

## SingIFuse™ SF-0603S Series Features

- Slow blow thin film chip fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Surface mount packaging for automated assembly
- UL listed (UL 248-14)
- RoHS compliant\* and halogen free\*\*

## SF-0603S 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-0603S040	0.40	Open within 5 sec. at 250 % rated current	350	DC 50 V	DC 50 V / AC 35 V 50 A	0.004
SF-0603S050	0.50		232			0.009
SF-0603S063	0.63		150			0.017
SF-0603S070	0.70		148	0.023		
SF-0603S080	0.80		113	0.024		
SF-0603S100	1.00		67	0.026		
SF-0603S125	1.25		50	0.057		
SF-0603S150	1.50		42	0.081		
SF-0603S160	1.60		40	0.086		
SF-0603S200	2.00		27	0.115		
SF-0603S250	2.50		19.5	0.200		
SF-0603S300	3.00		16	0.210		
SF-0603S315	3.15		15	0.279		
SF-0603S400	4.00		11	0.326		
SF-0603S500	5.00		8	0.622		
SF-0603S600	6.00		6	2.700		

\*\*\* 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
UL File Number	E198545 <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

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

\*\*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.

"SingIFuse" 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.

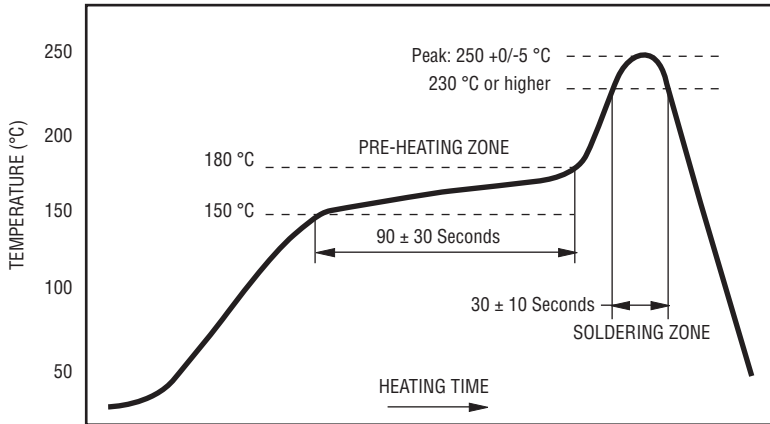
Users should verify actual device performance in their specific applications.

# SinglFuse™ SF-0603S Series Applications

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

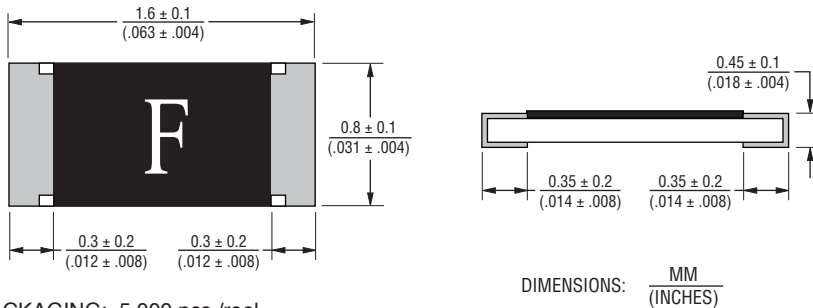
## SF-0603S Series - Slow Blow Surface Mount Fuses **BOURNS®**

### Solder Reflow Recommendations



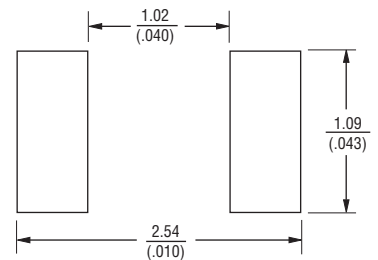
PEAK: 250 +0/-5 °C, 5 seconds  
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

### Product Dimensions

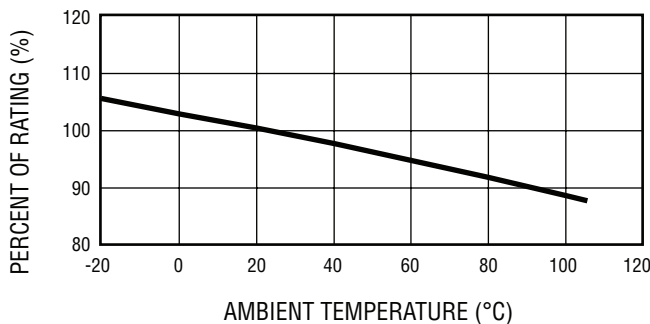


PACKAGING: 5,000 pcs./reel

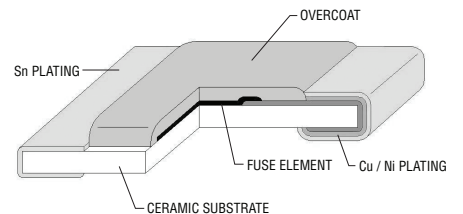
### Recommended Pad Layout



### Thermal Derating Curve



### Construction & Material Content

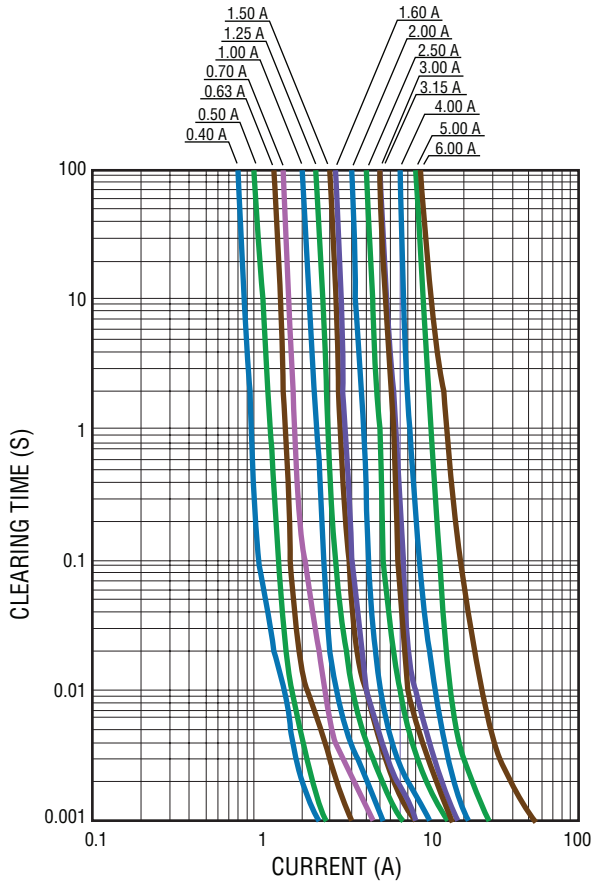


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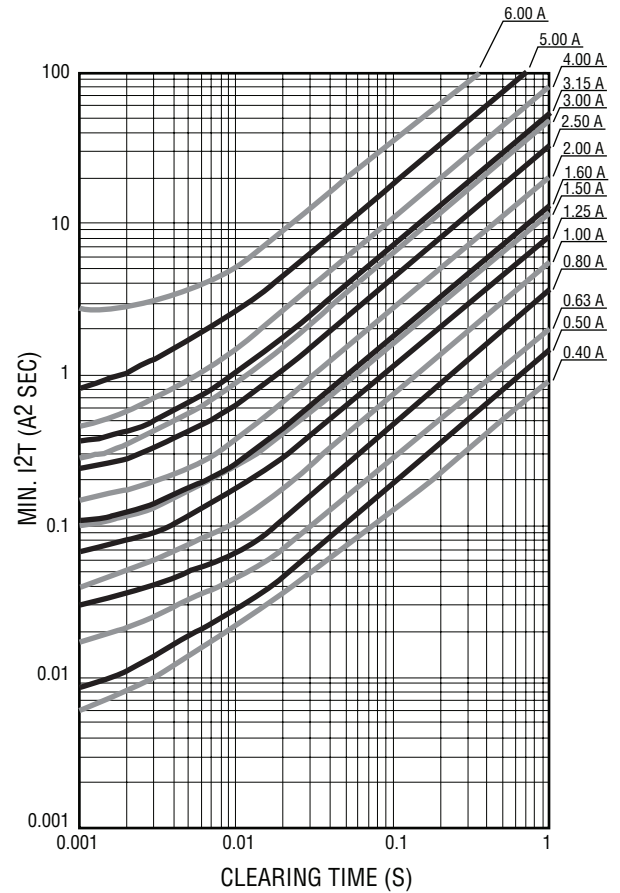
# SF-0603S Series - Slow Blow Surface Mount Fuses



## 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)	
E = 0.40	N = 1.60
F = 0.50	S = 2.00
I = 0.63	T = 2.50
J = 0.70	3 = 3.00
K = 0.80	U = 3.15
L = 1.00	W = 4.00
M = 1.25	Y = 5.00
P = 1.50	<u>6</u> = 6.00

## How to Order

**SF - 0603 S 040 - 2**

- SinglFuse™ Product Designator
- SMD Footprint 1608 (EIA 0603) size
- Fuse Blow Type F = Fast acting, S = Slow blow
- Rated Current 040-600 (400 mA - 6.00 A)
- Packaging Type - 2 = Tape & Reel (5,000 pcs./reel)

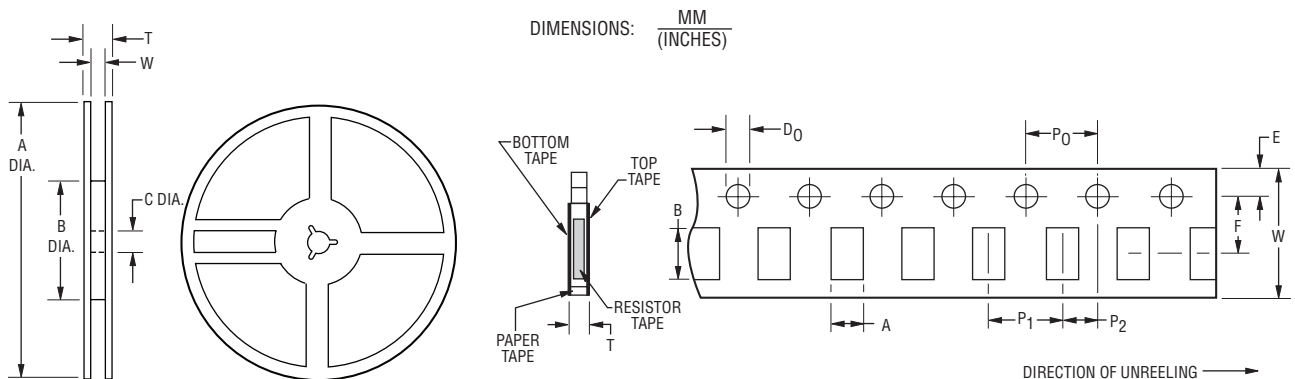
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# SF-0603S Series Tape and Reel Specifications

# BOURNS®

Tape Dimensions	SF-0603S 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>	$\frac{4.0 \pm 0.1}{(.157 \pm .004)}$
P <sub>2</sub>	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
A	$\frac{1.1 \pm 0.1}{(.043 \pm .004)}$
B	$\frac{1.9 \pm 0.1}{(.075 \pm .004)}$
F	$\frac{3.5 \pm 0.05}{(.138 \pm .002)}$
E	$\frac{1.75 \pm 0.1}{(.069 \pm .004)}$
D <sub>0</sub>	$\frac{1.5 + 0.1/-0}{(.059 + .004/-0)}$
T	$\frac{0.64 \pm 0.1}{(.025 \pm .004)}$
<b>Reel Dimensions</b>	
A	$\frac{180 +0/-3.0}{(7.087 +0/- .118)}$
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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