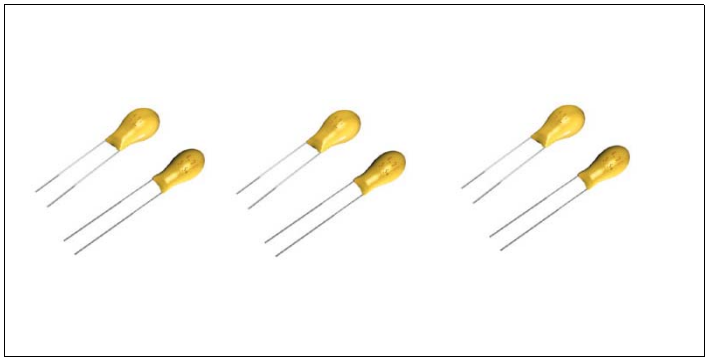
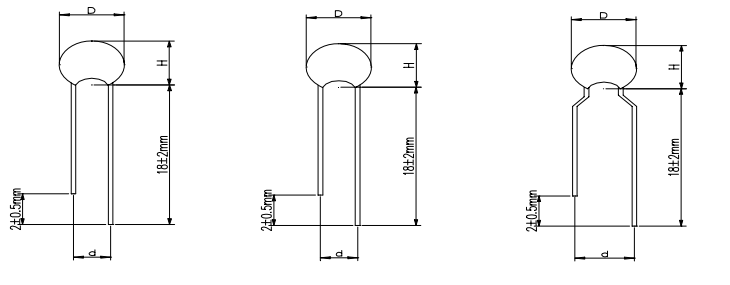
TB SERIES

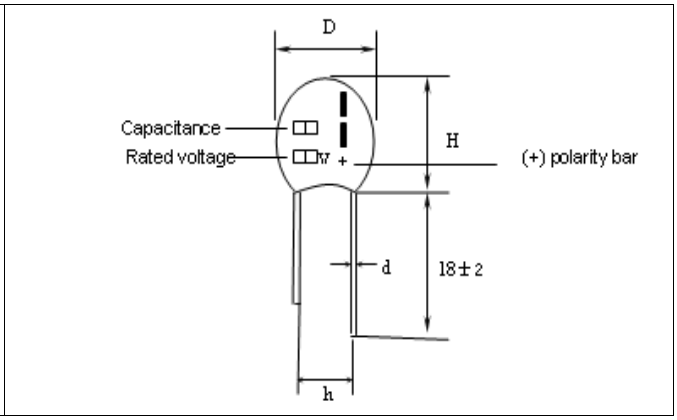


FEATURES

- Capacitance:0.1μF to 330μF
- Current Test on Each Size
- Capacitance Tolerance:±5%(K),±10%(K), ±20%(M)
- Voltage :3V DC to 50V DC

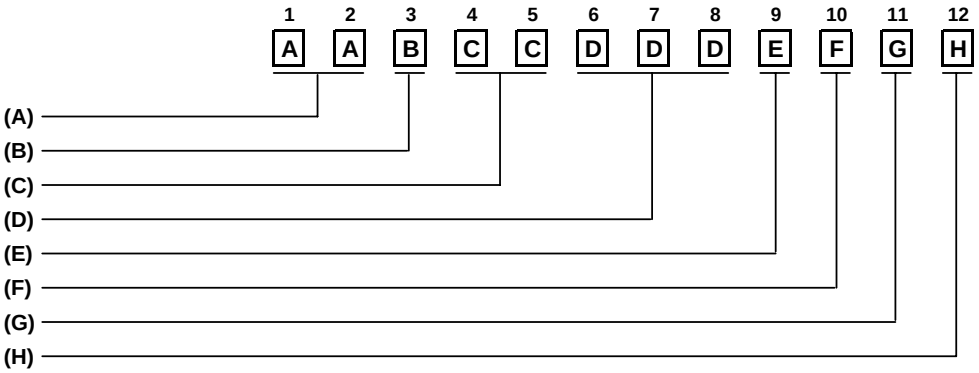
CASE DIMENSIONS AND MARKINGS





ORDERING INFORMATION

1.Production Code System



2.Explain For Each Code

1) A : Product Series : TB

2) B : Capacitance Tolerance

J	K	M
±5%	±10%	±20%

TB SERIES

3) C : Rated Voltage

Voltage	Code	Voltage	Code
6.3V	0J	25V	1E
10V	1A	35V	1V
16V	1C	50V	1H
20V	1D		

4) D : Capacitance Code

Capacitance	Code	Capacitance	Code
0.1uF	104	100uF	107
1.5uF	155	220uF	227
1uF	105	330uF	337
10uF	106	..	

5) E : Case Size

* Size Code

Size	D(max)	H(max)	h(±0.5mm)	d
A	4.5	7.0	2.5	0.5
B	5.0	8.0	2.5	0.5
C	5.5	9.5	2.5	0.5
D	6.5	11.0	2.5	0.5
E	8.5	13.0	5.0	0.5
F	9.5	16.5	5.0	0.5

* Capacitance and Voltage range of TB series

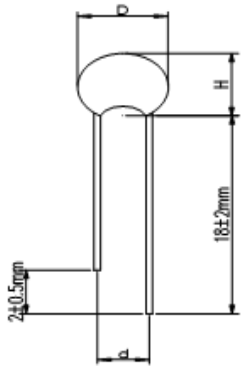
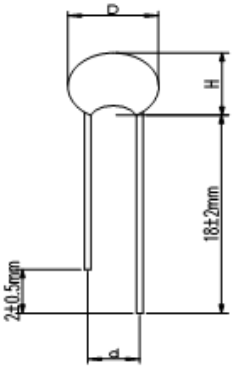
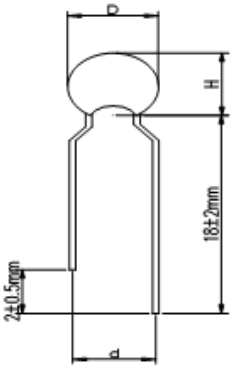
Rated Voltage	3V	6.3V	10V	16V	20V	25V	35V	50V
Voltage Derating	2	4	6.3	10	13	16	20	32
Surge Voltage	4	8	13	20	26	33	46	65

Capacitance	Case Size							
0.1uF							A	A
0.15uF							A	A
0.22uF							A	A
0.33uF							A	A
0.47uF							A	A
0.68uF							A	A
1uF				A	A	A	A	B
1.5uF				A	A	A	A	C
2.2uF			A	A	A	A	B	C
3.3uF		A	A	A	B	B	B	D
4.7uF	A	A	A	B	B	B	C	D
6.8uF	A	A	B	B	C	C	D	E
10uF	A	B	B	B	C	C	D	E
15uF	A	B	C	C	D	D	E	F
22uF	B	C	C	C	D	D	E	F
33uF	B	C	D	D	E	E	F	
47uF	C	D	D	D	E	E	F	
68uF	D	D	D	E	F	F		
100uF	D	E	E	E	F	F		
150uF	D	E	E	F				
220uF	E	E	F					
330uF	E	F						

TB SERIES

6) F : Lead Free(E)

7) G : Lead / Forming Styles

Forming A	Forming C	Forming E
 Forming A: d=5.0±0.5mm	 Forming C: d=2.5±0.5mm	 Forming E: d=5.0±0.5mm

* Forming styles by Capacitance and Voltage range

Voltage / Capacitance	3V	6.3V	10V	16V	20V	25V	35V	50V
0.1uF							C,E	C,E
0.15uF							C,E	C,E
0.22uF							C,E	C,E
0.33uF							C,E	C,E
0.47uF							C,E	C,E
0.68uF							C,E	C,E
1uF				C,E	C,E	C,E	C,E	C,E
1.5uF				C,E	C,E	C,E	C,E	C,E
2.2uF			C,E	C,E	C,E	C,E	C,E	C,E
3.3uF		C,E	C,E	C,E	C,E	C,E	C,E	C,E
4.7uF	C,E	C,E	C,E	C,E	C,E	C,E	C,E	A,C
6.8uF	C,E	C,E	C,E	C,E	C,E	C,E	C,E	A
10uF	C,E	C,E	C,E	C,E	C,E	C,E	A,C	A
15uF	C,E	C,E	C,E	C,E	C,E	C,E	A	A
22uF	C,E	C,E	C,E	C,E	C,E	C,E	A	A
33uF	C,E	C,E	C,E	C,E	C,E	C,E	A	
47uF	C,E	C,E	C,E	C,E	A,C	A	A	
68uF	C,E	C,E	C,E	A,C	A	A		
100uF	C,E	C,E	A,C	A	A	A		
150uF	C,E	A,C	A	A				
220uF	A	A	A					
330uF	A	A						

8) H : Taping (B : Bulk, A : Ammo)

TB SERIES

3.PACKING

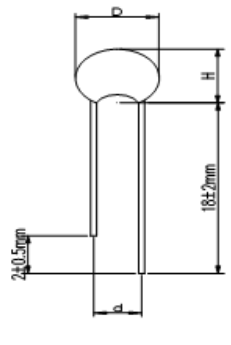
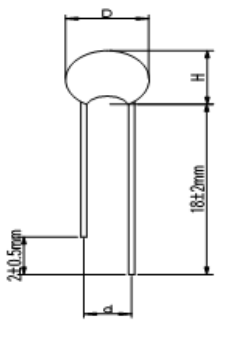
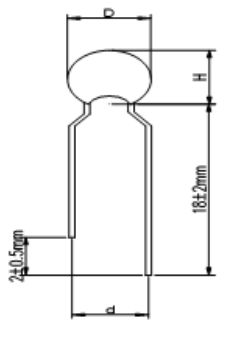
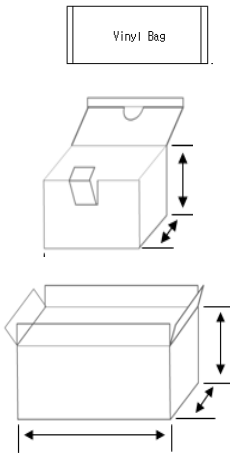
*Packing Information

Ammo Type	Bulk Type

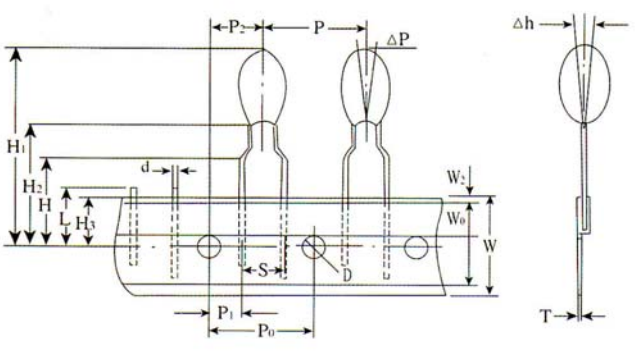
Size	Inner Box	Size	Inner Box
A	2,500 Pcs	A,B,C	1,000 Pcs
B,C	2,000 Pcs	D,E	500 Pcs
D,E,F	1,000 Pcs	F	250 Pcs

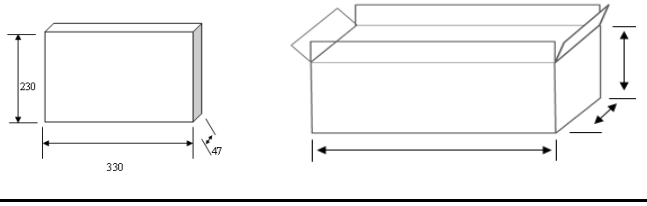
BULK & AMMO DIMENSIONS

1.BULK TYPE

Forming A	Forming C	Forming E	
 Forming A: d=5.0±0.5mm	 Forming C: d=2.5±0.5mm	 Forming E: d=5.0±0.5mm	

2.AMMO TYPE





Symbol	Designation	Dimensions(mm)	
P	Pitch of component	12.7 ± 1.0	
P0	Feed hole pitch	12.7 ± 0.3	
W	Tape width	+1 18 -0.5	
W0	Hold down tape width	12 ± 0.5	
H3	Hold position	+0.75 9 -0.5	
W2	Hold down tape position	3.0msx	
H1	Overall component height	32.5max	
ΔP	Component alignment	± 1.3max	
D	Feed hole diameter	4.0 ± 0.2	
T	Tape thickness	0.5 ± 0.2	
Δh	Component alignment	± 2.0max	
L	Length of snipped leads	11max	
H	Lead clinch height	16 ± 0.5	
S	Lead wire spacing	2.5 ± 0.5	5.0 ± 0.7
P1	Feed hole center to wire center	5.10 ± 0.5	3.85 ± 0.7
P2	Hole center to component center	6.35 ± 0.4	
H2	Component height	+2 18 -0	
d	Lead diameter	0.5 ± 0.05	

TB SERIES

SPECIFICATIONS

Temperature Characteristics

Capacitance (uF)	Change in capacitance(%)			**DF** Max(%)				**DCL** Max(uA)		
	-55℃	+85℃	+125℃	-55℃	+20℃	+85℃	+125℃	+20℃	+85℃	+125℃
≤1.0	±10	±15	±25	6	4	6	6	I_o=0.01CRVR 0.5μA (whichever is greater)	10I_o	12.5I_o
1.5~6.8				8	6	8	8			
10~68				10	8	10	10			
100~330				12	10	12	12			

*__DF Max__ (**D**issipation **F**actor Max) / __DCL Max__(**D**irect **C**urrent **L**eakage Max)

APPLICATION GUIDE

1.THE METHOD OF MOUNTING

1.1.Recommend the method of mounting:

- The capacitor directly insets PCB when it is used.
- The body and the lead are steadied in the application of the vibration and shock tests, the distance between the body and the mounting point shall be 6 ±1㎜.

2.NOTE IN USE

2.1.For circuits with low resistance circuit, make the use voltage be 1/3 or under of the rated voltage; in general circuit, make the use voltage be 2/3 or under of the rated voltage.

2.2.In case of circuits with large instantaneous rush current or rapid charging/discharging circuits, connect the protection resistor of 3Ω/V or more in series to the capacitor to limit the current to 300mA or less. When the protection resistor can not be inserted, lower the use voltage to 1/3 or under of the rated voltage.

2.3.Use the capacitors within the permissible ripple voltage specified independently. Use in the range that the sum of the DC voltage value and the peak value of ripple voltage does not exceed the rated voltage. Design not to apply over voltage made by fluctuation of superimposed DC voltage or reverse voltage to the capacitors.

2.4.Use the capacitors within the specified use temperature range. In case use temperature exceeds +85℃, apply the reduced voltage shown in the below figure as the rated voltage.

2.5.Environmental conditions do not use the equipment fit with the capacitor in the below environment.

- Environment where capacitors are directly splashed with water, salt water and oil.
- Environment where capacitors are directly exposed to sunlight.
- Environment in high temperature and humidity causing dewing on capacitor surface.
- Environment where capacitors touch various active gases.
- Acid and alkaline atmosphere.
- Environment with high frequency induction.
- Environment with excessive vibration and shock.

3.STORAGE

3.1.Storage condition:

- Environmental temperature: -10℃ ~ +40℃
- Relative humidity: no more than 70%

4.OTHER INFORMATION

4.1.Orders for capacitors covered by this specification shall contain, in clear or in coded form, the following minimum information:

- Rated capacitance.
- Tolerance on rated capacitance.
- Rated d.c. voltage.