



## 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 $\Omega$ )***	Rated Voltage	Breaking Capacity	Typical I <sup>2</sup> t (A <sup>2</sup> 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 I<sup>2</sup>t 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 $\pm 5$ °C, 10 seconds $\pm 1$ second
Solderability .....	95 % coverage minimum .....	235 °C $\pm 5$ °C, 2 $\pm 0.5$ second
Temperature Rise .....	<75 °C .....	245 °C $\pm 5$ °C, 2 $\pm 0.5$ 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 $\pm 5$ °C, 1000 hours
Residual Resistance .....	10k ohms or more .....	23 °C $\pm 5$ °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
	<a href="http://www.ul.com/">http://www.ul.com/</a> Follow link to Online Certificates Directory, then enter UL File No. E198545, or <a href="#">click here</a>	

### 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

**BOURNS®**

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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.

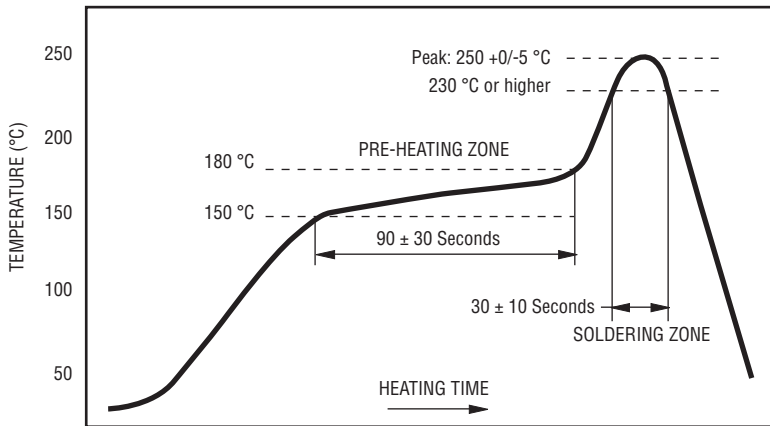
Users should verify actual device performance in their specific applications.

# 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

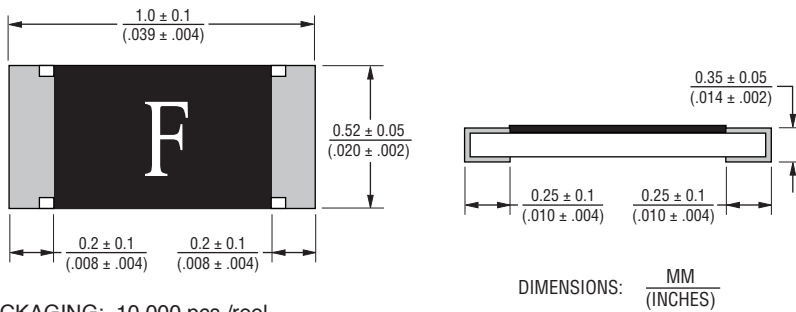
## SF-0402FP Series - Fast Acting Precision Surface Mount Fuses **BOURNS®**

### Solder Reflow Recommendations



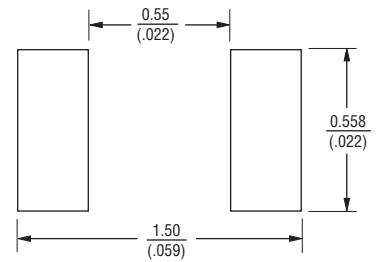
PEAK: 250 +0/-5 °C, 5 seconds  
PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

### Product Dimensions

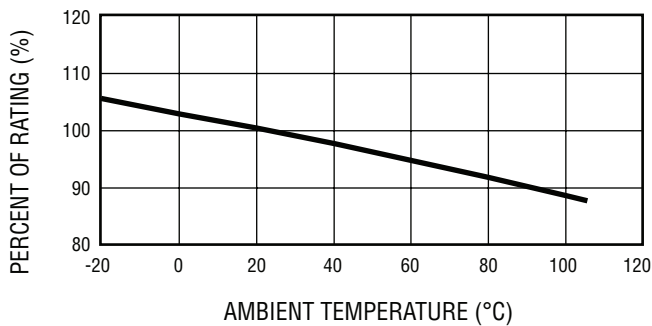


PACKAGING: 10,000 pcs./reel

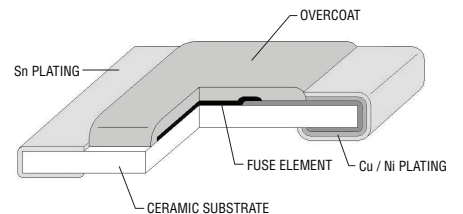
### Recommended Pad Layout



### Thermal Derating Curve



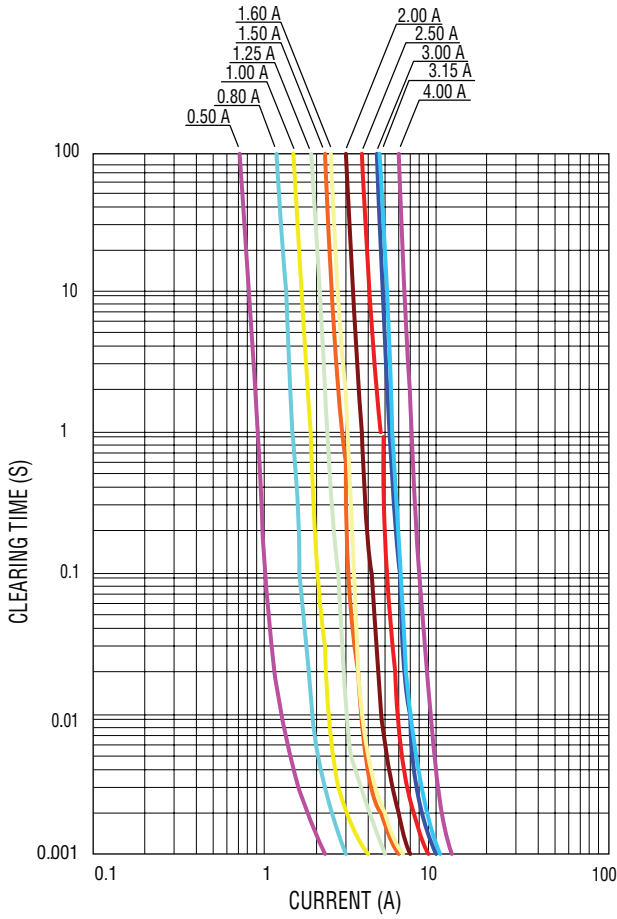
### Construction & Material Content



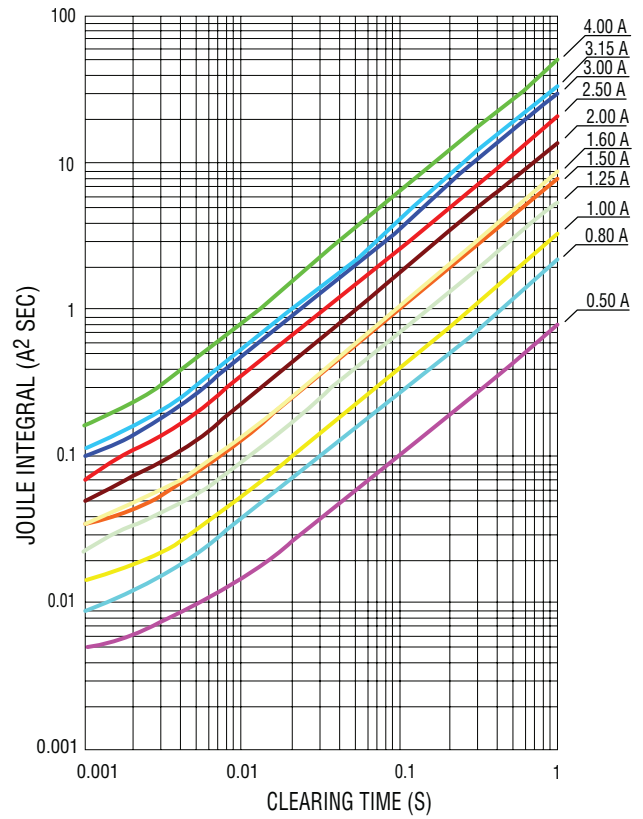
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**Average Time Current Curves**



**Minimum I<sup>2</sup>T 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**

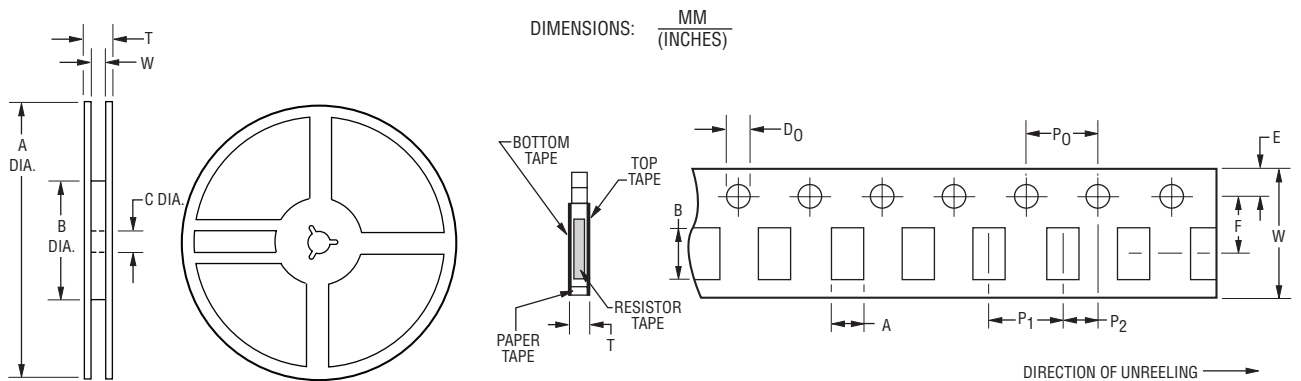
**SF - 0402 FP 050 - 2**

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

**BOURNS®**

Tape Dimensions	SF-0402FP Series per EIA 481-2
W	$\frac{8.0 \pm 0.2}{(.315 \pm .008)}$
P <sub>0</sub>	$\frac{4.0 \pm 0.1}{(.157 \pm .004)}$
P <sub>1</sub>	$\frac{2.0 \pm 0.1}{(.079 \pm .004)}$
P <sub>2</sub>	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
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 <sub>0</sub>	$\frac{1.5 \pm 0.1}{(.059 \pm .004)}$
T	$\frac{0.45 \pm 0.01}{(.018 \pm .004)}$
<b>Reel Dimensions</b>	
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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