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

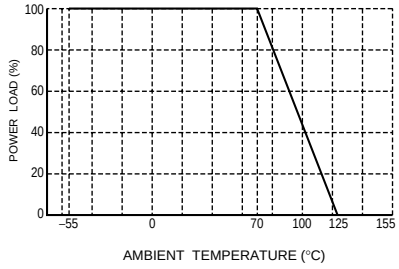
Item	Conditions	Specifications	
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.  Fig.1	0.063W (1 / 16W) at 70°C	
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting 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	

Table 1

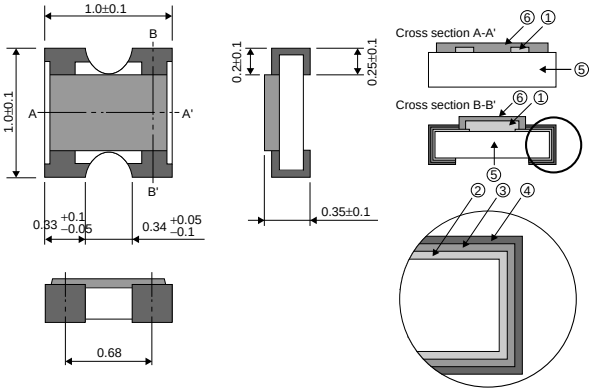
Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
J (±5%)	10≤R≤1M (E24)	±300

●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

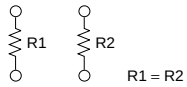
Items	Guaranteed value Resistor type	Test conditions (JIS C 5201-1)
Resistance	J : ±5%	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1	JIS C 5201-1 4.8 Measurement : –55 / +25 / +125°C
Overload	± (2.0%+0.1Ω)	JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s. Limiting Element Voltage×2 : 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~+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~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~1,048h
Endurance	± (3.0%+0.1Ω)	JIS C 5201-1 4.25.3 125°C Test time : 1,000h~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

●**External dimensions** (Units: mm)



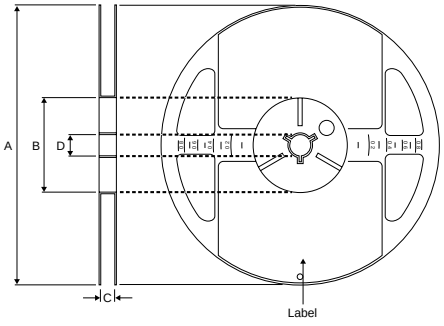
No.	Material
①	Thick dielectric glaze of ruthenium
②	Thick film of silver for primary electrode
③	Nickel-coated secondary electrode
④	External electrode coated with Sn/Pb or Sn
⑤	Alumina substrate
⑥	Overcoating

●**Equivalent circuit**



●Packaging

Reel

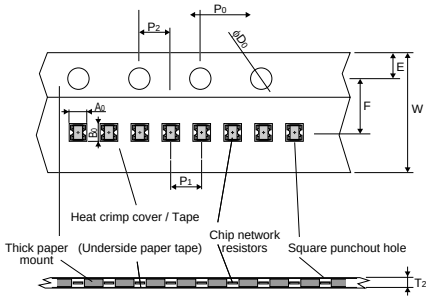


EIAJ ET-7200A compliant

(Units: mm)

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

Taping



(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
$\phi 1.5^{+0.1}_{0}$	4.0±0.1	2.0±0.1	2.0±0.05	Max. 0.5

●Product designation

Part No.

M	N	R	0	2	M	0	A		J			

Packaging / Processing specifications

Circuit configuration code

Resistance tolerance

Nominal resistance

Code	Part No.	Packaging	Package style
M0	MNR02	Taping	Paper tape with reel (10,000)

A	MNR02

J	±5%

3-digit IEC coding system

●Electrical characteristics

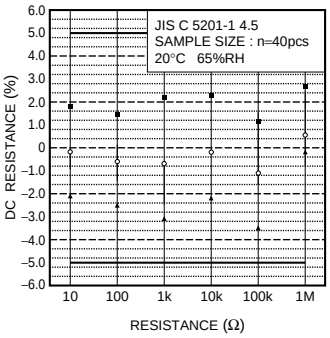


Fig.2 Resistance

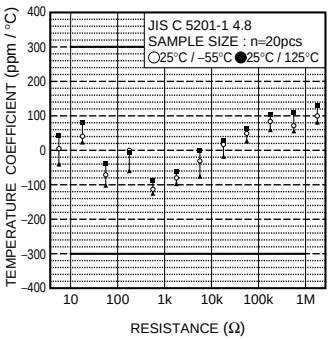


Fig.3 Variation resistance with temperature

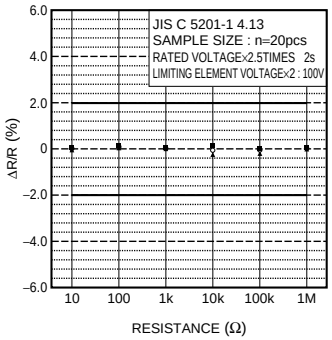


Fig.4 Overload

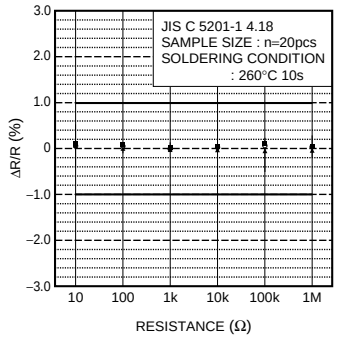


Fig.5 Resistance to soldering heat

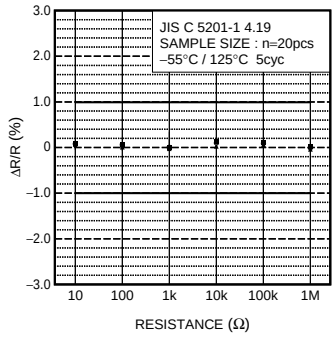


Fig.6 Rapid change of temperature

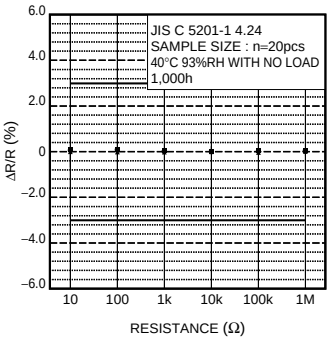


Fig.7 Damp heat, steady state

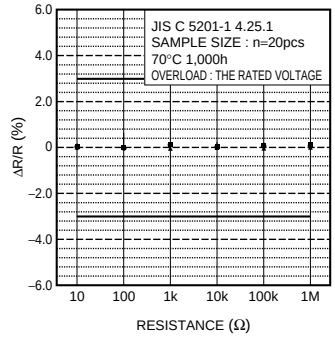


Fig.8 Endurance at 70°C

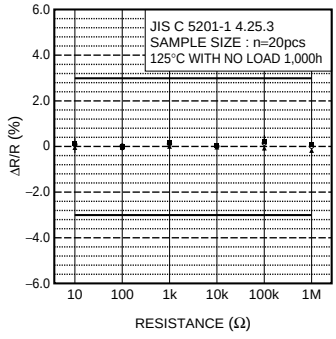


Fig.9 Endurance