

## Features

- Metal foil chip design for overcurrent protection
- EIA 1206 (3216 metric) footprint
- Small chip size with high current rating up to 20 A

- Agency recognition:  us
- RoHS\* compliant and halogen free\*\*
- AEC-Q200 compliant\*\*\*

## SF-1206SA-R Series – Automotive Grade SMD Fuses

### Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
250 %	—	5 seconds
350 %	—	1 second

### Additional Information

Click these links for more information:



### Electrical Characteristics

Model	Rated Current (A)	Resistance (Ω) Typ. <sup>1</sup>	Rated Voltage	Interrupting Rating	Typical I <sup>2</sup> t (A <sup>2</sup> s) <sup>2</sup>	Agency Recognition
						cUL: <a href="#">E198545</a>
SF-1206SA1000R-2	10	0.004	32 VDC	100 A @ 32 VDC	21.3	✓
SF-1206SA1200R-2	12	0.0032			29.7	✓
SF-1206SA1500R-2	15	0.0026			49.1	✓
SF-1206SA2000R-2	20	0.00215			70.9	✓

Notes:

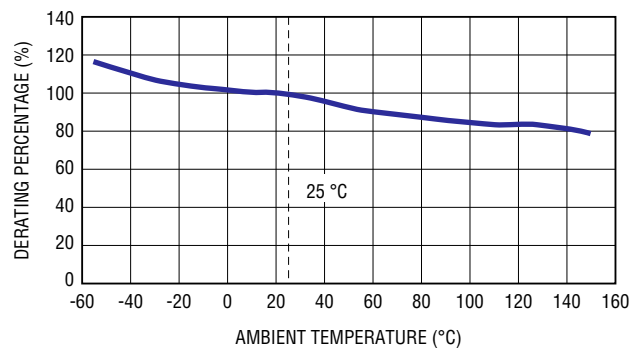
1. Resistance value measured with ≤10 % rated current at 25 °C ambient. Tolerance ±25 %.
2. Melting I<sup>2</sup>t calculated at 0.001 second pre-arcing time.

### 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>3</sup>	Class 6

<sup>3</sup>per AEC-Q200-2, HBM

### Current Rating Thermal Derating Curve



**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.

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

"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-1206SA-R Series – Automotive Grade SMD Fuses



## Typical Part Marking

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



Rated Current	Part Marking
10 A	10
12 A	12
15 A	15
20 A	20

## How to Order

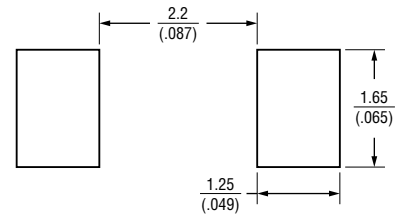
**SF - 1206 S A 1000 R - 2**

SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 1206 = EIA 1206  
 (3216 metric) \_\_\_\_\_  
 Fusing Characteristic \_\_\_\_\_  
 S = 5 sec. max. @ 250 % I<sub>n</sub> \_\_\_\_\_  
 Automotive Grade \_\_\_\_\_  
 Rated Current \_\_\_\_\_  
 1000~2000 = 10 A~20 A \_\_\_\_\_  
 Structure Type \_\_\_\_\_  
 R = Metal Foil \_\_\_\_\_  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel \_\_\_\_\_

## Packaging

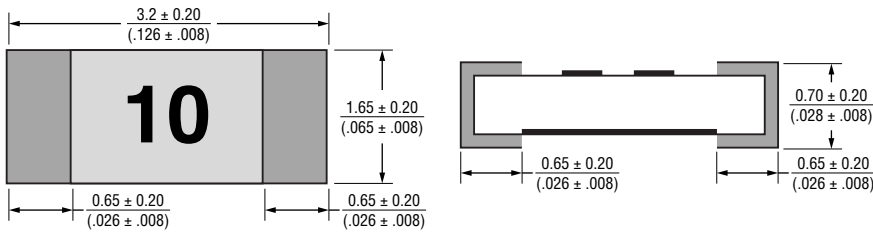
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	5,000 pieces
Packaging Code	-2

## Recommended Pad Layout



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

## Product Dimensions



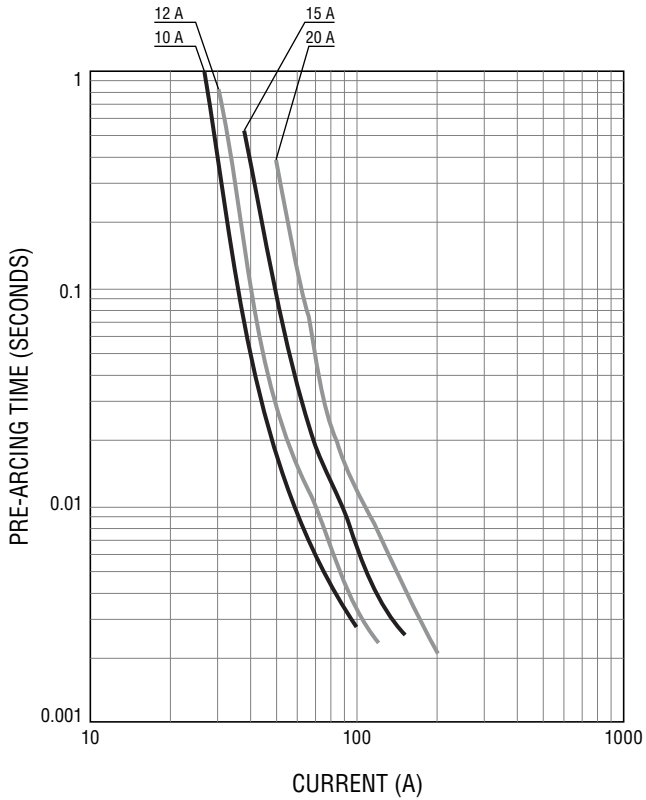
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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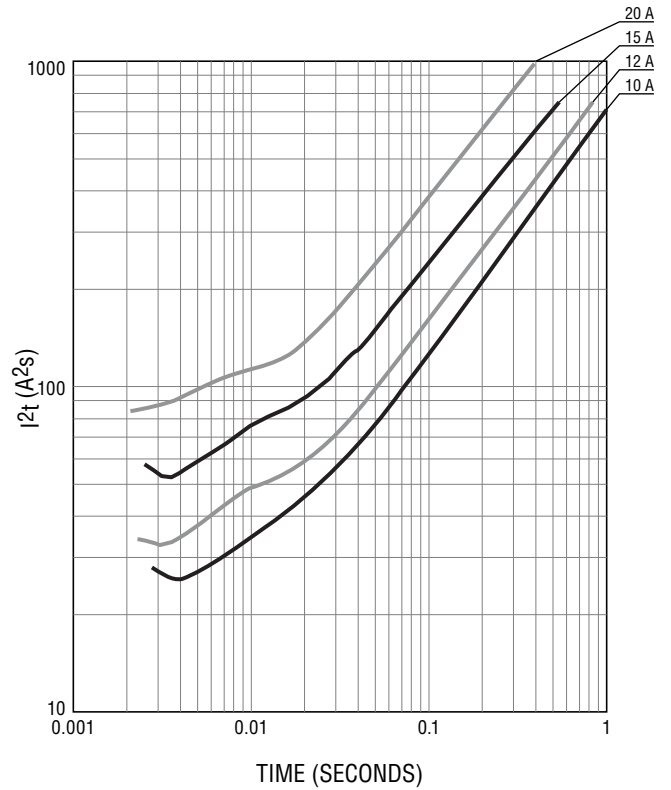
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Average Pre-Arcing Time vs. Current Curves



Average  $I^2t$  vs. t Curves

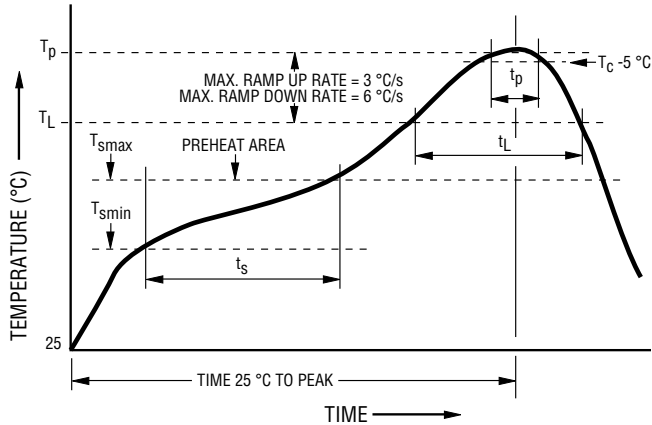


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## Solder Reflow Recommendations



Profile Feature	Pb-Free Assembly
Preheat / Soak:	
Temperature Min. ( $T_{smin}$ )	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.

## 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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03/22

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