

CERAMIC DISC CAPACITORS

CLASS I TEMPERATURE COMPENSATION

FEATURES

- * Linear temperature coefficient of capacitance.
- * High stability of capacitance.
- * Low loss at wide range of frequency.

SPECIFICATIONS

- * Operating temperature range: $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- * Storage Temperature range: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- * Rated working voltage: 50 V.DC, 500 V.DC
- * Test voltage: 3 times of the rated voltage
- * Capacitance: Within the tolerance at 1 MHz, 1 to 3V rms, 25°C
- * Q factor: At 1 MHz, 1 to 3V rms, 25°C .
 $C > 30\text{pF} \dots\dots\dots Q \geq 1,000$
 $C \leq 30\text{pF} \dots\dots\dots Q \geq 400 + 20C$
 (C: Rated capacitance)
- * Insulation resistance: 10,000 Megohms min.

* Load life test:

After application of 200% of the rated voltage for 1000 hours at 85°C , capacitors shall meet the following. Measurement shall be made after 24 hours exposure at room temperature.

Item	Temp. Char.	T.C. (NP0 — N750, SL)	
		≤ 30pF	> 30pF
Capacitance Change		≤ ±5% or ≤ ±0.3pF	≤ ±3%
Q Factor		$Q \geq 275 + 5/3C$	$Q \geq 350$
Insulation Resistance		≥ 1000MΩ	

* Humidity test:

The capacitors shall be exposed in the ambient temperature of 40°C , and at 95% R.H. for 500 hours. The capacitors shall meet the following after 24 hours exposure at room temperature.

Item	Temp. Char.	T.C. (NP0 — N750, SL)	
		≤ 30pF	> 30pF
Capacitance Change		≤ ±5% or ≤ ±0.5pF	≤ ±5%
Q Factor		$Q \geq 275 + 5/3C$	$Q \geq 350$
Insulation Resistance		≥ 1000MΩ	

TEMPERATURE COMPENSATING MATERIAL

EIA	CO	S1	U1	P2	R2	S2	T2	U2	SL
JIS	C	H	L	P	R	S	T	U	SL
T.C. PPM/°C	NP0	N30	N50	N150	N220	N330	N470	N750	P350 to N1000

CERAMIC DISC CAPACITORS

CLASS II HIGH DIELECTRIC CONSTANT

FEATURES

- * Large capacitance in small sizes.
- * Non linear temperature coefficient of capacitance.

SPECIFICATIONS

- * Operating temperature range: $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- * Rated working voltage: 50V.DC, 500V.DC.
- * Capacitance: Within the tolerance at 1 KHz, 1 to 3 V.rms, 25°C .
- * Test voltage: 2.5 times of the rated voltage.
- * Dissipation factor: $(\tan \delta)$:
 B, E characteristics: $\tan \delta \leq 2.5\%$ max.
 F characteristics: $\tan \delta \leq 5\%$ max.
- * Insulation resistance:
 $10,000\text{M}\Omega$ or $200 \text{M}\Omega\mu\text{F}$, whichever is the smaller.

* Temperature characteristics

Char. \ Item	Max. Capacitance Change From 25°C	Applicable Temperature Range	Applicable Standards	
			IEC pub. 384.9	EIA RS-198
B	$\pm 10\%$	-25 to $+85^{\circ}\text{C}$	2B4	Y5P
E	$+20, -55\%$	$+10$ to $+85^{\circ}\text{C}$	2E5	Z5U
F	$+30, -80\%$	$+10$ to $+85^{\circ}\text{C}$		

* Life test:

After application of 200% of the rated voltage for 1000 hours at 85°C , capacitor shall meet the following. Measurement shall be made after 24 hours exposure at room temperature.

Item \ Temp. Char.	B	E	F
Capacitance Change	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$
Dissipation Factor	$\leq 50 \times 10^{-3}$		$\leq 75 \times 10^{-3}$
Insulation Resistance	$1000\text{M}\Omega$ or $20\text{M}\Omega\mu\text{F}$ whichever is less		

* Humidity test:

The capacitors shall be exposed in the ambient temperature of 40°C and at 95% R.H. for 500 hours. The capacitors shall meet the following after 24 hours exposure at room temperature.

Item \ Temp. Char.	B	E	F
Capacitance Change	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$
Dissipation Factor	$\leq 50 \times 10^{-3}$		$\leq 75 \times 10^{-3}$
Insulation Resistance	$1000\text{M}\Omega$ or $20\text{M}\Omega\mu\text{F}$ whichever is less		

CERAMIC DISC CAPACITORS

HIGH VOLTAGE 1KV ~ 3KV

SPECIFICATION

- * Operating temperature range: $-25^{\circ}\text{C} + 85^{\circ}\text{C}$.
- * Rated working Voltage: 1KV DC, 2KV DC, 3KV DC.
- * Capacitance: Within the tolerance at 1MHz for class 1, 1KHz for class 2, 1 to 3 Vrms, 25°C.
- * Test voltage:
3 times of the rated voltage for NPO, N750, SL.
2.5 times of the rated voltage for B, E, F.

- * Dissipation Factor/Q Factor ($\tan \delta$):
1MHz, 1 to 3Vrms, 25°C, class 1,
C > 30PF Q \geq 1,000
C \leq 30PF Q \geq 400 + 20C
1KHz, 1 to 3 Vrms, 25°C, class 2,
B, E $\tan \delta \geq$ 2.5% Max.
F $\tan \delta \geq$ 5.0% Max.
- * Insulation resistance:
10,000 M Ω or 200 M $\Omega\mu\text{F}$ whichever is the smaller.

* Temperature characteristics

Char. \ Item	Max. Capacitance Change from 25°C	Applicable Temperature Range	Applicable Standards	
			IEC Pub. 384.9	EIA RS-198
B	$\pm 10\%$	-25 to $+85^{\circ}\text{C}$	2B4	Y5P
E	+20, -55%	+10 to $+85^{\circ}\text{C}$	2E5	Z5U
F	+30, -80%	+10 to $+85^{\circ}\text{C}$		

* Life test

After application of 200% of the rated voltage for 1000 hours at 85°C, capacitor shall meet the following. Measurement shall be made after 24 hours exposure at room temperature.

Temp. Char. \ Item	NPO, N750, SL		B	E	F
	$\leq 30\text{PF}$	$> 30\text{PF}$			
Capacitance Change	$\leq \pm 5\%$ or $\leq \pm 0.5\text{pF}$	$\leq \pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$
D. Factor/Q Factor	Q $\geq 27.5 + 5/3C$	Q ≥ 350	50×10^{-3}		75×10^{-3}
Insulation Resistance	$\geq 1000\text{M}\Omega$		1000M Ω or 20M $\Omega\mu\text{F}$ whichever is less		

* Humidity test

The capacitors shall be exposed in the ambient temperature of 40°C and at 95% R.H. for 500 Hours. The capacitors shall meet the following after 24 hours exposure at room temperature.

Temp. Char. \ Item	NPO, N750, SL		B	E	F
	$\leq 30\text{PF}$	$> 30\text{PF}$			
Capacitance Change	$\leq \pm 5\%$ or $\leq \pm 0.5\text{pF}$	$\leq \pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$
D. Factor/Q Factor	Q $\geq 27.5 + 5/3C$	Q ≥ 350	50×10^{-3}		75×10^{-3}
Insulation Resistance	$\geq 1000\text{M}\Omega$		1000M Ω or 20M $\Omega\mu\text{F}$ whichever is less		

CERAMIC DISC CAPACITORS

CLASS III SEMICONDUCTOR TYPE

FEATURES

- * Linear temperature characteristics of capacitance.
- * Stable capacitance change over the specified temperature.
- * Low loss at wide range of frequency.
- * Cost saving by replacing film capacitors.
- * Ultra large capacitance in small sizes.

SPECIFICATIONS

- * Operating temperature range: $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- * Rated working voltage: 12V/16V/25V/50V/63V
- * Test voltage: 2.5 times of the rated voltage
- * Dissipation factor ($\tan \delta$): at 1 KHz, 0.1 Vrms, 25°C
 B, E, F: 12V/16V 7.5% max. 25V/50V 5% Max.
- * Insulation resistance: (at 25°C)
 12V/16V. $100\text{M}\Omega\mu\text{F}$ or $10\text{M}\Omega\mu\text{F}$ whichever is less
 25V/50V. $1000\text{M}\Omega\mu\text{F}$ or $20\text{M}\Omega\mu\text{F}$ whichever is less

* Temperature characteristics:

Char. \ Item.	Max. Capacitance Change from 25°C	Applicable Temperature Range	Applicable Standards	
			IEC Pub. 384.9	EIA RS-198
B	$\pm 10\%$	-25° to $+85^{\circ}\text{C}$	2B4	Y5P
E	+20, -55%	$+10^{\circ}$ to $+85^{\circ}\text{C}$	2E5	Z5U
F	+30, -80%	-25° to $+85^{\circ}\text{C}$	2F4	Y5V

* Load life test:

After application of 200% of the rated voltage for 1000 hours at 85°C , capacitors shall meet the following. Measurement shall be made after 24 hours exposure at room temperature.

Temp. Char. \ Item	B	E	F
Capacitance Change	+10%	$\pm 20\%$	$\pm 30\%$
Dissipation Factor	5%		7.5%
Insulation Resistance	$500\text{M}\Omega$ or $50\text{M}\Omega\mu\text{F}$ whichever is less		$500\text{M}\Omega$ or $50\text{M}\Omega\mu\text{F}$ whichever is less

* Humidity test:

The capacitors shall be exposed in the ambient temperature of 40°C , and at 95% R.H. for 500 hours. The capacitors shall meet the following after 24 hours exposure at room temperature.

Temp. Char. \ Item	B	E	F
Capacitance Change	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$
Dissipation Factor	7.5%		7.5%
Insulation Resistance	$500\text{M}\Omega$ or $50\text{M}\Omega\mu\text{F}$ whichever is less		$500\text{M}\Omega$ or $50\text{M}\Omega\mu\text{F}$ whichever is less

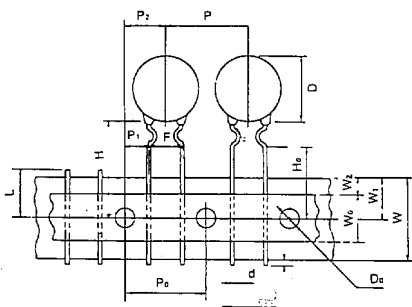
CERAMIC DISC CAPACITORS

RADIAL TAPE & REEL

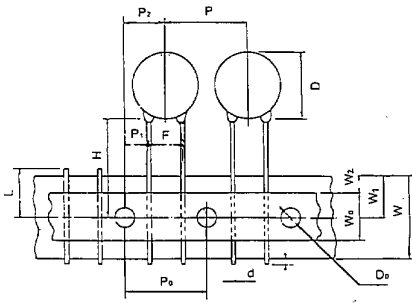
RADIAL TAPE & REEL for AUTO INSERTION

■ DIMENSION

F-R TYPE (F = 5.0)



S-R TYPE (F = 5.0)



F-R TYPE

unit: mm

Code	Dimension
P	12.7 ± 1.0
P ₀	12.7 ± 0.3
P ₁	3.85 ± 0.7
P ₂	6.35 ± 1.3
W	18.0 ^{+1.0} _{-0.5}
W ₀	12.5 min.
W ₁	9.0 ± 0.5
W ₂	3.0 max.
H	20.0 ^{+1.5} _{-1.0}
H ₀	16.0 ± 0.5
ℓ	2.0 max.
D ₀	4.0 ± 2.0
t	0.7 ± 0.2
Δh	0 ± 2.0
F	5.0 ^{+0.8} _{-0.2}
d	0.6 ^{+0.06} _{-0.05}
L	11.0 max.
D	12.0 φmax.

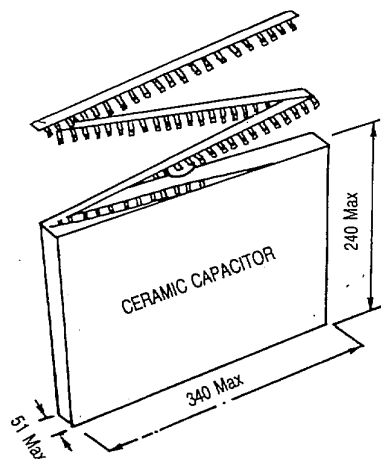
S-R TYPE

unit: mm

Code	Dimension
P	12.7 ± 1.0
P ₀	12.7 ± 0.3
P ₁	3.85 ± 0.7
P ₂	6.35 ± 1.3
W	18.0 ^{+1.0} _{-0.5}
W ₀	12.5 min.
W ₁	9.0 ± 0.5
W ₂	3.0 max.
H	20.0 ± 0.75
ℓ	2.0 max.
D ₀	4.0 ± 0.2
t	0.7 ± 0.2
Δh	0 ± 2.0
F	5.0 ^{+0.8} _{-0.2}
d	0.6 ^{+0.06} _{-0.05}
L	11.0 max.
D	12.0 φmax.

PACKAGE: Quantity per reel is 2500pcs.

■ Special Features for Taping Box



PACKAGE: Quantity per Box is 2,500pcs. for Dia ≤ 8mm
2,000pcs. for Dia > 8mm