



**THE DATASHEET OF  
SF-3812F1000T-2**





## SinglFuse™ SF-3812F-T Series Features

- Single blow fuse for overcurrent protection
- EIA 3812 (10030 metric) footprint
- Ceramic tube design for fast acting fusing speed applications
- UL 248-14 compliant
- Surface mount packaging for automated assembly
- RoHS compliant\* and halogen free\*\*

## SF-3812F-T Series – Fast Acting SMD Fuses

### Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
200 %	—	60 seconds

### Additional Information

Click these links for more information:



### 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-3812F1000T-2	10	0.0067	250 VAC	100 A @ 250 VAC 150 A @ 125 VAC 50 A @ 250 VDC 130 A @ 80 VDC 300 A @ 72 VDC	75	✓
SF-3812F1500T-2	15	0.005			141.75	✓
SF-3812F2000T-2	20	0.003			356	✓
SF-3812F2500T-2	25	0.0024		100 A @ 250 VAC 150 A @ 125 VAC 130 A @ 80 VDC 300 A @ 72 VDC	625	✓
SF-3812F3000T-2	30	0.0018			900	✓
SF-3812F3500T-2	35	0.0014			1320	✓
SF-3812F4000T-2	40	0.00126			100 A @ 250 VAC 150 A @ 125 VAC 300 A @ 65 VAC 100 A @ 100 VDC 200 A @ 75 VDC 600 A @ 60 VDC	1897.6
SF-3812F5000T-2	50	0.00108		3150		✓
SF-3812F6000T-2	60	0.0009		4224		✓

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

\*\*\*\* Melting I<sup>2</sup>t calculated at 10 times rated current.

### Environmental Characteristics

Operating Temperature.....	-55 °C to +125 °C
Storage Conditions	
Temperature .....	+15 °C to +30 °C
Humidity.....	20 % to 70 %
Shelf Life.....	2 years from manufacturing date
Moisture Sensitivity Level.....	1
ESD Classification (HBM).....	Class 6



**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.

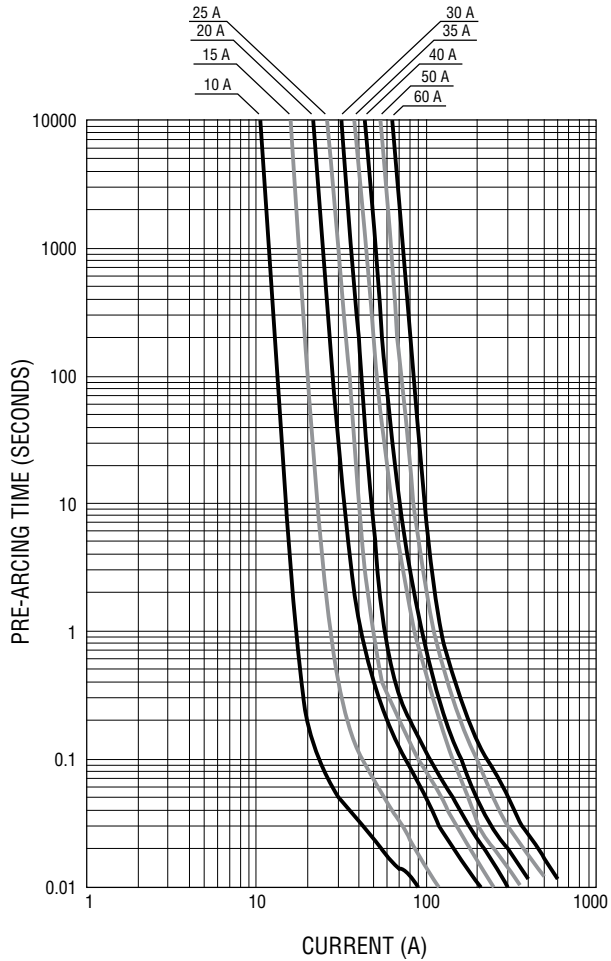
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# SinglFuse™ SF-3812F-T Series Applications

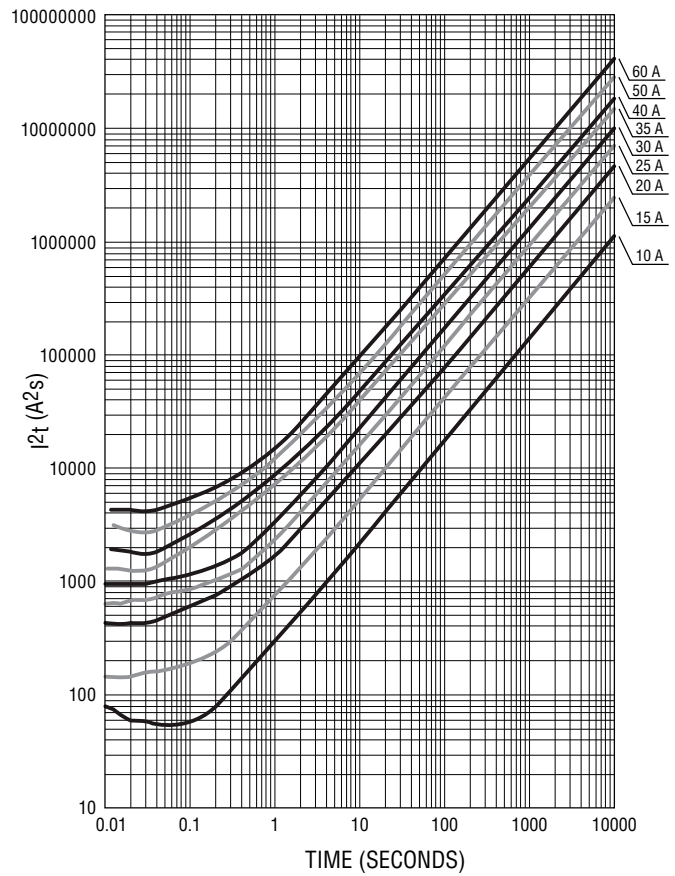
- Battery Management Systems
- Blade Computing
- PC Servers
- POE, POE+
- Voltage Regulator Modules
- Power Supplies
- Advanced Telecommunication Computing Architecture (ATCA) Applications

## SF-3812F-T Series – Fast Acting SMD Fuses BOURNS®

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



**Average I²t vs. t Curves**



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# SF-3812F-T Series – Fast Acting SMD Fuses



## Typical Part Marking

Represents total content. Layout may vary.



Rated Current	Part Marking
10 A	L 10 A
15 A	L 15 A
20 A	L 20 A
25 A	L 25 A
30 A	L 30 A
35 A	L 35 A
40 A	L 40 A
50 A	L 50 A
60 A	L 60 A

## How to Order

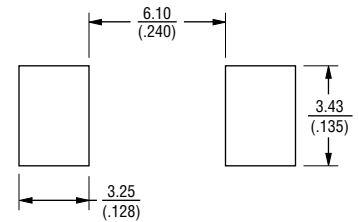
**SF - 3812 F 1000 T - 2**

SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 3812 = EIA 3812  
 (10030 metric) \_\_\_\_\_  
 Fuse Blow Type \_\_\_\_\_  
 F = Fast Acting \_\_\_\_\_  
 Rated Current \_\_\_\_\_  
 1000 ~ 6000 (10 A ~ 60 A) \_\_\_\_\_  
 Structure Type \_\_\_\_\_  
 T = Ceramic Tube \_\_\_\_\_  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel \_\_\_\_\_

## Packaging

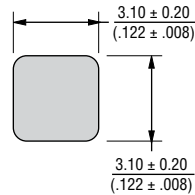
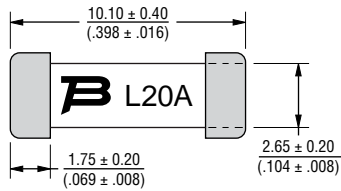
Reel Dimension	13-inch Tape and Reel
Specification	EIA 481-2
Quantity	2,500 pieces
Packaging Code	-2

## Recommended Pad Layout



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

## Product Dimensions



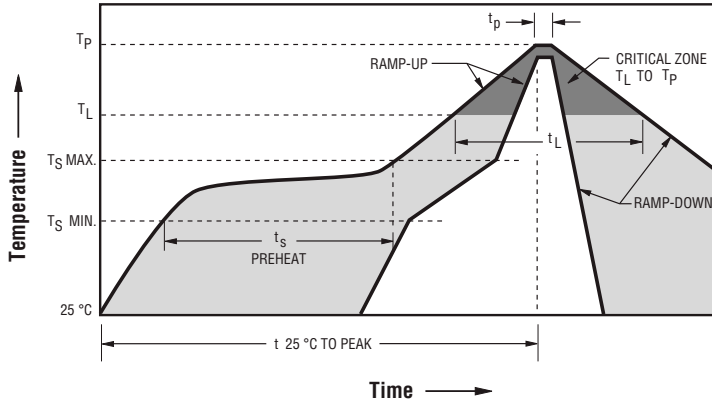
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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## Solder Reflow Recommendations

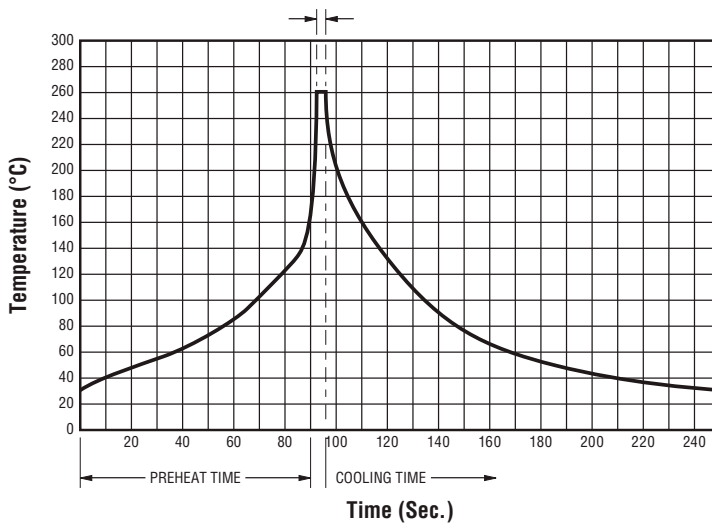


Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. ( $T_{smin}$ ) Temperature Max. ( $T_{smax}$ ) Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	150 °C 200 °C 60~180 seconds
Ramp Up Rate ( $T_L$ to $T_p$ )	3 °C / second max.
Ramp Up Rate ( $T_{smax}$ to $T_L$ )	5 °C / second max.
Liquidous Temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	217 °C 60~150 seconds
Peak Package Body Temperature ( $T_p$ )	260 °C +0/-5 °C
Time within 5 °C of actual peak temperature ( $T_p$ )	10~30 seconds*
Ramp Down Rate ( $T_p$ to $T_L$ )	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.
Do not exceed	260 °C

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

## Solder Wave Recommendations

Peak Temperature (Dwell Time)



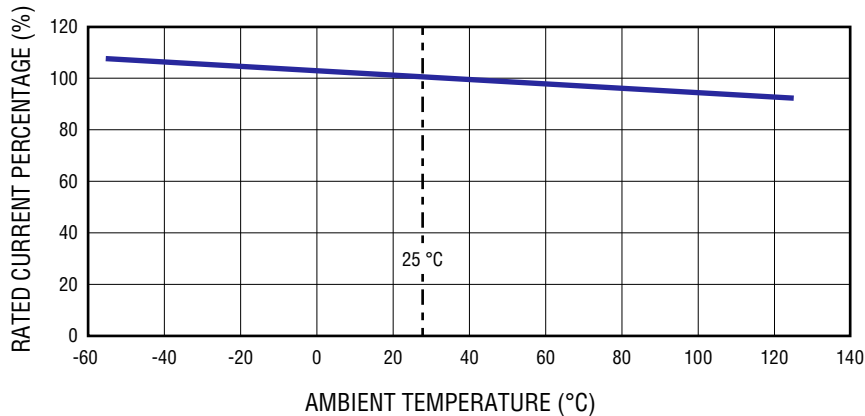
Profile Feature	Pb-Free Assembly
Preheat: Temperature Max. ( $T_{smax}$ ) Time (Min. to Max.)	150 °C 60~90 seconds
Solder Pot Temperature	260 °C max.
Solder Dwell Time	2~3 seconds

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**Current Rating Thermal Derating Curve**



**Reliability Testing**

No.	Test	Test Condition	Requirement	Test Reference
1	Solderability	Temperature setup: 235 ±5 °C Time setup: 10 ±1 sec.	After test terminal electrode wetting area must be greater than 95 %	IEC 60068-2-58
2	Resistance to soldering heat	Temperature setup: 260 +0/-5 °C Time setup: 10 sec. max.	DCR change ≤ ±15 %	IEC 60068-2-58
3	Thermal shock	Temperature setup: 25 °C ~ -65 °C ~ 25 °C ~ 125 °C Time setup: -65 °C (30 min) ~ 25 °C (5 min) ~ 125 °C (30 min) ~ 25 °C (5 min), 5 cycles	DCR change ≤ ±15 % No mechanical damage	MIL-STD-202G Method 107G Test Condition B
4	Humidity unload	Heat (85 ±0.5 °C) High Humidity (85 ±1 % RH) 240 hours	DCR change ≤ ±15 % No mechanical damage	MIL-STD-202G Method 103B Test Condition A
5	Salt spray	Salt spray concentration: 5 ±1 % Test liquid temperature: 35 ±0.5 °C 96 hours	DCR change ≤ ±15 % No mechanical damage	MIL-STD-202G Method 101E Test Condition A
6	Bending	The board shall be bent by 1 mm at a rate of 1 mm/sec.	DCR change ≤ ±15 %	IEC 60127-4
7	Vibration	Frequency setup: 10 ~ 55 ~ 10 Hz Time setup: 1 Minute/cycle (X-Y-Z, 120 cycles, 6 hours)	DCR change ≤ ±15 % No mechanical damage	MIL-STD-202G Method 201A

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