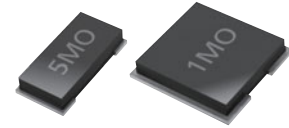


Current Sensing Resistors, Metal Plate Type



Type: ERJ MS4, MS6

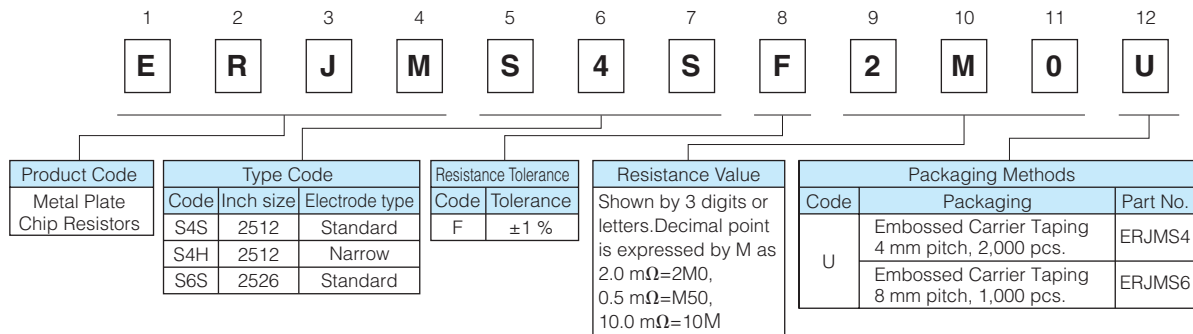
Features

- 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



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.

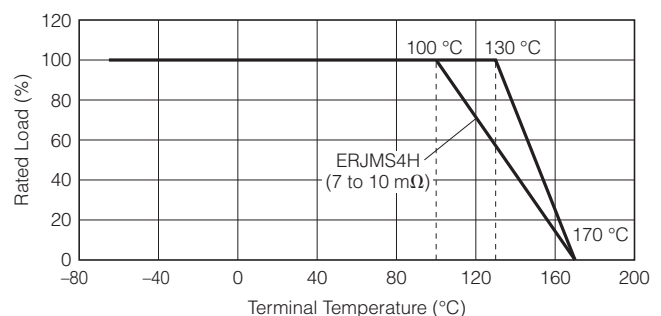
Power Derating Curve

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>

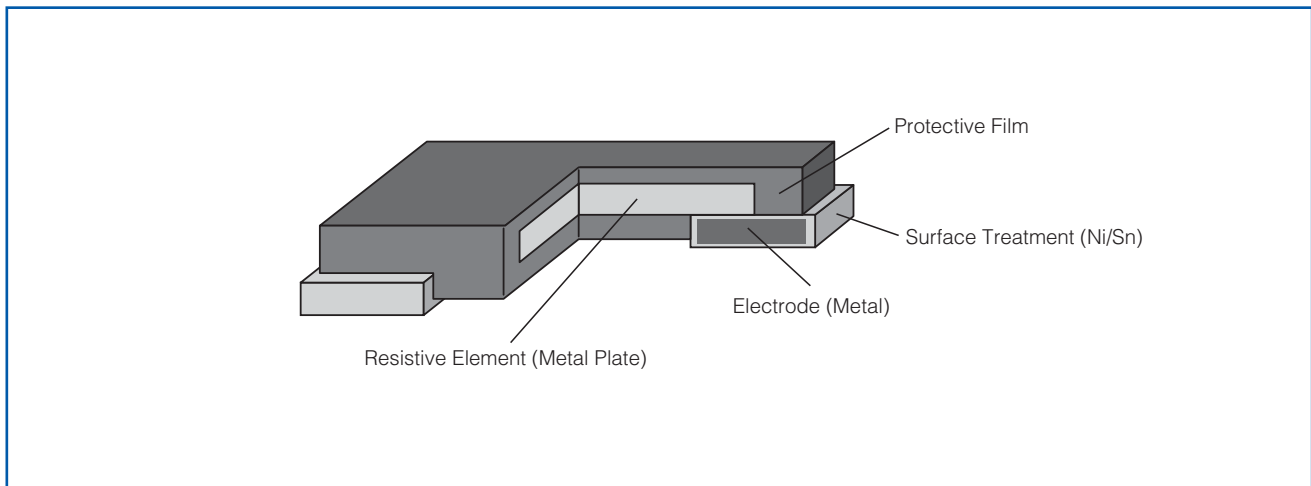
In the case of the temperature measurement of the terminal portion of the resistor, Please perform under the following conditions.

- 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.



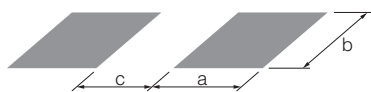
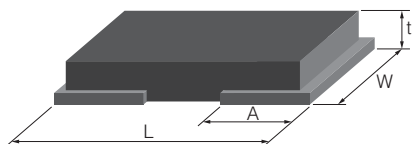
Panasonic Current Sensing Resistors, Metal Plate Type

Construction



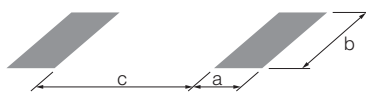
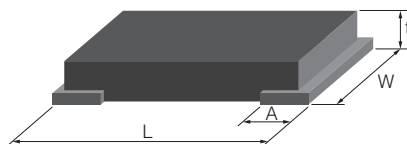
Dimensions in mm (not to scale), Recommended Land Pattern

● ERJMS4S

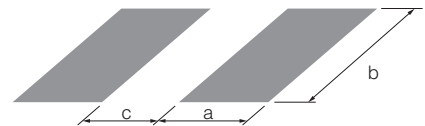
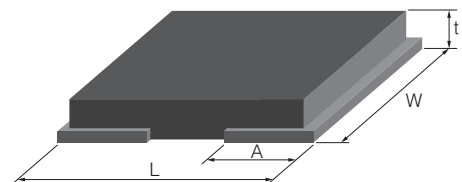


Land Pattern

● ERJMS4H



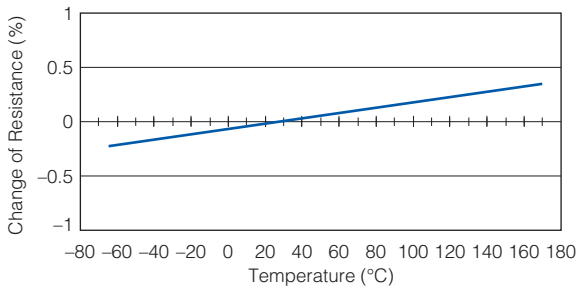
● ERJMS6S



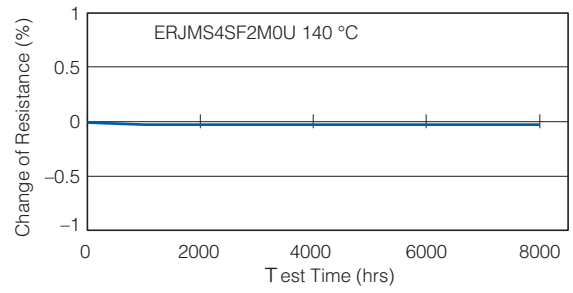
| Part No. (inch size) | Dimension (mm) | | | | Recommended Land Pattern (mm) | | | Mass (Weight) (g/1000 pcs.) |
|-------------------------|----------------|-----------|-----------|-----------|-------------------------------|-----|-----|--------------------------------|
| | L | W | A | t | a | b | c | |
| 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 |

Panasonic Current Sensing Resistors, Metal Plate Type

Typical Temperature dependence of electrical resistance

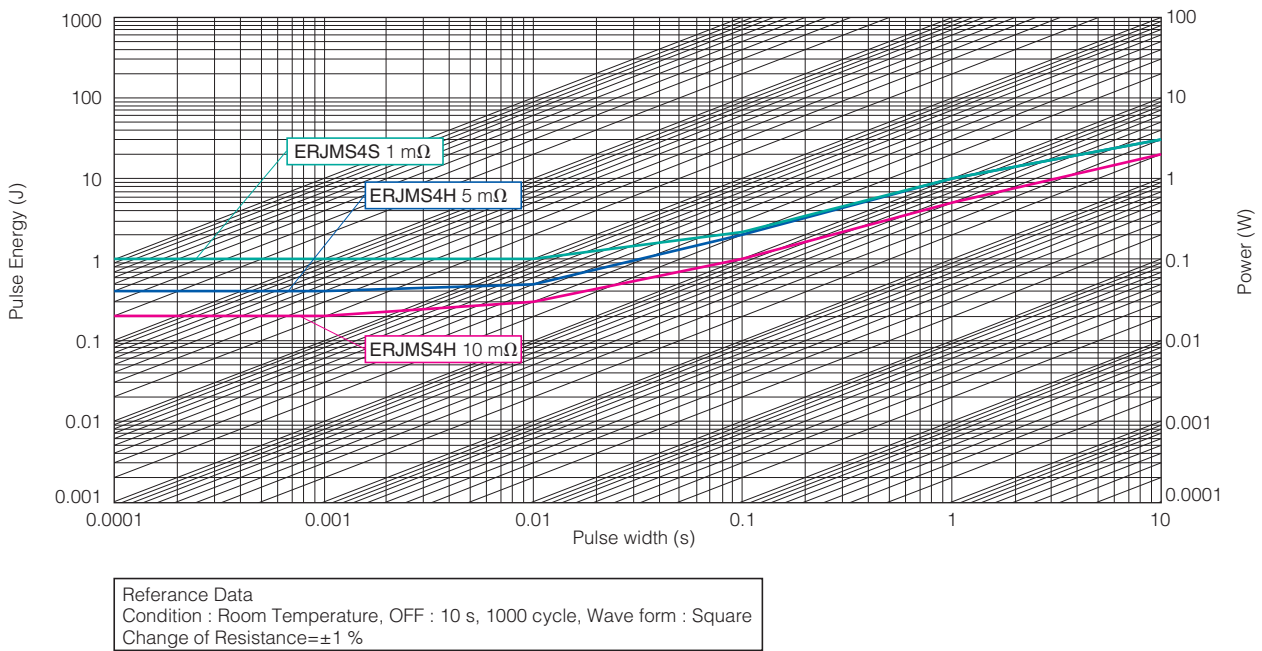


Long-term stability

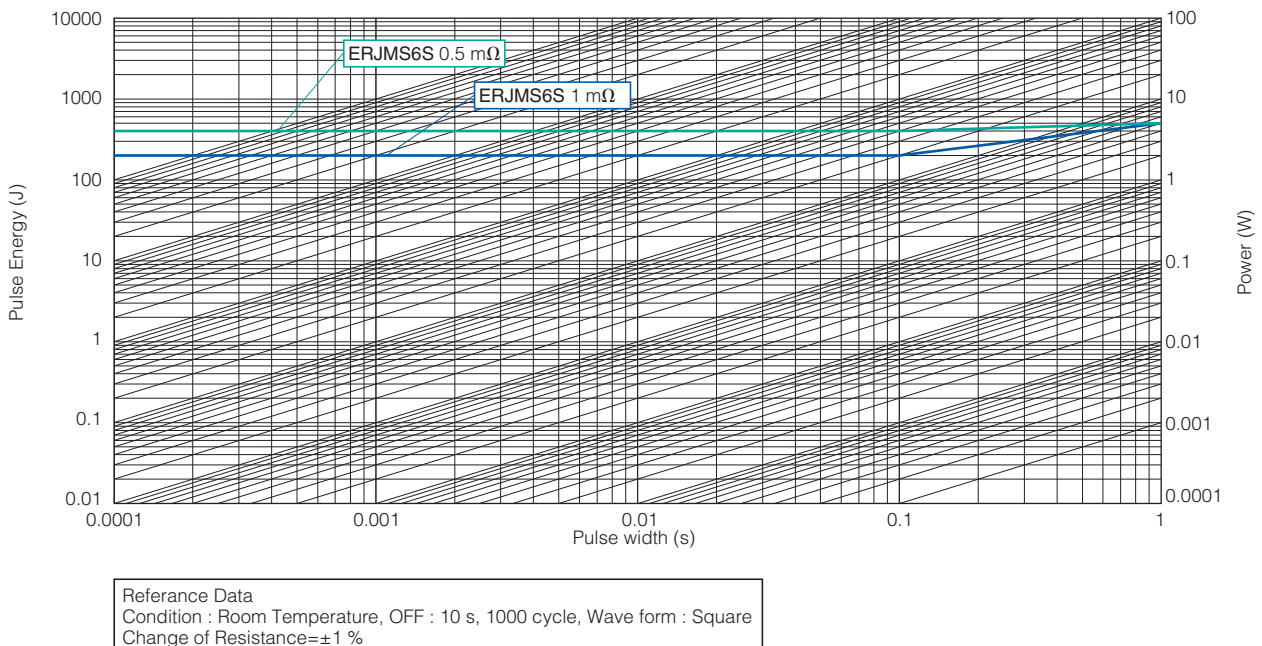


Maximum pulse energy respectively pulse power for continuous operation

● ERJMS4 type



● ERJMS6 type



Performance (AEC-Q200)

● ERJMS4 type

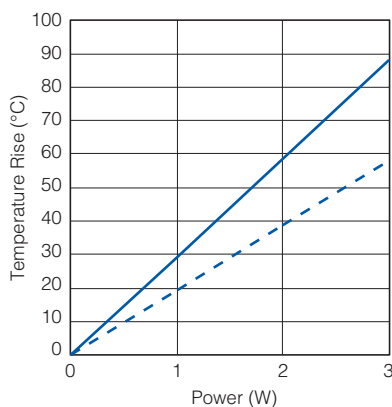
| Test Item | Test Condition | Specification | Typical value |
|---------------------------------------|--|----------------|----------------|
| Thermal Shock | MIL-STD-202 method 107 (-55 °C / +125 °C, 25 cycle) | ±0.5 % | 0.05 % |
| Overload | MIL-R-26E (5 x rated power, 5 sec) | ±0.5 % | 0.02 % |
| 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

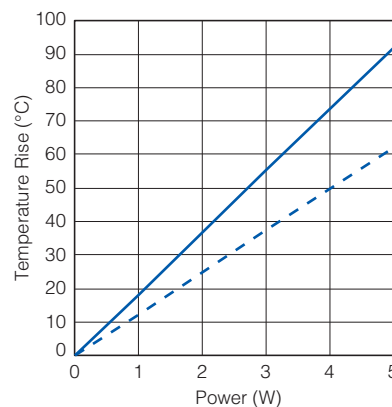
| Test Item | Test Condition | Specification | Typical value |
|---------------------------------------|--|----------------|----------------|
| Thermal Shock | MIL-STD-202 method 107 (-55 °C / +125 °C, 25 cycle) | ±0.5 % | 0.10 % |
| Overload | MIL-R-26E (5 x rated power, 5 sec) | ±0.5 % | 0.02 % |
| 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

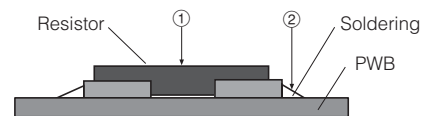


● ERJMS6SF2M0U



- ① ———
② - - - -

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



Sense terminal-Layout

