

SinglFuse™ SF-0402SxxxM Series Features

- Single blow fuse for overcurrent protection
- 1005 (EIA 0402) miniature footprint
- Slow blow fuse (Fusing time ≤ 5 seconds at 250 % rated current)
- UL 248-14 listed
- Surface mount packaging for automated assembly
- Multilayer SMD design
- RoHS compliant* and halogen free**

SF-0402SxxxM Series - Slow Blow Multilayer Surface Mount Fuses

Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance (Ω) Typ.***	Rated Voltage	Breaking Capacity	Typical I^2t (A ² s) ****
SF-0402S050M-2	0.50	Open within 5 sec. at 250 % rated current	0.378	DC 24 V	DC 24 V 35 A	0.0041
SF-0402S075M-2	0.75		0.209			0.0071
SF-0402S100M-2	1.00		0.119			0.0142
SF-0402S150M-2	1.50		0.0557			0.051
SF-0402S200M-2	2.00		0.0348			0.071
SF-0402S300M-2	3.00		0.0209			0.111
SF-0402S400M-2	4.00		0.0139			0.212

*** Resistance value measured with ≤ 10 % rated current at 25 °C ambient. Tolerance ± 30 %.

****Melting I^2t calculated at 0.001 second pre-arcing time.

Reliability Testing

No.	Test	Requirement	Test Condition	Test Reference
1	Soldering heat resistance	DCR change $\leq \pm 10$ % No mechanical damage	One dip at 260 °C for 60 seconds	MIL-STD-202 Method 210
2	Solderability	Minimum 95 % coverage	One dip at 245 °C for 5 seconds	MIL-STD-202 Method 208
3	Thermal shock	DCR change $\leq \pm 10$ % No mechanical damage	100 cycles between -65 °C and +125 °C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change $\leq \pm 15$ % No excessive corrosion	10 cycles	MIL-STD-202 Method 106
5	Salt spray	DCR change $\leq \pm 10$ % No excessive corrosion	48 hour exposure, 5 % salt solution	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change $\leq \pm 10$ % No mechanical damage	0.4 inch D.A. or 30 G between 5-3000 Hz	MIL-STD-202 Method 204
7	Mechanical shock	DCR change $\leq \pm 10$ % No mechanical damage	1500 G, 0.5 ms, half-sine shocks	MIL-STD-202 Method 213
8	Life	No electrical "opens" during testing. Voltage drop change shall be less than ± 20 % of initial value.	80 % rated current (75 % for ≤ 1 A fuses) for 2000 hours at ambient temperature +20 °C ~ +30 °C	Refer to STP document
9	Terminal strength	No mechanical damage	0.5 Kg pushing force	Refer to STP document

Environmental Characteristics

Operating Temperature..... -55 °C to +125 °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

Agency Recognition

UL File Number E198545



WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

* 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.

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Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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SingIFuse™ SF-0402SxxxM Series Applications

- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- MP3 players
- Cellphones
- Rechargeable battery packs
- Battery chargers
- Set-top boxes
- Industrial controllers
- Battery Management Systems (BMS)
- LED lighting
- Power tools

SF-0402SxxxM Series - Slow Blow Multilayer Surface Mount Fuses **BOURNS®**

Typical Part Marking

..... No part marking for this series

Packaging Quantity

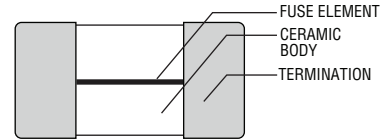
.....10,000 pieces per 7 inch reel

How to Order

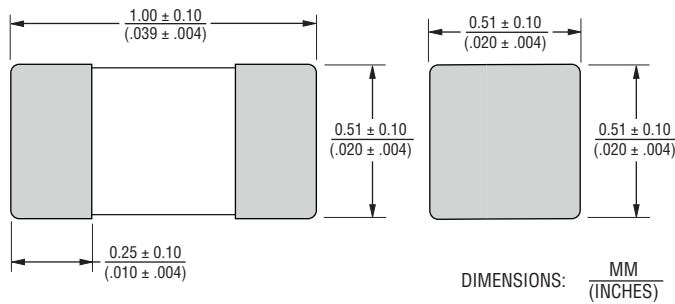
SF - 0402 S 050 M - 2

SingIFuse™
 Product Designator
 SMD Footprint
 0402 = 1005 (EIA 0402) size
 Fuse Blow Type
 S = Slow blow
 Rated Current
 050 ~ 400 (0.50 A ~ 4.00 A)
 Structure Type
 M = Multilayer
 Packaging Type
 - 2 = Tape & Reel

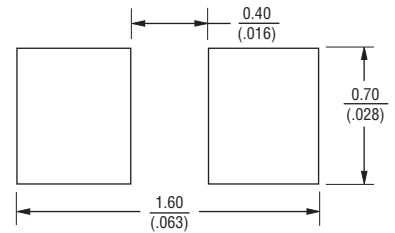
Construction



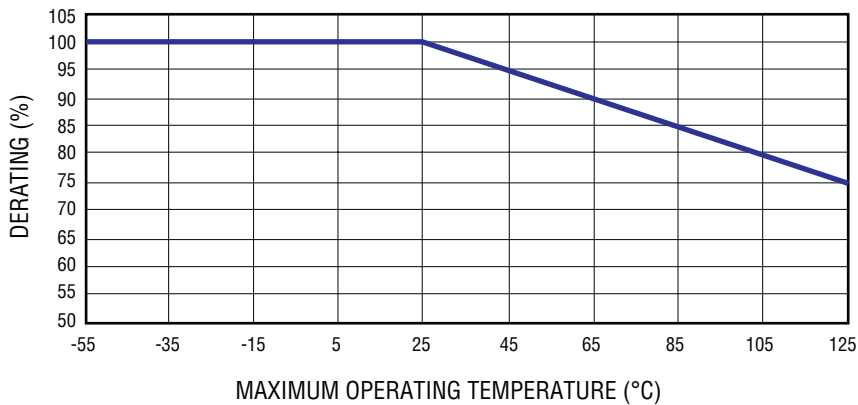
Product Dimensions



Recommended Pad Layout

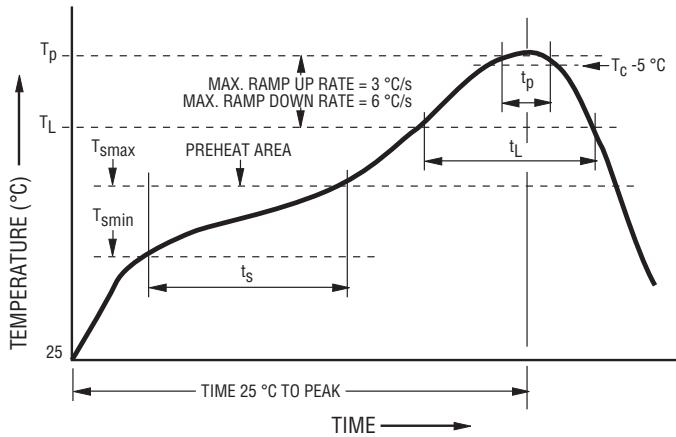


Current Rating Thermal Derating Curve



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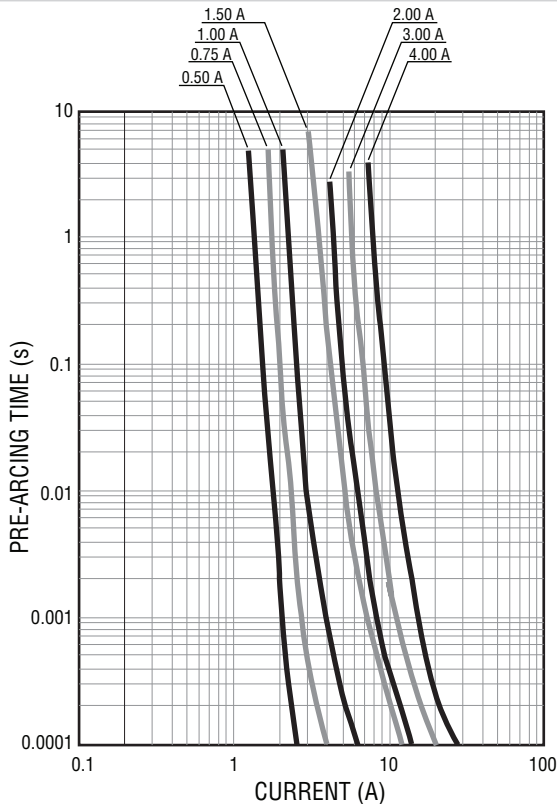
Solder Reflow Recommendations



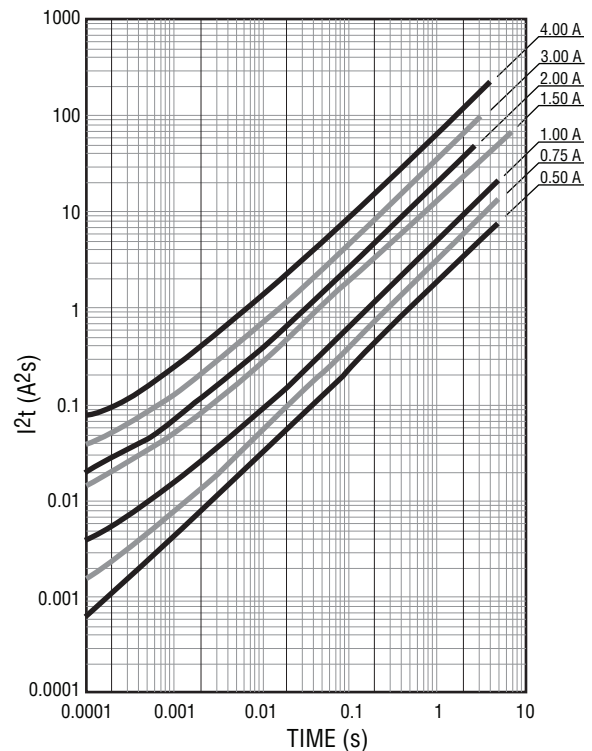
Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. (T_{smin}) Temperature Max. (T_{smax}) Time (t_s) from (T_{smin} to T_{smax})	150 °C 200 °C 60~120 seconds
Ramp Up Rate (T_L to T_p)	3 °C / second max.
Liquidous Temperature (T_L) Time (t_L) maintained above T_L	217 °C 60~150 seconds
Peak Package Body Temperature (T_p)	260 °C
Time (t_p)* within 5 °C of the specified classification temperature (T_c)	30 seconds*
Ramp Down Rate (T_p to T_L)	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

Average Pre-Arcing Time vs. Current Curves



Average I^2t vs. t Curves



REV. D 09/20

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SF-0402SxxxM Series Tape and Reel Specifications

BOURNS®

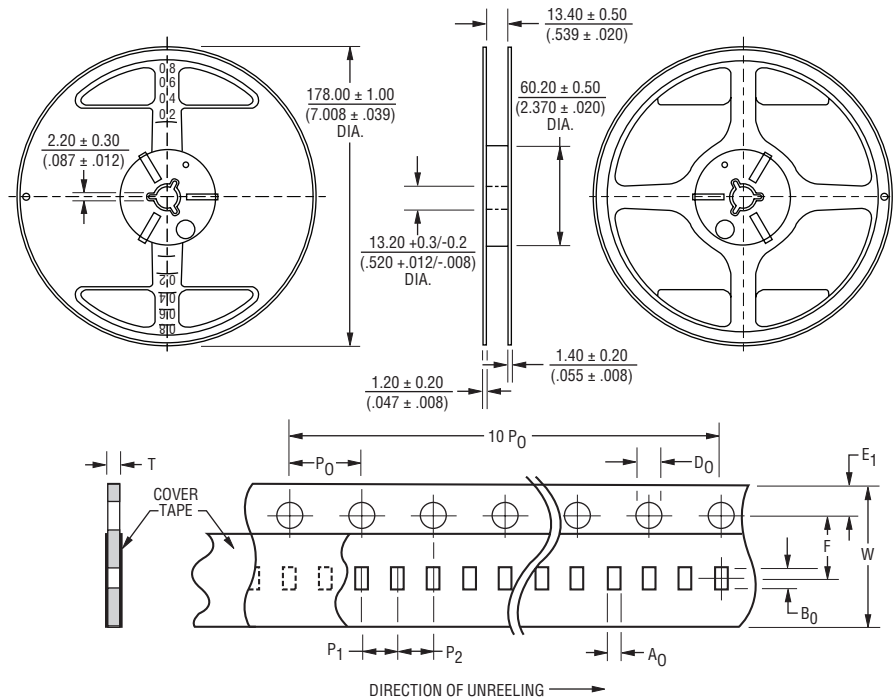
SF-0402SxxxM Series per EIA 481-2

Tape Dimensions

W	$\frac{8.10 \pm 0.10}{(.319 \pm .004)}$
P ₀	$\frac{4.0 \pm 0.10}{(.157 \pm .004)}$
P ₁	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
P ₂	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
A ₀	$\frac{0.67 \pm 0.10}{(.026 \pm .004)}$
B ₀	$\frac{1.17 \pm 0.10}{(.046 \pm .004)}$
F	$\frac{3.5 \pm 0.05}{(.138 \pm .002)}$
E ₁	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$
D ₀	$\frac{1.50 \pm 0.10}{(.059 \pm .004)}$
T	$\frac{0.63 \pm 0.10}{(.025 \pm .004)}$

PACKAGING: Paper tape, 10,000 pcs. per reel

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



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