

WELLCOMP TECHNOLOGY CO., LTD

APPROVAL SHEET

Model Name	Metal Strip Current Sensing Resistor
Part Number	WMCSE0402 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

WELLCOMP TECHNOLOGY CO., LTD.

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Features

- ◆ Able to withstand high temperature and high current
- ◆ Ultra Low sensing resistance
- ◆ Excellent frequency response
- ◆ Chip size: 0402
- ◆ 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

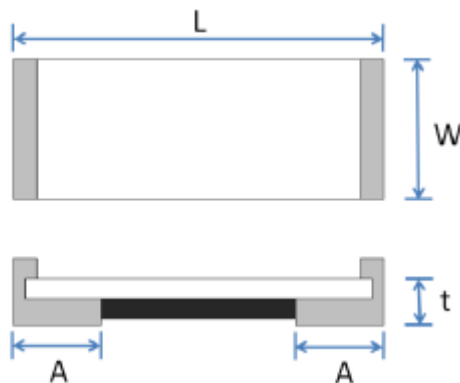
Part Numbering System

WMCSE 0402 R010 F X I 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: X=1/8W, A=1/4W, 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=TWN Factory

Dimension

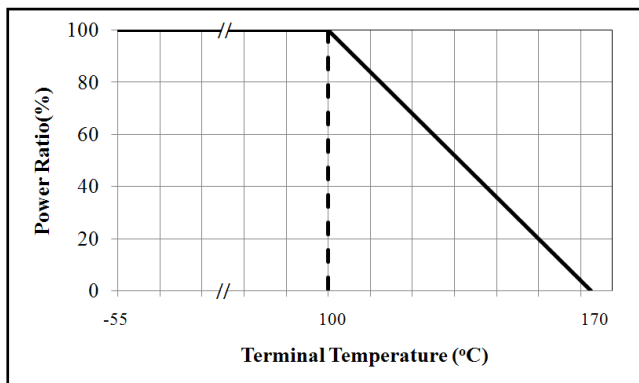


Type (inch size)	Dimensions(mm)			
	L	W	t	A
WMCSE0402	1.00±0.10	0.55±0.1	0.45±0.10	0.25±0.10

Electrical Specification

Item	Power Rating	Resistance Range(mΩ)	Operation Temp. Range	TCR (PPM/°C)
WMCSE0402	1/8W	$10 \leq R \leq 15$	-55~+170°C	±200

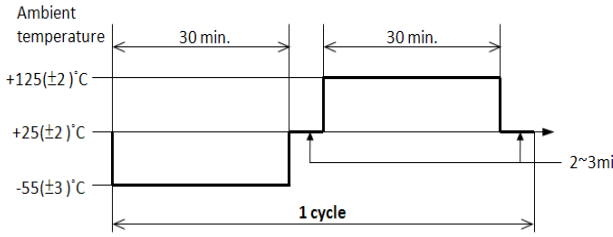
Derating Curve



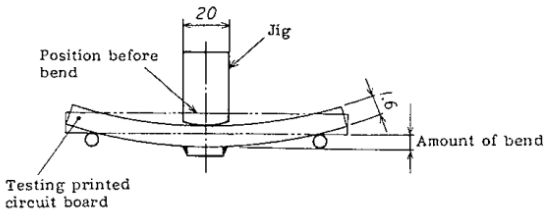
Performances

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)	$\Delta R: \pm(1\%+0.0005\Omega)$
2	Temperature Coefficient of Resistance (T.C.R.)	+25°C /+125°C. (JIS-C5202-5.2) $TCR \text{ (ppm/}^\circ\text{C)} = \frac{\Delta R}{R \times \Delta t} \times 10^6$	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)	$\Delta R: \pm(1\%+0.0005\Omega)$
4	High Temperature Exposure	The ship (mounted on board) is exposed in the heat chamber 125±3°C for 1000 hrs. (JIS-C5202-7.2)	$\Delta R: \pm(1\%+0.0005\Omega)$
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)	$\Delta R: \pm(1\%+0.0005\Omega)$

6	Rapid change of temperature	<p>The chip (mounted on board) is exposed, $-55\pm 3^{\circ}\text{C}$ (30min.)/$+125\pm 2^{\circ}\text{C}$ (30min.) for 5 cycles. The following conditions as the following figure. (JIS-C5202-7.4)</p> 	$\Delta R: \pm(1\%+0.0005\Omega)$
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Function Performance

No.	Item	Test Condition	Specification
1	Bending Strength	<p>Mount the chip to test substrate. Apply pressure in direction of arrow unit band width reaches $2\text{mm}(+0.2/-0\text{mm})$ illustrated in the figure below and hold for 10 ± 1 sec. (JIS-C5202-6.1)</p> <p style="text-align: right;">Unit: mm</p> 	$\Delta R: \pm(1\%+0.0005\Omega)$
2	Solvent Resistance	<p>The chip is completed immersion of the specimens in the isopropyl alcohol for 3 (+5, -0) min., $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$. (MIL-STD-202, Method 215)</p>	Verify marking permanency. (Nor required for laser etched parts or parts with no marking)
3	Resistance to solder Heat	<p>The specimen chip shall be immersed into the flux specified in the solder bath $260\pm 5^{\circ}\text{C}$ for 10 ± 1 sec. (MIL-STD-202, Method 210)</p>	$\Delta R: \pm(1\%+0.0005\Omega)$

Metal Strip Current Sensing Resistor

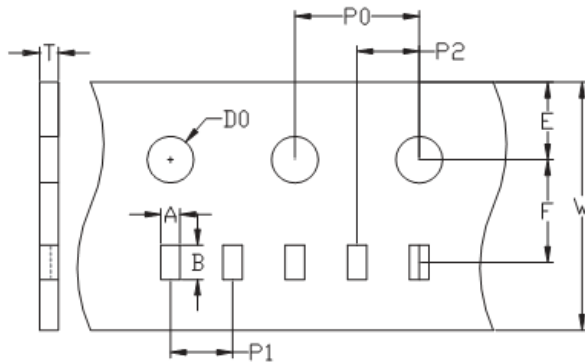
4	Solderability	<p>The specimen chip shall be immersed into the flux specified in the solder bath $235\pm 5^{\circ}\text{C}$ for 2 ± 0.5 sec. It shall be immersed to a point 10mm from its root. (Sn96.5/Ag3.0/Cu0.5) (JIS-C5 202-6.11)</p>	Solder shall be covered 95% or more of the electrode area.
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Remark:

a. 0.125 W with total solder pad trace size of 100 mm². The surface temperature of component should below 100°C.

Tape Packaging Specifications

◆Paper Tape Specifications



Unit:mm

Type	Carrier Dimensions									
	A	B	E	F	W	P0	P1	P2	D0	T
0402	0.7±0.05	1.2±0.05	1.75±0.1	3.5±0.05	8.0±0.2	4.0±0.1	2.0±0.1	2.0±0.05	1.55±0.05	0.6±0.1

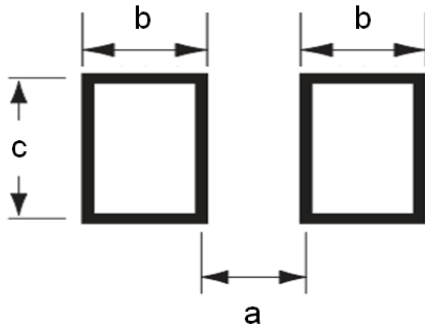
Packaging

Size EIA (EIAJ)	0402
Standard Packing Quantity (pcs /reel)	10,000

Storage Conditions

Temperature : 5~35°C, Humidity : 40~75%

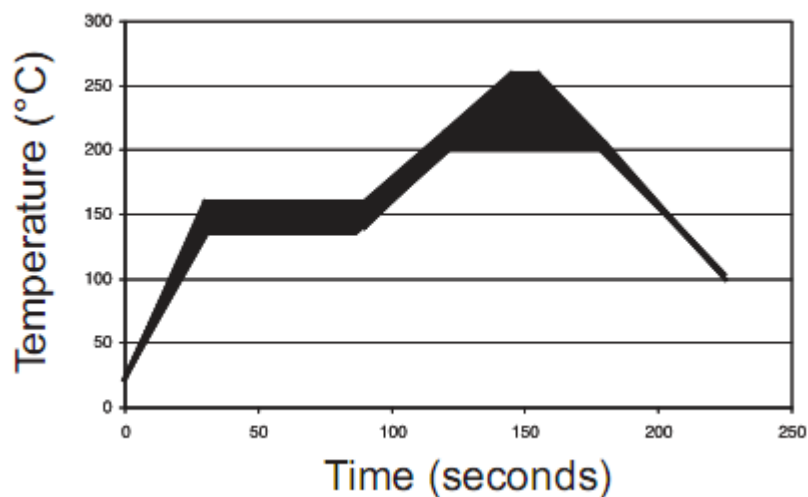
Recommended Solder Pad Layout



Type	Pad Layout Dimension (mm)		
	a	b	c
0402	0.6	0.5	0.6

Soldering Recommendations

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