

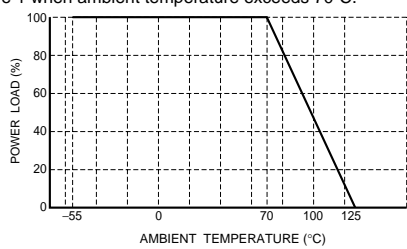
# Thick Film Chip Resistors

## MCR50 (2010 size : 1 / 2W)

### ●Features

- 1) Made of same material as the general purpose chip resistors (MCR10 / 18).
- 2) Highly reliable chip resistor  
Ruthenium oxide dielectric 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 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><p style="text-align: center;">Fig.1</p></div>	0.5W (1 / 2W) 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. <div><math display="block">E = \sqrt{P \times R}</math><p>E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)</p></div>	Limiting element voltage	
		200V	
Nominal resistance	See Table 1.		
Operating temperature		-55°C to +125°C	

### Jumper type

Resistance	Max. 50mΩ
Rated current	3A
Operating temperature	-55°C to +125°C

Table 1

Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
F (±1%)	10≤R≤180k (E24,96)	±100
J (±5%)	1.0≤R<2.0 (E24)	500±350
	2.2≤R<9.1 (E24)	±500
	10≤R≤330k (E24)	±200
	360k<R≤560k (E24)	±350

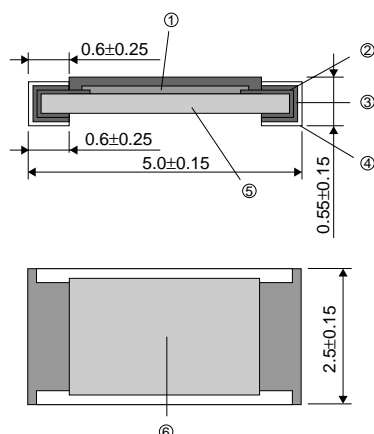
●Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady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

## Resistors

## ●Characteristics

Item	Guaranteed value		Test conditions (JIS C 5201-1)
	Resistor type	Jumper type	
Resistance	J : $\pm 5\%$ 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 Measurement : $-55 / +25 / +125^{\circ}\text{C}$
Overload	$\pm (2.0\%+0.1\Omega)$	Max. 50m $\Omega$	JIS C 5201-1 4.13 Rated voltage (current) $\times 2.5$ , 2s. 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 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	$\pm (1.0\%+0.05\Omega)$ No remarkable abnormality on the appearance.	Max. 50m $\Omega$	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	$\pm (1.0\%+0.05\Omega)$	Max. 50m $\Omega$	JIS C 5201-1 4.19 Test temp. : $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ 5cyc
Damp heat, steady state	$\pm (3.0\%+0.1\Omega)$	Max. 100m $\Omega$	JIS C 5201-1 4.24 $40^{\circ}\text{C}$ , 93%RH Test time : 1,000h to 1,048h
Endurance at $70^{\circ}\text{C}$	$\pm (3.0\%+0.1\Omega)$	Max. 100m $\Omega$	JIS C 5201-1 4.25.1 Rated voltage (current), $70^{\circ}\text{C}$ 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	$\pm (3.0\%+0.1\Omega)$	Max. 100m $\Omega$	JIS C 5201-1 4.25.3 $125^{\circ}\text{C}$ 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 $23\pm 5^{\circ}\text{C}$ , Immersion cleaning, $5\pm 0.5\text{min}$ . Solvent : 2-propanol
Bend strength of the end face plating	$\pm (1.0\%+0.05\Omega)$ Without mechanical damage such as breaks.	Max. 50m $\Omega$	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 (Glass)

## Resistors

## ●Packaging

Reel

Diagram of a reel showing dimensions A, B, D, C, and a label. The reel is EIAJ ET-7200B compliant.

EIAJ ET-7200B compliant

(Unit : mm)

A	B	C	D
$\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$	$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$	$13 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$\phi 13 \pm 0.2$

Taping

Diagram of a resistor tape showing dimensions W, E, A<sub>0</sub>, B<sub>0</sub>, P<sub>0</sub>, P<sub>1</sub>, P<sub>2</sub>, and K.

(Unit : mm)

W	F	E	A <sub>0</sub>	B <sub>0</sub>
$12.0 \pm 0.3$	$5.5 \pm 0.05$	$1.75 \pm 0.1$	$3.4 \pm 0.2$	$5.6 \pm 0.2$
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 5 0 J Z H J**        

Part No.

Resistance tolerance

<b>F</b>	$\pm 1\%$
<b>J</b>	$\pm 5\%$
J is also used for jumper	

Nominal resistance

Resistance code, 3 or 4 digits.  
000 denotes jumper type.

Resistance tolerance	Resistance code
<b>F</b>	: 4 digits
<b>J</b>	: 3 digits

## Packaging Specifications Code

Part No.	Code	Resistance tolerance		Packaging specifications	Reel	Basic ordering unit (pcs)
		J( $\pm 5\%$ )	F( $\pm 1\%$ )			
<b>MCR50</b>	JZH	○	○	Embossed tape (4mm Pitch)	$\phi 180\text{mm}$ (7in.)	4,000

Reel ( $\phi 180$ ) : JEITA ET-7200B

○ : Standard product

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