

## SinglFuse™ 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	DC 32 V	DC 32 V / AC 35 V 50 A	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 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

**BOURNS®**

#### Asia-Pacific:

Tel: +886-2 2562-4117

Email: asiacus@bourns.com

#### Europe:

Tel: +36 88 520 390

Email: eurocus@bourns.com

#### The Americas:

Tel: +1-951 781-5500

Email: americus@bourns.com

[www.bourns.com](http://www.bourns.com)

\* 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.

"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.

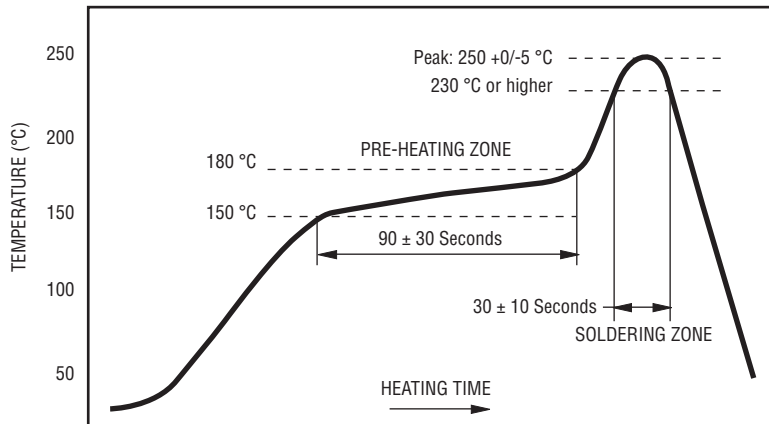
## SinglFuse™ SF-0603S Series Applications

- 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

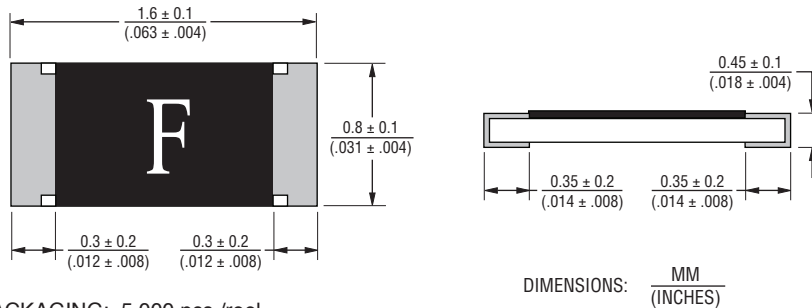
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### Solder Reflow Recommendations



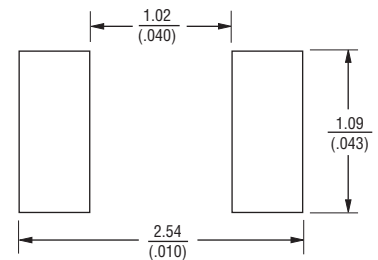
PEAK: 250 +0/-5 °C, 5 seconds  
PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

### Product Dimensions

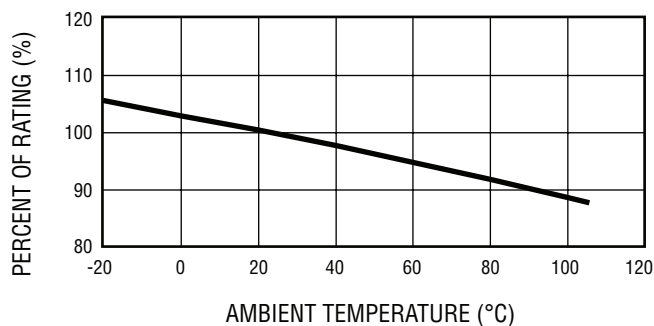


PACKAGING: 5,000 pcs./reel

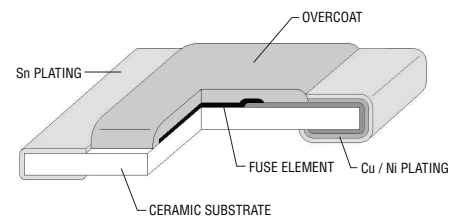
### Recommended Pad Layout



### Thermal Derating Curve



### Construction & Material Content

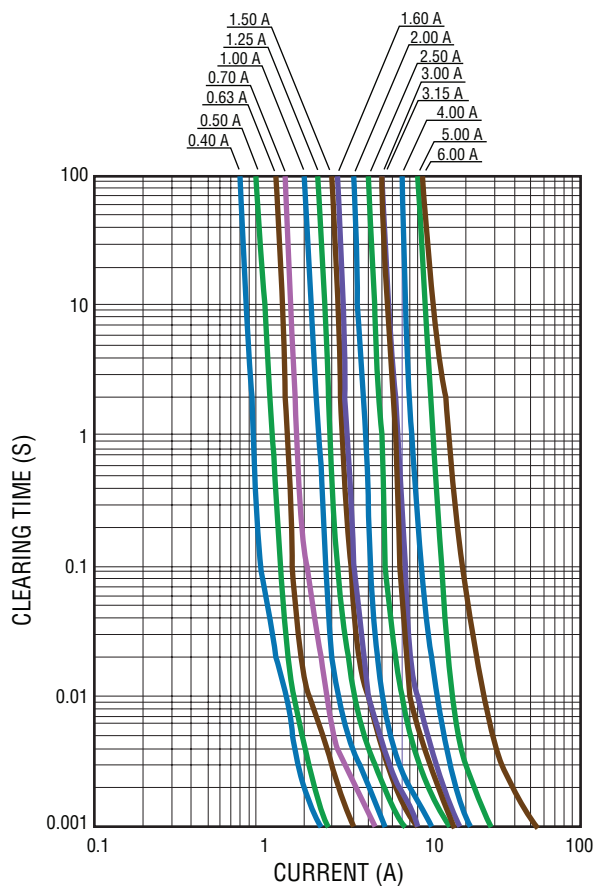


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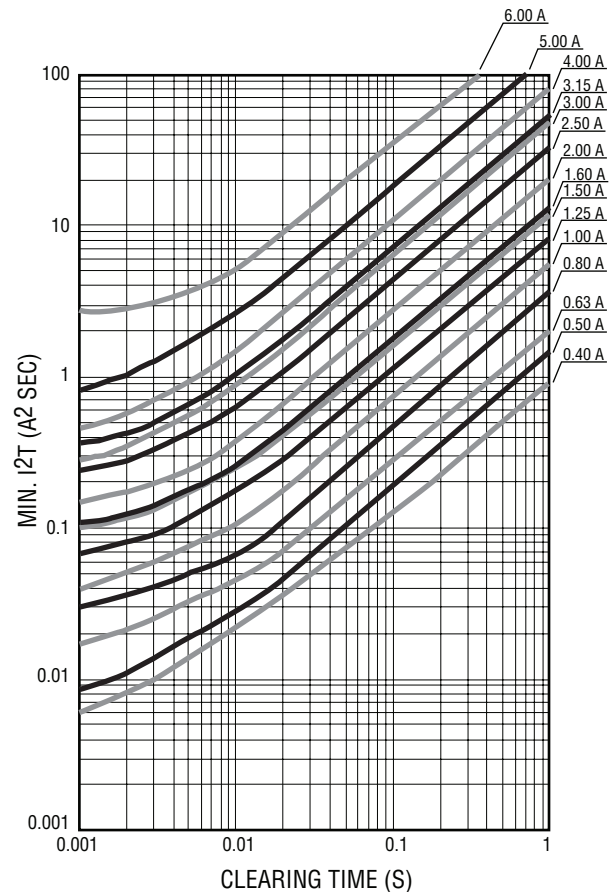
# SF-0603S Series - Slow Blow Surface Mount Fuses

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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)	
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	6 = 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)

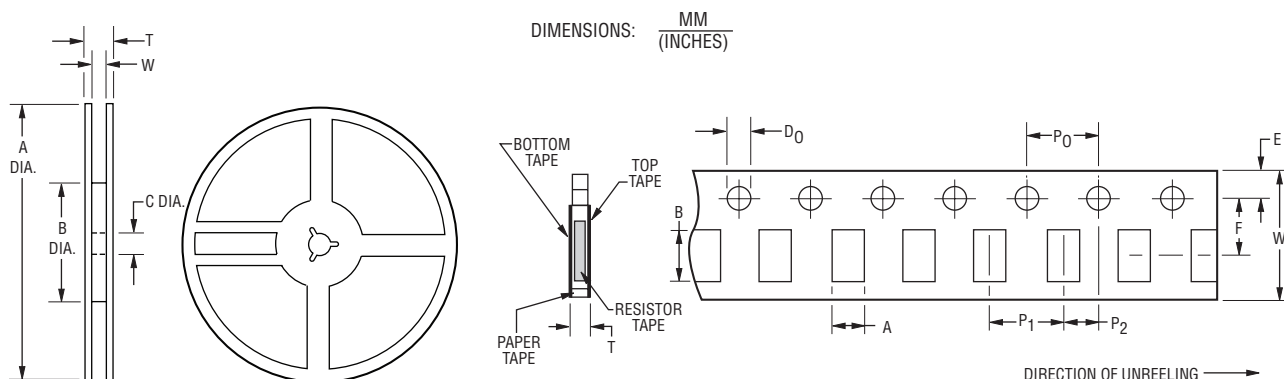
REV. H 08/17

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# SF-0603S Series Tape and Reel Specifications

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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>	$\frac{1.5 \pm 0.1/-0}{(.059 \pm .004/-0)}$
T	$\frac{0.64 \pm 0.1}{(.025 \pm .004)}$
<b>Reel Dimensions</b>	
A	$\frac{180 \pm 0/-3.0}{(7.087 \pm 0/-1.18)}$
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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