

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

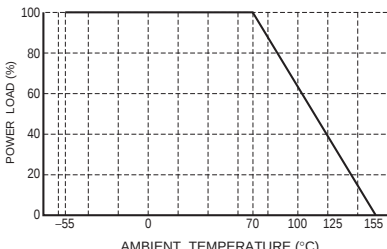
Item	Conditions	Specifications
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.  Fig.1	0.5W (1 / 2W) at 70°C
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting element voltage, the voltage rating is equal to the maximum operating voltage. $E = \sqrt{P \times R}$ E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)	Limiting element voltage 200V
Nominal resistance	See Table 1.	
Operating temperature		-55°C to +155°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

Jumper type

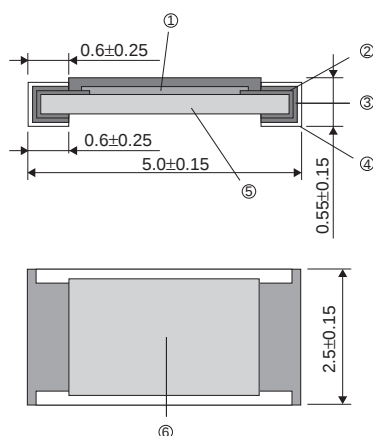
Resistance	Max. 50mΩ
Rated current	3A
Operating temperature	-55°C to +155°C

●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 : $\pm 5\%$ F : $\pm 1\%$	Max. 50m Ω	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1		JIS C 5201-1 4.8 Measurement : -55 / +25 / +125°C
Overload	$\pm (2.0\%+0.1\Omega)$	Max. 50m Ω	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 ± 0.5 s.
Resistance to soldering heat	$\pm (1.0\%+0.05\Omega)$ No remarkable abnormality on the appearance.	Max. 50m Ω	JIS C 5201-1 4.18 Soldering condition : 260 $\pm 5^\circ\text{C}$ Duration of immersion : 10 ± 1 s.
Rapid change of temperature	$\pm (1.0\%+0.05\Omega)$	Max. 50m Ω	JIS C 5201-1 4.19 Test temp. : -55°C to +125°C 5cyc
Damp heat, steady state	$\pm (3.0\%+0.1\Omega)$	Max. 100m Ω	JIS C 5201-1 4.24 40°C, 93%RH Test time : 1,000h to 1,048h
Endurance at 70°C	$\pm (3.0\%+0.1\Omega)$	Max. 100m Ω	JIS C 5201-1 4.25.1 Rated voltage (current), 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	$\pm (3.0\%+0.1\Omega)$	Max. 100m Ω	JIS C 5201-1 4.25.3 125°C Test time : 1,000h to 1,048h
Resistance to solvent	$\pm (1.0\%+0.05\Omega)$	Max. 50m Ω	JIS C 5201-1 4.29 23 $\pm 5^\circ\text{C}$, Immersion cleaning, 5 ± 0.5 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 Ω	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)

●Packaging

Reel

Diagram of a reel of resistors showing dimensions A, B, C, D, and a label. The reel is circular with a central hub and four spokes. The dimensions are defined as follows: A is the outer diameter, B is the inner diameter, C is the width of the reel, D is the diameter of the central hub, and Label is the location of the label on the reel.

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, B0, A0, P0, P1, P2, D0, K, and a label. The tape is rectangular with a central hub and four spokes. The dimensions are defined as follows: W is the width of the tape, E is the thickness of the tape, B0 is the width of the central hub, A0 is the width of the spokes, P0 is the pitch between the central hub and the first spoke, P1 is the pitch between the first and second spokes, P2 is the pitch between the second and third spokes, D0 is the diameter of the central hub, and K is the width of the label.

(Unit : mm)

W	F	E	A0	B0
12.0 ± 0.3	5.5 ± 0.05	1.75 ± 0.1	3.4 ± 0.2	5.6 ± 0.2
D0	P0	P1	P2	K
$\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	Max. 1.1

●Part No. Explanation

M	C	R	5	0	J	Z	H	J				
Part No.					Resistance tolerance				Nominal resistance			
					F	±1%			Resistance code, 3 or 4 digits. 000 denotes jumper type.			
					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($\pm 5\%$)	F($\pm 1\%$)			
MCR50	JZH	⊙	⊙	Embossed tape (4mm Pitch)	$\phi 180\text{mm}$ (7in.)	4,000

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

Notes

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