

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** SF-0603SP350M-2

**Manufacturer:** Bourns Inc.

**Package:** Tape & Reel (TR), Cut Tape (CT), Digi-Reel®

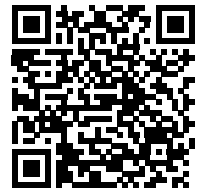
**Availability:** Please confirm with sales

### Product Page:

<https://antrexco.com/product/details/bourns-inc/sf-0603sp350m-2.html>

### Request a Quote:

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## Contact Information

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New & Original Components

Supplier verification and packaging condition review

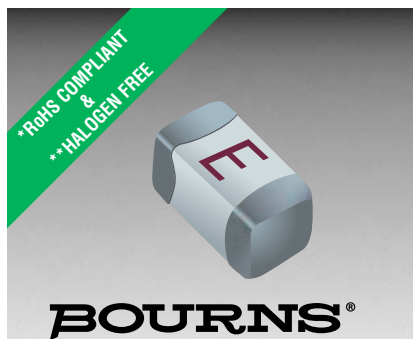
CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

### Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.



## SinglFuse™ SF-0603SP-M Series Features

- Single blow fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Time Lag fuse
- UL 248-14 compliant
- RoHS compliant\* and halogen free\*\*
- Multilayer SMD design
- Surface mount packaging for automated assembly

## SF-0603SP-M Series - Time Lag Multilayer Surface Mount Fuses

### Clearing Time Characteristics for Series

| % of Current Rating | Clearing Time at 25 °C |              |
|---------------------|------------------------|--------------|
|                     | Min.                   | Max.         |
| 100 %               | 4 hours                | —            |
| 200 %               | 1 second               | 120 seconds  |
| 300 %               | 0.1 seconds            | 3 seconds    |
| 800 % (1 A - 1.5 A) | 0.0005 seconds         | 0.05 seconds |
| 800 % (2 A - 8 A)   | 0.001 seconds          | 0.05 seconds |

### Additional Information

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### Electrical Characteristics

| Model           | Rated Current (A) | Resistance (Ω) Typ.*** | Rated Voltage | Interrupting Rating | Typical I <sup>2</sup> t (A <sup>2</sup> s) **** | Certifications               |
|-----------------|-------------------|------------------------|---------------|---------------------|--------------------------------------------------|------------------------------|
|                 |                   |                        |               |                     |                                                  | cUL: <a href="#">E198545</a> |
| SF-0603SP100M-2 | 1.00              | 0.1990                 | 32 VDC        | 50 A @ 32 VDC       | 0.0944                                           | ✓                            |
| SF-0603SP150M-2 | 1.50              | 0.0995                 |               |                     | 0.182                                            | ✓                            |
| SF-0603SP200M-2 | 2.00              | 0.0517                 |               |                     | 0.323                                            | ✓                            |
| SF-0603SP250M-2 | 2.50              | 0.0408                 |               |                     | 0.636                                            | ✓                            |
| SF-0603SP300M-2 | 3.00              | 0.0308                 |               |                     | 0.879                                            | ✓                            |
| SF-0603SP350M-2 | 3.50              | 0.0209                 |               |                     | 1.21                                             | ✓                            |
| SF-0603SP400M-2 | 4.00              | 0.0169                 |               |                     | 2.32                                             | ✓                            |
| SF-0603SP450M-2 | 4.50              | 0.0149                 |               |                     | 2.73                                             | ✓                            |
| SF-0603SP500M-2 | 5.00              | 0.0129                 |               |                     | 3.23                                             | ✓                            |
| SF-0603SP600M-2 | 6.00              | 0.0100                 |               | 80 A @ 32 VDC       | 4.0                                              | ✓                            |
| SF-0603SP700M-2 | 7.00              | 0.0080                 |               |                     | 5.1                                              | ✓                            |
| SF-0603SP800M-2 | 8.00              | 0.0060                 |               |                     | 7.1                                              | ✓                            |

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

\*\*\*\* Melting I<sup>2</sup>t calculated at 0.001 second pre-arcing time.

# BOURNS®

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**WARNING Cancer  
and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://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.

"SinglFuse" is a trademark of Bourns, Inc.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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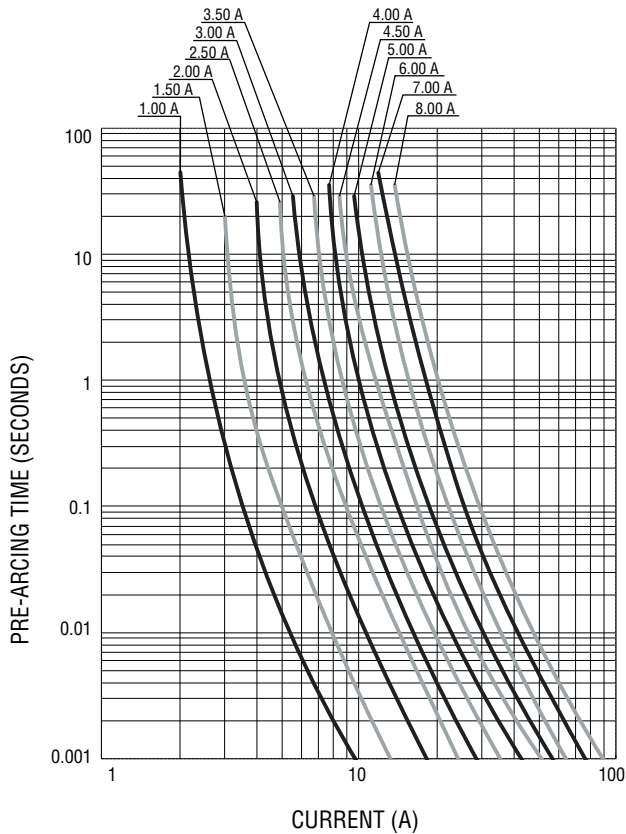
## SinglFuse™ SF-0603SP-M Series Applications

- 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

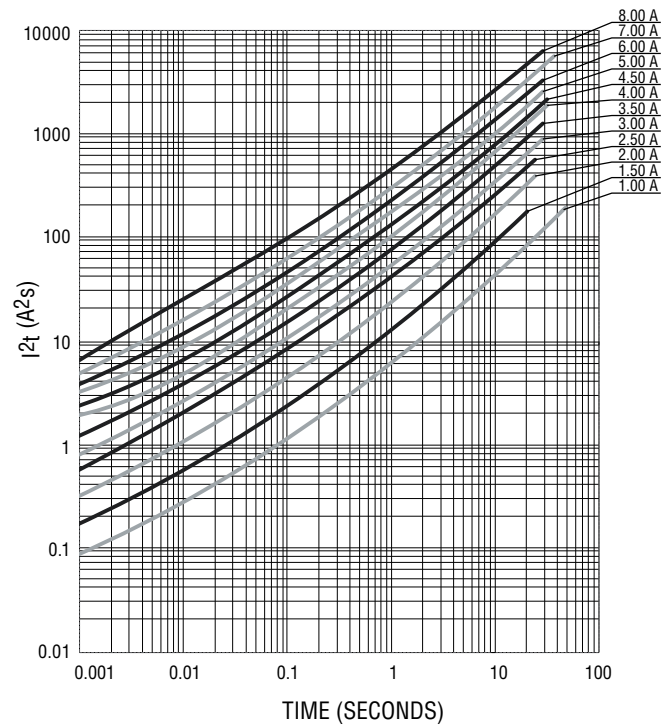
### SF-0603SP-M Series - Time Lag Multilayer Surface Mount Fuses

**BOURNS®**

**Average Pre-Arcing Time vs. Current Curves**



**Average  $I^2t$  vs.  $t$  Curves**



### 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

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## SF-0603SP-M Series - Time Lag Multilayer Surface Mount Fuses

**BOURNS®**

### Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)

E = 1.00 M = 4.00

G = 1.50 T = 4.50

I = 2.00 N = 5.00

J = 2.50 O = 6.00

K = 3.00 P = 7.00

L = 3.50 R = 8.00

### How to Order

**SF - 0603 SP 100 M - 2**

SinglFuse™

Product Designator

SMD Footprint

0603 = 1608 (EIA 0603) size

Fuse Blow Type

SP = Time Lag

Rated Current

100 ~ 800 (1.00 A ~ 8.00 A)

Structure Type

M = Multilayer

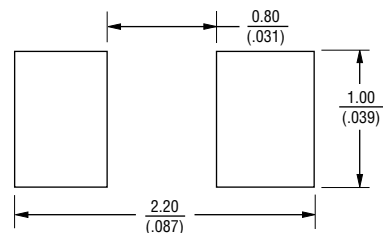
Packaging Type

- 2 = Tape & Reel

### Packaging

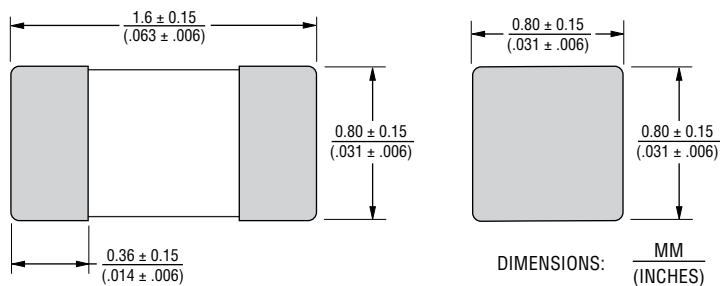
|                |                      |
|----------------|----------------------|
| Reel Dimension | 7-inch Tape and Reel |
| Specification  | EIA 481-2            |
| Quantity       | 4,000 pieces         |
| Packaging Code | -2                   |

### Recommended Pad Layout

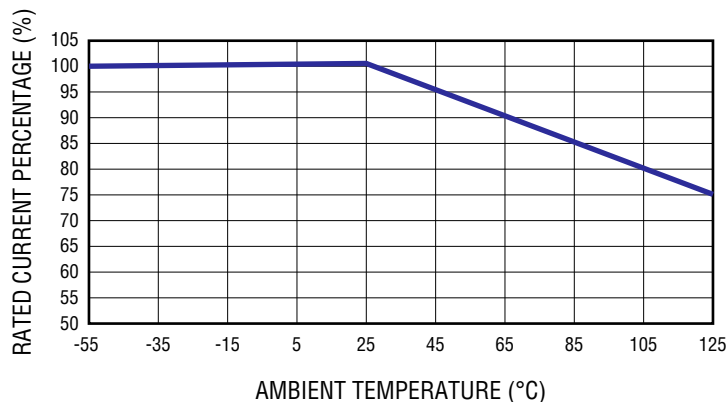


DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

### Product Dimensions



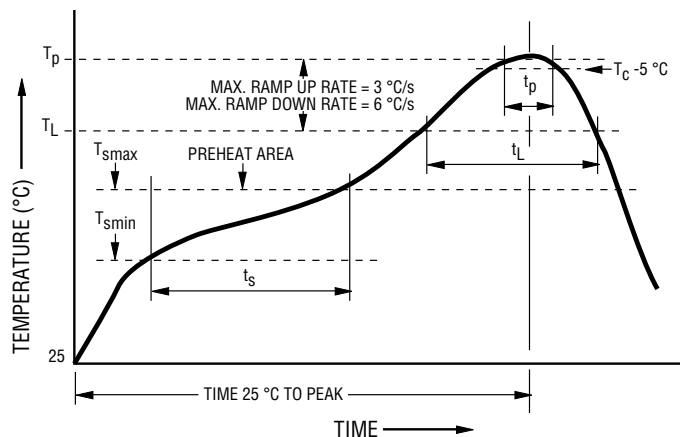
### Current Rating Thermal Derating Curve



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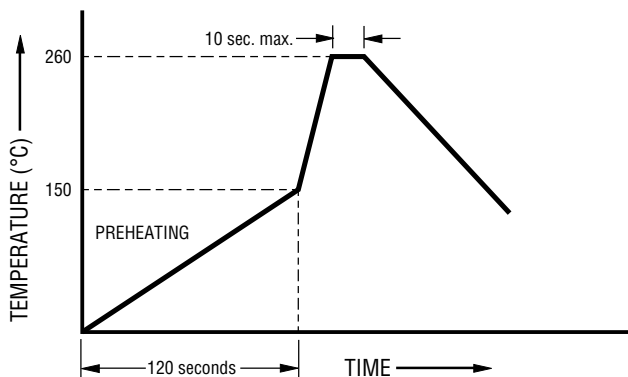
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**Solder Reflow Recommendations**

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

**Recommended Temperature Profile for Wave Soldering**

Wave soldering is suitable for 0603 size models.

**Reliability Testing**

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

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