

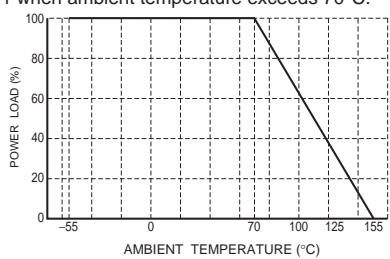
# Thick Film Chip Resistors

## MCR25 (1210 size: 1 / 4W)

### ●Features

- 1) Made of same material as the general purpose chip resistors (MCR10 / 18).
- 2) Highly reliable chip resistor  
Ruthenium oxide resistive material offers superior resistance to the elements.
- 3) Electrodes not corroded by soldering  
Suitable for re-flow soldering.
- 4) ROHM resistors have approved ISO9001-/ ISO/TS 16949- 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°C.<br><br>Fig.1   | 0.25W (1 / 4W)<br>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.<br>$E = \sqrt{P \times R}$<br>E: Rated voltage (V)<br>P: Rated power (W)<br>R: Nominal resistance (Ω) | Limiting element voltage   200V |
| Nominal resistance    | See Table 1.  |                                 |
| Operating temperature |   | -55°C to +155°C                 |

#### Jumper type

|                       |                 |
|-----------------------|-----------------|
| Resistance            | Max. 50mΩ       |
| Rated current         | 2A              |
| Operating temperature | -55°C to +155°C |

Table 1

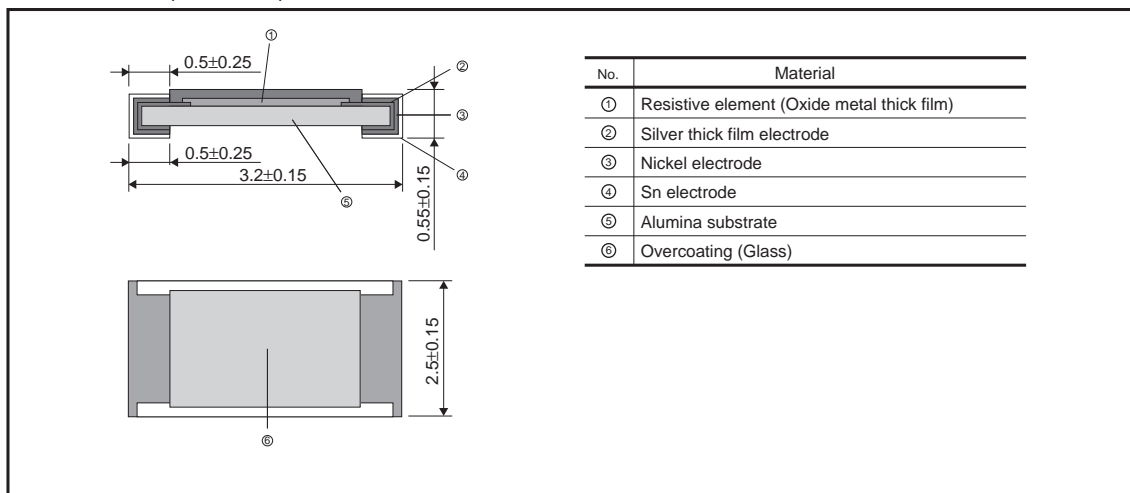
| Resistance tolerance | Resistance range (Ω) | Resistance temperature coefficient (ppm/°C) |
|----------------------|----------------------|---|
| F (±1%)              | 10 ≤ R ≤ 1M (E24,96) | ±100  |
| J (±5%)              | 1.0 ≤ R ≤ 2.0 (E24)  | 500±350                                     |
|                      | 2.2 ≤ R ≤ 5.1 (E24)  | ±500  |
|                      | 5.6 ≤ R ≤ 3.3M (E24) | ±200  |

●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.

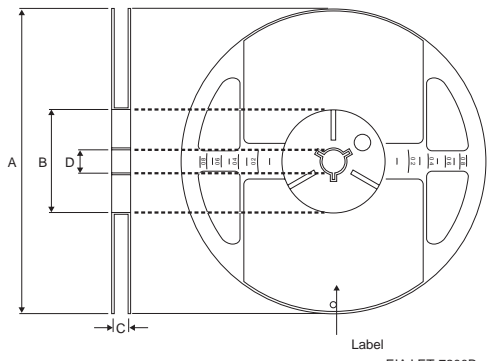
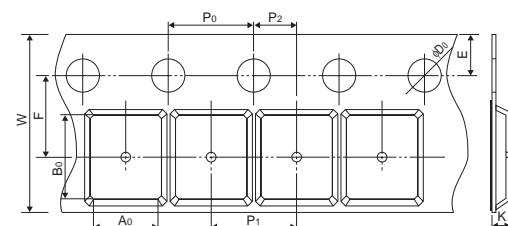
## ●Characteristics

| Item                                     | Guaranteed value   |                    | Test conditions (JIS C 5201-1)   |
|--|--|--------------------|--|
|  | Resistor type  | Jumper type        |  |
| Resistance                               | J : $\pm 5\%$<br>F : $\pm 1\%$   | Max. 50m $\Omega$  | JIS C 5201-1 4.5   |
| Variation of resistance with temperature | See Table.1  |                    | JIS C 5201-1 4.8<br>Measurement : -55 / +25 / +125°C   |
| Overload                                 | $\pm (2.0\%+0.1\Omega)$  | Max. 50m $\Omega$  | JIS C 5201-1 4.13<br>Rated voltage (current) $\times 2.5$ , 2s.<br>Maximum overload voltage : 400V                           |
| 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 $\pm$ 5°C<br>Duration of immersion : 2.0 $\pm$ 0.5s. |
| Resistance to soldering heat             | $\pm (1.0\%+0.05\Omega)$<br>No remarkable abnormality on the appearance.                       | Max. 50m $\Omega$  | JIS C 5201-1 4.18<br>Soldering condition : 260 $\pm$ 5°C<br>Duration of immersion : 10 $\pm$ 1s.                             |
| Rapid change of temperature              | $\pm (1.0\%+0.05\Omega)$   | Max. 50m $\Omega$  | JIS C 5201-1 4.19<br>Test temp. : -55°C to +125°C 5cyc   |
| Damp heat, steady state                  | $\pm (3.0\%+0.1\Omega)$  | Max. 100m $\Omega$ | JIS C 5201-1 4.24<br>40°C, 93%RH<br>Test time : 1,000h to 1,048h   |
| Endurance at 70°C                        | $\pm (3.0\%+0.1\Omega)$  | Max. 100m $\Omega$ | 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                                | $\pm (3.0\%+0.1\Omega)$  | Max. 100m $\Omega$ | JIS C 5201-1 4.25.3<br>125°C<br>Test time : 1,000h to 1,048h   |
| Resistance to solvent                    | $\pm (1.0\%+0.05\Omega)$   | Max. 50m $\Omega$  | JIS C 5201-1 4.29<br>23 $\pm$ 5°C, Immersion cleaning, 5 $\pm$ 0.5min.<br>Solvent : 2-propanol                               |
| Bend strength of the end face plating    | $\pm (1.0\%+0.05\Omega)$<br>Without mechanical damage such as breaks.                          | Max. 50m $\Omega$  | JIS C 5201-1 4.33  |

## ●Dimensions (Unit : mm)



●Packaging

| Reel  | Taping  |  |                   |                |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |
|---|---|--|-------------------|----------------|--|---|--|-------------------|--|---|---|---|----------------|----------------|---------------|----------------|----------------|---------------|---------------|----------------|----------------|----------------|----------------|---|--|---------------|---------------|----------------|----------|
|  <p style="text-align: center;">(Unit : mm)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> </tr> <tr> <td><math>\phi 180 \begin{smallmatrix} 0 \\ -3 \end{smallmatrix}</math></td> <td><math>\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}</math></td> <td><math>9 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}</math></td> <td><math>\phi 13 \pm 0.2</math></td> </tr> </table> | A   | B  | C                 | D              | $\phi 180 \begin{smallmatrix} 0 \\ -3 \end{smallmatrix}$ | $\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ | $9 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$ | $\phi 13 \pm 0.2$ |  <p style="text-align: center;">(Unit : mm)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>W</td> <td>F</td> <td>E</td> <td>A<sub>0</sub></td> <td>B<sub>0</sub></td> </tr> <tr> <td><math>8.0 \pm 0.3</math></td> <td><math>3.5 \pm 0.05</math></td> <td><math>1.75 \pm 0.1</math></td> <td><math>3.0 \pm 0.1</math></td> <td><math>3.5 \pm 0.1</math></td> </tr> <tr> <td>D<sub>0</sub></td> <td>P<sub>0</sub></td> <td>P<sub>1</sub></td> <td>P<sub>2</sub></td> <td>K</td> </tr> <tr> <td><math>\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}</math></td> <td><math>4.0 \pm 0.1</math></td> <td><math>4.0 \pm 0.1</math></td> <td><math>2.0 \pm 0.05</math></td> <td>Max. 1.1</td> </tr> </table> | W | F | E | A <sub>0</sub> | B <sub>0</sub> | $8.0 \pm 0.3$ | $3.5 \pm 0.05$ | $1.75 \pm 0.1$ | $3.0 \pm 0.1$ | $3.5 \pm 0.1$ | D <sub>0</sub> | P <sub>0</sub> | P <sub>1</sub> | P <sub>2</sub> | K | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | $4.0 \pm 0.1$ | $4.0 \pm 0.1$ | $2.0 \pm 0.05$ | Max. 1.1 |
| A   | B   | C  | D                 |                |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |
| $\phi 180 \begin{smallmatrix} 0 \\ -3 \end{smallmatrix}$  | $\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ | $9 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$ | $\phi 13 \pm 0.2$ |                |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |
| W   | F   | E  | A <sub>0</sub>    | B <sub>0</sub> |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |
| $8.0 \pm 0.3$   | $3.5 \pm 0.05$  | $1.75 \pm 0.1$                                       | $3.0 \pm 0.1$     | $3.5 \pm 0.1$  |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |
| D <sub>0</sub>  | P <sub>0</sub>  | P <sub>1</sub>                                       | P <sub>2</sub>    | K              |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |
| $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$  | $4.0 \pm 0.1$   | $4.0 \pm 0.1$  | $2.0 \pm 0.05$    | Max. 1.1       |  |   |  |                   |  |   |   |   |                |                |               |                |                |               |               |                |                |                |                |   |  |               |               |                |          |

●Part No. Explanation

| M                         | C               | R | 2 | 5 | J  | Z | H                         | J   |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
|---------------------------|-----------------|---|---|---|--|---|---------------------------|-----|---|-----|---------------------------|--|--|--|--|--|--|--|----------------------|-----------------|---|------------|---|------------|
| <b>Part No.</b>           |                 |   |   |   | <b>Resistance tolerance</b>  |   | <b>Nominal resistance</b> |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
|                           |                 |   |   |   | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>F</td> <td>±1%</td> </tr> <tr> <td>J</td> <td>±5%</td> </tr> <tr> <td colspan="2">J is also used for jumper</td> </tr> </table> |   | F                         | ±1% | J | ±5% | J is also used for jumper |  | <p style="font-size: small;">Resistance code, 3 or 4 digits.<br/>000 denotes jumper type.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="font-size: x-small;">Resistance tolerance</th> <th style="font-size: x-small;">Resistance code</th> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">: 4 digits</td> </tr> <tr> <td style="text-align: center;">J</td> <td style="text-align: center;">: 3 digits</td> </tr> </table> |  |  |  |  |  | Resistance tolerance | Resistance code | F | : 4 digits | J | : 3 digits |
| F                         | ±1%             |   |   |   |  |   |                           |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
| J                         | ±5%             |   |   |   |  |   |                           |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
| J is also used for jumper |                 |   |   |   |  |   |                           |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
| Resistance tolerance      | Resistance code |   |   |   |  |   |                           |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
| F                         | : 4 digits      |   |   |   |  |   |                           |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |
| J                         | : 3 digits      |   |   |   |  |   |                           |     |   |     |                           |  |  |  |  |  |  |  |                      |                 |   |            |   |            |

Packaging Specifications Code

| Part No. | Code | Resistance tolerance |        | Packaging specifications  | Reel          | Basic ordering unit (pcs) |
|----------|------|----------------------|--------|---------------------------|---------------|---------------------------|
|          |      | J(±5%)               | F(±1%) |                           |               |                           |
| MCR25    | JZH  | ◎                    | ◎      | Embossed tape (4mm Pitch) | φ180mm (7in.) | 4,000                     |

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

## Notes

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