

WELLCOMP TECHNOLOGY CO., LTD

APPROVAL SHEET

Model Name	Metal Strip Current Sensing Resistor
Part Number	WMCSS 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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Metal Type Current Shunt Resistor

Features

- ◆ Able to withstand high temperature and high current
- ◆ Excellent long term stability
- ◆ 5W up to 129A at 0.3mΩ
- ◆ Chip size: 2512, and 3920
- ◆ Lead free, RoHS compliant for global applications and halogen free

Application

- ◆ Power modules
- ◆ Frequency converters
- ◆ Current sensor for power hybrid sources
- ◆ high current for automotive

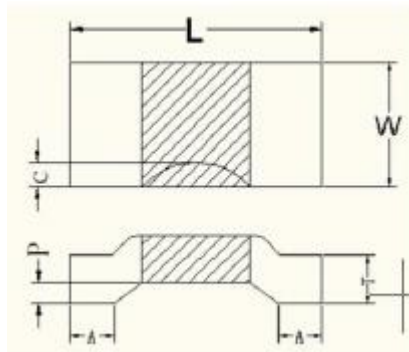
Part Numbering System

WMCSS 2512 R001 F H E A

(1) (2) (3) (4) (5) (6) (7)

- (1) Series Code
- (2) Size (EIA): Length x Width
- (3) Resistance: R001=1mΩ, 0R50=0.5mΩ
- (4) Tolerance: F=+/-1%, G=+/-2%, J=+/-5%
- (5) Power Rating: S=1/2W, C=1W, D=1.5W, E=2W, H=3W, I=5W
- (6) Packaging: T- Embossed paper tape, 7" reel
 E-Embossed plastic tape, 7" reel
- (7) Factory Code, A=Taiwan Factory

Dimension

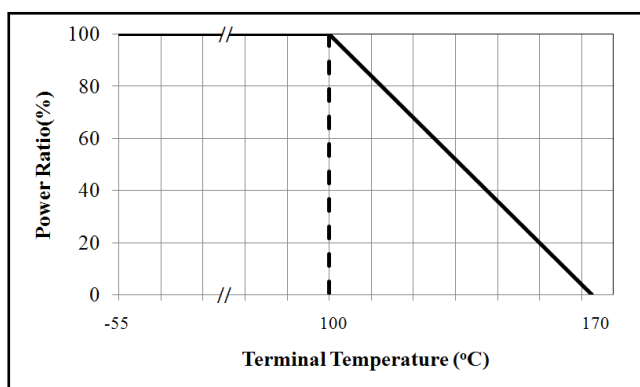


Type (inch size)	Resistance	Dimensions(mm)					
		L	W	T	A	C(Max.)	P
WMCSS2512	0.3mΩ	6.50±0.2	3.25±0.2	0.82±0.15	0.90±0.20	0.4	0.35±0.1
WMCSS2512	0.5mΩ	6.50±0.2	3.25±0.2	0.72±0.15	0.90±0.20	0.4	0.35±0.1
WMCSS2512	1mΩ	6.50±0.2	3.25±0.2	0.38±0.15	0.90±0.20	0.4	0.35±0.1
WMCSS3920	0.3mΩ	10.2±0.2	5.20±0.2	1.42±0.15	1.80±0.30	0.6	0.50±0.1
WMCSS3920	0.5mΩ	10.2±0.2	5.20±0.2	0.86±0.15	1.80±0.30	0.6	0.50±0.1
WMCSS3920	1mΩ	10.2±0.2	5.20±0.2	0.42±0.15	1.80±0.30	0.6	0.50±0.1

Electrical Specification

Item	Power Rating	Resistance Range(mΩ)	Operation Temp. Range	TCR (PPM/°C)
WMCSS2512	3W	0.3	-55~+170°C	±150
		0.5		±115
		1.0		±100
WMCSS3920	5W	0.3		±150
		0.5		±70
		1.0		±50

Derating Curve



Performances

Environmental Performance

No.	Item	Test Condition	Specification
1	Short Time Overload	Loading 5 times rated power for 5 sec.	ΔR: ±(1%+0.0005Ω)
2	Temperature Coefficient of Resistance (T.C.R.)	+25°C /+125°C. (JIS-C5202-5.2) $TCR \text{ (ppm/°C)} = \frac{\Delta R}{R \times \Delta t} \times 10^6$	Refer to Electrical Specification
3	Moisture Resistance	The specimens shall be placed in a chamber and subjected to a relative humidity of 90~95% percent and a temperature of 25°C/65°C 10 cycles. (MIL-STD-202, Method 106)	ΔR: ±(1%+0.0005Ω)
4	High Temperature Exposure	The chip (mounted on board) is exposed in the heat chamber 125°C for 1000 hrs. (JIS-C5202-7.2)	ΔR: ±(1%+0.0005Ω)

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5	Load Life	Apply rated power 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>	$\Delta R: \pm(1\%+0.0005\Omega)$

Function Performance

No.	Item	Test Condition	Specification
1	Bending Strength	<p>Mount the chip to test 90mm(L)*40mm(W) FR4 printed circuit board 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)</p> <p style="text-align: center;">Unit: mm</p>	$\Delta R: \pm(1\%+0.0005\Omega)$
2	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> <p style="text-align: center;">$h = 10\text{ mm}$ $H = 10\text{ mm min.}$</p>	Solder shall be covered 95% or more of the electrode area.

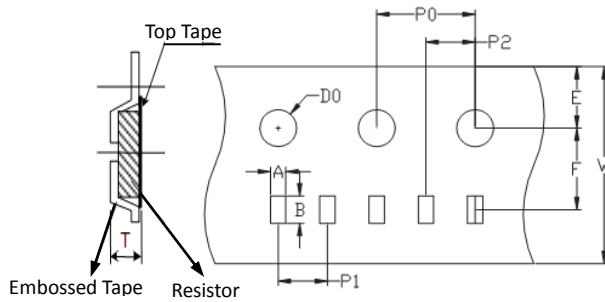
Remark:

- a. The terminal electron temperature of component should below 100°C .

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Tape Packaging Specifications

◆ Embossed Plastic Tape Specifications



Unit:mm

Type	Carrier Dimensions									
	A	B	E	F	W	P0	P1	P2	D0	T
2512	3.55±0.1	6.75±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	1.2±0.2
3920	5.5±0.2	10.8±0.2	1.75±0.1	7.5±0.05	16.0±0.2	4.0±0.05	12.0±0.1	6.0±0.05	1.5±0.1	1.2±0.2

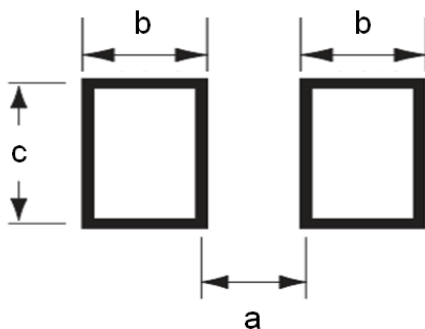
Packaging

Size EIA (EIAJ)	2512	3920
Standard Packing Quantity (pcs /reel)	4,000	3,000

Storage Conditions

Temperature : 22~28°C, Humidity : 40~75%

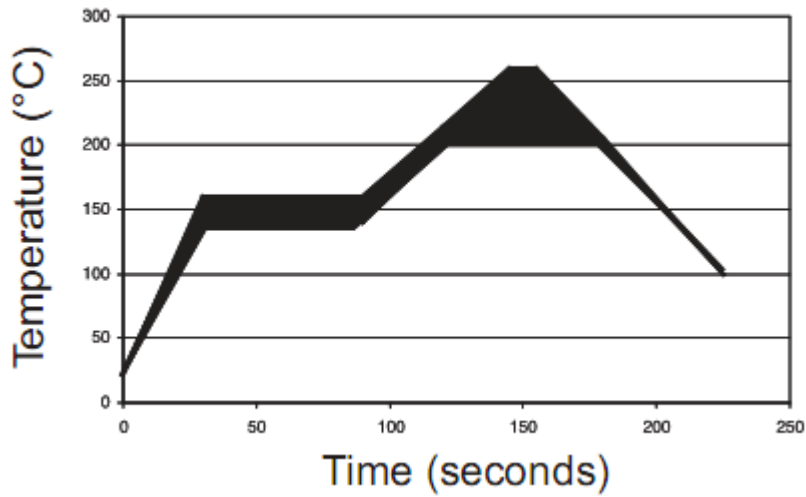
Recommended Solder Pad Layout



Type	Pad Layout Dimension (mm)		
	a	b	c
2512	3.80	1.80	3.40
3920	5.60	2.70	6.20

Soldering Recommendations

- ◆ Peak reflow temperatures and durations :
 - IR Reflow Peak = 260°C max for 10 sec
 - Not suitable for wave soldering
- ◆ 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.