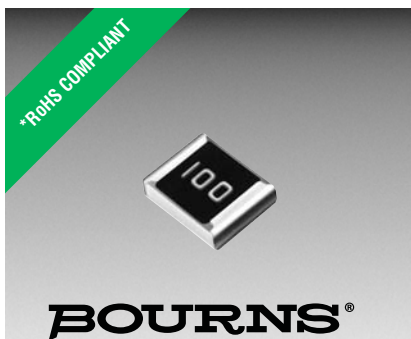




## Features

- 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
- Snubber resistor for flyback power supplies

# 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>47 mohms to 910 mohms<br>1 ohm to 1 megohm          | 551 mV<br>150 V                                                                                                                                | 675 mV<br>200 V | 954 mV<br>200 V |
| Insulation Resistance                                                          | >1000 megohms                                                                                                                                  |                 |                 |
| Resistance Range                                                               | 47 mohms to 910 mohms (±1 % and ±5 %, E24 Series)<br>1 ohm to 1 megohm (±1 %, E96 & E24 Series)<br>0 ohm, 1 ohm to 1 megohm (±5 %, E24 Series) |                 |                 |
| Resistance Tolerance                                                           | ±1 %, ±5 %                                                                                                                                     |                 |                 |
| Temperature Coefficient<br>47 mohms to 91 mohms<br>(±1 % and ±5 %, E24 Series) | ±100 ppm                                                                                                                                       | ±100 ppm        | ±100 ppm        |
| 100 mohms to 910 mohms<br>(±1 % and ±5 %, E24 Series)                          | ±100 ppm                                                                                                                                       | ±100 ppm        | ±100 ppm        |
| 1 ohm to 1 megohm<br>(±1 %, E96 & E24 Series)                                  | ±100 ppm <sup>(1)</sup>                                                                                                                        | ±100 ppm        | ±100 ppm        |
| 1 ohm to 1 megohm<br>(±5 %, E24 Series)                                        | ±200 ppm                                                                                                                                       | ±200 ppm        | ±200 ppm        |
| Zero Ohm Jumper <0.02 ohm <sup>(2)</sup>                                       | 4 A                                                                                                                                            | 4 A             | 6 A             |
| Maximum Rated Current                                                          | 4 A                                                                                                                                            | 4 A             | 6 A             |

Exceptions:

(1) ±1 %, 1 ohm to 9.76 ohms: ±150 ppm (CRM0805)

(2) Jumper (0 ohms): Temperature coefficient is not applicable.

## 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.

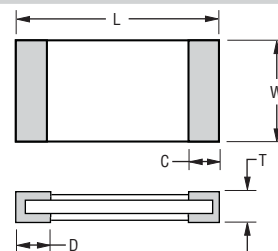
## Characteristic Data

| 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 % |

For Standard Values Used in Capacitors, Inductors and Resistors, [click here](#).

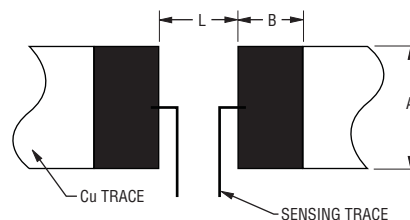
## Product Dimensions

| Model   | L                                  | W                                  | C                                  | D                                  | T                                  |
|---------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| CRM0805 | $2.00 \pm 0.15$<br>(0.079 ± 0.006) | $1.20 \pm 0.15$<br>(0.047 ± 0.006) | $0.40 \pm 0.20$<br>(0.016 ± 0.008) | $0.40 \pm 0.20$<br>(0.016 ± 0.008) | $0.50 \pm 0.10$<br>(0.020 ± 0.04)  |
| CRM1206 | $3.10 \pm 0.15$<br>(0.122 ± 0.006) | $1.60 \pm 0.15$<br>(0.063 ± 0.006) | $0.50 \pm 0.25$<br>(0.020 ± 0.010) | $0.50 \pm 0.25$<br>(0.020 ± 0.010) | $0.55 \pm 0.10$<br>(0.022 ± 0.004) |
| CRM2010 | $5.00 \pm 0.20$<br>(0.197 ± 0.008) | $2.50 \pm 0.20$<br>(0.098 ± 0.008) | $0.60 \pm 0.25$<br>(0.024 ± 0.010) | $0.60 \pm 0.25$<br>(0.024 ± 0.010) | $0.60 \pm 0.10$<br>(0.024 ± 0.004) |



## Recommended Solder Pad Layout

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



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

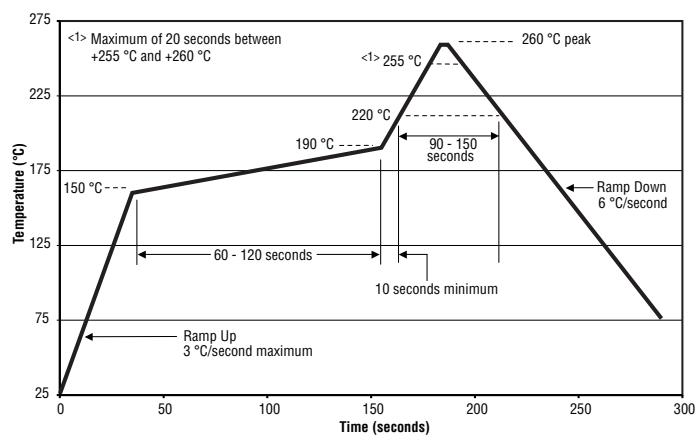
\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011. Specifications are subject to change without notice.

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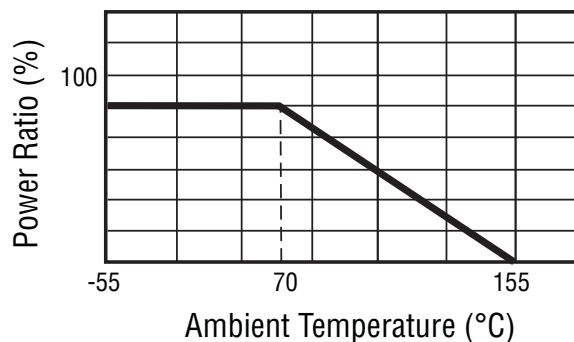
# CRM0805/1206/2010 Chip Resistors

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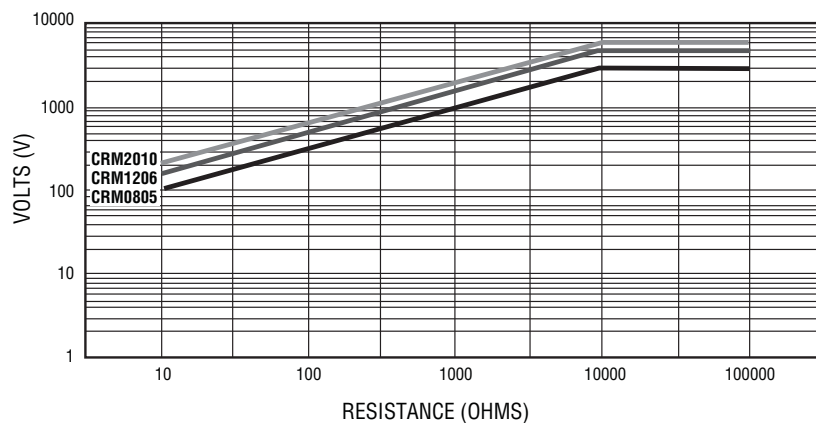
## Soldering Profile



## Derating Curve



## Pulse Voltage Curve

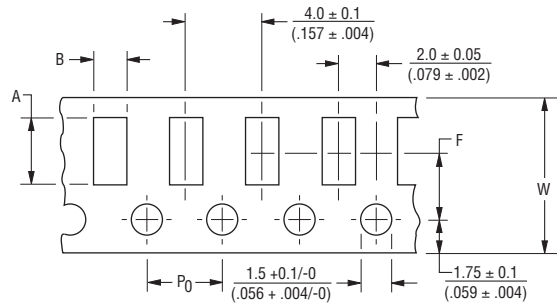


Test Method: 1.2/50  $\mu$ s Waveform with 12 Ohm Resistor, 5 Pulses at 12 Second Intervals

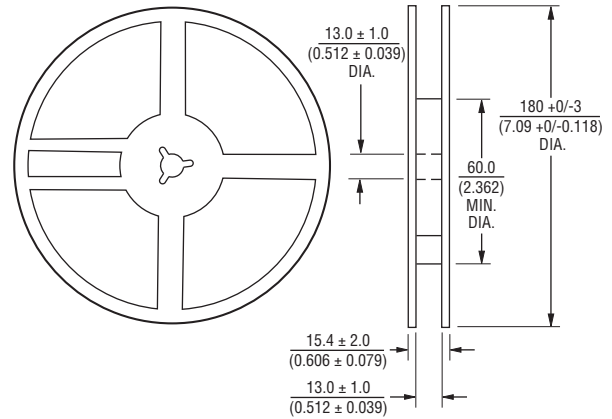
# CRM0805/1206/2010 Chip Resistors

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



Maximum 1 mm (.040) thick  
 \* Cumulative over 10 holes: ±0.2 mm



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

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

# CRM0805/1206/2010 Chip Resistors

**BOURNS®**

## How to Order

CRM 2010 - F X - R100 E LF

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| Model _____<br>(CRM = Precision Chip Resistor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |
| Size _____<br>0805 = 0805 Size<br>1206 = 1206 Size<br>2010 = 2010 Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |  |  |
| Resistance Tolerance _____<br>• F = $\pm 1\%$ ..... Use with "X" TCR code<br><u>Exceptions:</u><br>(CR0805) Use with "Z" TCR code for values from 1 ohm to 9.76 ohms<br>• J = $\pm 5\%$ ..... Use with "W" TCR code for values from 1 ohm through 1 megohm<br>Use with "X" TCR code for values under 1 ohm<br><u>Exceptions:</u><br>Use with "/" TCR code for 0 ohm (Jumper)                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
| TCR (PPM/ $^{\circ}$ C - See Electrical Characteristics chart) _____<br>• W = $\pm 200$ PPM/ $^{\circ}$ C<br>• Z = $\pm 150$ PPM/ $^{\circ}$ C<br>• X = $\pm 100$ PPM/ $^{\circ}$ C<br>• / = Jumper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |
| Resistance Value _____<br>• <u>1 % or 5 % Tolerance:</u><br>R <1 ohm ..... "R" represents decimal point followed by three significant digits ( <i>example: R100 = 0.100 ohm</i> )<br>• <u>1% Tolerance:</u><br><100 ohms ..... "R" represents decimal point ( <i>example: 24R3 = 24.3 ohms</i> )<br>$\geq 100$ ohms ..... First three digits are significant, fourth digit represents number of zeros to follow ( <i>example: 8252 = 82.5K ohms</i> )<br>• <u>5% Tolerance:</u><br><10 ohms ..... "R" represents decimal point ( <i>example: 4R7 = 4.7 ohms</i> )<br>$\geq 10$ ohms ..... First two digits are significant, third digit represents number of zeros to follow ( <i>example: 474 = 470K ohms</i> )<br>0 ohm Jumper ..... "000" |  |  |  |  |  |
| Packaging _____<br>• E = 5,000 pieces on 180 mm (7 inch) reel - CRM0805, CRM1206<br>4,000 pieces on 180 mm (7 inch) reel - CRM2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |
| Termination _____<br>• LF = Tin-plated (RoHS Compliant)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |

REV. 09/14

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