

Low Ohmic Thick Film Chip Resistors

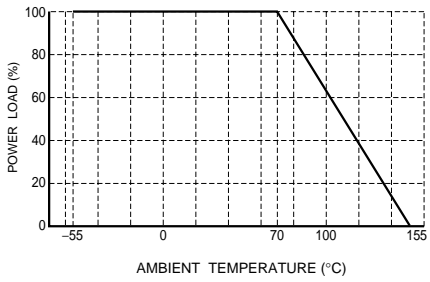
MCR18 (3216 size (1206 size) : 1 / 4W)

●Features

- 1) Power rating of 1 / 4W
- 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/TS 19649- 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> | 0.25W (1 / 4W) at 70°C |
| Rated voltage | <p>The voltage rating is calculated by the following equation.</p> $E = \sqrt{P \times R}$ <p style="margin-left: 40px;">E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)</p> | |
| Nominal resistance | See Table 1. | |
| Operating temperature | | -55°C to +155°C |

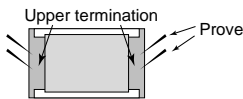
Resistors

Table 1

| Resistance tolerance | Special specification | Resistance range (Ω) | Resistance temperature coefficient (ppm/ $^{\circ}$ C) |
|----------------------|-----------------------|-------------------------------|--|
| F ($\pm 1\%$) | L | 0.1 to 0.13 (E24) | 400 \pm 200 |
| | L | 0.15 to 9.1 (E24) | \pm 250 |
| | S | 0.047 to 0.091 (E24) | 500 \pm 300 |
| J ($\pm 5\%$) | L | 0.1 to 0.13 (E24) | 400 \pm 200 |
| | L | 0.15 to 0.91 (E24) | \pm 250 |
| | S | 0.047 to 0.091 (E24) | 500 \pm 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

| Item | Guaranteed value | Test conditions (JIS C 5201-1) |
|--|--|---|
| | Resistor type | |
| Resistance | J : $\pm 5\%$ 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 $^{\circ}$ 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 $^{\circ}$ C Duration of immersion : 2.0 \pm 0.5s. |
| 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 $^{\circ}$ C Duration of immersion : 10 \pm 1s. |
| Rapid change of temperature | $\pm (1.0\%+0.005\Omega)$ | JIS C 5201-1 4.19 Test temp. : -55 $^{\circ}$ C to +125 $^{\circ}$ C 5cyc |
| Damp heat, steady state | $\pm (3.0\%+0.005\Omega)$ | JIS C 5201-1 4.24 40 $^{\circ}$ C, 93%RH Test time : 56days |
| Endurance at 70 $^{\circ}$ C | $\pm (3.0\%+0.005\Omega)$ | JIS C 5201-1 4.25.1 70 $^{\circ}$ 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 $^{\circ}$ C Test time : 1,000h to 1,048h |
| Component solvent resistance | $\pm (0.5\%+0.005\Omega)$ | JIS C 5201-1 4.29 23 $^{\circ}$ C \pm 5 $^{\circ}$ C Solvent : 2-propanol |
| Bend strength of the end face plating | Without open. | JIS C 5201-1 4.33 |

Resistors

●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 (Glass) |

●Packaging

| Reel | Taping | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|--|--|--|---|---|-------------------|---|---|---|---|----------------|----------------|---------------|----------------|----------------|--|--|----------------|----------------|----------------|----------------|----------------|--|---------------|---------------|----------------|----------|
| <p>EIAJ ET-7200B compliant</p> <p>(Unit: mm)</p> <table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>$\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$</td> <td>$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$</td> <td>$9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$</td> <td>$\phi 13 \pm 0.2$</td> </tr> </tbody> </table> | A | B | C | D | $\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$ | $\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ | $9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ | $\phi 13 \pm 0.2$ | <p>(Unit: mm)</p> <table border="1"> <thead> <tr> <th>W</th> <th>F</th> <th>E</th> <th>A₂</th> <th>B₂</th> </tr> </thead> <tbody> <tr> <td>8.0 ± 0.3</td> <td>3.5 ± 0.05</td> <td>1.75 ± 0.1</td> <td>$1.95 \begin{smallmatrix} +0.1 \\ -0.05 \end{smallmatrix}$</td> <td>$3.5 \begin{smallmatrix} +0.15 \\ -0.05 \end{smallmatrix}$</td> </tr> <tr> <th>D₀</th> <th>P₀</th> <th>P₁</th> <th>P₂</th> <th>T₂</th> </tr> <tr> <td>$\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$</td> <td>$4.0 \pm 0.1$</td> <td>$4.0 \pm 0.1$</td> <td>$2.0 \pm 0.05$</td> <td>Max. 1.1</td> </tr> </tbody> </table> | W | F | E | A ₂ | B ₂ | 8.0 ± 0.3 | 3.5 ± 0.05 | 1.75 ± 0.1 | $1.95 \begin{smallmatrix} +0.1 \\ -0.05 \end{smallmatrix}$ | $3.5 \begin{smallmatrix} +0.15 \\ -0.05 \end{smallmatrix}$ | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Resistors

●Part No. Explanation

M C R 1 8 E Z H J L

Part No.

Resistance tolerance

| | |
|---|-----|
| F | ±1% |
| J | ±5% |

Special part number

| | |
|---|---|
| L | 0.1 to 9.1Ω (class F) 0.1 to 0.91Ω (class J) |
| S | 0.047 to 0.091Ω |

Nominal resistance

| | |
|--------------------------------------|-----------------|
| Resistance code, 3 or 4 digits. | |
| Resistance tolerance +Special P/N | Resistance code |
| FL,FS,JS | : 4 digits |
| JL | : 3 digits |

Packaging Specifications Code

| Part No. | Code | Resistance tolerance | | Packaging specifications | Reel | Basic ordering unit(pcs) |
|----------|------|----------------------|--------|--------------------------|----------------|--------------------------|
| | | J(±5%) | F(±1%) | | | |
| MCR18 | EZH | ◎ | ◎ | Paper tape (4mm Pitch) | φ180mm (7inch) | 5,000 |

Reel (φ180mm) : Compatible with JEITA standard "EIAJ ET-7200B"
 ◎ : Standard product

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