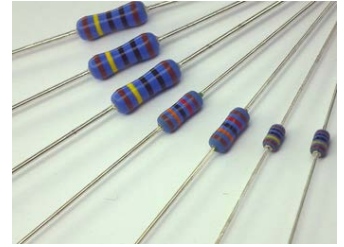
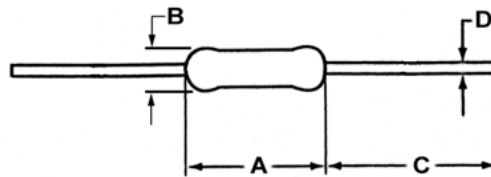


- Features:
- Miniature metal film for tight size constraints
  - Superior electrical, TCR performances
  - Flameproof silicone coating is standard
  - 1-watt part in 1/4-watt package,  
2-watt part in 1/2-watt package,  
½-watt part in 1/8-watt package
  - RoHS compliant



Electrical Specifications							
Type / Code	Power Rating (Watts) @ 70°C	Maximum Working Voltage (1)	Maximum Overload Voltage	Resistance Temperature Coefficient	Ohmic Range (Ω) and Tolerance		
					0.5%	1%	5%
RNS12	0.5W	400V	600V	±50 ppm/°C ±100 ppm/°C ±200 ppm/°C	100 - 511K	10 - 1M	10 - 1M
RNS1	1W	500V	700V	±50 ppm/°C ±100 ppm/°C ±200 ppm/°C	100 - 511K	10 - 1M	10 - 1M
RNS2	2W	600V	800V	±50 ppm/°C ±100 ppm/°C ±200 ppm/°C	100 - 511K	10 - 1M	10 - 1M

(1) Rated voltage = √Power Rating x Nominal Resistance or Maximum Working Voltage, whichever is lower

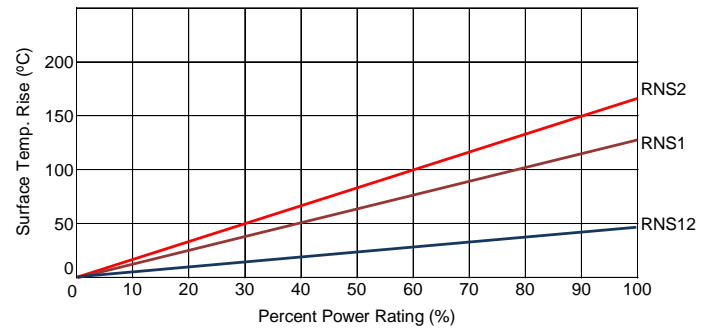


Mechanical Specifications					
Type / Code	A Body Length	B Body Diameter	C Lead Length (Bulk)	D Lead Diameter	Unit
RNS12	0.126 ± 0.008 3.20 ± 0.20 /-0	0.073 ± 0.008 1.85 ± 0.20	1.102 ± 0.118 28.00 ± 3.00	0.018 ± 0.002 0.45 ± 0.05	inches mm
RNS1	0.236 ± 0.012 6.00 ± 0.30	0.094 ± 0.008 2.40 ± 0.20	1.102 ± 0.118 28.00 ± 3.00	0.022 ± 0.002 0.55 ± 0.05	inches mm
RNS2	0.335 ± 0.020 8.50 ± 0.50	0.110 ± 0.012 2.80 ± 0.30	1.102 ± 0.118 28.00 ± 3.00	0.028 ± 0.002 0.70 ± 0.05	inches mm

Performance Characteristics		
Item	Performance	Test Method
Temperature Coefficient of Resistance	± 50ppm/°C ± 100ppm/°C ± 200ppm/°C	Measure resistance (R <sub>0</sub> ) at room temperature (t), after that, measure again the resistance (R) at 100°C higher than room temperature $TCR = \frac{R - R_0}{R_0} \times \frac{10^6}{(t + 100) - t} \text{ (ppm/°C)}$
Voltage Proof	1. Change of Resistance ≤ ±(0.5% + 0.05Ω)	Lay the resistor on the 90° angle metal V block and apply rated AC voltage for one minute.
Insulation Resistance	≥ 1,000 Mohm	Lay the resistor on the 90° angle metal V block and apply 500Vdc between V block and lead wire for a minute. The insulation resistance shall be measured while applying the voltage.

Performance Characteristics																	
Item	Performance	Test Method															
Solvent Resistance	There shall be no damage on the insulating surface.	Soak in a Isopropyl alcohol for 5 minutes. After drying up for 5 minutes, stress of 5N is added with absorbent cotton and it does by five round trips at the rate of one round trip a second.															
Overload (Short Time)	Change of Resistance $\leq \pm(1\% + 0.05\Omega)$	Apply 2.5 times rated voltage or max. overload voltage whichever is lower for 5 seconds and leave in room temperature for one hour after test.															
Robustness of Termination	Change of Resistance $\leq \pm(0.2\% + 0.05\Omega)$	<p>Tensile: The body of the resistor is fixed, a static load is added in the direction of drawing out of the terminal, and it maintains it for <math>10 \pm 1</math> seconds. Tensile strength: 10N</p> <p>Bend: Component body shall be fixed so that terminals are perpendicular to the floor. A static load specified below shall be applied to the terminal acting in a direction away from the body. The body of piezoelectric oscillator shall then be inclined through an angle of <math>90^\circ</math> in the vertical plane and then returned to its initial position in 2 or 3 seconds then the body shall be inclined to the reversed direction through an angle <math>90^\circ</math> and then returned to its initial position in 2 or 3 seconds. Bending strength: 5N</p>															
Resistance to Soldering Heat	Change of Resistance $\leq \pm(0.3\% + 0.05\Omega)$	Dip the lead into a solder bath having a temperature of $260^\circ\text{C} \pm 5^\circ\text{C}$ up to $1.5 \pm 0.5$ mm from the body of the resistors and hold it for $10 \pm 0.5$ seconds and leave in room temperature for one hour after test.															
Solderability	More than 95% of the surface of the lead shall be covered by new solder.	Dip the lead into a solder bath having a temperature of $245 \pm 5^\circ\text{C}$ up to $1.5 \pm 0.5$ mm from the body of the resistors and hold it form $5 \pm 0.5$ seconds.															
Rapid Change of Temperature	Change of Resistance $\leq \pm(1\% + 0.05\Omega)$	<p>The resistor shall be subjected to 5 continuous cycles, each as show in the table below:</p> <table border="1"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <tr> <td>1</td><td>Minimum Operating Temperature</td><td>30 min.</td></tr> <tr> <td>2</td><td>Standard Atmospheric Condition</td><td><math>\leq 30</math> sec.</td></tr> <tr> <td>3</td><td>Max Operating Temperature</td><td>30 min.</td></tr> <tr> <td>4</td><td>Standard Atmospheric Condition</td><td><math>\leq 30</math> sec.</td></tr> </tbody> </table>		Temperature	Duration	1	Minimum Operating Temperature	30 min.	2	Standard Atmospheric Condition	$\leq 30$ sec.	3	Max Operating Temperature	30 min.	4	Standard Atmospheric Condition	$\leq 30$ sec.
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Vibration	Change of Resistance $\leq \pm(0.5\% + 0.05\Omega)$	Apply 1.5mm amplitude vibration to three directions perpendicular to each other 2 hours each, total 6 hours. Vibrating frequency is 10Hz-55Hz-10Hz cycle in 1 minute sweeping and repeat cycle.															
Damp Heat, Steady State	Change of Resistance $\leq \pm(3\% + 0.05\Omega)$	In the chamber having temp. $40 \pm 2^\circ\text{C}$ and relative humidity $93 \pm 3\%$ , apply one percent of the rated power, 1.5 hour ON, 0.5 hour OFF for 1000 hours and leave in room temperature for one hour after test.															
Endurance at $70^\circ\text{C}$	Change of Resistance $\leq \pm(3\% + 0.05\Omega)$	At $70 \pm 2^\circ\text{C}$ , apply rated DC voltage 1.5 hour ON, 0.5 hour OFF for 1000 hours and leave in room temperature for one hour after test.															

Heat Rise:



The diagram illustrates the relationship between resistor codes and their specifications. The codes are organized into three groups based on their first digit:

- Codes 1-4:** These codes are associated with a table containing Product Series, Size, Power, and Tolerance.
- Codes 5-7:** These codes are associated with a table containing Packaging details (Code, Description, Size, Quantity).
- Codes 8-11:** These codes are associated with a table containing TCR and Resistance Value.

The Resistance Value table includes a note: "Four characters with the multiplier used as the decimal holder." and provides examples: 100 ohms = 100R, 10.2 Kohm = 10K2, 1 Mohm = 1M00.