

# CERAMIC DISC CAPACITORS-(T.C.)

## EIA RS 198 ● CLASS 1 JIS C 6423 ● TYPE I

### FEATURES

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

#### 1. Class I—Type 'T'

#### 2. Temperature coefficient (Ref. Fig 1)

Code	PPM/°C	T.C.	EIA Code	Color	Symbol
CH	0 ± 60	NP0	C0H	Black	C
HH	-30 ± 60	N33	S1H	Brown	H
LH	-80 ± 60	N75	U1H	Red	L
PH	-150 ± 60	N150	P2H	Orange	P
RH	-220 ± 60	N220	R2H	Yellow	R
SH	-330 ± 60	N330	S2H	Green	S
TH	-470 ± 60	N470	T2H	Blue	T
UJ	-750 ± 120	N750	U2J	Violet	U
SL	+350 ~ -1,000	P350 -N1000	S2L	—	—

#### 3. Rated Voltage (D.C.)

Code	Voltage	Code	Voltage
1C	16V	2E	250V
1E	25V	2H	500V
1H	50V	3A	1KV
2A	100V	3D	2KV
2D	200V	3F	3KV

#### 4. Rated capacitance

Code	Cap. (PF)	Code	Cap. (PF)
010	1PF	390	39PF
1P5	1.5PF	470	47PF
2P2	2.2PF	560	56PF
3P3	3.3PF	680	68PF
3P9	3.9PF	820	82PF
4P7	4.7PF	101	100PF
5P6	5.6PF	121	120PF
6P8	6.8PF	151	150PF
8P2	8.2PF	181	180PF
100	10PF	221	220PF
120	12PF	271	270PF
150	15PF	331	330PF
180	18PF	391	390PF
220	22PF	471	470PF
270	27PF	561	560PF
330	33PF	681	680PF

#### 5. Tolerance on rated capacitance.

Code	Tol.	Rated Cap. (PF)
C	±0.25PF	1, 2, 3, 4, 5
D	±0.5PF	6, 7, 8, 9
F	±1PF	6, 7, 8, 9, 10
J	±5%	From 10PF to 680PF
K	±10%	
M	±20%	

#### 6. Lead Shape. (Ref. Fig. 3.)

Code	Type	
K	Bulk	Short Kink
S		Short Straight
L		Long Straight
A	Tape/Reel	Long Straight
B	Tape/Box	Long Straight
C	Tape/Reel	Long Kink
D	Tape/Box	Long Kink

#### 7. Lead Spacing. (F)

Code	Dimension. (mm)		
	K	S	L
2	—	2.5 ± 0.8	2.5 ± 0.8
5	5.0 ± 0.8	5.0 ± 0.8	5.0 ± 0.8
6	—	6.3 ± 0.8	6.3 ± 0.8
7	—	7.5 ± 0.8	7.5 ± 0.8
0	10.0 ± 0.8	—	10.0 ± 0.8

#### 8. Lead Length. (L)

Code	Dimension (mm)		
	K	S	L
3	3.5 ± 1.0	3.5 ± 1.0	3.5 ± 1.0
5	5.0 ± 0.8	5.0 ± 0.8	5.0 ± 0.8
6	6.3 ± 0.8	6.3 ± 0.8	6.3 ± 0.8
0	10.0 ± 0.8	10.0 ± 0.8	10.0 ± 0.8
1	—	—	25min

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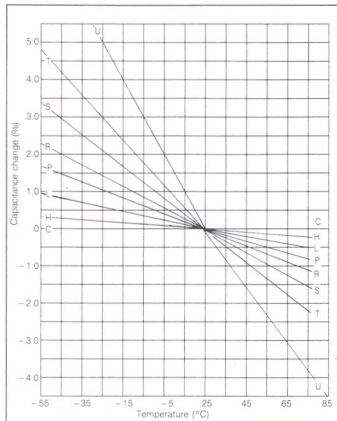
## 9. Lead Wire. (d)

Code	Dia ( $\phi$ mm)	Rated Voltage (D.C.)
5	0.48 $\pm$ 0.05	16V~500V
6	0.50 $\pm$ 0.05	1KV
8	0.45~0.60	2KV
9	0.60 $\pm$ 0.05	3KV~above

## 10. Grade

Code	Temperature range
Y	-25°C ~ +85°C

Fig. 1 (T.C. PPM/°C)



## Dimension & Capacitance Range

Dia. (D)	Dimension (mm)			Capacitance Range (PF)							
	Lead Spacing (F)			50V		500V		1KV			
	max.	K	S	L	CH	UJ	SL	CH	SL	CH	SL
5.0	5.0 $\pm$ 0.8	2.5 $\pm$ 0.8	2.5 $\pm$ 0.8	2.5 $\pm$ 0.8	1-47	5-47	1-151	1-15	20-50	1-10	20-30
6.0	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	56-68	56-68	161-221	16-47	51-101	12-27	33-68
7.0	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	82-101	82-101	241-331	50-82	121-151	30-47	70-101
8.0	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	121-151	121-151	361-471	101	—	56-68	—
9.0	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	161-221	161-181	501-681	—	—	82-101	—
10.0	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	5.0 $\pm$ 0.8	221-331	201-221	821	—	—	—	—
12.0	to	to	to	to	—	—	—	—	—	—	—
14.0	10.0 $\pm$ 0.8	10.0 $\pm$ 0.8	10.0 $\pm$ 0.8	10.0 $\pm$ 0.8	—	—	—	—	—	—	—

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## SPECIFICATION & TEST

No. Item	Performance	Test Method
1. Visual & Mechanical	To meet the specification.	The product shall be inspected for visible evidence of defect.
2. Marking	To be clear and legible.	Marking shall be tested with acetone
3. Voltage Proof (Between terminal)	No failure	2.5 times the rated voltage shall be applied for 1 to 5 sec. Charging and discharging current shall be limited to 50 mA max.
4. Insulation resistance	10,000 MΩ min.	Shall be measured 1 minute after with rated voltage.
5. Capacitance	To be within the specified tolerance	Test frequency: 1MHz ± 100Hz. Test voltage shall not exceed 5Vrms at 25 ± 2°C
6. Q Value	C ≤ 30PF    Q = 400 + 20C. C > 30PF    Q > 1000.	Same condition as above (Item 5)
7. Temperature Coefficient	To be within the specification.	T.C. shall be calculated by the following formula: $\text{PPM}/^{\circ}\text{C} = \frac{C(t_1) - C(t_2)}{C t_1 (t_2 - t_1)} \times 10^4$ C t 2 = capacitance at t 2. C t 1 = capacitance at t 1 t 2 = 85 ± 3°C. t 1 = 25 ± 2°C

## Part Code Designation

Example:  $\frac{T}{(1)}$     $\frac{CH}{(2)}$     $\frac{1H}{(3)}$     $\frac{120}{(4)}$     $\frac{K}{(5)}$    —    $\frac{K}{(6)}$     $\frac{5}{(7)}$     $\frac{5}{(8)}$     $\frac{5}{(9)}$     $\frac{Y}{(10)}$