

# 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 ISO-9001 certification.  
Design and specifications are subject to change without notice. Carefully check the specification sheet before using or ordering it.

### ●Ratings

Item	Conditions	Specifications		
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C. <div style="text-align: center;"> <p>Fig.1</p> </div>	0.063W (1 / 16W) at 70°C		
Rated voltage	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. $E = \sqrt{P \times R}$ E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)	<table border="1" style="width: 100%;"> <tr> <td>Limiting element voltage</td> <td>25V</td> </tr> </table>	Limiting element voltage	25V
Limiting element voltage	25V			
Nominal resistance	See <a href="#">Table 1</a> .			
Operating temperature		-55°C to +125°C		

## Resistors

Table 1

Resistance tolerance	Resistance range ( $\Omega$ )	Resistance temperature coefficient (ppm / $^{\circ}\text{C}$ )
J ( $\pm 5\%$ )	$10 \leq R \leq 1\text{M}$ (E24)	$\pm 300$

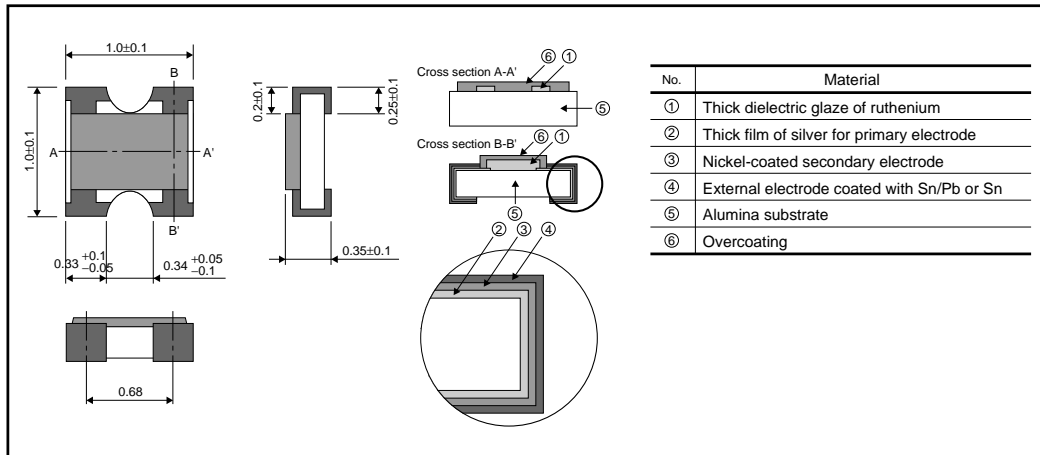
● Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady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

## ● Characteristics

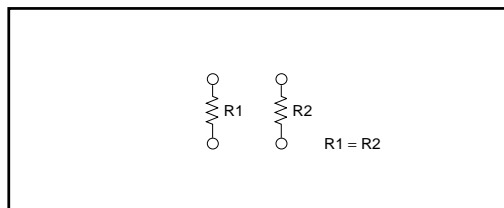
Items	Guaranteed value	Test conditions (JIS C 5201-1)
	Resistor type	
Resistance	J : $\pm 5\%$	JIS C 5201-1 4.5
Variation of resistance with temperature	See <a href="#">Table.1</a>	JIS C 5201-1 4.8 Measurement : $-55 / +25 / +125^{\circ}\text{C}$
Overload	$\pm (2.0\%+0.1\Omega)$	JIS C 5201-1 4.13 Rated voltage (current) $\times 2.5$ , 2s. Limiting Element Voltage $\times 2$ : 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 : $235 \pm 5^{\circ}\text{C}$ Duration of immersion : $2.0 \pm 0.5\text{s}$ .
Resistance to soldering heat	$\pm (1.0\%+0.05\Omega)$ No remarkable abnormality on the appearance.	JIS C 5201-1 4.18 Soldering condition : $260 \pm 5^{\circ}\text{C}$ Duration of immersion : $10 \pm 1\text{s}$ .
Rapid change of temperature	$\pm (1.0\%+0.05\Omega)$	JIS C 5201-1 4.19 Test temp. : $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$ 5cyc
Damp heat, steady state	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.24 $40^{\circ}\text{C}$ , 93%RH Test time : 1,000h~1,048h
Endurance at $70^{\circ}\text{C}$	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.25.1 Rated voltage (current), $70^{\circ}\text{C}$ 1.5h : ON – 0.5h : OFF Test time : 1,000h~1,048h
Endurance	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.25.3 $125^{\circ}\text{C}$ Test time : 1,000h~1,048h
Resistance to solvent	$\pm (1.0\%+0.05\Omega)$	JIS C 5201-1 4.29 $23 \pm 5^{\circ}\text{C}$ , Immersion cleaning, $5 \pm 0.5\text{min}$ . Solvent : 2-propanol
Bend strength of the end face plating	$\pm (1.0\%+0.05\Omega)$ Without mechanical damage such as breaks.	JIS C 5201-1 4.33

## Resistors

## ● External dimensions (Units: mm)

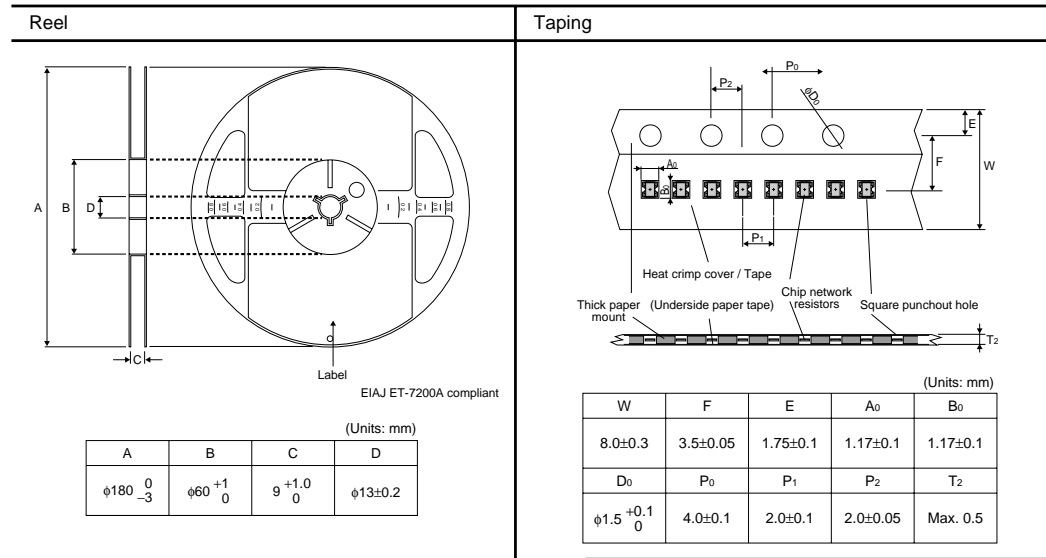


## ● Equivalent circuit

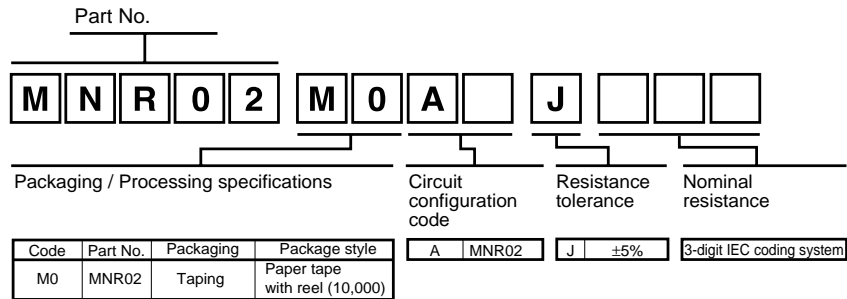


Resistors

●Packaging



●Product designation



Resistors

● Electrical characteristics

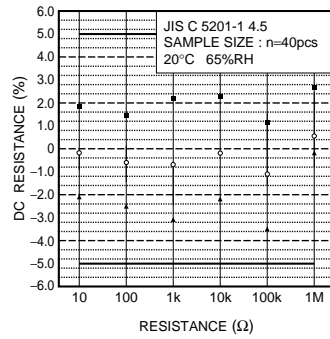


Fig.2 Resistance

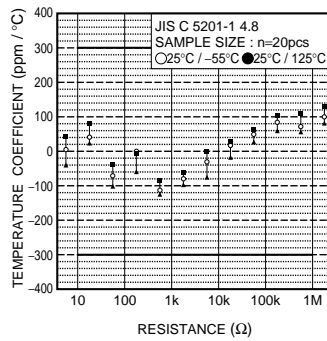


Fig.3 Variation resistance with temperature

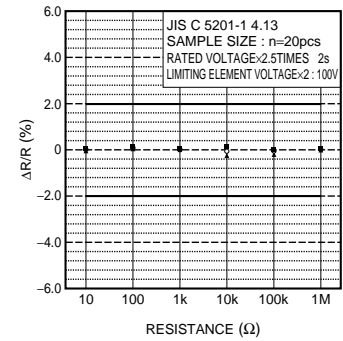


Fig.4 Overload

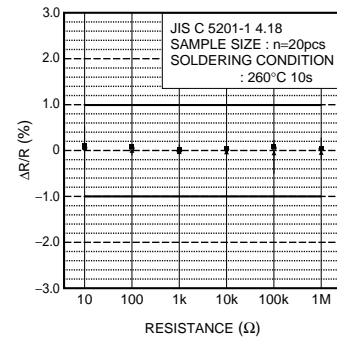


Fig.5 Resistance to soldering heat

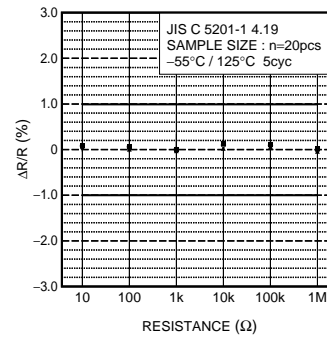


Fig.6 Rapid change of temperature

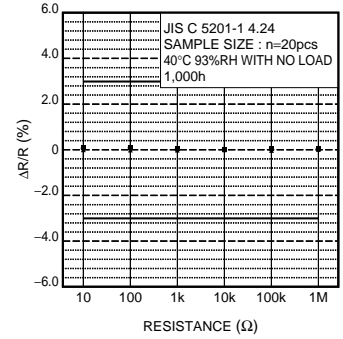


Fig.7 Damp heat, steady state

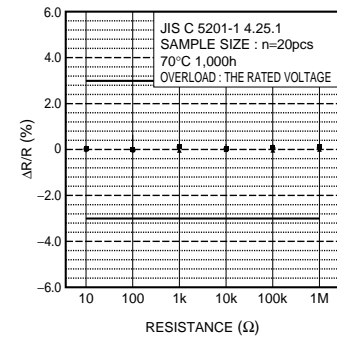


Fig.8 Endurance at 70°C

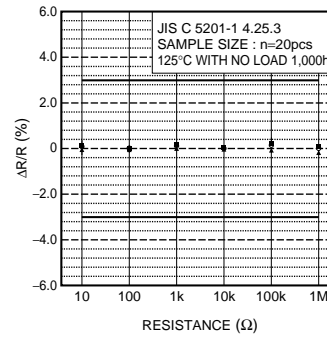


Fig.9 Endurance