SingIFuse™ 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^2s) ****
SF-0402S050M-2	0.50	Open within 5 sec. at 250 % rated current	0.380	DC 24 V	DC 24 V 35 A	0.004
SF-0402S075M-2	0.75		0.210			0.007
SF-0402S100M-2	1.00		0.120			0.014
SF-0402S150M-2	1.50		0.056			0.050
SF-0402S200M-2	2.00		0.035			0.070
SF-0402S300M-2	3.00		0.021			0.110
SF-0402S400M-2	4.00		0.014			0.210

*** Resistance value measured with ≤10 % rated current at 25 °C ambient. Tolerance ±25 %.
****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 ≤ ±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 ≤ ±10 % No mechanical damage	100 cycles between -65 °C and +125 °C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change ≤ ±15 % No excessive corrosion	10 cycles	MIL-STD-202 Method 106
5	Salt spray	DCR change ≤ ±10 % No excessive corrosion	48 hour exposure, 5 % salt solution	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change ≤ ±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 ≤ ±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 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.

SingIFuse™ SF-0402SxxxM Series Applications

- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- MP3 players
- Cell phones
- 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

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Typical Part Marking

.....No part marking for this series

Packaging Quantity

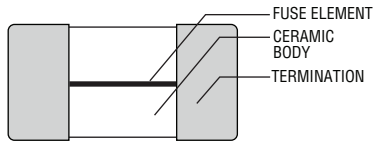
10,000 pieces per 7 inch reel

How to Order

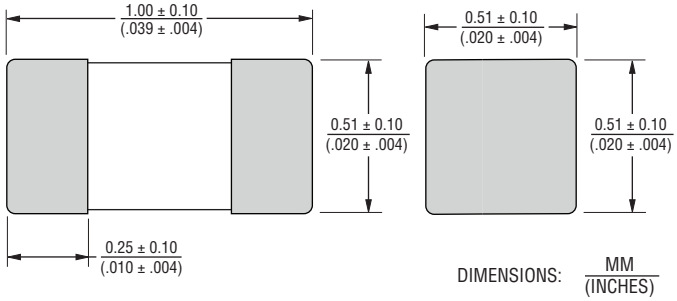
SF - 0402 S 050 M - 2

- 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

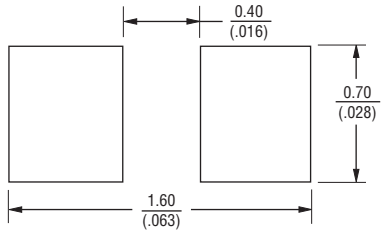
Construction



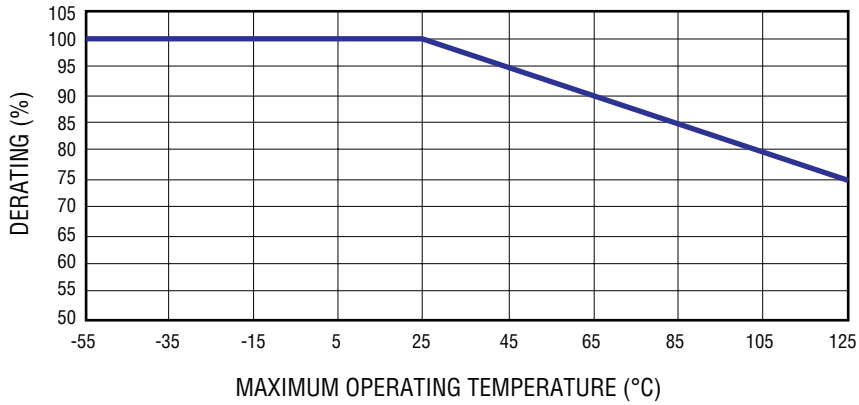
Product Dimensions



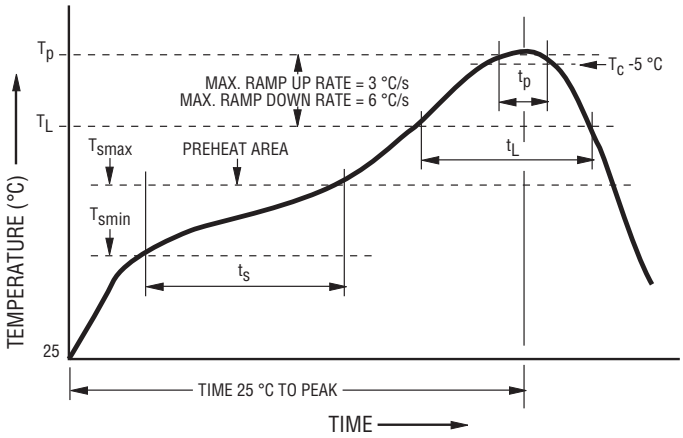
Recommended Pad Layout



Current Rating Thermal Derating Curve



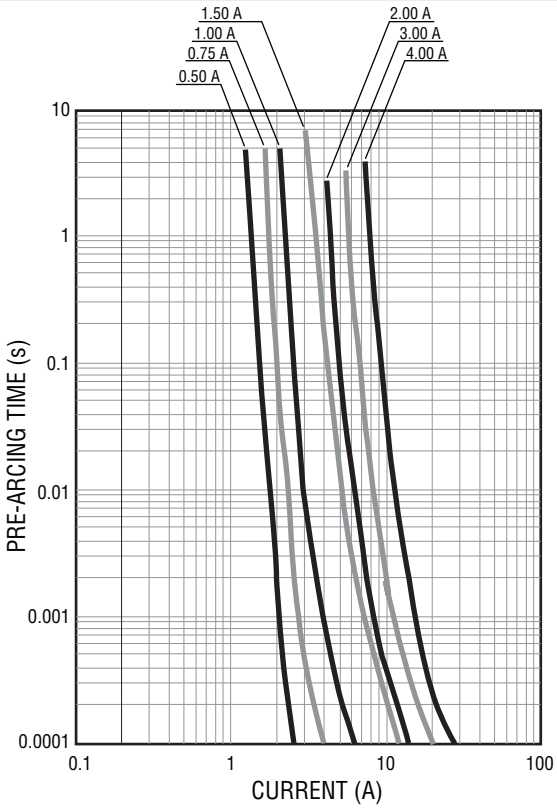
Solder Reflow Recommendations



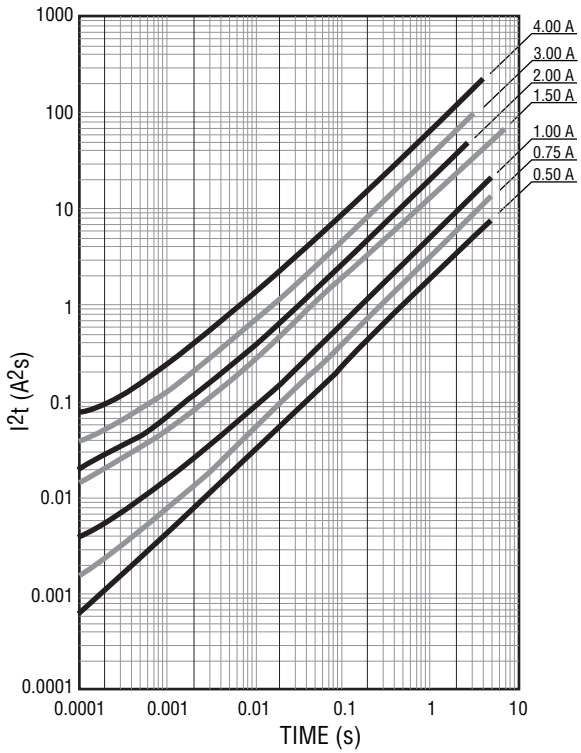
Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. (T_{smin}) Temperature Max. (T_{smax}) Time (t_s) from (T_{smin} to T_{smax})	 150 °C 200 °C 60~120 seconds
Ramp Up Rate (T_L to T_p)	3 °C / second max.
Liquidous Temperature (T_L) Time (t_L) maintained above T_L	217 °C 60~150 seconds
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



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SF-0402SxxxM Series Tape and Reel Specifications

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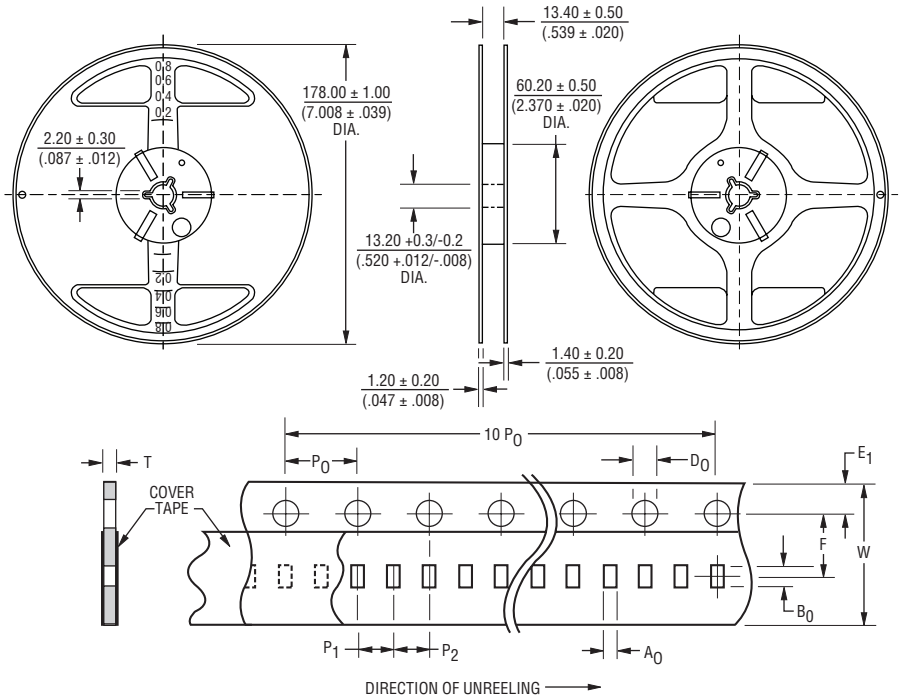
Tape Dimensions	SF-0402SxxxM Series per EIA 481-2
W	8.10 ± 0.10 (.319 ± .004)
P_0	4.0 ± 0.10 (.157 ± .004)
P_1	2.0 ± 0.05 (.079 ± .002)
P_2	2.0 ± 0.05 (.079 ± .002)
A_0	0.67 ± 0.10 (.026 ± .004)
B_0	1.17 ± 0.10 (.046 ± .004)
F	3.5 ± 0.05 (.138 ± .002)
E_1	1.75 ± 0.10 (.069 ± .004)
D_0	1.50 + 0.10 (.059 + .004)
T	0.63 ± 0.10 (.025 ± .004)

DIMENSIONS: MM / (INCHES)

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



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