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: cULus
- RoHS* compliant and halogen free**
- AEC-Q200 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

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

Electrical Characteristics

Model	Rated Current (A)	Resistance (Ω) Typ.[1]	Rated Voltage[1]	Interrupting Rating[2]	Typical I^2t (A^2s)[3]	Agency Recognition	
						cUL: E198545	TÜV: TA50515766
SF-0603SPA100R-2	1.0	0.115	50 VDC 63 VDC	50 A @ 50 VDC 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 / TUV: 50 A @ 50 VDC
3. Melting I^2t calculated at 0.001 second pre-arcing time.

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www.bourns.com

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.
***Meets Bourns internal AEC-Q200 equivalent test plan.

"SinglFuse" is a trademark of Bourns, Inc.
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Users should verify actual device performance in their specific applications.
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SF-0603SPA-R Series – Automotive Grade SMD Fuses

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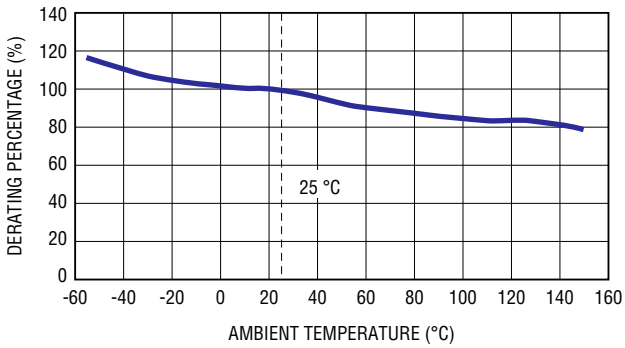
Environmental Characteristics

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[1]	Class 6

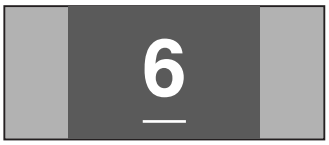
[1]per AEC-Q200-2, HBM

Current Rating Thermal Derating Curve



Typical Part Marking

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



Rated Current	Part Marking
1 A	L
1.5 A	P
2 A	S
3 A	3
4 A	W

Rated Current	Part Marking
5 A	Y
6 A	6
7 A	7
8 A	8

How to Order

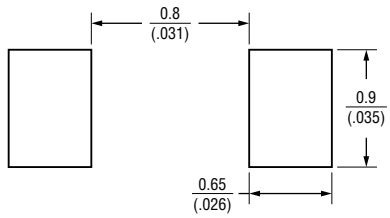
SF - 0603 SP A 100 R - 2

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

Packaging

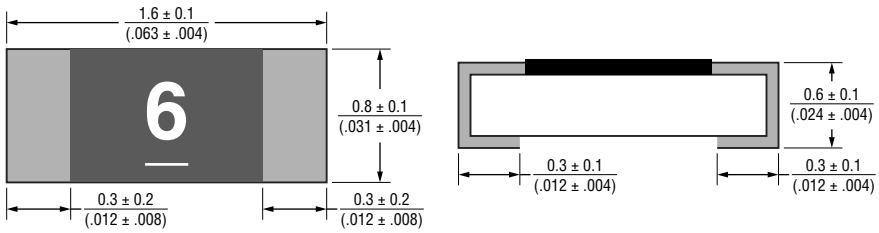
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	5,000 pieces
Packaging Code	-2

Recommended Pad Layout



DIMENSIONS: MM / (INCHES)

Product Dimensions



DIMENSIONS: MM / (INCHES)

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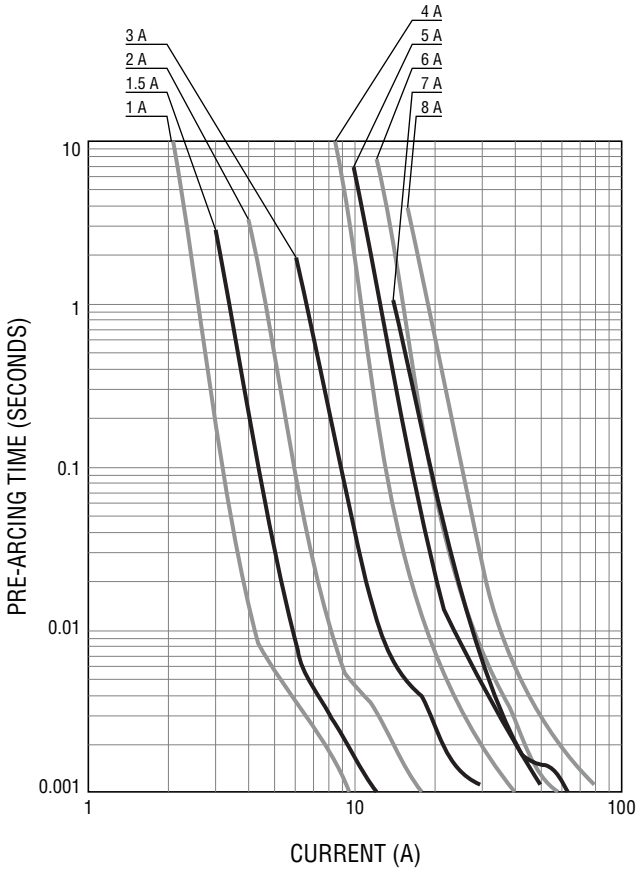
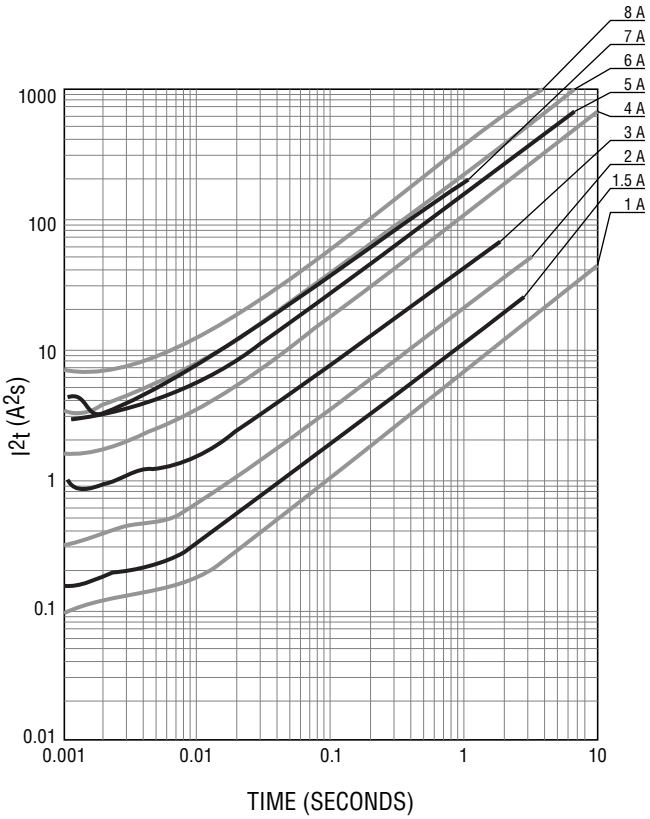
Average Pre-Arcing Time vs. Current Curves



Average I^2t vs. t Curves



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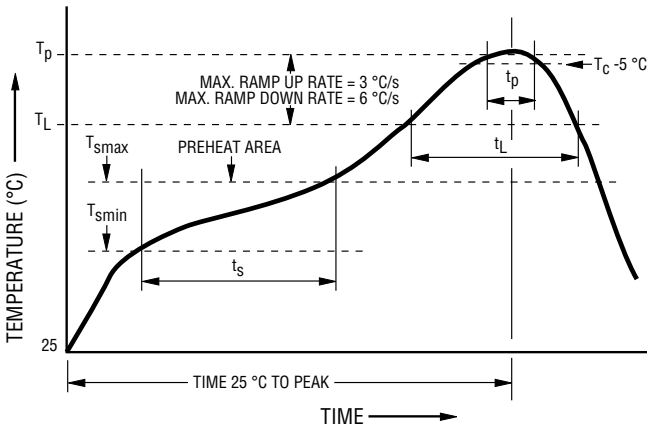
Solder Reflow Recommendations



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.

* 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

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