

Thick film rectangular resistors

MCR03 (0603 size)

●Features

- 1) Power rating of 1 / 10W
- 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) Resin protective coating for FX, D resistors
Absorbs impact, facilitates mounting.
- 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. <div style="text-align: center;"> <p>Fig.1</p> </div> | 0.10W (1 / 10W) 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) | <table border="1"> <tr> <td>Limiting element voltage</td> <td>50V</td> </tr> </table> | Limiting element voltage | 50V |
| Limiting element voltage | 50V | | | |
| Nominal resistance | See Table 1. | | | |
| Operating temperature | | -55°C to +155°C | | |

Resistors

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) | ±400 |
| | 10≤R≤10M (E24) | ±200 |
| FX (±1%) | 10≤R≤10M (E24,96) | ±100 |
| D (±0.5%) | 10≤R<100 (E24,96) | ±100 |
| | 100≤R≤1M (E24,96) | ±50 |

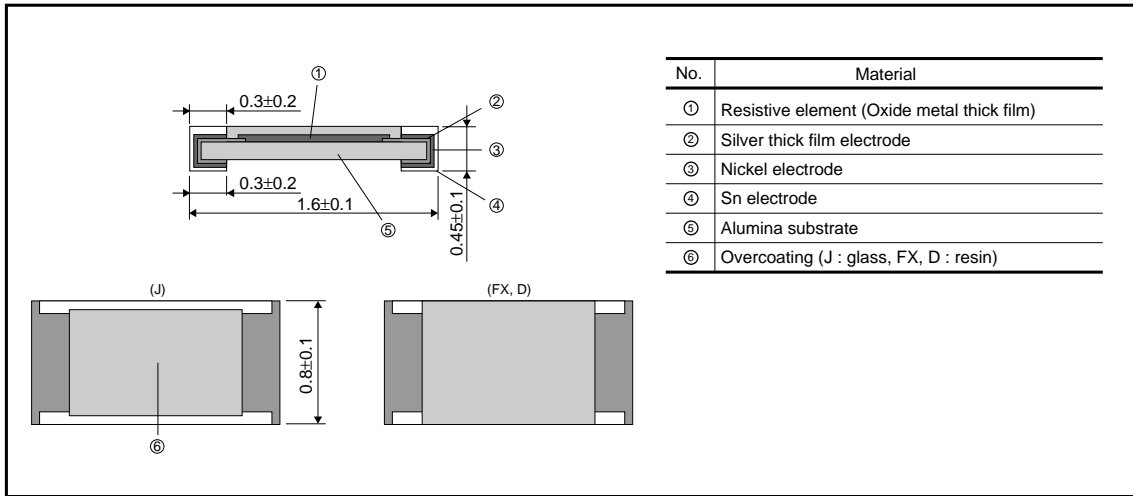
●Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady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

●Characteristics

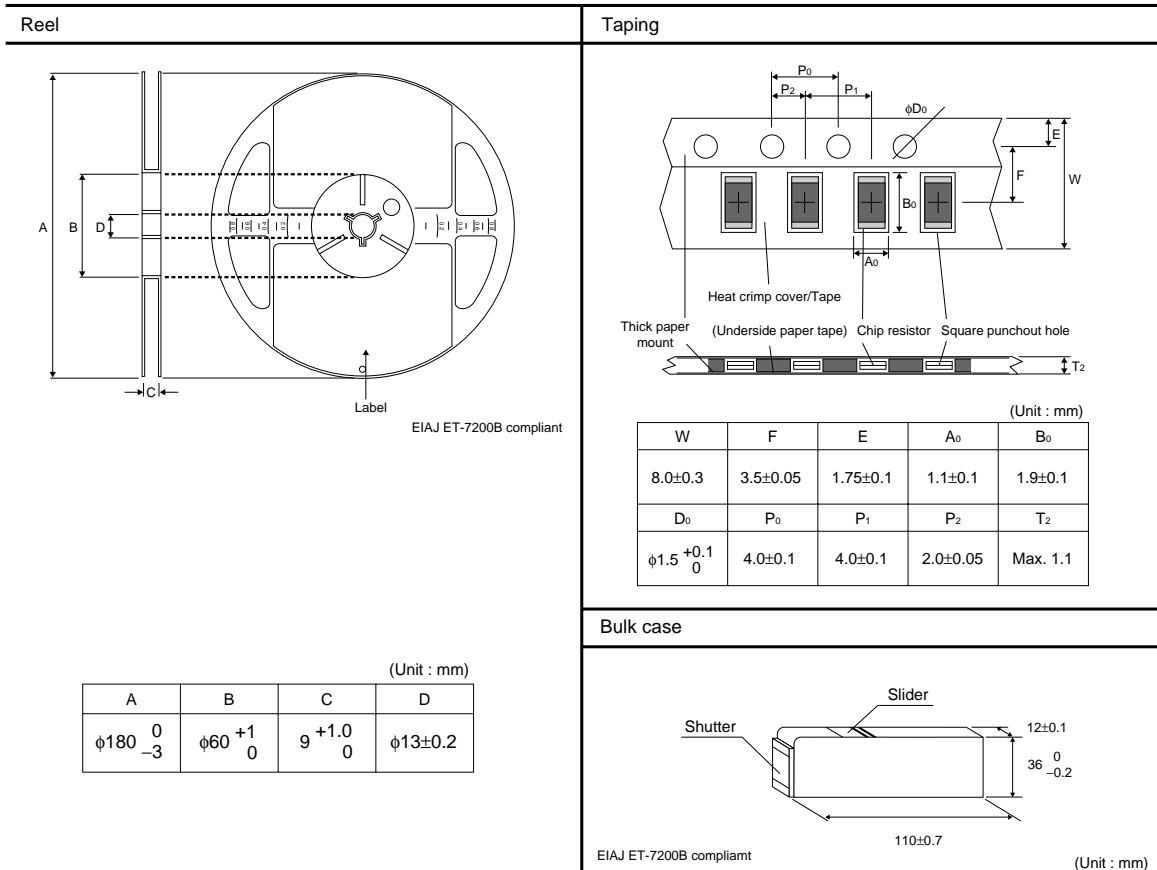
| Item | Guaranteed value | | Test conditions (JIS C 5201-1) |
|--|--|-------------|--|
| | Resistor type | Jumper type | |
| Resistance | J : ±5% FX : ±1% D : ±0.5% | Max. 50mΩ | JIS C 5201-1 4.5 |
| Variation of resistance with temperature | See Table.1 | | JIS C 5201-1 4.8 Measurement : -55 / +25 / +125°C |
| Overload | ± (2.0%+0.1Ω) | Max. 50mΩ | JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s. Maximum overload voltage : 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 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. | Max. 50mΩ | JIS C 5201-1 4.18 Soldering condition : 260±5°C Duration of immersion : 10±1s. |
| Rapid change of temperature | ± (1.0%+0.05Ω) | Max. 50mΩ | JIS C 5201-1 4.19 Test temp. : -55°C to +125°C 5cyc |
| Damp heat, steady state | ± (3.0%+0.1Ω) | Max. 100mΩ | JIS C 5201-1 4.24 40°C, 93%RH Test time : 1,000h to 1,048h |
| Endurance at 70°C | ± (3.0%+0.1Ω) | Max. 100mΩ | JIS C 5201-1 4.25.1 Rated voltage (current), 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h |
| Endurance | ± (3.0%+0.1Ω) | Max. 100mΩ | JIS C 5201-1 4.25.3 155°C Test time : 1,000h to 1,048h |
| Resistance to solvent | ± (1.0%+0.05Ω) | Max. 50mΩ | 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. | Max. 50mΩ | JIS C 5201-1 4.33 |

Resistors

●External dimensions (Unit : mm)

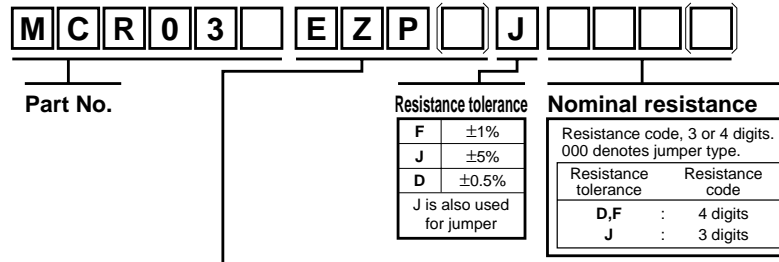


●Packaging



Resistors

●Part designation



Packaging Specifications Code

| Part No. | Code | Resistance tolerance | | | Packaging specifications | Reel | Basic ordering unit (pcs) |
|----------|------|----------------------|--------|----------|--------------------------|---------------|---------------------------|
| | | J(±5%) | F(±1%) | D(±0.5%) | | | |
| MCR03 | EZP | ◎ | ◎ | ◎ | Paper tape (4mm Pitch) | φ180mm (7in.) | 5,000 |

Reel (φ180) : JEITA ET-7200B
 ◎ : Standard product

●Dimensions

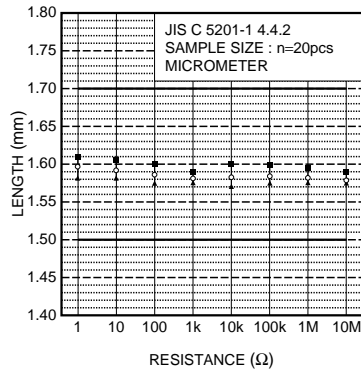


Fig.2 Dimensions (length)

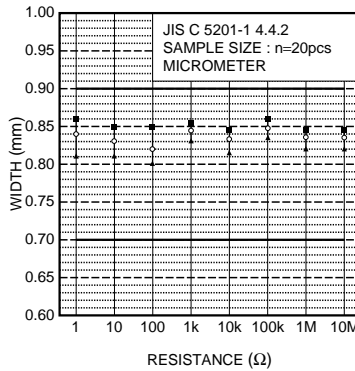


Fig.3 Dimensions (width)

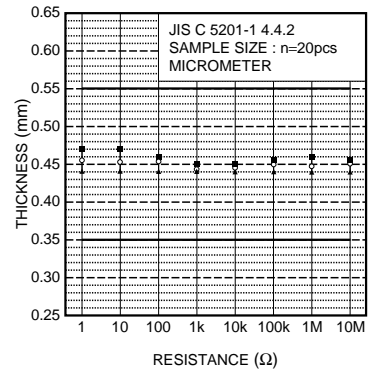


Fig.4 Dimensions (thickness)

●Electrical characteristics

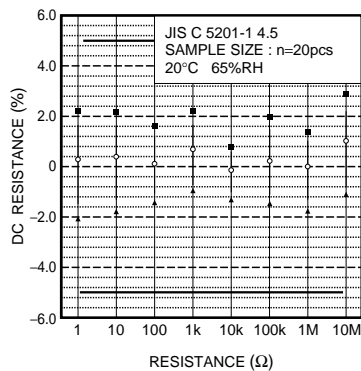


Fig.5 Resistance

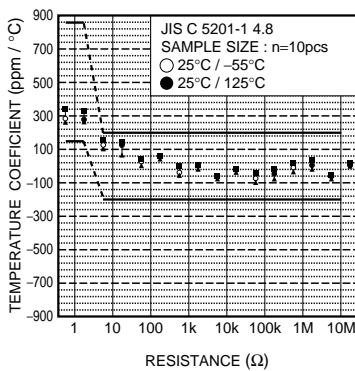


Fig.6 Variation of resistance with temperature

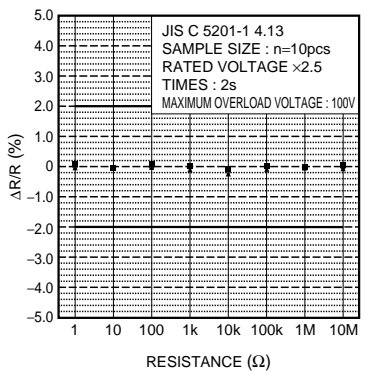


Fig.7 Overload

Resistors

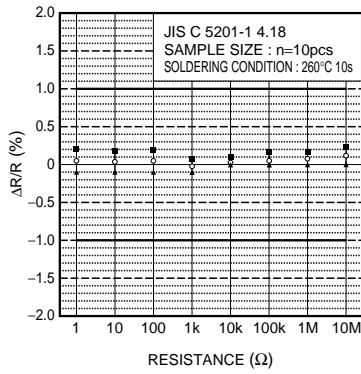


Fig.8 Resistance to soldering heat

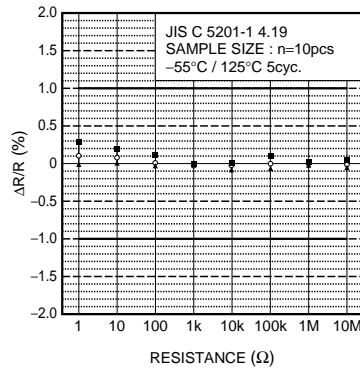


Fig.9 Rapid change of temperature

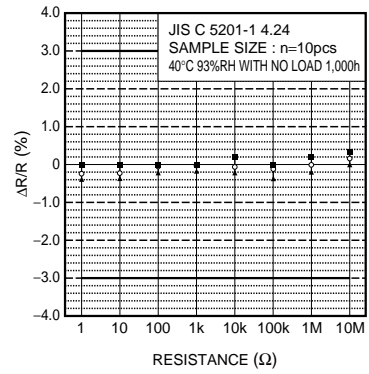


Fig.10 Damp heat, steady state

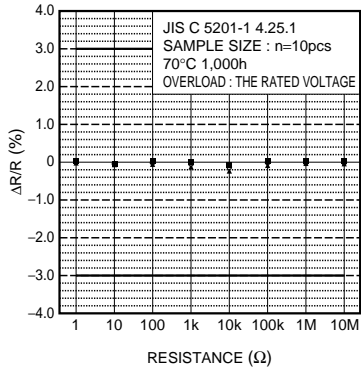


Fig.11 Endurance at 70°C

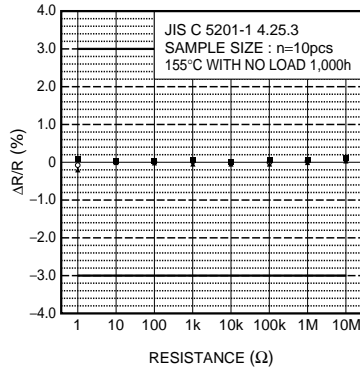


Fig.12 Endurance

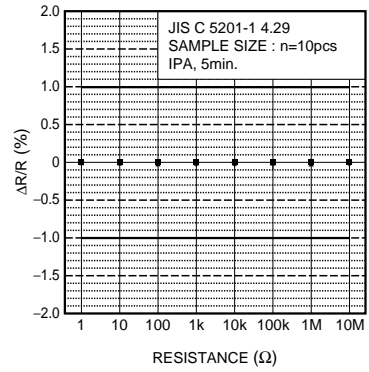


Fig.13 Resistance to solvents

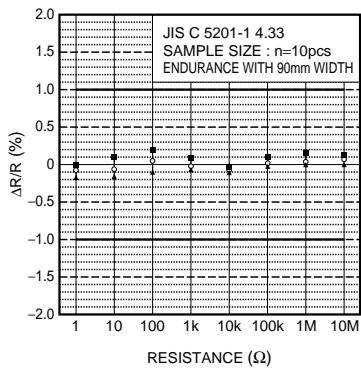


Fig.14 Bend strength of the end face plating

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