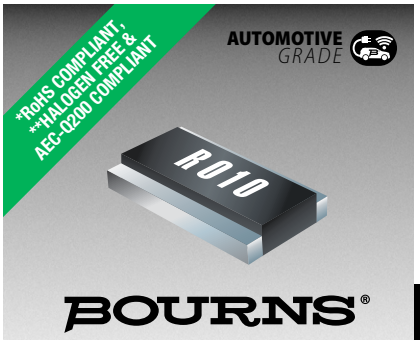


Features

- Wide terminal type
- Excellent heat dissipation
- Low inductance <5 nH
- Low thermal EMF <40 µV/°C
- High reliability
- AEC-Q200 compliant
- 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	CRK1225
Power Rating @ 70 °C	1 W		3 W
Resistance Value	1 mΩ ~ 10 mΩ	1 mΩ ~ 30 mΩ	1 mΩ ~ 55 mΩ
Operation Temperature Range	-55 °C ~ +170 °C		
Temperature Coefficient of Resistance	±100 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

Additional Information

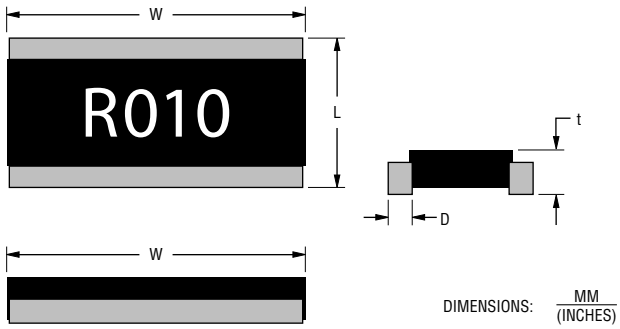
Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

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

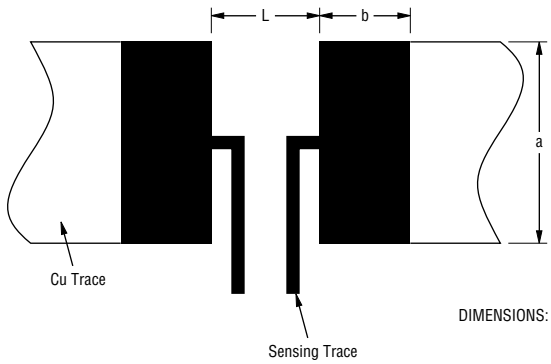
Product Dimensions



DIMENSIONS: MM (INCHES)

	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)
CRK1225	6.40 ± 0.3 (.252 ± .012)	3.20 ± 0.3 (.126 ± .012)	0.50 ± 0.2 (.020 ± .008)	0.90 ± 0.25 (.035 ± .010)

Recommended Solder Pad Dimensions



DIMENSIONS: MM (INCHES)

	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)
CRK1225	7.00 (0.27)	1.00 (0.04)	2.30 (0.09)

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

* RoHS Directive 2015/863, Mar 31, 2015 and Annex.
** 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.

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	±100 PPM//°C
Operation Life	AEC-Q200 Test 8 MIL-STD-202 Method 108	1000 hours at TA=70 °C at 100 % rated power ON/OFF	< ±1 %
Short Time Overload	IEC 60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5 sec.	< ±0.5 %
Biased Humidity	AEC-Q200 Test 7 MIL-STD-202 Method 103	85 °C, 85 % RH, 1000 hrs with 10 % rated power	< ±0.5 %
Temperature Cycle	AEC-Q200 Test 4 JESD22-A104	-55 °C & +155 °C, 1000 cycles	< ±0.5 %
Resistance to Soldering Heat	AEC-Q200 Test 15 MIL-STD-202 Method 210	260 ±5 °C for 10 ±1 sec	< ±0.5 %
Solderability	AEC-Q200 Test 18 J-STD-002	Solder dipping at 235 ±3 °C, 3 ±0.5 sec. Pre-condition: Aging 4 hours at 155 °C dry heat	At least 95 % of surface area of electrode shall be covered with new solder
High Temperature Exposure	AEC-Q200 Test 3 MIL-STD-202 Method 108	170 °C, 1000 hrs	< ±1 %
Resistance to Solvents	AEC-Q200 Test12 MIL-STD-202 Method 215	a: Isopropyl Alcohol c: Deionized Water b: Terpene Defluxer	< ±1 %
Board Flex	AEC-Q200-005	Bending width 2 mm for 60 sec.	< ±0.5 %
Insulation Resistance	IEC 60115-1-4.6 JIS-C5201-4.6	100 VDC for 1 minute	>100 MΩ
Vibration	AEC-Q200 Test 14 MIL-STD-202 Method 204	5 g's for 20 mins., 12 cycles 10~2000 Hz	< ±0.5 %
Terminal Strength/Shear	AEC-Q200-006	1.8 kg for 60 sec.	< ±1 %
ESD	AEC-Q200-002	Apply 500 V	< ±1 %
Mechanical Shock	AEC-Q200 Test 13 MIL-STD-202 Method 213	100 g's for 6 ms	< ±0.5 %
Flammability	AEC-Q200 Test 20 UL-94	V-0 or V-1 are acceptable. Electrical test not required	V-0

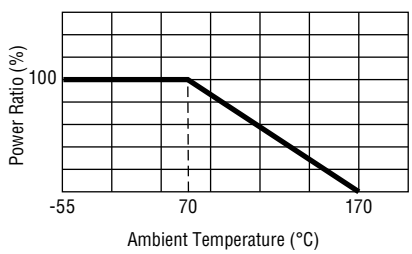
Rated Voltage

The rated voltage is calculated by the following formula:

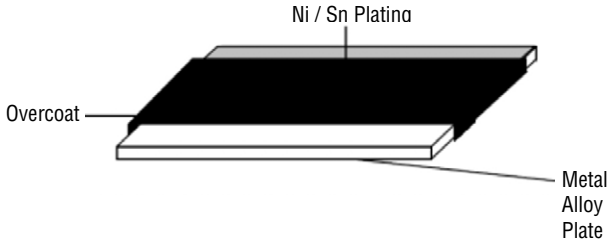
$V=\sqrt{P \times R}$

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

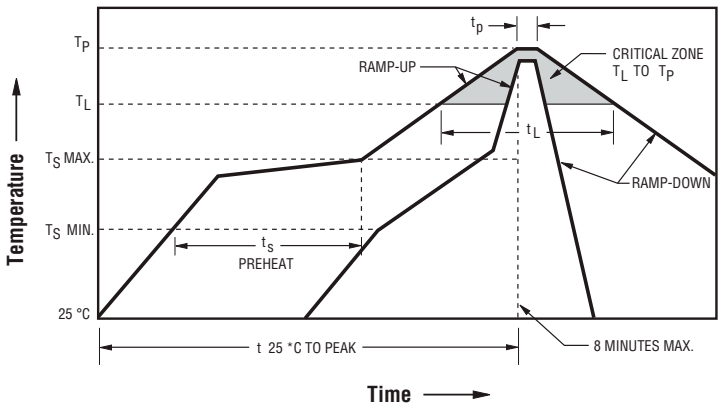
Derating Curve



Construction



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 (Tp)	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
- 1225 = 1225 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
  - CRK1225: 4,000 pcs. / 7-inch reel

Popular Resistance Values

CRK0612

Code	R Value
R001	1 mΩ
R003	3 mΩ
R005	5 mΩ

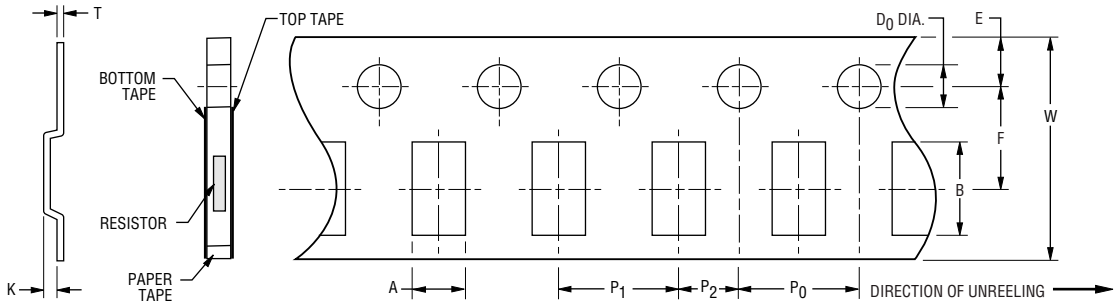
CRK0815

Code	R Value
R003	3 mΩ
R004	4 mΩ
R005	5 mΩ
R010	10 mΩ

CRK1225

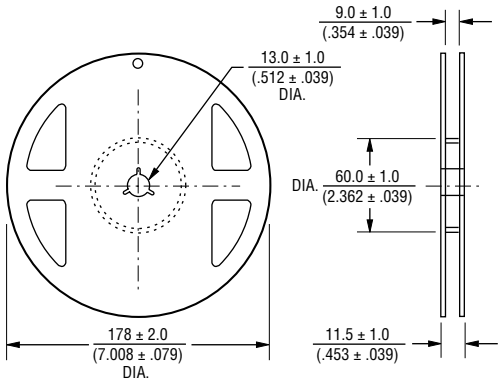
Code	R Value	Code	R Value
R001	1 mΩ	R009	9 mΩ
R002	2 mΩ	R010	10 mΩ
2L20	2.2 mΩ	R012	12 mΩ
R003	3 mΩ	R015	15 mΩ
R004	4 mΩ	R020	20 mΩ
R005	5 mΩ	R025	25 mΩ
R006	6 mΩ	R030	30 mΩ
R007	7 mΩ	R033	33 mΩ
R008	8 mΩ	R040	40 mΩ

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)	1.50 +0.1/-0 (.059 +.004/-0)	0.84 ± 0.10 (.033 ± .004)	—
CRK0815 (embossed)	2.60 ± 0.20 (.102 ± .008)	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)
CRK1225 (embossed)	3.60 ± 0.20 (.142 ± .008)	6.90 ± 0.20 (.272 ± .008)	12.00 ± 0.20 (.472 ± .008)	5.50 ± 0.05 (.217 ± .002)					2.00 ± 0.10 (.080 ± .004)	0.30 ± 0.10 (.012 ± .004)	1.20 ± 0.15 (.047 ± .006)

DIMENSIONS: MM / (INCHES)



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