10					1.16	1.17	1.15			
220	22x40	25x30	30x25		0.15	0.905	22x45	25x35	30x30	35x25	0.15	0.905
	1.31	1.25	1.29				1.34	1.30	1.35	1.39		
270	22x45	25x35	30x30	35x25	0.15	0.737		25x45	30x35	35x25	0.15	0.737
	1.44	1.40	1.46	1.50				1.51	1.49	1.45		
330	22x50	25x40	30x35	35x30	0.15	0.603		25x50	30x40	35x30	0.15	0.603
	1.63	1.60	1.68	1.74				1.67	1.68	1.65		
390		25x45	30x35	35x30	0.15	0.510			30x45	35x35	0.15	0.510
		1.75	1.75	1.80					1.87	1.85		
470			30x40	35x35	0.15	0.423			30x50	35x40	0.15	0.423
			2.00	2.06					2.10	2.10		
560			30x45	35x40	0.15	0.355				35x45	0.15	0.355
			2.20	2.29						2.30		
680				35x45	0.15	0.293				35x50	0.15	0.293
				2.50						2.60		
820				35x50	0.15	0.243						
				2.80								

Capacitance (μF)	Rated (Surge) Voltage											
	400(450)						450(500)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
56							22x25				0.25	5.921
							0.65					
68	22x25				0.15	2.926	22x30				0.25	4.876
	0.65						0.75					
82	22x25				0.15	2.426	22x30	25x25			0.25	4.044
	0.75						0.85	0.85				
100	22x30	25x25			0.15	1.989	22x35	25x30			0.25	3.316
	0.85	0.85					0.90	0.90				
120	22x35	25x25	30x25		0.15	1.658	22x40	25x35	30x25		0.25	2.763
	0.99	0.93	1.04				1.11	1.12	1.10			
150	22x40	25x30	30x25		0.15	1.326	22x50	25x40	30x30		0.25	2.210
	1.15	1.10	1.13				1.25	1.21	1.20			
180	22x45	25x35	30x30		0.15	1.105		25x45	30x35	35x25	0.25	1.842
	1.24	1.20	1.25					1.40	1.39	1.35		
220	22x50	25x40	30x30	35x25	0.15	0.905		25x50	30x40	35x30	0.25	1.507
	1.40	1.36	1.35	1.38				1.51	1.53	1.50		
270		25x45	30x35	35x30	0.15	0.737			30x45	35x35	0.25	1.228
		1.50	1.50	1.54					1.72	1.70		
330		25x50	30x40	35x35	0.15	0.603			30x50	35x40	0.25	1.005
		1.70	1.70	1.77					1.90	1.90		
390			30x45	35x35	0.15	0.510				35x45	0.25	0.850
			1.92	1.90						2.10		
470				35x40	0.15	0.423				35x50	0.25	0.705
				2.10						2.30		
560				35x50	0.15	0.355						
				2.30								

☆Size:Dφx L(mm). ☆tan δ:20℃,120Hz. ☆Ripple Current: 85℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LJ High temperature and long life Series

■ Features : 105℃ 3000 hours , Wide temperature range for LF , Longer life than LG, Snap-in terminal, High ripple current

LJ
↑ Long Life
LG

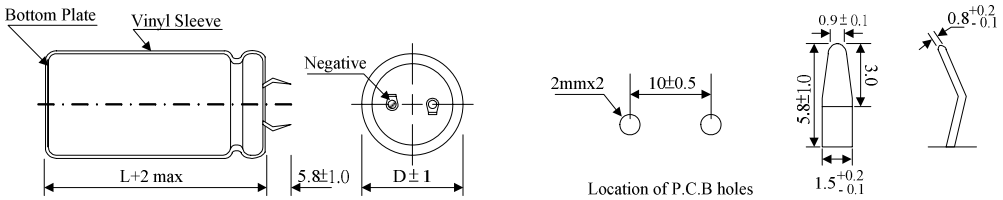
■ Recommended Applications: Smoothing circuit, TV/Monitor,Adapter, SMPS

■ Corresponding product to RoHS

■ Specifications

Item	Characteristics
Operating Temperature Range	-40 ~ +105℃ -25 ~ +105℃
Rated Voltage Range	10 ~ 100VDC 160 ~ 450VDC
Capacitance Range	560 ~ 68000μF 56 ~ 2200μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.02CV or 3mA whichever is smaller(After rated voltage applied for 5 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Dissipation Factor(tan δ)shall not exceed the values showed in the table of standard rating
Endurance	After applying rated voltage with rated Ripple current for 3000hrs at 105℃, the capacitor shall meet the following requirement. Capacitance Change: Within±20% of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirements as Endurance.

■ Diagram of Dimensions



■ Multiplier for Ripple Current

Frequency coefficient

Freq. (Hz)	50	60	120	400	1K	2.4K	5K	10K
Coefficient	0.8	0.85	1.0	1.14	1.23	1.3	1.36	1.4

ALUMINUM ELECTROLYTIC CAPACITORS

LJ **High temperature and long life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	10(13)						16(20)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
6800							22x25 1.80				0.55	0.107
8200							22x30 2.05	25x25 2.05			0.55	0.089
10000	22x25 1.80				0.55	0.073	22x35 2.45	25x30 2.45			0.55	0.073
12000	22x30 2.05	25x25 2.05			0.55	0.061	22x40 2.73	25x30 2.60	30x25 2.68		0.55	0.061
15000	22x35 2.45	25x30 2.45	30x25 2.55		0.55	0.049	22x45 2.99	25x35 2.90	30x30 3.02		0.55	0.049
18000	22x40 2.94	25x30 2.80	30x30 3.11		0.55	0.041	22x50 3.43	25x40 3.33	30x30 3.30	35x25 3.37	0.55	0.041
22000	22x45 3.24	25x35 3.15	30x30 3.28	35x25 3.37	0.55	0.033		25x45 3.70	30x35 3.70	35x30 3.81	0.55	0.033
27000		25x40 3.5	30x35 3.67	35x30 3.78	0.55	0.027			30x40 4.15	35x35 4.27	0.55	0.027
33000		25x45 4.00	30x40 4.20	35x30 4.08	0.55	0.022			30x50 4.65	35x40 4.65	0.55	0.022
39000		25x50 4.45	30x45 4.67	35x35 4.63	0.55	0.019				35x45 5.25	0.55	0.019
47000				35x40 4.90	0.55	0.016				35x50 5.80	0.55	0.016
56000				35x45 5.50	0.55	0.013						
68000				35x50 6.05	0.55	0.011						

Capacitance (μF)	Rated (Surge) Voltage											
	25(32)						35(44)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
2700							22x25 1.45				0.40	0.196
3300							22x30 1.60				0.40	0.161
3900	22x25 1.50				0.45	0.153	22x30 1.80				0.40	0.136
4700	22x30 1.80				0.45	0.127	22x35 2.23	25x25 2.10			0.40	0.113
5600	22x30 1.95	25x25 1.95			0.45	0.107	22x40 2.41	25x30 2.30	30x25 2.37		0.40	0.095
6800	22x35 2.20	25x30 2.20			0.45	0.088	22x45 2.68	25x35 2.60	30x30 2.70		0.40	0.078
8200	22x40 2.47	25x35 2.50	30x25 2.45		0.45	0.073	22x50 3.02	25x40 2.93	30x30 2.90	35x25 2.96	0.40	0.065
10000	22x45 2.75	25x40 2.80	30x30 2.75		0.45	0.060		25x45 3.20	30x35 3.20	35x30 3.30	0.40	0.0531
12000	22x50 3.13	25x45 3.22	30x35 3.19	35x25 3.10	0.45	0.050		25x50 3.64	30x40 3.67	35x30 3.6	0.40	0.044
15000		25x50 3.43	30x40 3.47	35x30 3.40	0.45	0.040			30x45 4.04	35x35 4.00	0.40	0.035
18000			30x45 3.94	35x35 3.90	0.45	0.033				35x40 4.60	0.40	0.029
22000			30x50 4.30	35x40 4.30	0.45	0.027				35x50 5.10	0.40	0.024
27000				35x45 4.85	0.45	0.022						

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 105℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LJ **High temperature and long life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	50(63)						63(79)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
1200							22x25					
							1.25				0.30	0.332
1500	22x25						22x30	25x25				
	1.25				0.35	0.309	1.45	1.45			0.30	0.265
1800	22x30						22x35	25x30				
	1.45				0.35	0.258	1.6	1.6			0.30	0.221
2200	22x30	25x25					22x40	25x30	30x25			
	1.6	1.6			0.35	0.211	1.89	1.8	1.85		0.30	0.181
2700	22x35	25x30					22x45	25x35	30x30			
	1.8	1.8			0.35	0.172	2.06	2	2.08		0.30	0.147
3300	22x40	25x30	30x25					25x40	30x30	35x25		
	2.05	1.95	2.01		0.35	0.141		2.32	2.3	2.35	0.30	0.121
3900	22x45	25x35	30x30					25x45	30x35	35x30		
	2.27	2.2	2.29		0.35	0.119		2.55	2.55	2.63	0.30	0.102
4700	22x50	25x40	30x30	35x25				25x50	30x40	35x30		
	2.5	2.42	2.4	2.45	0.35	0.099		2.83	2.86	2.8	0.30	0.085
5600		25x45	30x35	35x30					30x45	35x35		
		2.7	2.7	2.78	0.35	0.083			3.18	3.15	0.30	0.071
6800			30x40	35x30					30x50	35x40		
			3.06	3	0.35	0.068			3.5	3.5	0.30	0.059
8200			30x45	35x35						35x45		
			3.38	3.35	0.35	0.057				3.9	0.30	0.049
10000				35x40								
				3.7	0.35	0.046						
12000				35x50	0.35	0.039						
				4.20								

Capacitance (μF)	Rated (Surge) Voltage											
	80(100)						100(125)					
	φ DxL / Ripple Current				tan δ	ESR	φ DxL / Ripple Current				tan δ	ESR
560							22x25					
							1.20				0.25	0.592
680							22x30					
							1.35				0.25	0.488
820	22x25						22x30	25x25				
	1.20				0.25	0.404	1.50	1.50			0.25	0.404
1000	22x30						22x35	25x30				
	1.35				0.25	0.332	1.70	1.70			0.25	0.332
1200	22x35	25x25					22x40	25x35	30x25			
	1.59	1.50			0.25	0.276	1.97	1.99	1.95		0.25	0.276
1500	22x40	25x30	30x25				22x45	25x40	30x30	35x25		
	1.78	1.70	1.75		0.25	0.221	2.15	2.19	2.15	2.21	0.25	0.221
1800	22x45	25x35	30x30					25x45	30x35	35x30		
	2.01	1.95	2.03		0.25	0.184		2.45	2.45	2.52	0.25	0.184
2200		25x40	30x30	35x25				25x50	30x40	35x35		
		2.17	2.15	2.19	0.25	0.151		2.75	2.75	2.86	0.25	0.151
2700		25x45	30x35	35x30					30x45	35x35		
		2.45	2.45	2.52	0.25	0.123			3.08	3.05	0.25	0.123
3300			30x40	35x35					30x50	35x40		
			2.75	2.83	0.25	0.100			3.45	3.45	0.25	0.100
3900			30x45	35x35						35x45		
			3.13	3.10	0.25	0.085				3.90	0.25	0.085
4700				35x40						35x50		
				3.40	0.25	0.071				4.30	0.25	0.071
5600				35x50								
				3.80	0.25	0.059						

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 105℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LJ **High temperature and long life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	160(200)						180(225)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
270	22x25				0.15	0.737	22x25				0.15	0.737
	0.85						0.85					
330	22x30				0.15	0.603	22x30				0.15	0.603
	1.00						1.10					
390	22x30	25x25			0.15	0.51	22x35	25x25			0.15	0.51
	1.15	1.15					1.32	1.25				
470	22x35	25x30			0.15	0.423	22x40	25x30			0.15	0.423
	1.30	1.30					1.47	1.40				
560	22x40	25x30	30x25		0.15	0.355	22x45	25x35	30x25		0.15	0.355
	1.57	1.50	1.54				1.70	1.63	1.60			
680	22x45	25x35	30x30		0.15	0.293	22x50	25x40	30x30	35x25	0.15	0.293
	1.75	1.70	1.77				1.87	1.82	1.80	1.84		
820	22x50	25x40	30x30	35x25	0.15	0.243		25x45	30x35	35x30	0.15	0.243
	2.03	1.97	1.95	1.99				2.05	2.05	2.11		
1000		25x45	30x35	35x30	0.15	0.199		25x50	30x40	35x30	0.15	0.199
		2.15	2.15	2.21				2.27	2.29	2.25		
1200			30x40	35x35	0.15	0.166			30x45	35x35	0.15	0.166
			2.45	2.52					2.57	2.55		
1500			30x50	35x40	0.15	0.133				35x40	0.15	0.133
			2.75	2.75						2.85		
1800				35x45	0.15	0.111				35x50	0.15	0.111
				3.00						3.10		
2200				35x50	0.15	0.09						
				3.50								

Capacitance (μF)	Rated (Surge) Voltage											
	200(250)						250(300)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
150							22x25				0.15	1.330
							0.75					
180							22x30				0.15	1.110
							0.85					
220	22x25				0.15	0.905	22x30	25x25			0.15	0.905
	0.85						1.00	1.00				
270	22x30				0.15	0.737	22x35	25x25			0.15	0.737
	1.00						1.22	1.15				
330	22x30	25x25			0.15	0.603	22x40	25x30			0.15	0.603
	1.15	1.15					1.36	1.30				
390	22x35	25x30			0.15	0.510	22x45	25x35	30x25	35x25	0.15	0.510
	1.30	1.30					1.54	1.48	1.45	1.59		
470	22x40	25x35	30x25		0.15	0.423	22x50	25x40	30x30	35x30	0.15	0.423
	1.52	1.54	1.49				1.78	1.75	1.72	1.88		
560	22x45	25x35	30x30		0.15	0.355		25x40	30x35	35x30	0.15	0.355
	1.7	1.65	1.72					1.80	1.89	1.94		
680		25x45	30x35	35x30	0.15	0.293		25x50	30x40	35x35	0.15	0.293
		1.97	1.97	2.02				2.10	2.10	2.18		
820		25x45	30x35	35x30	0.15	0.243			30x45	35x40	0.15	0.243
		2.20	2.10	2.16					2.30	2.39		
1000			30x45	35x35	0.15	0.199			30x50	35x45	0.15	0.199
			2.32	2.30					2.55	2.65		
1200			30x50	35x40	0.15	0.166				35x50	0.15	0.166
			2.75	2.75						2.90		
1500				35x45	0.15	0.133						
				2.90								

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 105℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LJ **High temperature and long life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	315(365)						350(400)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
82	22x25				0.15	2.426	22x25				0.15	2.426
	0.55						0.60					
100	22x30				0.15	1.989	22x30	25x25			0.15	1.989
	0.65						0.70	0.70				
120	22x30	25x25			0.15	1.658	22x35	25x30			0.15	1.658
	0.75	0.75					0.80	0.80				
150	22x35	25x30			0.15	1.326	22x40	25x35	30x25		0.15	1.326
	0.8	0.80					0.86	0.87	0.85			
180	22x40	25x35	30x25		0.15	1.105	22x45	25x40	30x30		0.15	1.105
	1.01	1.02	1.00				1.05	1.07	1.05			
220	22x45	25x40	30x30		0.15	0.905	22x50	25x45	30x35	35x25	0.15	0.905
	1.10	1.12	1.10				1.16	1.20	1.18	1.15		
270		25x45	30x35		0.15	0.737		25x50	30x40	35x30	0.15	0.737
		1.25	1.25					1.31	1.33	1.3		
330		25x50	30x40	35x30	0.15	0.603			30x45	35x35	0.15	0.603
		1.53	1.53	1.50					1.46	1.45		
390			30x45	35x30	0.15	0.510			30x50	35x40	0.15	0.510
			1.71	1.60					1.65	1.65		
470			30x50	35x35	0.15	0.423				35x45	0.15	0.423
			1.85	1.75						1.85		
560				35x40	0.15	0.355				35x50	0.15	0.355
				2.00						2.10		
680				35x45	0.15	0.293						
				2.20								

Capacitance (μF)	Rated (Surge) Voltage											
	400(450)						450(500)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
56							22x25				0.25	5.921
							0.55					
68	22x25				0.15	2.926	22x30				0.25	4.876
	0.55						0.65					
82	22x30	25x25			0.15	2.426	22x35	25x25			0.25	4.044
	0.65	0.65					0.80	0.75				
100	22x35	25x25			0.15	1.989	22x40	25x30			0.25	3.316
	0.79	0.75					0.89	0.85				
120	22x40	25x30	30x25		0.15	1.658	22x45	25x35	30x25		0.25	2.763
	0.89	0.85	0.87				0.95	0.92	0.90			
150	22x45	25x35	30x30	35x25	0.15	1.326	22x50	25x40	30x30		0.25	2.210
	0.93	0.90	0.94	0.96			1.14	1.11	1.10			
180	22x50	25x40	30x30	35x25	0.15	1.105		25x45	30x35	35x25	0.25	1.842
	1.14	1.11	1.10	1.12				1.25	1.24	1.20		
220		25x45	30x35	35x30	0.15	0.905		25x50	30x40	35x30	0.25	1.507
		1.20	1.20	1.24				1.36	1.38	1.35		
270		25x50	30x40	35x30	0.15	0.737			30x45	35x35	0.25	1.228
		1.36	1.38	1.35					1.51	1.50		
330			30x45	35x35	0.15	0.603			30x50	35x40	0.25	1.005
			1.51	1.50					1.70	1.70		
390			30x50	35x40	0.15	0.510				35x45	0.25	0.850
			1.70	1.70						1.90		
470				35x45	0.15	0.423				35x50	0.25	0.705
				1.90						2.10		

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 105℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LQ High temperature and long life Series

■ Features : 105℃ 5000 hours , Wide temperature range for LF , Longer life than HW, Snap-in terminal, High ripple current

■ Recommended Applications: Smoothing circuit, TV/Monitor,Adapter, SMPS

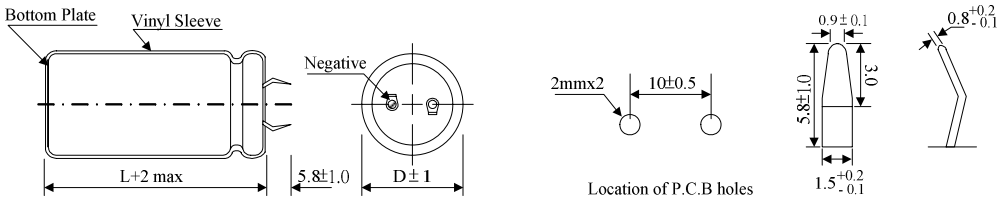
■ Corresponding product to RoHS

LQ
↑
LJ
Long Life

■ Specifications

Item	Characteristics
Operating Temperature Range	-25 ~ +105℃
Rated Voltage Range	160 ~ 450VDC
Capacitance Range	56 ~ 2200μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX) (20℃)	I≦0.02CV or 3mA whichever is smaller(After rated voltage applied for 5 minutes) I= Leakage Current (μA) C = Nominal Capacitance (μF) V= Rated Voltage (V)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Dissipation Factor(tan δ)shall not exceed the values showed in the table of standard rating
Endurance	After applying rated voltage with rated Ripple current for 5000hrs at 105℃, the capacitor shall meet the following requirement. Capacitance Change: Within±20% of the initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: Not more than the specified value
Shelf Life	After placed at 105℃without voltage applied for 1000 hours, the capacitor shall meet the same requirements as Endurance.

■ Diagram of Dimensions



■ Multiplier for Ripple Current

Frequency coefficient

Freq. (Hz)	50	60	120	400	1K	2.4K	5K	10K
Coefficient	0.8	0.85	1.0	1.14	1.23	1.3	1.36	1.4

ALUMINUM ELECTROLYTIC CAPACITORS

LQ **High temperature and long life Series**

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	160(200)						180(225)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
270	22x25				0.15	0.737	22x25				0.15	0.737
	0.85						0.85					
330	22x30				0.15	0.603	22x30				0.15	0.603
	1.00						1.10					
390	22x30	25x25			0.15	0.51	22x35	25x25			0.15	0.51
	1.15	1.15					1.32	1.25				
470	22x35	25x30			0.15	0.423	22x40	25x30			0.15	0.423
	1.30	1.30					1.47	1.40				
560	22x40	25x30	30x25		0.15	0.355	22x45	25x35	30x25		0.15	0.355
	1.57	1.50	1.54				1.70	1.63	1.60			
680	22x45	25x35	30x30		0.15	0.293	22x50	25x40	30x30	35x25	0.15	0.293
	1.75	1.70	1.77				1.87	1.82	1.80	1.84		
820	22x50	25x40	30x30	35x25	0.15	0.243		25x45	30x35	35x30	0.15	0.243
	2.03	1.97	1.95	1.99				2.05	2.05	2.11		
1000		25x45	30x35	35x30	0.15	0.199		25x50	30x40	35x30	0.15	0.199
		2.15	2.15	2.21				2.27	2.29	2.25		
1200			30x40	35x35	0.15	0.166			30x45	35x35	0.15	0.166
			2.45	2.52					2.57	2.55		
1500			30x50	35x40	0.15	0.133				35x40	0.15	0.133
			2.75	2.75						2.85		
1800				35x45	0.15	0.111				35x50	0.15	0.111
				3.00						3.10		
2200				35x50	0.15	0.09						
				3.50								

Capacitance (μF)	Rated (Surge) Voltage											
	200(250)						250(300)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
150							22x25				0.15	1.330
							0.75					
180							22x30				0.15	1.110
							0.85					
220	22x25				0.15	0.905	22x30	25x25			0.15	0.905
	0.85						1.00	1.00				
270	22x30				0.15	0.737	22x35	25x25			0.15	0.737
	1.00						1.22	1.15				
330	22x30	25x25			0.15	0.603	22x40	25x30			0.15	0.603
	1.15	1.15					1.36	1.30				
390	22x35	25x30			0.15	0.510	22x45	25x35	30x25	35x25	0.15	0.510
	1.30	1.30					1.54	1.48	1.45	1.59		
470	22x40	25x35	30x25		0.15	0.423	22x50	25x40	30x30	35x30	0.15	0.423
	1.52	1.54	1.49				1.78	1.75	1.72	1.88		
560	22x45	25x35	30x30		0.15	0.355		25x40	30x35	35x30	0.15	0.355
	1.7	1.65	1.72					1.80	1.89	1.94		
680		25x45	30x35	35x30	0.15	0.293		25x50	30x40	35x35	0.15	0.293
		1.97	1.97	2.02				2.10	2.10	2.18		
820		25x45	30x35	35x30	0.15	0.243			30x45	35x40	0.15	0.243
		2.20	2.10	2.16					2.30	2.39		
1000			30x45	35x35	0.15	0.199			30x50	35x45	0.15	0.199
			2.32	2.30					2.55	2.65		
1200			30x50	35x40	0.15	0.166				35x50	0.15	0.166
			2.75	2.75						2.90		
1500				35x45	0.15	0.133						
				2.90								

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 105℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LQ

High temperature and long life
Series

■Dimensions,Max Dissipation Factor,Max Permissible Ripple Current,Max Equivalent Series Resistance

Capacitance (μF)	Rated (Surge) Voltage											
	315(365)						350(400)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
82	22x25				0.15	2.426	22x25				0.15	2.426
	0.55						0.60					
100	22x30				0.15	1.989	22x30	25x25			0.15	1.989
	0.65						0.70	0.70				
120	22x30	25x25			0.15	1.658	22x35	25x30			0.15	1.658
	0.75	0.75					0.80	0.80				
150	22x35	25x30			0.15	1.326	22x40	25x35	30x25		0.15	1.326
	0.8	0.80					0.86	0.87	0.85			
180	22x40	25x35	30x25		0.15	1.105	22x45	25x40	30x30		0.15	1.105
	1.01	1.02	1.00				1.05	1.07	1.05			
220	22x45	25x40	30x30		0.15	0.905	22x50	25x45	30x35	35x25	0.15	0.905
	1.10	1.12	1.10				1.16	1.20	1.18	1.15		
270		25x45	30x35		0.15	0.737		25x50	30x40	35x30	0.15	0.737
		1.25	1.25					1.31	1.33	1.3		
330		25x50	30x40	35x30	0.15	0.603			30x45	35x35	0.15	0.603
		1.53	1.53	1.50					1.46	1.45		
390			30x45	35x30	0.15	0.510			30x50	35x40	0.15	0.510
			1.71	1.60					1.65	1.65		
470			30x50	35x35	0.15	0.423				35x45	0.15	0.423
			1.85	1.75						1.85		
560				35x40	0.15	0.355				35x50	0.15	0.355
				2.00						2.10		
680				35x45	0.15	0.293						
				2.20								

Capacitance (μF)	Rated (Surge) Voltage											
	400(450)						450(500)					
	φ DxL				tan δ	ESR	φ DxL				tan δ	ESR
	Ripple Current						Ripple Current					
56							22x25				0.25	5.921
							0.55					
68	22x25				0.15	2.926	22x30				0.25	4.876
	0.55						0.65					
82	22x30	25x25			0.15	2.426	22x35	25x25			0.25	4.044
	0.65	0.65					0.80	0.75				
100	22x35	25x25			0.15	1.989	22x40	25x30			0.25	3.316
	0.79	0.75					0.89	0.85				
120	22x40	25x30	30x25		0.15	1.658	22x45	25x35	30x25		0.25	2.763
	0.89	0.85	0.87				0.95	0.92	0.90			
150	22x45	25x35	30x30	35x25	0.15	1.326	22x50	25x40	30x30		0.25	2.210
	0.93	0.90	0.94	0.96			1.14	1.11	1.10			
180	22x50	25x40	30x30	35x25	0.15	1.105		25x45	30x35	35x25	0.25	1.842
	1.14	1.11	1.10	1.12				1.25	1.24	1.20		
220		25x45	30x35	35x30	0.15	0.905		25x50	30x40	35x30	0.25	1.507
		1.20	1.20	1.24				1.36	1.38	1.35		
270		25x50	30x40	35x30	0.15	0.737			30x45	35x35	0.25	1.228
		1.36	1.38	1.35					1.51	1.50		
330			30x45	35x35	0.15	0.603			30x50	35x40	0.25	1.005
			1.51	1.50					1.70	1.70		
390			30x50	35x40	0.15	0.510				35x45	0.25	0.850
			1.70	1.70						1.90		
470				35x45	0.15	0.423				35x50	0.25	0.705
				1.90						2.10		

☆Size:D φ x L(mm). ☆tan δ :20℃,120Hz. ☆Ripple Current: 105℃,120Hz,(A/rms) ☆ESR:20℃,120Hz,(Ω).

ALUMINUM ELECTROLYTIC CAPACITORS

LS High temperature and Smaller Size Series

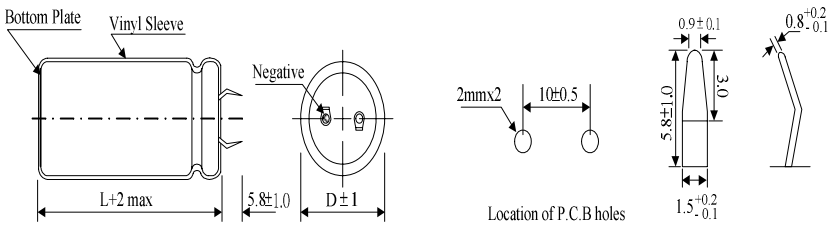
- Endurance : 105℃ 2000 hours, smaller size than LG
- Ideally suitable for using in Switching Power Supplies and orther industrial /commercial applications
- Corresponding product to RoHS

LS ↑ Smaller size
LG

Specifications

Item	Characteristics
Operating Temperature Range	-25 ~ +105℃
Rated Voltage Range	160 ~ 450VDC
Capacitance Range	100 ~ 3300 μF
Capacitance Tolerance	± 20 % at 120Hz , 20℃
Leakage Current (MAX)	I=0.02CV or 3mA , whichever is smaller.(At 20℃, After 5 minutes) Where, I :Leakage Current (μA) ; C:Nominal Capacitance(μF) ; V:Rated Voltage(v)
Dissipation Factor (MAX) (tan δ) (120Hz ,20℃)	Rated voltage(V) | 160~400 | 420~450 tan δ | 0.15 | 0.20
Low Temperature Stability Impedance Ratio (MAX)	Measurement frequency : 120Hz Rated voltage(V) | 160~400 | 420~450 Z-25℃ / Z+20℃ | 4 | 8
Endurance	After applying rated voltage with rated Ripple current for 2000hrs at 105℃, the capacitor shall meet the following requirements. Capacitance Change: Within ± 20 % of initial value Dissipation Factor: Not more than 200% of the specified value Leakage Current: initial specified value or less
Shelf Life	After placed at 105℃ without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.

Diagram of Dimensions



Multiplier for Ripple Current

Frequency coefficient

Frequency	50	60	120	1K	10K
160~250V	0.85	0.88	1.00	1.30	1.50
315~450V	0.88	0.9	1.00	1.35	1.45

ALUMINUM ELECTROLYTIC CAPACITORS

LS

High temperature and Smaller-size Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage							
	160 (200)		200 (250)		220 (270)		250（300）	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
330					22x25	1.26		
390					22x30	1.34	22x30	1.08
							25x25	1.08
470			22x30	1.20	22x35	1.48	22x35	1.17
					25x30	1.40	25x30	1.30
560	22x30	1.40	22x35	1.48	22x40	1.45	22x40	1.40
			25x30	1.48	25x30	1.45	25x35	1.50
							30x25	1.26
680	22x35	1.50	22x40	1.60	22x40	1.49	22x45	1.35
	25x30	1.70	25x35	1.60	25x35	1.78	25x40	1.70
					30x30	1.65	30x30	1.70
820	22x40	2.00	22x45	1.75	22x50	1.93		
	25x35	2.00	25x40	1.75	25x40	1.93	25x45	2.00
			30x30	1.75	30x30	1.85	30x35	2.00
					35x25	1.93	35x30	2.00
1000	22x50	2.10			25x45	2.15		
	25x40	2.20	25x45	2.04	30x35	2.33		
	30x30	2.20	30x35	2.04	35x30	2.33	25x50	2.20
							30x40	2.20
1200							35x30	2.00
	25x45	2.30	25x50	2.30				
	30x35	2.30	30x40	2.30	30x40	2.50	30x45	2.30
			35x30	2.30	35x30	2.12	35x35	2.20
1500	25x50	2.50						
	30x40	2.50	30x45	2.57	30x45	2.30		
	35x30	2.50	35x35	2.57	35x35	2.25	35x40	2.30
1800								
	30x45	2.70	30x50	2.41				
	35x35	2.55	35x40	2.68	35x40	2.43	35x50	2.50
2200	30x50	2.90						
	35x45	2.90	35x45	2.63	35x50	2.95		
2700	35x50	3.00	35x55	3.27				
3300	35x60	3.10						

☆ Size: Dϕ x L (mm) ☆ Ripple Current ： A/rms. 105℃,120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

LS

High temperature and Smaller-size Series

■Dimensions,Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage					
	400 (450)		420(470)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple
100					22x25	0.50
120	22x25	0.61	22x30	0.50	22x30	0.60
150			22x35	0.58	22x35	0.72
			25x25	0.65	25x30	0.79
180	22x35	0.73	22x35	0.64	22x40	0.79
	25x25	0.66	25x30	0.64	25x30	0.71
220	22x40	0.85	22x40	0.80	22x45	0.87
	25x30	0.77	25x35	0.80	25x35	0.78
			30x25	0.80	30x30	0.89
270	22x45	1.00	22x50	1.00	22x50	0.95
	25x35	1.00	25x40	1.00	25x45	0.95
	30x30	1.00	30x30	1.00	30x35	1.05
					35x25	0.95
330	22x50	1.04				
	25x40	1.04	25x45	1.10	25x50	1.20
	30x35	1.15	30x35	1.10	30x40	1.20
	35x25	1.04	35x30	1.10	35x30	1.20
390	25x45	1.26	25x50	1.20		
	30x35	1.26	30x40	1.20	30x45	1.38
	35x30	1.55	35x30	1.20	35x35	1.38
470	30x40	1.40	30x45	1.30	30x50	1.55
	35x35	1.55	35x35	1.30	35x40	1.55
560	30x50	1.63				
	35x40	1.63	35x40	1.60	35x45	1.70
680						
	35x45	1.80	35x45	2.00	35x50	1.91
820	35x50	2.00				

☆ Size: Dϕx L (mm) ☆ Ripple Current ： A/rms. 105℃,120Hz