

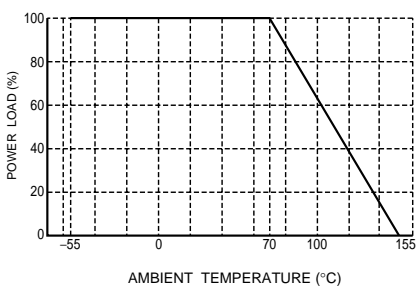
# Thick film rectangular Low resistance series

## MCR10 (2012 size (0805 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) 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	<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. 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="text-align: center;">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>1.58V(10Ω)</td> </tr> </table>	Limiting element voltage	1.58V(10Ω)
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Nominal resistance	See Table 1.			
Operating temperature		-55°C to + 155°C		

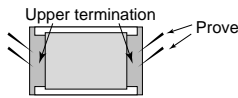
## Resistors

Table 1

Resistance tolerance	Special specification	Resistance range ( $\Omega$ )	Resistance temperature coefficient (ppm/ $^{\circ}$ C)
F ( $\pm 1\%$ )	L	$0.15 \leq R \leq 10$ (E24)	$\pm 250$
	L	$0.1 \leq R \leq 0.13$ (E24)	$400 \pm 200$
	S	$0.047 \leq R \leq 0.091$ (E24)	$500 \pm 300$
J ( $\pm 5\%$ )	L	$0.15 \leq R \leq 1.0$ (E24)	$\pm 250$
	L	$0.1 \leq R \leq 0.13$ (E24)	$400 \pm 200$
	S	$0.047 \leq R \leq 0.091$ (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 : $2.0 \pm 0.5$ 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 : $260 \pm 5^{\circ}$ C Duration of immersion : $10 \pm 1$ s.
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
Resistance to solvent	$\pm (0.5\% + 0.005\Omega)$	JIS C 5201-1 4.29 $23^{\circ}$ C $\pm 5^{\circ}$ C, Immersion cleaning, $5 \pm 0.5$ 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

Resistors

●External dimensions (Unit : mm)

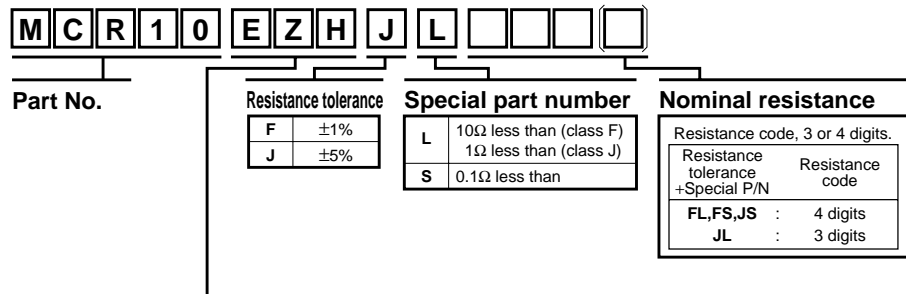
No.	Material
①	Resistive element
②	Silver thick film electrode
③	Nickel electrode
④	Sn electrode
⑤	Alumina substrate
⑥	Overcoating

●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><math>\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}</math></td> <td><math>\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}</math></td> <td><math>13 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}</math></td> <td><math>\phi 13 \pm 0.2</math></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>(Unit: mm)</p> <table border="1"> <thead> <tr> <th>W</th> <th>F</th> <th>E</th> <th>A<sub>0</sub></th> <th>B<sub>0</sub></th> </tr> </thead> <tbody> <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>1.65 \begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}</math></td> <td><math>2.4 \begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}</math></td> </tr> <tr> <th>D<sub>0</sub></th> <th>P<sub>0</sub></th> <th>P<sub>1</sub></th> <th>P<sub>2</sub></th> <th>T<sub>2</sub></th> </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> </tbody> </table>	W	F	E	A <sub>0</sub>	B <sub>0</sub>	$8.0 \pm 0.3$	$3.5 \pm 0.05$	$1.75 \pm 0.1$	$1.65 \begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}$	$2.4 \begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}$	D <sub>0</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	T <sub>2</sub>	$\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$	$4.0 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	Max. 1.1
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Resistors

●Part designation



**Packaging Specifications Code**

Part No.	Code	Resistance tolerance		Packaging specifications	Reel	Basic ordering unit(pcs)
		J(±5%)	F(±1%)			
MCR10	EZH	◎	◎	Paper tape (4mm Pitch)	φ180mm (7in.)	5,000

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

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