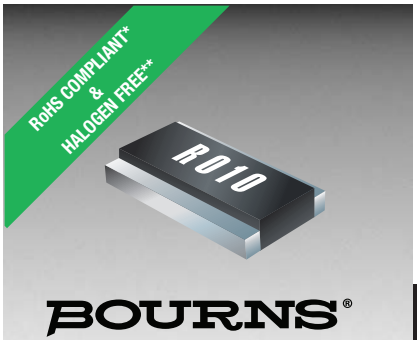


Features

- Wide terminal type
- Excellent heat dissipation
- High reliability
- Metal alloy plate
- RoHS compliant* and halogen free**

Applications

- Current sensing
- Power supplies
- Stepper motor drives
- Input amplifiers

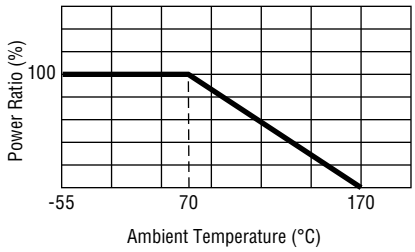
CRK Series Metal Strip, Wide Terminal Current Sense Resistor

Electrical Characteristics

Characteristic	Model	
	CRK0612	CRK0815
Power Rating @ 70 °C	1 W	
Resistance Value	1 mΩ, 5 mΩ, 10 mΩ	4 mΩ, 5 mΩ, 10 mΩ
Operation Temperature Range	-55 °C ~ +170 °C	
Temperature Coefficient of Resistance	±50 ppm/°C	
Tolerance	±1 %, 5 %	
Insulation Resistance	Over 100 MΩ	
Maximum Working Voltage (V)	$(P*R)^{1/2}$	

Note: 1 Watts with total solder pad and trace size of 300 mm²

Derating Curve



Reliability Tests

Test Items	Reference Standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1-4.8 JIS-C5201-4.8	+25 °C ~ +125 °C	—
Load Life	IEC60115-1-4.25.1 JIS-C5201-4.25.1	1000 hours at rated power, 70 °C, 1.5 hours “ON”, 0.5 hour “OFF”	< ±1 %
Short Time Overload	IEC60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5 s	< ±0.5 %
Moisture no Load	IEC60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a)	85 °C, 85 %RH, 1000 hrs	< ±0.5 %
Temperature Cycle	IEC60115-1-4.19 JIS-C5201-4.19	-55 °C & +155 °C, 100 cycle, 15 min per extreme condition	< ±0.5 %
Resistance to Soldering Heat	IEC60115-1-4.18 JIS-C5201-4.18	260 ±5 °C for 10 ±1 sec	< ±0.5 %
Solderability	IEC60115-1-4.17 JIS-C5201-4.17	245 ±5 °C, 2 ±0.5 sec	At least 95 % of surface area of electrode shall be covered with new solder
High Temperature Exposure	IEC60115-1- 4.23.2 JIS-C5201-4.23.2	155 °C, 1000 hrs	< ±0.5 %
Low Temperature Storage	EC60115-1- 4.23.4 JIS-C5201-4.23.4	-55 °C, 1000 hrs	< ±0.5 %
Substrate Bending	IEC60115-1-4.33 JIS-C5201-4.33	Bending width 2 mm	< ±1 %
Insulation Resistance	IEC60115-1-4.6 JIS-C5201-4.6	100 V DC for 1 minute	>100 MΩ

WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

** Bourns considers a product to be “halogen free” if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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Users should verify actual device performance in their specific applications.
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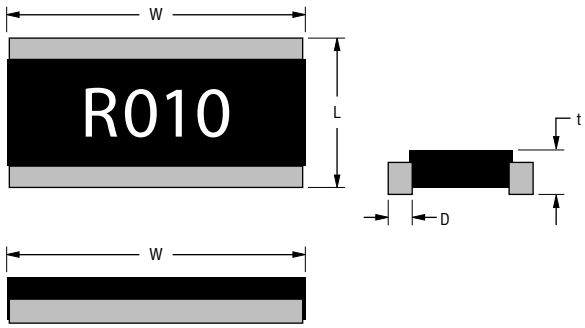
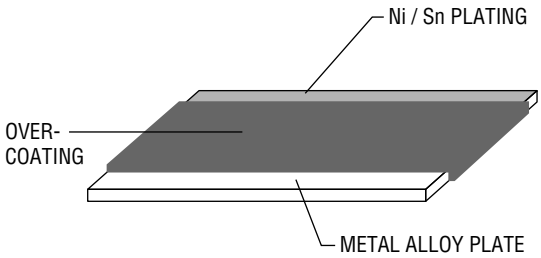
Product Dimensions



	W	L	D	t
CRK0612	3.20 ± 0.2 (.126 ± .008)	1.70 ± 0.2 (.067 ± .008)	0.40 ± 0.2 (.016 ± .008)	0.60 ± 0.2 (.027 ± .008)
CRK0815	3.75 ± 0.3 (.148 ± .012)	2.30 ± 0.2 (.091 ±. 008)	0.50 ± 0.2 (.020 ± .008)	0.70 ± 0.2 (.028 ± .008)

DIMENSIONS: MM / (INCHES)

Construction



Environmental Characteristics

Storage Conditions
- Temperature .....+5 °C ~ +35 °C
- Humidity .....40 % ~ 75 %

Shelf Life.....2 years from manufacturing date
Solder Recommendations..... Reflow profile
(Solder: Sn96.5 / Ag3 / Cu0.5)
Moisture Sensitivity Level..... 1

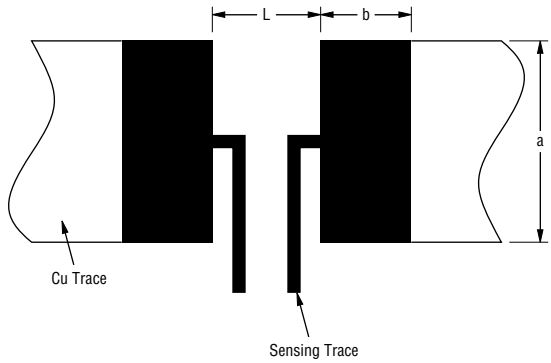
Rated Voltage

The rated voltage is calculated by the following formula:

$V=\sqrt{P \times R}$

V: Rated Voltage (V)
P: Rated Power (W)
R: Resistance Value (Ω)

Recommended Solder Pad Dimensions



	a	b	L
CRK0612	3.80 (0.15)	0.70 (0.03)	0.70 (0.03)
CRK0815	4.20 (0.17)	0.80 (0.03)	1.20 (0.05)

DIMENSIONS: MM / (INCHES)

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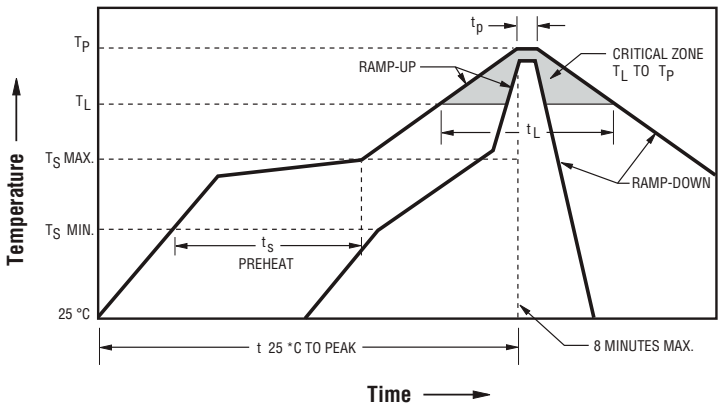
Solder Reflow Recommendations



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.

How to Order

CRK 0612 - F Z - R005 E

Model
- CRK = Metal Strip, Wide Terminal Current Sense Resistor

Size
- 0612 = 0612 Size
- 0815 = 0815 Size

Resistance Tolerance
- F = ±1 %
- J = ±5 %

TCR
- Z = ±50 PPM/°C

Resistance Code – (See Standard Resistance Values Table)
- "R" (decimal point) followed by three significant digits *(example: R004 = 0.0040 ohms)*

Packaging
- E = Tape and Reel
  - CRK0612: 5,000 pcs. / 7-inch reel;
  - CRK0815: 4,000 pcs. / 7-inch reel

CRK0612 Resistance Values Available

Code	Resistance Value (milliohms
R001	1
R005	5
R010	10

CRK0815 Resistance Values Available

Code	Resistance Value (milliohms
R004	4
R005	5
R010	10

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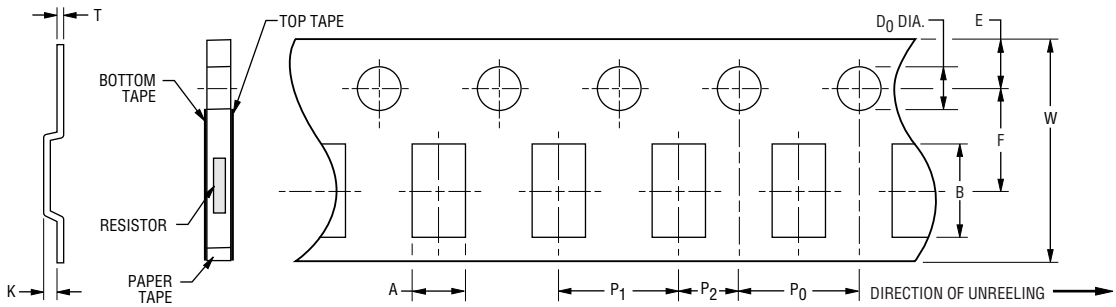
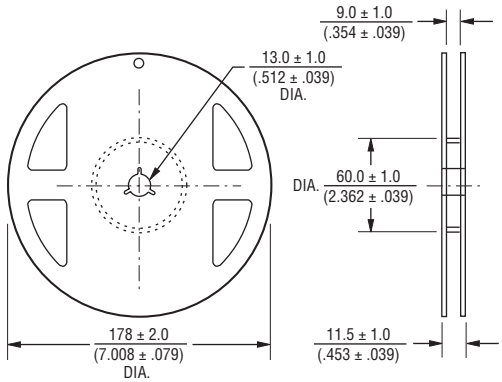
Packaging Dimensions (Conforms to EIA RS-481A)



Model	A	B	W	F	E	P_1	P_2	P_0	D_0	T	K
CRK0612 (paper tape)	2.00 ± 0.15 (.079 ± .006)	3.60 ± 0.20 (.142 ± .008)	8.00 ± 0.20 (.315 ± .008)	3.50 ± 0.05 (.138 ± .002)	1.75 ± 0.10 (.069 ± .004)	4.00 ± 0.10 (.157 ± .004)	2.00 ± 0.10 (.079 ± .004)	4.00 ± 0.10 (.157 ± .004)	1.55 ± 0.10 (.061 ± .004)	0.84 ± 0.10 (.033 ± .004)	—
CRK0815 (embossed)	2.60 ± 0.15 (.102 ± .006)	4.50 ± 0.20 (.177 ± .008)	12.00 ± 0.20 (.472 ± .008)	5.50 ± 0.05 (.217 ± .002)						0.30 ± 0.10 (.012 ± .004)	1.10 ± 0.10 (.043 ± .004)

DIMENSIONS: MM / (INCHES)



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