

Chip resistor networks

MNR15 (0603×5 size)

●Features

- 1) Suitable for pull-up and pull-down resistors.
- 2) No direction to be mounted by placing common electrode with symmetry.
- 3) Convex electrodes
Easy to check the fillet after soldering is finished.
- 4) High-density mounting
Can be mounted even densely than eight 0402chips (MCR01), and mounting costs are lower.
- 5) Compatible with a wide range of mounting machines.
Squared corners make it excellent for mounting using image recognition machines.
- 6) ROHM resistors have approved ISO-9001 certification.
Design and specifications are subject to change without notice. Carefully check the specification sheet supplied with the product before using or ordering it.

●Ratings

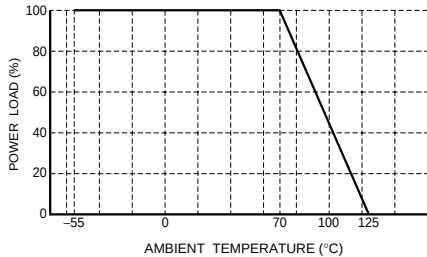
Item	Conditions	Specifications
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.  Fig.1	0.031W (1 / 32W) at 70°C
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting 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
Nominal resistance	See Table 1.	12.5V
Operating temperature		-55°C to +125°C

Table 1

Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
J (±5%)	56≤R≤100k (E24)	±200

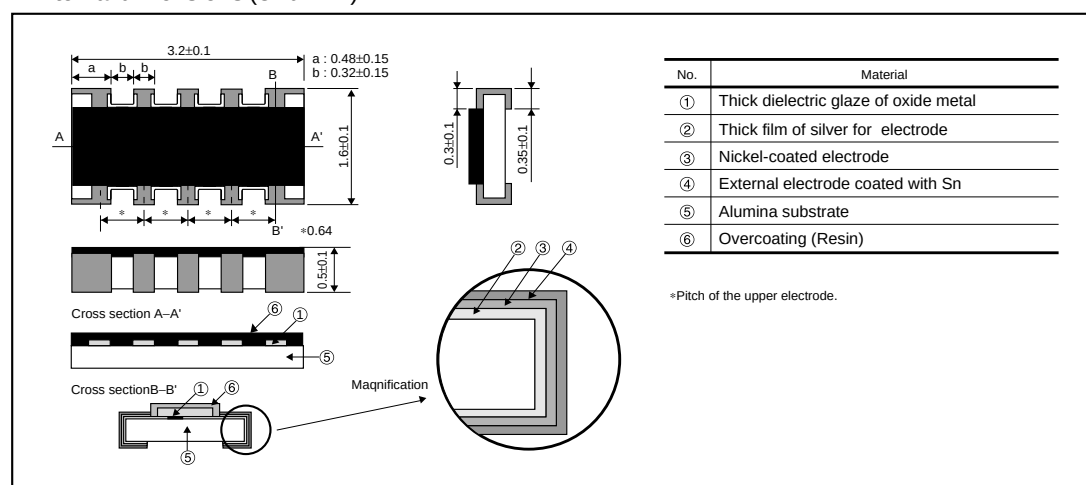
*Before using components in circuits where they will be exposed to transients such as pulse loads(short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady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

Resistors

●Characteristics

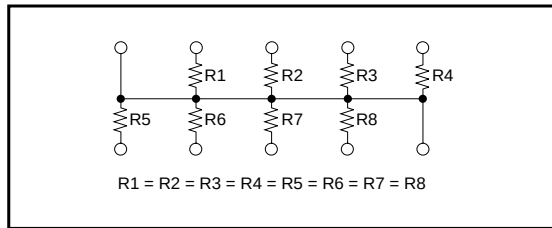
Item	Guaranteed value	Test conditions (JIS C 5201-1)
	Resistor type	
Resistance	J : $\pm 5\%$	JIS C 5201-1 4.5
Variation of resistance with temperature	See <u>Table.1</u>	JIS C 5201-1 4.8 Measurement : $+25 / +125^{\circ}\text{C}$
Overload	$\pm (2.0\%+0.1\Omega)$	JIS C 5201-1 4.13 Rated voltage $\times 2.5$, 2s. Maximum Overload Voltage : 25V
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°C to $+125^{\circ}\text{C}$ 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 to 1,048h
Endurance at 70°C	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.25.1 Rated voltage, 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.25.3 125°C Test time : 1,000h to 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

●External dimensions (Unit : mm)



Resistors

●Equivalent circuit



●Packaging

Reel

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

EIAJ ET-7200B compliant

(Unit: mm)

A	B	C	D
$\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$	$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$	$9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$\phi 13 \pm 0.2$

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, Thick paper mount, (Underside paper tape), Chip network resistors, and Square punchout hole.

(Unit : mm)

W	F	E	A ₀	B ₀
8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	3.4±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	4.0±0.1	2.0±0.05	Max. 1.1

●Product designation

M	N	R	1	5	E	0	R	P	J									
Part No.					Resistance tolerance					Nominal resistance								
					<table><tr><td>J</td><td>±5%</td></tr><tr><td colspan="2">J is also used for jumper</td></tr></table>					J	±5%	J is also used for jumper		<table><tr><td colspan="2">Resistance code, 3 digits, 000 denotes Jumper type.</td></tr></table>			Resistance code, 3 digits, 000 denotes Jumper type.	
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Packaging Specifications Code

Part No.	Code	Resistance tolerance J($\pm 5\%$)	Packaging specifications	Reel	Basic ordering unit (pcs)
MNR15	E0RP	⊙	Paper tape (4mm Pitch)	$\phi 180\text{mm}$ (7in.)	5,000

Reel ($\phi 180$) : JEITA ET-7200B
 ⊙ : Standard product

Resistors

●Electrical characteristics

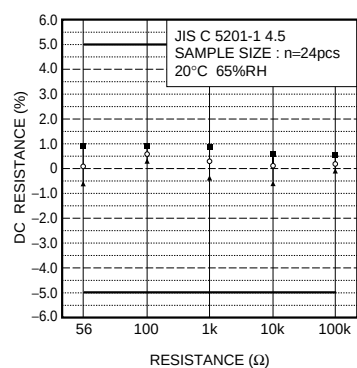


Fig.2 Resistance

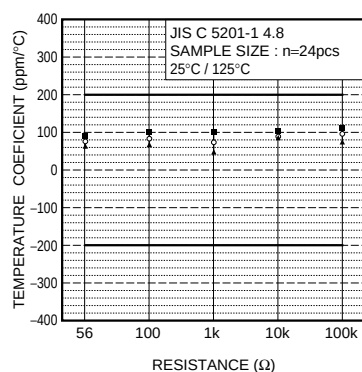


Fig.3 Variation resistance with temperature

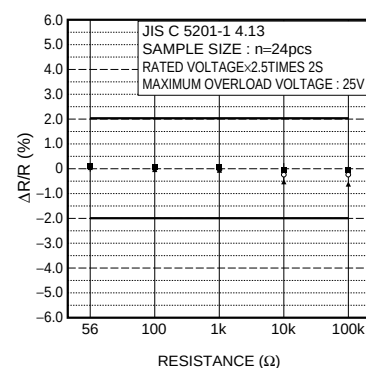


Fig.4 Overload

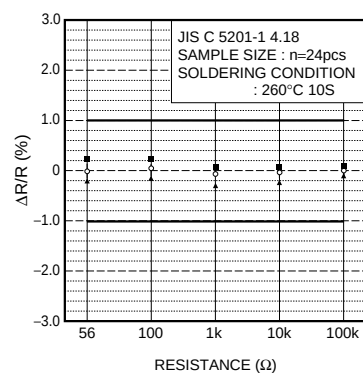


Fig.5 Resistance to soldering heat

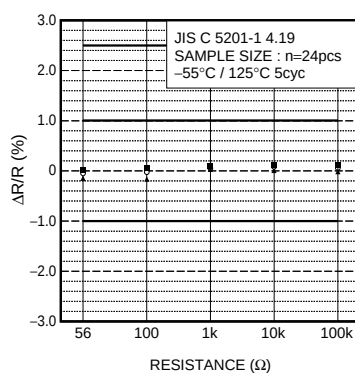


Fig.6 Rapid change of temperature

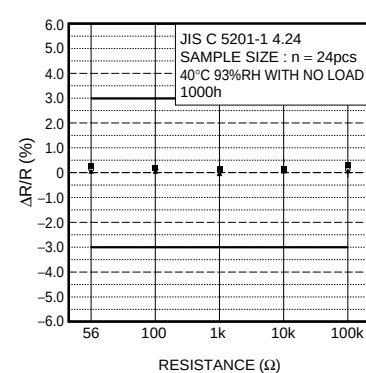


Fig.7 Damp heat, steady state

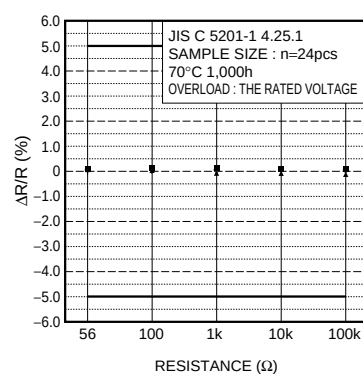


Fig.8 Endurance at 70°C

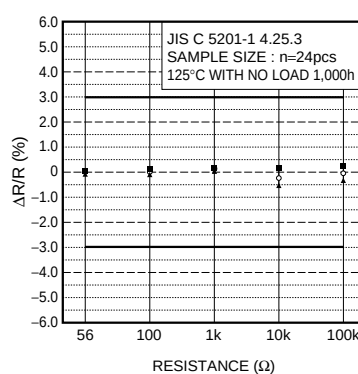


Fig.9 Endurance

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