Compact Film Chip Resistors

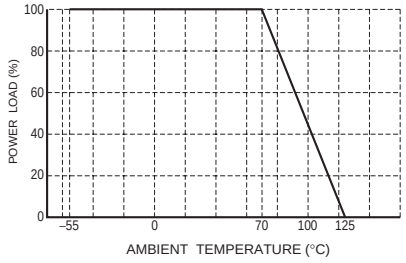
MCR004 (0402 size : 1 / 32W)

●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 ±20□m.
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.  Fig.1	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

Jumper type

Resistance	Max. 50mΩ
Rated current	0.5A
Operating temperature	–55°C to +125°C

Table 1

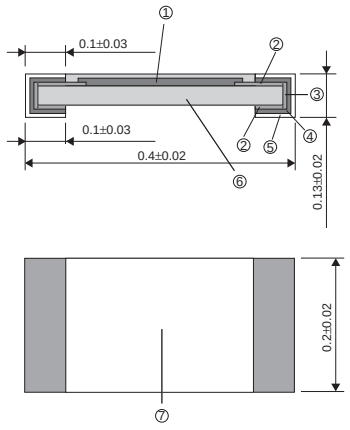
Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
J (±5%)	10≤R≤3M (E24)	±250
F (±1%)	10≤R≤3M (E24)	±250

●Before using components in circuits where they will be exposed to transients such as pulse loads (short–duration, high– level loads), be certain to valuate 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 Table.1	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

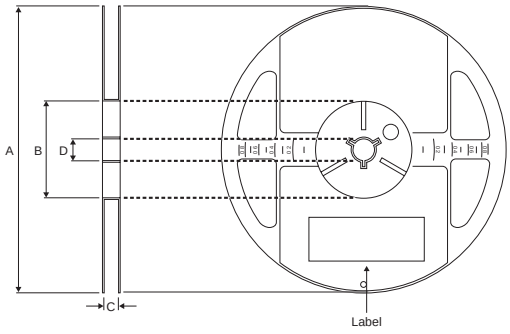
●Dimensions (Unit : mm)



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

Reel

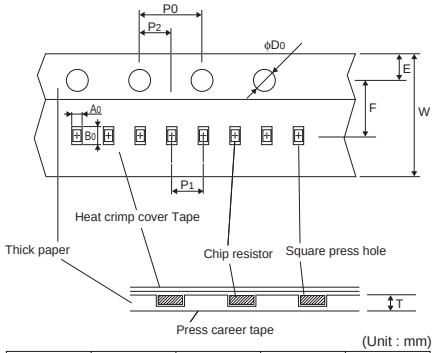


EIAJ ET-7200B compliant

(Unit : mm)

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

Taping



(Unit : mm)

W	F	E	A0	B0
8.0±0.2	3.5±0.05	1.75±0.1	0.24±0.03	0.45±0.03
D0	P0	P1	P2	T
$\phi 1.5\ ^{+0.1}_{0}$	4.0±0.1	2.0±0.05	2.0±0.05	Max. 0.50

●Part No. Explanation

M C R 0 0 4 Y Z P □ J □ □ □ □

Part No.

Resistance tolerance

F	±1%
J	±5%

J is also used for jumper

Nominal resistance

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

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%)			
MCR004	YZP	◎	◎	Paper tape (2mm Pitch)	φ180mm	15,000

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

Notes

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