

## Features

- Resistance value as low as 0.001 ohm
- High power density
- Inductance less than 5 nH
- RoHS compliant\*

## Applications

- Power supplies
- Stepper motor drives

# CRF Series - High Power Current Sense Chip Resistor

## Electrical Characteristics

| Rating                      | CRF0805              | CRF1206   | CRF2512  |
|-----------------------------|----------------------|---|--|
| Power Rating @ 70 °C        | 0.5 W                | 1 W   | (0.001 to 0.010 Ω) 2 W<br>(0.011 to 0.050 Ω) 1 W |
| Operating Temperature Range | -55 °C to +170 °C    |   |  |
| Derated to Zero Load at     | +170 °C              |   |  |
| Maximum Working Voltage     | $(P \times R)^{1/2}$ |   |  |
| Resistance                  | 0.005 ~ 0.020 Ω      | 0.001 ~ 0.030 Ω   | 0.001 ~ 0.050 Ω                                  |
| Resistance Tolerance        | 1 %, ±5 %            |   |  |
| Temperature Coefficient     | ±100 PPM/°C          | (0.001 Ω) ±275 PPM/°C<br>(0.002 to 0.010 Ω) ±100 PPM/°C<br>(>0.010 Ω) ± 75 PPM/°C |  |

## Performance Characteristics

| Test                      | Conditions   | Specification                          |  |         |
|---------------------------|--|--|--|---------|
|                           |  | CRF0805                                | CRF1206                                | CRF2512 |
| Thermal Shock             | -55 °C to +150 °C,<br>300 Cycles, 15 minutes                             | $\Delta R \pm(1 \% + 0.0005 \Omega)$   | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| Short Time Overload       | 5 X Rated Power for 5 seconds  | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| Low Temperature Storage   | -55 °C for 1000 hours  | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| High Temperature Exposure | 1000 hours @ + 170 °C  | $\Delta R \pm(1 \% + 0.0005 \Omega)$   | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| Bias Humidity             | + 85 °C, 85 % RH,<br>10 % Bias, 1000 hours                               | N/A                                    | $\Delta R \pm(1 \% + 0.0005 \Omega)$   |         |
| Mechanical Shock          | 100 g for 6 milliseconds,<br>5 pulses                                    | N/A                                    | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| Vibration                 | Frequency varied 10-2000 KHz<br>in one minute, 3 directions,<br>12 hours | N/A                                    | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| Load Life                 | 1000 hours at rated power at<br>+70 °C, 1.5 hours on, 0.5 hours<br>off   | $\Delta R \pm(1 \% + 0.0005 \Omega)$   | $\Delta R \pm(1 \% + 0.0005 \Omega)$   |         |
| Resistance to Solder Heat | +260 °C, 10-12 second dwell,<br>25 mm/second emergence                   | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |
| Moisture Resistance       | MIL-STD-202 Method 106, 0 %<br>power (7a and 7b not required)            | $\Delta R \pm(1 \% + 0.0005 \Omega)$   | $\Delta R \pm(0.5 \% + 0.0005 \Omega)$ |         |

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

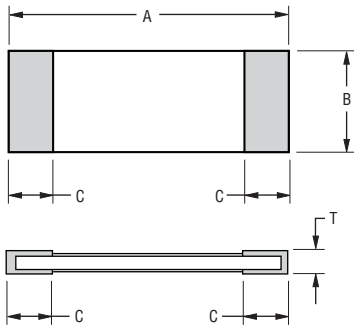
Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

# CRF Series - High Power Current Sense Chip Resistor

**BOURNS®**

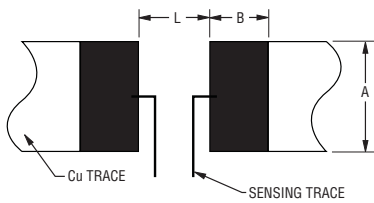
## Product Dimensions



| Dim. | CRF0805                                   | CRF1206                                    | CRF2512                                   |
|------|---|--|---|
| A    | $\frac{2.0 \pm 0.10}{(0.079 \pm 0.004)}$  | $\frac{3.20 \pm 0.20}{(0.126 \pm 0.008)}$  | $\frac{6.40 \pm 0.20}{(0.252 \pm 0.008)}$ |
| B    | $\frac{1.25 \pm 0.10}{(0.049 \pm 0.004)}$ | $\frac{1.65 \pm 0.20}{(0.064 \pm 0.008)}$  | $\frac{3.20 \pm 0.20}{(0.126 \pm 0.008)}$ |
| C    | $\frac{0.40 \pm 0.20}{(0.016 \pm 0.008)}$ | $\frac{0.50 \pm 0.30}{(0.0197 \pm 0.012)}$ | $\frac{0.95 \pm 0.30}{(0.037 \pm 0.012)}$ |
| T    | $\frac{0.60 \pm 0.20}{(0.024 \pm 0.008)}$ | $\frac{0.60 \pm 0.20}{(0.024 \pm 0.008)}$  | $\frac{0.60 \pm 0.20}{(0.024 \pm 0.008)}$ |

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

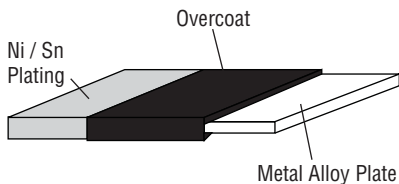
## Recommended Solder Pad Layout



| Dim. | CRF0805                | CRF1206               |                       | CRF2512               |                       |
|------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|      | 0.005 ~ 0.020 Ω        | 0.001 Ω               | 0.002 ~ 0.030 Ω       | 0.001 ~ 0.003 Ω       | 0.004 ~ 0.050 Ω       |
| A    | $\frac{1.4}{(0.055)}$  | $\frac{1.8}{(0.070)}$ | $\frac{1.8}{(0.070)}$ | $\frac{4.0}{(0.157)}$ | $\frac{4.0}{(0.157)}$ |
| B    | $\frac{1.15}{(0.045)}$ | $\frac{2.3}{(0.090)}$ | $\frac{1.7}{(0.066)}$ | $\frac{3.1}{(0.122)}$ | $\frac{2.1}{(0.083)}$ |
| L    | $\frac{1.2}{(0.047)}$  | $\frac{1.0}{(0.039)}$ | $\frac{1.6}{(0.062)}$ | $\frac{1.3}{(0.051)}$ | $\frac{4.1}{(0.161)}$ |

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

## Construction



## Resistance Value Tables

### CRF0805

| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R005 | 0.005   | R010 | 0.010   |
| R009 | 0.009   | R020 | 0.020   |

### CRF1206

| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R001 | 0.001   | R010 | 0.010   |
| R002 | 0.002   | R012 | 0.012   |
| R004 | 0.004   | R014 | 0.014   |
| R005 | 0.005   | R015 | 0.015   |
| R006 | 0.006   | R020 | 0.020   |
| R007 | 0.007   | R022 | 0.022   |
| R008 | 0.008   | R025 | 0.025   |
| R009 | 0.009   | R030 | 0.030   |

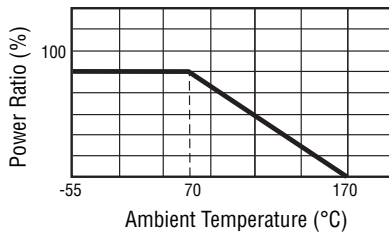
### CRF2512 (1W)

| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R011 | 0.011   | R030 | 0.030   |
| R012 | 0.012   | R033 | 0.033   |
| R015 | 0.015   | R035 | 0.035   |
| R018 | 0.018   | R040 | 0.040   |
| R020 | 0.020   | R050 | 0.050   |
| R025 | 0.025   |      |         |

### CRF2512 (2W)

| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R001 | 0.001   | R006 | 0.006   |
| R002 | 0.002   | R007 | 0.007   |
| R003 | 0.003   | R008 | 0.008   |
| R004 | 0.004   | R010 | 0.010   |
| R005 | 0.005   |      |         |

## Derating Curve



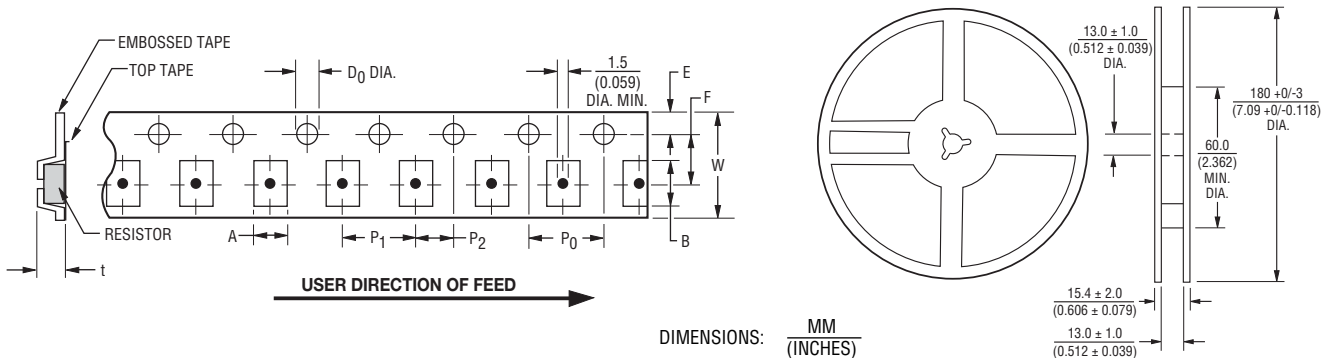
Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

# CRF Series - High Power Current Sense Chip Resistor

**BOURNS®**

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



| Packing       | Model   | A                              | B                             | W                              | F                             | E                              | P1                            | P2                            | P0                            | D0                             | t                              |
|---------------|---------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Paper Tape    | CRF0805 | 1.6 ± 0.15<br>(0.063 ± 0.006)  | 2.4 ± 0.20<br>(0.094 ± 0.008) | 8.0 ± 0.20<br>(0.315 ± 0.008)  | 3.5 ± 0.05<br>(0.138 ± 0.002) | 1.75 ± 0.10<br>(0.069 ± 0.004) | 4.0 ± 0.10<br>(0.157 ± 0.004) | 2.0 ± 0.1<br>(0.079 ± 0.004)  | 4.0 ± 0.1<br>(0.157 ± 0.004)  | 1.5+0.1/-0<br>(0.059+0.004/-0) | 0.84 ± 0.10<br>(0.033 ± 0.004) |
| Paper Tape    | CRF1206 | 2.0 ± 0.15<br>(0.079 ± 0.006)  | 3.6 ± 0.20<br>(0.142 ± 0.008) | 8.0 ± 0.20<br>(0.315 ± 0.008)  | 3.5 ± 0.05<br>(0.138 ± 0.002) | 1.75 ± 0.10<br>(0.069 ± 0.004) | 4.0 ± 0.10<br>(0.157 ± 0.004) | 2.0 ± 0.05<br>(0.079 ± 0.002) | 4.0 ± 0.05<br>(0.157 ± 0.002) | 1.5+0.1/-0<br>(0.059+0.004/-0) | 0.85 ± 0.15<br>(0.033 ± 0.006) |
| Embossed Tape | CRF2512 | 3.60 ± 0.20<br>(0.142 ± 0.008) | 6.9 ± 0.20<br>(0.272 ± 0.008) | 12.0 ± 0.20<br>(0.472 ± 0.008) | 5.5 ± 0.05<br>(0.217 ± 0.002) | 1.75 ± 0.10<br>(0.069 ± 0.004) | 4.0 ± 0.10<br>(0.157 ± 0.004) | 2.0 ± 0.05<br>(0.079 ± 0.002) | 2.0 ± 0.05<br>(0.079 ± 0.002) | 1.5+0.1/-0<br>(0.059+0.004/-0) | 0.85 ± 0.15<br>(0.033 ± 0.006) |

## How to Order

### CRF 0805 - F X - R020 E LF

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

Size \_\_\_\_\_  
0805 = 0805 Size  
1206 = 1206 Size  
2512 = 2512 Size

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

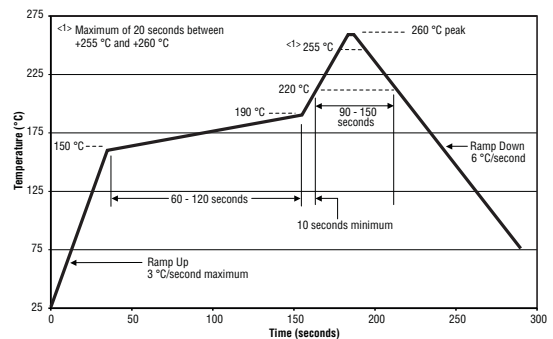
TCR (PPM/°C) \_\_\_\_\_  
• Z = ± 75 PPM/°C (>0.010 ohm)  
• X = ±100 PPM/°C (0.002 ohm ~ 0.010 ohm & Model CRF0805 only)  
• V = ±275 PPM/°C (0.001 ohm)

Resistance Value \_\_\_\_\_  
"R" (decimal point) followed by three significant digits  
(example: R020 = 0.020 ohm)

Packaging \_\_\_\_\_  
• E = 5,000 pcs./180 mm (7-inch) reel (CRF0805 & CRF1206)  
or 4,000 pcs./180 mm (7-inch) reel (CRF2512)

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

## Soldering Profile



REV. 09/13

Specifications are subject to change without notice.  
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
Users should verify actual device performance in their specific applications.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.