



SinglFuse™ SF-0402FP Series Features

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

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

Electrical Characteristics

| Model | Rated Current (Amps) | Fusing Time | Resistance Tolerance $\pm 25\%$ (m Ω)*** | Rated Voltage | Breaking Capacity | Typical I ² t (A ² s)**** |
|--------------|----------------------|---|--|---------------|-------------------|---|
| SF-0402FP050 | 0.50 | Open within 5 sec. at 200 % rated current | 380 | DC 32 V | DC32 V 35 A | 0.00317 |
| SF-0402FP080 | 0.80 | | 120 | | | 0.00532 |
| SF-0402FP100 | 1.00 | | 95 | | | 0.00724 |
| SF-0402FP125 | 1.25 | | 67 | | | 0.01344 |
| SF-0402FP150 | 1.50 | | 51 | | | 0.01356 |
| SF-0402FP160 | 1.60 | | 46 | | | 0.01672 |
| SF-0402FP200 | 2.00 | | 33 | | | 0.01983 |
| SF-0402FP250 | 2.50 | | 22.5 | | | 0.03763 |
| SF-0402FP300 | 3.00 | | 20 | | | 0.05427 |
| SF-0402FP315 | 3.15 | | 19 | | | 0.06304 |
| SF-0402FP400 | 4.00 | | 16 | | | 0.0896 |

*** Resistance value measured with less than 10 % of rated current.

****Typical I²t value measured at 10x rated current.

Reliability Testing

| Parameter | Requirement | Test Method |
|---------------------------|---|---|
| Carrying Capacity | No fusing | Rated current, 4 hours |
| Fusing Time | Within 5 seconds | 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 °C | 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 |

BOURNS®

Asia-Pacific:

Tel: +886-2 2562-4117

Email: asiacus@bourns.com

Europe:

Tel: +36 88 520 390

Email: eurocus@bourns.com

The Americas:

Tel: +1-951 781-5500

Email: americus@bourns.com

www.bourns.com

* 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.

"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.

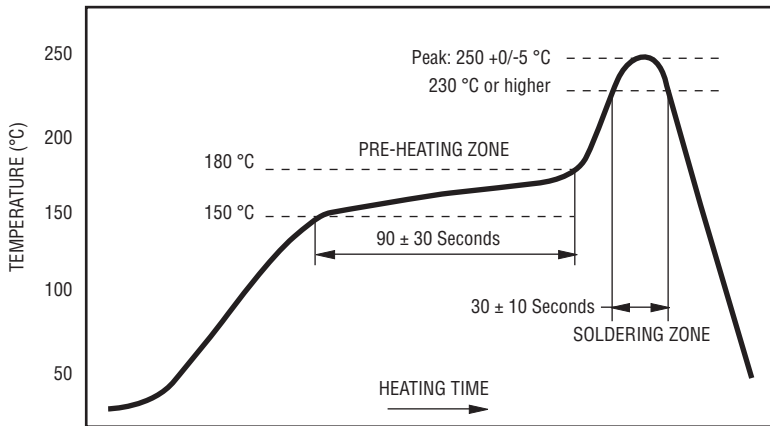
Users should verify actual device performance in their specific applications.

SinglFuse™ SF-0402FP Series Applications

- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- DVDs
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set top boxes
- Industrial controllers

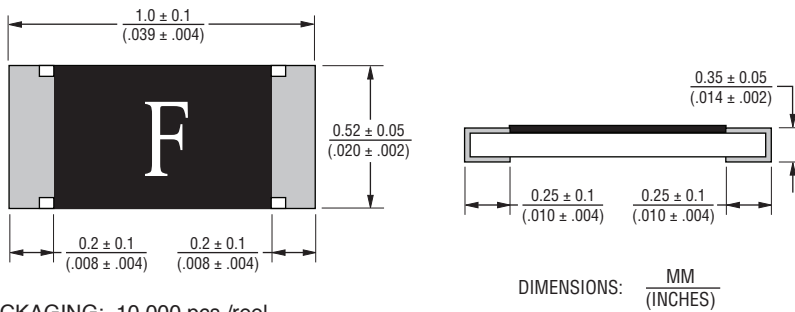
SF-0402FP Series - Fast Acting Precision Surface Mount Fuses **BOURNS®**

Solder Reflow Recommendations



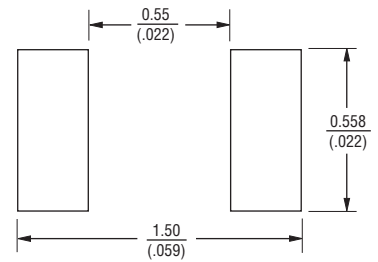
PEAK: 250 +0/-5 °C, 5 seconds
PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds
SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

Product Dimensions

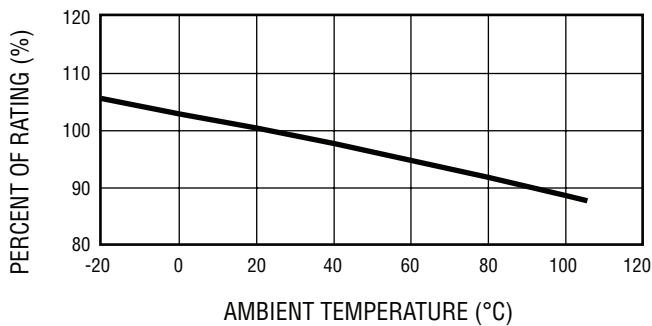


PACKAGING: 10,000 pcs./reel

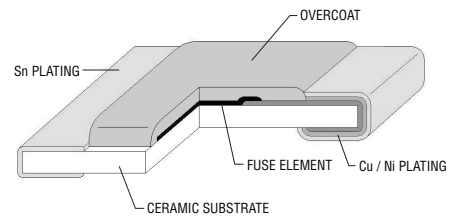
Recommended Pad Layout



Thermal Derating Curve



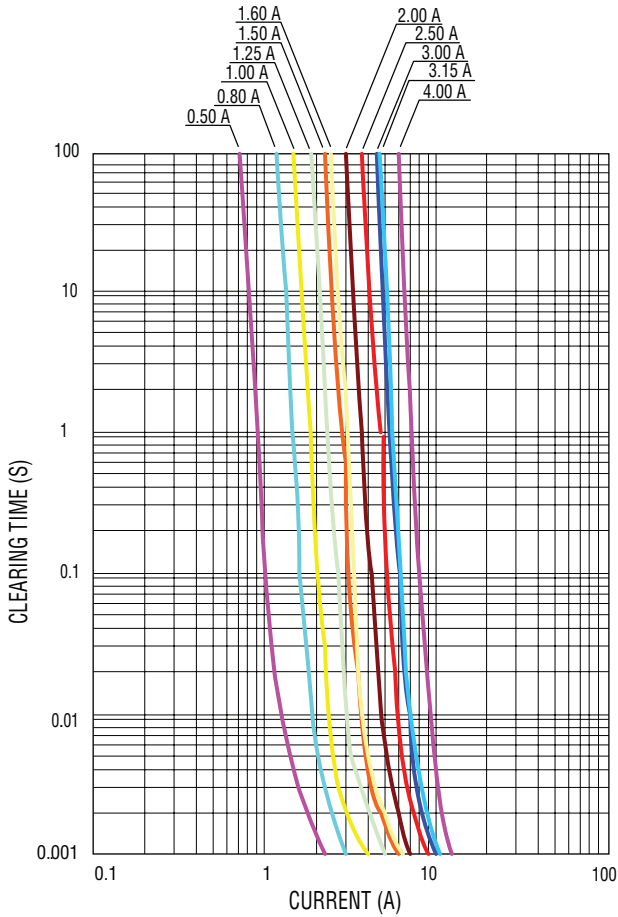
Construction & Material Content



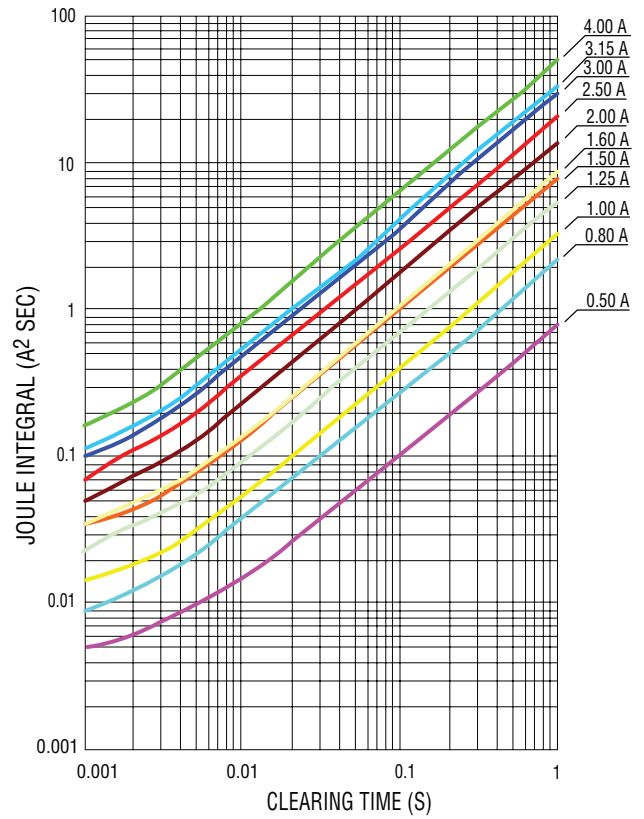
Specifications are subject to change without notice.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.

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

Average Time Current Curves



Minimum I²T V Clear Time Curves



Typical Part Marking

Represents total content. Layout may vary.



| RATED CURRENT (A) | |
|-------------------|----------|
| F = 0.50 | S = 2.00 |
| K = 0.80 | T = 2.50 |
| L = 1.00 | 3 = 3.00 |
| M = 1.25 | U = 3.15 |
| P = 1.50 | W = 4.00 |
| N = 1.60 | |

How to Order

SF - 0402 FP 050 - 2

SinglFuse™
 Product Designator _____
 SMD Footprint _____
 1005 (EIA 0402) size
 Fuse Blow Type _____
 FP = Fast acting precision
 Rated Current _____
 050-400 (500 mA - 4.00 A)
 Packaging Type _____
 - 2 = Tape & Reel (10,000 pcs./reel)

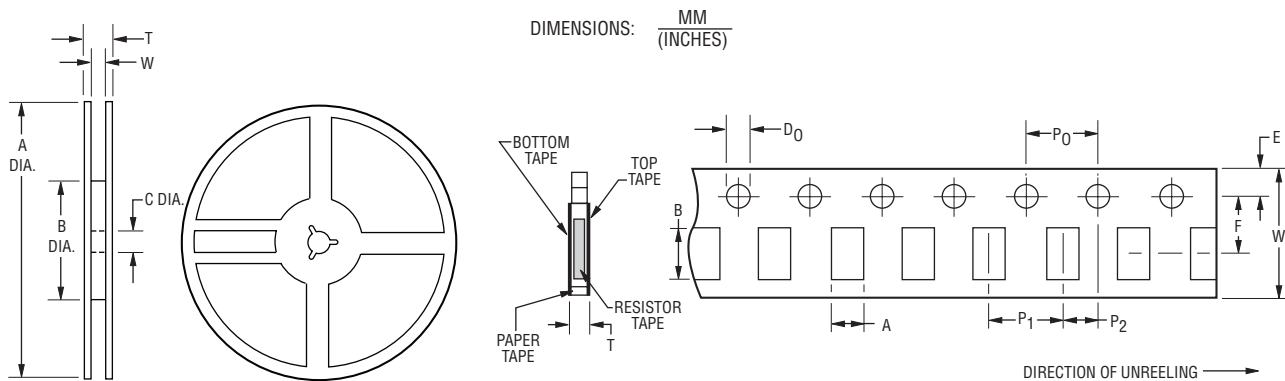
REV. B 10/17

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.

SF-0402FP Series Tape and Reel Specifications

BOURNS®

| Tape Dimensions | SF-0402FP 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 | $\frac{2.0 \pm 0.1}{(.079 \pm .004)}$ |
| P ₂ | $\frac{2.0 \pm 0.05}{(.079 \pm .002)}$ |
| A | $\frac{0.7 \pm 0.05}{(.028 \pm .002)}$ |
| B | $\frac{1.2 \pm 0.05}{(.047 \pm .002)}$ |
| F | $\frac{3.5 \pm 0.05}{(.138 \pm .002)}$ |
| E | $\frac{1.75 \pm 0.1}{(.069 \pm .004)}$ |
| D ₀ | $\frac{1.5 \pm 0.1}{(.059 \pm .004)}$ |
| T | $\frac{0.45 \pm 0.01}{(.018 \pm .004)}$ |
| Reel Dimensions | |
| A | $\frac{178 \pm 2.0}{(7.087 \pm .079)}$ |
| B Min. | $\frac{60.0 \pm 1.0}{(2.362 \pm .039)}$ |
| C | $\frac{13.0 \pm 1.0}{(.512 \pm .039)}$ |
| W | $\frac{9.0 \pm 1.0}{(.354 \pm .039)}$ |
| T | $\frac{11.4 \pm 2.0}{(.449 \pm .079)}$ |



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.