WELLCOMP TECHNOLOGY CO., LTD

APPROVAL SHEET

Model Name	**Metal Strip Current Sensing Resistor**
Part Number	**WMCS Series**
Customer Name	
Customer P/N	
Issued Date	

Customer		Maker		
Approved	Checked	Inspector	Checked	Prepared

元璽科技股份有限公司

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WMCS Series

Metal Strip Current Sensing Resistor

Document No: 20130607001
Issued Date: 2013/06/07
Version: A10

Features

◆Able to withstand high temperature and high current
◆Ultra Low sensing resistance
◆Excellent frequency response
◆Chip size: 0805, 1206, 2512 and 3720
◆Lead free, RoHS compliant for global applications and halogen free

Application

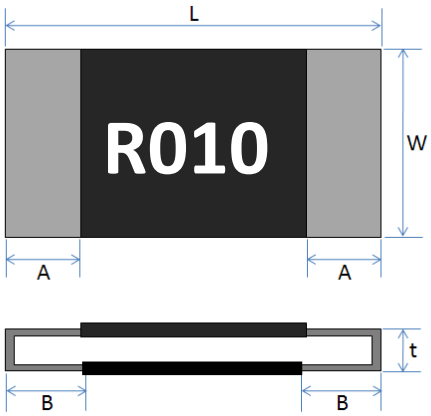
◆Mobile electronic equipment-Cellular phone, NB Tablet PC, GPS, DSC, HDD
◆DC-DC converter, Adapter, Battery pack and charger
◆Switching power supply
◆Voltage Regulation module
◆Power management applications

Part Numbering System

WMCS	1206	R005	F	C	T	A
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series Code
(2) Size (EIA): Length x Width
(3) Resistance: R002=2mΩ, R010=10mΩ
(4) Tolerance: F=+/-1%, G=+/-2%, J=+/-5%
(5) Power Rating: S=1/2W, C=1W, D=1.5W, E=2W
(6) Packaging: T- Embossed paper tape, 7" reel
E-Embossed plastic tape, 7” reel
(7) Factory Code, A=Taiwan Factory

Dimension



Type (inch size)	Dimensions(mm)				
	L	W	t	A	B
WMCS0805	2.10±0.20	1.30±0.15	0.70±0.15	0.40±0.20	0.45±0.20
WMCS1206(S)	3.10±0.20	1.55±0.10	0.70±0.15	0.50±0.20	0.55±0.20
WMCS1206(L)					1.10±0.30
WMCS2512(S)	6.45±0.20	3.25±0.20	0.80±0.15	0.90±0.20	1.10±0.25
WMCS2512(L)			1.00±0.20		2.20±0.25
WMCS3720	3.75±0.20	2.10±0.20	0.65±0.15	0.60±0.30	0.60±0.25

*Remark: R≦3mΩ is L Type

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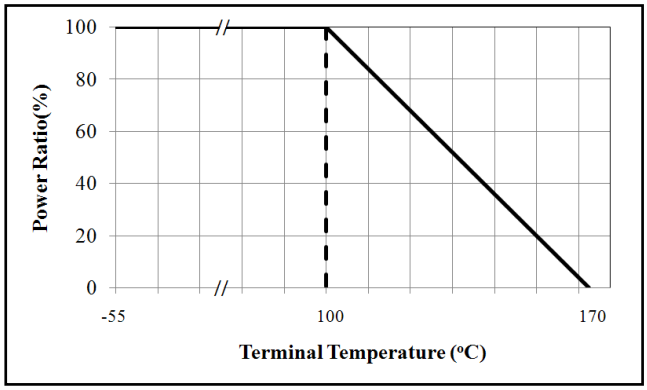
Electrical Specification

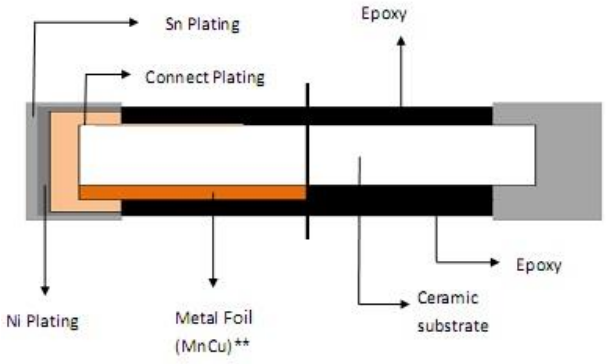
Item	Power Rating	Resistance Range(mΩ)	Operation Temp. Range	TCR (PPM/℃)
MCS0805	1/2W	10<R≤30	-55~+170℃	±50
		10		±100
MCS1206	1/2W, 1W	10<R≤40		±50
		5≤R≤10		±100
MCS2512	1W, 1.5W ,2W	10≤R≤600		±50
		5≤R<10		±100
MCS3720	1/2W, 1W	10≤R≤30		±50
		5≤R<10		±100

Derating Curve



Construction

Top view

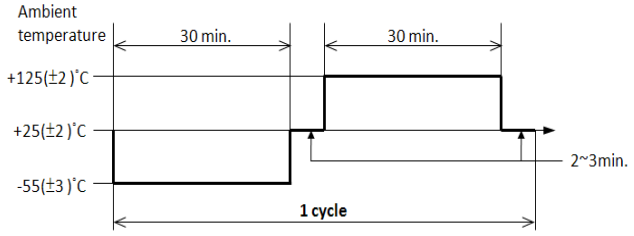


Side view

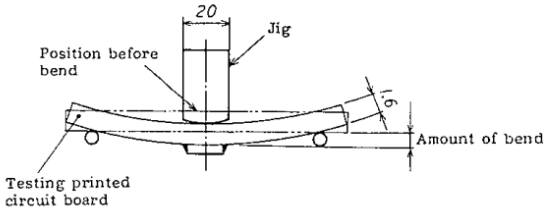
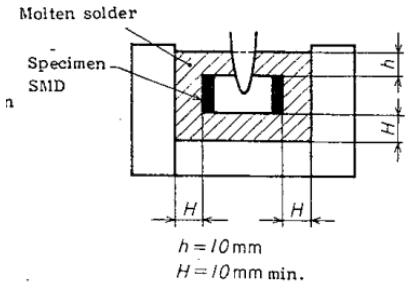
**Thermal EMF against Cu is -1 μV/℃

Performances

Environmental Performance

No.	Item	Test Condition	Specification
1	Short Time Overload	Voltage equal to 5 time rated power for 5 sec , (JIS-C5202-5.5)	ΔR: ±(1%+0.0005Ω)
2	Temperature Coefficient of Resistance (T.C.R.)	+25°C /+125°C. (JIS-C5202-5.2) $TCR\ (\text{ppm}/℃) = \frac{\Delta R}{R \times \Delta t} \times 10^6$	Refer to Electrical Specification
3	Damp Heat with Load	The specimens shall be placed in a chamber and subjected to a relative humidity of 90~95% percent and a temperature of 40° ±2°C for the period of 1000 hrs. (MIL-STD-202, Method 103)	ΔR: ±(1%+0.0005Ω)
4	High Temperature Exposure	The ship (mounted on board) is exposed in the heat chamber 125±3℃ for 1000 hrs. (JIS-C5202-7.2)	ΔR: ±(1%+0.0005Ω)
5	Load Life	Apply rated power at 70±2°C for 1000 hours with 1.5 hours ON and 0.5 hour OFF. (JIS-C5202-7.10)	ΔR: ±(1%+0.0005Ω)
6	Rapid change of temperature	The chip (mounted on board) is exposed, -55±3°C (30min.)/+125±2°C (30min.) for 5 cycles. The following conditions as the following figure. (JIS-C5202-7.4) 	ΔR: ±(1%+0.0005Ω)

Function Performance

No.	Item	Test Condition	Specification
1	Bending Strength	Mount the chip to test substrate. Apply pressure in direction of arrow unit band width reaches 2mm(+0.2/-0mm) illustrated in the figure below and hold for 10±1 sec. (JIS-C5202-6.1) Unit: mm 	ΔR: ±(1%+0.0005Ω)
5	Solvent Resistance	The chip is completed immersion of the specimens in the isopropyl alcohol for 3 *+5, -0) min., 25°C ±5°C. ((MIL-STD-202, Method 215)	Verify marking permanency. (Nor required for laser etched parts or parts with no marking)
6	Resistance to solder Heat	The specimen chip shall be immersed into the flux specified in the solder bath 260±5℃ for 10±1 sec. (MIL-STD-202, Method 210)	ΔR: ±(1%+0.0005Ω)
7	Solderability	The specimen chip shall be immersed into the flux specified in the solder bath 235±5℃ for 2±0.5 sec. It shall be immersed to a point 10mm from its root. (Sn96.5/Ag3.0/Cu0.5) (JIS-C5 202-6.11) 	Solder shall be covered 95% or more of the electrode area.

Remark:

a. 0.5 W with total solder pad trace size of 100 mm².

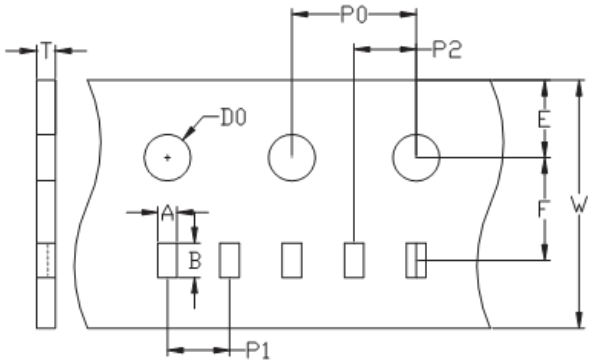
b. 1.0 W with total solder pad trace size of 100 mm².

c. 1.5 W with total solder pad trace size of 200 mm².

d. 2.0 W with total solder pad trace size of 300 mm².

Tape Packaging Specifications

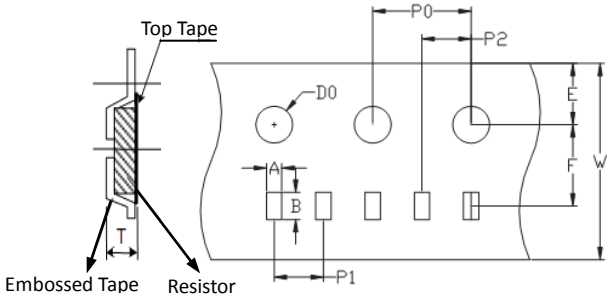
◆Paper Tape Specifications



Unit:mm

Type	Carrier Dimensions									
	A	B	E	F	W	P0	P1	P2	D0	T
0805	1.6±0.1	2.4±0.1	1.75±0.1	3.5±0.05	8.0±0.2	4.0±0.1	4.0±0.1	2.0±0.05	1.55±0.05	0.97±0.1
1206	2.0±0.1	3.6±0.1	1.75±0.1	3.5±0.05	8.0±0.2	4.0±0.1	4.0±0.1	2.0±0.05	1.55±0.05	0.97±0.1

◆Embossed Plastic Tape Specifications



Unit:mm

Type	Carrier Dimensions									
	A	B	E	F	W	P0	P1	P2	D0	T
2512	3.5±0.1	6.8±0.1	1.75±0.1	5.5±0.05	12.0±0.2	4.0±0.05	4.0±0.1	2.0±0.05	1.5±0.1	1.0±0.2
3720	2.6±0.2	4.5±0.2	1.75±0.1	5.5±0.05	12.0±0.2	4.0±0.05	4.0±0.1	2.0±0.05	1.5±0.1	1.0±0.2

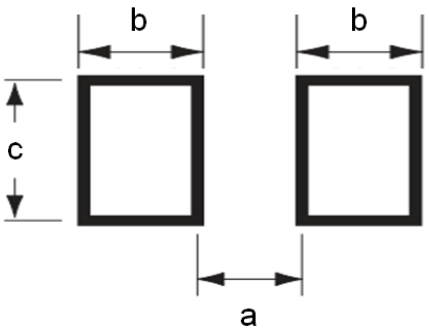
Packaging

Size EIA (EIAJ)	0805/1206	2512/3720
Standard Packing Quantity (pcs /reel)	5,000	4,000

Storage Conditions

Temperature：5~35℃, Humidity：40~75%

Recommended Solder Pad Layout



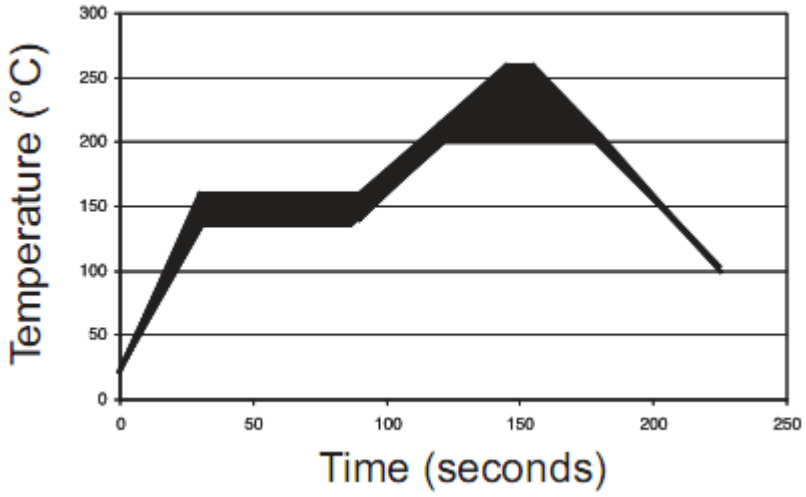
Type	Pad Layout Dimension (mm)		
	a	b	c
0805	1.20	1.20	1.20
1206	2.20	1.30	1.80
2512	3.80	2.10	3.40
3720	1.2	1.6	7.9

Soldering Recommendations

◆ Peak reflow temperatures and durations：
- IR Reflow Peak = 260℃ max for 10 sec
- Wave Solder = 260℃ max for 10 sec

◆ Compatible with lead and lead-free solder reflow processes

◆ Recommended IR Reflow Profile：



ECN

Engineering Change Notice：The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.