



SinglFuse™ SF-0402FP Series Features

- Fast acting precision thin film chip fuse for overcurrent protection
- 1005 (EIA 0402) miniature footprint
- Surface mount packaging for automated assembly
- UL listed (UL 248-14)
- RoHS compliant* and halogen free**

SF-0402FP Series - Fast Acting Precision Surface Mount Fuses

Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance Tolerance $\pm 25\%$ (m Ω)***	Rated Voltage	Breaking Capacity	Typical I ² t (A ² s)****
SF-0402FP050	0.50	Open within 5 sec. at 200 % rated current	380	DC 32 V	DC32 V 35 A	0.00317
SF-0402FP080	0.80		120			0.00532
SF-0402FP100	1.00		95			0.00724
SF-0402FP125	1.25		67			0.01344
SF-0402FP150	1.50		51			0.01356
SF-0402FP160	1.60		46			0.01672
SF-0402FP200	2.00		33			0.01983
SF-0402FP250	2.50		22.5			0.03763
SF-0402FP300	3.00		20			0.05427
SF-0402FP315	3.15		19			0.06304
SF-0402FP400	4.00		16			0.0896

*** Resistance value measured with less than 10 % of rated current.

****Typical I²t value measured at 10x rated current.

Reliability Testing

Parameter	Requirement	Test Method
Carrying Capacity	No fusing	Rated current, 4 hours
Fusing Time	Within 5 seconds	200 % of its rated current
Interrupting Ability	No mechanical damages	After the fuse is interrupted, rated voltage applied for 30 seconds again
Bending Test	No mechanical damages	Distance between holding points: 90 mm, Bending: 3 mm, 1 time, 30 seconds
Resistance to Solder Heat	$\pm 20\%$	260 °C ± 5 °C, 10 seconds ± 1 second
Solderability	95 % coverage minimum	235 °C ± 5 °C, 2 ± 0.5 second
Temperature Rise	<75 °C	245 °C ± 5 °C, 2 ± 0.5 second (lead free)
Resistance to Dry Heat	$\pm 20\%$	100 % of its rated current, measure of surface temperature
Resistance to Solvent	No evident damage on protective coating and marking	105 °C ± 5 °C, 1000 hours
Residual Resistance	10k ohms or more	23 °C ± 5 °C of isopropyl alcohol, 90 seconds
Thermal Shock	$\Delta R < 10\%$	Measure DC resistance after fusing
UL File Number	E198545	-20 °C / +25 °C / +125 °C / +25 °C, 10 cycles
	http://www.ul.com/ Follow link to Online Certificates Directory, then enter UL File No. E198545, or click here	

Environmental Characteristics

Operating Temperature	-20 °C to +105 °C
Storage Conditions	
Temperature	+5 °C to +35 °C
Humidity	40 % to 75 %
Shelf Life	2 years from manufacturing date
Moisture Sensitivity Level	1
ESD Classification (HBM)	Class 6

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* 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.

"SinglFuse" is a trademark of Bourns, Inc.

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.

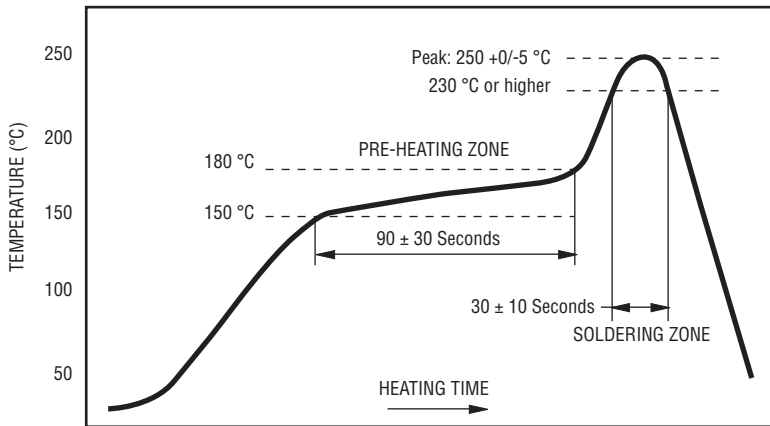
Users should verify actual device performance in their specific applications.

SinglFuse™ SF-0402FP Series Applications

- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- DVDs
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set top boxes
- Industrial controllers

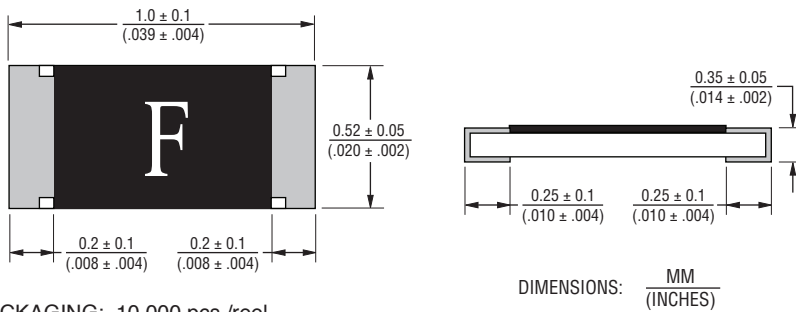
SF-0402FP Series - Fast Acting Precision Surface Mount Fuses **BOURNS®**

Solder Reflow Recommendations



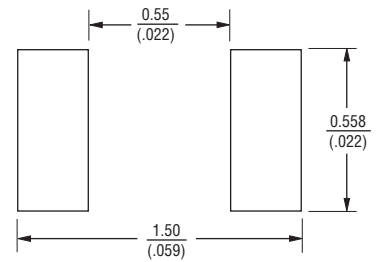
PEAK: 250 +0/-5 °C, 5 seconds
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

Product Dimensions

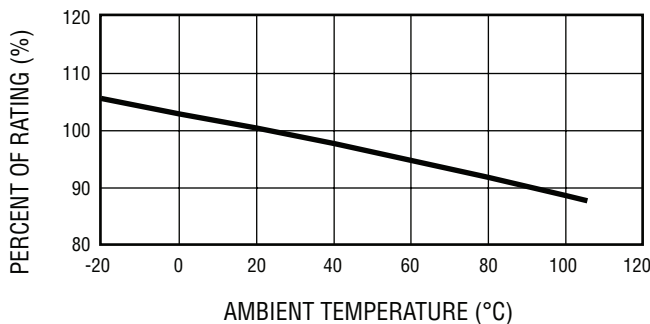


PACKAGING: 10,000 pcs./reel

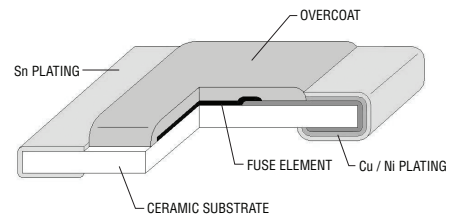
Recommended Pad Layout



Thermal Derating Curve



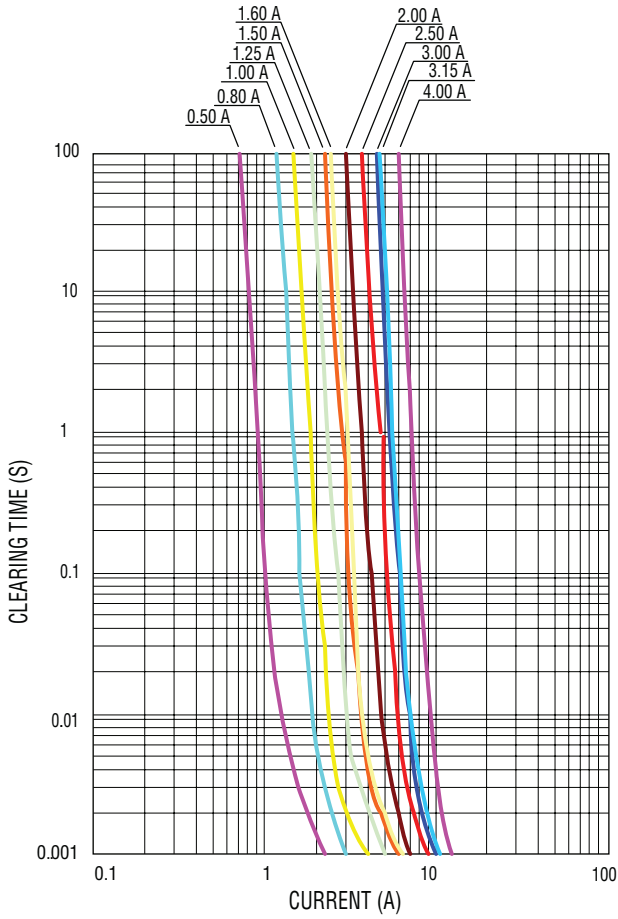
Construction & Material Content



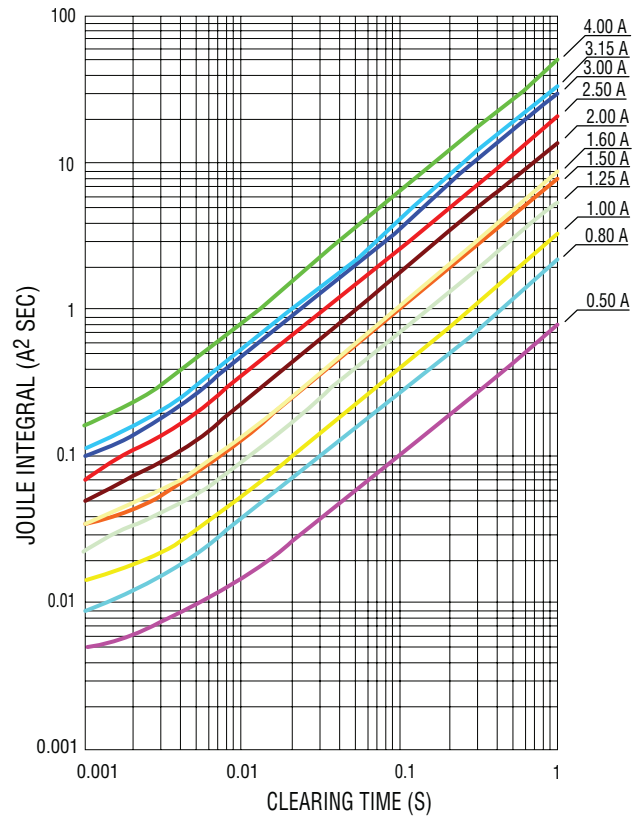
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Average Time Current Curves



Minimum I²T V Clear Time Curves



Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)	
F = 0.50	S = 2.00
K = 0.80	T = 2.50
L = 1.00	3 = 3.00
M = 1.25	U = 3.15
P = 1.50	W = 4.00
N = 1.60	

How to Order

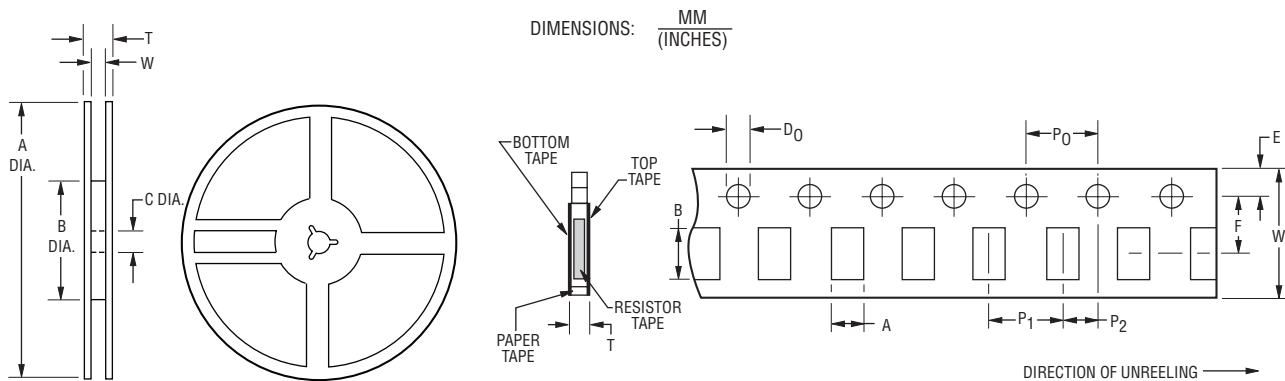
SF - 0402 FP 050 - 2

SinglFuse™
 Product Designator _____
 SMD Footprint _____
 1005 (EIA 0402) size
 Fuse Blow Type _____
 FP = Fast acting precision
 Rated Current _____
 050-400 (500 mA - 4.00 A)
 Packaging Type _____
 - 2 = Tape & Reel (10,000 pcs./reel)

SF-0402FP Series Tape and Reel Specifications

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Tape Dimensions	SF-0402FP Series per EIA 481-2
W	$\frac{8.0 \pm 0.2}{(.315 \pm .008)}$
P ₀	$\frac{4.0 \pm 0.1}{(.157 \pm .004)}$
P ₁	$\frac{2.0 \pm 0.1}{(.079 \pm .004)}$
P ₂	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
A	$\frac{0.7 \pm 0.05}{(.028 \pm .002)}$
B	$\frac{1.2 \pm 0.05}{(.047 \pm .002)}$
F	$\frac{3.5 \pm 0.05}{(.138 \pm .002)}$
E	$\frac{1.75 \pm 0.1}{(.069 \pm .004)}$
D ₀	$\frac{1.5 \pm 0.1}{(.059 \pm .004)}$
T	$\frac{0.45 \pm 0.01}{(.018 \pm .004)}$
Reel Dimensions	
A	$\frac{178 \pm 2.0}{(7.087 \pm .079)}$
B Min.	$\frac{60.0 \pm 1.0}{(2.362 \pm .039)}$
C	$\frac{13.0 \pm 1.0}{(.512 \pm .039)}$
W	$\frac{9.0 \pm 1.0}{(.354 \pm .039)}$
T	$\frac{11.4 \pm 2.0}{(.449 \pm .079)}$



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