

\*RoHS COMPLIANT



**BOURNS®**

**Features**

- Thick film technology
- Power rating of 0.25, 0.5 or 1 watt at 70 °C
- Strong pulse performance
- RoHS compliant\*

**Applications**

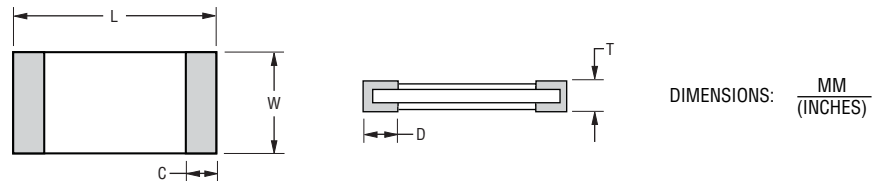
- Power supplies
- Stepper motor drives

**CRM0805/1206/2010 Chip Resistors**

**Electrical Characteristics**

| Characteristic   | Model CRM0805  | Model CRM1206   | Model CRM2010   |
|--|--|-----------------|-----------------|
| Power Rating @ 70 °C   | 0.25 W   | 0.5 W           | 1 W             |
| Operating Temperature Range  | -55 °C to +155 °C  |                 |                 |
| Derated to Zero Load at  | +155 °C  |                 |                 |
| Maximum Working Voltage<br>0.047 to 0.91 ohms<br>1.0 ohm to 1.0 megohm   | 477 mV<br>150 V  | 675 mV<br>200 V | 954 mV<br>200 V |
| Insulation Resistance  | >1000 megohms  |                 |                 |
| Resistance Range   | 0.047 - 1 megohm   |                 |                 |
| Resistance Tolerance   | ±1 %, ±5 %   |                 |                 |
| Temperature Coefficient<br>0.047 to 0.091 ohms<br>0.100 to 0.91 ohms<br>1.0 ohm to 1 megohm<br>10 ohms to 1 megohm | ±150 PPM/°C<br>±100 PPM/°C<br>±200 PPM/°C (Tolerance 5 %, E24 Values)<br>±100 PPM/°C (Tolerance 1 %, E96 Values) |                 |                 |

**Product Dimensions**



| Model   | L   | W   | C   | D   | T   |
|---------|---|---|---|---|---|
| CRM0805 | $\frac{2.00 \pm 0.15}{(0.079 \pm 0.006)}$ | $\frac{1.20 \pm 0.15}{(0.047 \pm 0.006)}$ | $\frac{0.40 \pm 0.20}{(0.016 \pm 0.008)}$ | $\frac{0.40 \pm 0.20}{(0.016 \pm 0.008)}$ | $\frac{0.50 \pm 0.10}{(0.020 \pm 0.004)}$ |
| CRM1206 | $\frac{3.10 \pm 0.15}{(0.122 \pm 0.006)}$ | $\frac{1.60 \pm 0.15}{(0.063 \pm 0.006)}$ | $\frac{0.50 \pm 0.25}{(0.020 \pm 0.010)}$ | $\frac{0.50 \pm 0.25}{(0.020 \pm 0.010)}$ | $\frac{0.55 \pm 0.10}{(0.022 \pm 0.004)}$ |
| CRM2010 | $\frac{5.00 \pm 0.20}{(0.197 \pm 0.008)}$ | $\frac{2.50 \pm 0.20}{(0.098 \pm 0.008)}$ | $\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$ | $\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$ | $\frac{0.60 \pm 0.10}{(0.024 \pm 0.004)}$ |

**Recommended Solder Pad Layout**

| Model   | A                     | B                      | L                     |
|---------|-----------------------|------------------------|-----------------------|
| CRM0805 | $\frac{1.3}{(0.051)}$ | $\frac{1.15}{(0.045)}$ | $\frac{1.2}{(0.047)}$ |
| CRM1206 | $\frac{1.8}{(0.071)}$ | $\frac{1.3}{(0.051)}$  | $\frac{2.1}{(0.083)}$ |
| CRM2010 | $\frac{3.0}{(0.118)}$ | $\frac{1.5}{(0.059)}$  | $\frac{3.8}{(0.149)}$ |

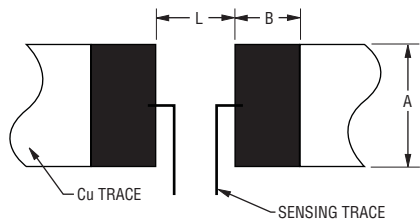
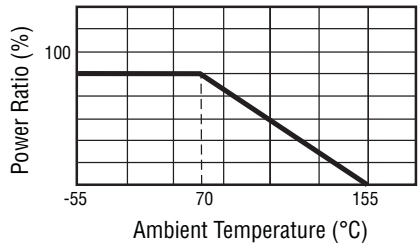
**General Information**

Bourns® CRM Series are thick film chip resistors with high power ratings making them suitable for different applications in power supply circuits including current sensing, current limiting and high pulse resistance.

**Characteristic Data**

| Test  | ΔR Max.          |
|---|------------------|
| Load Life (1000 hours)<br>Rated Voltage @ 70 °C<br>(1.5 hrs. on, 0.5 hrs. off)<br>1 % Tolerance<br>5 % Tolerance                        | < 1 %<br>< 3 %   |
| Short Term Overload<br>(5 X Rated Power for 5 sec.)<br>1 % Tolerance<br>5 % Tolerance   | < 1 %<br>< 2 %   |
| Thermal Shock<br>(5 Cycles: -55 °C/30 min.;<br>+25 °C/2-3 min.; +155 °C/<br>30 min.; +25 °C/2-3 min.)<br>1 % Tolerance<br>5 % Tolerance | < 0.5 %<br>< 1 % |

**Derating Curve**



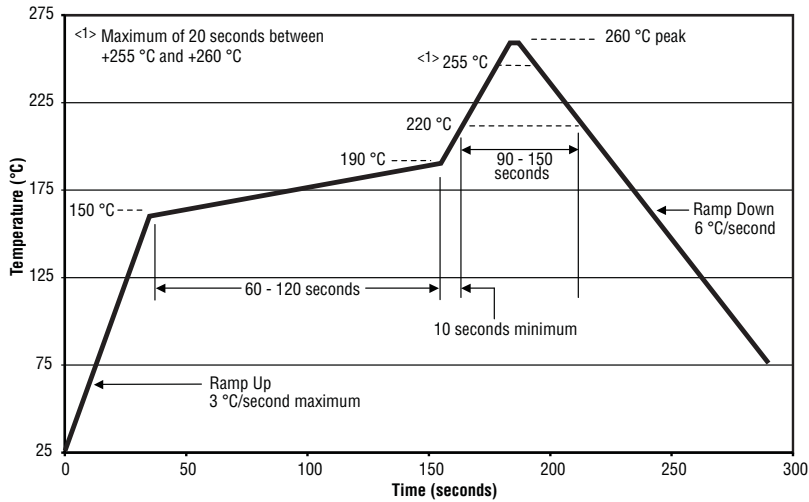
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

\*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex. Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

# CRM0805/1206/2010 Chip Resistors

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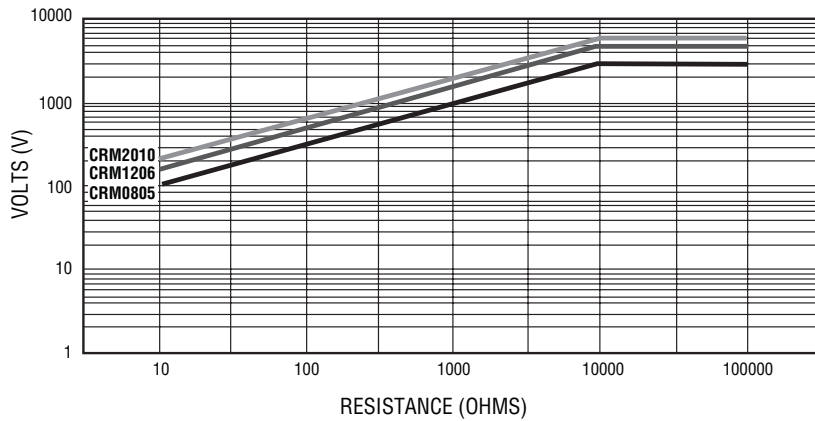
## Soldering Profile



## Resistance Value Table (0.047-0.91 Ω)

| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R047 | 0.047   | R200 | 0.200   |
| R050 | 0.050   | R300 | 0.300   |
| R060 | 0.060   | R510 | 0.510   |
| R075 | 0.075   | R750 | 0.750   |
| R082 | 0.082   | R820 | 0.820   |
| R090 | 0.090   | R910 | 0.910   |
| R100 | 0.100   |      |         |

## Pulse Voltage Curve



Test Method: 1.2/50 μs Waveform with 12 Ohm Resistor, 5 Pulses at 12 Second Intervals

# CRM0805/1206/2010 Chip Resistors

**BOURNS®**

## How to Order

CRM 2010 - F X - R100 E LF

Model \_\_\_\_\_  
 (CRM = Precision Chip Resistor)

Size \_\_\_\_\_  
 0805 = 0805 Size  
 1206 = 1206 Size  
 2010 = 2010 Size

Resistance Tolerance \_\_\_\_\_  
 • F = ±1 %  
 • J = ±5 %

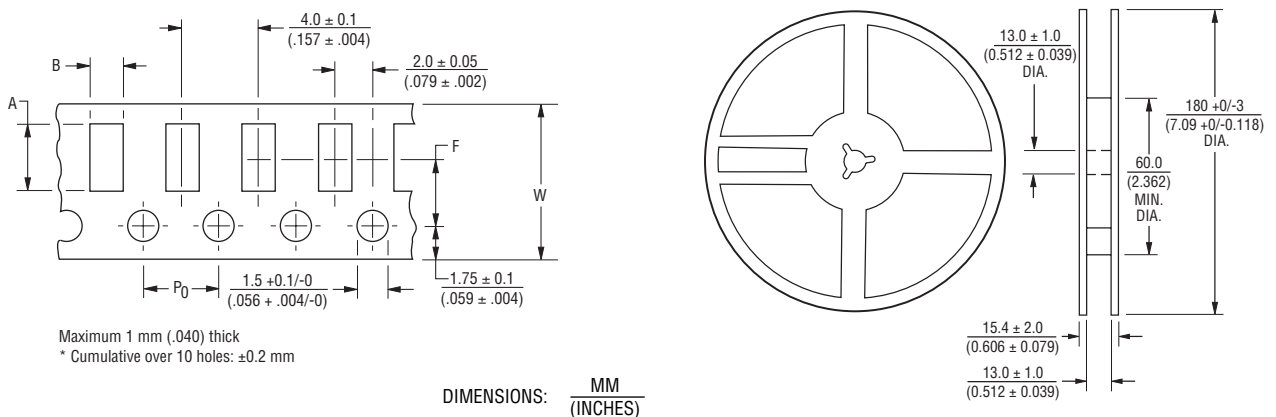
TCR (PPM/°C) \_\_\_\_\_  
 • W = ±200 PPM/°C  
 • Z = ±150 PPM/°C  
 • X = ±100 PPM/°C

Resistance Value \_\_\_\_\_  
 R < 1 ohm (1 % or 5 % Tolerance): "R" (decimal point) followed by three significant digits (example: R100 = 0.100 ohm)  
 1% Tolerance:  
 < 100 ohms ..... "R" represents decimal point (example: 24R3 = 24.3 ohms)  
 ≥ 100 ohms ..... First three digits are significant, fourth digit represents number of zeros to follow (example: 8252 = 82.5K ohms)  
 5% Tolerance:  
 < 10 ohms ..... "R" represents decimal point (example: 4R7 = 4.7 ohms)  
 ≥ 10 ohms ..... First two digits are significant, third digit represents number of zeros to follow (example: 474 = 470K ohms)

Packaging \_\_\_\_\_  
 • E = 5000 pieces on 180 mm (7 inch) reel - CRM0805, CRM1206  
 4000 pieces on 180 mm (7 inch) reel - CRM2010

Termination \_\_\_\_\_  
 • LF = Tin-plated (RoHS Compliant)

## Packaging Dimensions (Conforms to EIA RS-481A)



| Model   | A   | B   | F   | W  |
|---------|---|---|---|--|
| CRM0805 | $\frac{2.40 \pm 0.20}{(0.094 \pm 0.008)}$ | $\frac{1.65 \pm 0.20}{(0.065 \pm 0.008)}$ | $\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$ | $\frac{8.00 \pm 0.30}{(0.315 \pm 0.012)}$  |
| CRM1206 | $\frac{3.57 \pm 0.20}{(0.141 \pm 0.008)}$ | $\frac{2.00 \pm 0.20}{(0.079 \pm 0.008)}$ | $\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$ | $\frac{8.00 \pm 0.30}{(0.315 \pm 0.012)}$  |
| CRM2010 | $\frac{5.50 \pm 0.20}{(0.217 \pm 0.008)}$ | $\frac{2.80 \pm 0.20}{(0.110 \pm 0.008)}$ | $\frac{5.50 \pm 0.05}{(0.217 \pm 0.002)}$ | $\frac{12.00 \pm 0.30}{(0.472 \pm 0.012)}$ |