

Radial Ceramic Capacitors



Features

Radial leaded technology

Excellent solderability

Ideal for industrial and commercial applications

Part Number Description

RND 150 [M] [NPO] [010] [C] [2A] [R15DS7] [16] [A]

Series [1] [2] [3] [4] [5] [6] [7] [8]

[1] Type

Symbol	Type
M	Radial

[2] Temperature Characteristic

Temp. Charact.	Temperature Range	Capacitance Change
NPO	-55 ~ 125°C	0±30 ppm/°C

[3] Capacitance Value

Symbol	Capacitance Value
060	6pF
6R8	6.8pF
120	12pF
471	470pF
222	2200pF
104	10000pF

[4] Capacitance Tolerance

Symbol	Capacitance Tolerance
C	±0.25pF
J	±5%

[5] Rated Voltage

Symbol	Rated Voltage
2A	DC 100V
2H	DC 500V

[6] Style

Symbol	Dimension (unit:mm)				
	W(max)	L(max)	T(max)	F(±0.8)	Φd
R15AS2	4.5	4.8	3	2.5	0.52
R15DS7	4.5	4.8	3	5	±0.05

[7] Lead Length (L)

(mm)

Packing	Bulk				Taping(H)	
	04	06	10	25	16	20
Length	3.5	6	10	25	16	20
Tol.	±0.5	±1	±1	±3	+1.5 -1	+1.5 -1

[8] Packaging

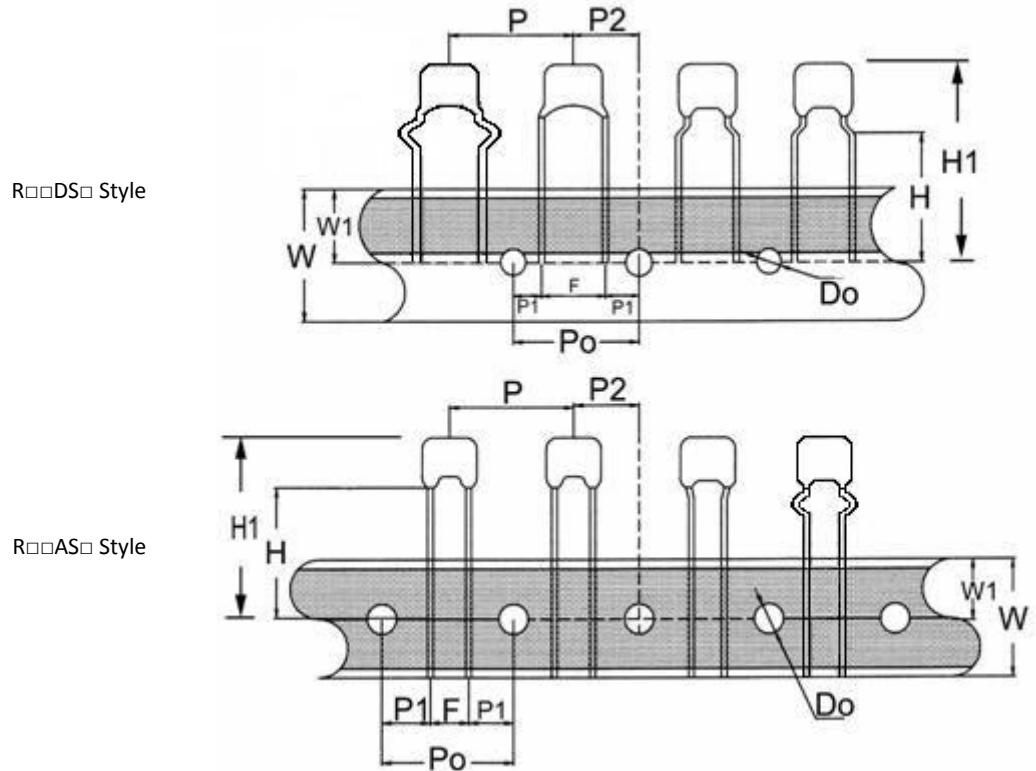
Symbol	Packing
Blank	Bulk
A	AMMO

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Dipped Radial Lead Type

Taping

(Refer to [6] Style)



Unit:mm

Description		R□□AS□ Style	R□□DS□ Style	Remark
Carrier tape width	W	18±0.5		
Position of sprocket hole	W1	9±0.5		
Pitch of component	P	12.7 Ref.		
Pitch of sprocket hole	Po	12.7±0.3		
Length from hole center to Lead	P1	5.1±0.7	3.85±0.7	
Length from hole center to component center	P2	6.35 Ref.		
Diameter of sprocket hole	Do	4±0.3		
Lead crimp height	H	18 ^{+1.5} ₋₁	16 ^{+1.5} ₋₁	
Lead spacing	F	2.5±0.8	5±0.8	
Top of component height	H1	26.5Max		

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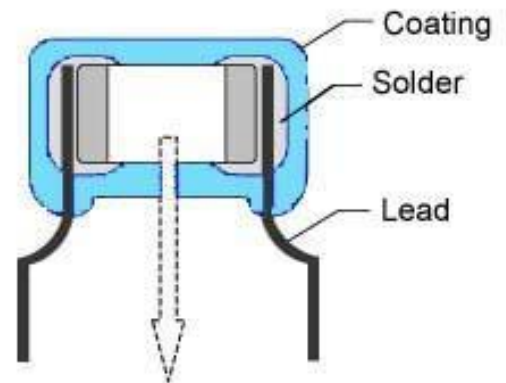
Electrical Characteristics

NPO

Item	Temperature Compensating	Measuring Condition
Operating Temperature Range	-55 ~ +125°C	
Temperature Characteristics	0 ± 30 ppm/°C	
Capacitance	Within the specified tolerance	Shall be measured at 25°C ± 2°C at the frequency and voltage
Q	$C \geq 30\text{pF} : Q \geq 1000$ $C < 30\text{pF} : Q \geq 400 + 20 \times C$ (C is nominal capacitance)	$C \leq 1000\text{pF} @ 1\text{MHz} \pm 20\%, 1 \pm 0.2\text{Vrms}$ $C > 1000\text{pF} @ 1\text{KHz} \pm 10\%, 1 \pm 0.2\text{Vrms}$
Withstanding Voltage	No defects	Applied voltage : Rated voltage × 2.5 100V ~ 999V Rated voltage × 1.5 1000 ~ 3000V Rated voltage × 1.2 Duration : 1 to 5 sec. The charge/discharge current is less than 50mA
Insulation Resistance	More than 10GΩ or 500MΩ·μF , whichever is less 16Vdc product : More than 10GΩ or 100MΩ·μF , whichever is less	Apply rated voltage for 1 minute at 25°C ± 2°C and 70%R.H. max. 16Vdc product : Measurement voltage is 25Vdc

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Material List

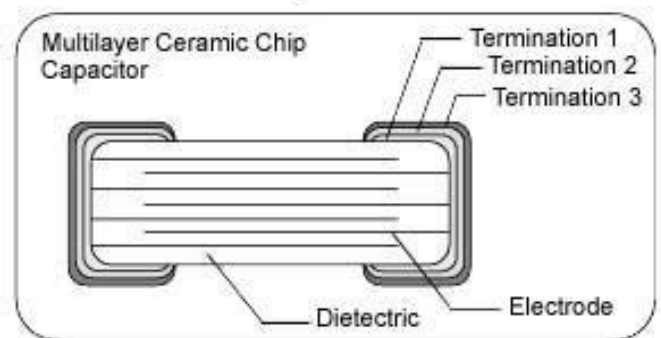


Storage

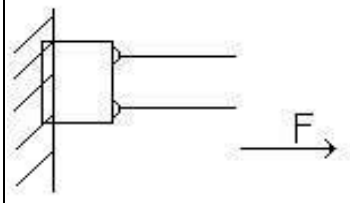
1. The storage conditions should be:

Temperature = Lower than 40°C
Humidity = Lower than 70% R.H.

2. After opening the package, please store in desiccators.



Environmental and Test Characteristics

Item	Temperature Compensating	Measuring Condition
Strength of termination	Termination not to be broken or loosened Force : 2 LB min. Keep time : 10 ± 1 sec.	
Solderability of leads	Lead wire to be soldered vertically up to the coating end point. At least 75% of lead surface is covered	Solder temperature : 260 ± 5°C Dipping : 2 ± 0.5 sec. (Flux shall be used)

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Environmental and Test Characteristics

NPO

Item	Temperature Compensating	Measuring Condition															
Resistance to Soldering heat																	
ΔC	$\pm 2.5\%$ or $\pm 0.25pF$ (Whichever is greater)	The lead wire is immersed in the melted solder 1.5mm to 2mm from the main body at $260 \pm 5^\circ C$ for $10 \pm 0.5sec.$ Let sit at room temperature for $24 \pm 2 hrs.$ then measure. Perform the initial measurement.															
Q	$C \geq 30pF : Q \geq 1000$ $C < 30pF : Q \geq 400 + 20 \times C$ (C is nominal capacitance)																
I.R.	More than $10G\Omega$ or $500M\Omega \cdot \mu F$, whichever is less. 16Vdc product : More than $10G\Omega$ or $100M\Omega \cdot \mu F$, whichever is less.																
Withstanding voltage	No defects																
Exterior	No abnormalities																
Thermal shock																	
ΔC	$\pm 2.5\%$ or $\pm 0.25pF$ (Whichever is greater)	Fix the capacitor to the supporting jig in the same manner and under the same conditions as (Resistance to Soldering heat). Perform the five cycles according to the four heat treatments listed in the following table. Remove and let sit at room temperature for $24 \pm$ $2 hrs.,$ then measure.															
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		<table border="1"> <thead> <tr> <th>Step</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. ($^\circ C$)</td> <td>Min. Operating Temp.</td> <td>Room Temp.</td> <td>Max. Operating Temp.</td> <td>Room Temp.</td> </tr> <tr> <td>Time</td> <td>3 ± 30</td> <td>15</td> <td>3 ± 30</td> <td>15</td> </tr> </tbody> </table>	Step	1	2	3	4	Temp. ($^\circ C$)	Min. Operating Temp.	Room Temp.	Max. Operating Temp.	Room Temp.	Time	3 ± 30	15	3 ± 30	15
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Temp. ($^\circ C$)	Min. Operating Temp.	Room Temp.	Max. Operating Temp.	Room Temp.													
Time	3 ± 30	15	3 ± 30	15													

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Environmental and Test Characteristics

NPO

Item	Temperature Compensating	Measuring Condition
Moisture resistance (Steady state)		
ΔC	$\pm 5\%$ or $\pm 0.5pF$ (Whichever is greater)	Apply the rated DC voltage at $40 \pm 2^\circ C$ and 90 to 95% R.H. for 500^{+24}_{-0} hrs. Remove and let sit at room temperature for 24 ± 2 hrs., then measure. Perform the initial measurement.
Q	$C \geq 30pF : Q \geq 350$ $10pF > C < 30pF : Q \geq 275 + \frac{5}{2} \times C$ $C \leq 10pF : Q \geq 200 + 10 \times C$ (C is nominal capacitance)	
I.R.	More than $1000M\Omega$ or $50M\Omega \cdot \mu F$, whichever is less. 16Vdc product : More than $1000M\Omega$ or $10M\Omega \cdot \mu F$, whichever is less.	
Withstanding voltage	No defects	
Exterior	No abnormalities	
High temperature loading		
ΔC	$\pm 3\%$ or $\pm 0.3pF$ (Whichever is greater)	Apply 200% of the rated DC voltage for 1000^{+48}_{-0} hrs. at the maximum operating temperature $\pm 2^\circ C$. Remove and let sit at room temperature for 24 ± 2 hrs., then measure. The charge/discharge current is less than 50mA. Perform initial measurement. <ul style="list-style-type: none"> • $100V \leq V < 1000V$: 150% of rated voltage. • $V \leq 1000V$: 120% of rated voltage (max.3600V)
Q	$C \geq 30pF : Q \geq 350$ $10pF > C < 30pF : Q \geq 275 + \frac{5}{2} \times C$ $C \leq 10pF : Q \geq 200 + 10 \times C$	
I.R.	More than $1000M\Omega$ or $50M\Omega \cdot \mu F$, whichever is less. 16Vdc product : More than $1000M\Omega$ or $10M\Omega \cdot \mu F$, whichever is less.	
Withstanding voltage	No defects	
Exterior	No abnormalities	