规格書

SPECIFICATION

Customer：_____

Part Name: E-CAP

SPEC : NP Series

Part NO. : ALL

Date : 2017-11-22

CUSTOMER SIGN		

TOPAZCON	
DRAWING	RATIFY
黃峰	陳慶

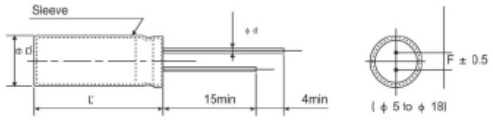
NP Series

- Standard Bi-polarized series
- Endurance:+105 ℃ 1,000hours
- RoHS Compliant

SPECIFICATIONS

Items	Characteristics									
Category Temperature Range	-40 to +105 ℃									
Rated Voltage Range	6.3 to 100Vdc									
Capacitance Tolerance	± 20%(M)									(at20 ℃ ,120Hz)
Leakage Current	I ≤ 0.06CVor 10 μ A whichever is greater (at 20 ℃ after 2 minutes) I ≤ 0.03CVor 3 μ A whichever is greater (at 20 ℃ after 5 minutes) Where, I:Max.leakage current(μ A), C:Nominal capacitance (μ F) V:Rated voltage(V)									
Dissipation Factor (tanδ)	Rated voltage(Vdc)	6.3	10	16	25	35	50	63	100	
	Tanδ (Max)	0.24	0.24	0.20	0.20	0.16	0.14	0.12	0.10	
	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	6.3	10	16	25	35	50	63	100	(at120Hz)
	Z(-25 ℃)/Z(+20 ℃)	4	3	2						
	Z(-40 ℃)/Z(+20 ℃)	10	8	6	4	3				
Endurance	The following specification 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)	≤ 150% 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 500 hours at 105 ℃ ,without voltage applied									
	Capacitance change	≤ ± 20% of the initial value								
	DF (tanδ)	≤ 150% of the initial 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	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							

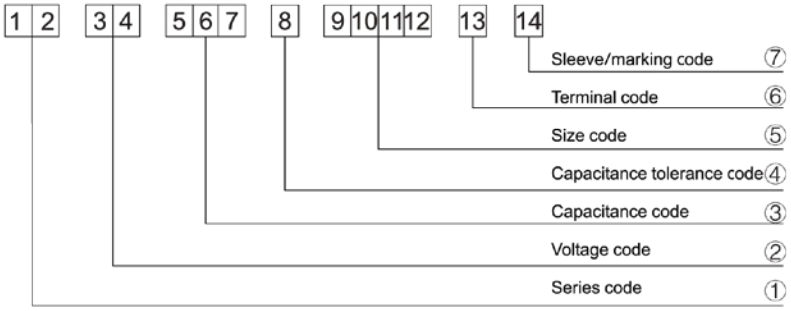
NP Series

STANDARD RATINGS

WV (Vdc)	cap (μF)	CaSe size ΦD × L(mm)	Tanδ	Ripple current (Arms/105℃,120Hz)
6.3(0J)	33	5 × 11	0.24	45
	47	5 × 11	0.24	54
	100	6.3 × 11	0.24	90
	220	8 × 11.5	0.24	150
	330	8 × 11.5	0.24	185
	470	10 × 12.5	0.24	260
	1000	10 × 20	0.24	460
	2200	12.5 × 25	0.26	820
	3300	16 × 25	0.28	1110
	4700	16 × 31.5	0.30	1430
	6800	18 × 35.5	0.34	1830
10(1A)	22	5 × 11	0.24	37
	33	5 × 11	0.24	45
	47	5 × 11	0.24	54
	100	6.3 × 11	0.24	90
	220	8 × 11.5	0.24	150
	330	10 × 16	0.24	240
	470	10 × 16	0.24	290
	1000	12.5 × 20	0.24	510
	2200	16 × 25	0.26	910
	3300	16 × 31.5	0.28	1200
	4700	18 × 35.5	0.30	1520
16(1C)	10	5 × 11	0.20	27
	22	5 × 11	0.20	40
	33	5 × 11	0.20	49
	47	6.3 × 11	0.20	67
	100	8 × 11.5	0.20	110
	220	10 × 12.5	0.20	195
	330	10 × 16	0.20	265
	470	10 × 20	0.20	345
	1000	12.5 × 25	0.20	605
	2200	16 × 31.5	0.22	1070
	3300	18 × 35.5	0.24	1400
25(1E)	10	5 × 11	0.20	27
	22	5 × 11	0.20	46
	33	6.3 × 11	0.20	56
	47	6.3 × 11	0.20	67
	100	8 × 11.5	0.20	110
	220	10 × 16	0.20	215
	330	12.5 × 20	0.20	320
	470	12.5 × 20	0.20	380
	1000	16 × 25	0.20	670
	2200	18 × 35.5	0.22	1140
35(1V)	4.7	5 × 11	0.16	21
	10	5 × 11	0.16	30
	22	6.3 × 11	0.16	51
	33	8 × 11.5	0.16	72
	47	8. × 11.5	0.16	86
	100	10 × 16	0.16	160

WV (Vdc)	cap (μF)	CaSe size ΦD × L(mm)	Tanδ	Ripple current (Arms/105℃,120Hz)
35(1V)	220	12.5 × 20	0.16	290
	330	12.5 × 20	0.16	350
	470	12.5 × 25	0.16	465
	1000	16 × 31.5	0.16	805
50(1H)	0.47	5 × 11	0.14	7.0
	1.0	5 × 11	0.14	10
	2.2	5 × 11	0.14	15
	3.3	5 × 11	0.14	18
	4.7	5 × 11	0.14	22
	10	6.3 × 11	0.14	37
	22	8 × 11.5	0.14	63
	33	8 × 11.5	0.14	77
	47	10 × 12.5	0.14	105
	100	10 × 20	0.14	190
	220	12.5 × 25	0.14	340
	330	16 × 25	0.14	460
	470	16 × 31.5	0.14	590
63(1J)	3.3	5 × 11	0.12	20
	4.7	6.3 × 11	0.12	24
	10	6.3 × 11	0.12	40
	22	8 × 11.5	0.12	68
	33	10 × 12.5	0.12	98
	47	10 × 16	0.12	130
	100	12.5 × 20	0.12	225
	220	16 × 25	0.12	405
	330	16 × 31.5	0.12	535
	470	18 × 35.5	0.12	680
80(1K)	2.2	5 × 11	0.12	16
	3.3	6.3 × 11	0.12	23
	4.7	6.3 × 11	0.12	27
	10	8 × 11.5	0.12	46
	22	10 × 16	0.12	89
	33	10 × 16	0.12	105
	47	10 × 20	0.12	140
	100	12.5 × 25	0.12	245
	220	16 × 31.5	0.12	435
	330	18 × 35.5	0.12	570
100(2A)	0.47	5 × 11	0.10	8.0
	1.0	5 × 11	0.10	12
	2.2	6.3 × 11	0.10	20
	3.3	6.3 × 11	0.10	25
	4.7	6.3 × 11	0.10	30
	10	8 × 11.5	0.10	50
	22	10 × 16	0.10	97
	33	12.5 × 20	0.10	140
	47	12.5 × 20	0.10	170
	100	16 × 25	0.10	300
	220	18 × 35.5	0.10	510

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

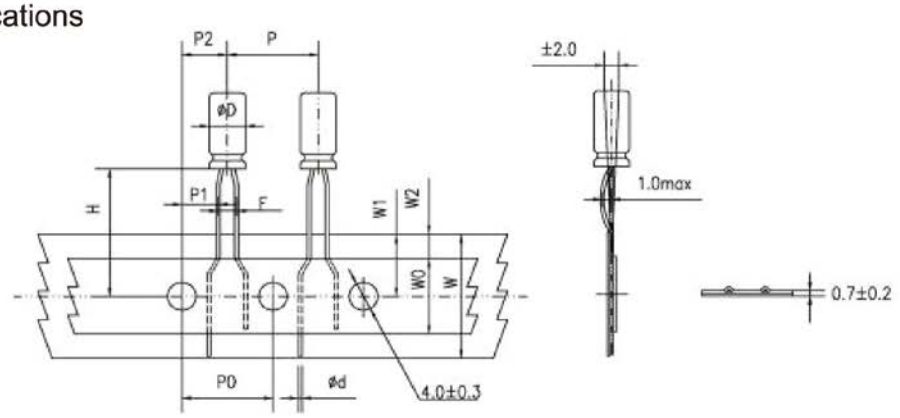


Fig.2Code:T2

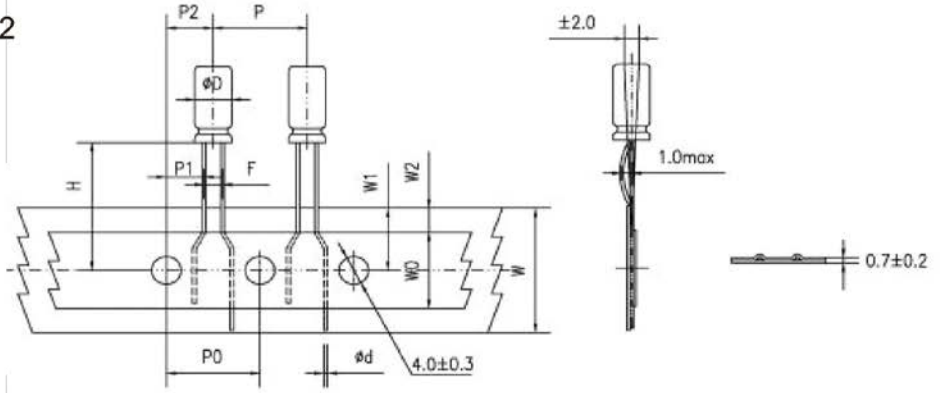


Fig.3 Code:T2

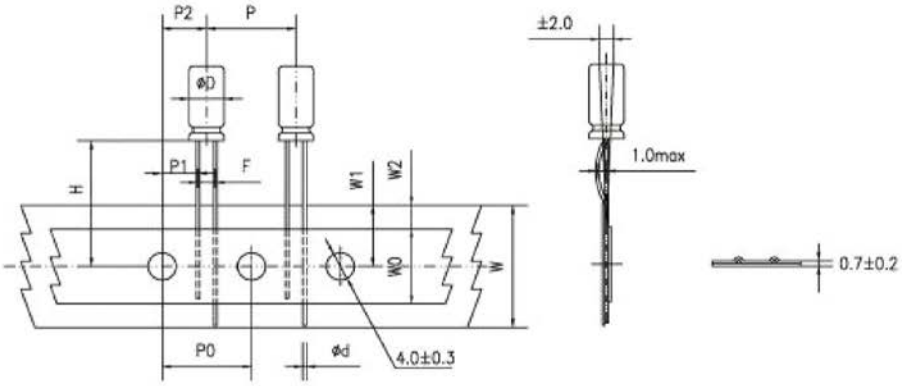
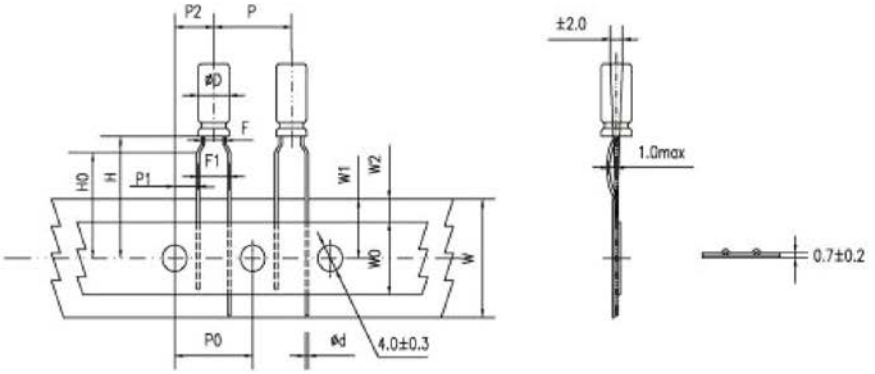


Fig.4 Code:T3



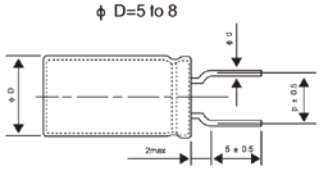
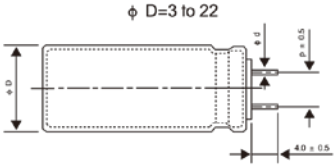
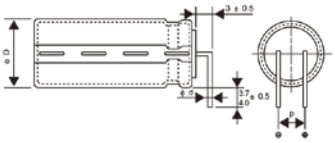
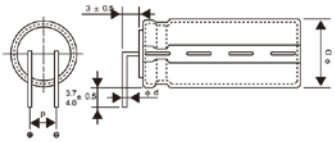
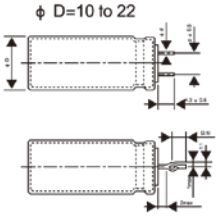
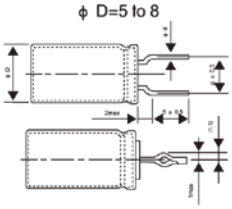
Specification Fig.1 & Fig.2 & Fig.3

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:

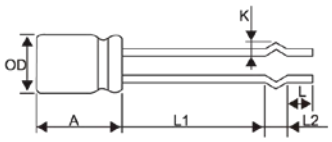
Lead comfiguration:F	Lead comfiguration:C
ϕ D=5 to 8 	ϕ D=3 to 22 
Lead comfiguration:R	**Lead comfiguration:L**
ϕ D=10 to 22 	ϕ D=10 to 22 
Lead comfiguration:M	**Lead comfiguration:S**
ϕ D=10 to 22 	ϕ D=5 to 8 

LEAD SPACING&RECOMMENDED PCB DIMENSIONS

(mm)

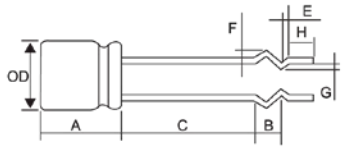
ϕD / Dimensionc	ϕd	p	PC Board		Lead Configuration
			Hole diame ter	Thickness	
5	0.5	5.0	0.8	1.6	F C S
6.3	0.5	5.0	0.8		
8	0.5/0.6	5.0	1.0		
10	0.6	5.0	1.0	1.6	C M R L
12.5	0.6	5.0	1.0		
16	0.8	7.5	1.2		
18	0.8	7.5	1.2		
20	0.8	7.5	1.2		
22	0.8	10.0	1.2		

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