

CERAMIC DISC CAPACITORS

CLASS 1 (TEMPERATURE COMPENSATING)

SPECIFICATIONS

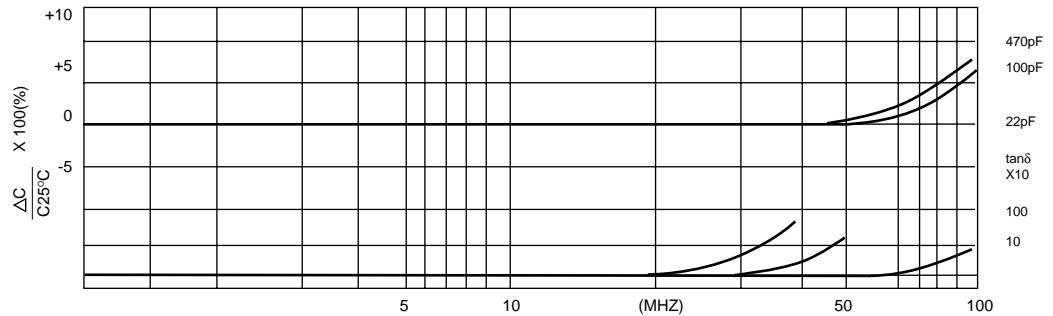
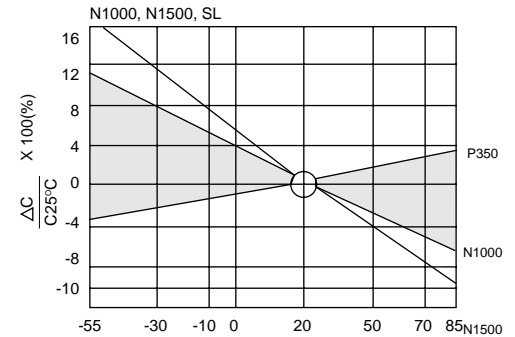
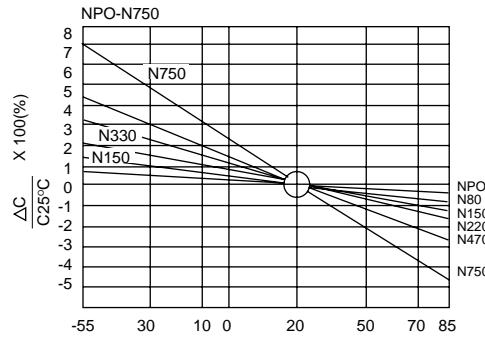
- Standard: JIS C6423 5102, EIA RS-198C
- Temperature Range: $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Capacitance: Shall be within tolerance when measured at a frequency of $1\text{MHz} \pm 10\%$, 5Vrms and $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$
- Dielectric strength: 50mA maximum
 $50\text{V} \sim 500\text{V}$ Capacitors shall withstand 3 times rated working voltage for 1~5 seconds
 $1\text{Kv} \sim 3\text{Kv}$ Capacitors shall withstand 2 times rated working voltage for 1~5 seconds
- Insulation resistance:
 $50\text{V} \sim 500\text{V}$ 10000 $\text{M}\Omega$ minimum at working voltage for 60 ± 5 seconds
 $1\text{Kv} \sim 3\text{Kv}$ 10000 $\text{M}\Omega$ minimum at 500VDC for 60 ± 5 seconds

- Q: When measured in the same method as capacitance, the Q value will be as follows:

(C=capacitance in pF)
 NPO - N750 & SL N1000, N1500
 Cap. <30pF, Q $\geq 400+20\text{C}$ Cap. <30pF, Q $\geq 200+10\text{C}$
 Cap. $\geq 30\text{pF}$, Q ≥ 1000 Cap. $\geq 30\text{pF}$, Q ≥ 500

- Temperature coefficient: Shall not exceed limits defined in graphs below. SL: P350-N1000 PPM/ $^{\circ}\text{C}$
- Values available in E24 series over 10pF, under 10pF Consult MMC

PERFORMANCE



MARKING

Diameter	TC	5φ			6φ			7φ or above		
		C-U	V,W	SL	C-U	V,W	SL	C-U	V,W	SL
T.C. color code										
T.C. (e.g.; V,W)			.			.				
T.C. (NPO, N1500)							.	.		
Capacitance	
Cap. Tol.				

NOTE:

- Capacitance marking: values less than 100pF marked with actual capacitance, 100pF and over using 3 digits. (e.g. 10pF-10, 1000pF -102)
- Working voltage: 50V- marked with a "-" under capacitance, 500V- no marking. Other voltages will be marked.
- Brand name will be marked on the following: 50V 6mm & above, 500V: All parts are marked, 1KV & over: 9.5mm & above.
- TC: Color Code or Symbol

T.C.	Color	T.C.	Color	T.C.	Color
NPO (C)	Black	N220 (R)	Yellow	N470 (T)	Blue
N80 (L)	Red	N330 (S)	Green	N750 (U)	Violet
N150 (P)	Orange				

PART NUMBERING SYSTEM

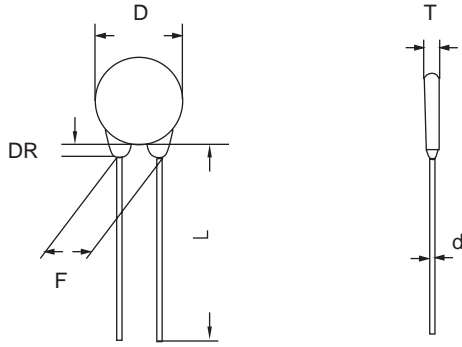
E 121 J C - RDS

- OPTIONAL LEAD STYLE/TAPING
- TEMPERATURE CHARACTERISTIC... C=NPO, L=N80, P=N150, R=N220, S=N330
T=N470, U=N=750. V=N1000, W=N15000, G=SL
- TOLERANCE... C= $\pm 25\text{pF}$, D= $\pm 0.5\text{pF}$, F= $\pm 1.0\text{pF}$, J= $\pm 5\%$, K= $\pm 10\%$
- CAPACITANCE... 3 digit system in pF
- VOLTAGE... E=50V, M=500V, P=1KV, S=2KV, T=3KV

CERAMIC DISC CAPACITORS

CLASS 1

■ DIMENSIONS



DIMENSIONS mm (in)				
WVDC	DR	L	T	d
50V	2.0 MAX (.079)	25.0 MIN (1.0)	3.0 MAX (.118)	d=0.4 (.015) F=2.5mm (.098)
				d=0.5 (.0196) F=5.0mm (.197)
500V	3.0 MAX (.118)	25.0 MIN (1.0)	4.0 MAX (.157)	AWG#22 (.025)
1KV	4.0 Max (.157)	25.0 MIN (1.0)	6.0 MAX (.236)	AWG#22 (.025)
2KV	4.0 Max (.157)	25.0 MIN (1.0)	6.0 MAX (.236)	AWG#20 (.032)
3KV	4.0 Max (.157)	25.0 MIN (1.0)	6.0 MAX (.236)	AWG#20 (.032)

■ CAPACITANCE RANGE (pF)

DIMENSIONS mm (in)	CAPACITANCE RANGE (pF)												
	D MAX.	F ±1.0	NPO (C)	N80 (L)	N150 (P)	N220 (R)	N330 (S)	N470 (T)	N750 (U)	N1000 (V)	N1500 (W)	SL	
50V	4.0 (.157)	2.5 (.098)	1- 24	1- 12	1- 24	1.5- 27	2- 27	2- 33	3- 43	10- 43	10- 56	.5- 75	
	5.0 (.197)	5.0 (.197)	27- 33	13- 20	27- 33	30- 39	30- 39	-	47- 62	47- 68	62- 91	82- 120	
	5.0 (.197)	5.0 (.197)	36- 39	22	36- 39	43	43- 47	36- 56	68- 82	-	-	-	
	6.0 (.236)	5.0 (.197)	43- 56	24- 33	43- 56	47- 68	47- 68	62- 82	91- 120	75- 100	100- 130	130- 180	
	7.0 (.276)	5.0 (.197)	62- 82	36- 47	62- 91	75- 100	75- 100	91- 120	130- 180	110- 150	150- 200	200- 270	
	8.0 (.315)	5.0 (.197)	91- 120	51- 68	100- 130	110- 130	110- 150	130- 160	200- 240	160- 220	220- 270	300- 390	
	9.0 (.354)	5.0 (.197)	130- 160	75- 91	150- 160	150- 180	160- 200	180- 240	270- 330	240- 300	300- 390	430- 510	
	9.5 (.374)	5.0 (.197)	180	100	180	-	220	-	-	330	430	560	
	10.5 (.413)	5.0 (.197)	200- 220	110- 130	200- 240	200- 240	240- 270	270- 330	360- 470	360- 390	470- 510	620- 750	
	12.0 (.472)	5.0 (.197)	240- 300	150- 180	270- 330	270- 360	300- 390	360- 430	510- 680	430- 560	560- 750	820- 1000	
500V	6.0 (.236)	6.4 (.250)	1- 30	1- 16	1- 30	1- 33	2- 36	2- 43	1.5- 62	10- 51	10- 68	0.75- 100	
	7.4 (.291)	6.4 (.250)	33- 47	18- 24	33- 47	36- 51	39- 56	47- 62	68- 100	56- 82	75- 100	110- 150	
	9.5 (.375)	6.4 (.250)	51- 82	27- 51	51- 91	56- 100	62- 100	68- 130	110- 180	91- 160	110- 200	160- 270	
	11.0 (.433)	6.4 (.250)	91- 120	56- 68	100- 130	110- 130	110- 150	150- 180	220- 270	180- 220	220- 300	300- 390	
	12.5 (.492)	6.4 (.250)	130- 160	75- 100	150- 180	150- 200	160- 200	200- 240	300- 360	240- 300	330- 390	430- 510	
	14.5 (.570)	9.5 (.375)	180- 240	110- 130	200- 240	220- 270	220- 300	270- 360	390- 510	330- 430	430- 560	560- 750	
	16.3 (.642)	9.5 (.375)	270- 330	150- 180	270- 330	300- 360	330- 390	390- 470	560- 680	470- 560	620- 750	820- 1000	
	19.0 (.748)	9.5 (.375)	360- 430	200- 240	360- 470	390- 510	430- 510	510- 620	750- 910	620- 750	820- 1000	-	
	1000V	6.0 (.236)	6.4 (.250)	1-22									1-68
		7.4 (.291)	6.4 (.25)	24-33									75-110
9.5 (.374)		6.4 (.25)	36-62									120-200	
11.0 (.433)		6.4 (.25)	68-91									220-330	
13 (.512)		6.4 (.25)	100-130									330-390	
15.0 (.590)		9.5 (.375)	150-180									430-560	
17.0 (.669)		9.5 (.375)	200-240									620-750	
19.0 (.748)		9.5 (.375)	270-330									820-1000	
8.0 (.315)		6.4 (.250)	1-12									1-36	
2000V		10.0 (.394)	6.4 (.25)	13-24									39-75
	12.0 (.472)	6.4 (.25)	27-36									82-110	
	15.0 (.590)	9.5 (.375)	39-68									120-220	
	20.0 (.787)	9.5 (.375)	75-130									240-430	
	10.0 (.394)	9.5 (.375)	1-16									1-56	
	3000V	12.0 (.472)	9.5 (.375)	18-24									62-82
		15.0 (.590)	9.5 (.375)	27-51									91-160
		20.0 (.787)	9.5 (.375)	56-91									180-300

DIMENSIONS mm (in)	CAPACITANCE RANGE (pF)				
	D MAX	F ±1.5	NPO	SL	
1000V	6.0 (.236)	6.4 (.250)	1-22	1-68	
	7.4 (.291)	6.4 (.25)	24-33	75-110	
	9.5 (.374)	6.4 (.25)	36-62	120-200	
	11.0 (.433)	6.4 (.25)	68-91	220-330	
	13 (.512)	6.4 (.25)	100-130	330-390	
	15.0 (.590)	9.5 (.375)	150-180	430-560	
	17.0 (.669)	9.5 (.375)	200-240	620-750	
	19.0 (.748)	9.5 (.375)	270-330	820-1000	
	8.0 (.315)	6.4 (.250)	1-12	1-36	
	2000V	10.0 (.394)	6.4 (.25)	13-24	39-75
12.0 (.472)		6.4 (.25)	27-36	82-110	
15.0 (.590)		9.5 (.375)	39-68	120-220	
20.0 (.787)		9.5 (.375)	75-130	240-430	
10.0 (.394)		9.5 (.375)	1-16	1-56	
3000V		12.0 (.472)	9.5 (.375)	18-24	62-82
		15.0 (.590)	9.5 (.375)	27-51	91-160
		20.0 (.787)	9.5 (.375)	56-91	180-300

■ STANDARD CAPACITANCE TOLERANCE

.5~5pF C(±.5pF, D(±.5pF)
 5.1~10pF; D(±.5pF), F(±.1pF)
 Over 10pF; J(±.5%), K(±.10%)

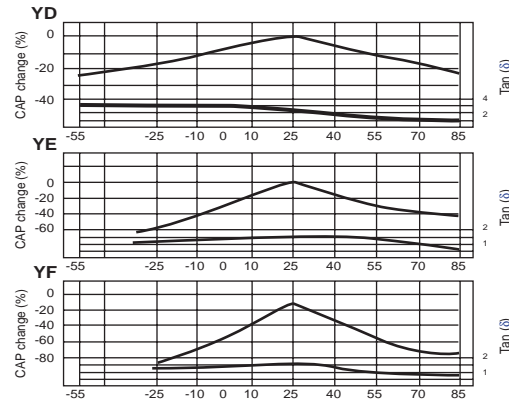
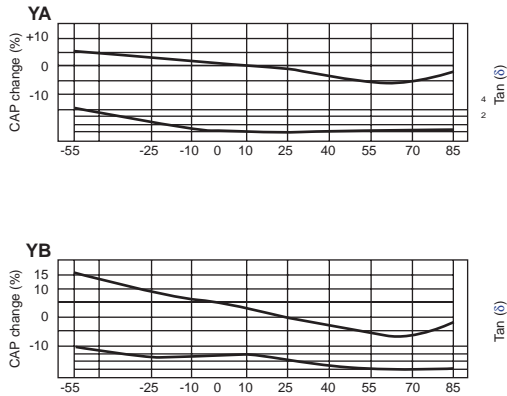
CERAMIC DISC CAPACITORS

CLASS 2 (MEDIUM K DIELECTRIC)

■ SPECIFICATIONS

- Standard: JIS C6422 5102 EIA RS-198C.
- Temperature range: -30°C ~ +85°C.
- Capacitance: Shall be within tolerance when measured at a frequency of 1KHz±10%, 5Vrms at 20°C.
- Dielectric strength: Capacitors shall withstand 2.5 times the rated working voltage for 1--5 seconds. (50mA Max)
- Insulation resistance: Value obtained will be 10,000 MΩ minimum when measured by applying the rated working voltage for 1 minute.
- Dissipation factor (tanδ) 2.5% maximum except YF (Y%V); 5% maximum when it is measured in the same manner as capacitance.

■ PERFORMANCE



E.I.A. STD.				JIS STD.	
TEMP. RANGE (°C)	CAP. CHANGE (%)	TEMP. RANGE (°C)	CAP. CHANGE (%)	MMC MATERIAL	
-30~+85	±4.7	-55~+85	±7.5	YA	
	±7.5		-	-	
	±10		±15	YA	
	±15		-	-	
	±22		-	-	
	+22 -33		+22 -33	YD	
	+22 -56		-	YE	
	+22 -62		-	YF	

NOTE: EIA Designation: YA-Y5E, YB-Y5P, YD-Y5T, YE-Y5U, YF-Y5V as listed. See capacitance and dissipation vs temperature for specification.

■ MARKING

50 WVDC

Diameter	4φ		5φ		6 φ		7φ or above	
	B,D,E,F	B,D,E	F	B,D,E	F	B,D,E	F	
ITEMS								
Temp. Char.		•		•		•		
Capacitance	•	•	•	•	•	•	•	
Cap. Tol.					•		•	
Working Voltage	•	•	•	•	•	•	•	
Brand KCK						•	•	

- NOTE: 1. Capacitance: It is shown in 3 digits (pF)
 2. Cap. Tol.: It will be marked by code except +80 -20%.
 3. 50 W.V. Marked "-" under capacitance.
 4. T.C. Temp. range code will not be marked, cap change code only.

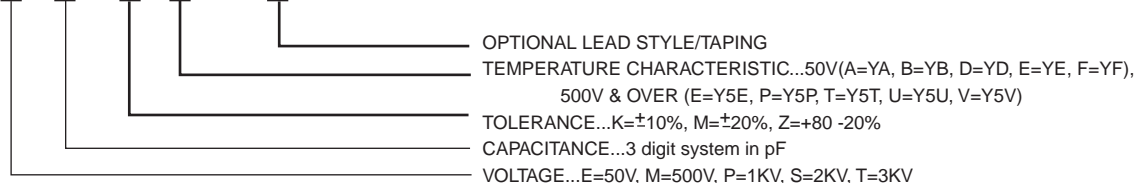
OTHER VOLTAGE

Diameter	6 and 7		8 and above	
	Except Y5V	Y5V	Except Y5V	Y5V
ITEMS				
Temp. Char.	•		•	
Capacitance	•	•	•	•
Cap. Tol.	•		•	
Working Voltage	•	•	•	•

- NOTE: 1. Capacitance: It is shown in 3 digits (pF)
 2. Cap. Tol.: It will be marked by code except +80 -20%.
 3. Brand Name: all parts are marked.
 4. WV not marked on 500V parts.

■ PART NUMBERING SYSTEM

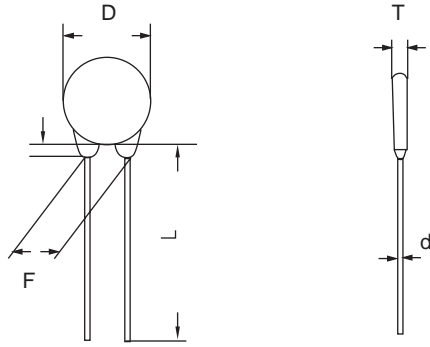
M 222 M U - RDS



CERAMIC DISC CAPACITORS

CLASS 2

■ DIMENSIONS



DIMENSIONS mm (inch)				
WVDC	DR	L	T	d
50V	2.0 MAX (.079)	25.0 MIN (1.0)	3.0 MAX (.118)	d=0.4 (.015) F=2.5mm (.098)
				d=0.5 (.0196) F=5.0mm (.197)
500V	3.0 MAX (.118)	25.0 MIN (1.0)	4.0 MAX (.157)	AWG#22 (.025)
1KV	4.0 Max (.157)	25.0 MIN (1.0)	4.5 MAX (.177)	AWG#22 (.025)
2KV	4.0 Max (.157)	25.0 MIN (1.0)	5.0 MAX (.197)	AWG#20 (.032)
3KV	4.0 Max (.157)	25.0 MIN (1.0)	6.0 MAX (.236)	AWG#20 (.032)

■ CAPACITANCE RANGE (pF)

50V	DIMENSIONS mm (inch)		CAPACITANCE RANGE (pF)				
	D MAX	F±1.0	Y5E(YA)	Y5P(YB)	Y5T(YD)	Y5U(YE)	Y5V(YF)
	4.0 (.157)	2.5 (.098)	100-470	100-820	1000	1000,1500	1000,2200
	5.0 (.197)	2.5 (.098)	560-680	1000-1500	1500	2200	4700
	6.0 (.236)	2.5 (.098)	-	-	2200	-	-
	6.0 (.236)	5.0 (.197)	820-1200	1800,2200	-	3300,4700	10000
	7.0 (.276)	5.0 (.197)	1500-1800	2700,3300	3300	5600,6800	-
	8.0 (.315)	5.0 (.197)	2200-2700	3900,4700	4700	10000	22000
	9.0 (.354)	5.0 (.197)	3300	5600	6800	-	-
	9.5 (.374)	5.0 (.197)	3900	6800	-	15000	-
	10.0 (.394)	5.0 (.197)	4700	8200	10000	-	-
	12.0 (.472)	5.0 (.197)	5600,6800	10000	1500	22000	47000
500V	6.0 (.236)	6.4 (.250)	100-680	100-1000	1000	1000-22000	-
	7.4 (.291)	6.4 (.250)	820	1200,1500	1500	3300	-
	8.6 (.338)	6.4 (.250)	1000,1200	1800,220	2200	4700	-
	9.5 (.374)	6.4 (.250)	1500,1800	2700	3300	-	-
	11.0 (.433)	6.4 (.250)	2200	3300,3900	4700	6800	-
	12.5 (.492)	6.4 (.250)	2700,3300	4700,5600	6800	10000	-
	14.5 (.570)	9.5 (.375)	3900,4700	6800,8200	10000	15000	-
	16.3 (.642)	9.5 (.375)	5600	10000	-	22000	-
	19.0 (.748)	9.5 (.375)	6800,8200	12000,15000	15000	-	-

1000V	DIMENSIONS mm (inch)		CAPACITANCE RANGE (pF)	
	D MAX	F±1.5	Y5P	Y5U
	6.0 (.236)	6.4 (.250)	100-820	1000,1500
	7.4 (.291)	6.4 (.250)	1000,1200	2200
	8.6 (.339)	6.4 (.250)	1500	3300
	9.5 (.374)	6.4 (.250)	1800,2200	-
	11.0 (.433)	6.4 (.250)	2700,3300	4700
	12.5 (.492)	6.4 (.250)	3900	6800
	15.0 (.590)	9.5 (.375)	4700,5600	10000
	17.0 (.669)	9.5 (.375)	6800,8200	15000
	19.0 (.748)	9.5 (.375)	10000	22000
2000V	8.0 (.315)	6.4 (.250)	100-390	-
	10.0 (.394)	6.4 (.250)	470-820	1000,1500
	12.0 (.472)	6.4 (.250)	1000,1200	2200
	15.0 (.590)	9.5 (.375)	1500-2700	3300,4700
	20.0 (.787)	9.5 (.375)	3300-4700	6800,10000
3000V	10.0 (.394)	9.5 (.375)	100-560	1000
	12.0 (.472)	9.5 (.375)	680,820	1500
	15.0 (.590)	9.5 (.375)	1000-1800	2200,3300
	20.0 (.787)	9.5 (.375)	2200-3300	4700,6800

■ STANDARD CAPACITANCE TOLERANCE

Y5E-K (±10%), Y5P-K (±10%), Y5T-M (±20%)
 Y5U-M (±20%), Z (+80%-20%), Y5V-Z (+80%-20%)