

Features

- Resistance value as low as 0.001 ohm
- High power density
- Inductance less than 5 nH
- RoHS compliant*
- AEC-Q200 qualified, automotive grade

Applications

- Power supplies
- Stepper motor drives
- Input amplifiers

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 (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 (0.002 to 0.010 Ω) ±100 PPM/°C (>0.010 Ω) ± 75 PPM/°C	

Performance Characteristics

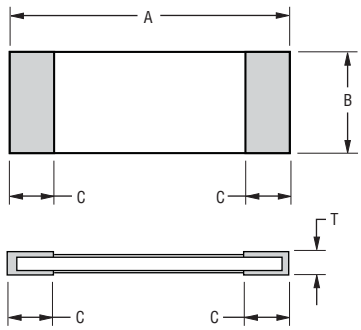
Test	Conditions	Specification		
		CRF0805	CRF1206	CRF2512
Thermal Shock	-55 ˚C to +150 ˚C, 300 Cycles, 15 minutes	ΔR ±(1 % + 0.0005 Ω)	ΔR ±(0.5 % + 0.0005 Ω)	
Short Time Overload	5 X Rated Power for 5 seconds	ΔR ±(0.5 % + 0.0005 Ω)	ΔR ±(0.5 % + 0.0005 Ω)	
Low Temperature Storage	-55 ˚C for 1000 hours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

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
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CRF Series - High Power Current Sense Chip Resistor

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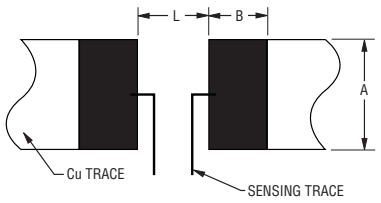
Product Dimensions



Dim.	CRF0805	CRF1206	CRF2512
A	2.0 ± 0.10 (0.079 ± 0.004)	3.20 ± 0.20 (0.126 ± 0.008)	6.40 ± 0.20 (0.252 ± 0.008)
B	1.25 ± 0.10 (0.049 ± 0.004)	1.65 ± 0.20 (0.064 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)
C	0.40 ± 0.20 (0.016 ± 0.008)	0.50 ± 0.30 (0.0197 ± 0.012)	0.95 ± 0.30 (0.037 ± 0.012)
T	0.60 ± 0.20 (0.024 ± 0.008)	0.60 ± 0.20 (0.024 ± 0.008)	0.60 ± 0.20 (0.024 ± 0.008)

DIMENSIONS: MM / (INCHES)

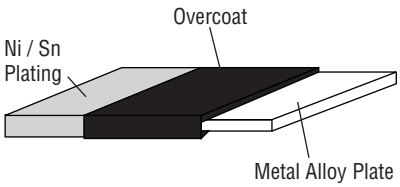
Recommended Solder Pad Layout



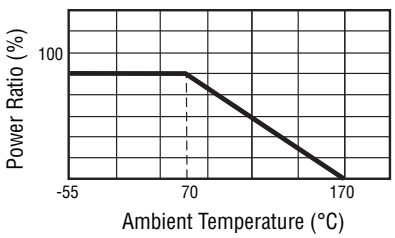
Dim.	CRF0805	CRF1206		CRF2512	
	0.005 ~ 0.020 Ω	0.001 Ω	0.002 ~ 0.030 Ω	0.001 ~ 0.003 Ω	0.004 ~ 0.050 Ω
A	1.4 (0.055)	1.8 (0.070)	1.8 (0.070)	4.0 (0.157)	4.0 (0.157)
B	1.15 (0.045)	2.3 (0.090)	1.7 (0.066)	3.1 (0.122)	2.1 (0.083)
L	1.2 (0.047)	1.0 (0.039)	1.6 (0.062)	1.3 (0.051)	4.1 (0.161)

DIMENSIONS: MM / (INCHES)

Construction



Derating Curve



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)

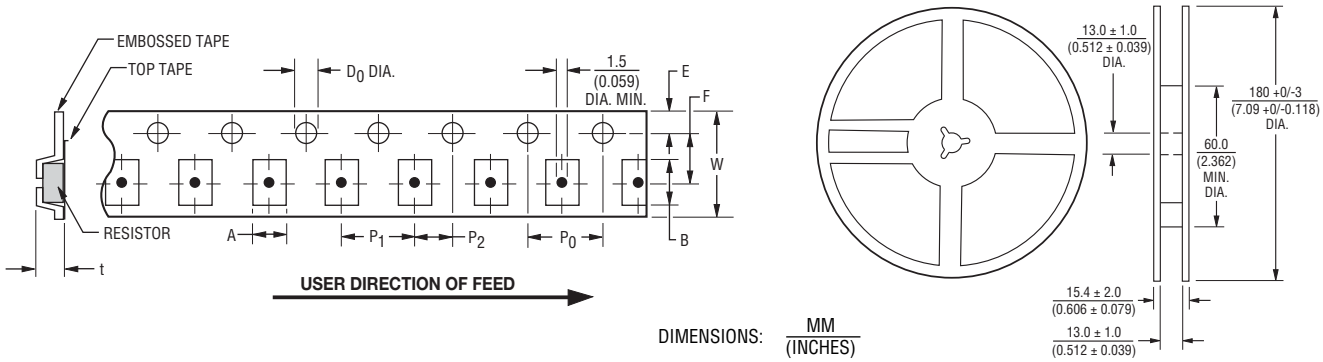
Code	R Value	Code	R Value
R011	0.011	R030	0.030
R012	0.012	R033	0.033
R015	0.015	R035	0.035
R018	0.018	R040	0.040
R020	0.020	R050	0.050
R025	0.025		

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		

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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 (0.063 ± 0.006)	2.4 ± 0.20 (0.094 ± 0.008)	8.0 ± 0.20 (0.315 ± 0.008)	3.5 ± 0.05 (0.138 ± 0.002)	1.75 ± 0.10 (0.069 ± 0.004)	4.0 ± 0.10 (0.157 ± 0.004)	2.0 ± 0.1 (0.079 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.5+0.1/-0 (0.059+0.004/-0)	0.84 ± 0.10 (0.033 ± 0.004)
Paper Tape	CRF1206	2.0 ± 0.15 (0.079 ± 0.006)	3.6 ± 0.20 (0.142 ± 0.008)	8.0 ± 0.20 (0.315 ± 0.008)	3.5 ± 0.05 (0.138 ± 0.002)	1.75 ± 0.10 (0.069 ± 0.004)	4.0 ± 0.10 (0.157 ± 0.004)	2.0 ± 0.05 (0.079 ± 0.002)	4.0 ± 0.05 (0.157 ± 0.002)	1.5+0.1/-0 (0.059+0.004/-0)	0.85 ± 0.15 (0.033 ± 0.006)
Embossed Tape	CRF2512	3.60 ± 0.20 (0.142 ± 0.008)	6.9 ± 0.20 (0.272 ± 0.008)	12.0 ± 0.20 (0.472 ± 0.008)	5.5 ± 0.05 (0.217 ± 0.002)	1.75 ± 0.10 (0.069 ± 0.004)	4.0 ± 0.10 (0.157 ± 0.004)	2.0 ± 0.05 (0.079 ± 0.002)	2.0 ± 0.05 (0.079 ± 0.002)	1.5+0.1/-0 (0.059+0.004/-0)	0.85 ± 0.15 (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)

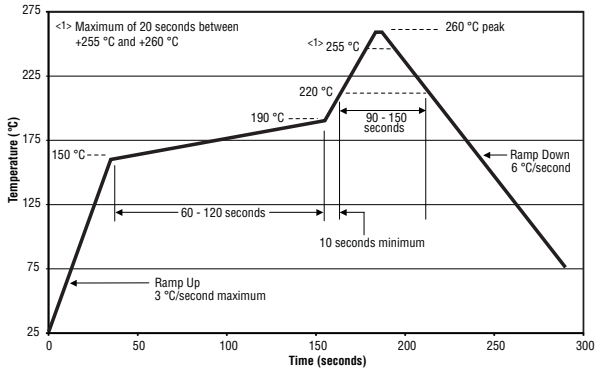
Resistance Value
"R" (decimal point) followed by three significant digits (example: R020 = 0.020 ohm)

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

Can be soldered in accordance with IPC/JEDEC-J-STD-020.



REV. 07/15

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