

Low Ohmic Thick Film Chip Resistors

MCR03 (1608 size (0603 size) : 1 / 10W)

●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) ROHM resistors have approved ISO9001- / ISO/TS16949- certification.

●Ratings

Design and specifications are subject to change without notice.
Carefully check the specification sheet before using or ordering it.

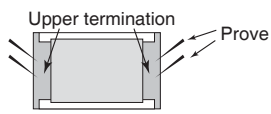
| Item | Conditions | Specifications | | |
|--------------------------|--|---|--------------------------|------------|
| Rated power | <p>Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.</p> <p style="text-align: center;">Fig.1</p> | 0.1W (1 / 10W) at 70°C | | |
| Rated voltage | <p>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.</p> $E = \sqrt{P \times R}$ <p style="margin-left: 40px;">E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)</p> | <table border="1" style="width: 100%;"> <tr> <td>Limiting element voltage</td> <td>0.95(9.1Ω)</td> </tr> </table> | Limiting element voltage | 0.95(9.1Ω) |
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| Nominal resistance | See Table 1. | | | |
| Operating temperature | | -55°C to + 155°C | | |

Table 1

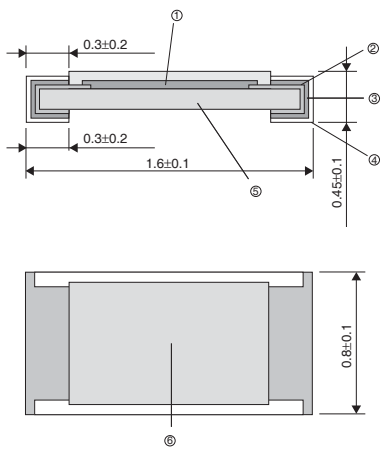
| Resistance tolerance | Special specification | Resistance range (Ω) | Resistance temperature coefficient (ppm/°C) |
|----------------------|-----------------------|----------------------|---|
| F (±1%) | L | 1.0 to 9.1 (E24) | ±400 |

●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

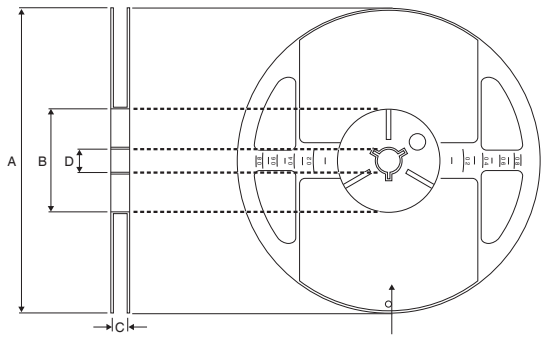
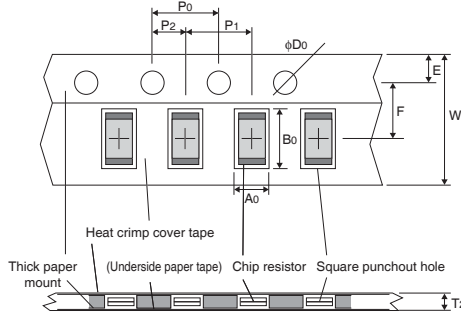
| Item | Guaranteed value | Test conditions (JIS C 5201-1) |
|--|--|---|
| | Resistor type | |
| Resistance | F : $\pm 1\%$ | JIS C 5201-1 4.5 Load voltage : A Measuring method : measure upper termination by 4 probes.  |
| Variation of resistance with temperature | See Table.1 | JIS C 5201-1 4.8 Measurement : +25 / -55 / +25 / +125°C |
| Overload | $\pm (2.0\%+0.005\Omega)$ | JIS C 5201-1 4.13 Rated voltage (current) $\times 2.5$, 2s. |
| 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 | $\pm (1.0\%+0.005\Omega)$ 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 | $\pm (1.0\%+0.005\Omega)$ | JIS C 5201-1 4.19 Test temp. : -55°C to $+125^\circ\text{C}$ 5cyc |
| Damp heat, steady state | $\pm (3.0\%+0.005\Omega)$ | JIS C 5201-1 4.24 40°C , 93%RH Test time : 56days |
| Endurance at 70°C | $\pm (3.0\%+0.005\Omega)$ | JIS C 5201-1 4.25.1 70°C , Rated voltage 1.5h : ON – 0.5h : OFF Test time : 1,000h |
| Endurance | $\pm (3.0\%+0.005\Omega)$ | JIS C 5201-1 4.25.3 155°C Test time : 1,000h to 1,048h |
| Resistance to solvent | $\pm (0.5\%+0.005\Omega)$ | JIS C 5201-1 4.29 $23^\circ\text{C}\pm 5^\circ\text{C}$, Immersion cleaning, $5\pm 0.5\text{min}$. Solvent : 2-propanol |
| Bend strength of the end face plating | $\pm (1.0\%+0.005\Omega)$ Without mechanical damage such as breaks. | JIS C 5201-1 4.33 |

●Dimensions (Unit : mm)



| No. | Material |
|-----|--|
| ① | Resistive element (Oxide metal thick film) |
| ② | Silver thick film electrode |
| ③ | Nickel electrode |
| ④ | Sn electrode |
| ⑤ | Alumina substrate |
| ⑥ | Overcoating (Resin) |

●Packaging

| Reel | Taping | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|-------------------|----------------|--|---|--|-------------------|--|---|---|---|----------------|----------------|---------------|----------------|----------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|--|---------------|---------------|----------------|----------|
|  <p style="text-align: center;">EIAJ ET-7200B compliant</p> <p style="text-align: center;">(Unit: mm)</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$</td> <td style="text-align: center;">$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$</td> <td style="text-align: center;">$13 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$</td> <td style="text-align: center;">$\phi 13 \pm 0.2$</td> </tr> </tbody> </table> | A | B | C | D | $\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$ | $\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ | $13 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ | $\phi 13 \pm 0.2$ |  <p style="text-align: right;">(Unit: mm)</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>W</th> <th>F</th> <th>E</th> <th>A₀</th> <th>B₀</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">8.0 ± 0.3</td> <td style="text-align: center;">3.5 ± 0.05</td> <td style="text-align: center;">1.75 ± 0.1</td> <td style="text-align: center;">1.1 ± 0.1</td> <td style="text-align: center;">1.9 ± 0.1</td> </tr> <tr> <th>D₀</th> <th>P₀</th> <th>P₁</th> <th>P₂</th> <th>T₂</th> </tr> <tr> <td style="text-align: center;">$\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$</td> <td style="text-align: center;">4.0 ± 0.1</td> <td style="text-align: center;">4.0 ± 0.1</td> <td style="text-align: center;">2.0 ± 0.05</td> <td style="text-align: center;">Max. 1.1</td> </tr> </tbody> </table> | W | F | E | A ₀ | B ₀ | 8.0 ± 0.3 | 3.5 ± 0.05 | 1.75 ± 0.1 | 1.1 ± 0.1 | 1.9 ± 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 |
| A | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| $\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$ | $\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ | $13 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ | $\phi 13 \pm 0.2$ | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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 | | | | | | | | | | | | | | | | | | | | | | | | | |

●Part No. Explanation

| | | | | | | | | | | | | | |
|-----------------|----------|----------|----------|----------|-----------------------------|----------|--------------------------------|----------|----------|-----------------------------------|--|--|--|
| M | C | R | 0 | 3 | E | Z | P | F | L | | | | |
| Part No. | | | | | Resistance tolerance | | Special part number | | | Nominal resistance | | | |
| | | | | | F $\pm 1\%$ | | L 1.0 to 9.1Ω (class F) | | | Resistance code, 4 digits. | | | |
| | | | | | | | | | | Resistance tolerance +Special P/N | | | |
| | | | | | | | | | | FL : 4 digits | | | |

Packaging Specifications Code

| Part No. | Code | Resistance tolerance F(±1%) | Packaging specifications | Reel | Basic ordering unit(pcs) |
|--------------|------------|--------------------------------|--------------------------|-----------------------------|--------------------------|
| MCR03 | EZP | ◎ | Paper tape (4mm Pitch) | $\phi 180\text{mm}$ (7inch) | 5,000 |

Reel ($\phi 180\text{mm}$) : Compatible with JEITA standard "EIAJ ET-7200B"
 ◎ : Standard product

Notes

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