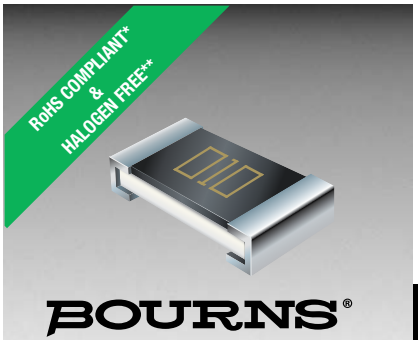


Features

- Metal foil
- High power density
- Low inductance <5 nH
- Low thermal EMF <3 µV/°C
- High reliability and stability
- RoHS compliant* and halogen free**

Applications

- Current sensing
- Power supplies
- Stepper motor drives
- Input amplifiers

CFN Series Metal Foil, Current Sense Resistor

Electrical Characteristics

Characteristic	CFN0402	CFN0603	CFN0805	CFN1206
Power Rating @ 70 °C (W)	0.25	0.5	0.75	1
Resistance Value (mΩ)	10, 20	5, 10, 20	5, 10, 20, 30	5, 10, 20, 40
Operating Temperature Range (°C)	-55 ~ +125	-55 ~ +155		
Temperature Coefficient of Resistance (ppm/°C)	±100	±50, ±100		
Tolerance (%)	±1, ±5			

Environmental Characteristics

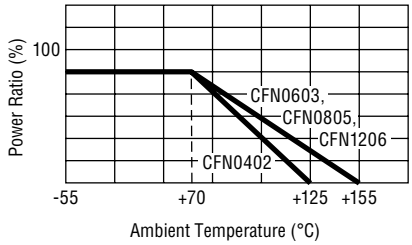
Storage Conditions
Temperature ..... +5 °C ~ +35 °C
Humidity ..... 40 % ~ 75 %
Shelf Life ..... 2 years from manufacturing date
Solder Recommendations ..... Reflow profile
(Solder: Sn96.5 / Ag3 / Cu0.5)
Moisture Sensitivity Level 1

Additional Information

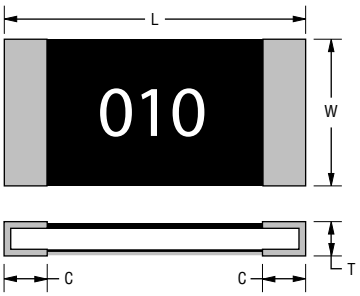
Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

Derating Curve



Product Dimensions



	L	W	C	T
CFN0402	1.10 ± 0.10 (.043 ± .004)	0.55 ± 0.10 (.021 ± .004)	0.25 ± 0.20 (.010 ± .004)	0.45 ± 0.10 (.017 ± .004)
CFN0603	1.60 ± 0.20 (.063 ± .008)	0.80 ± 0.20 (.031 ± .008)	0.40 ± 0.20 (.016 ± .008)	0.60 ± 0.20 (.023 ± .008)
CFN0805	2.00 ± 0.20 (.079 ± .008)	1.25 ± 0.20 (.049 ± .008)	0.40 ± 0.20 (.016 ± .008)	0.70 ± 0.20 (.028 ± .008)
CFN1206	3.20 ± 0.20 (.126 ± .008)	1.60 ± 0.20 (.063 ±. 008)	0.50 ± 0.20 (.020 ± .008)	0.70 ± 0.20 (.028 ± .008)

DIMENSIONS: MM / (INCHES)

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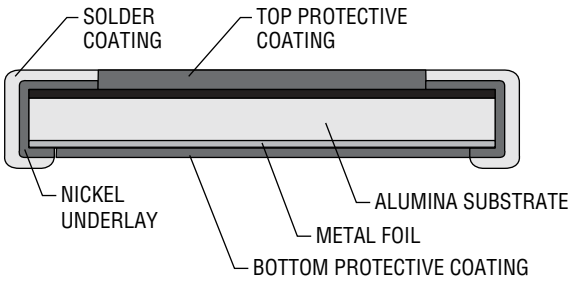
WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

*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.

CFN Series Metal Foil, Current Sensing Chip Resistor

BOURNS®

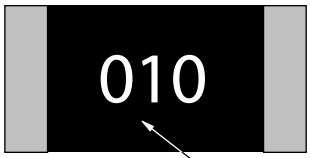
Construction



Typical Part Marking

CFN0402 & CFN0603:
No marking.

CFN0805 & CFN1206:



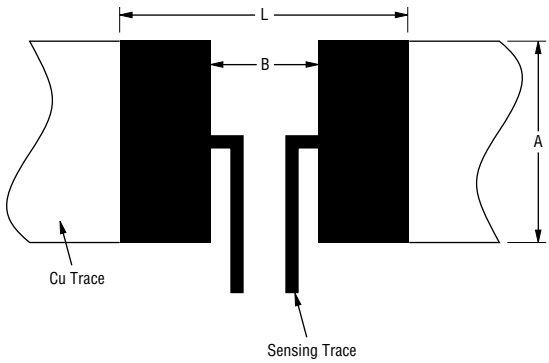
RESISTANCE CODE:
005 = 5 mΩ
6.5 = 6.5 mΩ
010 = 10 mΩ
020 = 20 mΩ

Popular Resistance Values*

Code	Resistance Value (milliohms)	Model
R005	5	CFN0603
R010	10	CFN0402, 0603, 0805, 1206
R020	20	CFN0402, 0603, 0805, 1206
R030	30	CFN0805
R040	40	CFN1206

*Please consult factory for other resistance values.

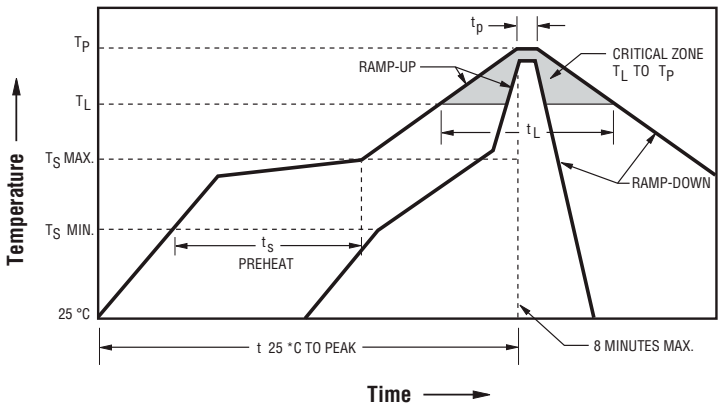
Recommended Solder Pad Dimensions



Model	Resistance	A	L	B
CFN0402	10 ≤ R < 20	0.70 (.027)	1.20 (.047)	0.45 (.018)
CFN0603	10 ≤ R < 20	1.00 (.039)	2.80 (.110)	0.60 (.024)
CFN0805	10 ≤ R < 30	1.40 (.055)	3.20 (.126)	1.20 (.047)
CFN1206	20 ≤ R < 30	1.80 (.071)	4.70 (.185)	1.60 (.063)
	R = 40			2.20 (.087)

DIMENSIONS: MM / (INCHES)

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 (T_p)	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

CFN 0805 - F X - R005 E LF

Model
- CFN = Metal Foil Current Sense Resistor

Size
- 0402 = 0402 Size
- 0603 = 0603 Size
- 0805 = 0805 Size
- 1206 = 1206 Size

Resistance Tolerance
- F = ±1 %
- J = ±5 %

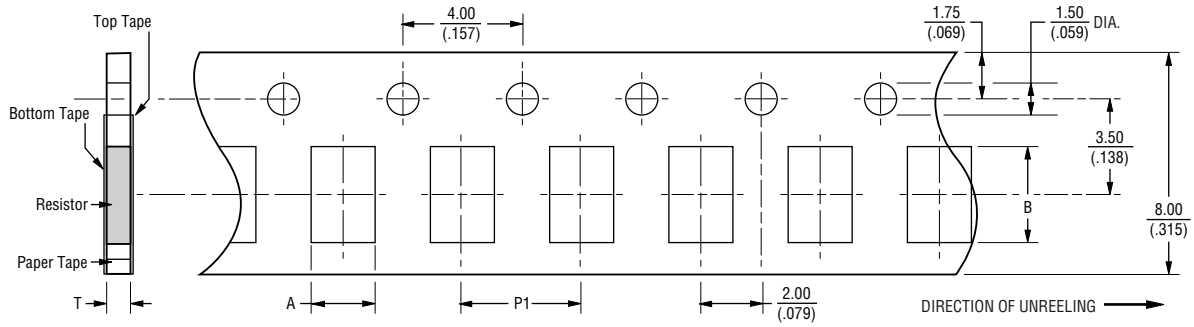
TCR
- X = ±100 PPM/°C
- Z = ±50 PPM/°C

Resistance Code – (See Popular Resistance Table)
- "R" (decimal point) followed by three significant digits *(example: R005 = 0.005 ohms)*

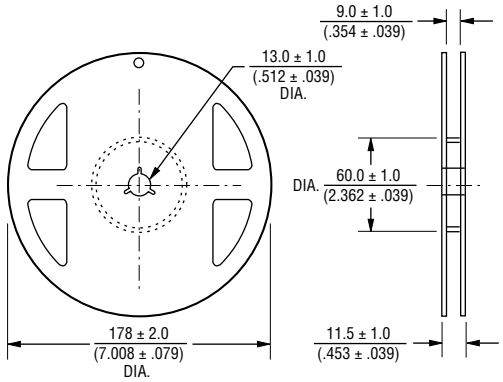
Packaging
- E = Tape and Reel
  - 4,000 pcs. / 7-inch reel, paper tape (CFN0805, CFN1206)
  - 5,000 pcs. / 7-inch reel, paper tape (CFN0603)
  - 10,000 pcs. / 7-inch reel, paper tape (CFN0402)

Termination
- LF = Tin-plated (RoHS Compliant)

Packaging Dimensions (Conforms to EIA RS-481A)



Model	A	B	P1	T
CFN0402	0.75 (.030)	1.30 (.051)	2.00 (.079)	0.65 (.026)
CFN0603	1.10 (.043)	1.90 (.075)	4.00 (.157)	0.85 (.034)
CFN0805	1.60 (.063)	2.40 (.094)		1.05 (.041)
CFN1206	2.00 (.079)	3.60 (.142)		



DIMENSIONS: MM / (INCHES)

Reliability Tests

Test Items	Condition of Test	ΔR Maximum
Load Life	1000 hours at rated power, 70 °C, 1.5 hours “ON”, 0.5 hour “OFF”	< ±1 %
Short Time Overload	5 X rated power for 5 sec.	< ±1 %
Moisture no Load	85 °C, 85 %RH, 1000 hrs.	< ±1 %
Temperature Cycle	-55 °C & +155 °C, 100 cycles, 15 min. per extreme condition (CFN0402: -55 °C & +125 °C, 100 cycles)	< ±1 %
Resistance to Soldering Heat	260 ±5 °C for 10 ±1 sec.	< ±0.5 %
Solderability	245 ±5 °C, 2 ±0.5 sec.	At least 95 % of surface area of electrode shall be covered with new solder
High Temperature Exposure	+155 °C, 1000 hrs. (CFN0402: +125 °C, 1000 hrs.	< ±1 %
Low Temperature Storage	-55 °C, 1000 hrs.	< ±1 %
Substrate Bending	Bending width 2 mm	< ±0.5 %
Insulation Resistance	100 V DC for 1 minute	>100 MΩ

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