规格書

SPECIFICATION

Customer： _____

Part Name: E-CAP

SPEC： SS Series

Part NO.： ALL

Date： 2017-11-22

CUSTOMER SIGN		

TOPAZCON	
DRAWING	**RATIFY**
黃峰	**陳慶**

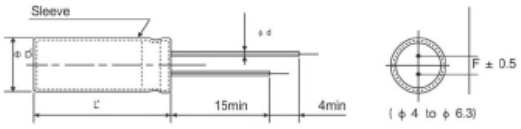
SS Series

- Low profile with 5mm height
- Wide temperature range of –40 ℃ +105 ℃
- Endurance:+105 ℃ 1,000hours
- RoHS Compliant

SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	–40 to +105 ℃							
Rated Voltage Range	6.3 to 50vdc							
Capacitance Tolerance	± 20%(M)							(at20 ℃ ,120Hz)
Leakage Current	I ≤ 0.01CV or 3uA whichere is greater Where, I:Max.leakage current(uA),C:Nominal capacitance (UF) V:Rated voltage(V)							(at 20 ℃ after2minutes)
Dissipation Factor (tanδ)	Rated voltage(Vdc)	6.3	10	16	25	35	50	(at20 ℃ ,120Hz)
	Tanδ (Max)	0.28	0.24	0.20	0.14	0.12	0.10	
Low Temperature Characteristics (Max.Impedance Ratio)	Rated voltage(Vdc)	6.3	10	16	25	35	50	(at120Hz)
	Z(–25 ℃)/Z(+20 ℃)	3		2				
	Z(–40 ℃)/Z(+20 ℃)	8	5	4	3			
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20 ℃ after the rated voltage is applied for 1,000 hours at 105 ℃							
	Capacitance change	≤ ± 20% of the initial value						
	DF (tanδ)	≤ 200% of the initial specified value						
	Leakage current	≤ The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20 ℃ after exposing them for 500 hours at 105 ℃ without voltage applied.							
	Capacitance change	≤ ± 20% of the initial value						
	DF (tanδ)	≤ 200% of the specified value						
	Leakage current	≤ 200% the initial specified value						

DIMENSIONS[MM]



Φ D	4	5	6.3
Φ d	0.45	0.45	0.45
F	1.5	2.0	2.5
Φ D'	Φ D+0.5max		
L'	L+1.5max		

RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

WV(Vdc) \ Freq.(Hz)	50/60	120	1k	10k~100k
6.3 to 16	0.80	1.00	1.30	1.50
25 to 35	0.80	1.00	1.20	1.20
50	0.80	1.00	1.15	1.20

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

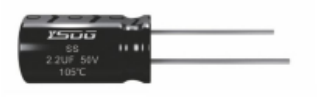
SS Series

STANDARD RATINGS

WV(Vdc)	Cap(μ F)	Case size φ DxL(mm)	Tanδ	Ripple current (mArms/105 ℃ ,120Hz)
6.3(0J)	22	4 × 5	0.28	23
	33	5 × 5	0.28	30
	47	5 × 5	0.28	37
	100	6.3 × 5	0.28	57
10(1A)	10	4 × 5	0.24	20
	22	5 × 5	0.24	28
	33	5 × 5	0.24	34
	47	6.3 × 5	0.24	52
16(1C)	4.7	4 × 5	0.20	15
	10	4 × 5	0.20	23
	22	5 × 5	0.20	31
	33	6.3 × 5	0.20	48
	47	6.3 × 5	0.20	56
25(1E)	4.7	4 × 5	0.14	15
	10	5 ×	0.14	22

WV(Vdc)	Cap(μ F)	Case size φ DxL(mm)	Tanδ	Ripple current (mArms/105 ℃ ,120Hz)
25(1E)	22	6.3 × 5	0.14	44
	33	6.3 × 5	0.14	48
35(1V)	3.3	4 × 5	0.12	13
	4.7	4 × 5	0.12	17
	10	5 × 5	0.12	24
	22	6.3 × 5	0.12	48
50(1H)	0.1	4 × 5	0.10	1
	0.22	4 × 5	0.10	2
	0.33	4 × 5	0.10	3
	0.47	4 × 5	0.10	4
	1	4 × 5	0.10	8
	2.2	4 × 5	0.10	13
	3.3	4 × 5	0.10	14
	4.7	5 × 5	0.10	18
	10	6.3 × 5	0.10	28

SS Series

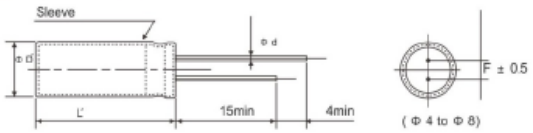


- Low profile with 7mm height
- Endurance:+105 ℃ 2,000hours
- Wide temperature range of −40 ℃ +105 ℃
- RoHS Compliant

SPECIFICATIONS

Items	Characteristics								
Category Temperature Range	−40to+105 ℃								
Rated Voltage Range	6.3to 63vdc								
Capacitance Tolerance	± 20%(M)								(at20 ℃ ,120Hz
Leakage Current	I ≤ 0.01CV or 3uA whichever is greater Where, I:Max.leakage current(uA),C:Nominal capacitance (UF) V:Rated voltage(V)								(at 20 ℃ after2minutes)
Dissipation Factor (tanδ)	Rated voltage(Vdc)	6.3	10	16	25	35	50	63	(at20 ℃ ,120Hz)
	Tanδ (Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	
Low Temperature Characteristics (Max.Impedance Ratio)	Rated voltage(Vdc)	6.3	10	16	25	35	50	63	(at120Hz
	Z(−25 ℃)/Z(+20 ℃)	4	3	2					
	Z(−40 ℃)/Z(+20 ℃)	8	5	4	3				
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20 ℃ after the rated voltage is applied for 2,000 hours at 105 ℃								
	Capacitance change	≤ ± 20% of the initial value							
	DF (tanδ)	≤ 200% of the initial specified value							
	Leakage current	≤ The initial specified value							
Shelf Life	The following specifications shall be satisfied when the capacitor are restored to 20 ℃ after exposing them for 1,000hours at 105 ℃ without voltage applied.								
	Capacitance change	≤ ± 20% of the initial value							
	DF (tanδ)	≤ 200% of the specified value							
	Leakage current	≤ 200% the initial specified value							

DIMENSIONS[MM]



Φ D	4	5	6.3	8
Φ d	0.45	0.45	0.5	0.5
F	1.5	2.0	2.5	3.5
Φ D'	Φ D+0.5max			
L'	L+2max			

RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

WV(Vdc) \ Freq.(Hz)	50/60	120	1k	10k~100k
6.3 to 16	0.80	1.00	1.30	1.50
25 to 35	0.80	1.00	1.20	1.20
≥50	0.80	1.00	1.15	1.20

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

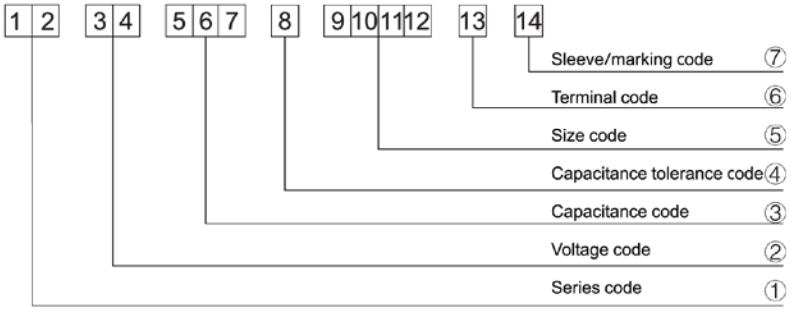
SS Series

STANDARD RATINGS

WV(Vdc)	Cap (μF)	Case size φ DxL(mm)	Tanδ	Ripple current (mArms/105℃,120Hz)
6.3(0J)	22	4 × 7	0.22	28
	33	4 × 7	0.22	32
		5 × 7	0.22	35
	47	5 × 7	0.22	47
	68	5 × 7	0.22	50
	100	6.3 × 7	0.22	75
	220	8 × 7	0.22	92
10(1A)	22	4 × 7	0.19	32
	33	5 × 7	0.19	68
	47	5 × 7	0.19	51
	68	6.3 × 7	0.19	68
	100	6.3 × 7	0.19	80
		8 × 7	0.19	95
	220	8 × 7	0.19	130
16(1C)	10	4 × 7	0.16	28
	22	4 × 7	0.16	35
		5 × 7	0.16	42
	33	5 × 7	0.16	50
	47	6.3 × 7	0.16	67
	68	6.3 × 7	0.16	70
		8 × 7	0.16	78
	100	8 × 7	0.16	110
25(1E)	4.7	4 × 7	0.14	17
	6.8	4 × 7	0.14	19
	10	4 × 7	0.14	28
		5 × 7	0.14	33
	22	5 × 7	0.14	43
		6.3 × 7	0.14	45
	33	6.3 × 7	0.14	62
	47	8 × 7	0.14	75
	68	8 × 7	0.14	80
	100	8 × 7	0.14	115

WV(Vdc)	Cap (μF)	Case size φ DxL(mm)	Tanδ	Ripple current (mArms/105℃,120Hz)
35(1V)	4.7	4 × 7	0.12	22
	6.8	4 × 7	0.12	24
		5 × 7	0.12	28
	10	5 × 7	0.12	35
	22	6.3 × 7	0.12	60
	33	6.3 × 7	0.12	50
		8 × 7	0.12	68
	47	8 × 7	0.12	80
	68	8 × 7	0.12	85
50(1H)	0.1	4 × 7	0.10	1.5
	0.22	4 × 7	0.10	2.5
	0.33	4 × 7	0.10	3.5
	0.47	4 × 7	0.10	5
	0.68	4 × 7	0.10	7
	1	4 × 7	0.10	10
	2.2	4 × 7	0.10	20
	3.3	4 × 7	0.10	26
	4.7	4 × 7	0.10	27
		5 × 7	0.10	29
	10	6.3 × 7	0.10	38
	22	8 × 7	0.10	63
	33	8 × 7	0.10	78
63(1J)	0.1	4 × 7	0.09	1.5
	0.22	4 × 7	0.09	2.5
	0.33	4 × 7	0.09	3.5
	0.47	4 × 7	0.09	6
	1	4 × 7	0.09	12
	2.2	4 × 7	0.09	20
	3.3	5 × 7	0.09	28
	4.7	6.3 × 7	0.09	33
	10	6.3 × 7	0.09	40
	22	8 × 7	0.09	65

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 (Vdc)	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 (uF)	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
Lesd Cut	F
	C
	R
	L
	M
	S
	B
	K

Lead Forming

Taping Specifications

Fig.1 Code:T1

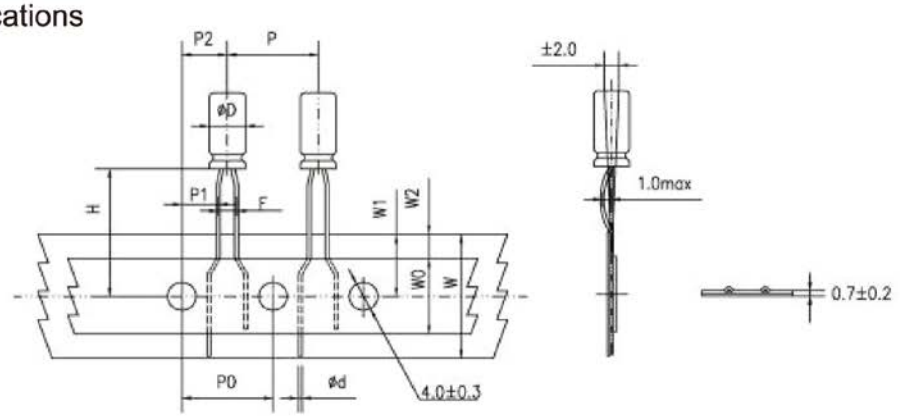


Fig.2Code:T2

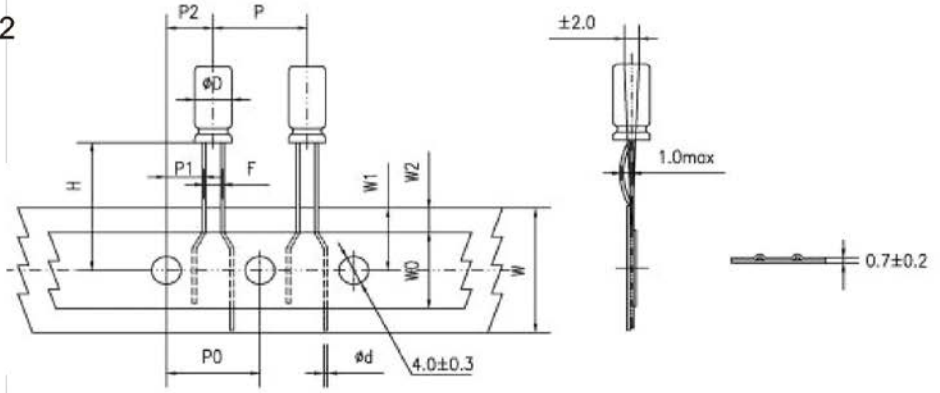


Fig.3 Code:T2

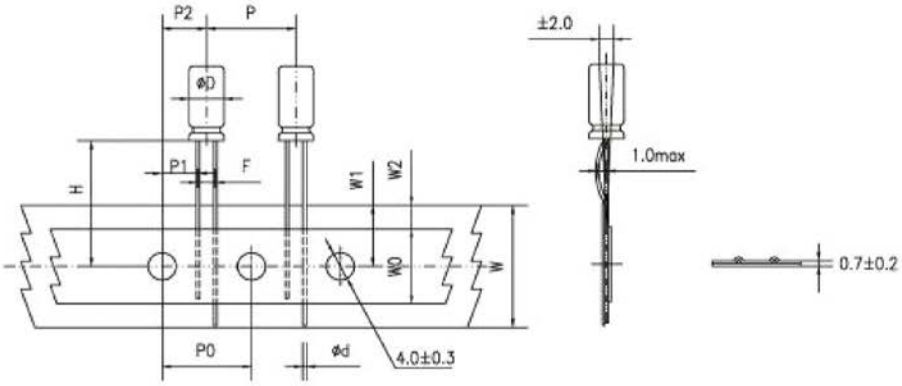
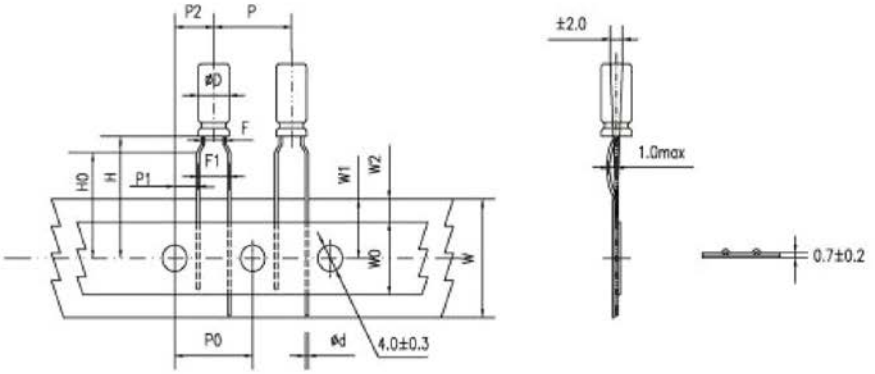


Fig.4 Code:T3



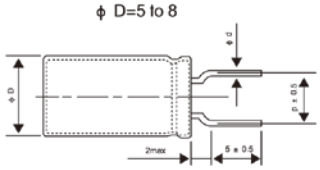
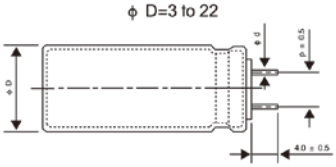
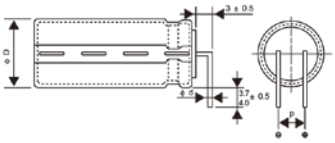
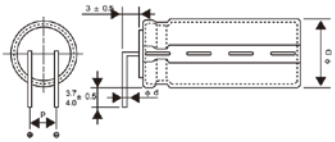
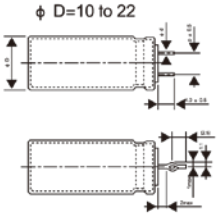
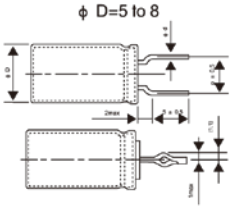
Specification Fig.1 & Fig.2 & Fig.3

Iterms	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		T1	T2	T1	T2	T1		T2	T2	T2	T2	T2	T2		
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

Iterms	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		T3	T3	T3	T3	T3	T3	T3	T3	T3	
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:

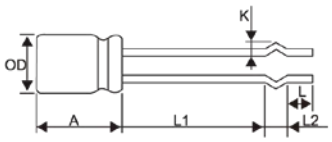
Lead comfiguration:F	Lead comfiguration:C
ϕ D=5 to 8 	ϕ D=3 to 22 
Lead comfiguration:R	**Lead comfiguration:L**
ϕ D=10 to 22 	ϕ D=10 to 22 
Lead comfiguration:M	**Lead comfiguration:S**
ϕ D=10 to 22 	ϕ D=5 to 8 

LEAD SPACING&RECOMMENDED PCB DIMENSIONS

(mm)

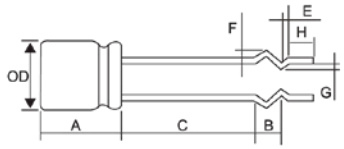
ϕD / Dimensionc	ϕd	p	PC Board		Lead Configuration
			Hole diame ter	Thickness	
5	0.5	5.0	0.8	1.6	F C S
6.3	0.5	5.0	0.8		
8	0.5/0.6	5.0	1.0		
10	0.6	5.0	1.0	1.6	C M R L
12.5	0.6	5.0	1.0		
16	0.8	7.5	1.2		
18	0.8	7.5	1.2		
20	0.8	7.5	1.2		
22	0.8	10.0	1.2		

Lead comfiguration:B



⌀D	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	10.0–25.0	
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 comfiguration:K



⌀D	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