

# Compact Film Chip Resistors

**MCR004 (0402 size : 1 / 32W)**

**●Features**

- 1) Extremely small  
Area ratio is 50% smaller than that of chip 0603.
- 2) High dimensional precision  
Novel semiconductor process technology guarantees an external dimensional tolerance of ±20µm.
- 3) Pressed carrier tape applications  
Using a pressed carrier tape reduces mounting errors compared with conventional carrier tapes.
- 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**

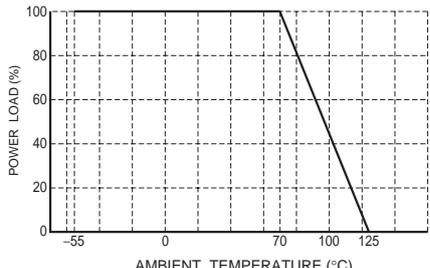
Item	Conditions	Specifications
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.   <p style="text-align: center;">Fig.1</p>	0.031W (1 / 32W) at 70°C
Rated voltage	The voltage rating is calculated by the following equation. If the 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   15V
Nominal resistance	See Table 1.	
Operating temperature		-55°C to +125°C

Table 1

Jumper type		Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
Resistance	Max. 50mΩ	J (±5%)	10 ≤ R < 100 (E24)	±300
			100 ≤ R ≤ 3M (E24)	±250
Rated current	0.5A	F (±1%)	10 ≤ R < 100 (E24)	±300
			100 ≤ R ≤ 3M (E24)	±250
Operating temperature	-55°C to +125°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 : ±5% F : ±1%	Max. 50mΩ	JIS C 5201-1 4.5
Variation of resistance with temperature	See <u>Table.1</u>	Max. 50mΩ	JIS C 5201-1 4.8 Measurement : +20 / -55 / +125°C
Overload	± (2.0%+0.1Ω)	Max. 50mΩ	JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s. Maximum overload voltage : 30V
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±5°C Duration of immersion : 2.0±0.5s.
Resistance to soldering heat	± (1.0%+0.05Ω) No remarkable abnormality on the appearance.	Max. 50mΩ	JIS C 5201-1 4.18 Soldering condition : 260±5°C Duration of immersion : 10±1s.
Rapid change of temperature	± (1.0%+0.05Ω)	Max. 50mΩ	JIS C 5201-1 4.19 Test temp. : -55°C to +125°C 100cyc
Damp heat, steady state	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.24 40°C, 93%RH Test time : 1,000h to 1,048h
Endurance at 70°C	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.25.1 Rated voltage (current), 70°C±3°C 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.25.3 125°C Test time : 1,000h to 1,048h
Resistance to solvent	± (1.0%+0.05Ω)	Max. 50mΩ	JIS C 5201-1 4.29 23±5°C, Immersion cleaning, 5±0.5min. Solvent : 2-propanol
Bend strength of the end face plating	± (1.0%+0.05Ω) Without mechanical damage such as breaks.	Max. 50mΩ	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	Nickel electrode
⑤	Sn electrode
⑥	Alumina substrate
⑦	Overcoating (Resin)

●Packaging  
 • Paper tape(2mm Pitch)

Reel

EIAJ ET-7200B compliant

(Unit : mm)

A	B	C	D
$\phi 180 \begin{smallmatrix} 0 \\ -15 \end{smallmatrix}$	$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$	$9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$\phi 13 \pm 0.2$

Taping

(Unit : mm)

W	F	E	A <sub>0</sub>	B <sub>0</sub>
8.0±0.2	3.5±0.05	1.75±0.1	0.24±0.03	0.45±0.03
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±0.1	2.0±0.05	2.0±0.05	Max. 0.50

• Embossed tape(1mm Pitch)

Reel

(Unit : mm)

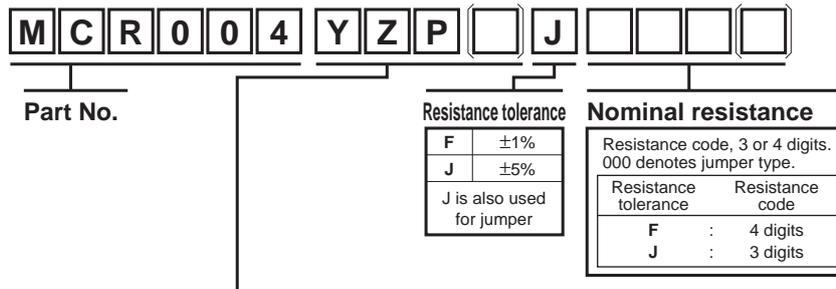
A	B	C	D
$\phi 178 \pm 1.0$	$\phi 60 \pm 1.0$	$5 \begin{smallmatrix} +1.0 \\ -0.6 \end{smallmatrix}$	$\phi 13 \pm 0.2$

Taping

(Unit : mm)

W	F	E	A <sub>0</sub>	B <sub>0</sub>
4.0±0.05	1.8±0.02	0.9±0.05	0.23±0.02	0.43±0.02
D <sub>0</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	T
0.8±0.04	2.0±0.04	1.0±0.02	1.0±0.02	0.2±0.02

●Part No. Explanation



Packaging Specifications Code

Part No.	Code	Resistance tolerance		Packaging specifications	Reel	Basic ordering unit (pcs)
		J(±5%)	F(±1%)			
MCR004	YZP	⊙	⊙	Paper tape (2mm Pitch)	φ180mm	15,000
	RZP	⊙	⊙	Embossed tape (1mm Pitch)	φ180mm	40,000

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

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