

规格書

SPECIFICATION

Customer : _____

Part Name: _____ E-CAP

SPEC : _____ LG Series

Part NO. : _____ ALL

Date : _____ 2017-11-22

CUSTOMER SIGN		

TOPAZCON	
DRAWING	RATIFY
黃峰	陳慶

LG Series

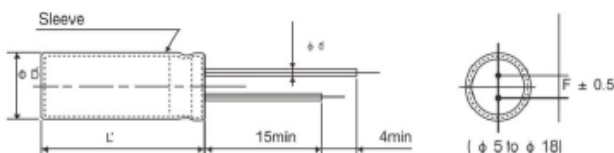
- "GBL" system, high reliability
- Low impedance and high ripple current
- Life time: +105 °C 2,000 to 8,000 hours
- RoHS Compliant



SPECIFICATIONS

Items	Characteristics																						
Category	Temperature Range																						
Temperature Range	-55 to +105 ℃																						
Rated Voltage Range	6.3 to 63Vdc																						
Capacitance Tolerance	± 20%(M) (at20 ℃ , 120Hz)																						
Leakage Current	I ≤ 0.01CVor 3 μ A whichever is greater Where, I:Max.leakage current(μ A), C:Nominal capacitance (μ F) V:Rated voltage(V) (at 20 ℃ after 2 minutes)																						
Dissipation Factor (tanδ)	Rated voltage(Vdc)	6.3	10	16	25	35	50	63															
	Tanδ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.08															
	When nominal capacitance exceeds 1,000 μ F, add 0.02 to the value above for each 1,000 μ F increase. (at 20 ℃ , 120Hz)																						
Low Temperature Characteristics (Max.Impedance Ratio)	Rated voltage(Vdc)	6.3	10	16	25	35	50	63															
	ZI-25 ℃ 1/Z (+20 ℃)	4	3			2																	
	ZI-55 ℃ 1/Z (+20 ℃)	8	6	4	3																		
Endurance	The following specification shall be satisfied when the capacitors are restored to 20 ℃ after subjected to DC voltage with the rated ripple current is applied for the specified period of time at 105 ℃																						
	Capacitance change	≤ ± 25% of the initial value					<table><tr><th>Cass Dia</th><th>Lifetime(hours)</th></tr><tr><td>φ D ≤ 6.3</td><td>2,000</td></tr><tr><td>φ D=8</td><td>3,000</td></tr><tr><td>φ D=10</td><td>5,000</td></tr><tr><td>φ D=12.5</td><td>7,000</td></tr><tr><td>φ D ≥ 16</td><td>8,000</td></tr></table>					Cass Dia	Lifetime(hours)	φ D ≤ 6.3	2,000	φ D=8	3,000	φ D=10	5,000	φ D=12.5	7,000	φ D ≥ 16	8,000
	Cass Dia	Lifetime(hours)																					
	φ D ≤ 6.3	2,000																					
φ D=8	3,000																						
φ D=10	5,000																						
φ D=12.5	7,000																						
φ D ≥ 16	8,000																						
DF (tanδ)	≤ 200% of the initial specified value																						
Leakage current	≤ The initial specified value																						
Shelf Life	The following specification shall be satisfied when the capacitors are restored to 20 ℃ after exposing them for 1,000 hours at 105 ℃ without voltage applied																						
	Capacitance change	≤ ± 25% of the initial value																					
	DF (tanδ)	≤ 200% of the specified value																					
	Leakage current	≤ 200% The initial specified value																					

DIMENSIONS[MM]



φ D	5	6.3	8	10	12.5	16	18
φ d	0.5	0.5	0.5	0.6	0.6	0.6	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φ D'	φ D+0.5max						
L'	L+2max						

RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Cap(µF)	120	1k	10k	100k
Cap < 220	0.40	0.75	0.90	1.00
220 ≤ Cap < 680	0.50	0.85	0.94	1.00
680 ≤ Cap < 2200	0.60	0.87	0.95	1.00
2200 ≤ Cap < 4700	0.75	0.90	0.95	1.00
Cap ≥ 4700	0.85	0.95	0.98	1.00

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

LG Series

● STANDARD RATINGS

(Impedance: at 20 °C 100KHZ/ Ω max. Ripple current: mA rms/105 °C 100KHZ)

WV (Vdc)	cap (μ F)	Case size Φ D x L(mm)	Tan δ	Impedance (Ω max)	Ripple current (mA rms)
6.3(OJ)	100	5 x 11	0.22	0.65	155
	220	6.3 x 11	0.22	0.40	255
	330	6.3 x 11	0.22	0.25	290
	470	8 x 11.5	0.22	0.18	400
	560	8 x 11.5	0.22	0.17	460
	680	8 x 11.5	0.22	0.13	550
	820	8 x 16	0.22	0.095	730
	1000	8 x 16	0.22	0.090	730
	1200	8 x 20	0.22	0.080	810
	1500	10 x 20	0.22	0.052	1220
	2200	10 x 20	0.24	0.045	1440
	2700	10 x 30	0.24	0.037	1690
	3300	12.5 x 20	0.26	0.038	1660
	3900	12.5 x 25	0.26	0.030	1950
	4700	12.5 x 30	0.28	0.025	2310
	5600	12.5 x 35	0.30	0.022	2510
10(1A)	6800	12.5 x 40	0.32	0.020	2870
	8200	16 x 30	0.36	0.019	3010
	10000	16 x 35	0.40	0.017	3150
	100	5 x 11	0.19	0.58	175
	220	6.3 x 11	0.19	0.25	290
	330	8 x 11.5	0.19	0.21	410
	470	8 x 11.5	0.19	0.13	555
	560	8 x 16	0.19	0.12	675
	680	8 x 16	0.19	0.090	730
	820	8 x 20	0.19	0.085	875
	1000	10 x 16	0.19	0.088	1050
	1200	10 x 20	0.19	0.052	1220
	1500	10 x 20	0.21	0.045	1440
	2200	12.5 x 20	0.21	0.038	1660
	2700	12.5 x 25	0.23	0.034	1945
	3300	12.5 x 25	0.23	0.030	1950
16(1C)	3900	12.5 x 30	0.25	0.025	2310
	4700	12.5 x 35	0.27	0.022	2510
	5600	12.5 x 40	0.29	0.017	2870
	6800	16 x 30	0.33	0.019	3010
	8200	16 x 35	0.33	0.017	3150
	10000	16 x 40	0.37	0.015	3710
	47	5 x 11	0.16	0.80	120
	68	6.3 x 11	0.16	0.56	220
	100	6.3 x 11	0.16	0.52	255
	150	8 x 11.5	0.16	0.21	350
	220	8 x 11.5	0.16	0.20	405
	330	8 x 11.5	0.16	0.13	555
	470	8 x 16	0.16	0.090	730
	560	8 x 20	0.16	0.085	810
	680	8 x 20	0.16	0.089	1050
	820	10 x 20	0.16	0.058	1220
25(1E)	1000	10 x 20	0.16	0.052	1220
	1200	10 x 25	0.16	0.045	1440
	1500	12.5 x 20	0.18	0.030	1950
	2200	12.5 x 25	0.18	0.025	2310
	2700	12.5 x 30	0.20	0.022	2510
	3900	12.5 x 40	0.20	0.017	2870
	4700	16 x 30	0.22	0.019	3010
	5600	16 x 35	0.24	0.017	3150
	6800	16 x 40	0.26	0.015	3710
	100	5 x 11	0.12	1.5	100
	22	5 x 11	0.12	0.75	160
	33	5 x 11	0.12	0.58	210
	47	6.3 x 11	0.12	0.49	215
	68	8 x 11.5	0.12	0.21	350
	100	8 x 11.5	0.12	0.20	405
	150	8 x 11.5	0.12	0.13	555
35(1V)	220	8 x 16	0.12	0.090	730
	330	10 x 16	0.12	0.080	1050
	470	10 x 20	0.12	0.065	1220
	560	10 x 25	0.12	0.045	1440
	680	10 x 30	0.12	0.037	1690
	820	12.5 x 25	0.12	0.035	1938
	1000	12.5 x 25	0.12	0.030	1950
	1200	12.5 x 30	0.12	0.025	2310
	1500	12.5 x 35	0.12	0.022	2510
	2200	16 x 30	0.14	0.019	3010
	2700	16 x 35	0.14	0.017	3150
	3300	16 x 40	0.16	0.016	3710
	3900	18 x 40	0.16	0.015	3800
	10	5 x 11	0.10	2.00	105
	22	5 x 11	0.10	1.10	155
	33	6.3 x 11	0.10	0.48	215
50(1H)	47	6.3 x 11	0.10	0.40	220
	68	8 x 11.5	0.10	0.35	355
	100	8 x 11.5	0.10	0.23	485
	150	8 x 16	0.10	0.16	635
	220	10 x 16	0.10	0.088	1050
	330	10 x 25	0.10	0.073	1250
	470	12.5 x 20	0.10	0.059	1480
	560	12.5 x 25	0.10	0.044	1640
	680	12.5 x 30	0.10	0.039	2220
	820	12.5 x 35	0.10	0.033	2290
	1000	16 x 25	0.10	0.034	2240
	1200	16 x 30	0.10	0.028	2700
	1500	16 x 35	0.10	0.025	2800
	2200	18 x 35	0.12	0.023	3100
	2700	18 x 40	0.12	0.020	3400

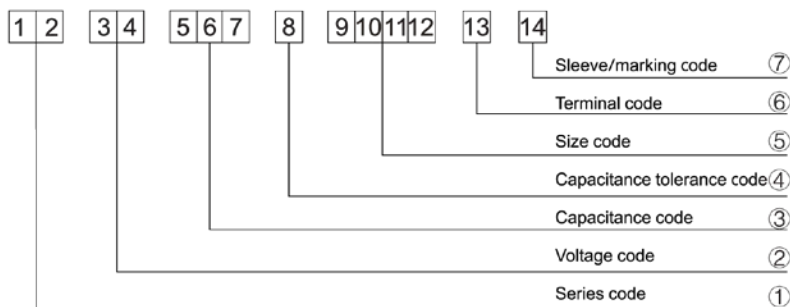
LG Series

STANDARD RATINGS

(Impedance: at 20 °C 100kHz/ Ω max, Ripple current: mA rms/105 °C 100kHz)

WV (Vdc)	Cap (μ F)	Case size Φ D × L (mm)	Tan δ	Impedance (Ω max)	Ripple current (mA rms)
63(1J)	12	5 × 11	0.08	1.9	145
	22	6.3 × 11	0.08	1.0	240
	39	6.3 × 15	0.08	0.61	330
	68	8 × 12	0.08	0.34	405
	100	8 × 16	0.08	0.27	535
	100	10 × 12.5	0.08	0.255	540
	120	10 × 16	0.08	0.19	600
	150	8 × 20	0.08	0.21	690
	180	10 × 20	0.08	0.145	890
	220	10 × 25	0.08	0.13	1050
	330	10 × 30	0.08	0.090	1300
	330	12.5 × 20	0.08	0.085	1290
	390	12.5 × 25	0.08	0.070	1720
	470	12.5 × 30	0.08	0.055	2090
	470	16 × 20	0.08	0.059	1770
	680	12.5 × 35	0.08	0.047	2270
	680	16 × 25	0.08	0.050	2160
	680	18 × 20	0.08	0.055	2290
	820	12.5 × 40	0.08	0.042	2560
	820	16 × 30	0.08	0.043	2670
	820	18 × 25	0.08	0.043	2590
	1000	16 × 35	0.08	0.036	2770
	1200	16 × 40	0.08	0.030	2850
	1200	18 × 30	0.08	0.032	2950
	1500	18 × 35	0.08	0.030	3100
	1800	18 × 40	0.08	0.025	3210

Part Number System



① Series code

Series name	Code	
	1	2
SM	S	M
SS	S	S
SH	S	H
SP	S	P
NP	N	P
LL	L	L
RD	R	D
RE	R	E
RT	R	T
RF	R	F
RG	R	G
RJ	R	J
RR	R	R
LF	L	F
LJ	L	J
LR	L	R
LG	L	G

② Voltage code

WV (V _{dc})	Code	
	3	4
4	0	G
6.3	0	J
10	1	A
16	1	C
25	1	E
35	1	V
50	1	H
63	1	J
80	1	K
100	2	A
160	2	C
200	2	D
250	2	E
350	2	V
400	2	G
450	2	W
500	2	H

③ Capacitance code

Cap (μF)	Code		
	5	6	7
0.1	R	1	0
0.22	R	2	2
0.33	R	3	3
0.47	R	4	7
1	1	R	0
2.2	2	R	2
3.3	3	R	3
4.7	4	R	7
6.8	6	R	8
10	1	0	0
22	2	2	0
33	3	3	0
47	4	7	0
100	1	0	1
220	2	2	1
330	3	3	1
470	4	7	1
560	5	6	1
1000	1	0	2
1500	1	5	2
2200	2	2	2
3300	3	3	2
4700	4	7	2
6800	6	8	2
10000	1	0	3
15000	1	5	3

④ Capacitance tolerance code

Tol. (%)	Code
	8
-5 ~ +5	J
-10 ~ +10	K
-20 ~ +20	M

⑤ Size code

ΦD × L (mm)	Code			
	9	10	11	12
3 × 5	0	3	0	5
4 × 5	0	4	0	5
5 × 5	0	5	0	5
6.3 × 5	0	6	0	5
4 × 7	0	4	0	7
5 × 7	0	5	0	7
6.3 × 7	0	6	0	7
8 × 7	0	8	0	7
5 × 11	0	5	1	1
6.3 × 11	0	6	1	1
8 × 12	0	8	1	2
8 × 16	0	8	1	6
10 × 12	1	0	1	2
10 × 16	1	0	1	6
8 × 20	0	8	2	0
10 × 20	1	0	2	0
13 × 20	1	3	2	0
13 × 25	1	3	2	5
16 × 25	1	6	2	5
16 × 32	1	6	3	2
16 × 36	1	6	3	6
18 × 32	1	8	3	2
18 × 36	1	8	3	6
18 × 40	1	8	4	0

⑦ Sleeve/Marking code

Sleeve/Marking	Code 14
PET	T
Black	B
Yellow	Y
Ink Green	I
Pea Green	P
Orange	O

⑥ Terminal code

Specification	Code 13
Bulk packing	0
Φ4-8Taping	T1
	T2
	T2
Φ10-18Taping	T3
Lead Cut	F
	C
	R
	L
	M
	S
	B
	K

Lead Forming

Taping Specifications

Fig.1 Code:T1

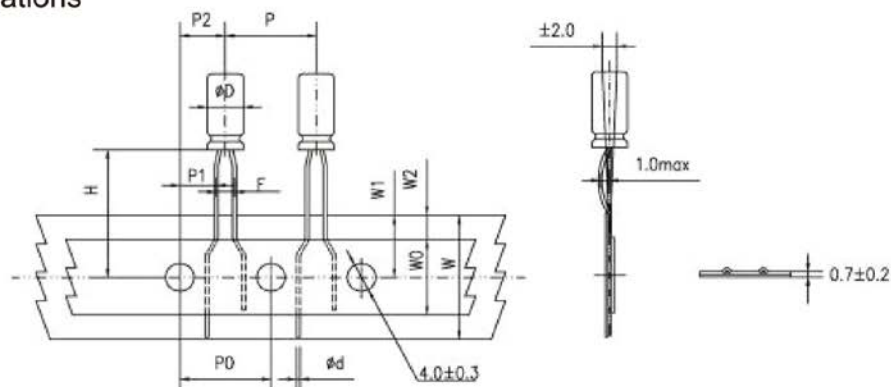


Fig.2 Code:T2

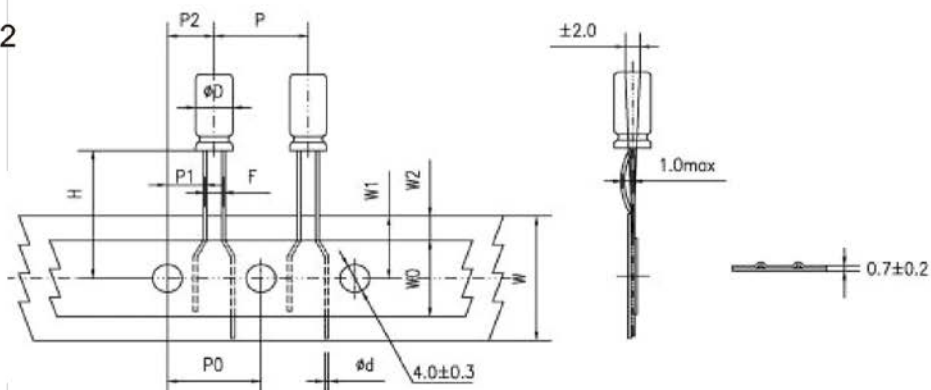


Fig.3 Code:T2

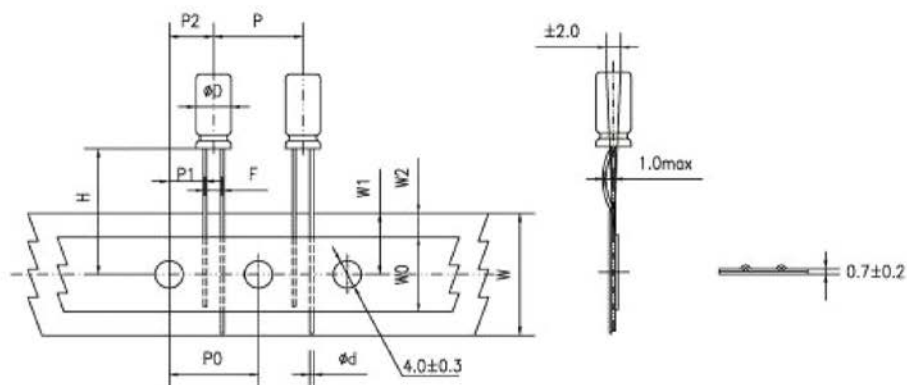
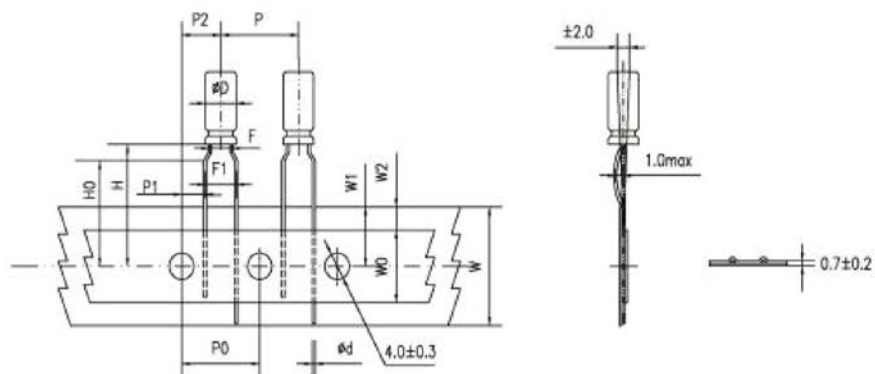


Fig.4 Code:T3



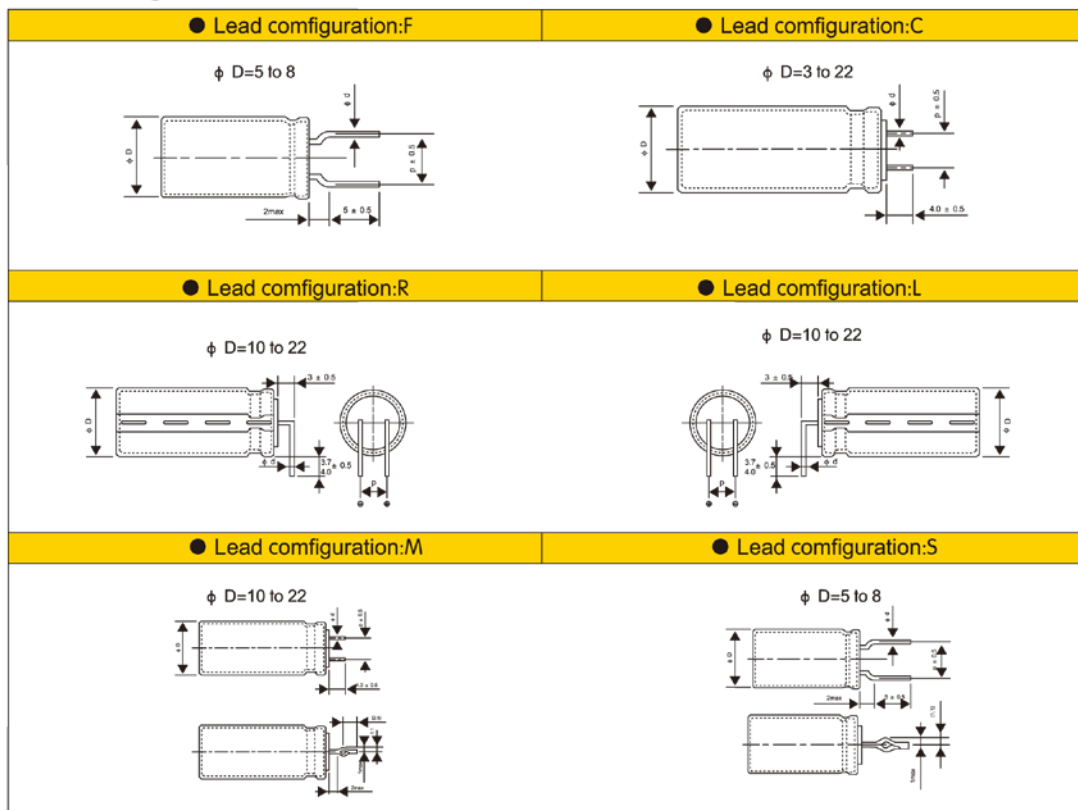
Specification Fig.1 & Fig.2 & Fig.3

Items	Symbol	CASE SIZE											Tolerance	
		4 × 5 4 × 7		5 × 5 5 × 7		5x11		6.3x5	6.3x7 6.3x9	6.3x11 6.3x12	8x5/7 8x9/11 8x11.5 8x12	8x16 8x20		10x9/12 10x12.5 10x13/16 10x20/25
Pin Code		T ₁	T ₂	T ₁	T ₂	T ₁		T ₂	T ₂	T ₂	T ₂	T ₂	T ₂	
Lead wire diameter	φd	0.45		0.45		0.5		0.45	0.5	0.5	0.45/0.5	0.6	0.6	± 0.05
Pitch of body	P	12.7		12.7		12.7		12.7	12.7	12.7	12.7	12.7	12.7	± 1.0
Feed hole pitch	PO	12.7		12.7		12.7		12.7	12.7	12.7	12.7	12.7	12.7	± 0.2
Hole center to lead distance	P1	5.1	5.6	5.1	5.35	5.1	5.35	5.1	5.1	5.1	4.6	4.6	3.85	± 0.7
Feed hole center to body center distance	P2	6.35		6.35		6.35		6.35	6.35	6.35	6.35	6.35	6.35	± 1.0
Lead to lead distance	F	2.5	1.5	2.5	2.0	2.5	2.0	2.5	2.5	2.5	3.5	3.5	5.0	± 0.5
Height of body from tape center	H	18.5		18.5		18.5		18.5	18.5	18.5	18.5	18.5	18.5	± 0.75
Base tape width	W	18.0		18.0		18.0		18.0	18.0	18.0	18.0	18.0	18.0	± 0.5
Adhesive tape width	WO	11.0		11.0		11.0		11.0	11.0	11.0	11.0	11.0	11.0	min
Hole positron	W1	9.0		9.0		9.0		9.0	9.0	9.0	9.0	9.0	9.0	+0.75 -0.5
Hole down tape position	W2	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0	max

Specification Fig.4

Items	Symbol	CASE SIZE									Tolerance
		4 × 5 4 × 7	5 × 5	5 × 7	5 × 11	6.3 × 5	6.3 × 7 6.3 × 9	6.3 × 11 6.3 × 12	8 × 5/7 8 × 9/11 8 × 11.5/12	8 × 16 8 × 20	
Pin Code		T ₃	T ₃	T ₃	T ₃	T ₃	T ₃	T ₃	T ₃	T ₃	
Lead wire diameter	φd	0.45	0.45	0.45	0.5	0.45	0.5	0.5	0.45/0.5	0.6	± 0.05
Pitch of body	P	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 1.0
Feed hole pitch	PO	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 0.2
Hole center to lead distance	P1	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	± 0.7
Feed hole center to body center distance	P2	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	± 1.0
Lead to lead distance	F	1.5	2.0	2.0	2.0	2.5	2.5	2.5	3.5	3.5	± 0.5
Lead to lead distance	F1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	+0.8 -0.2
Height of body from tape center	H	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	± 0.75
Lead wire clinch height	HO	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	± 0.5
Base tape width	W	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	± 0.5
Adhesive tape width	WO	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	min
Hole position	W1	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	+0.75 -0.5
Hole down tape position	W2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	max

● Lead Forming & Cut:

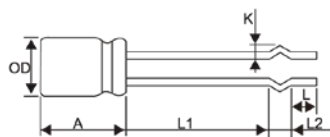


● LEAD SPACING&RECOMMENDED PCB DIMENSIONS

(mm)

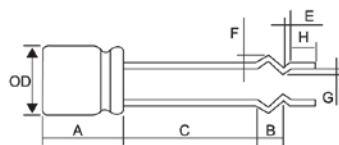
Dimension	φD	φd	p	PC Board		Lead Configuration
				Hole diameter	Thickness	
5		0.5	5.0	0.8	1.6	F C S
6.3		0.5	5.0	0.8		
8		0.5/0.6	5.0	1.0		
10		0.6	5.0	1.0		
12.5		0.6	5.0	1.0	1.6	C M R L
16		0.8	7.5	1.2		
18		0.8	7.5	1.2		
20		0.8	7.5	1.2		
22		0.8	10.0	1.2		

● Lead configuration:B



φD	L1	L2	K	A	L
5	17.5–19.5	2.6	1.9	10.0–15.0	3.0–5.0
6.3	17.5–19.5	2.6	1.9	10.0–16.0	
8	12.0–14.0	2.5	1.3	10.0–20.0	
8	13.5–15.5	2.5	1.5		
8	13.0–15.0	3.0	1.5		
8	19.5–21.5	3.0	1.5		
8	21.0–23.0	3.0	1.5		
10	7.5–9.5	2.5	1.7		
10	17.0–19.0	2.5	1.7		
10	10.5–12.5	2.5	1.5		
10	10.0–12.0	3.0	1.5		
10	13.0–15.0	3.0	1.5		
10	18.0–20.0	3.0	1.5		
10	21.0–23.0	3.0	1.5		
	± 1.0	± 0.5	0.3	± 1.0	± 1.0

● Lead configuration:K



ØD	C	B	E	F	G	A	H
8	13.5–15.5	3	1.2	1.8	0.8	10–20	3.0–5.0
10	18.5–20.5	3	1.2	1.8	1	10–25	
10	19.0–21.0	3	1.5	1.4	0.5		
	± 1.0	± 0.5	± 0.3	± 0.3	± 0.3	± 1.0	± 1.0