

SinglFuse™ SF-0402FP-F Series Features

- Single blow fuse for overcurrent protection
- 1005 (EIA 0402) miniature footprint
- Fast-acting precision fuse
- UL 248-14 compliant
- RoHS compliant* and halogen free**
- Thin film chip design
- Surface mount packaging for automated assembly

SF-0402FP-F Series - Fast Acting Precision Surface Mount Fuses

Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
200 % (0.375 A – 5 A)	—	5 seconds
300 % (0.2 A – 0.25 A)	—	5 seconds
300 % (0.375 A – 5 A)	—	0.2 seconds

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Electrical Characteristics

Model	Rated Current (A)	Resistance (Ω) Typ.***	Rated Voltage	Interrupting Rating	Typical I ² t (A ² s) ****	Certifications
						cUL: E198545
SF-0402FP020F-2	0.20	0.60	35 VDC	35 A @ 35 VDC	0.0017	✓
SF-0402FP025F-2	0.25	0.33			0.0035	✓
SF-0402FP0375F-2	0.375	0.24			0.0036	✓
SF-0402FP050F-2	0.50	0.16			0.006	✓
SF-0402FP075F-2	0.75	0.10			0.012	✓
SF-0402FP100F-2	1.00	0.073			0.024	✓
SF-0402FP125F-2	1.25	0.054			0.045	✓
SF-0402FP150F-2	1.50	0.04			0.081	✓
SF-0402FP175F-2	1.75	0.034			0.092	✓
SF-0402FP200F-2	2.00	0.031			0.12	✓
SF-0402FP250F-2	2.50	0.018			0.22	✓
SF-0402FP300F-2	3.00	0.015			0.27	✓
SF-0402FP350F-2	3.50	0.012			0.34	✓
SF-0402FP400F-2	4.00	0.011			0.36	✓
SF-0402FP500F-2	5.00	0.009			0.55	✓

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

**** Melting I²t calculated at 0.001 second pre-arcing time.



**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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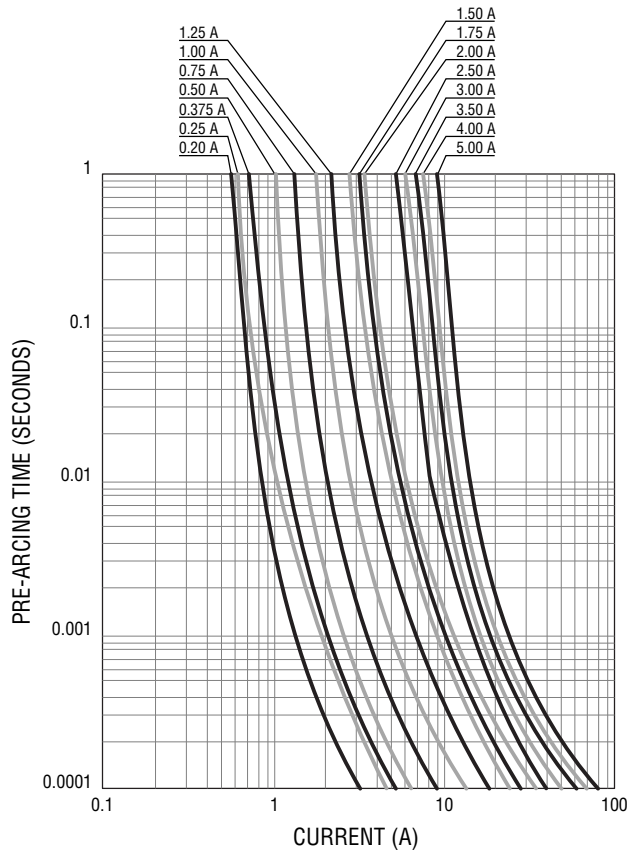
SinglFuse™ SF-0402FP-F Series Applications

- 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

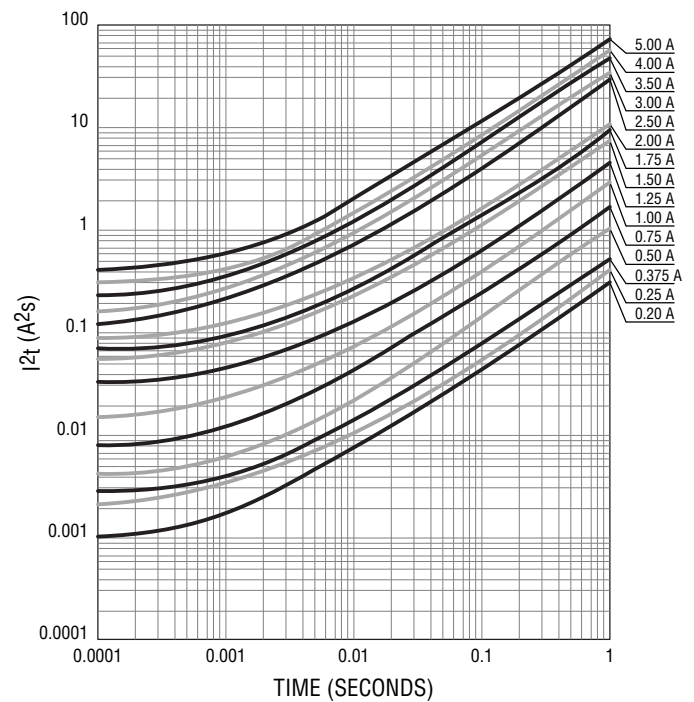
SF-0402FP-F Series - Fast Acting Precision Surface Mount Fuses

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Average Pre-Arcing Time vs. Current Curves



Average I^2t vs. t Curves



Environmental Characteristics

Operating Temperature.....	-55 °C to +90 °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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SF-0402FP-F Series - Fast Acting Precision Surface Mount Fuses

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Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)

.. = 0.200	.. = 1.00	H = 2.50
: = 0.250	x = 1.25	III = 3.00
... = 0.375	II = 1.50	H = 3.50
= 0.500	= = 1.75	□ = 4.00
— = 0.750	± = 2.00	○ = 5.00

How to Order

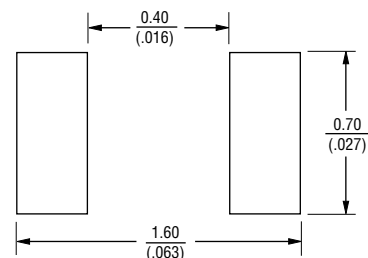
SF - 0402 FP 050 F - 2

SinglFuse™
 Product Designator
 SMD Footprint
 0402 = 1005 (EIA 0402) size
 Fuse Blow Type
 FP = Fast acting precision
 Rated Current
 020 ~ 075 (200 mA ~ 0.75 A)
 Structure Type
 = ThinFilm
 Packaging Type
 2 = Tape & Reel

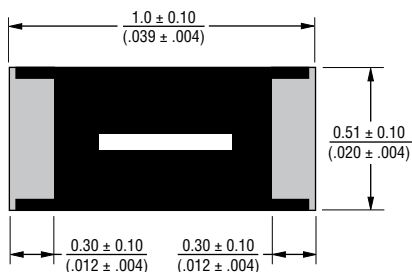
Packaging

Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	20,000 pieces
Packaging Code	-2

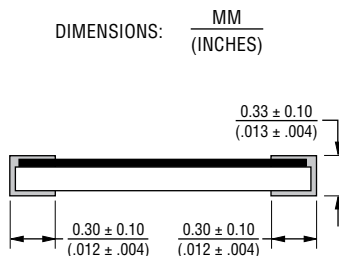
Recommended Pad Layout



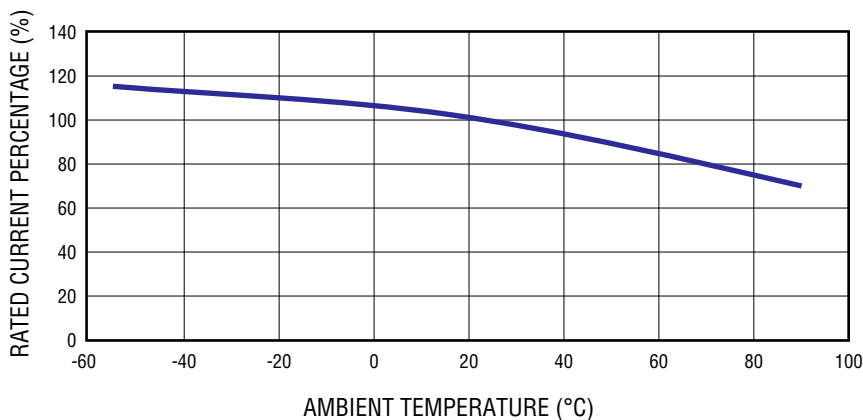
Product Dimensions



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



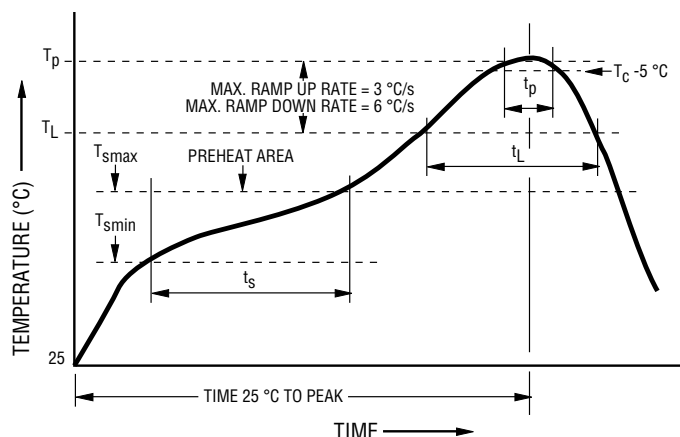
Current Rating Thermal Derating Curve



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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.

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

Reliability Testing

No.	Test	Requirement	Test Condition	Test Reference
1	Bending	≤ 1 A: DCR change $\leq \pm 10$ % > 1 A: DCR change $\leq \pm 20$ %	2 mm	Refer to STP document
2	Solderability	Minimum 95 % coverage	One dip at 255 °C for 5 seconds	MIL-STD-202 Method 208
3	Thermal shock	DCR change $\leq \pm 10$ % No mechanical damage	100 cycles between -55 °C and +125 °C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change $\leq \pm 10$ % 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 ± 10 % of initial value	75 % rated current for 2000 hours at ambient temperature between +20 °C and +30 °C	Refer to STP document

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