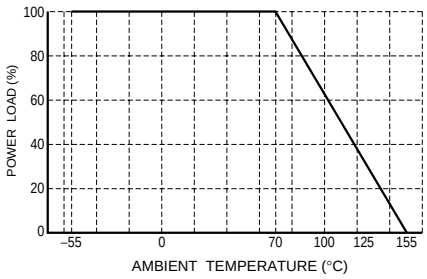
# Thick film rectangular

## **MCR01** (1005 size : 1 / 16W)

**●Features**

1) Extremely small light
   Area ratio is 60% smaller than that of chip 1608, while weight ratio has been cut 75%.
2) Highly reliable chip resistor
   Ruthenium oxide dielectric offers superior resistance to the elements.
3) Electrodes not corroded by soldering
   Thick film makes the electrodes very strong.
4) Flat surface further facilitates mounting
   Mounting can also be automated.
5) 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.<br>  <br><br>Fig.1 | 0.063W (1 / 16W)<br>at 70°C | |
| Rated voltage | The voltage rating is calculated by the following equation.<br>If the value obtained exceeds the limiting element voltage, the voltage rating is equal to the maximum operating voltage.<br>$E=\sqrt{P\times R}$<br>E: Rated voltage (V)<br>P: Rated power (W)<br>R: Nominal resistance (Ω) | Limiting element voltage | 50V |
| Nominal resistance | See Table 1. | | |
| Operating temperature | | –55°C to +155°C | |

Jumper type

| | |
|---|---|
| Resistance | Max. 50mΩ |
| Rated current | 1A |
| Operating temperature | –55°C to +155°C |

Table 1

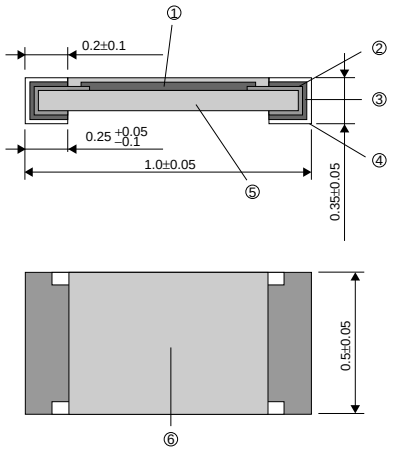
| Resistance tolerance | Resistance range (Ω) | Resistance temperature coefficient (ppm / °C) |
|---|---|---|
| J (±5%) | 1.0≤R<10 (E24) | +500 / –250 |
| | 10≤R≤10M (E24) | ±200 |
| F (±1%) | 10≤R≤2.2M (E24) | ±100 |
| D (±0.5%) | 10≤R<100 (E24) | ±100 |
| | 100≤R≤1MΩ (E24) | ±50 |

●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

| Item | Guaranteed value | | Test conditions (JIS C 5201-1) |
|---|---|---|---|
| | Resistor type | Jumper type | |
| Resistance | J : ±5%<br>F : ±1%<br>D : ±0.5% | Max. 50mΩ | JIS C 5201-1 4.5 |
| Variation of resistance with temperature | See Table.1 | | JIS C 5201-1 4.8<br>Measurement : +25 / +125°C |
| Overload | ± (2.0%+0.1Ω) | Max. 50mΩ | JIS C 5201-1 4.13<br>Rated voltage (current) ×2.5, 2s.<br>Limiting Element Voltage×2 : 100V |
| Solderability | A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage. | | JIS C 5201-1 4.17<br>Rosin·Ethanol (25%WT)<br>Soldering condition : 235±5°C<br>Duration of immersion : 2.0±0.5s. |
| Resistance to soldering heat | ± (1.0%+0.05Ω) | Max. 50mΩ<br>No remarkable abnormality on the appearance. | JIS C 5201-1 4.18<br>Soldering condition : 260±5°C<br>Duration of immersion : 10±1s. |
| Rapid change of temperature | ± (1.0%+0.05Ω) | Max. 50mΩ | JIS C 5201-1 4.19<br>Test temp. : –55°C to +125°C 5cyc |
| Damp heat, steady state | ± (3.0%+0.1Ω) | Max. 50mΩ | JIS C 5201-1 4.24<br>40°C, 93%RH<br>Test time : 1,000h to 1,048h |
| Endurance at 70°C | ± (3.0%+0.1Ω) | Max. 50mΩ | JIS C 5201-1 4.25.1<br>Rated voltage (current), 70°C<br>1.5h : ON – 0.5h : OFF<br>Test time : 1,000h to 1,048h |
| Endurance | ± (3.0%+0.1Ω) | Max. 50mΩ | JIS C 5201-1 4.25.3<br>125°C<br>Test time : 1,000h to 1,048h |
| Resistance to solvent | ± (1.0%+0.05Ω) | Max. 50mΩ | JIS C 5201-1 4.29<br>23±5°C, Immersion cleaning, 5±0.5min.<br>Solvent : 2-propanol |
| Bend strength of the end face plating | ± (1.0%+0.05Ω) | Max. 50mΩ<br>Without mechanical damage such as breaks. | JIS C 5201-1 4.33 |

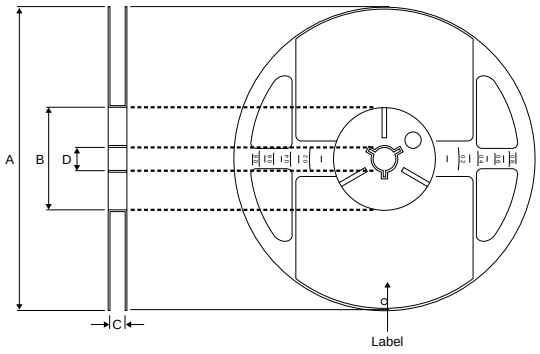
●**External dimensions** (Unit : mm)




| No. | Material |
|---|---|
| ① | Thick dielectric glaze of oxide metal (only silver used for jumper) |
| ② | Thick film of silver for electrode |
| ③ | Nickel-coated electrode |
| ④ | External electrode coated with Sn |
| ⑤ | Alumina substrate |
| ⑥ | Overcoating |

●**Packaging**

Reel

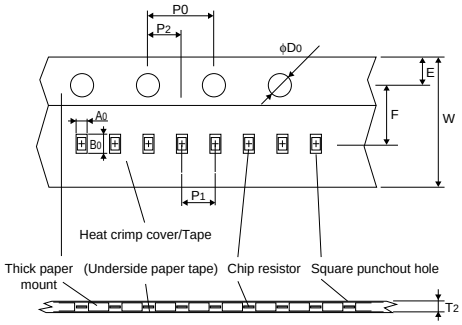



EIAJ ET-7200B compliant

(Unit : mm)

| A | B | C | D |
|---|---|---|---|
| $\phi 180^{\ 0}_{-1.5}$ | $\phi 60^{\ +1}_{\ 0}$ | $9^{\ +1.0}_{\ 0}$ | $\phi 13 \pm 0.2$ |

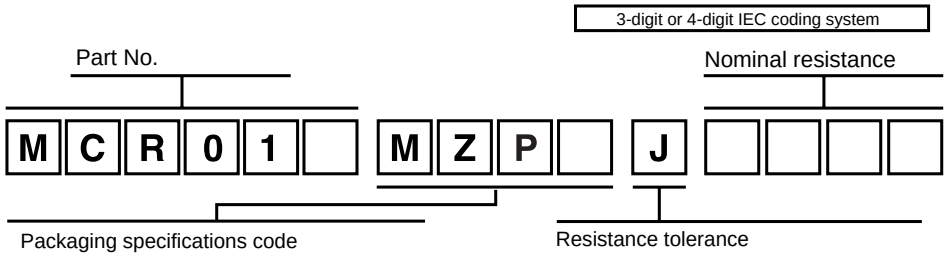
Taping




(Unit : mm)

| W | F | E | A0 | B0 |
|---|---|---|---|---|
| 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 0.7±0.1 | 1.2±0.1 |
| D0 | P0 | P1 | P2 | T2 |
| $\phi 1.5^{\ +0.1}_{\ 0}$ | 4.0±0.1 | 2.0±0.05 | 2.0±0.05 | Max. 1.1 |

## ●Part designation




| Part No. | Code | Packaging style | Basisic ordering unit (pcs) |
|---|---|---|---|
| MCR01 | MZP | Paper tape | 10,000 |

| F | ±1% | J | ±5% | D | ±0.5% |
|---|---|---|---|---|---|
| Specify "J" for jumper also. | | | | | |

## ●Dimensions

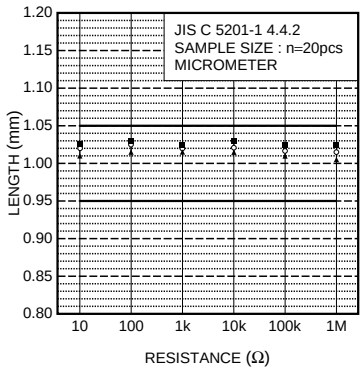



Fig.2 Dimensions (length)

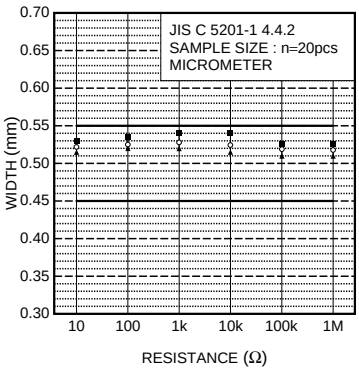



Fig.3 Dimensions (width)

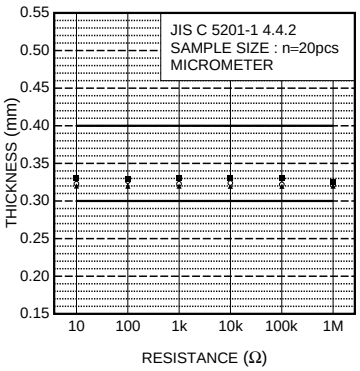



Fig.4 Dimensions (thickness)

## ●Electrical characteristics

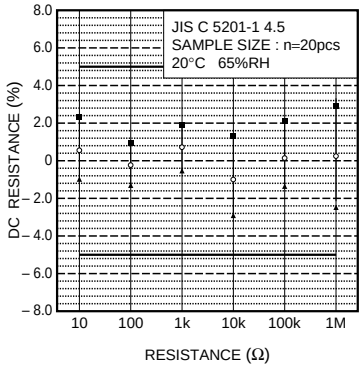



Fig.5 Resistance

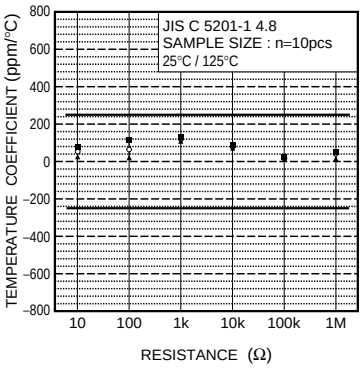



Fig.6 Variation of resistance with temperature

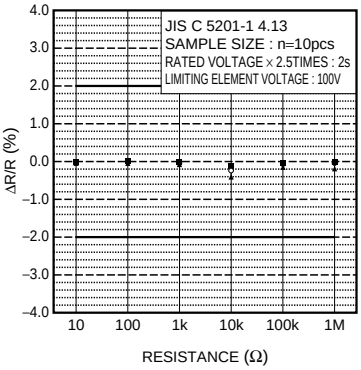



Fig.7 Overload

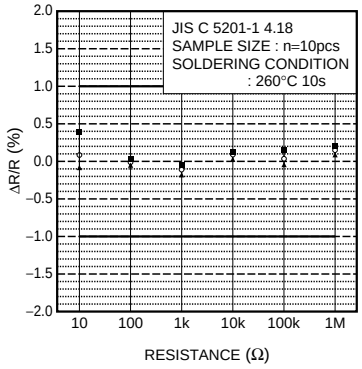



Fig.8 Resistance to soldering heat

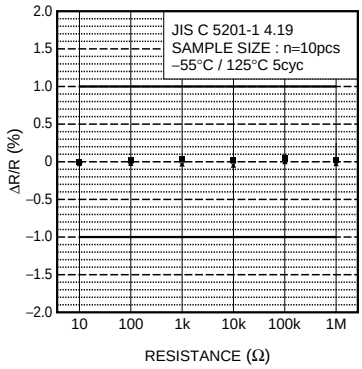



Fig.9 Rapid change of temperature

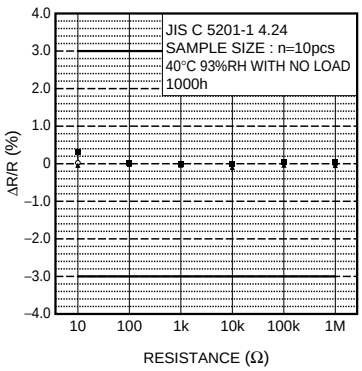



Fig.10 Damp heat, steady state

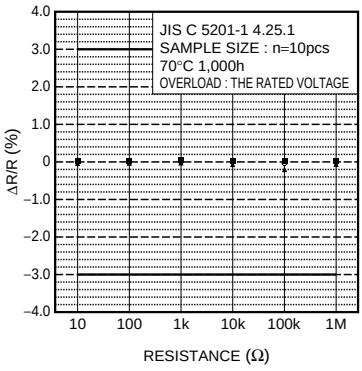



Fig.11 Endurance at 70°C

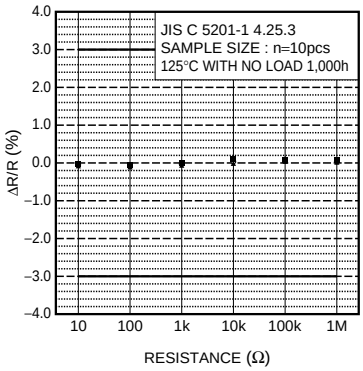



Fig.12 Endurance

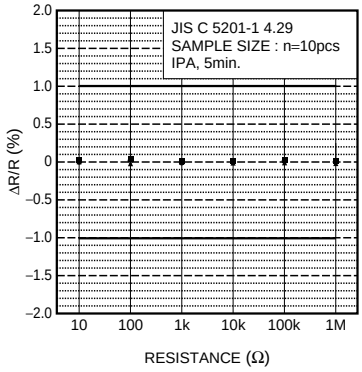



Fig.13 Resistance to solvents

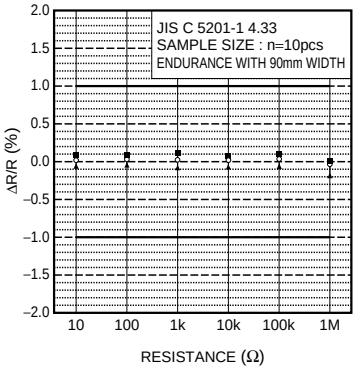



Fig.14 Bend strength of the end face plating

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