

规格書

SPECIFICATION

Customer : _____

Part Name: _____ **E-CAP** _____

SPEC : _____ **SH Series** _____

Part NO. : _____ **ALL** _____

Date : _____ **2017-11-22** _____

CUSTOMER SIGN		

TOPAZCON	
DRAWING	RATIFY
黃峰	陳慶

SH Series

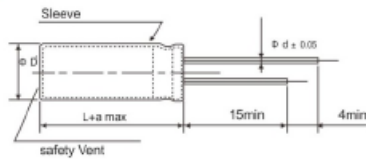
- Low Impedance and high ripple current.
- Load life 3,000~4,000 hours at 105 °C .



● SPECIFICATIONS

Item	Performance Characteristics														
Category	-40 ~ +105 °C														
Temperature Range	10 ~ 35Vdc														
Working Voltage Range	150 ~ 820 µF														
Capacitance Range	± 20% (at 20 °C and 120Hz)														
Capacitance Tolerance	<table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>Tanδ (Max)</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </table> The above values should be increased by 0.02 for every additional 1000µF (at 20 °C , 120Hz)		Rated Voltage (V)	10	16	25	35	Tanδ (Max)	0.19	0.16	0.14	0.12			
Rated Voltage (V)	10	16	25	35											
Tanδ (Max)	0.19	0.16	0.14	0.12											
Dissipation Factor (tanδ)	I=0.01CV or 3µA whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) (at 20 °C , 2minutes)														
Leakage Current	The following requirements shall be satisfied when the capacitor are restored to 20 °C after the rated voltage applied for 3,000 to 4,000 hours at 105 °C .														
Endurance	<table border="1"> <tr> <td>Capacitance change</td> <td>≤ ± 25% of the initial value</td> <td>Siez</td> <td>Life time(hours)</td> </tr> <tr> <td>Dissipation factor (tanδ)</td> <td>≤ 200% of the specified value</td> <td>10Φ</td> <td>3,000</td> </tr> <tr> <td>Leakage current</td> <td>≤ specified value</td> <td>12.5Φ</td> <td>4,000</td> </tr> </table>	Capacitance change	≤ ± 25% of the initial value	Siez	Life time(hours)	Dissipation factor (tanδ)	≤ 200% of the specified value	10Φ	3,000	Leakage current	≤ specified value	12.5Φ	4,000		
Capacitance change	≤ ± 25% of the initial value	Siez	Life time(hours)												
Dissipation factor (tanδ)	≤ 200% of the specified value	10Φ	3,000												
Leakage current	≤ specified value	12.5Φ	4,000												
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 20 °C after exposing them for 1,000 hours at 105 °C without voltage applied.														
	<table border="1"> <tr> <td>Capacitance change</td> <td>≤ ± 25% of the initial value</td> </tr> <tr> <td>Dissipation factor (tanδ)</td> <td>≤ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ 200% of the specified value</td> </tr> </table>	Capacitance change	≤ ± 25% of the initial value	Dissipation factor (tanδ)	≤ 200% of the specified value	Leakage current	≤ 200% of the specified value								
Capacitance change	≤ ± 25% of the initial value														
Dissipation factor (tanδ)	≤ 200% of the specified value														
Leakage current	≤ 200% of the specified value														

● DIMENSIONS[MM]



Φ D	10 × 9	12.5 × 9
Φ D	Φ D+0.5Max	
Φ d	0.6	0.6
F	5.0	5.0
a	L + 1.0 Max	

● RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

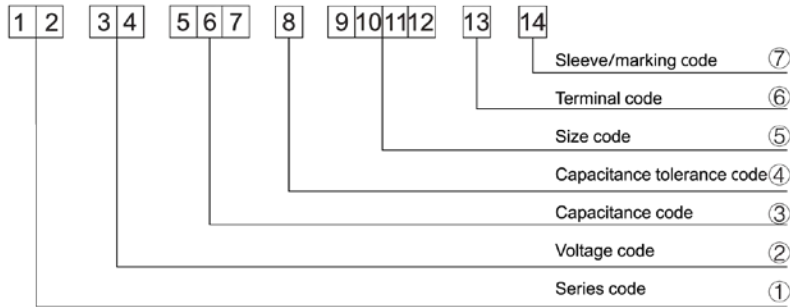
Vdc	Cap.(µF)	Frequency (Hz)				
		50/60	120	1K	10K	100K
10 ~ 35	150~270	0.30	0.50	0.80	0.95	1.00
	390~820	0.57	0.71	0.90	0.98	1.00

SH Series

● Case size & Permissible rated ripple current:

Nominal capacitance (μF)	10V		16V		25V		35V	
	Case size DΦ×L (mm)	Max. Rated ripple current @105℃ 100kHz (mA rms)	Case size DΦ×L (mm)	Max. Rated ripple current @105℃ 100kHz (mA rms)	Case size DΦ×L (mm)	Max. Rated ripple current @105℃ 100kHz (mA rms)	Case size DΦ×L (mm)	Max. Rated ripple current @105℃ 100kHz (mA rms)
150							10×9	630
220							12.5×9	750
270					10×9	630		
390			10×9	640	12.5×9	700		
560	10×9	600	12.5×9	720				
820	12.5×9	750						

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 (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
	T3
Lead Cut	F
	C
	R
	L
	M
	S
	B
	K
	K

Lead Forming

Taping Specifications

Fig.1 Code:T1

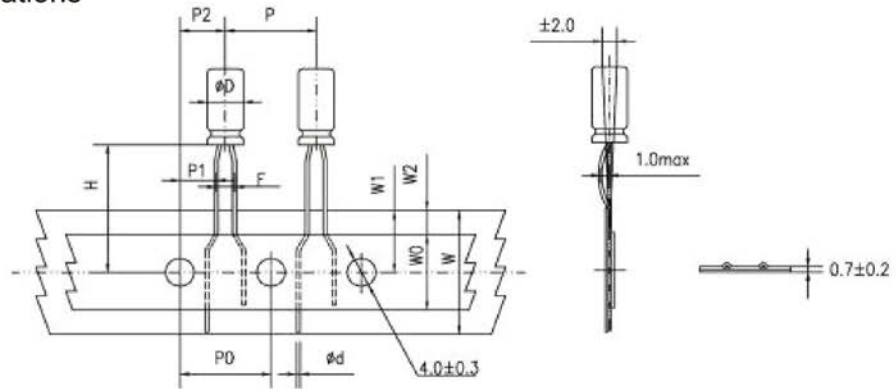


Fig.2 Code:T2

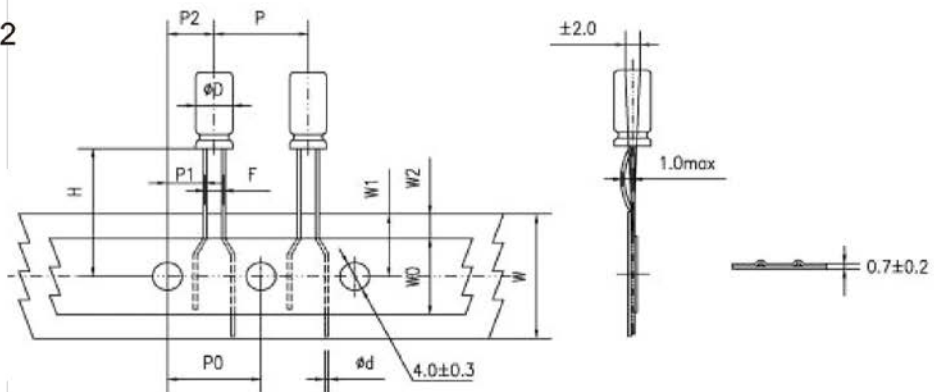


Fig.3 Code:T2

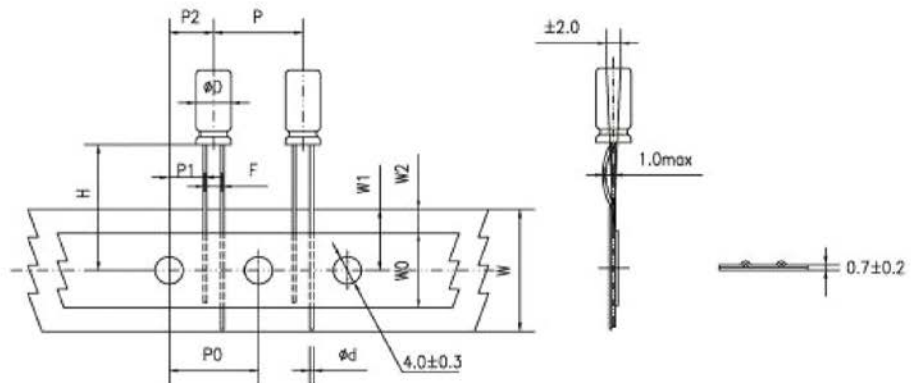
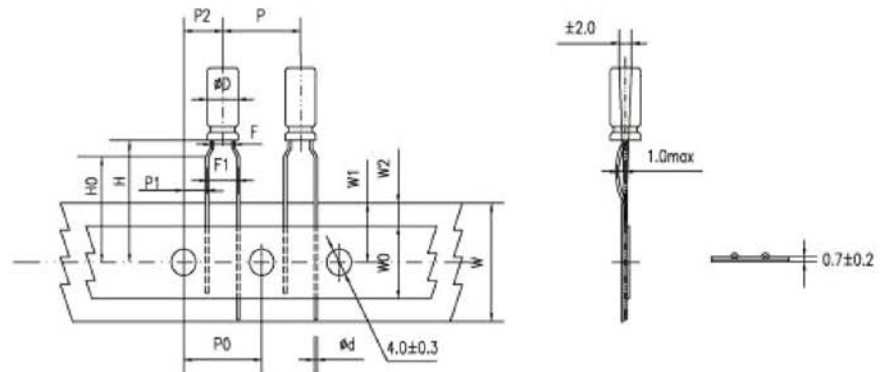


Fig.4 Code:T3



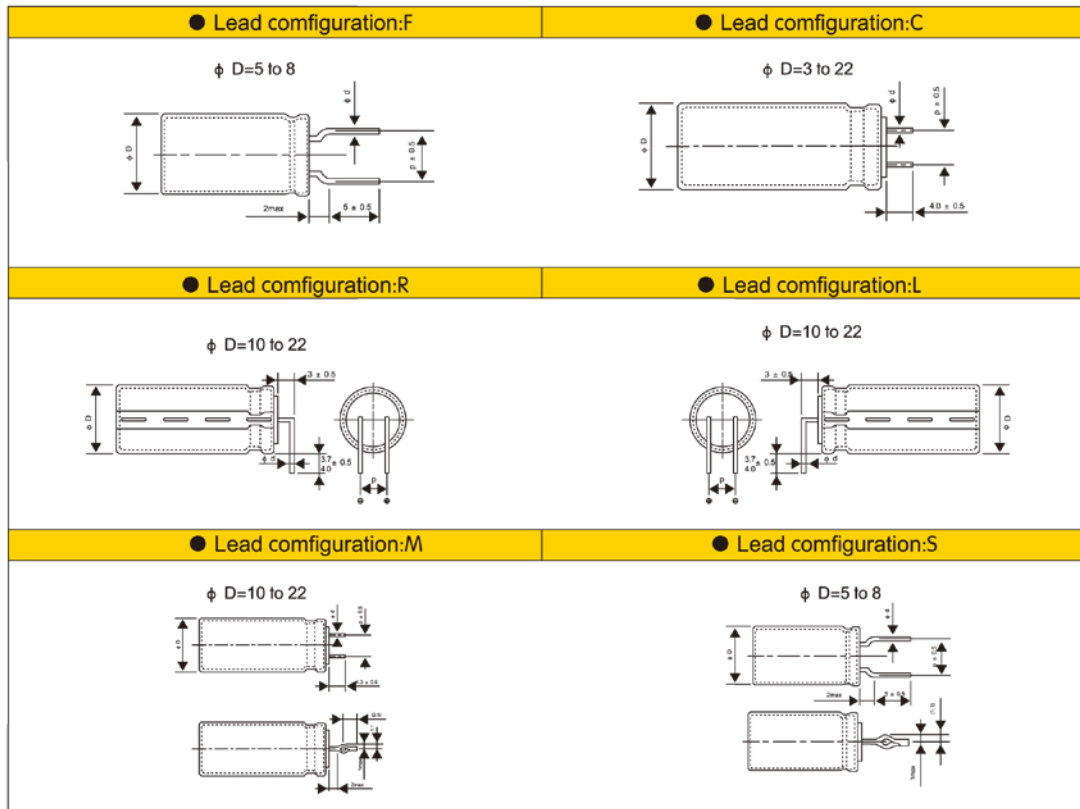
Specification Fig.1 & Fig.2 & Fig.3

Items	Symbol	CASE SIZE										Tolerance					
		4 × 5 4 × 7		5 × 5 5 × 7		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 8 × 12		8 × 16 8 × 20
Pin Code		T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₂	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	0.5	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	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	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	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	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	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	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	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	11.0	min	
Hole positron	W1	9.0		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	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	
Pin Code		T ₃	T ₃	T ₃	T ₃	T ₃	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	0.6	± 0.05	
Pitch of body	P	12.7		12.7		12.7		12.7	12.7	12.7	12.7	12.7		12.7	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	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	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	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	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	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	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	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	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	11.0	min	
Hole position	W1	9.0		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	3.0	max	

● Lead Forming & Cut:

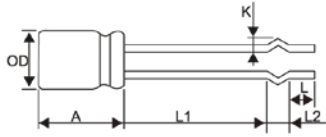


● LEAD SPACING&RECOMMENDED PCB DIMENSIONS

(mm)

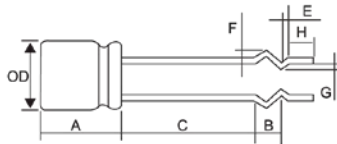
Dimension	φD	φd	p	PC Board		Lead Configuration
				Hole diameter	Thickness	
5	5	0.5	5.0	0.8	1.6	F C S
6.3	6.3	0.5	5.0	0.8		
8	8	0.5/0.6	5.0	1.0		
10	10	0.6	5.0	1.0	1.6	C M R L
12.5	12.5	0.6	5.0	1.0		
16	16	0.8	7.5	1.2		
18	18	0.8	7.5	1.2		
20	20	0.8	7.5	1.2		
22	22	0.8	10.0	1.2		

● Lead configuration: 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 configuration: 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