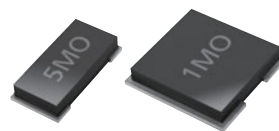


Current Sensing Resistors, Metal Plate Type

Type: **ERJ MS4, MS6**



Features

- Ideal for current sensing solution
- Small case size with high power
- Metal plate bonding technology. Excellent long term stability
- Outer Resin with high heat dissipation. Wide temperature range (-65 °C to +170 °C)
- AEC-Q200 qualified
- RoHS compliant

As for Packaging Methods, Soldering Conditions and Safety Precautions,

Please see Data Files

Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	M	S	4	S	F	2	M	0	U
Product Code		Type Code			Resistance Tolerance		Resistance Value		Packaging Methods		
Metal Plate Chip Resistors		Code	Inch size	Electrode type	Code	Tolerance	Shown by 3 digits or letters. Decimal point is expressed by M as 2.0 mΩ=2M0, 0.5 mΩ=M50, 10.0 mΩ=10M		Code	Packaging	Part No.
		S4S	2512	Standard	F	±1 %			U	Embossed Carrier Taping 4 mm pitch, 2,000 pcs.	ERJMS4
		S4H	2512	Narrow						Embossed Carrier Taping 8 mm pitch, 1,000 pcs.	ERJMS6
		S6S	2526	Standard							

Ratings

Part No. (inch size)	Power Rating at 70 °C (W)	Resistance Range (mΩ)	Resistance Tolerance (%)	T.C.R. (×10 ⁻⁶ /°C)	Category Temperature Range (°C)	Terminal temp. upper limit (°C)
ERJMS4S (2512)	3	1, 2, 3, 4	F : ±1	±75	-65 to +170	130
ERJMS4H (2512)	3	5, 6	F : ±1	±75	-65 to +170	130
	2	7, 8, 9, 10	F : ±1	±75	-65 to +170	100
ERJMS6S (2526)	5	0.5, 1, 2	F : ±1	±75	-65 to +170	130

* Please contact us when resistors of irregular series are needed.

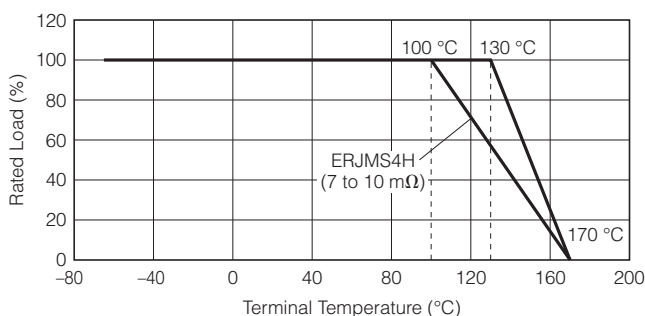
Power Derating Curve

If the terminal temperature of the resistor is more than terminal temperature upper limit value of the rated table, please reduce the rated power according to the Power Derating Curve shown in the figure on the right.

<Supplemented>

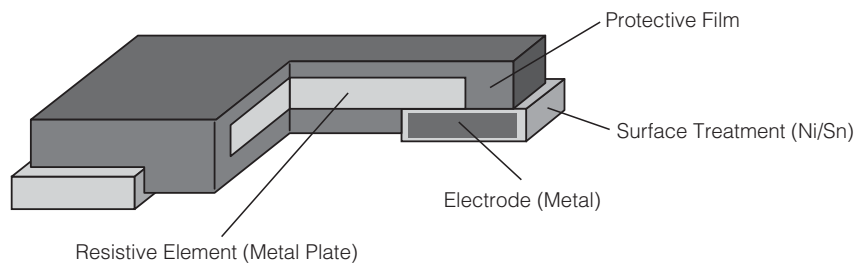
In the case of the temperature measurement of the terminal portion of the resistor, Please perform under the following conditions.

- 1) Terminal temperature measurement, please apply the temperature of the higher of either the left or right electrode upper surface of the resistor.
- 2) Please measure the temperature of the resistor in the land pattern printed of circuit board and plan to use by real conditions.



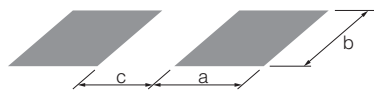
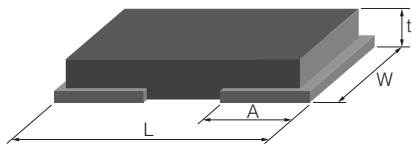
Panasonic Current Sensing Resistors, Metal Plate Type

Construction



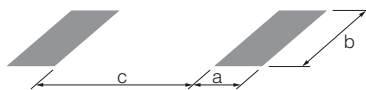
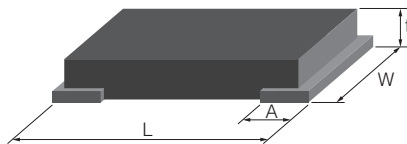
Dimensions in mm (not to scale), Recommended Land Pattern

● ERJMS4S

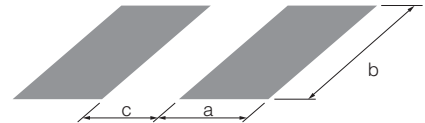
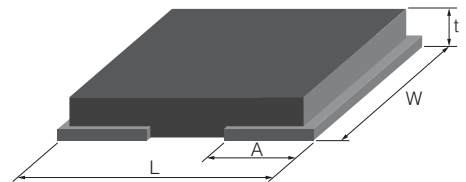


Land Pattern

● ERJMS4H

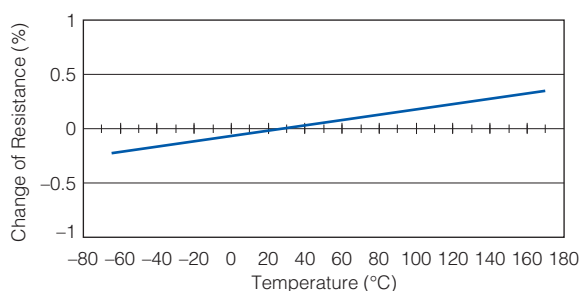


● ERJMS6S

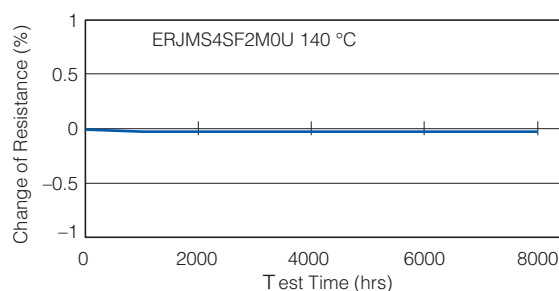


Part No. (inch size)	Dimension (mm)				Recommended Land Pattern (mm)			Mass (Weight) (g/1000 pcs.)
	L	W	A	t	a	b	c	
ERJMS4S (2512)	6.40±0.25	3.20±0.25	2.20±0.25	1.20±0.15	2.7	3.4	2.0	120
ERJMS4H (2512)	6.40±0.25	3.20±0.25	1.25±0.25	1.20±0.15	1.7	3.4	4.0	115
ERJMS6S (2526)	6.40±0.25	6.80±0.25	2.20±0.25	1.20±0.15	2.7	7.0	2.0	260

Typical Temperature dependence of electrical resistance

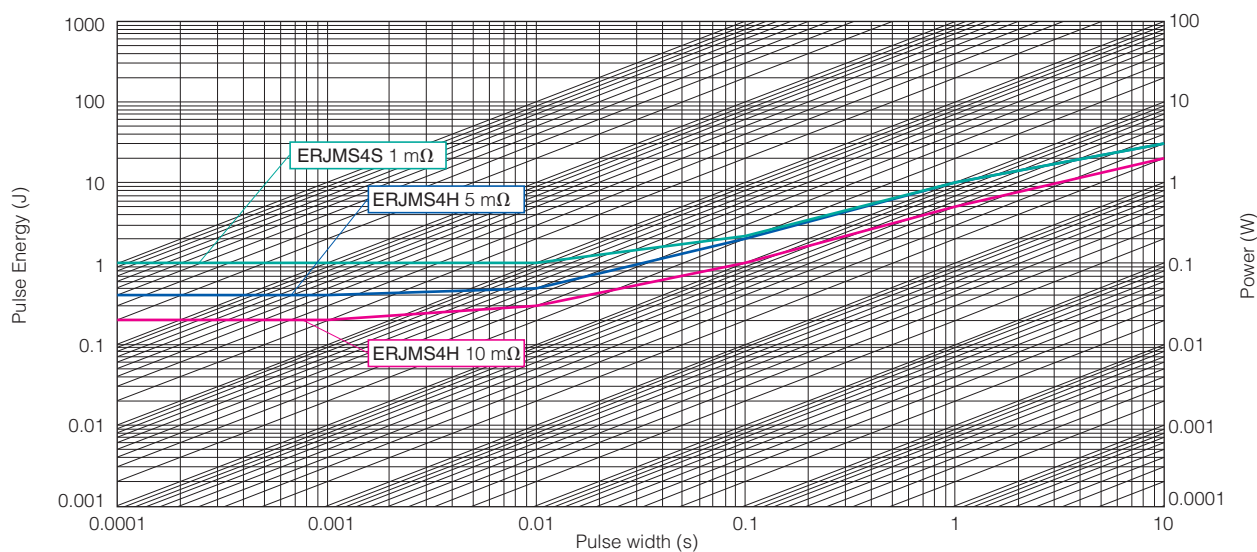


Long-term stability



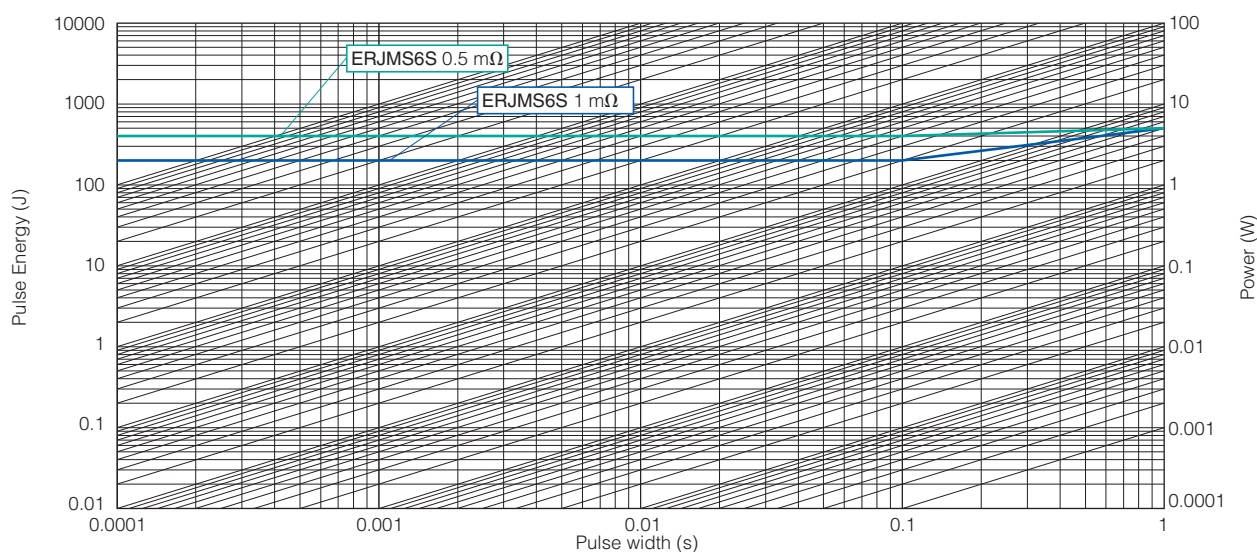
Maximum pulse energy respectively pulse power for continuous operation

● ERJMS4 type



Reference Data
Condition : Room Temperature, OFF : 10 s, 1000 cycle, Wave form : Square
Change of Resistance = $\pm 1\%$

● ERJMS6 type



Reference Data
Condition : Room Temperature, OFF : 10 s, 1000 cycle, Wave form : Square
Change of Resistance = $\pm 1\%$

Performance (AEC-Q200)

● ERJMS4 type

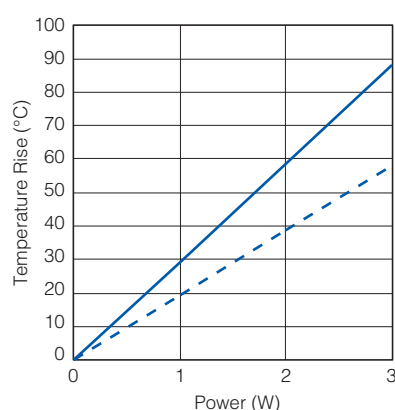
Test Item	Test Condition	Specification	Typical value
Thermal Shock	MIL-STD-202 method 107 (-55 °C / +125 °C, 25 cycle)	±0.5 %	0.05 %
Overload	MIL-R-26E (5 x rated power, 5 sec)	±0.5 %	0.02 %
Solderability	MIL-STD-202 method 208	> 95% coverage	> 95% coverage
Resistance to Solvents	MIL-STD-202 method 215, 2.1a, 2.1d	No damage	No damage
Low Temperature Storage and Operation	MIL-STD-26E (-65 °C, 24 h)	±0.5 %	0.03 %
Resistance to Soldering Heat	MIL-STD-202 method 210 (260 °C, 10s)	±0.5 %	0.10 %
Moisture Resistance	MIL-STD-202 method 106	±0.5 %	0.20 %
Shock	MIL-STD-202 method 213-A	±0.5 %	0.10 %
Vibration, High Frequency	MIL-STD-202 method 204-B	±0.5 %	0.05 %
Life	MIL-STD-26E (Rated Power, 1.5 h-ON, 0.5 h-OFF, 2000 h)	±1 %	0.30 %
Storage Life at Elevated Temperature	MIL-STD-202 method 108-F (170 °C, 2000 h)	±1 %	0.30 %
High Temperature Characteristics	140 °C, 2000 h	±0.5 %	0.05 %
Frequency Characteristics	Inductance	< 2 nH	< 2 nH

● ERJMS6 type

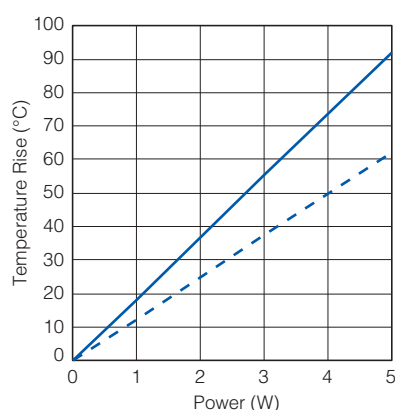
Test Item	Test Condition	Specification	Typical value
Thermal Shock	MIL-STD-202 method 107 (-55 °C / +125 °C, 25 cycle)	±0.5 %	0.10 %
Overload	MIL-R-26E (5 x rated power, 5 sec)	±0.5 %	0.02 %
Solderability	MIL-STD-202 method 208	> 95% coverage	> 95% coverage
Resistance to Solvents	MIL-STD-202 method 215, 2.1a, 2.1d	No damage	No damage
Low Temperature Storage and Operation	MIL-STD-26E (-65 °C, 24 h)	±0.5 %	0.03 %
Resistance to Soldering Heat	MIL-STD-202 method 210 (260 °C, 10s)	±0.5 %	0.10 %
Moisture Resistance	MIL-STD-202 method 106	±0.5 %	0.10 %
Shock	MIL-STD-202 method 213-A	±0.5 %	0.10 %
Vibration, High Frequency	MIL-STD-202 method 204-B	±0.5 %	0.05 %
Life	MIL-STD-26E (Rated Power, 1.5 h-ON, 0.5 h-OFF, 2000 h)	±1 %	0.20 %
Storage Life at Elevated Temperature	MIL-STD-202 method 108-F (170 °C, 2000 h)	±1 %	0.30 %
High Temperature Characteristics	140 °C, 2000 h	±0.5 %	0.05 %
Frequency Characteristics	Inductance	< 2 nH	< 2 nH

Temperature Rise

● ERJMS4HF5M0U

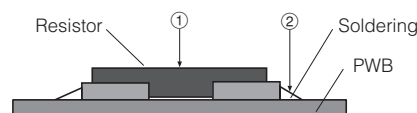


● ERJMS6SF2M0U

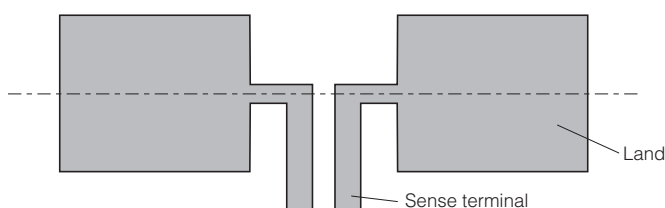


- ① ———
② - - -

<Condition>
Base material : FR-4 (t1.6mm)
Copper Thickness : 70 μm, Two layer



Sense terminal-Layout



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Panasonic:

<u>ERJ-MS4SF2M0U</u>	<u>ERJ-MS4HF6M0U</u>	<u>ERJ-MS4HF7M0U</u>	<u>ERJ-MS4SF1M0U</u>	<u>ERJ-MS4HF10MU</u>	<u>ERJ-MS4HF9M0U</u>
<u>ERJ-MS4HF5M0U</u>	<u>ERJ-MS6SF1M0U</u>	<u>ERJ-MS4HF8M0U</u>	<u>ERJ-MS4SF4M0U</u>	<u>ERJ-MS6SF2M0U</u>	<u>ERJ-MS6SFM50U</u>
<u>ERJ-MS4SF3M0U</u>					