

Features

- Wide terminal type
- Excellent heat dissipation
- Low inductance <5 nH
- Low thermal EMF <40 $\mu\text{V}/^\circ\text{C}$
- 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 m Ω ~ 10 m Ω	1 m Ω ~ 30 m Ω
Operation Temperature Range	-55 °C ~ +170 °C	
Temperature Coefficient of Resistance	± 100 ppm/°C	
Tolerance	± 1 %, 5 %	
Insulation Resistance	Over 100 M Ω	
Maximum Working Voltage (V)	$(P \cdot R)^{1/2}$	

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

Additional Information

Click these links for more information:



Reliability Tests

Test Items	Reference Standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC 60115-1-4.8 JIS-C5201-4.8	+25 °C ~ +125 °C	—
Load Life	IEC 60115-1-4.25.1 JIS-C5201-4.25.1	1000 hours at rated power, 70 °C, 1.5 hours "ON", 0.5 hour "OFF"	< ± 1 %
Short Time Overload	IEC 60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5 sec	< ± 0.5 %
Moisture no Load	IEC 60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a)	85 °C, 85 %RH, 1000 hrs	< ± 0.5 %
Temperature Cycle	IEC 60115-1-4.19 JIS-C5201-4.19	-55 °C & +155 °C, 300 cycles	< ± 0.5 %
Resistance to Soldering Heat	IEC 60115-1-4.18 JIS-C5201-4.18	260 ± 5 °C for 10 ± 1 sec	< ± 0.5 %
Solderability	IEC 60115-1-4.17 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	IEC 60115-1- 4.23.2 JIS-C5201-4.23.2	170 °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	IEC 60115-1-4.33 JIS-C5201-4.33	Bending width 2 mm	< ± 1 %
Insulation Resistance	IEC 60115-1-4.6 JIS-C5201-4.6	100 V DC for 1 minute	>100 M Ω



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.

Specifications are subject to change without notice.

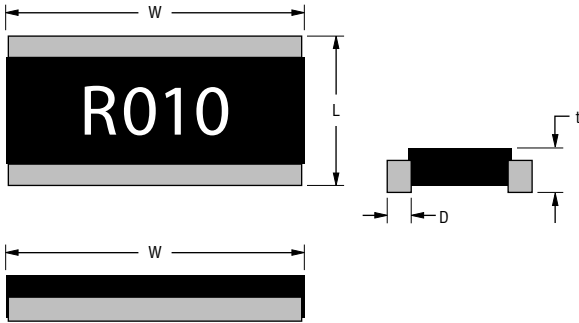
Users should verify actual device performance in their specific applications.

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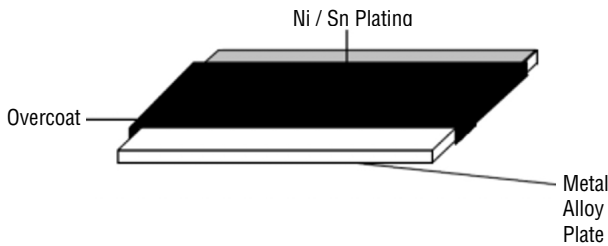
Product Dimensions



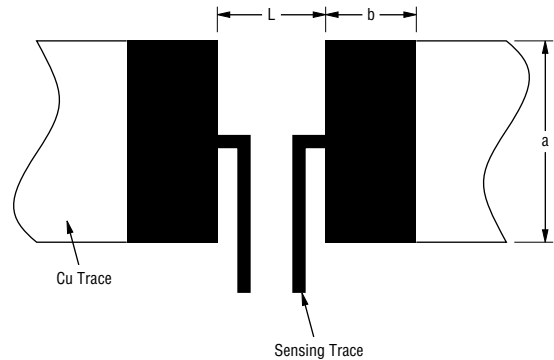
	W	L	D	t
CRK0612	$\frac{3.20 \pm 0.2}{(.126 \pm .008)}$	$\frac{1.70 \pm 0.2}{(.067 \pm .008)}$	$\frac{0.40 \pm 0.2}{(.016 \pm .008)}$	$\frac{0.60 \pm 0.2}{(.027 \pm .008)}$
CRK0815	$\frac{3.75 \pm 0.3}{(.148 \pm .012)}$	$\frac{2.30 \pm 0.2}{(.091 \pm .008)}$	$\frac{0.50 \pm 0.2}{(.020 \pm .008)}$	$\frac{0.70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

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Construction



Recommended Solder Pad Dimensions



	a	b	L
CRK0612	$\frac{3.80}{(0.15)}$	$\frac{0.70}{(0.03)}$	$\frac{0.70}{(0.03)}$
CRK0815	$\frac{4.20}{(0.17)}$	$\frac{0.80}{(0.03)}$	$\frac{1.20}{(0.05)}$

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Environmental Characteristics

Storage Conditions

Temperature+5 °C ~ +35 °C

Humidity40 % ~ 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:

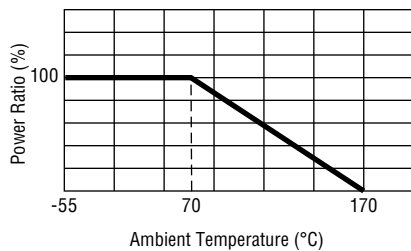
$$V = \sqrt{P \times R}$$

V: Rated Voltage (V)

P: Rated Power (W)

R: Resistance Value (Ω)

Derating Curve



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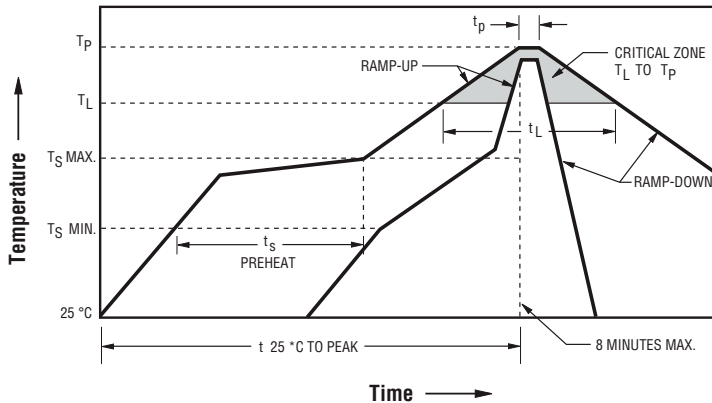
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Solder Reflow Recommendations



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 = ±100 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
R003	3
R005	5
R010	10

CRK0815 Resistance Values Available

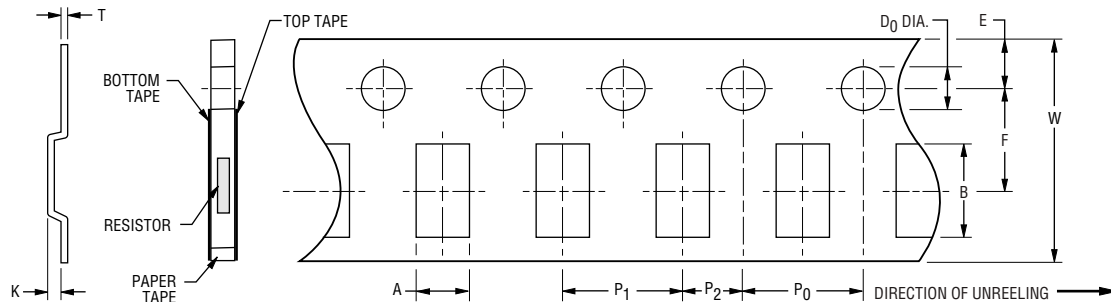
Code	Resistance Value (milliohms)
R003	3
R004	4
R005	5
R010	10

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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)	$\frac{2.00 \pm 0.15}{(.079 \pm .006)}$	$\frac{3.60 \pm 0.20}{(.142 \pm .008)}$	$\frac{8.00 \pm 0.20}{(.315 \pm .008)}$	$\frac{3.50 \pm 0.05}{(.138 \pm .002)}$	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{2.00 \pm 0.05}{(.079 \pm .002)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{1.50 + 0.1/-0}{(.059 + .004/-0)}$	$\frac{0.84 \pm 0.10}{(.033 \pm .004)}$	—
CRK0815 (embossed)	$\frac{2.60 \pm 0.20}{(.102 \pm .008)}$	$\frac{4.50 \pm 0.20}{(.177 \pm .008)}$	$\frac{12.00 \pm 0.20}{(.472 \pm .008)}$	$\frac{5.50 \pm 0.05}{(.217 \pm .002)}$	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{2.00 \pm 0.20}{(.079 \pm .008)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{1.55 \pm 0.05}{(.061 \pm .002)}$	$\frac{0.30 \pm 0.10}{(.012 \pm .004)}$	$\frac{1.10 \pm 0.10}{(.043 \pm .004)}$

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$



BOURNS®

Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com

Europe: Tel: +36 88 885 877 • Email: eurocus@bourns.com

Mexico: Tel: +52 614 478 0400 • Email: mexicus@bourns.com

The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com

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