

# Compact Chip Resistor Networks

## MNR02 (1005 × 2 size)

### ●Features

1) Extremely small and light

Area ratio is 60% smaller than that of chip 1616 (MNR12), while weight ratio has been cut 75%.

2) High-density mounting

Can be mounted even more densely than two 1005 chips (MCR01). Also, the cost of mounting has been reduced.

3) Compatible with a wide range of mounting equipment.

Squared corners make it excellent for mounting using image recognition devices.

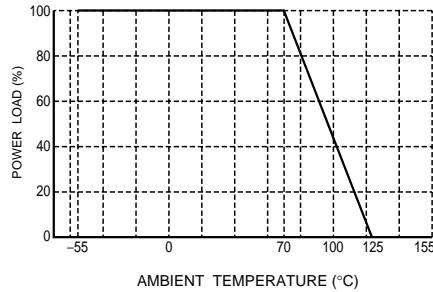
4) Convex electrodes

Easy to check the fillet after soldering is finished.

5) ROHM resistors have obtained ISO9001- / ISO/TS 16949- certification.

### ●Ratings

Design and specifications are subject to change without notice. Carefully check the specification sheet before using or ordering it.

Item	Conditions	Specifications	
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.	0.063W (1 / 16W) at 70°C	
	 <p>Fig.1</p>		
Rated voltage	<p>The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting element voltage, the voltage rating is equal to the maximum operating voltage.</p> $E = \sqrt{P \times R}$ <p>E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)</p>	<p>Limiting element voltage</p>	
Nominal resistance	See Table 1.		
Operating temperature	-55°C to +125°C		

## Resistors

Jumper type

Resistance	Max. 50mΩ
Rated current	1A
Operating temperature	-55°C to +125°C

Table 1

Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
J (±5%)	10 to 1M (E24)	±300

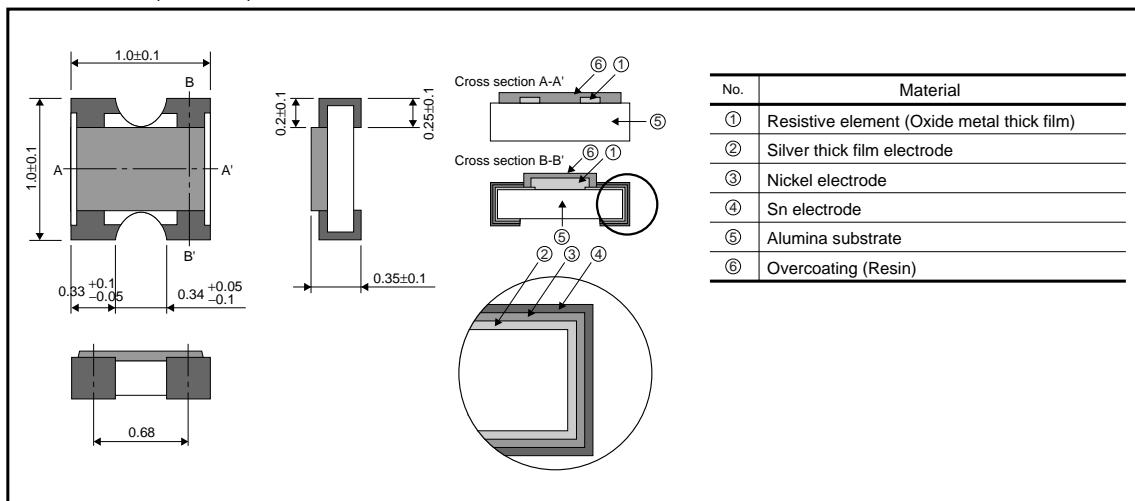
•Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady state voltage that is greater than its rated voltage.

**●Characteristics**

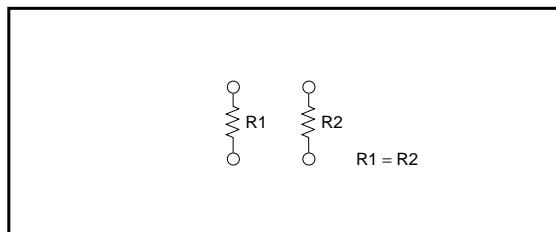
Items	Guaranteed value	Test conditions (JIS C 5201-1)
	Resistor type	
Resistance	J : ±5%	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1	JIS C 5201-1 4.8 Measurement : -55 / +25 / +125°C
Overload	± (2.0%+0.1Ω)	JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s. Limiting Element Voltage×2 : 50V
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.	JIS C 5201-1 4.17 Rosin-Ethanol (25%WT) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s.
Resistance to soldering heat	± (1.0%+0.05Ω) No remarkable abnormality on the appearance.	JIS C 5201-1 4.18 Soldering condition : 260±5°C Duration of immersion : 10±1s.
Rapid change of temperature	± (1.0%+0.05Ω)	JIS C 5201-1 4.19 Test temp. : -55°C to +125°C 5cyc
Damp heat, steady state	± (3.0%+0.1Ω)	JIS C 5201-1 4.24 40°C, 93%RH Test time : 1,000h to 1,048h
Endurance at 70°C	± (3.0%+0.1Ω)	JIS C 5201-1 4.25.1 Rated voltage (current), 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	± (3.0%+0.1Ω)	JIS C 5201-1 4.25.3 125°C Test time : 1,000h to 1,048h
Resistance to solvent	± (1.0%+0.05Ω)	JIS C 5201-1 4.29 23±5°C, Immersion cleaning, 5±0.5min. Solvent : 2-propanol
Bend strength of the end face plating	± (1.0%+0.05Ω) Without mechanical damage such as breaks.	JIS C 5201-1 4.33

## Resistors

## ●Dimensions (Unit: mm)



## ●Equivalent circuit



## Resistors

## ●Packaging

Reel	Taping																												
<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr> <td><math>\phi 180^0_{-1.5}</math></td><td><math>\phi 60^+_0</math></td><td><math>9^+1.0_0</math></td><td><math>\phi 13\pm 0.2</math></td></tr> </table>	A	B	C	D	$\phi 180^0_{-1.5}$	$\phi 60^+_0$	$9^+1.0_0$	$\phi 13\pm 0.2$	<table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td>W</td><td>F</td><td>E</td><td>A0</td><td>B0</td></tr> <tr> <td><math>8.0\pm 0.3</math></td><td><math>3.5\pm 0.05</math></td><td><math>1.75\pm 0.1</math></td><td><math>1.17\pm 0.1</math></td><td><math>1.17\pm 0.1</math></td></tr> <tr> <td>D0</td><td>P0</td><td>P1</td><td>P2</td><td>T2</td></tr> <tr> <td><math>\phi 1.5^+0.1_0</math></td><td><math>4.0\pm 0.1</math></td><td><math>2.0\pm 0.1</math></td><td><math>2.0\pm 0.05</math></td><td>Max. 0.5</td></tr> </table>	W	F	E	A0	B0	$8.0\pm 0.3$	$3.5\pm 0.05$	$1.75\pm 0.1$	$1.17\pm 0.1$	$1.17\pm 0.1$	D0	P0	P1	P2	T2	$\phi 1.5^+0.1_0$	$4.0\pm 0.1$	$2.0\pm 0.1$	$2.0\pm 0.05$	Max. 0.5
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## ●Part No. Explanation

<b>M N R 0 2</b>	<b>M O A P</b>	<b>J</b>	<b>[ ] [ ] [ ]</b>								
Part No.		Resistance tolerance	Nominal resistance								
		J $\pm 5\%$ J is also used for jumper.	Resistance code, 3 or 4 digits. 000 denotes jumper type.								
Packaging Specifications Code											
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MNR02	M0AP	◎	Paper tape (2mmPitch)								

Reel ( $\phi 180\text{mm}$ ) : Compatible with JEITA standard "EIAJ ET-7200B"  
 ◎ : Standard product

## Appendix

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