

# WELLCOMP TECHNOLOGY CO., LTD

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## APPROVAL SHEET

<b>Model Name</b>	<b>Thinner Metal Foil Current Sensing Resistor For Automotive</b>
<b>Part Number</b>	<b>WMCSTAL1530C003FPEA</b>
<b>Customer Name</b>	
<b>Customer P/N</b>	
<b>Issued Date</b>	

Customer		Maker		
Approved	Checked	Inspector	Checked	Prepared



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## Features

- ◆ Chip size: 1530
- ◆ Resistance value from 2~30mΩ (refer to Electrical Specification)
- ◆ Lead free, RoHS compliant for global applications and halogen free

## Application

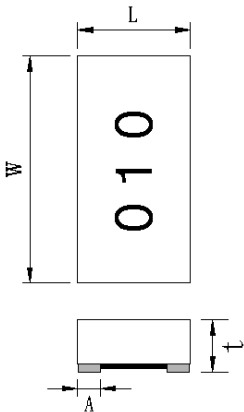
- ◆ Switching power supply
- ◆ Voltage Regulation module
- ◆ DC-DC converter, Adapter, Battery pack and charger
- ◆ Pad and Cell Phone; Power management applications
- ◆ Automotive electronics, Motors, Inverters

## Part Numbering System

**WMCSTA L7638 C003 F P E A**  
 (1) (2) (3) (4) (5) (6) (7)

- (1) Series Code
- (2) Long terminal: L; Size (EIA): Length x Width
- (3) Resistance: R003 means 0.003Ω with low EMF, C003 means 0.003Ω with high operating temperature
- (4) Tolerance: F=+/-1%, G=+/-2%, J=+/-5%
- (5) Power Rating: A=1/4W, F=1/3W, S=1/2W, Q=3/4W, C=1W, D=1.5W, E=2W, H=3W, P=4W
- (6) Packaging: T- Embossed paper tape, 7" reel  
 E-Embossed plastic tape, 7" reel
- (7) Factory Code, A=TWN Factory

## Dimension



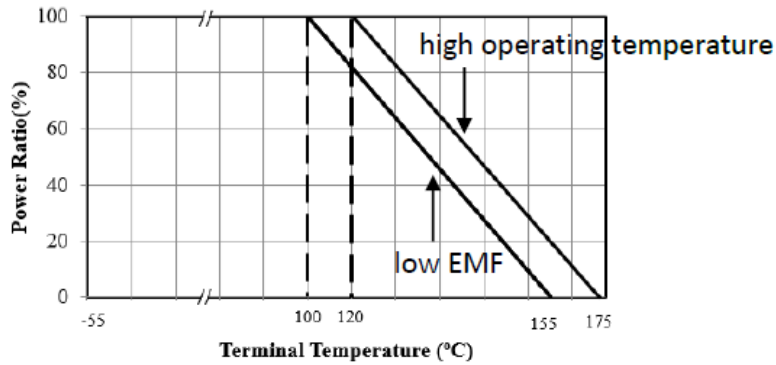
Type (inch size)	Size(mm)	Dimensions(mm)			
		L	W	t	A
MCSTAL1530	7638	3.9±0.30	7.5±0.30	0.5±0.30	0.6±0.20

## Electrical Specification

Item	Power Rating	Resistance Range(mΩ)	Operation Temp. Range	TCR (PPM/°C)
MCSTAL1530	4W	3	-55~+170°C	±100*

\*TCR was measured by resistor element, but the value will difference by different measurement method.

## Derating Curve



## Performances

### Environmental Performance

No.	Item	Test Condition	Specification
1	Short Time Overload	5 times rated power for 5 sec , (JIS-C5202-5.5)	ΔR: ±(1%+0.0005Ω)
2	Temperature Coefficient of Resistance (T.C.R.)	+25°C /+100°C. (JIS-C5202-5.2) $TCR (ppm/°C) = \frac{\Delta R}{R \times \Delta t} \times 10^6$	Refer to electrical specification.
3	Biased Humidity	The specimens shall be placed in a chamber and subjected to a relative humidity of 85% percent and a temperature of 85° ±2°C for the period of 1000 hr. (MIL-STD-202, Method 103)	ΔR: ±(1%+0.0005Ω)
4	High Temperature Exposure	The ship (mounted on board) is exposed in the heat chamber 170±3°C for 1000 hrs. (JIS-C5202-7.2)	ΔR: ±(1%+0.0005Ω)
5	Load Life	Apply rated power at 90±2°C for 1000 hours with 1.5 hours ON and 0.5 hour OFF. (JIS-C5202-7.10)	ΔR: ±(1%+0.0005Ω)
6	Moisture Resistance (Climatic Sequence)	(ΔR/R1) ≤±0.5%	Mil-STD-202, Method 106

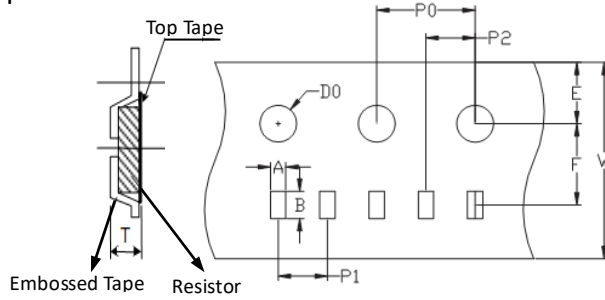
### Function Performance

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 2mm(+0.2/-0mm) illustrated in the figure below and hold for 10±1 sec. (JIS-C5202-6.1)</p> <p style="text-align: right;">Unit: mm</p>	ΔR: ±(1%+0.0005Ω)
2	Solvent Resistance	<p>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)</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±5°C for 10±1 sec. (MIL-STD-202, Method 210)</p>	ΔR: ±(1%+0.0005Ω)
4	Solderability	<p>The specimen chip shall be immersed into the flux specified in the solder bath 235±5°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;"> <math>h = 10 \text{ mm}</math>  <math>H = 10 \text{ mm min.}</math> </p>	Solder shall be covered 95% or more of the electrode area.
5	Thermal Shock	-55°C /125°C (30min) 1000cyc	Δ R: (1%+0.0005Ω)
6	Terminal strength	1.8kg 60sec	Δ R: (1%+0.0005Ω)

**Remark:** The surface temperature of component should below 100°C

## Tape Packaging Specifications

### ◆ Embossed Plastic Tape Specifications



Type	Carrier Dimensions (mm)									
	A	B	E	F	W	P0	P1	P2	D0	T
1530	4.3±0.15	7.7±0.15	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

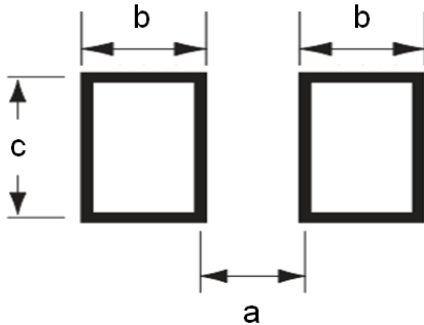
## Packaging

Size EIA (EIAJ)	1530
Standard Packing Quantity (pcs /reel)	4,000

## Storage Conditions

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

## Recommended Solder Pad Layout

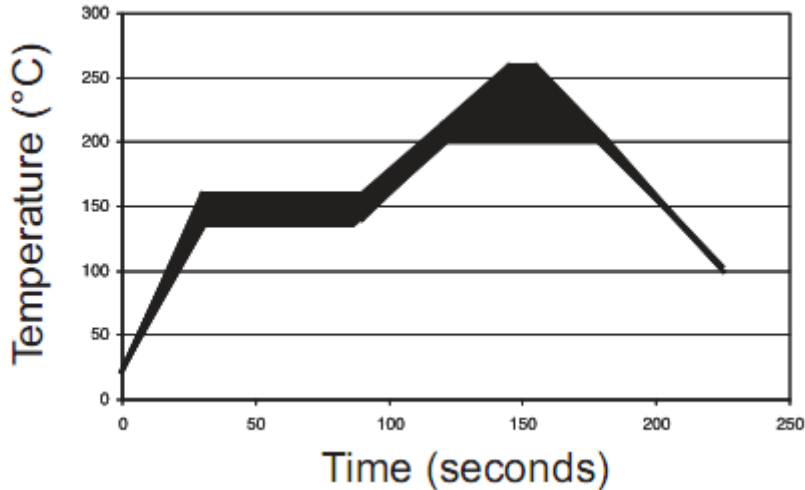


Type	Pad Layout Dimension (mm)		
	a	b	c
0508	0.5	1.3	2.6
0612	0.6	1.3	3.6
1225	1.6	1.4	7.0
1530	2.1	1.6	8.0
1628	2.3	1.6	7.6
2043	2.5	2.0	12.0

\*\* Please contact Wellcomp if special layout.

## 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.

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# WMCSTAL1530C003FPEA

## Thinner Metal Foil Current Sensing Resistor for Automotive

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