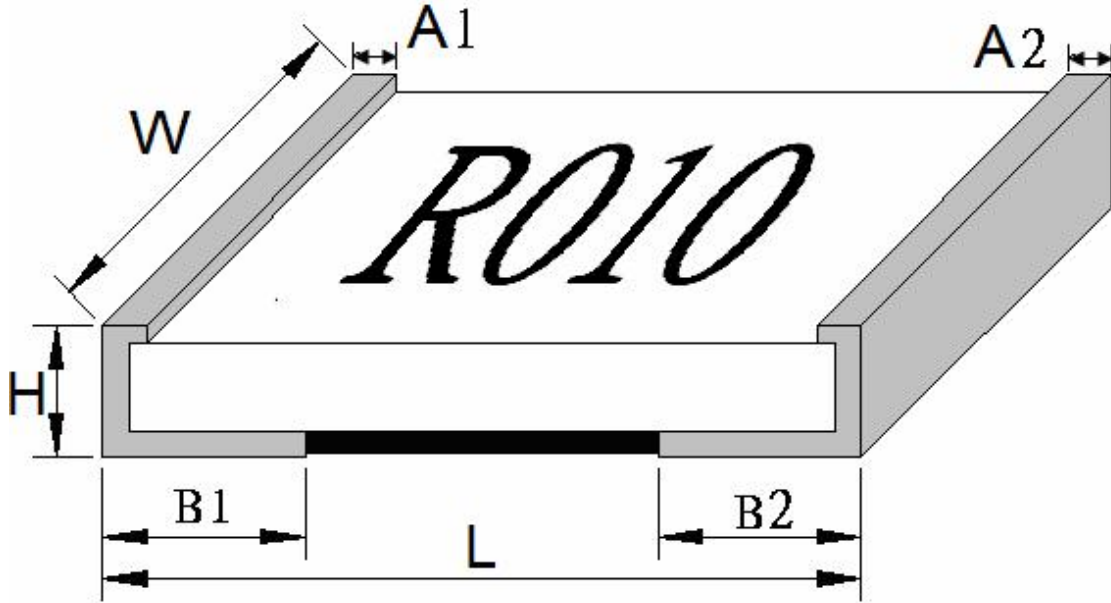


Metal Strip Current Sensing Chip Resistors

1.0 Scope:

This sheet is the statement of the Metal Strip Current Sensing Chip Resistors MS10 specification.

2.0 Ratings & Dimension:



Dimension (mm)

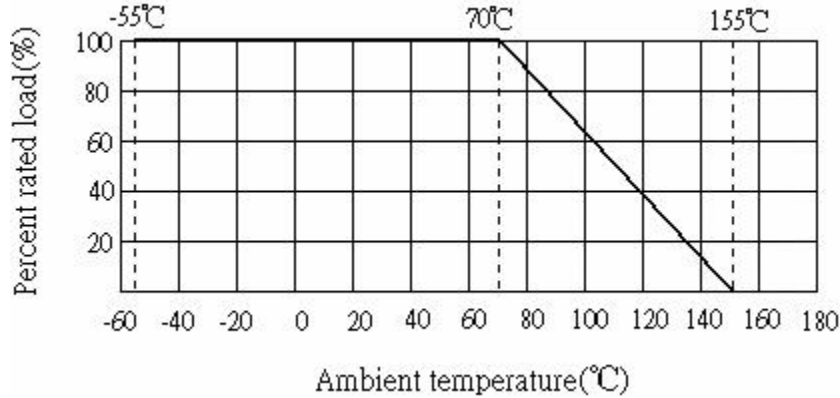
Size	L	W	H	A1/A2	B1/B2
RMS06(1206)	3.10±0.20	1.60±0.30	0.70±0.20	≤1.0	0.50~0.70±0.25
RMS07(1210)	3.10±0.20	2.50±0.25	0.70±0.20	≤1.0	0.65±0.25
RMS11(1812)	4.40±0.20	3.20±0.25	0.70±0.20	≤1.0	0.80±0.30
RMS10(2010)	5.00±0.20	2.50±0.25	0.70±0.20	≤1.0	1.00±0.30
RMS12(2512)	6.35±0.20	3.20±0.25	0.70±0.20	≤1.0	1.20~1.90±0.30
RMS17(2817)	7.10±0.20	4.20±0.20	0.70±0.20	≤1.0	1.10±0.30
RMS20(4320)	11.00±0.30	5.00±0.25	0.65±0.20	≤1.0	2.50±0.30
RMS27(4527)	11.60±0.30	6.70±0.25	0.65±0.20	≤1.0	2.50±0.30

Type	Resistance Range	T.C.R(ppm/°C)		
		Resistance Tolerance		
		±1%	±2%	±5%
0805	0.01Ω≤R≤0.03Ω	±50	±50	±50
1206	0.005Ω≤R≤0.1Ω	±50	±50	±50
2010	0.01Ω≤R≤0.05Ω	±50	±50	±50
2512	0.005Ω≤R≤0.05Ω	±100	±100	±100
	0.05Ω≤R≤0.2Ω	±50	±50	±50

Metal Strip Current Sensing Chip Resistors

3.0 Power Rating:

Resistors shall have a power rating based on continuous load operation at an ambient temperature from -55°C to 155°C. The load power will decline when the environment temperature increase. The relationship of power and Temperature is shown in figure as below.



3.1 Voltage rating:

Resistors shall have one voltage specifications:

1. Rated direct-current (DC) continuous working voltage
2. Or at approximate single-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage

We can calculate the Voltage from the following formula:

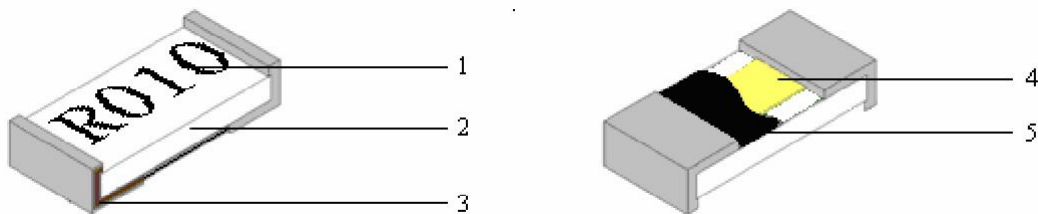
Remark:

RCWV=Rate continuous working voltage.(Volt)

P=Power Rating (WATT)

R=Nominal Resistance (Ohm)

4.0 Structure:

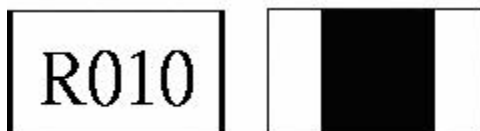


1	Marking	4	Resistance layer
2	Alumina Substrate	5	Protective layer
3	Terminal (Cu/Ni/ Sn)		

Metal Strip Current Sensing Chip Resistors

5.0 Marking:

If the resistance value is lower than 1 ohm, the first digit of marking will be "R" which meaning as decimal point.



R010→10mΩ

6.0 Performance Specification:

Characteristic	Limits	Test Method (JIS-C-5201&5202)
Temperature Coefficient	±100PPM/°C	Resistance value will change when temperature changes per centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/°C)}$ R ₁ : Resistance value at room temp. (t ₁) R ₂ : Resistance value at room temp. +100°C (t ₂) Test condition: 1 st condition: room temp. (t ₁), 2 nd condition: room temp. +100°C (t ₂)
Short-time overload	Resistance change rate must be in ±(1%+0.001Ω), and no mechanical damage.	Permanent resistance change after the application of a potential of 5 times rated power for 5 seconds.
Low Temperature Storage	±(1.0%+0.001Ω)ΔR _{Max}	- 55 °C for 1000hrs
High Temperature Exposure	±(1.0%+0.001Ω)ΔR _{Max}	155°C for 1000hrs
Solderability	More than 95% coverage rate	The surface of solder must be new, smooth, clean, shiny and continuous, and without concentrated pinholes. The solder's temperature must be within 245±3°C. Hold in hot solder 2~3seconds.
Resistance rate of change after soldering heat	±(0.5%+0.005Ω)ΔR _{Max}	Dipped into solder at 260°C for 10 seconds.

Metal Strip Current Sensing Chip Resistors

Load life	$\pm (1\%+0.001 \Omega)\Delta R_{Max}$ Without mechanical damage	Permanent resistance change after 1,000 hours operating at rated power at $70\pm 2^{\circ}C$, 1.5hrs ON, 0.5hrs OFF.
Temperature cycling	$\pm (0.5\%+0.005 \Omega)\Delta R_{Max}$	$-55^{\circ}C$ to $+155^{\circ}C$, 5cycles, 30min at each extreme test cycle
Load life in humidity	$\pm (1.0\%+0.001 \Omega)\Delta R_{Max}$	$40\pm 2^{\circ}C$, 1000hrs at rated power, 90~95%RH, 1.5hrs ON, 0.5hrs OFF.

7.0 Explanation of Part No. System:

The standard Part No. is made up from 14 digits which meanings as below:

7.1 1st ~4th digits: SIZE of the Metal Strip Current Sensing Chip series.

e.g.: MS10

7.2 5th ~6th digits: POWER rating. It makes up with letter and number, and the following codes are used; and please refer to the following chart for detail:

W=Normal Size; "1" ~ "G" to denotes "1" ~ "16" as Hexadecimal: 1W~16W ($\geq 1W$)

Wattage	1	2	3	5	7	8	9	10	15
code	1W	2W	3W	5W	7W	8W	9W	AW	FW
Wattage	1/2	1/3	1/4	1/5	1/7	1/8	1/9	1/10	1/15
code	W2	W3	W4	W5	W7	W8	W9	WA	WF

7.3 7th digit: Resistors' tolerance.

D= $\pm 0.5\%$ F= $\pm 1\%$ J= $\pm 5\%$

7.4 8th ~ 11th digits: Resistance Value.

7.4.1 If the value is in standard resistance values of E-24 series, 8th digit will be "0", 9th~10th codes means the significant figures of the resistance and the 11th digit is the power of ten.

If the value is in standard resistance values of E-96 series, 8th~10th digits means the significant Figures of the resistance and the 11th digit are the power of ten.

7.4.2 The following codes are used to indicate the power of ten.

0= 10^0 1= 10^1 2= 10^2 3= 10^3 4= 10^4 5= 10^5 6= 10^6 J= 10^{-1} K= 10^{-2} L= 10^{-3} M= 10^{-4}

7.5 12th digit: Packaging Type.

C=Bulk in cassette (for Chip Product) T=Tape/Reel

7.6 13th digit: Standard Packing Quantity

4=4000pcs

7.7 14th digit: Special features information

E=For "Environmental Protection, Lead Free type"

Metal Strip Current Sensing Chip Resistors

8.0 Ordering Procedure

RMS	06	W2	0103	J	T
Product Type	Resistor size	Wattage	Resistor Value	Tolerance	Packing type
Current Sensing Chip Resistance	06(1206)	Fill-in 2 digital with the code as follow: W2=1/2W 1W=1W WJ=1.5W 2W=2W 3W=3W 5W=5W	103=10KΩ 1003=100KΩ 1R0=1Ω	F=± 1% G=± 2% J=± 5%	T=T/R B=Bulk in poly bag C=Bulk in cassette
	07(1210)				
	11(1812)				
	10(2010)				
	12(2512)				
	17(2817)				
	20(4320)				
	27(4527)				