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

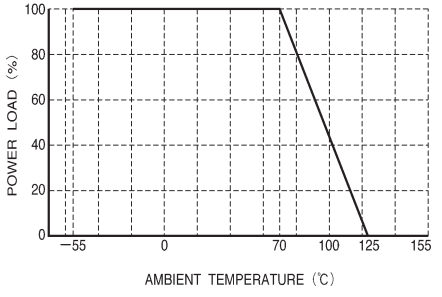
Item	Conditions	Specifications	
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70℃.  Fig.1	0.063W (1 / 16W) at 70℃	
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the maximum operating 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)	Max. operating voltage	25V
		Max. overload voltage	50V
		Max. intermittent overload voltage	50V
Nominal resistance	See Table 1.		
Operating temperature		−55℃ to +125℃	

Table 1

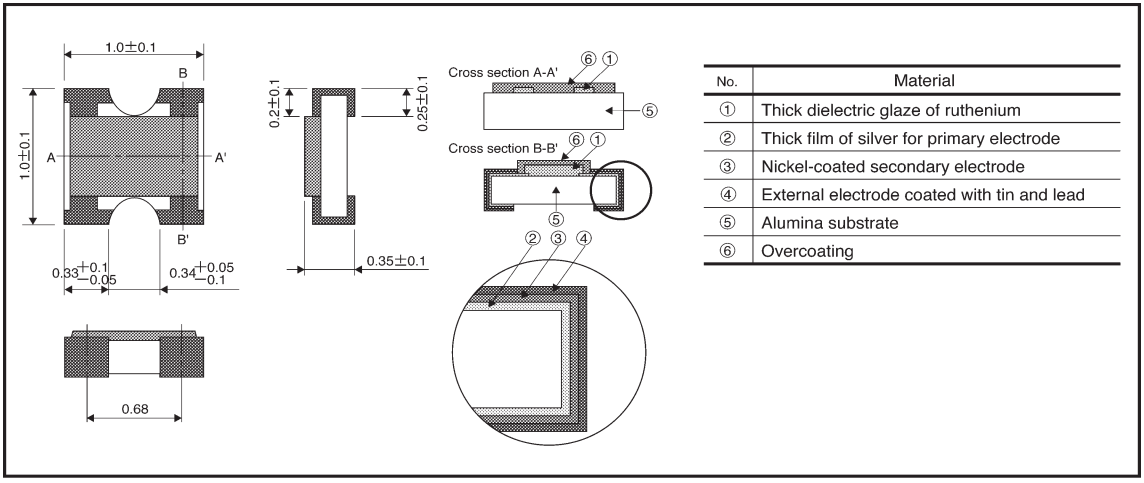
Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / ℃)
J（±5%）	10≦R≦1M （E24）	±300

●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

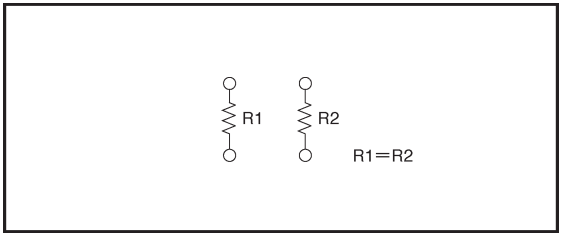
Characteristics	Specifications	Test method (JIS C 5202)
DC resistance	J：±5%	JIS C 5202 5.1 Applied voltage: A
Resistance temperature characteristics	See Table 1.	JIS C 5202 5.2 Test conditions: +25 / −55 / +25 / +125℃
Short time overload	±(5.0%+0.1Ω)	JIS C 5202 5.5 Rated voltage (current) : ×2.5, 5s Maximum overload voltage: 50V
Resistance to soldering heat	±(2.5%+0.1Ω) Outside must not be noticeably damaged.	JIS C 5202 6.4 Soldering conditions: 260±5℃ Soldering time: 10±1s.
Solderability	95% of terminal surface must be covered by new soldering, and there must be no soldering corrosion.	JIS C 5202 6.5 Rosin methanol: (25%WT) Soldering conditions: 235±5℃ Soldering time: 2±0.5s.
Resistance to dry heat	±(5.0%+0.1Ω)	JIS C 5202 7.2 125℃ Test time: 1,000 to 1,048 hrs.
Endurance (rated load)	±(5.0%+0.1Ω)	JIS C 5202 7.10 Rated voltage (current), 70℃ 1.5h: ON − 0.5h: OFF Test time: 1,000 to 1,048 hrs.
Endurance (under load in damp environment)	±(5.0%+0.1Ω)	JIS C 5202 7.9 Rated voltage (current), 60℃, 95%RH 1.5h: ON − 0.5h: OFF Test time: 1,000 to 1,048 hrs.
Resistance to humidity (steady state)	±(5.0%+0.1Ω)	JIS C 5202 7.5 85℃,85%RH Test time: 1,000 to 1,048 hrs.
Temperature cycling	±(2.5%+0.1Ω)	JIS C 5202 7.4 Test temperature: −55℃ to +125℃ 100cyc.
Resistance to solvents	±(1.0%+0.05Ω)	JIS C 5202 6.9 Room temperature, static immersion, 1 min. Solvent: Isopropyl alcohol

●External dimensions (Units: mm)



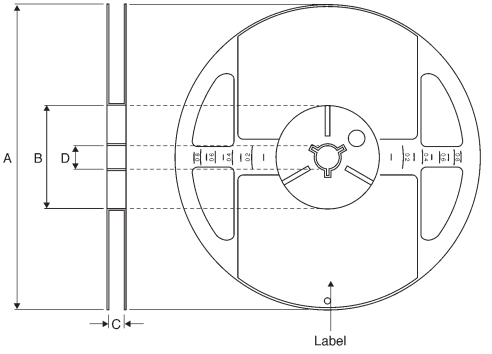
No.	Material
①	Thick dielectric glaze of ruthenium
②	Thick film of silver for primary electrode
③	Nickel-coated secondary electrode
④	External electrode coated with tin and lead
⑤	Alumina substrate
⑥	Overcoating

●Equivalent circuit



●Packaging

Reel

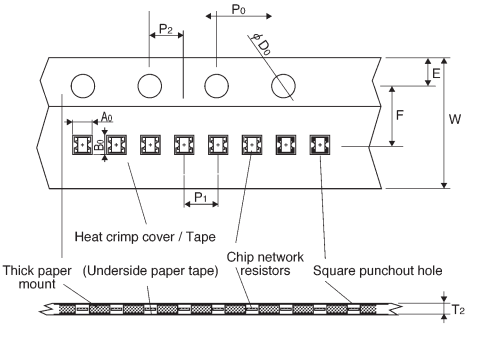


EIAJ ET-7001 compliant

(Units : mm)

A	B	C	D
$\phi 180^{\ 0}_{-3}$	$\phi 60^{+1}_{\ 0}$	9±0.3	ϕ13±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 reel

A	MNR02

J	±5%

3-digit IEC coding system

●Electrical characteristics

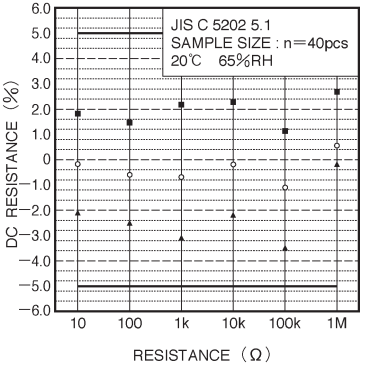


Fig.2 DC resistance

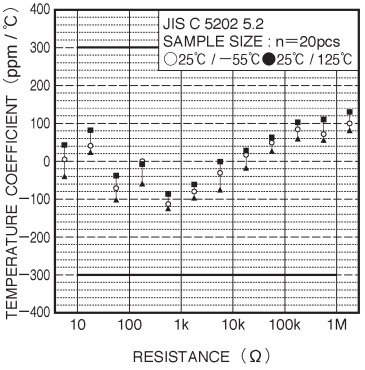


Fig.3 Resistance temperature characteristics

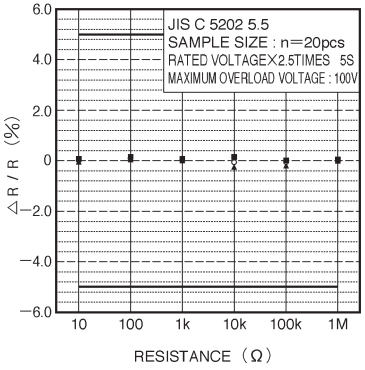


Fig.4 Short time overload

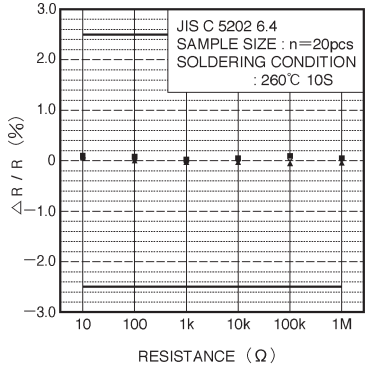


Fig.5 Resistance to soldering heat

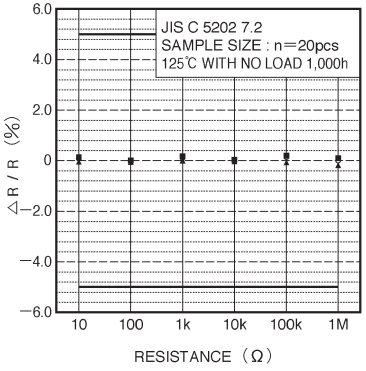


Fig.6 Resistance to dry heat

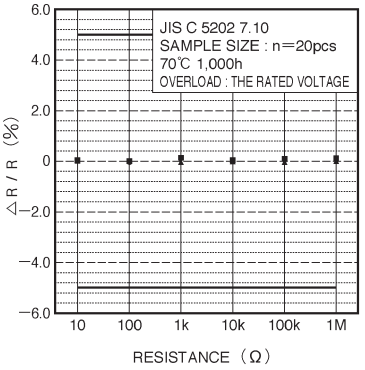


Fig.7 Endurance (rated load)

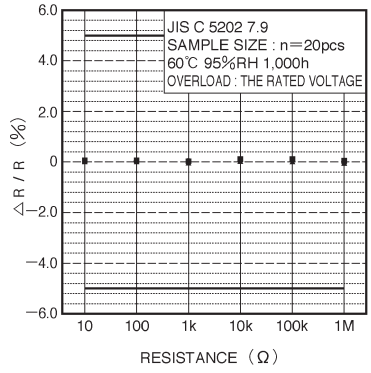


Fig.8 Endurance (under load in damp environment)

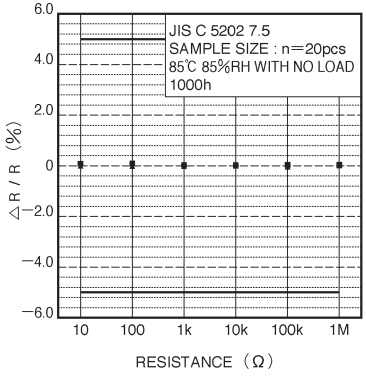


Fig.9 Resistance to humidity (steady state)

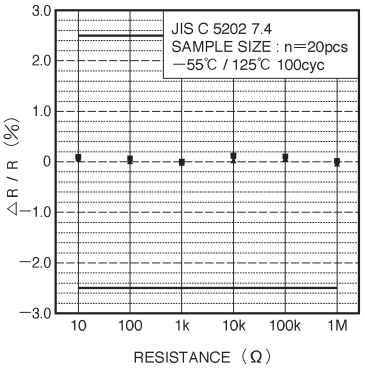


Fig.10 Temperature cycling