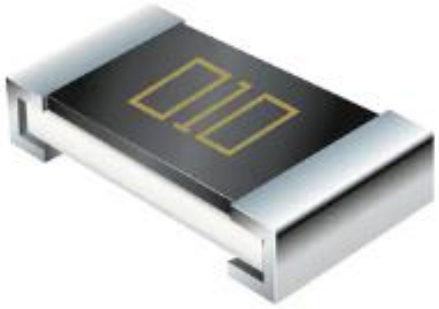
Hi-Reliability Metal Foil, Current Sensing Resistor

HRRCS Series



Features

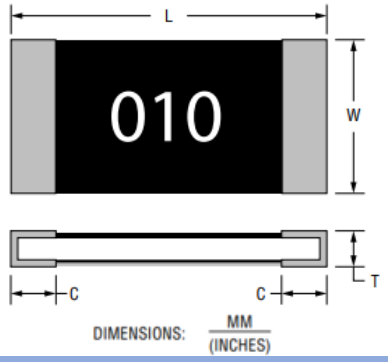
- Metal foil technology
- High reliability and stability
- High power density
- Low temperature coefficient of resistance
- Available with Sn, Sn/Pb, or Au terminal finish
- MIL-PRF-55342 and Space Level screening available

Electrical Characteristics

Characteristic	Model			
	HRRCS0403	HRRCS0603	HRRCS0805	HRRCS1206
Power Rating @ 70 °C	0.2 W	0.5 W	0.75 W	1 W
Resistance Value	10 mΩ 20 mΩ	5 mΩ 10 mΩ 20 mΩ	5 mΩ 10 mΩ 20 mΩ 30 mΩ	5 mΩ 10 mΩ 20 mΩ 40 mΩ
Tolerance	±1 %, ± 5 %			
Operating Temperature Range	-55°C to +125°C	-55C °C to +155 °C		
Temperature Coefficient of Resistance	±100 PPM/°C	±50 PPM/°C and ±100 PPM/°C		

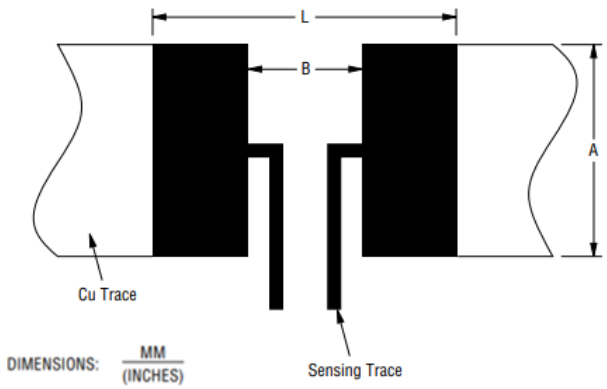
Product Dimensions

Model	L	W	C	T
HRRCS0402	1.10 ± 0.10 (0.043 ± 0.004)	0.55 ± 0.10 (0.021 ± 0.004)	0.25 ± 0.10 (0.009 ± 0.004)	0.45 ± 0.10 (0.018 ± 0.004)
HRRCS0603	1.60 ± 0.20 (0.063 ± 0.008)	0.80 ± 0.20 (0.031 ± 0.008)	0.40 ± 0.20 (0.016 ± 0.008)	0.60 ± 0.20 (0.024 ± 0.008)
HRRCS0805	2.00 ± 0.20 (0.079 ± 0.008)	1.25 ± 0.20 (0.049 ± 0.008)	0.40 ± 0.20 (0.016 ± 0.008)	0.70 ± 0.20 (0.028 ± 0.008)
HRRCS1206	3.20 ± 0.20 (0.125 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	0.50 ± 0.20 (0.020 ± 0.008)	0.70 ± 0.20 (0.028 ± 0.008)



Recommended Solder Pad Layout

Model		A	L	B
HRRCS0402	10 ≤ R ≤ 20	0.790 (0.027)	1.20 (0.047)	0.45 (0.018)
HRRCS0603	10 ≤ R ≤ 20	1.00 (0.039)	2.80 (0.110)	0.60 (0.024)
HRRCS0805	10 ≤ R ≤ 30	1.40 (0.055)	3.20 (0.126)	1.20 (0.047)
HRRCS1206	20 ≤ R ≤ 30	1.80 (0.071)	4.70 (0.185)	1.60 (0.063)
	R = 40			2.20 (0.087)



Part Ordering Information

HRRCS 0603 – R005 J W 1 PB

HRRCS = High Reliability Metal Foil Current Sensing Resistor

0603 = EIA Package Size

*R005 = Resistance Code

J = Resistance Tolerance (1% = F, 5% = J)

W = TCR (X = ± 100 PPM/°C, Z = ± 50 PPM/°C)

Screening Options: 1, 2, 3, 4, 5 (see screening options below)

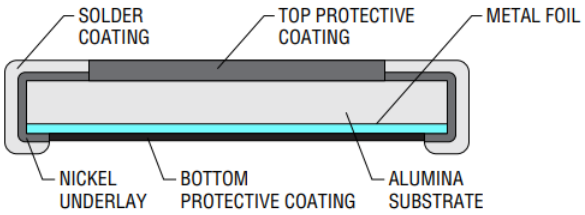
Termination Code: PB = Sn/Pb plated; Sn = Sn plated; AU – Au plated

* "R" (decimal point)followed by three significant digits (example: R005 = 0.005 ohms)

Standard Screening Options

- Option 1: 100% visual inspection per MIL-PRF-55342, AS9102 FAIR, MIL-STD-1580 DPA.
- Option 2: 100% Group A and B Screening per MIL-PRF-55342, AS9102 FAIR, MIL-STD-1580 DPA (see AEM detail specification for more details).
- Option 3: 100% Group A, B, and C Screening per MIL-PRF-55342, AS9102 FAIR, MIL-STD-1580 DPA (see AEM detail specification for more details).
- Option 4: 100% Group A, B, and Qualification Screening per MIL-PRF-55342, AS9102 FAIR, MIL-STD-1580 DPA (see AEM detail specification for more details).
- Option 5: Customer Source Control Drawing (SCD) defined screening. AEM will customize screening based on customer requirements.

Construction



Marking

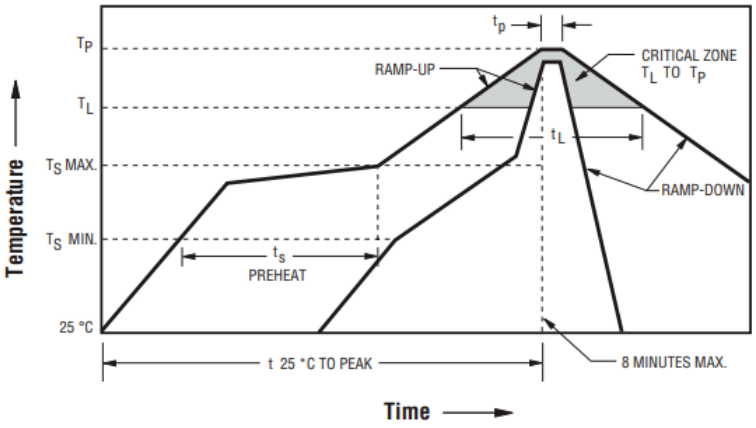
HRRCS0805
HRRCS1206

005 = 5 mΩ
010 = 10 mΩ
020 = 20 mΩ
6.5 = 6.5 mΩ

HRRCS0402
HRRCS0503

No Marking

Recommended Pb-Free Soldering Profile



Solder Profile	Lead Free Assembly
Average ramp-up rate (T_{smax} to T_p)	3 °C / second max.
Preheat: - Temperature Min. (T_{smin}) - Temperature Max. (T_{smax}) - Time (T_{smin} to T_{smax}) (t_s)	 150 °C 200 °C 60~150 seconds
Time maintained above: - Temperature (T_L) - Time (T_L)	 217 °C 60~120 seconds
Peak Temperature (T_p)	260 °C
Time within +0/-5 °C of actual Peak Temperature $(T_p)^2$	10 seconds
Ramp-down rate	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

Recommended Sn/Pb Soldering Profile