

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

|                      |                                             |
|----------------------|---------------------------------------------|
| <b>Part Number:</b>  | SF-0603SPA500R-2                            |
| <b>Manufacturer:</b> | Bourns Inc.                                 |
| <b>Package:</b>      | Tape & Reel (TR), Cut Tape (CT), Digi-Reel® |
| <b>Availability:</b> | Please confirm with sales                   |

#### Product Page:

<https://antrexco.com/product/details/bourns-inc/sf-0603spa500r-2.html>

#### Request a Quote:

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Scan for product page

### Contact Information

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### Quality & Trust

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.



## Features

- Metal foil chip design for overcurrent protection
- EIA 0603 (1608 metric) footprint
- Small chip size with high current rating and inrush withstanding capability

- Agency recognition:
- RoHS\* compliant and halogen free\*\*
- AEC-Q200 Rev. E compliant

## SF-0603SPA-R Series – Automotive Grade SMD Fuses

### Clearing Time Characteristics for Series

| % of Current Rating | Clearing Time at 25 °C |             |
|---------------------|------------------------|-------------|
|                     | Min.                   | Max.        |
| 100 %               | 4 hours                | —           |
| 200 %               | 1 second               | 120 seconds |

### Additional Information

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### Electrical Characteristics

| Model            | Rated Current (A) | Resistance (Ω) Typ. <sup>1</sup> | Rated Voltage <sup>1</sup> | Interrupting Rating <sup>2</sup> | Typical I <sup>2</sup> t (A <sup>2</sup> s) <sup>3</sup> | Certifications                  |                                    |
|------------------|-------------------|----------------------------------|----------------------------|----------------------------------|----------------------------------------------------------|---------------------------------|------------------------------------|
|                  |                   |                                  |                            |                                  |                                                          | cUL:<br><a href="#">E198545</a> | TÜV:<br><a href="#">TA50515766</a> |
| SF-0603SPA100R-2 | 1.0               | 0.115                            | 50 VDC<br>63 VDC           | 50 A @ 50 VDC<br>50 A @ 63 VDC   | 0.059                                                    | ✓                               | ✓                                  |
| SF-0603SPA150R-2 | 1.5               | 0.059                            |                            |                                  | 0.13                                                     | ✓                               | ✓                                  |
| SF-0603SPA200R-2 | 2.0               | 0.033                            |                            |                                  | 0.21                                                     | ✓                               | ✓                                  |
| SF-0603SPA300R-2 | 3.0               | 0.0159                           |                            |                                  | 0.71                                                     | ✓                               | ✓                                  |
| SF-0603SPA400R-2 | 4.0               | 0.01                             |                            |                                  | 0.96                                                     | ✓                               | ✓                                  |
| SF-0603SPA500R-2 | 5.0               | 0.00677                          |                            |                                  | 2.05                                                     | ✓                               | ✓                                  |
| SF-0603SPA600R-2 | 6.0               | 0.0063                           |                            |                                  | 3.47                                                     | ✓                               | ✓                                  |
| SF-0603SPA700R-2 | 7.0               | 0.0047                           |                            |                                  | 5.04                                                     | ✓                               | ✓                                  |
| SF-0603SPA800R-2 | 8.0               | 0.0043                           |                            |                                  | 6.5                                                      | ✓                               | ✓                                  |

Notes:

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

2. UL: 50 A @ 63 VDC / TÜV: 50 A @ 50 VDC

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

# BOURNS®

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See [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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# SF-0603SPA-R Series – Automotive Grade SMD Fuses

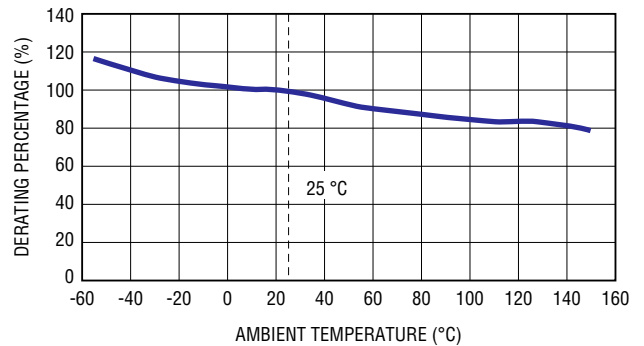
**BOURNS®**

## Environmental Characteristics

|                                 |                   |
|---------------------------------|-------------------|
| Operating Temperature           | -55 °C to +150 °C |
| Storage Conditions              |                   |
| Temperature                     | +5 °C to +35 °C   |
| Humidity                        | 40 % to 75 %      |
| Moisture Sensitivity Level      | 1                 |
| ESD Classification <sup>1</sup> | Class 6           |

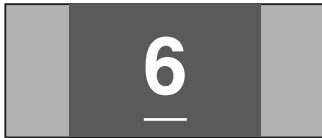
<sup>1</sup>per AEC-Q200-2, HBM

## Current Rating Thermal Derating Curve



## Typical Part Marking

Represents total content. Layout may vary.  
Markings in white color.



| Rated Current | Part Marking | Rated Current | Part Marking |
|---------------|--------------|---------------|--------------|
| 1 A           | L            | 5 A           | Y            |
| 1.5 A         | P            | 6 A           | 6            |
| 2 A           | S            | 7 A           | 7            |
| 3 A           | 3            | 8 A           | 8            |
| 4 A           | W            |               |              |

## How to Order

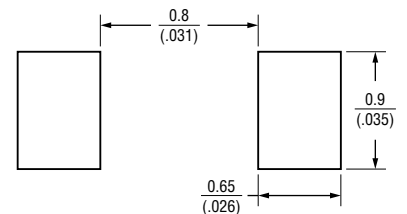
**SF - 0603 SP A 100 R - 2**

SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 0603 = EIA 0603  
 (1608 metric)  
 Fusing Characteristic \_\_\_\_\_  
 SP = 1~120 sec. @ 200 % I<sub>N</sub>  
 Automotive Grade \_\_\_\_\_  
 Rated Current \_\_\_\_\_  
 100~800 = 1 A~8 A  
 Structure Type \_\_\_\_\_  
 R = Metal Foil  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel

## Packaging

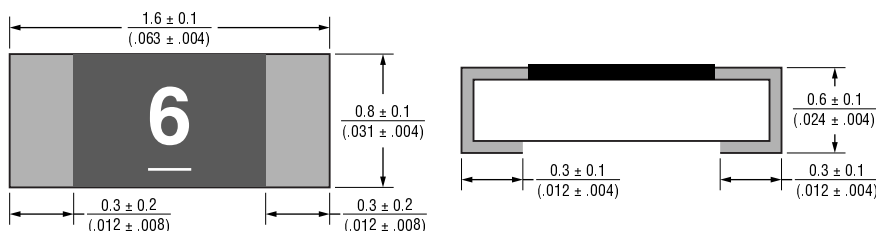
|                |                      |
|----------------|----------------------|
| Reel Dimension | 7-inch Tape and Reel |
| Specification  | EIA 481-2            |
| Quantity       | 5,000 pieces         |
| Packaging Code | -2                   |

## Recommended Pad Layout



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

## Product Dimensions



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

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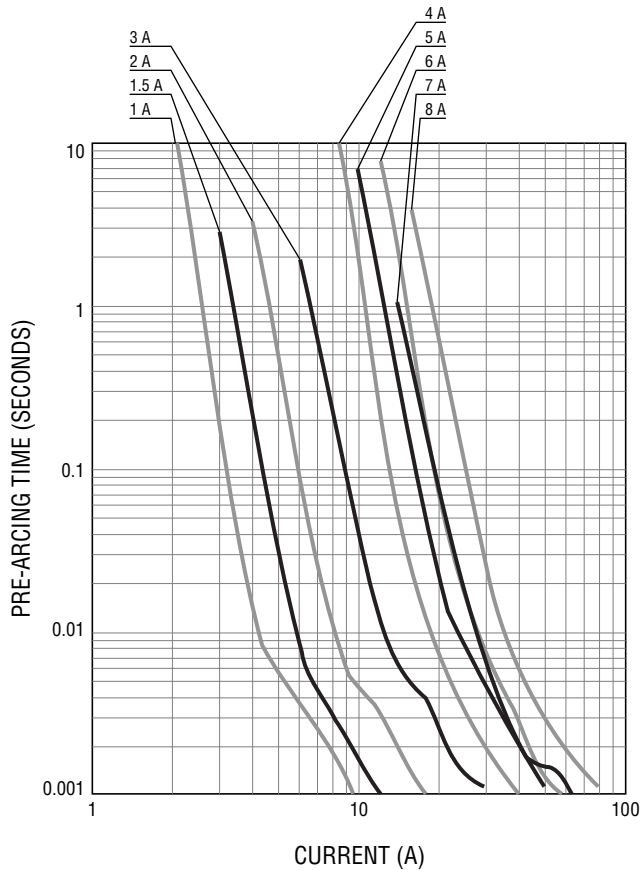
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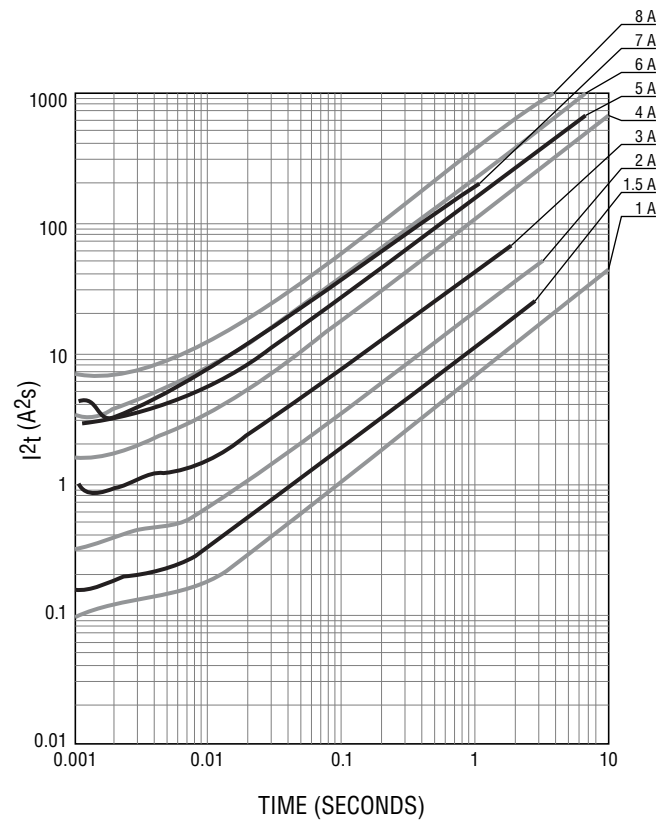
# SF-0603SPA-R Series – Automotive Grade SMD Fuses

**BOURNS®**

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



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



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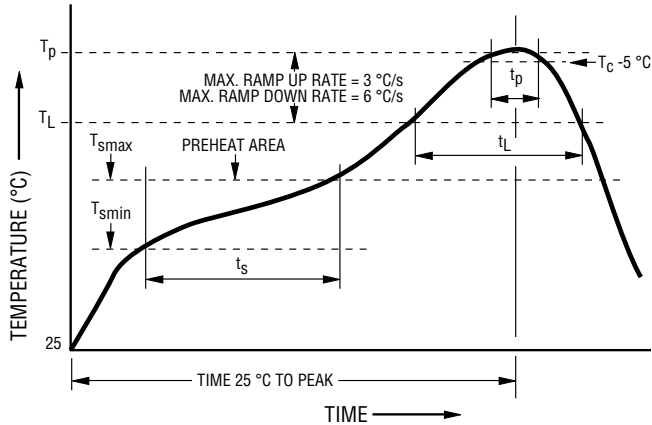
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## SF-0603SPA-R Series – Automotive Grade SMD Fuses

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### Solder Reflow Recommendations



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

### Reliability Tests

| Test Items                   | Reference Standard                            |
|------------------------------|-----------------------------------------------|
| Solderability                | J-STD-002; Condition B                        |
| Resistance to Soldering Heat | MIL-STD-202; Method 210; Condition B          |
| Moisture Resistance          | MIL-STD-202; Method 106                       |
| Thermal Shock                | MIL-STD-202; Method 107; Condition B          |
| Mechanical Shock             | MIL-STD-202; Method 213; Condition A          |
| Vibration                    | MIL-STD-202; Method 201                       |
| Terminal Strength            | IEC 60115-1 4.32                              |
| High Temperature Storage     | MIL-STD-202; Method 108                       |
| Temperature Cycling          | JESD22 Method JA-104, Test Conditions B and N |
| Bias Humidity                | MIL-STD-202; Method 103                       |
| Operational Life             | MIL-STD-202; Method 108; Condition D          |
| Resistance to Solvent        | MIL-STD-202; Method 215                       |
| Board Flex (Bending)         | AEC-Q200-005                                  |
| Carrying Capacity            | UL 248-14                                     |
| Fusing Time                  | UL 248-14                                     |
| Interrupting Ability         | UL 248-14                                     |
| Temperature Rise             | UL 248-14                                     |
| Residual Resistance          | UL 248-14                                     |
| Low Temperature Storage      | JESD22-A119                                   |

REV. 08/25

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