

规格書

SPECIFICATION

Customer : _____

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

SPEC : _____ **TE Series** _____

Part NO. : _____ **ALL** _____

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

CUSTOMER SIGN		

TOPAZCON	
DRAWING	RATIFY
黃峰	陳慶

TE Series

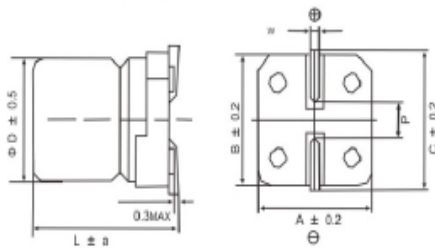
- Suitable for high density mounting
- Endurance: 105 °C 2,000 hours
- RoHS Compliant



● SPECIFICATIONS

Items	Characteristics										
Category	-40 to +105 °C										
Temperature Range	-40 to +105 °C										
Rated Voltage Range	6.3 to 450Vdc										
Capacitance Tolerance	± 20%(M) (at 20 °C 120Hz)										
Leakage Current	6.3 to 50 Vdc					160 to 450 Vdc					
	$I \leq 0.01CV$ or $3\mu A$ whichever is greater(at 2 minutes)					$I \leq 0.04CV+100\mu A$ (at 1 minute)					
Where, I:Max.leakage current (uA);C:Nominal capacitance (uF);V:Rated voltage (V).											
Dissipation Factor (tanδ)	Rate voltage(Vdc)	6.3	10	16	25	35	50	160 to 250	400 to 450	(at 20 °C 120Hz)	
	Tanδ (Max)	0507-0607	0.30	0.24	0.20	0.16	0.14	0.12	-		0.20
	Tanδ (Max)	0611-1821	0.40	0.30	0.26	0.16	0.14	0.12	0.15		0.20
Low Temperature Characteristics (Max.Impedance Ratio)	Rate voltage(Vdc)	6.3	10	16	25	35	50	160 to 250	400 to 450	(at 120Hz)	
	Z(-25 °C)/Z(+20 °C)	4	3	2	2	2	2	6	6		
	Z(-40 °C)/Z(+20 °C)	10	8	6	4	3	3	10	18		
Endurance	The following specification shall be satisfied when the capacitors are restored to 20 °C after the rated voltage is applied for 2,000 hours at 105 °C .										
	Rate voltage(Vdc)	6.3 to 450Vdc									
	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 specification shall be satisfied when the capacitors are restored to 20 °C after exposing them for 1000 hours at 105 °C ,without voltage applied.										
	Rate voltage(Vdc)	6.3 to 450Vdc									
	Capacitance Change	≤ ± 20% of the initial value									
	DF (tanδ)	≤ 200% of the initial specified value									
	Leakage Current	≤ 200% The initial specified value									

● DIMENSIONS[mm]



Size code	D	L	A	B	C	W	P
0507	5	7.7	5.3	5.3	5.9	0.5-0.8	1.4
0607	6.3	7.7	6.6	6.6	7.2	0.5-0.8	1.9
0611	6.3	10.5	6.6	6.6	7.2	0.5-0.8	1.9
0811	8	10.5	8.3	8.3	9.0	0.7-1.1	3.1
0812	8	12.5	8.3	8.3	9.0	0.7-1.1	3.1
0814	8	13.5	8.3	8.3	9.0	0.7-1.1	3.1
1010	10	10.5	10.3	10.3	11.0	0.7-1.1	4.5
1012	10	12.5	10.3	10.3	11.0	0.7-1.1	4.5
1013	10	13.5	10.3	10.3	11.0	0.7-1.1	4.5
1016	10	16.5	10.3	10.3	11.0	0.7-1.1	4.5
1214	12.5	13.5	13.0	13.0	13.7	1.0-1.3	4.2
1216	12.5	16.0	13.0	13.0	13.7	1.0-1.3	4.2
1221	12.5	21.0	13.0	13.0	13.7	1.0-1.3	4.2
1616	16	16.5	17.0	17.0	18.0	1.0-1.3	6.5
1621	16	21.5	17.0	17.0	18.0	1.0-1.3	6.5
1816	18	16.5	19.0	19.0	20.0	1.0-1.3	6.5
1821	18	21.5	19.0	19.0	20.0	1.0-1.3	6.5

● RATED RIPPLE CURRENT MULTIPLIERS

WV(Vdc)	Freq(Hz)			
	120	1k	10k	100k
6.3 to 450	0.50	0.80	0.90	1.00

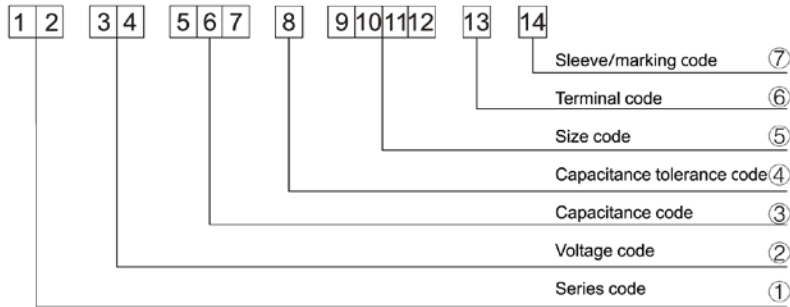
TE Series

● STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size code	Tanδ	Ripple current (mA rms/105 °C, 100kHz)
6.3(0J)	100	0507	0.30	105
	220	0607	0.30	160
	330	0811	0.40	340
	1000	1010	0.40	860
10(1A)	33	0507	0.24	105
	100	0607	0.24	175
	220	0607	0.24	180
	330	0811	0.30	340
	470	0811	0.30	360
16(1C)	820	1010	0.30	860
	47	0507	0.20	105
	100	0607	0.20	175
	150	0607	0.20	190
	220	0811	0.26	500
	330	0811	0.26	545
25(1E)	470	1010	0.26	800
	33	0507	0.16	105
	47	0607	0.16	180
	100	0607	0.16	205
	220	0811	0.16	550
	330	0811	0.16	780
35(1V)	470	1012	0.16	875
	10	0507	0.14	105
	22	0507	0.14	110
	47	0607	0.14	210
	100	0811	0.14	575
	220	1010	0.14	835
50(1H)	330	1012	0.14	900
	10	0507	0.12	90
	22	0607	0.12	175
	33	0607	0.12	180
	47	0811	0.12	540
	100	1010	0.12	700
	220	1214	0.12	900
330	1216	0.12	1180	

WV (Vdc)	Cap (μF)	Size code	Tanδ	Ripple current (mA rms/105 °C, 100kHz)
160(2C)	10	1010	0.15	90
	15	1010	0.15	136
	22	1013	0.15	180
		1214	0.15	200
		1016	0.15	240
	33	1214	0.15	310
		1216	0.15	420
		1616	0.15	520
	68	1621	0.15	660
		1816	0.15	660
		1621	0.15	780
	100	1621	0.15	780
1821		0.15	780	
200(2D)	10	1010	0.15	120
	15	1010	0.15	164
	22	1013	0.15	200
		1216	0.15	236
	33	1016	0.15	260
		1216	0.15	300
	47	1221	0.15	440
		1621	0.15	556
68	1621	0.15	660	
250(2E)	2.2	0611	0.15	56
	3.3	0611	0.15	68
	4.7	0811	0.15	96
		1010	0.15	104
	10	1214	0.15	184
	22	1616	0.15	364
	33	1621	0.15	470
		1816	0.15	470
47	1821	0.15	580	
400(2G)	1	0607	0.20	28
	1.5	0611	0.20	36
	2.2	0611	0.20	44
		0811	0.20	52
	3.3	0811	0.20	64
		1010	0.20	72
	3.9	0814	0.20	72
		1010	0.20	76
	4.7	0811	0.20	78
		0812	0.20	80
		1010	0.20	84
	5.6	0812	0.20	96
	6.8	0814	0.20	108
	8.2	0816	0.20	130
	10	1016	0.20	156
1616		0.20	176	
1216		0.20	184	
15	1616	0.20	210	
	1616	0.20	210	
22	1621	0.20	260	
33	1821	0.20	280	
450(2W)	2.2	1010	0.20	50
	3.3	1214	0.20	80
	4.7	1214	0.20	96
	10	1616	0.20	170
	15	1621	0.20	200
	22	1621	0.20	240

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

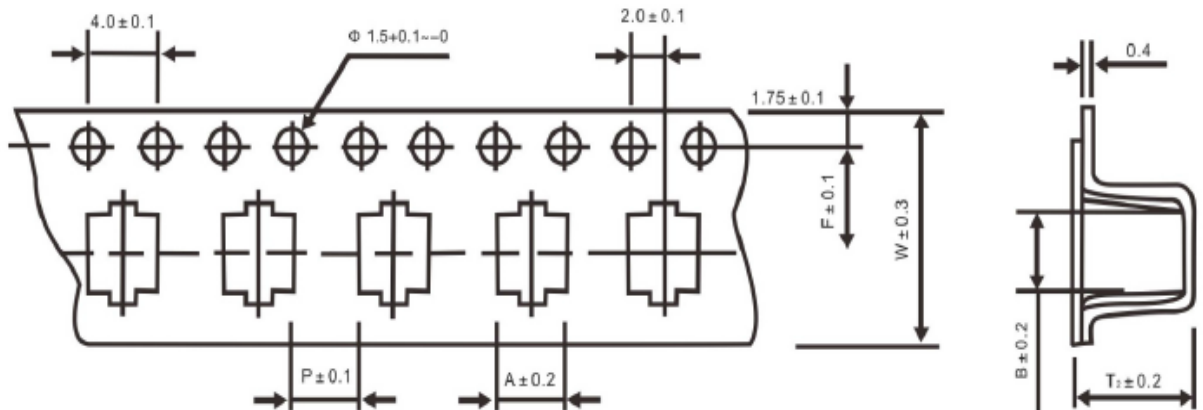
⑦ Sleeve/Marking code

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

⑥ Terminal code

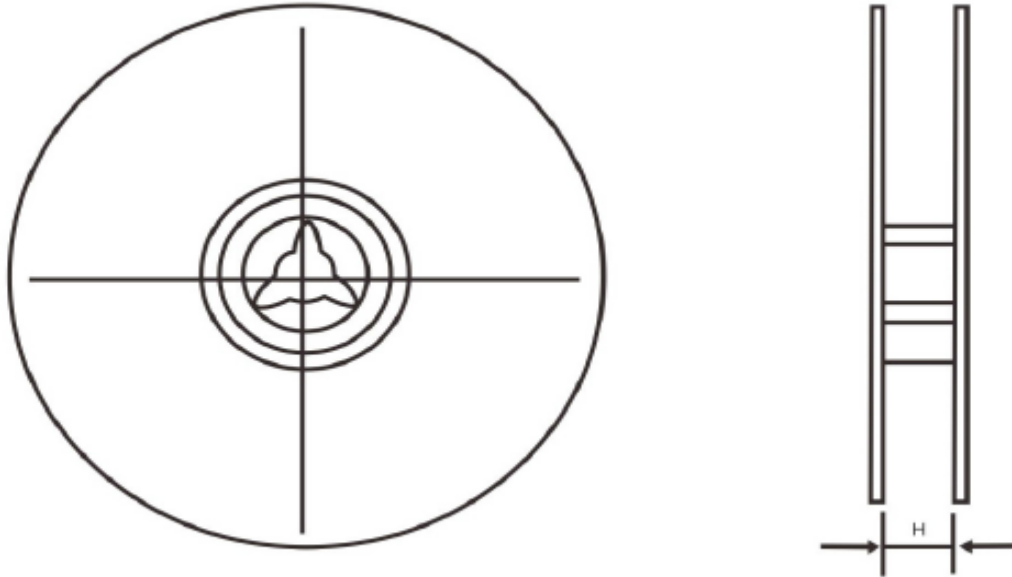
Specification	Code 13
Bulk packing	0
Φ4-8Taping	T1
	T2
	T2
Φ10-18Taping	T3
	T3
Lead Cut	F
	C
	R
	L
	M
	S
	B
	K

● Carrier Tape [mm]



Item	W	A	B	F	P	T ₂		
Series	± 0.3	± 0.2	± 0.2	± 0.1	± 0.1	± 0.2		
TE	0407	12	4.6	4.6	5.5	8.0	7.5	
	0607	16	7	7	7.5	12	8.2	
	0609	16	7	7	7.5	12	9.2	
	0611	16	7	7	7.5	12	11	
	0811	24	8.7	8.7	11.5	16	11	
	0812	24	8.7	8.7	11.5	16	13	
	0814	24	8.7	8.7	11.5	16	14	
	0816	24	8.7	8.7	11.5	16	16	
	TF	1010	24	10.7	10.7	11.5	16	11
		1012	24	10.7	10.7	11.5	16	13
	TG	1013	24	10.7	10.7	11.5	16	14
		1016	24	10.7	10.7	11.5	16	17
		1214	32	13.4	13.4	14.2	24	14
		1216	32	13.4	13.4	14.2	24	16.5
		1616	44	17.5	17.5	20.2	28	16.8
		1621	44	17.5	17.5	20.2	28	22.1
		1816	44	19.5	19.5	20.2	32	17.1
		1821	44	19.5	19.5	20.2	32	22.1

Packing specification for aluminum electrolytic capacitor

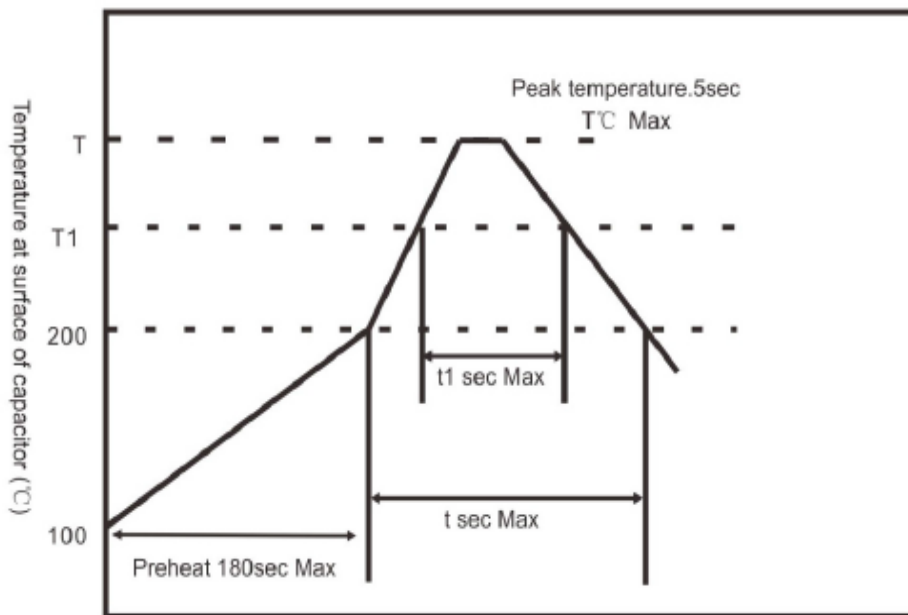


Case Size(mm)	Quantity/Reel(pcs)	Quantity/Bag(pcs)	H(mm)
Ø4×7	2000	12000	14
Ø5×7	1000	6000	14
Ø6.3×5.2	1000	5000	18
Ø6.3×7.7	900	4500	
Ø6.3×10.5	750	3750	
Ø8×10.5	550	2200	26
Ø8×12.5	500	2000	
Ø8×13.5	450	1800	
Ø8×15.5	350	1400	
Ø10×10.5	550	2200	26
Ø10×12.5	450	2000	
Ø10×13.5	350	1800	
Ø10×16.5	200	1400	
Ø12.5×13.5	150	600	34
Ø12.5×16	125	450	
Ø16×16.5	75	375	46
Ø16×21.5	125	225	
Ø18×16.5	125	375	46
Ø18×21.5	125	375	

Chip Al Electrolytic Capacitor—Conditions for Lead-free Reflow Soldering

Size of Al case 6.3~10mm :

- 1) Surface temperature below $T^{\circ}\text{C}$.
- 2) Not exceed t seconds when surface temperature over 200°C , and not exceed t_1 seconds for surface temperature over $T_1^{\circ}\text{C}$.
- 3) Preheat controlled within $100\sim 200^{\circ}\text{C}$, 180 seconds .



Time (sec)

Size	$T(^{\circ}\text{C})$ ①	$T(^{\circ}\text{C})$	$t(\text{sec})$ ②	$t_1(\text{sec})$ ③	Reflow
Ø6.3	250	230	90	40	1
Ø8	240	230	90	30	1
Ø10	235	230	60	30	1

1) Peak temperature

2) Time for over 200°C (Max.)

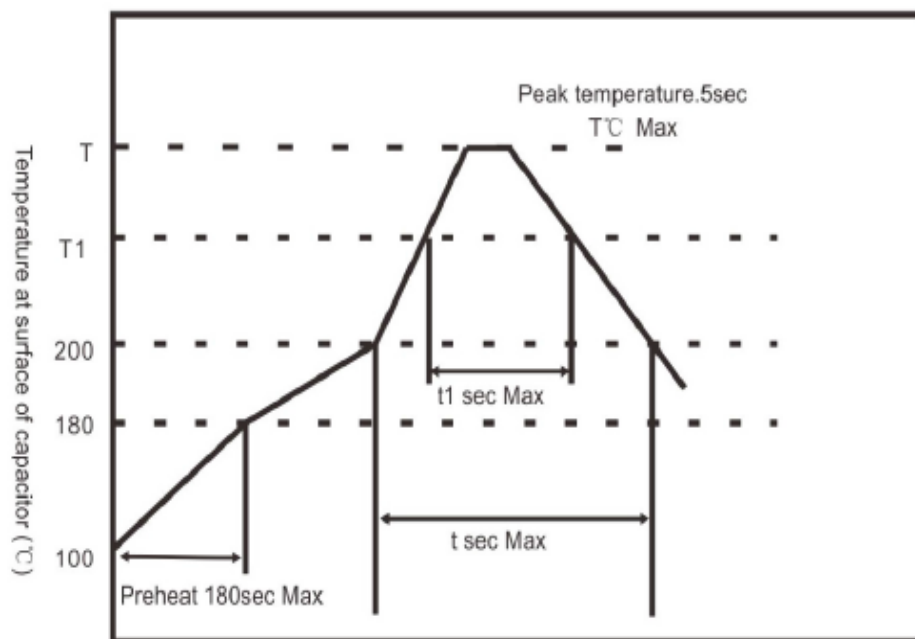
3) Time for over $T_1^{\circ}\text{C}$

Please contact us if beyond above conditions.

Chip Al Electrolytic Capacitor—Conditions for Lead-free Reflow Soldering

Size of Al case 12.5~18mm

- 1) Surface temperature below T°C
- 2) Not exceed t seconds when surface temperature over 200 °C, and not exceed t1 seconds for surface temperature over T1°C.
- 3) Preheat controlled within 100~180 °C, 150 seconds.



Time (sec)

Size	T(°C)①	T(°C)	t(sec)②	t1(sec)③	Reflow
Ø12.5~Ø18	240	230	60	30	1

1) Peak temperature

2) Time for over 200°C (Max.)

3) Time for over T1°C

Please contact us if beyond above conditions.