



## SinglFuse™ SF-0603F Series Features

- Fast acting 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-0603F Series - Fast Acting Surface Mount Fuses

### Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance (mΩ) ***	Rated Voltage	Breaking Capacity	Typical I <sup>2</sup> t (A <sup>2</sup> s) ****
SF-0603F040	0.40	Open within 1 min. at 200 % rated current	496	DC 50 V	DC 50 V 50 A	0.004
SF-0603F050	0.50		290			0.005
SF-0603F063	0.63		205			0.007
SF-0603F080	0.80		132	DC 32 V	DC 32 V 50 A	0.014
SF-0603F100	1.00		84			0.016
SF-0603F125	1.25		63			0.027
SF-0603F150	1.50		50.5			0.037
SF-0603F160	1.60		45			0.041
SF-0603F200	2.00		34			0.044
SF-0603F250	2.50		24.5			0.055
SF-0603F300	3.00		20			0.082
SF-0603F315	3.15		19			0.089
SF-0603F400	4.00		13			0.239
SF-0603F500	5.00		11			0.433

\*\*\* Resistance value was measured with less than 10 % of rated current. Tolerance ±25 %.

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

### Reliability Testing

No.	Test	Requirement	Test Condition
1	Carrying Capacity	No fusing	Rated current, 4 hours
2	Fusing Time	Within 1 minute	200 % of its rated current
3	Interrupting Ability	No mechanical damages	After the fuse is interrupted, rated voltage applied for 30 seconds again
4	Bending Test	No mechanical damages	Distance between holding points: 90 mm, Bending: 3 mm, 1 time, 30 seconds
5	Resistance to Solder Heat	±20 %	260 °C ±5 °C, 10 seconds ±1 second
6	Solderability	95 % coverage minimum	235 °C ±5 °C, 2 ±0.5 second 245 °C ±5 °C, 2 ±0.5 second (lead free)
7	Temperature Rise	<75 °C	100 % of its rated current, measure of surface temperature
8	Resistance to Dry Heat	±20 %	105 °C ±5 °C, 1000 hours
9	Resistance to Solvent	No evident damage on protective coating and marking	23 °C ±5 °C of isopropyl alcohol, 90 seconds
10	Residual Resistance	10k ohms or more	Measure DC resistance after fusing
11	Thermal Shock	ΔR < 10 %	-20 °C / +25 °C / +125 °C / +25 °C, 10 cycles

### Agency Recognition

UL File Number ..... E198545

### 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



**WARNING Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\* 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.

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Users should verify actual device performance in their specific applications.

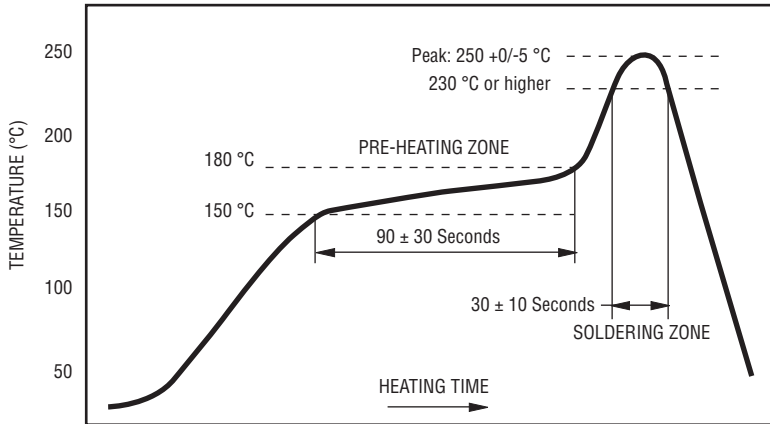
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# SinglFuse™ SF-0603F Series Applications

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

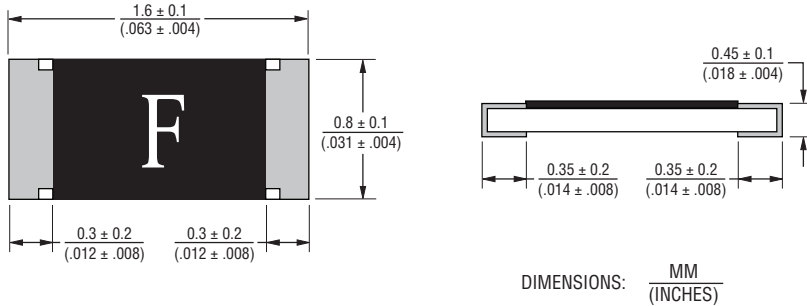
## SF-0603F Series - Fast Acting Surface Mount Fuses BOURNS®

### Solder Reflow Recommendations

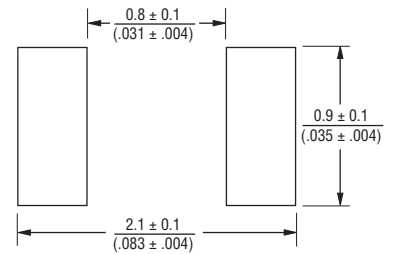


PEAK: 250 +0/-5 °C, 5 seconds  
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

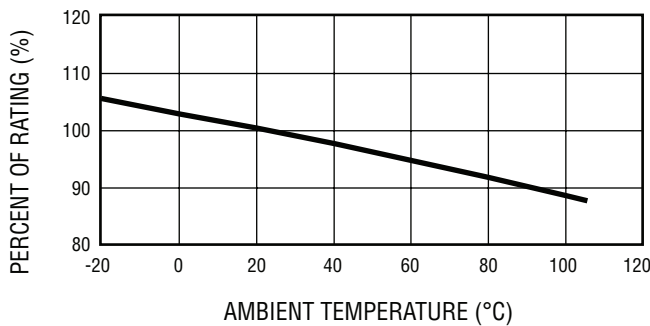
### Product Dimensions



### Recommended Pad Layout



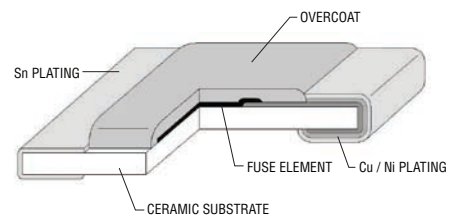
### Thermal Derating Curve



### Packaging Quantity

5,000 pieces per 7-inch reel

### Construction & Material Content

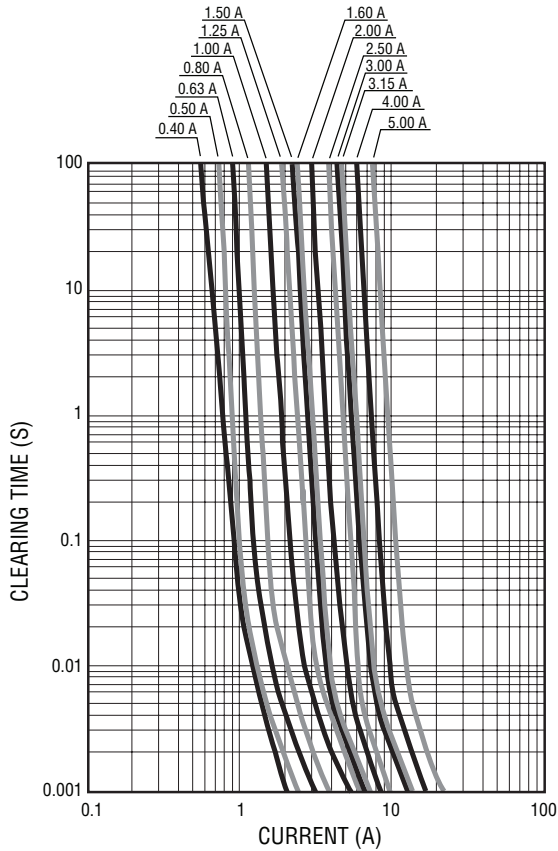


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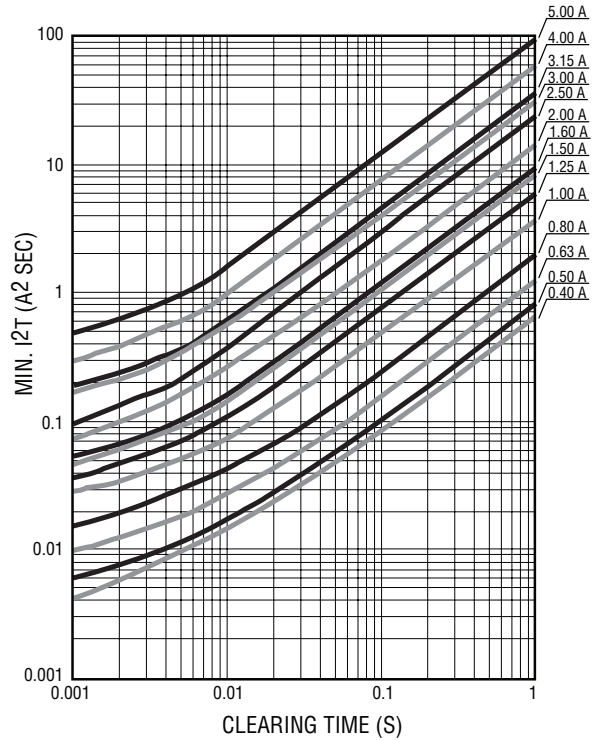
# SF-0603F Series - Fast Acting Surface Mount Fuses



## 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	S = 2.00
F = 0.50	T = 2.50
I = 0.63	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
N = 1.60	

## How to Order

**SF - 0603 F 040 - 2**

SinglFuse™  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 1608 (EIA 0603) size  
 Fuse Blow Type \_\_\_\_\_  
 F = Fast acting  
 S = Slow blow  
 Rated Current \_\_\_\_\_  
 040-500 (400 mA - 5.00 A)  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel (5,000 pcs./reel)

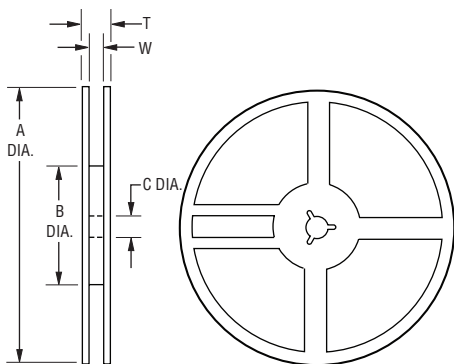
REV. K 01/19

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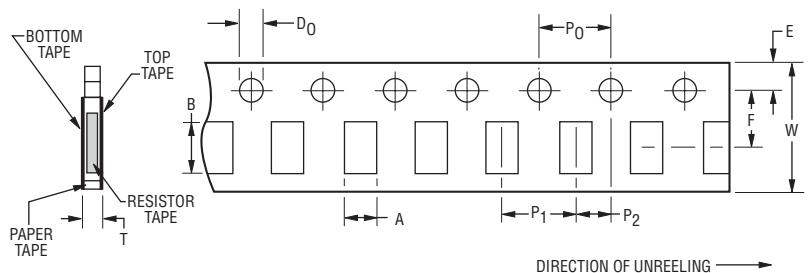
# SF-0603F Series Tape and Reel Specifications

# BOURNS®

Tape Dimensions	SF-0603F 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	$\frac{0.64 \pm 0.1}{(.025 \pm .004)}$
Reel Dimensions	
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	$\frac{11.4 \pm 2.0}{(.449 \pm .079)}$



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



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