Ultra-low Ohmic Resistors for Current Detection

PMR50

●Features

1) Ultra low-ohmic resistance range (1mΩ~)
2) Improved current detection accuracy by trimming-less structure.
   Highly recommended for large current / High speed switching circuit.
3) Completely Pb free product
4) ISO9001- / ISO/TS 16949- approved

●Rating

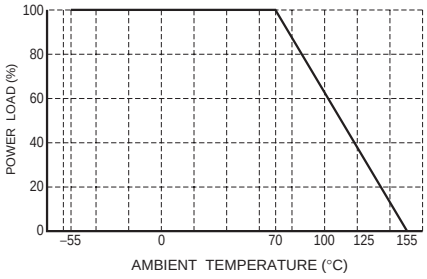
Item	Conditions	Specifications
Rated power	For resistors operated at the ambient temperature in excess of 70℃, the load shall be derated in accordance with Fig.1  Fig.1	1W at 70°C
Rated voltage Rated current	Rated voltage and current are determined from the following. $E=\sqrt{P\times R}$ $E=\sqrt{P/R}$ E: Rated voltage (V) I : Rated current (A) P: Rated power (W) R: Resistance (Ω)	
Nominal resistance	See Table 1.	
Operating temperature		−55°C to +155°C

Table.1

RESISTANCE (mΩ)	TOLERANCE	SPECIAL CODE	TEMPERATURE COEFFICIENT (ppm / ˚C)
1,2,3,4	F (±1%)	V	±100
5,6,7,8,9,10	J (±5%)	U	

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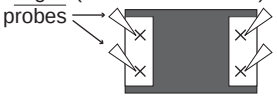
●Characteristics

Item	Guaranteed value Resistor type	Test conditions (JIS C 5201-1)
Resistance	F : ±1% J : ±5%	JIS C 5201-1 4.5 Measuring method : Measure under terminations by 4 probes. Fig.2 (Under terminations) probes 
Variation of resistance with temperature	See Table.1	JIS C 5201-1 4.8 Measurement : 25 / -55 / +25 / +125°C
Overload	± (2.0%+0.0005Ω)	JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s.
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%+0.0005Ω) No remarkable abnormality on the appearance.	JIS C 5201-1 4.18 Soldering condition : 260±5°C Duration of immersion : 10±1s.
Rapid change of temperature	± (1.0%+0.0005Ω)	JIS C 5201-1 4.19 Test temp. : –55°C to +125°C 5cyc
Damp heat, steady state	± (3.0%+0.0005Ω)	JIS C 5201-1 4.24 40°C, 93%RH Test time : 56days
Endurance at 70°C	± (3.0%+0.0005Ω)	JIS C 5201-1 4.25.1 Rated power, 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	± (3.0%+0.0005Ω)	JIS C 5201-1 4.25.3 155°C Test time : 1,000h to 1,048h
Component Solvent Resistance	± (0.5%+0.0005Ω)	JIS C 5201-1 4.29 23°C±5°C Solvent : 2-propanol
Bend strength of the end face plating	Without open.	JIS C 5201-1 4.33

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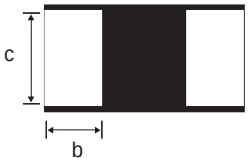
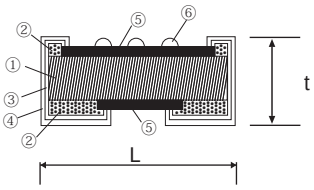
●Dimensions&Construction

（The Surface）

（The back）



（The cross section）



Resistance	Measure					
	L ± 0.20	W ± 0.20	t ± 0.15	a ± 0.20	b ± 0.20	c ± 0.20
1mΩ	5.00	2.50	0.52	0.50	1.85	1.95
2mΩ			0.42		1.30	
3mΩ			0.52		1.40	
4mΩ			0.42		1.40	
5mΩ			0.42		1.05	
6mΩ			0.32		1.40	
7mΩ			0.32		1.10	
8mΩ			0.32		0.90	
9mΩ			0.32		1.10	
10mΩ			0.32		0.90	

(Unit:mm)

No.	Material
①	Resistive metal element(Ni-Cu/Ni-Cr Alloy)
②	Primary electrode(Cu)
③	Middle electrode(Ni)
④	External electrode(Sn)
⑤	Overcoat(Resin:Black)
⑥	Marking(Resin:Yellow)

●Part No. Explanation

P	M	R	5	0	H	Z	P	J	V				

Part No.

Resistance tolerance

F	±1%
J	±5%

Special part number

U	5 to 10mΩ
V	1 to 4mΩ

Nominal resistance

Resistance code, 3 or 4 digits.

Resistance tolerance		Resistance code
F	:	4 digits
J	:	3 digits

Resistance Value (Ω)	Resistance Tolerance	
	J	F
1mΩ	1L0	1L00
2mΩ	2L0	2L00
3mΩ	3L0	3L00
4mΩ	4L0	4L00
5mΩ	5L0	5L00
6mΩ	6L0	6L00
7mΩ	7L0	7L00
8mΩ	8L0	8L00
9mΩ	9L0	9L00
10mΩ	10L	10L0

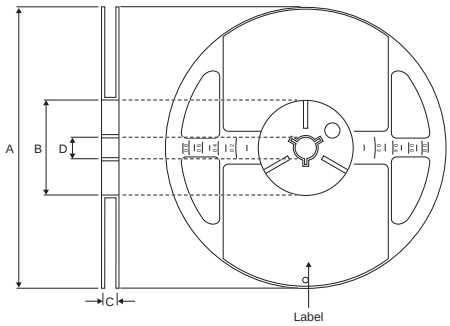
Packaging Specifications Code

Part No.	Code	Resistance tolerance		Packaging specifications	Reel	Basic ordering unit (pcs)
		J(±5%)	F(±1%)			
PMR50	HZP	◎	◎	Embossed tape (4mm Pitch)	ϕ180mm (7in.)	2,000

Reel (ϕ180) : Compatible with JEITA standard "EIAJ ET-7200B"
◎ : Standard product

●Packaging

Reel

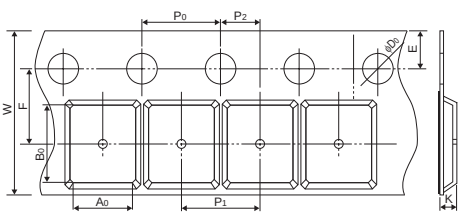


EIAJ ET-7200B compliant

(Unit : mm)

A	B	C	D
ϕ180 $^{0}_{-1.5}$	ϕ60 $^{+1}_{0}$	13 $^{+1.0}_{0}$	ϕ13±0.2

Taping



(Unit : mm)

W	F	E	A0	B0
12.0±0.3	5.5±0.05	1.75±0.1	2.9±0.2	5.3±0.2
D0	P0	P1	P2	K
ϕ1.5 $^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max. 1.1

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