

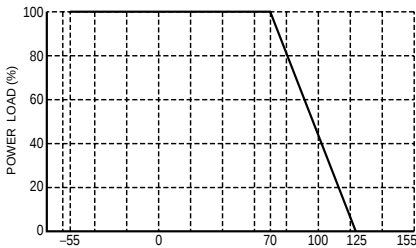
Chip resistor networks

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.  Fig.1	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)	Limiting element voltage	25V
Nominal resistance	See Table 1.		
Operating temperature		-55°C to +125°C	

Resistors

Table 1

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

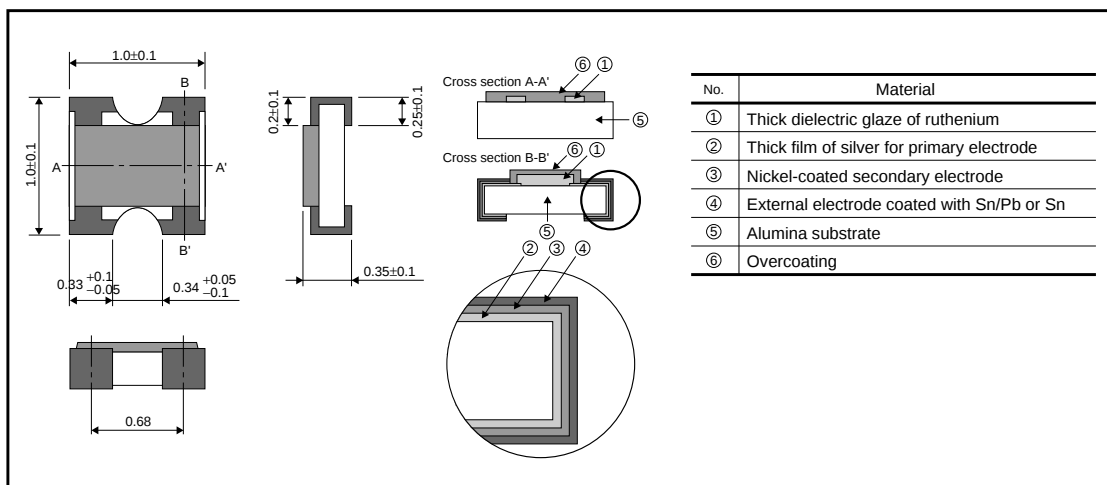
• Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady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

● Characteristics

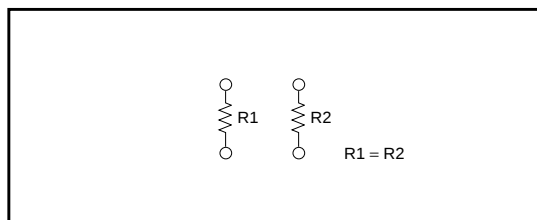
Items	Guaranteed value	Test conditions (JIS C 5201-1)
	Resistor type	
Resistance	J : $\pm 5\%$	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1	JIS C 5201-1 4.8 Measurement : $-55 / +25 / +125^{\circ}\text{C}$
Overload	$\pm (2.0\% + 0.1\Omega)$	JIS C 5201-1 4.13 Rated voltage (current) $\times 2.5$, 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°C , 93%RH Test time : 1,000h~1,048h
Endurance at 70°C	$\pm (3.0\% + 0.1\Omega)$	JIS C 5201-1 4.25.1 Rated voltage (current), 70°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°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

Reel

Diagram of a reel showing dimensions A, B, D, C, and a label. The reel is EIAJ ET-7200A compliant.

EIAJ ET-7200A compliant

(Units: mm)

A	B	C	D
$\phi 180 \begin{smallmatrix} 0 \\ -3 \end{smallmatrix}$	$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$	$9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$\phi 13 \pm 0.2$

Taping

Diagram of a resistor tape showing dimensions W, F, E, A₀, B₀, D₀, P₀, P₁, P₂, and T₂. Labels include Heat crimp cover / Tape, Chip network resistors, Square punchout hole, Thick paper mount, and Underside paper tape.

(Units: mm)

W	F	E	A ₀	B ₀
8.0±0.3	3.5±0.05	1.75±0.1	1.17±0.1	1.17±0.1
D ₀	P ₀	P ₁	P ₂	T ₂
$\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$	4.0±0.1	2.0±0.1	2.0±0.05	Max. 0.5

●Product designation

Part No.			
M	N	R	0 2
Packaging / Processing specifications			
M0	MNR02	Taping	Paper tape with reel (10,000)
Circuit configuration code			
A	MNR02	J	±5%
Resistance tolerance			
Nominal resistance			
3-digit IEC coding system			

Resistors

●Electrical characteristics

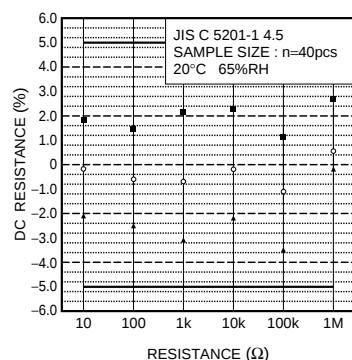


Fig.2 Resistance

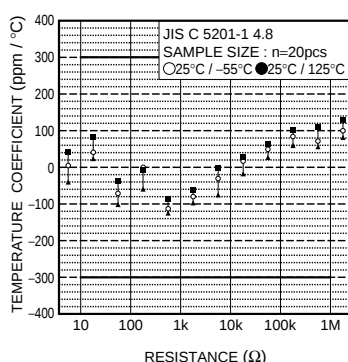


Fig.3 Variation resistance with temperature

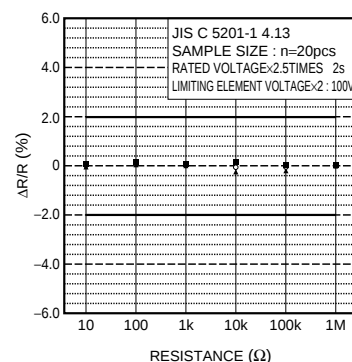


Fig.4 Overload

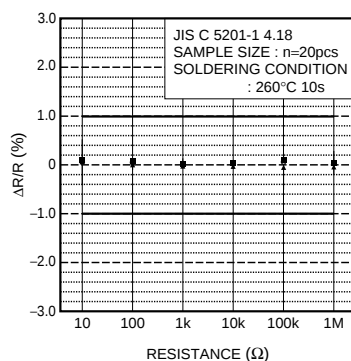


Fig.5 Resistance to soldering heat

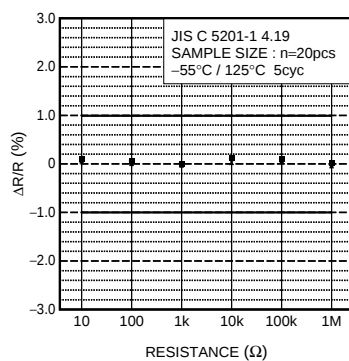


Fig.6 Rapid change of temperature

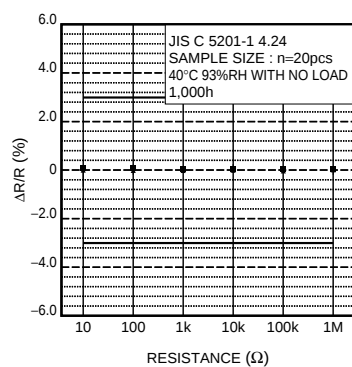


Fig.7 Damp heat, steady state

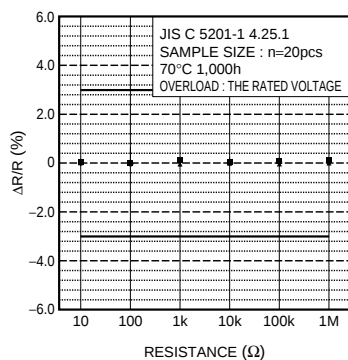


Fig.8 Endurance at 70°C

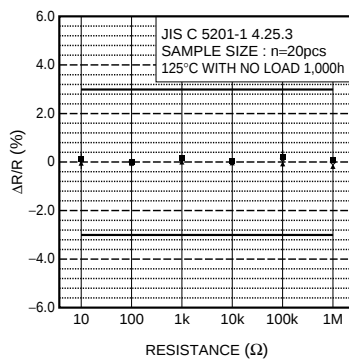


Fig.9 Endurance