

SinglFuse™ SF-0603F Series Features

- Single blow fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Fast-acting fuse
- UL listed
- RoHS compliant* and halogen free**
- Thin film chip fuse
- Surface mount packaging for automated assembly

SF-0603F Series - Fast Acting Surface Mount Fuses

Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance Tolerance $\pm 25\%$ % (m Ω) ***	Rated Voltage	Breaking Capacity	Typical I ² t (A ² 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.

****Typical I²t value is measured at 10x rated current.

Reliability Testing

Parameter	Requirement	Test Method
Carrying Capacity	No fusing	Rated current, 4 hours
Fusing Time	Within 1 minute	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 ± 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	$\pm 20\%$	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	$\Delta R < 10\%$	-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.

**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.

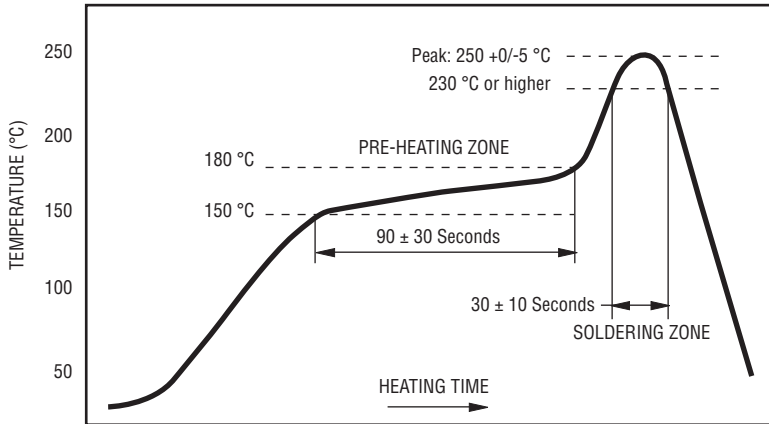
SinglFuse™ SF-0603F Series Applications

- 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

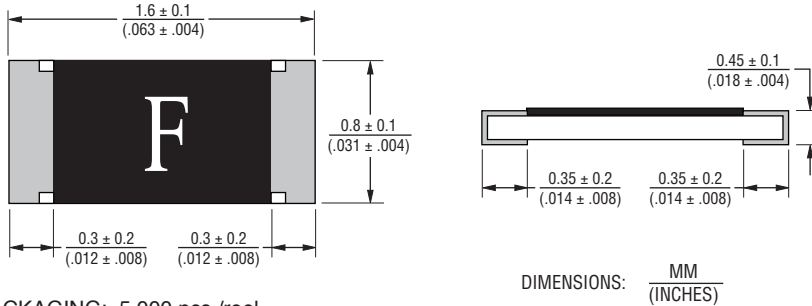
BOURNS®

Solder Reflow Recommendations



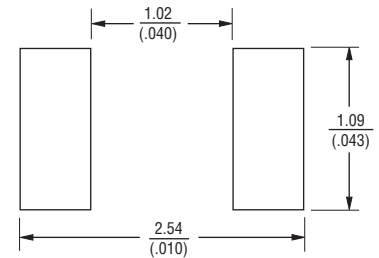
PEAK: 250 +0/-5 °C, 5 seconds
PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds
SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

Product Dimensions

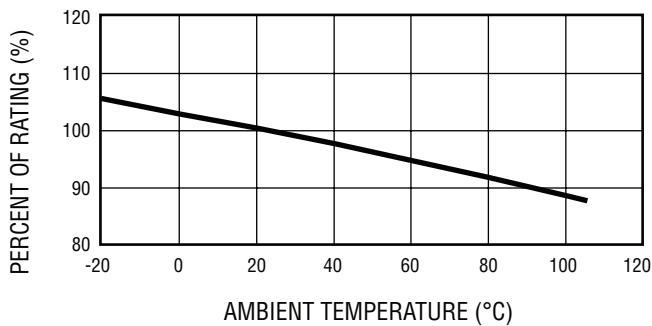


PACKAGING: 5,000 pcs./reel

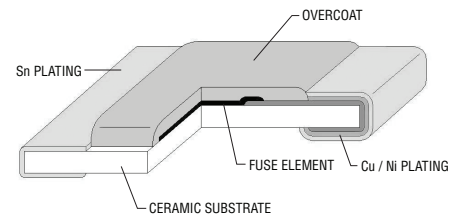
Recommended Pad Layout



Thermal Derating Curve



Construction & Material Content



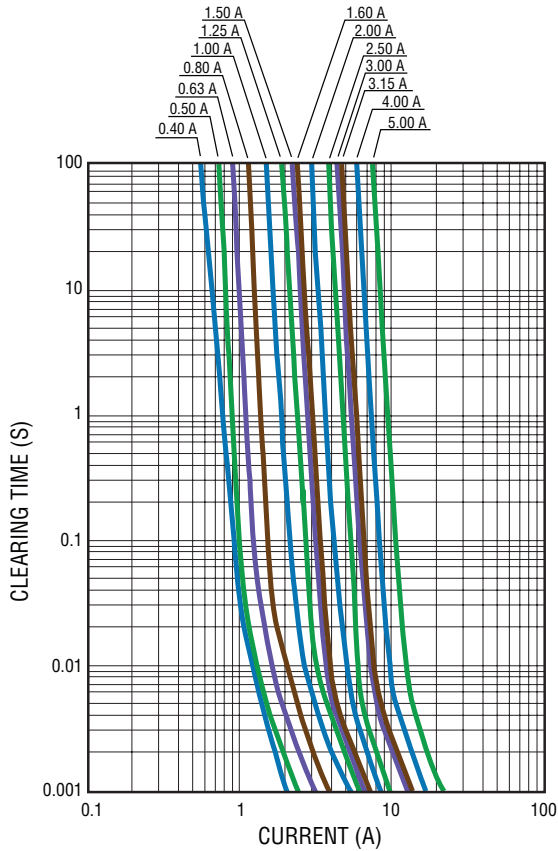
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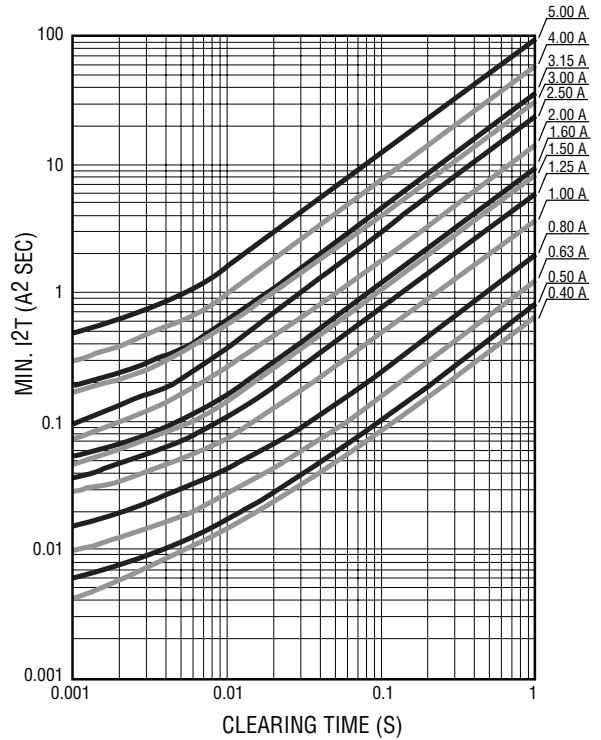
SF-0603F Series - Fast Acting Surface Mount Fuses



Average Time Current Curves



Minimum I²T V Clear Time Curves



Typical Part Marking

Represents total content. Layout may vary.



RATING 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

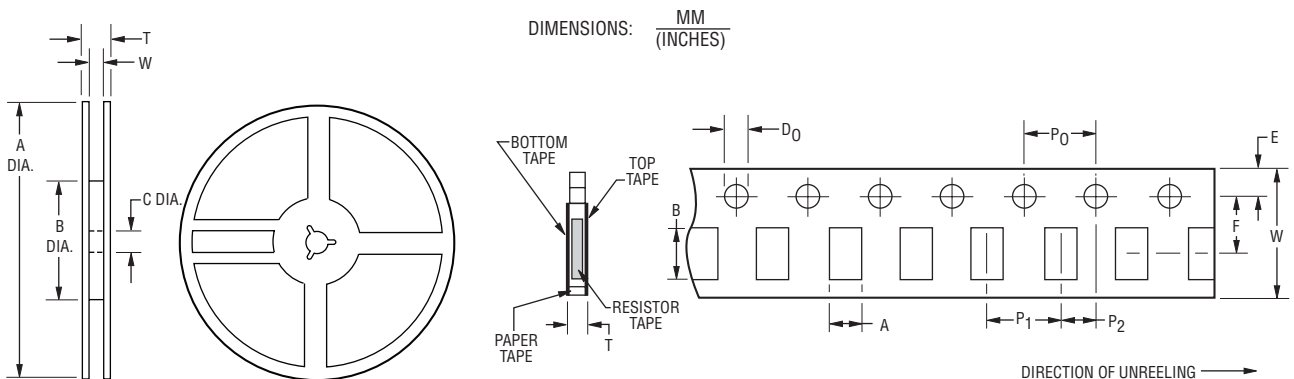
SF - 0603 F 040 - 2

- 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)

SF-0603F Series Tape and Reel Specifications

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Tape Dimensions	SF-0603F Series per EIA 481-2
W	$\frac{8.0 \pm 0.2}{(.315 \pm .008)}$
P ₀	$\frac{4.0 \pm 0.1}{(.157 \pm .004)}$
P ₁	$\frac{4.0 \pm 0.1}{(.157 \pm .004)}$
P ₂	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
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 ₀	$\frac{1.5 + 0.1/-0}{(.059 + .004/-0)}$
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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