



## SinglFuse™ SF-0402S Series Features

- Single blow fuse for overcurrent protection
- 1005 (EIA 0402) miniature footprint
- Slow blow fuse
- UL listed
- RoHS compliant\* and halogen free\*\*
- Thin film chip fuse
- Surface mount packaging for automated assembly

## SF-0402S Series - Slow Blow Surface Mount Fuses

### Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance (mΩ) Typ.***	Rated Voltage	Breaking Capacity	Typical I <sup>2</sup> t (A <sup>2</sup> s) ****
SF-0402S050	0.50	Open within 5 sec. at 250 % rated current	235	DC 24 V	DC24 V 35 A	0.00370
SF-0402S080	0.80		86			0.00947
SF-0402S100	1.00		64			0.01479
SF-0402S125	1.25		45			0.02310
SF-0402S150	1.50		35			0.02400
SF-0402S160	1.60		32			0.03734
SF-0402S200	2.00		24			0.04040
SF-0402S250	2.50		19			0.06760
SF-0402S300	3.00		15			0.09860
SF-0402S315	3.15		14			0.10868
SF-0402S400	4.00		10.5			0.11450

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

\*\*\*\*Typical I<sup>2</sup>t value is measured at 10x rated current.

### Reliability Testing

Parameter	Requirement	Test Method
Carrying Capacity .....	No fusing .....	Rated current, 4 hours
Fusing Time .....	Within 5 seconds .....	250 % 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 .....	±20 % .....	260 °C ±5 °C, 10 seconds ±1 second
Solderability .....	95 % coverage minimum .....	235 °C ±5 °C, 2 ±0.5 second 245 °C ±5 °C, 2 ±0.5 second (lead free)
Temperature Rise .....	<75 ° .....	100 % of its rated current, measure of surface temperature
Resistance to Dry Heat .....	±20 % .....	105 °C ±5 °C, 1000 hours
Resistance to Solvent .....	No evident damage on protective coating and marking .....	23 °C ±5 °C of isopropyl alcohol, 90 seconds
Residual Resistance .....	10k ohms or more .....	Measure DC resistance after fusing
Thermal Shock .....	ΔR < 10 % .....	-20 °C / +25 °C / +125 °C / +25 °C, 10 cycles

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

\*\* Bourns is using the definition that appears to be the prevalent definition used as the industry standard at this time. The Bourns definition of "halogen-free" is:

Bromine (Br) content: ≤ 900 ppm; Chlorine (Cl) content: ≤ 900 ppm; Total Br + Cl content: ≤ 1500 ppm.

"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.

# SingIFuse™ SF-0402S 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-0402S Series - Slow Blow Surface Mount Fuses **BOURNS®**

### Typical Part Marking

Represents total content. Layout may vary.



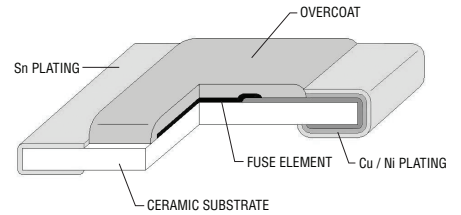
RATING CURRENT (A)	
D = 0.315	N = 1.60
F = 0.50	S = 2.00
V = 0.75	T = 2.50
K = 0.80	3 = 3.00
L = 1.00	U = 3.15
M = 1.25	W = 4.00
P = 1.50	

### How to Order

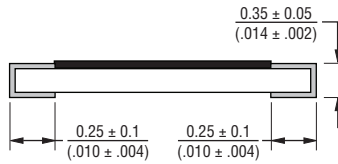
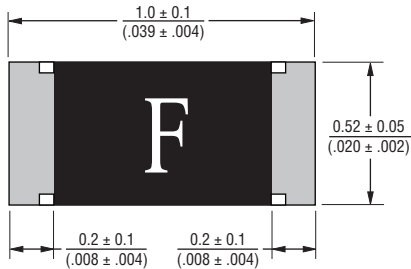
**SF - 0402 S 050 - 2**

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

### Construction & Material Content



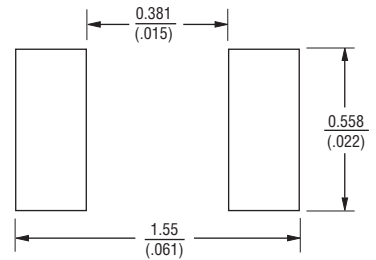
### Product Dimensions



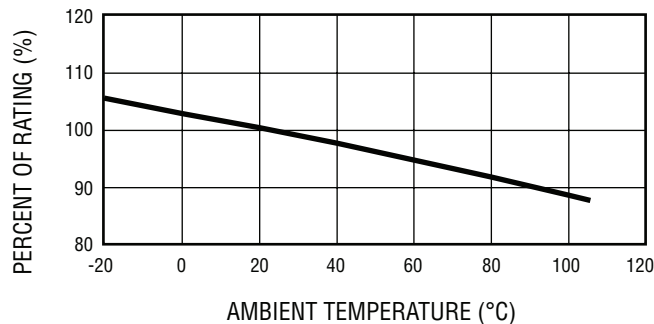
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

PACKAGING: 10,000 pcs./reel

### Recommended Pad Layout



### Thermal Derating Curve

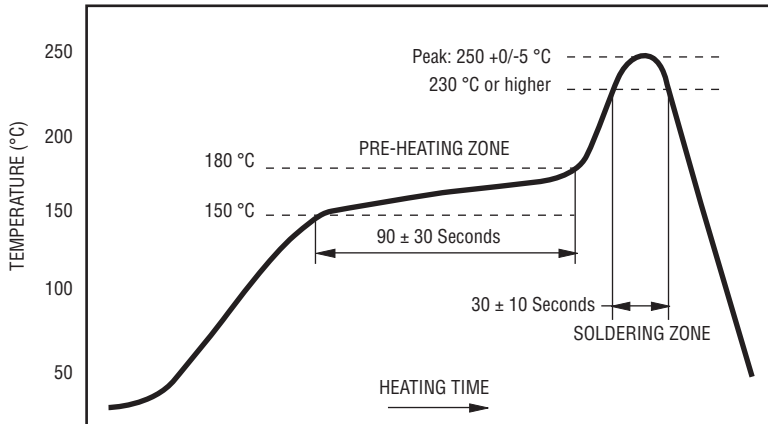


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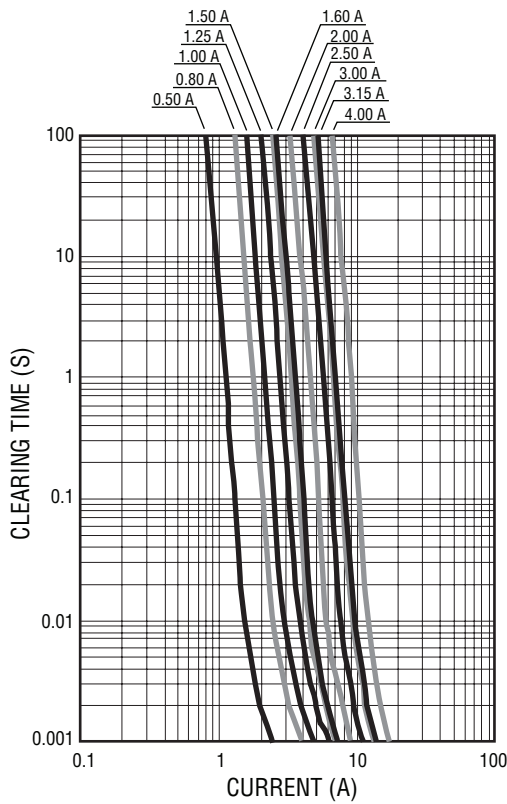
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## Solder Reflow Recommendations

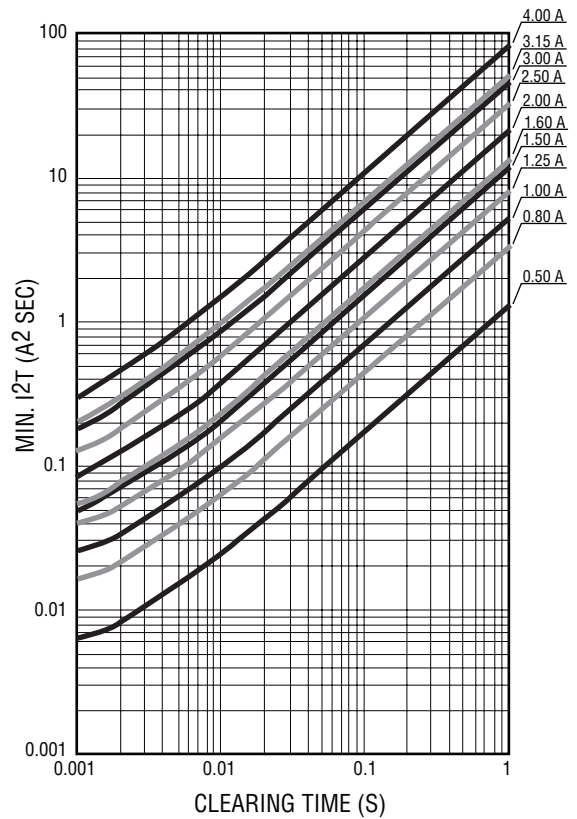


PEAK: 250 ± 0/-5 °C, 5 seconds  
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

## Average Time Current Curves



## Minimum I²T V Clear Time Curves



REV. E 07/17

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# SF-0402S Series Tape and Reel Specifications

# BOURNS®

Tape Dimensions	SF-0402S 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	$\frac{180 \pm 0/-3.0}{(7.087 \pm 0/-118)}$
B Min.	$\frac{60.0}{(2.362)}$
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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