

## SinglFuse™ SF-0603FP Series Features

- Fast acting precision 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-0603FP 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-0603FP050	0.50	Open within 5 sec. at 200 % rated current	260	DC 50 V	DC 50 V 50 A	0.088
SF-0603FP063	0.63		218	DC 32 V	DC 32 V 50 A	0.0125
SF-0603FP080	0.80		132			0.0206
SF-0603FP100	1.00		84.5			0.0211
SF-0603FP125	1.25		63			0.0472
SF-0603FP150	1.50		50.5			0.0623
SF-0603FP160	1.60		46			0.0817
SF-0603FP200	2.00		32			0.1176
SF-0603FP250	2.50		25.5			0.1807
SF-0603FP300	3.00		20			0.3177
SF-0603FP315	3.15		19			0.3615
SF-0603FP400	4.00		13			0.5348
SF-0603FP500	5.00		10			0.7726

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

\*\*\*\*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, 1time, 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 245 °C $\pm 5$ °C, 2 $\pm 0.5$ second (lead free)
Temperature Rise .....	<75 °C .....	100 % of its rated current, measure of surface temperature
Resistance to Dry Heat .....	$\pm 20\%$ .....	105 °C $\pm 5$ °C, 1000 hours
Resistance to Solvent .....	No evident damage on protective coating and marking .....	23 °C $\pm 5$ °C of isopropyl alcohol, 90 seconds
Residual Resistance .....	10k ohms or more .....	Measure DC resistance after fusing
Thermal Shock .....	$\Delta R < 10\%$ .....	-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 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.

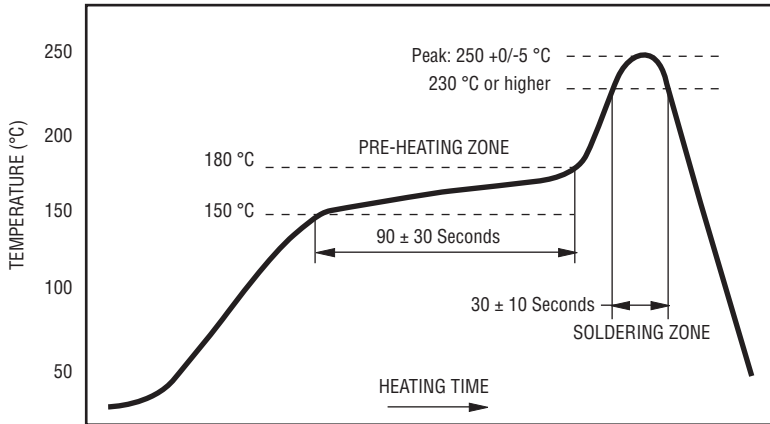
Users should verify actual device performance in their specific applications.

# SinglFuse™ SF-0603FP Series Applications

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

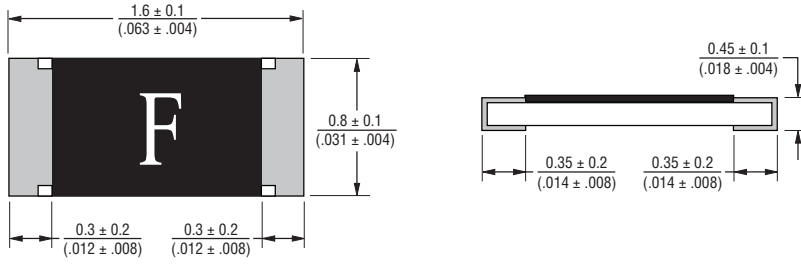
## SF-0603FP Series - Fast Acting Precision Surface Mount Fuses **BOURNS®**

### 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

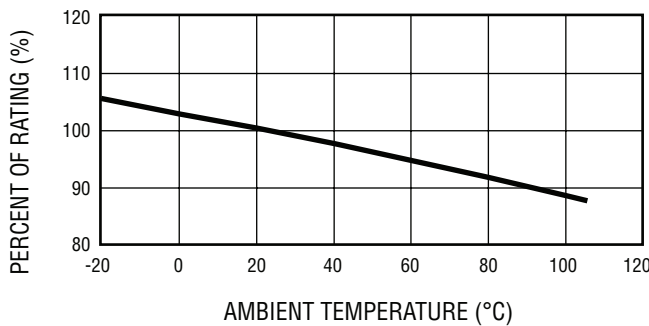
### Product Dimensions



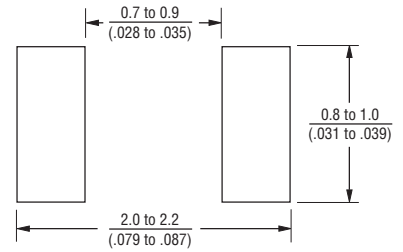
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

PACKAGING: 5,000 pcs./reel

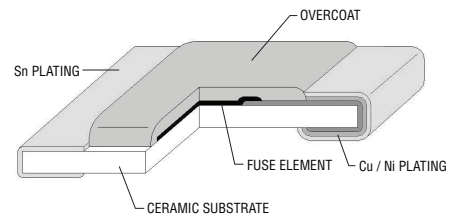
### Thermal Derating Curve



### Recommended Pad Layout



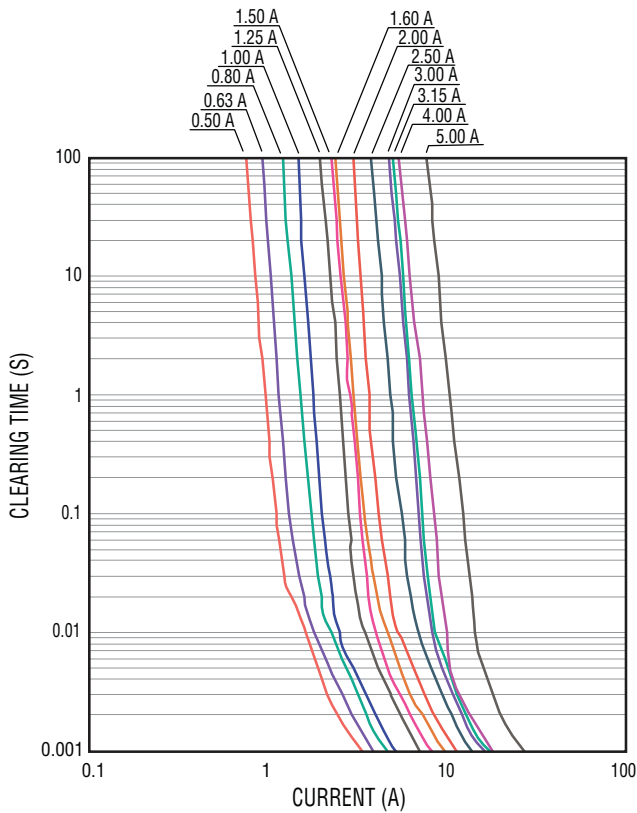
### Construction & Material Content



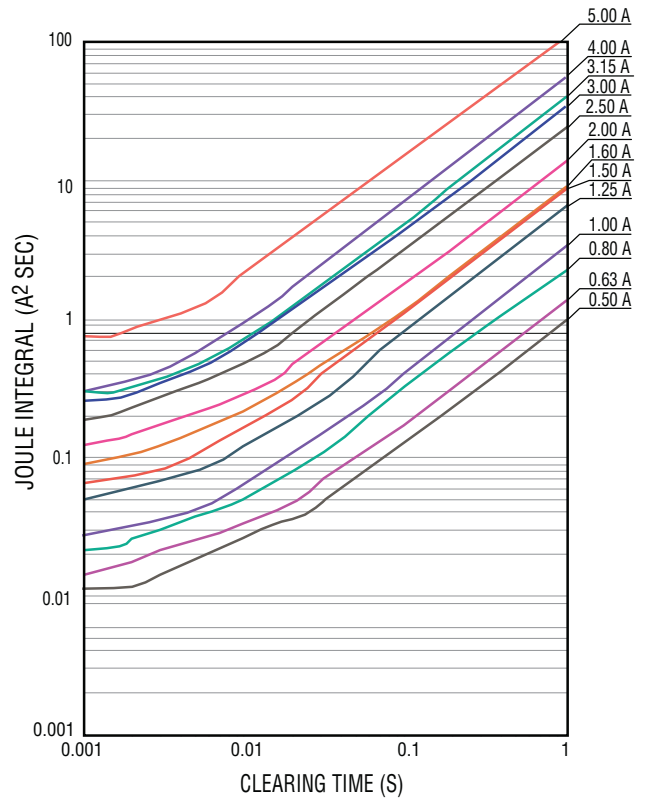
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**Average Time Current Curves**



**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
I = 0.63	T = 2.50
K = 0.80	3 = 3.00
L = 1.00	U = 3.15
M = 1.25	W = 4.00
P = 1.50	Y = 5.00
N = 1.60	

**How to Order**

**SF - 0603 FP 050 - 2**

SinglFuse™ \_\_\_\_\_

Product Designator \_\_\_\_\_

SMD Footprint \_\_\_\_\_

1608 (EIA 0603) size \_\_\_\_\_

Fuse Blow Type \_\_\_\_\_

FP = Fast acting precision \_\_\_\_\_

Rated Current \_\_\_\_\_

050-500 (500 mA - 5.00 A) \_\_\_\_\_

Packaging Type \_\_\_\_\_

- 2 = Tape & Reel (5,000 pcs./reel) \_\_\_\_\_

# SF-0603FP Series Tape and Reel Specifications

# BOURNS®

Tape Dimensions	SF-0603FP 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	$\frac{180 +0/-3.0}{(7.087 +0/-1.18)}$
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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