

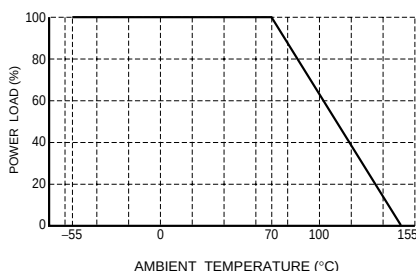
Thick film rectangular

MCR18 (3216 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) Leading the world in development and mass production.
Since start of production in 1976 (first in the world), this component has established a solid reputation as a general-purpose chip resistor.
- 5) ROHM resistors have approved ISO-9001 certification.
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	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.  Fig.1	0.25W (1 / 4W) 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	

Resistors

Jumper type

Resistance	Max. 50mΩ
Rated current	2A
Operating temperature	-55°C to +155°C

Table 1

Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
F (±1%)	0.1 ≤ R < 0.15 (E24)	400±200
	0.15 ≤ R < 10 (E24)	±250
	10 ≤ R ≤ 2.2M (E24,96)	±100
J (±5%)	0.1 ≤ R < 0.15 (E24)	400±200
	0.15 ≤ R < 1 (E24)	±250
	1.0 ≤ R < 2.2 (E24)	500±350
	2.2 ≤ R < 10 (E24)	±500
	10 ≤ R ≤ 10M (E24)	±200

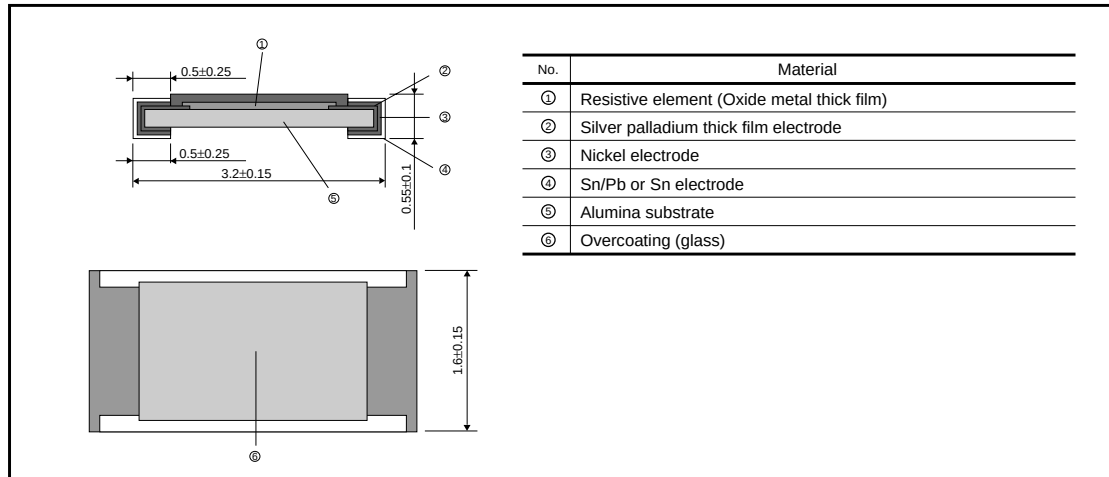
- Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady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

● Characteristics

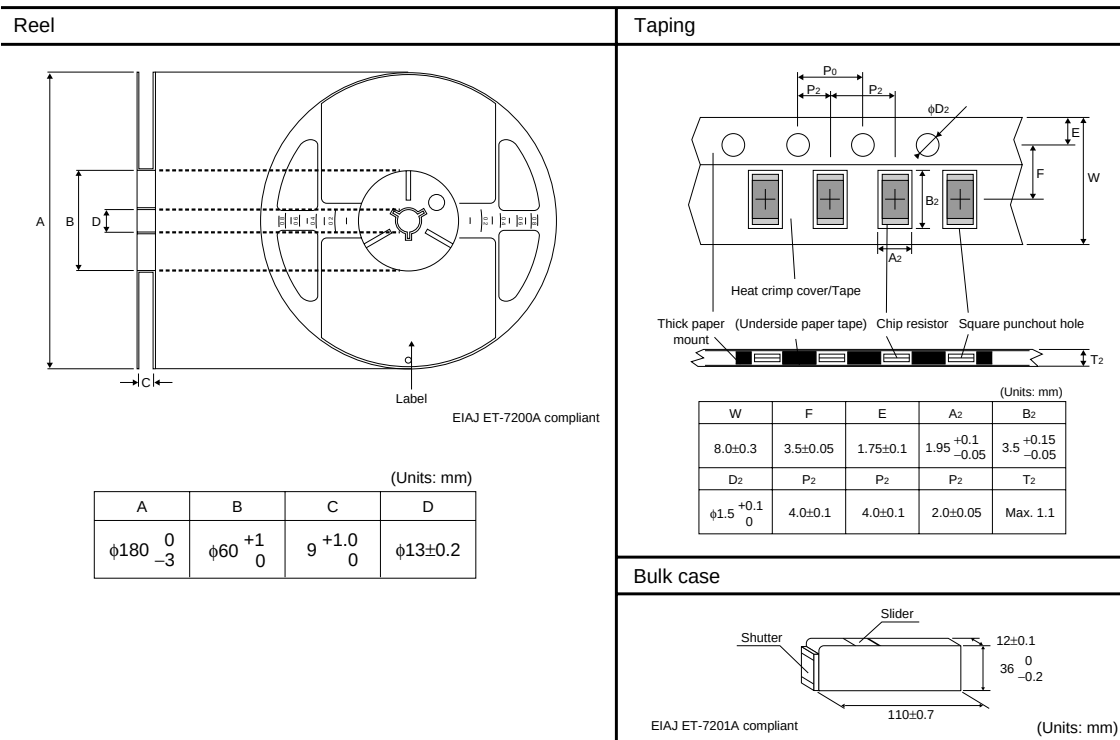
Item	Guaranteed value		Test conditions (JIS C 5201-1)
	Resistor type	Jumper type	
Resistance	J : ±5% F : ±1%	Max. 50mΩ	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1		JIS C 5201-1 4.8 Measurement : -55 / +25 / +125°C
Overload	± (2.0%+0.1Ω)	Max. 50mΩ	JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s. Limiting Element Voltage×2 : 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±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~+125°C 5cyc
Damp heat, steady state	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.24 40°C, 93%RH Test time : 1,000h~1,048h
Endurance at 70°C	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.25.1 Rated voltage (current), 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h~1,048h
Endurance	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.25.3 155°C Test time : 1,000h~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

Resistors

●External dimensions (Units : mm)



●Packaging



3-digit or 4-digit IEC coding system

Part No. Nominal resistance

Packaging / Processing specifications Resistance tolerance Special part number

Part No.	Code	Packaging	Standard ordering unit(pcs)
MCR18	EZH	Paper tape	5,000
	PZHI	Bulk case	5,000

F	±1%	J	±5%
Specify "J" for jumper also.			

Blank	10Ω or more (F class) 1Ω or more (J class)
L	Up to 10Ω (F class) Up to 10Ω (J class)

JIS C 5201-1 4.4.2
SAMPLE SIZE : n=20pcs
MICROMETER

RESISTANCE (Ω)	LENGTH (mm)
0.1	1.60
1	1.60
10	1.65
100	1.60
1k	1.60
10k	1.65
100k	1.60
1M	1.60
10M	1.65

JIS C 5201-1 4.4.2
SAMPLE SIZE : n=20pcs
MICROMETER

Resistance (Ω)	Width (nm)
0.1	1.56
1	1.56
10	1.56
100	1.56
1k	1.56
10k	1.56
100k	1.56
1M	1.54
10M	1.56

JIS C 5201-1 4.4.2
SAMPLE SIZE : n=20pcs
MICROMETER

RESISTANCE (Ω)	THICKNESS (mm)
0.1	0.55
1	0.55
10	0.55
100	0.55
1k	0.55
10k	0.55
100k	0.55
1M	0.55
10M	0.55

JIS C 5201-1 4.5
SAMPLE SIZE : n=20pcs
20°C 65%RH

Resistance (Ω)	DC Resistance (%) - Series 1 (Circles)	DC Resistance (%) - Series 2 (Triangles)	DC Resistance (%) - Series 3 (Squares)
0.1	-0.5	-2.0	1.5
1	0.0	-0.5	1.0
10	0.5	0.0	2.5
100	0.0	-0.5	1.0
1k	0.5	0.0	1.5
10k	0.0	-2.0	1.5
100k	0.5	0.0	2.0
1M	0.0	0.0	2.0
10M	0.5	-0.5	1.5

JIS C 5201-1 4.8
 SAMPLE SIZE : n=10pcs
 ○ 25°C / -55°C
 ● 25°C / 125°C

TEMPERATURE COEFFICIENT (ppm/°C)

RESISTANCE (Ω)

JIS C 5201-1 4.13
 SAMPLE SIZE : n=10pcs
 RATED VOLTAGE: 2.5 TIMES
 LIMITING ELEMENT VOLTAGE: 400V

RESISTANCE (Ω)	ΔPR (%)
0.1	0.0
1	0.0
10	0.0
100	0.0
1k	0.0
10k	0.0
100k	-0.5
1M	-0.5
10M	-0.5

Fig.7 Overload

Resistors

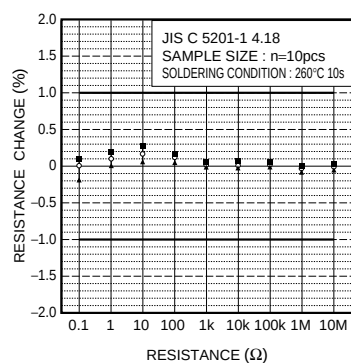


Fig.8 Resistance to soldering heat

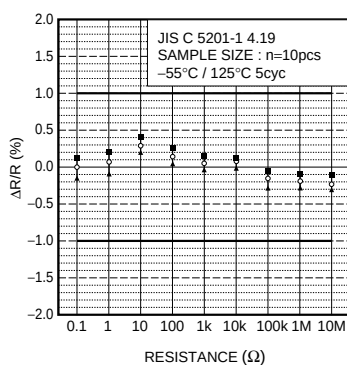


Fig.9 Rapid change of temperature

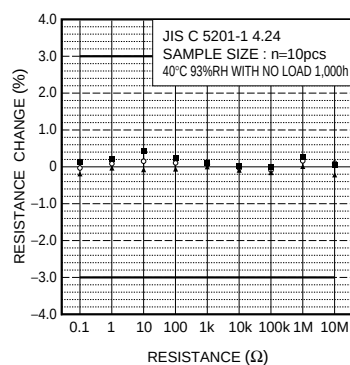


Fig.10 Damp heat, steady state

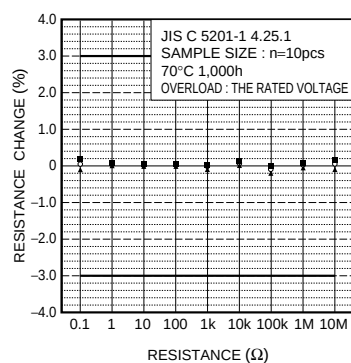


Fig.11 Endurance (at 70°C)

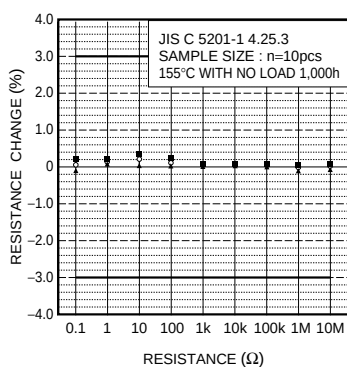


Fig.12 Endurance

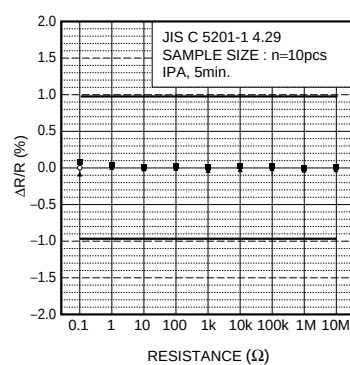


Fig.13 Resistance to solvents

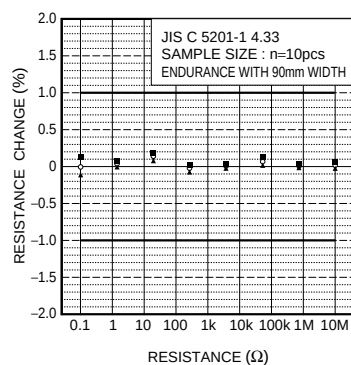


Fig.14 Bend strength of the end face plating