SingIFuse™ SF-0402FR Series Features

- EIA 0402 (1005 metric) footprint
- Small chip size with high current rating up to 5 A
- High interrupting capability up to 100 A @ 32 VDC
- UL 248-14 compliant
- RoHS compliant* and halogen free**

SF-0402FR Series - SMD Fuses

Clearing Time Characteristics for Series

<table>
<thead>
<tr>
<th>% of Current Rating</th>
<th>Clearing Time at 25 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>100 %</td>
<td>4 hours</td>
</tr>
<tr>
<td>200 %</td>
<td>—</td>
</tr>
</tbody>
</table>

Electrical Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Current (A)</th>
<th>Resistance (Ω) Typ.***</th>
<th>Rated Voltage</th>
<th>Interrupting Rating</th>
<th>Typical I²t (A²s) ****</th>
<th>Agency Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF-0402FR063-2</td>
<td>0.63</td>
<td>0.450</td>
<td>32 VDC</td>
<td>100 A @ 32 VDC</td>
<td>0.0079</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR100-2</td>
<td>1.0</td>
<td>0.150</td>
<td></td>
<td></td>
<td>0.0197</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR150-2</td>
<td>1.5</td>
<td>0.120</td>
<td></td>
<td></td>
<td>0.0443</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR200-2</td>
<td>2.0</td>
<td>0.052</td>
<td></td>
<td></td>
<td>0.0518</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR250-2</td>
<td>2.5</td>
<td>0.040</td>
<td></td>
<td></td>
<td>0.0688</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR300-2</td>
<td>3.0</td>
<td>0.033</td>
<td></td>
<td></td>
<td>0.1616</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR315-2</td>
<td>3.15</td>
<td>0.030</td>
<td></td>
<td></td>
<td>0.1273</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR350-2</td>
<td>3.5</td>
<td>0.025</td>
<td></td>
<td></td>
<td>0.2083</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR400-2</td>
<td>4.0</td>
<td>0.020</td>
<td></td>
<td></td>
<td>0.3072</td>
<td>✓</td>
</tr>
<tr>
<td>SF-0402FR500-2</td>
<td>5.0</td>
<td>0.016</td>
<td></td>
<td></td>
<td>0.7218</td>
<td>✓</td>
</tr>
</tbody>
</table>

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

**** Melting I²t calculated at 10 times rated current.

Environmental Characteristics

Operating Temperature: -20 °C to +105 °C

Storage Conditions

- Temperature: +5 °C to +35 °C
- Humidity: 40 % to 75 %

Moisture Sensitivity Level: 1

ESD Classification (HBM): Class 6

** 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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Users should verify actual device performance in their specific applications.

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WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov
Average Pre-Arcing Time vs. Current Curves

![Graph showing average pre-arc time vs. current curves for different amperages.]

**Product Dimensions**

![Diagram showing product dimensions with values in millimeters.]

**Recommended Pad Layout**

![Diagram showing recommended pad layout with values in millimeters.]

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**BOURNS**

Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com
EMEA: Tel: +36 88 885 877 • Email: eurocus@bourns.com
The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com
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SF-0402FR Series – SMD Fuses

Current Rating Thermal Derating Curve

<table>
<thead>
<tr>
<th>AMBIENT TEMPERATURE (°C)</th>
<th>120</th>
<th>110</th>
<th>100</th>
<th>90</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATED CURRENT PERCENTAGE (%)</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
<td>110%</td>
<td>120%</td>
</tr>
</tbody>
</table>

Packaging

<table>
<thead>
<tr>
<th>Reel Dimension</th>
<th>7-inch Tape and Reel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification</td>
<td>EIA 481-2</td>
</tr>
<tr>
<td>Quantity</td>
<td>10,000 pieces</td>
</tr>
<tr>
<td>Packaging Code</td>
<td>-2</td>
</tr>
</tbody>
</table>

Typical Part Marking

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

How to Order

SingIFuse™
Product Designator
0402 = EIA 0402 (1005 metric) size
Fusing Characteristic
FR = 5 sec. max. @ 200 % Iₚ
Rated Current
063 ~ 500 = 0.63 A ~ 5 A
Packaging Type
-2 = Tape & Reel (10,000 pcs./reel)

Solder Reflow Recommendations

Profile Feature
Preheat / Soak:
Temperature Min. (Tₛₘᵢₙ) 150 °C
Temperature Max. (Tₛₘᵃₓ) 200 °C
Time (tₛ) from (Tₛₘᵢₙ to Tₛₘᵃₓ) 60~120 seconds
Ramp Up Rate (Tₛ to Tₛₚ) 3 °C / second max.
Liquidous Temperature (Tₗ) 217 °C
Time (tₗ) maintained above Tₛₗ 60~150 seconds
Peak Package Body Temperature (Tₛₚ) 260 °C
Time (tₛₚ) * within 5 °C of the specified classification temperature (Tₛₚ) 30 seconds*
Ramp Down Rate (Tₛₚ to Tₛₗ) 6 °C / second max.
Time 25 °C to Peak Temperature 8 minutes max.

Packaging

Profile Current Part Marking | 0.63 A | 3 A
| 1.0 A | L | 3.15 A | U |
| 1.5 A | P | 3.5 A | H |
| 2.0 A | S | 4.0 A | W |
| 2.5 A | T | 5.0 A | Y |

* Tolerance for peak profile temperature (Tₛₚ) is defined as a supplier minimum and a user maximum.

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