



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 |

Additional Information

Click these links for more information:



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.

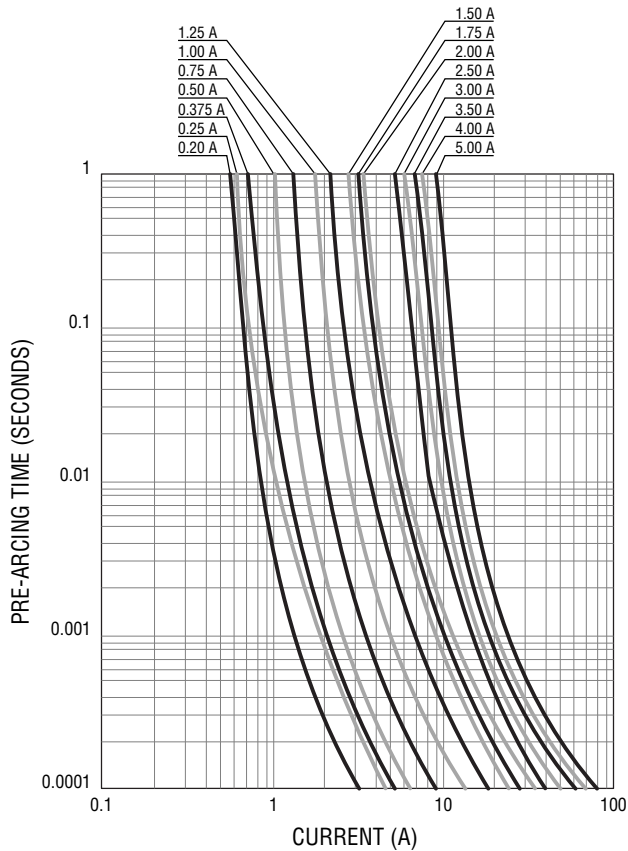
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SinglFuse™ SF-0402FP-F Series Applications

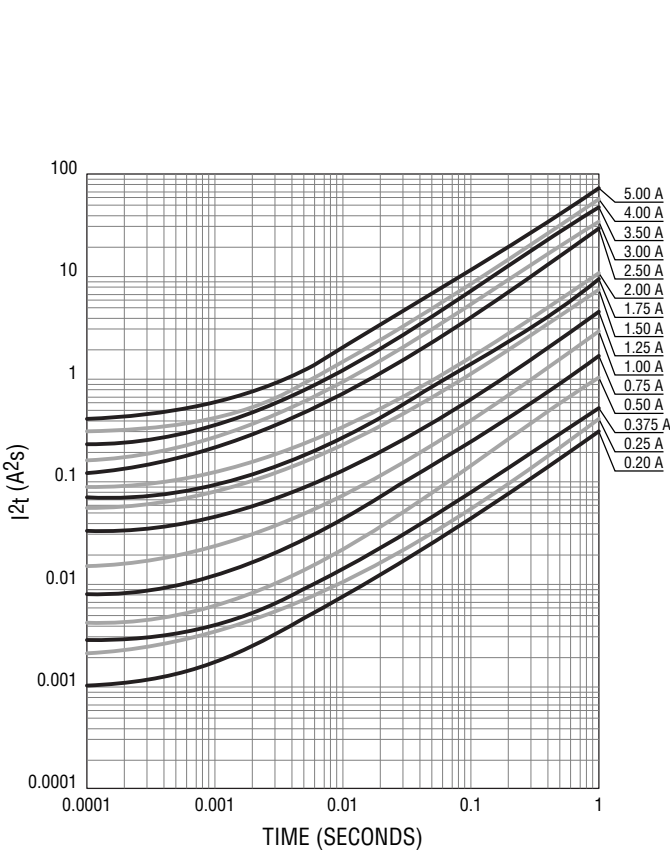
- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- MP3 players
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set-top boxes
- Industrial controllers
- Battery Management Systems (BMS)
- LED lighting
- Power tools

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

Average Pre-Arcing Time vs. Current Curves



Average I²t 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



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 | HH = 3.50 |
| = 0.500 | = = 1.75 | □ = 4.00 |
| - = 0.750 | ± = 2.00 | ○ = 5.00 |

How to Order

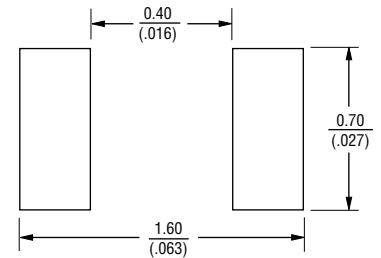
SF - 0402 FP 050 F - 2

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 —
 = ThirFilm
 Packaging Type —
 2 = Tape & Reel

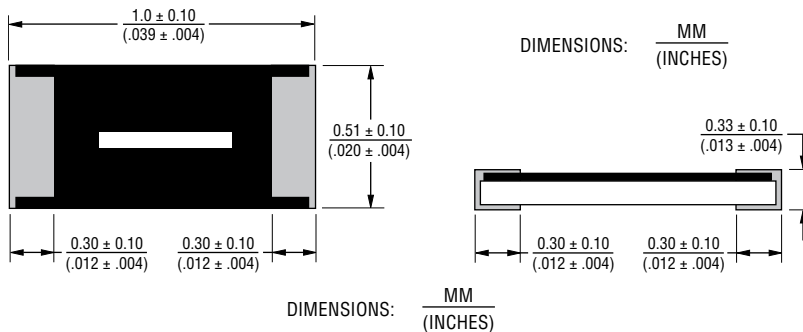
Packaging

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

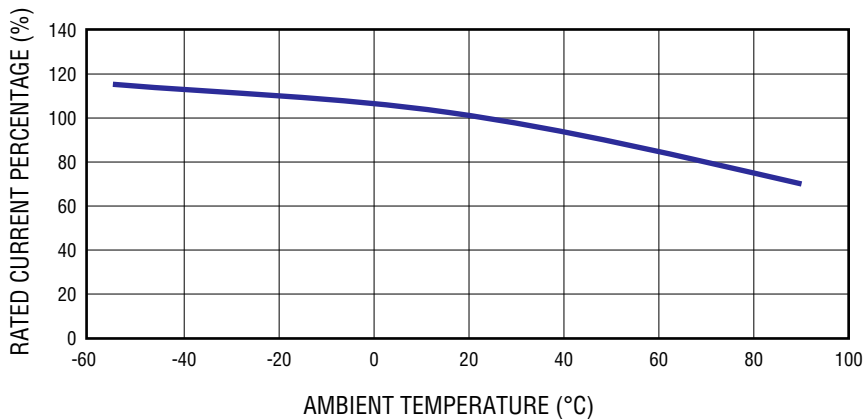
Recommended Pad Layout



Product Dimensions



Current Rating Thermal Derating Curve

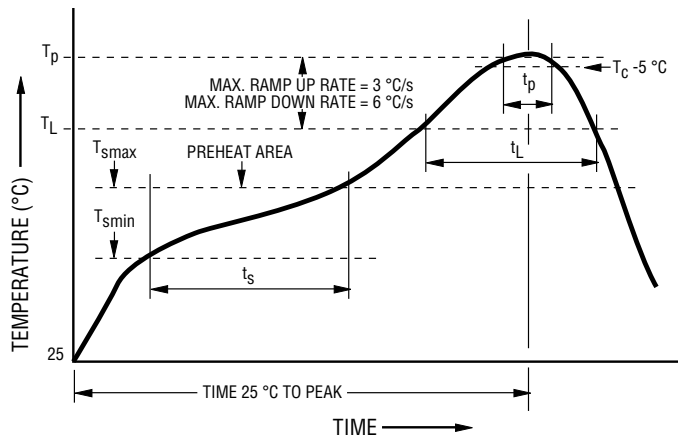


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Solder Reflow Recommendations



| 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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