

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 Tolerance $\pm 25\%$ (m Ω) ***	Rated Voltage	Breaking Capacity	Typical I^2t (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	DC 32 V	DC 32 V 50 A	0.005
SF-0603F063	0.63		205			0.007
SF-0603F080	0.80		132			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 I^2t 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
Temperature Rise	<75 °	245 °C ± 5 °C, 2 ± 0.5 second (lead free)
Resistance to Dry Heat	$\pm 20\%$	100 % of its rated current, measure of surface temperature
Resistance to Solvent	No evident damage on protective coating and marking	105 °C ± 5 °C, 1000 hours
Residual Resistance	10k ohms or more	23 °C ± 5 °C of isopropyl alcohol, 90 seconds
Thermal Shock	$\Delta R < 10\%$	Measure DC resistance after fusing
UL File Number	E198545	-20 °C / +25 °C / +125 °C / +25 °C, 10 cycles
	http://www.ul.com/ 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

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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.

"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.

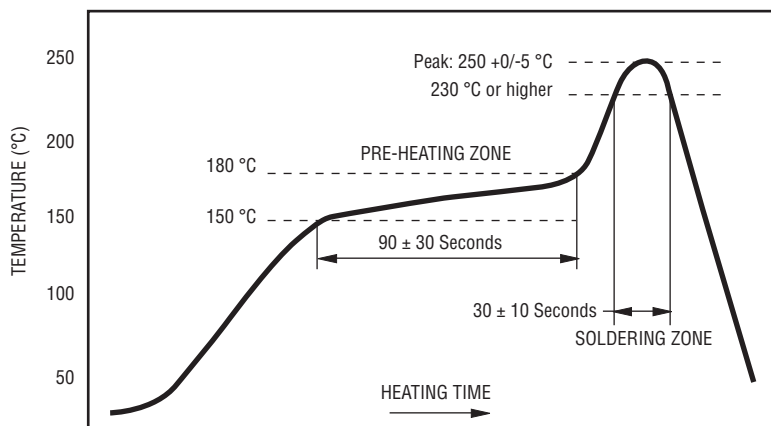
SinglFuse™ SF-0603F Series Applications

- 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

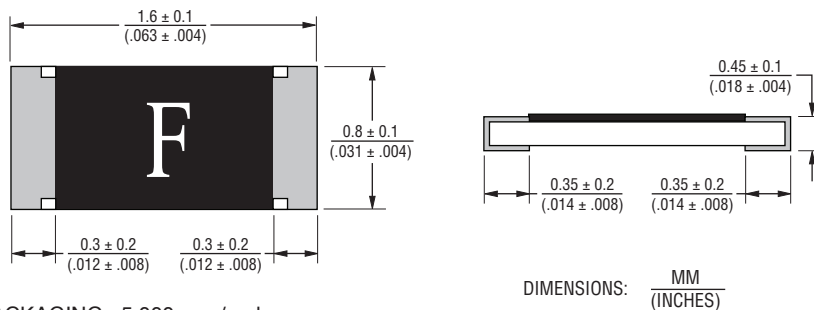
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Solder Reflow Recommendations



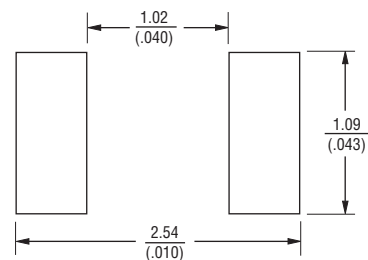
PEAK: 250 +0/-5 °C, 5 seconds
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

Product Dimensions

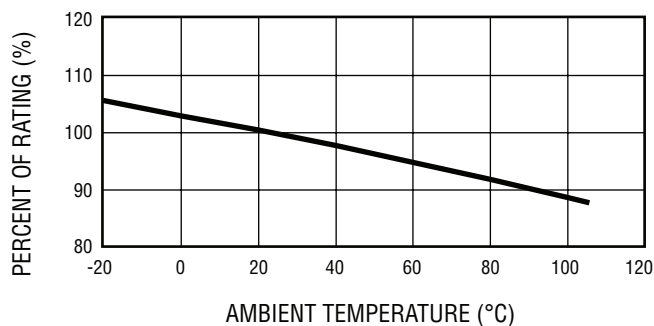


PACKAGING: 5,000 pcs./reel

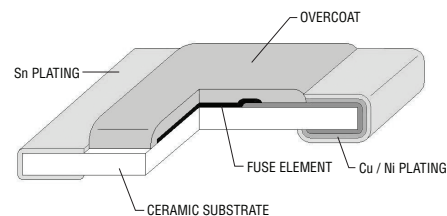
Recommended Pad Layout



Thermal Derating Curve



Construction & Material Content



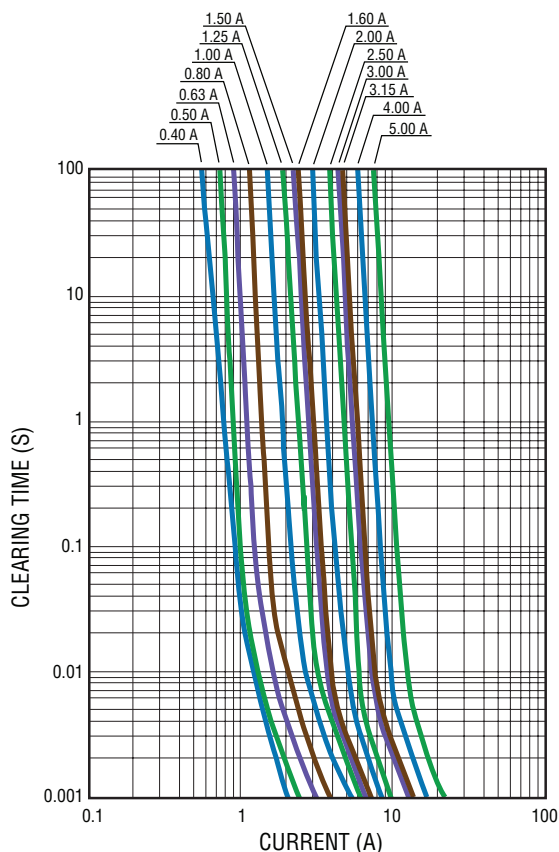
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Average Time Current Curves



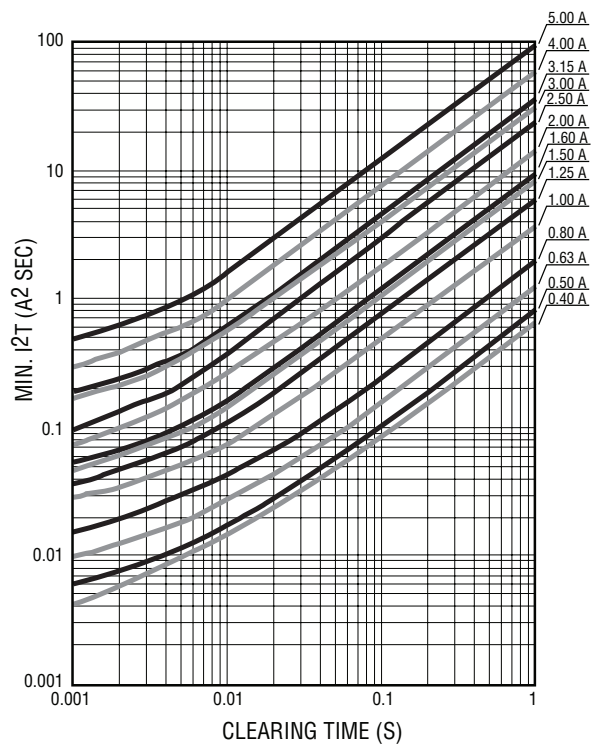
Typical Part Marking

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	

Minimum I²T V Clear Time Curves



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

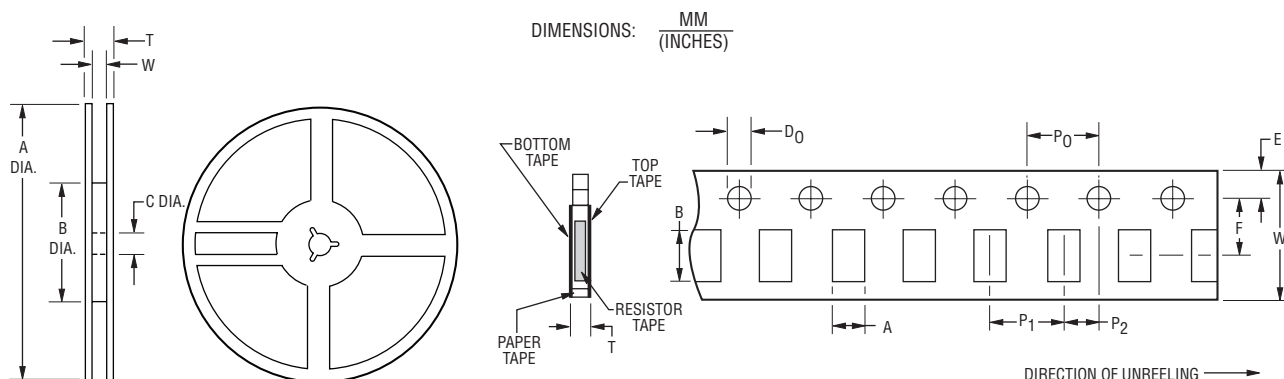
Rated Current
040-500 (400 mA - 5.00 A)

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	$\frac{180 +0/-3.0}{(7.087 +0/-0.118)}$
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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