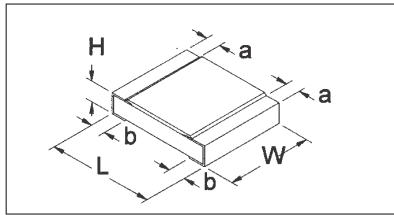


## Thin Film Chip Resistors



### FEATURES

- Surface Mount Devices (SMD)
- Precision Tolerances of  $\pm 0.5\%$  to  $\pm 0.1\%$
- Temperature Coefficients of  $\pm 50\text{ppm}/^\circ\text{C}$  and  $\pm 25\text{ppm}/^\circ\text{C}$
- Precision Performance
- Space Saving Construction

### PERFORMANCE CHARACTERISTICS (Tested per Mil-STD-202)

Dimensions in mm

Electrical (Operating Temperature Range  $-55^\circ\text{C}$  to  $+155^\circ\text{C}$ )

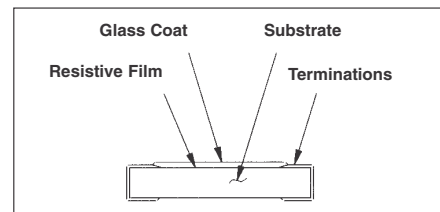
TYPE	Packaging Size	Power Rating (Watts)	Max. Working Voltage	Max. Overload Voltage	Resistance Temp. Coefficient	Resistance Range	Tolerance
RN10	0805	1/8 @ $70^\circ\text{C}$	150V	300V	$\pm 50\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$	100ohm - 787K 100Ohm - 100K	D = $\pm 0.5\%$ C = $\pm 0.25\%$ , B = $\pm 0.1\%$
RN12	1206	1/8 @ $70^\circ\text{C}$	150V	300V	$\pm 50\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$	100ohm - 787K 49.9Ohm - 1M	D = $\pm 0.5\%$ C = $\pm 0.25\%$ , B = $\pm 0.1\%$

### ENVIRONMENTAL

	Specification	Typical	Test Method
Moisture Resistance, Thermal Shock	$\pm(0.25\%+0.05\Omega)$	$\leq 0.1\%$	JIS C 5202 7.4
Load Life	$\pm(0.5\%+0.05\Omega)$	$\leq 0.2\%$	JIS C 5202 7.10
Load Life in Moisture	$\pm(0.5\%+0.05\Omega)$	$\leq 0.25\%$	JIS C 5202 7.9
Resistance to Soldering Heat	$\pm(0.25\%+0.05\Omega)$	$\leq 0.05\%$	JIS C 5202 6.4, $260\pm 5^\circ\text{C}$ , 10 sec.
Solderability	min. 95% coverage	$\geq 95\%$	JIS C 5202 6.5
Terminal Strength	$\pm(0.2\%+0.05\Omega)$	$\leq 0.05\%$	EIAJ RC-2609A 6.6
Dielectric Withstanding Voltage	$\pm(0.25\%+0.05\Omega)$	$\leq 0.05\%$	EIAJ RC-2609A 6.5 Test Voltage: $10@ 150\text{VAC}$ , RN12 @ $300\text{VAC}$
Short Time Overload	$\pm(0.25\%+0.05\Omega)$	$\leq 0.05\%$	JIS C 5202 7.4
Insulation Resistance	1,000 meg minimum	$\geq 1,000$ meg	EIAJ RC-2609A 6.36

### MATERIALS

Feature	Material	Remarks (Reference Only)
Substrate	Alumina Porcelain	Purity 96% min.
Resistive Film	Nickel-Chromium Film	20 Microns Thick
Coating	Boro-Silicated Acid Lead Glass	20 Microns Thick
Terminations	100% matte Tin (Electrical Plated) over Nickel (Electrical Plated) over AG-PD (Silver-Palladium [Glaze Printed])	3/5 Microns Thick 3/8 Microns Thick 8 Microns Thick



Dimensions in mm

Feature	RN10	RN12
L - Body Length	.078 $\pm$ .008 (2.00 $\pm$ 0.20)	.122 $\pm$ .004 (3.10 $\pm$ 0.10)
W - Body Width	.049 $\pm$ .008 (1.25 $\pm$ 0.20)	.061 $\pm$ .004 (1.55 $\pm$ 0.10)
H - Body Height	.018 $\pm$ .004 (0.45 $\pm$ 0.10)	.021 $\pm$ .004/-0.002 (0.55 $\pm$ 0.10/-0.05)
a - Top Termination	.016 $\pm$ .008 (0.40 $\pm$ 0.20)	.018 $\pm$ .008 (0.45 $\pm$ 0.20)
b - Bottom Termination	.012 $\pm$ .008/-0.004 (0.30 $\pm$ 0.20/-0.10)	.012 $\pm$ .008/-0.004 (0.30 $\pm$ 0.20/-0.10)

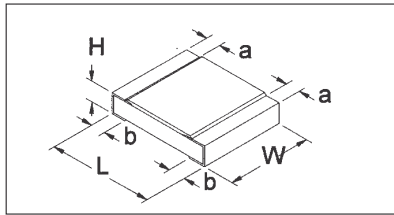
**Notes:** 1. Embossed taping available on RN12 only.

### Ordering Information

**Example:** 0805 1/10 watt .1% 1k

RN	10	B	1001	CT
Thin Film	Wattage	Resistance	Tolerance *Note	Packaging (Tape & Reel)
B = .1% C = .25% D = .50%				

## Thin Film Chip Resistors



### FEATURES

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- Precision Tolerances of  $\pm 0.5\%$  to  $\pm 0.1\%$
- Temperature Coefficients of  $\pm 50\text{ppm}/^\circ\text{C}$  and  $\pm 25\text{ppm}/^\circ\text{C}$
- Precision Performance
- Space Saving Construction

### PERFORMANCE CHARACTERISTICS (Tested per Mil-STD-202)

Electrical (Operating Temperature Range  $-55^\circ\text{C}$  to  $+155^\circ\text{C}$ )

Dimensions in mm

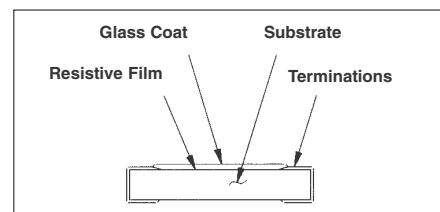
TYPE	Packaging Size	Power Rating (Watts)	Max. Working Voltage	Max. Overload Voltage	Resistance Temp. Coefficient	Resistance Range	Tolerance <sup>1</sup>
RN04	0402	1/16 @ $70^\circ\text{C}$	50V	100V	$\pm 50\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$	10 $\Omega$ - 97.6K 100 $\Omega$ - 100K	D = $\pm 0.5\%$ C = $\pm 0.25\%$ , B = $\pm 0.1\%$
RN06	0603	1/10 @ $70^\circ\text{C}$	75V	150V	$\pm 50\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$	10 $\Omega$ - 97.6K 49.9 $\Omega$ - 360K	D = $\pm 0.5\%$ C = $\pm 0.25\%$ , B = $\pm 0.1\%$

### ENVIRONMENTAL

	Specification	Typical	Test Method
Moisture Resistance, Thermal Shock	$\pm(0.25\%+0.05\Omega)$	$\leq 0.1\%$	JIS C 5202 7.4
Load Life	$\pm(0.5\%+0.05\Omega)$	$\leq 0.2\%$	JIS C 5202 7.10
Load Life in Moisture	$\pm(0.5\%+0.05\Omega)$	$\leq 0.25\%$	JIS C 5202 7.9
Resistance to Soldering Heat	$\pm(0.25\%+0.05\Omega)$	$\leq 0.05\%$	JIS C 5202 6.4, $260\pm 5^\circ\text{C}$ , 10 sec.
Solderability	min. 95% coverage	$\geq 95\%$	JIS C 5202 6.5
Terminal Strength	$\pm(0.2\%+0.05\Omega)$	$\leq 0.05\%$	EIAJ RC-2609A 6.6
Dielectric Withstanding Voltage	$\pm(0.25\%+0.05\Omega)$	$\leq 0.05\%$	EIAJ RC-2609A 6.5 Test Voltage: 10@ 150VAC, RN12 @ 300VAC
Short Time Overload	$\pm(0.25\%+0.05\Omega)$	$\leq 0.05\%$	JIS C 5202 7.4
Insulation Resistance	1,000 meg minimum	$\geq 1,000$ meg	EIAJ RC-2609A 6.36

### MATERIALS

Feature	Material	Remarks (Reference Only)
Substrate	Alumina Porcelain	Purity 96% min.
Resistive Film	Nickel-Chromium Film	20 Microns Thick
Coating	Boro-Silicated Acid Lead Glass	20 Microns Thick
Terminations	100% matte Tin (Electrical Plated) over Nickel (Electrical Plated) over AG-PD (Silver-Palladium [Glaze Printed])	3/8 Microns Thick 3/5 Microns Thick 8 Microns Thick



Dimensions in mm

Feature	RN04	RN06
L - Body Length	1.00 $\pm 0.05$	1.60 $\pm 0.20$
W - Body Width	0.50 $\pm 0.05$	0.80 $\pm 0.20$
H - Body Height	0.35 $\pm 0.05$	0.40 $\pm 0.10$
a - Top Termination	0.20 $\pm 0.10$	0.30 $\pm 0.20$
b - Bottom Termination	0.20 $\pm 0.10$	0.30 $\pm 0.20$

**Notes:** 1. Embossed taping available on RN12 only.

### Ordering Information

**Example:** 0805 1/10 watt .1% 1k

RN	10	B	1001	CT
Thin Film	Wattage	Resistance	Tolerance *Note	Packaging (Tape & Reel)
			B = .1%	
			C = .25%	
			D = .50%	