

MULTILAYER CERAMIC DISC CAPACITORS

Epoxy Coated Radial Type

SPECIFICATION



Application

Dielectric Material	NPO	X7R	Y5V	
Electrical Properties	With negligible dependence of electrical properties on temperature, voltage, frequency and time.	With predictable change of properties with temperature, voltage, frequency and time, this dielectric is ferroelectric and offers higher capacitance ranges than class I .	With higher dielectric constant and greater variation of properties with temperature and test conditions, very high capacitance per unit volume and suited for by-pass and coupling application as well as filtering, transient suppression blocking, and charge storage application.	
Application	Used in radio-frequency oscillators, precision timing circuits, ultrastable amplifiers, etc.	Used as blocking, decoupling in radio, television receivers, audio tone and coupling, By-passing and frequency discriminating elements.	General type for by-pass and filtering applications.	
Operating Temperature	-55°C ~ +125 °C	-55 °C ~ +125 °C	+10°C ~85°C	-30 °C ~ +85 °C
Temperature Coefficient	0 ± 30 ppm/°C	± 15%	+22%~-56%	+22%~-82%

How to order

RD15	B	104	M	1H	A	5	R
<u>SIZE</u>	<u>T.C.</u>	<u>CAPACITANCE</u>	<u>TOLERANCE</u>	<u>VOLTAGE</u>	<u>LEAD SHAPE</u>	<u>LEAD SPACE</u>	<u>PACKAGE</u>
RD15	N=NPO	1PF = 1R0	J=±5%	1H=50V	L=STRAIGHT	2=2.54±0.8	R=TAPE/REEL
RD20	B=X7R	1.5PF = 1R5	K=±10%	2A=100V	A=SLOPE 45° LEAD	5=5.08±0.8	B=TAPE/BOX
RD30	Y=Y5V	2.2PF =2R2	M=±20%	2A=100V	Y=INSIDE CRIMP		K=BULK
		100PF=101	Z=+80 ~ -20%	2H=500V	H=HIGHT SEATED 90°		L=25.4mm
		120PF=121		2J=630V	K=OUTWARD KINK		
		10nF=103		3A=1KV			
		100nF= 104		3D=2KV			
				3F=3KV			

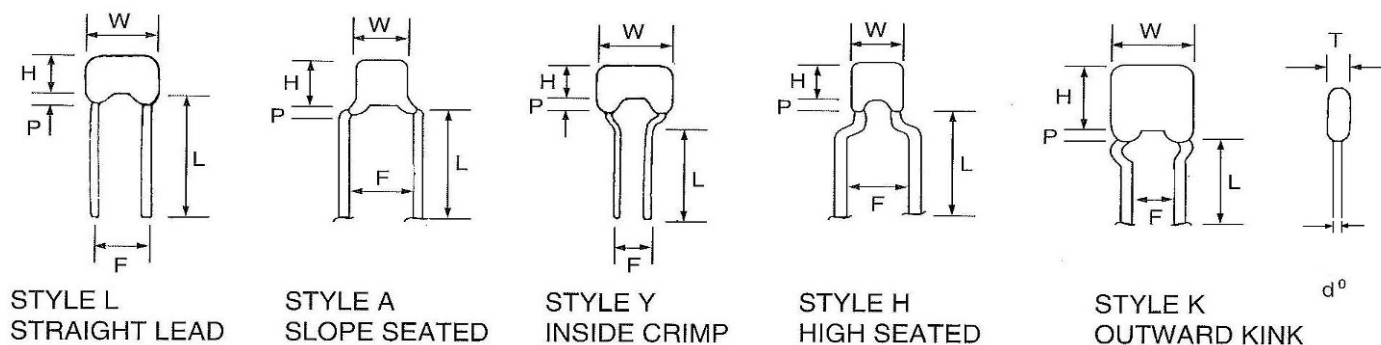
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CINETECH
SYMBOL OF QUALITY

Lead shape



Size Code and Dimensions

(mm)

Size Code	H (Max.)	W (Max.)	T (Max.)	$d \pm 0.05$	F	Lead Length	Lead Shape
RD15	3.81	3.81	4	0.5	2.54 ± 0.25	$6 \pm 1 \sim 25 \text{mm}$	L
	3.81	3.81	4		5.08 ± 0.5		A, H
RD20	5.8	5.8	4		2.54 ± 0.25		L, Y
	5.8	5.8	4		5.08 ± 0.5		H
RD30	6.8	6.8	5.5		5.08 ± 0.5		L

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Capacitance Range

T.C.	NPO																			
Size	RD15					RD20							RD30							
Cap (pF)	50V	100V	250V	500V	630V	50V	100V	250V	500V	630V	1KV	2KV	50V	100V	250V	500V	630V	1KV	2KV	3KV
0.5																				
0.6	0R6																			
0.7	0R7																			
0.8	0R8																			
0.9	0R9																			
1.0	1R0																			
1.2	1R2																			
1.5	1R5																			
1.8	1R8																			
2.2	2R2																			
2.7	2R7																			
3.3	3R3																			
3.9	3R9																			
4.7	4R7																			
5.6	5R6																			
6.8	6R8																			
8.2	8R2																			
10	100																			
12	120																			
15	150																			
18	180																			
22	220																			
27	270																			
33	330																			
39	390																			
47	470																			
56	560																			
68	680																			
82	820																			
100	101																			
120	121																			
150	151																			
180	181																			
220	221																			
270	271																			
330	331																			
390	391																			
470	471																			
560	561																			
680	681																			
820	821																			
1000	102																			
1200	122																			
1500	152																			
1800	182																			
2200	222																			
2700	272																			
3300	332																			
3900	392																			
4700	472																			
5600	562																			
6800	682																			
8200	822																			
10000	103																			
12000	123																			
15000	153																			
18000	183																			
22000	223																			
27000	273																			
33000	333																			
39000	393																			
47000	473																			
56000	563																			
68000	683																			
82000	823																			
[uF] 0.1	104																			

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T.C.		X7R																					
Size		RD15					RD20							RD30									
Cap (pF)		50V	100V	250V	500V	630V	50V	100V	250V	500V	630V	1KV	2KV	250V	500V	630V	1KV	2KV	3KV				
100	101																						
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56000	563																						
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82000	823																						
(uF) 0.1	104																						
0.12	124																						
0.15	154																						
0.18	184																						
0.22	224																						
0.27	274																						
0.33	334																						
0.39	394																						
0.47	474																						
0.56	564																						
0.68	684																						
0.82	824																						
1	105																						
1.5	155																						
2.2	225																						
3.3	335																						
4.7	475																						

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T.C.		Y5V		
Size		RD15	RD20	RD30
Cap (pF)		50V	50V	50V
10000	103			
12000	123			
15000	153			
18000	183			
22000	223			
27000	273			
33000	333			
39000	393			
47000	473			
56000	563			
68000	683			
82000	823			
(uF) 0.1	104			
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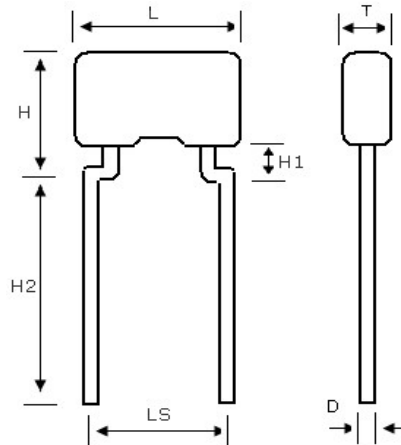
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CINETECH
SYMBOL OF QUALITY

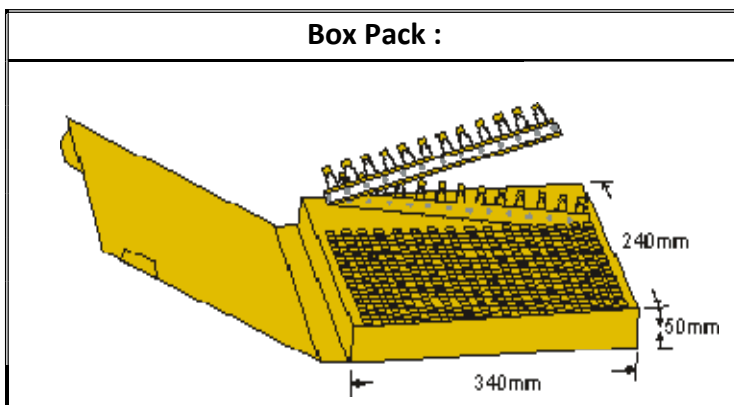
Marking

Color	Black	
Capacitance	Tolerance	Marking
100	J	10
220	J	22
470	J	47
101	J	101
471	J/K	471
102	J/K	102
103	J/K/M	103
104	K/M/Z	104
105	K/M/Z	105



Packing specification

Bulk	Tape
STYLE H HIGH SEATED	



Item	Radial Leaded Type
Tape & Reel	4000 pcs/Reel
Tape & Box	2000 pcs/Box
Bulk Pack	1000 pcs/Bag(STD)

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Inspection

Item	Inspection		
	NPO/COG	X7R	Y5V
Capacitance	Test Frequency : $\leq 1000\text{PF}=1\text{Mhz}$ $> 1000\text{PF}=1\text{Khz}$	Test Frequency : 1Khz	Test Frequency : 1Khz
	Test Voltage: $1 \pm 0.2 \text{ Vrms}$	Test Voltage: $1 \pm 0.2 \text{ Vrms}$	Test Voltage: $1 \pm 0.2 \text{ Vrms}$
	In the tolerance : $C=\pm 0.25\text{pf}$ $D=\pm 0.50\text{pf}$ $J=\pm 5\%$	In the tolerance : $J=\pm 5\%\text{pF}$ $K=\pm 10\%$ $M=\pm 20\%$	In the tolerance : $M=\pm 20\%$ $Z=+80\%/-20\%$
(DF) Dissipation Factor	Test Frequency : $\leq 1000\text{PF}=1\text{Mhz}$ $> 1000\text{PF}=1\text{Khz}$ Test Voltage: $1 \pm 0.2 \text{ Vrms}$ $< 0.1 \%$	Test Frequency : 1Khz Test Voltage: $1 \pm 0.2 \text{ Vrms}$ $< 2.5\%-100/50\text{V}$ $< 3.5\%-25/16\text{V}$	Test Frequency : 1Khz Test Voltage: $1 \pm 0.2 \text{ Vrms}$ $< 5.0\%-100/50\text{V}$ $< 7.0\%-25/16\text{V}$
(IR) Insulation Resistance $500\Omega=C \cdot R$ $500\Omega=0.47\text{UF}$ $1064\text{M}\Omega$	Test Voltage : Rated Voltage Whichever is less $\geq 10 \text{ Gohmas}$ or $\geq 1000 \text{ M}\Omega$	Test Voltage : Rated Voltage Whichever is less $\geq 10 \text{ Gohmas}$ or $\geq 1000 \text{ M}\Omega$	Test Voltage : Rated Voltage Whichever is less $\geq 10 \text{ Gohmas}$ or $\geq 1000 \text{ M}\Omega$
50V	2 x rated Voltage	2 x rated Voltage	2 x rated Voltage

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Reliability

(Item)	(Test Methods)	(Test Specifications)																																				
Solder ability	The lead wire of a capacitor shall be dipped into a rosin and then into molten solder of 235±5 ℃ for 5 seconds , in both cases the depth of dipping is up to about 2.5 to 3.0 mm from the root of lead wires.	Lead wire shall be soldered with uniformly coated on the Axial or Radial direction over 75% of the circumferential direction.																																				
Resistance to Soldering heat	The lead wire shall be immersed into the melted solder of 265±5 ℃, up to about 2.5 to 3.0 mm from the main body and the specified items shall be measured after leaving for 24±2 hours.	1.外觀：無損傷 Appearance：No marked defect 2.電容值變化(ΔC/C)： Capacitance change： <table><tr><td></td><td>COG</td><td>X7R</td><td>Y5V</td></tr><tr><td>ΔC/C</td><td>≤±0.5%, or ±0.5pf</td><td>≤±7.5%</td><td>≤±20%</td></tr></table>		COG	X7R	Y5V	ΔC/C	≤±0.5%, or ±0.5pf	≤±7.5%	≤±20%																												
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Life Test	<table><tr><td>條件 Condition</td><td>NPO</td><td>X7R</td><td>Y5V</td></tr><tr><td>溫度 Temperature</td><td>+125 ℃</td><td colspan="2">+85 ℃</td></tr><tr><td>時間 Time</td><td colspan="3">1000 小時(hours)</td></tr><tr><td>電壓 Voltage</td><td colspan="3">1.5×額定電壓 (rated voltage applied)</td></tr><tr><td>恢復時間 Recovery time</td><td colspan="3">24±2 小時(hours)</td></tr></table>	條件 Condition	NPO	X7R	Y5V	溫度 Temperature	+125 ℃	+85 ℃		時間 Time	1000 小時(hours)			電壓 Voltage	1.5×額定電壓 (rated voltage applied)			恢復時間 Recovery time	24±2 小時(hours)			1.外觀：無損傷 Appearance：No marked defect 2.變化值 (Change value)： <table><tr><td></td><td>COG</td><td>X7R</td><td>Y5V</td></tr><tr><td>ΔC/C</td><td>≤±2%, or ±2pf</td><td>≤±10%</td><td>≤±30%</td></tr><tr><td>DF</td><td colspan="3">≤1.5 × initial requirement</td></tr><tr><td>IR</td><td colspan="3">≥0.25 × initial requirement</td></tr></table>		COG	X7R	Y5V	ΔC/C	≤±2%, or ±2pf	≤±10%	≤±30%	DF	≤1.5 × initial requirement			IR	≥0.25 × initial requirement		
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Strength of lead	Fix the body of capacitor, apply a tensile weight gradually to each lead.	Pull：Axial：>4 kg Radial：>1 kg																																				

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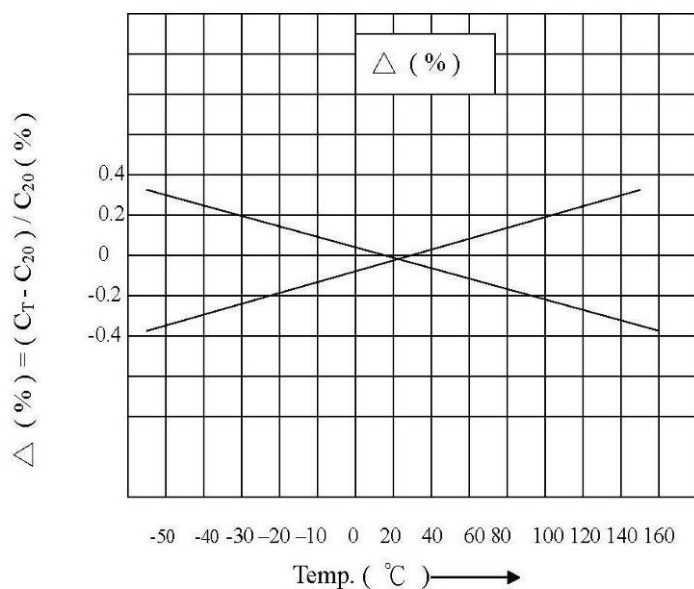
SPECIFICATION

CINETECH
SYMBOL OF QUALITY

Temperature Characteristics

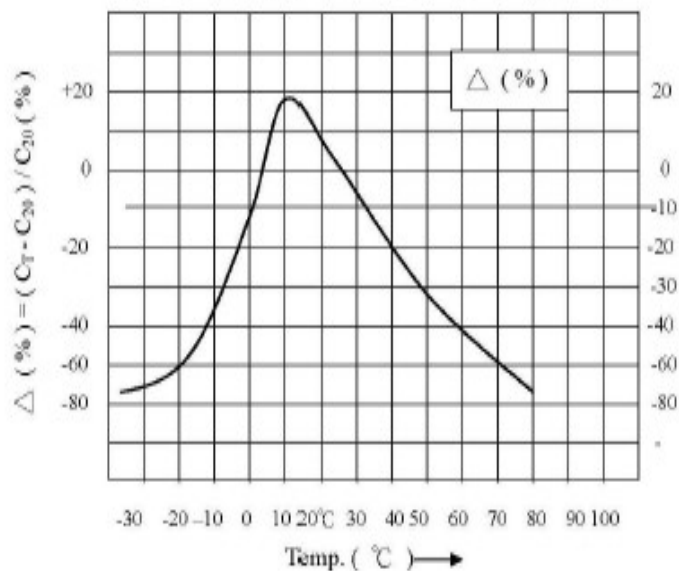
NPO

-30 -20 -10 0 10 20°C 30 40 50 60 70 80 90 100



Y5V

-30 -20 -10 0 10 20°C 30 40 50 60 70 80 90 100



X7R

-50 -40 -30 -20 -10 0 20 40 60 80 100 120 140 160

