WELLCOMP TECHNOLOGY CO., LTD

APPROVAL SHEET

Model Name	**Metal Film Current Sensing Resistor**
Part Number	**WTCS 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.
桃園縣龜山鄉南上路 **526** 號
NO. 526, NangShang RD., Guishan Township
Taoyuan Country 333, Taiwan
Tel: +886-3-2220730, 2220731
Fax: +886-3-2222820

WTCS Series

Metal Film Current Sensing Resistor

Document No: 20130502001
Issued Date: 2013/5/2
Version: A08

Features

◆Chip size from 0402 to 2512
◆Resistance Value from 20mΩ to 910mΩ
◆Lead free, RoHS compliant for global applications and halogen free

Application

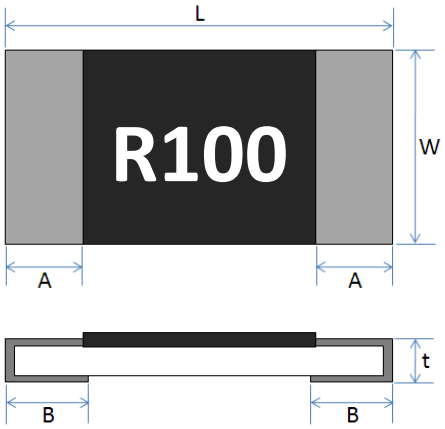
◆Mobile electronic equipment-Cellular phone, NB Tablet PC, GPS, DSC, HDD
◆DC-DC converter, Adapter, Battery pack and charger
◆Switching power supply
◆Voltage Regulation module
◆Power management applications

Part Numbering System

WTCS	2512	R100	F	E	x
(1)	(2)	(3)	(4)	(5)	(6)

(1) Series Code
(2) Size (EIA): Length x Width
(3) Resistance: R047=47mΩ, R100=100mΩ
(4) Tolerance: F=+/-1%, G=+/-2%, J=+/-5%
(5) Packaging: T- Embossed paper tape, 7" reel
E-Embossed plastic tape, 7” reel
(6) Factory Code

Dimension



Type	Dimensions				
(inch size)	L	W	t	A	B
0402	1.00±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10
0603	1.55±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.35±0.20
0805	2.10±0.15	1.30±0.15	0.65±0.15	0.40±0.20	0.40±0.20
1206-S Type	3.10±0.20	1.65±0.10	0.65±0.15	0.50±0.30	0.45±0.20
1206-L Type				0.8±0.30	
2010-S Type	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.30	0.50±0.25
2010-L Type				1.6±0.30	
2512-S Type	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.30	0.50±0.25
2512-L Type				1.8±0.30	

*Remark: R≧100mΩ is S Type
R<100mΩ is L Type

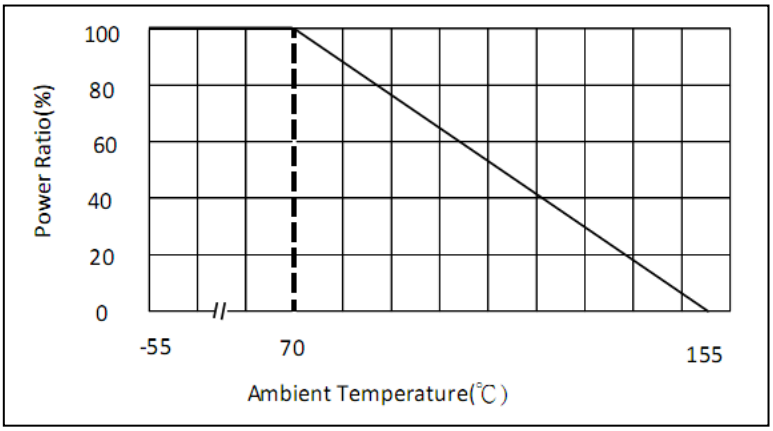
Electrical Specification

Type	Power Rating	Resistance Range(mΩ)	Operation Temp. Range	TCR (PPM/℃)
0402	1/16W	100-300	-55~+155℃	±300
		301-910		±200
0603	1/8W	100-910		±200
0805	1/4W	20-46		±500
		47-99		±300
		100-910		±200
1206	1/2W	20-46		±500
		47-99		±300
		100-910		±200
2010	3/4W	47-910		±200
2512	1W	47-910		±200

Note:

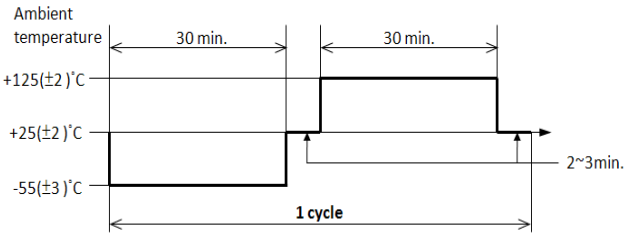
(1) Non-Standard resistance values available

Derating Curve

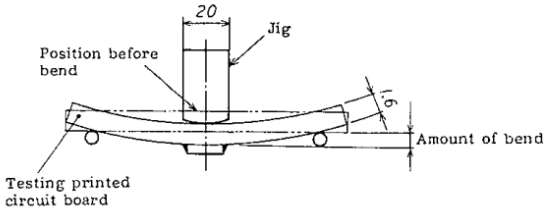
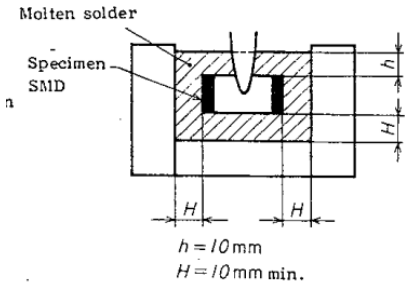


Performances

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)	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

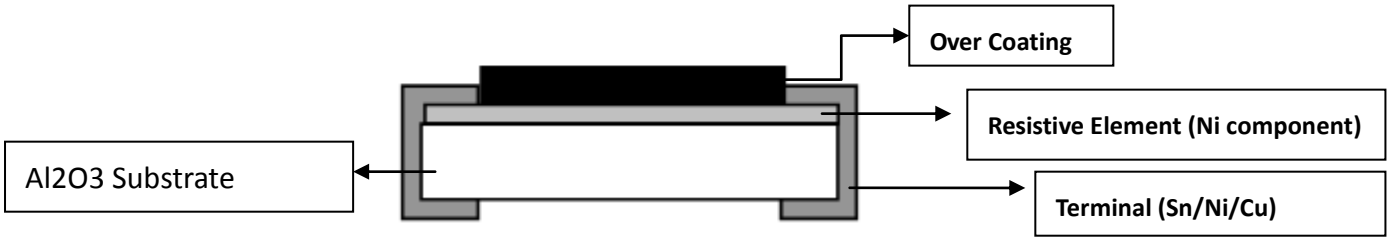
No.	Item	Test Condition	Specification
1	Bending Strength	Mount the chip to test substrate. Apply pressure in direction of arrow unit band width reaches 3mm(+0.2/-0mm) illustrated in the figure below and hold for 10±1 sec. (JIS-C5202-6.1) Unit: mm 	ΔR: ±(1%+0.0005Ω)
5	Solvent Resistance	The chip is completed 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°C 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°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) 	Solder shall be covered 95% or more of the electrode area.

WTCS Series

Metal Film Current Sensing Resistor

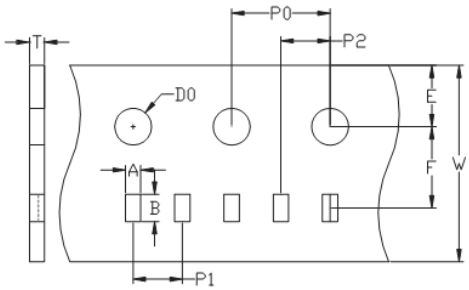
Document No: 20130502001
Issued Date: 2013/5/2
Version: A08

Construction



Tape Packaging Specifications

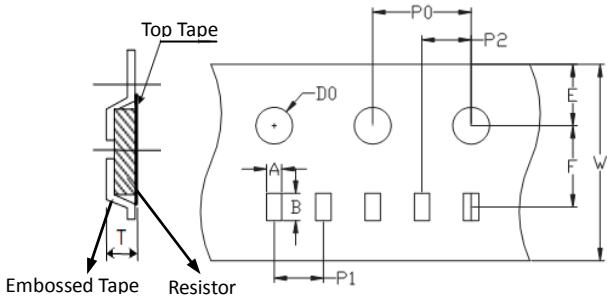
◆ **Paper Tape Specification**



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	0.45±0.1
0603	1.1±0.1	1.9±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	0.64±0.1
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
2010	2.85±1.0	5.4±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
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

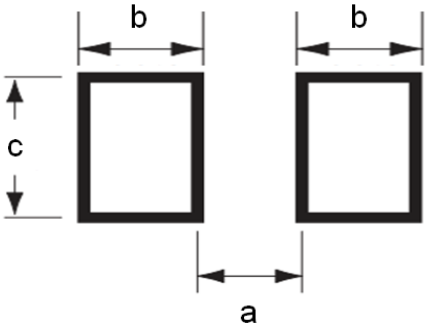
◆ Packaging

Size EIA (EIAJ)	0402	0603/0805/1206	2010/2512
Standard Packing Quantity (pcs /reel)	10,000	5,000	4,000

Storage Conditions

Temperature：5~35℃, Humidity：40~75%

Recommended Solder Pad Layout



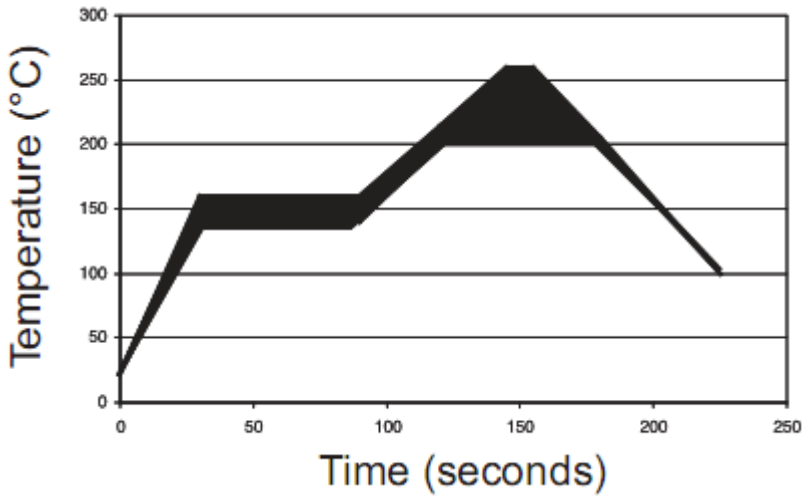
Type	Pad Layout Dimension (mm)		
	a	b	c
0402	0.60	0.50	0.60
0603	0.90	0.70	1.00
0805	1.20	1.20	1.40
1206	2.20	1.30	1.80
2010	3.50	1.50	3.00
2512	3.80	2.10	3.40

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.