APPROVAL SHEET

Model Name	**Metal Strip Current Sensing Resistor**
Part Number	**IMCSM2512R002FEEA**
Customer Name	
Customer P/N	
Issued Date	

Customer		Maker		
Approved	Checked	Inspector	Checked	Prepared
		Cody Liu	Cody Liu	Cody Liu

MCSM2512 Series

Metal Strip Current Sensing Resistors

Document No:2WO4
Issued Date:2018/02
Version : A004

Features

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

Application

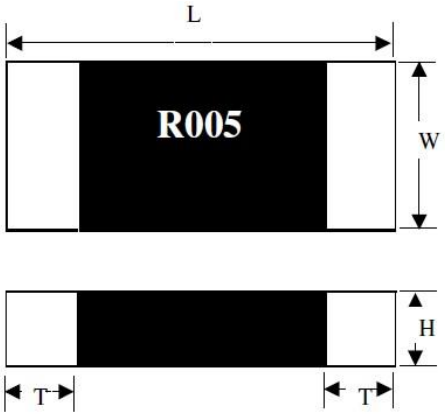
- ◆Mobile electronic equipment-Cellular phone, NB Tablet PC, GPS, DSC, HDD
- ◆DC-DC converter, Adapter, Battery pack and charger
- ◆Switching power supply
- ◆Voltage Regulation module and
- ◆Power management applications

Part Numbering System

IMCSM	2512	R002	F	E	E	A
(1)	(2)	(3)	(4)	(5)	(6)	

(1) Series Code
(2) Size (EIA): Length x Width
(3) Resistance: R002=2mΩ, R010=10mΩ, R050=50mΩ
(4) Tolerance: F=+/-1%, G=+/-2%, J=+/-5%
(5) Power Rating: S=0.5W, C=1W, D=1.5W, E=2W, H=3W, P=4W, I=5W
(6) Packaging: T- Embossed paper tape, 7" reel
E-Embossed plastic tape, 7” reel
(7) Special: A=Stander M=Low EMF

Dimension

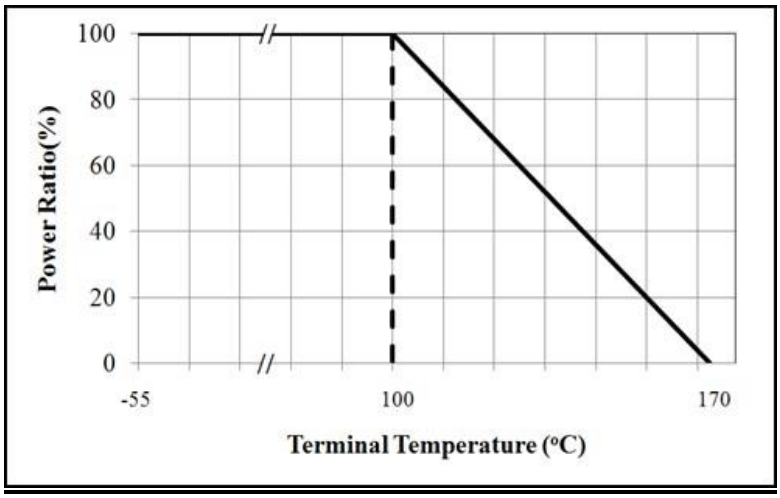


MCSM2512 Series

Metal Strip Current Sensing Resistors

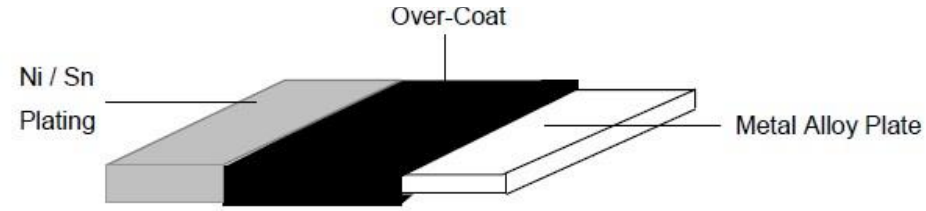
TYPE	Resistance Range (Ω)	T.C.R (ppm/℃) Max. & Material	Power Rating (watts)	Dimensions-mm(inches)			
				L	W	H	T
0805	0.001~0.05	MnCu±75 R≦20mΩ FeCrAi±100 R≧21mΩ	0.25-0.5	2±0.25 (0.08±0.01)	1.25±0.25 (0.05±0.01)	0.65±0.25 (0.03±0.01)	0.5±0.25 (0.02±0.01)
1206	0.001~0.12	MnCu±75 R≦15mΩ FeCrAi±100 R≧16mΩ	0.5-1.0	3.1±0.25 (0.12±0.01)	1.6±0.25 (0.06±0.01)	0.75±0.25 (0.03±0.01)	0.7±0.25 (0.03±0.01)
2010	0.0005-0.029	MnCu±75 R≦15mΩ FeCrAi±100 R≧16mΩ	1W-2W	5.1±0.25 (0.2±0.01)	2.65±0.25 (0.1±0.01)	0.85±0.25 (0.03±0.01)	1.3±0.25 (0.05±0.01)
	0.03-0.1						0.7±0.25 (0.05±0.01)
2512	0.0005-0.03	CuNi±50 R≦1mΩ MnCu±75 R≦20mΩ FeCrAi±100 R≧21mΩ	2W-3W	6.3±0.25 (0.3±0.01)	3.2±0.25 (0.13±0.01)	0.85±0.25 (0.03±0.01)	1.9±0.25 (0.074±0.01)
	0.004-0.059		2W-3W				1.15±0.25 (0.05±0.01)
	0.06-0.1		1.5W-3W				0.8±0.25 (0.03±0.01)
	0.11-0.2		1.5W				
2725	0.0005-0.079	MnCu±75 R≦10mΩ FeCrAi±100 R≧50mΩ	3W-4W	7.1±0.25 (0.3±0.01)	6.3±0.25 (0.3±0.01)	0.85±0.25 (0.03±0.01)	1.9±0.25 (0.07±0.01)
	0.08-0.1						1.15±0.25 (0.05±0.01)
							0.8±0.25 (0.03±0.01)

Derating Curve



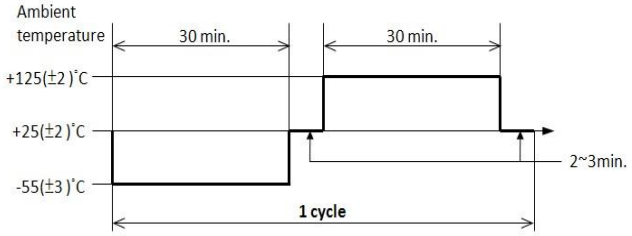
●All Specifications are subject to change without notice.

Construction

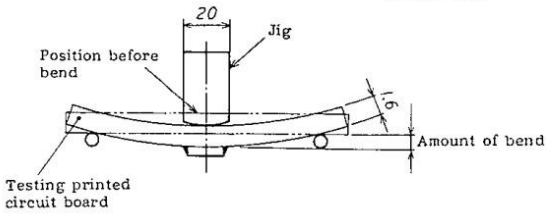
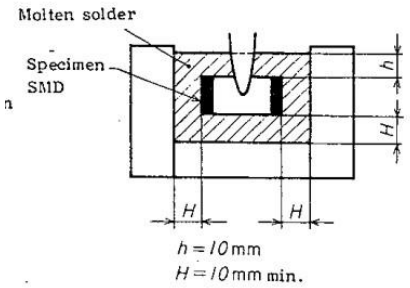


Performances

Environmental Performance

No.	Item	Test Condition	Specification
1	Short Time Overload	Voltage equal to 4 time rated power for 5 sec , (JIS-C5202-5.5)	R: ±(1%+0.0005)
2	Temperature Coefficient of Resistance (T.C.R.)	$TCR\ (\text{ppm}/℃) = \frac{\Delta R}{R \times \Delta t} \times 10^6$ +25°C /+125°C. (JIS-C5202-5.2)	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)	R: ±(1%+0.0005)
4	High Temperature Exposure	The ship (mounted on board) is exposed in the heat chamber 125±3℃ for 1000 hrs. (JIS-C5202-7.2)	R: ±(1%+0.0005)
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)	R: ±(1%+0.0005)
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)	R: ±(1%+0.0005)

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 	R: ±(1%+0.0005)
2	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)
3	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)	R: ±(1%+0.0005)
4	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.

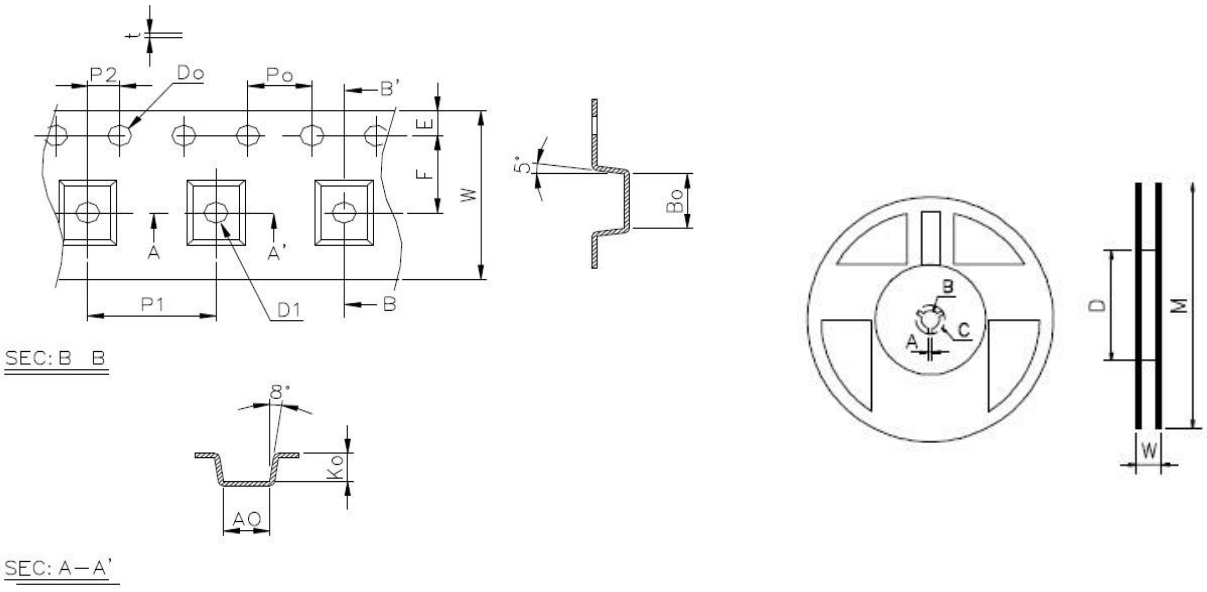
.**Remark:**

a. 3W with total solder pad trace size of 300mm^2 . The surface temperature of component should below 100℃ .

Tape Packaging Specifications ◆Paper

Tape Specifications

Item	W	P1	E	F	Do	D1	P0	P2	Ao	Bo	Ko	t
0805	8.00	4.00	1.75	3.50	1.55	1.00	4.00	2.00	1.45	2.25	0.90	0.25
1206	8.00	4.00	1.75	3.50	1.55	1.00	4.00	2.00	1.83	3.50	0.90	0.20
2010	12.00	4.00	1.75	5.50	1.50	1.50	4.00	2.00	2.90	5.45	1.10	0.23
2512	12.00	8.00	1.75	5.50	1.55	1.50	4.00	2.00	3.90	6.74	1.08	0.24
2725	16.00	12.00	1.75	7.50	1.50	---	4.00	2.00	6.5	7.25	1.200	0.30
Tolerance	±0.30	±0.10	±0.10	±0.05	±0.05	MIN	±0.10	±0.05	±0.10	±0.10	±0.10	±0.10



Unit : mm

Model	Reel			
	Tape Width	Diameter	Pieces/Reel	Code
0805	8mm/Embossd Plastic	178mm/7"	5,000	1
1206	8mm/Embossd Plastic	178mm/7"	2,000	1
2010	12mm/Embossd Plastic	178mm/7"	2,000	1
2512	12mm/Embossd Plastic	178mm/7"	2,000	1
2725	16mm/Embossd Plastic	178mm/7"	1000	1

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：

MCSM2512 Series

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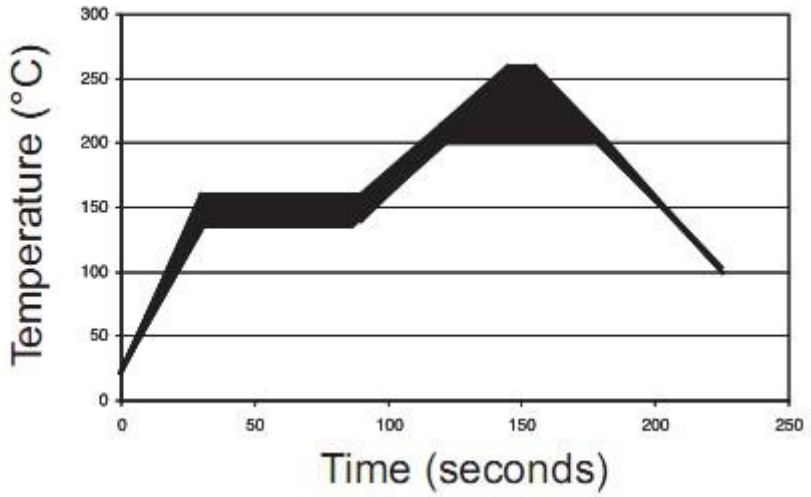
Storage

Humidity：

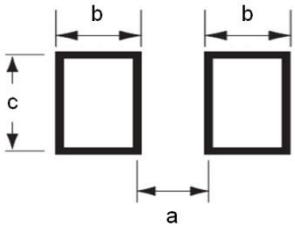
Solder Pad



Conditions

Temperature：5~35℃,
40~75%

Recommended Layout



Type	Resistance Range (Ω)	Power Rating (watts)	Dimensions-mm (inches)		
			a	b	i
0805	0.001~0.05	0.25W~0.5W (V)~(U)	0.9(0.035)	1.5(0.059)	0.8(0.031)
1206	0.001~0.12	0.5W~1W (U)~(T)	1.5(0.059)	1.95(0.077)	0.8(0.031)
2010	0.0005~0.029	1W~2W (T) ~(S)	2.25(0.089)	2.9(0.114)	1.5(0.059)
	0.03~0.1		1.6(0.063)	2.9(0.114)	3.14(0.124)
2512	0.0005~0.0049	1W~1.5W (T)~(A)	3(0.118)	3.65(0.144)	1.5(0.059)
	0.0001~0.079		2.2(0.087)	3.65(0.144)	3.14(0.124)
	0.08~0.2		1.9(0.075)	3.65(0.144)	3.6(0.141)
	0.0005~0.0049	2W (S)	3(0.118)	3.65(0.144)	1.5(0.059)
	0.0005~0.079		2.2(0.087)	3.65(0.144)	3.14(0.124)
	0.001~0.003	3W (R)	3(0.118)	3.65(0.144)	1.5(0.059)
2725	0.0005~0.001	4W (E)	3(0.118)	7(0.27)	1.5(0.059)
	0.002~0.05	4W (E)	2.2(0.087)		3.14(0.124)
	0.051~0.1	3W (R)	1.9(0.075)		3.6(0.141)

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.