



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

- Single blow fuse for overcurrent protection
- EIA 3812 (10030 metric) footprint
- Ceramic tube design for time lag fusing speed and low power applications
- UL 248-14, IEC 60127-1 and IEC 60127-7 compliant
- Surface mount packaging for automated assembly
- RoHS compliant\* and halogen free\*\*

## SF-3812TL-T Series – Time Lag & Low Power SMD Fuses

### Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
250 %	—	120 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	TUV
						E198545	R 50421699
SF-3812TL050T-2	0.50	0.5479	250 VAC	50 A @ 250 VAC	1.963	✓	✓
SF-3812TL075T-2	0.75	0.26			3.375	✓	✓
SF-3812TL100T-2	1.00	0.18			11.22	✓	✓
SF-3812TL150T-2	1.50	0.1027			14.85	✓	✓
SF-3812TL200T-2	2.00	0.0504			19.84	✓	✓
SF-3812TL250T-2	2.50	0.037			20.5	✓	✓
SF-3812TL300T-2	3.00	0.028			54	✓	✓
SF-3812TL350T-2	3.50	0.0199			57.82	✓	✓
SF-3812TL400T-2	4.00	0.0158			125.6	✓	✓
SF-3812TL500T-2	5.00	0.012			185	✓	✓

\*\*\* 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.

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Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

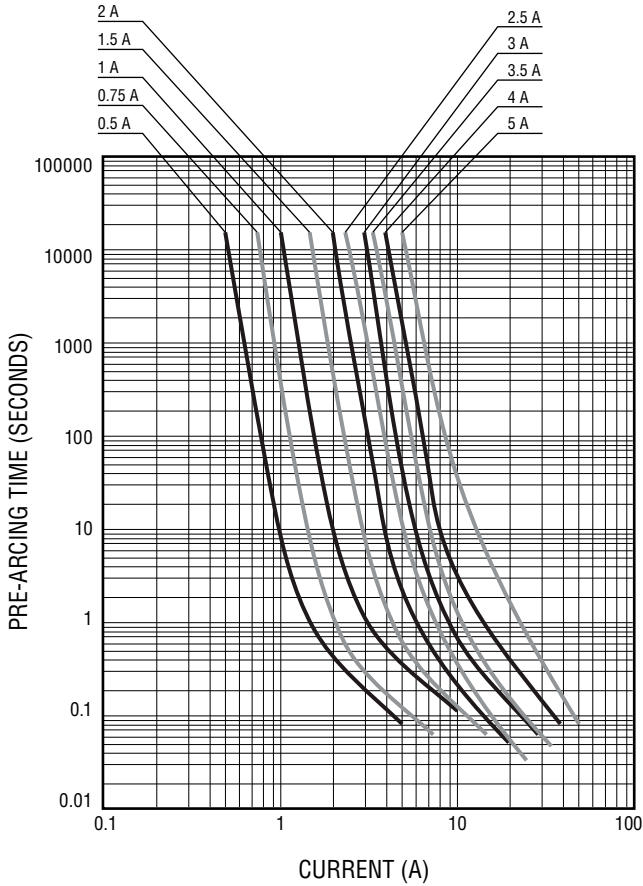
Users should verify actual device performance in their specific applications.

# SinglFuse™ SF-3812TL-T Series Applications

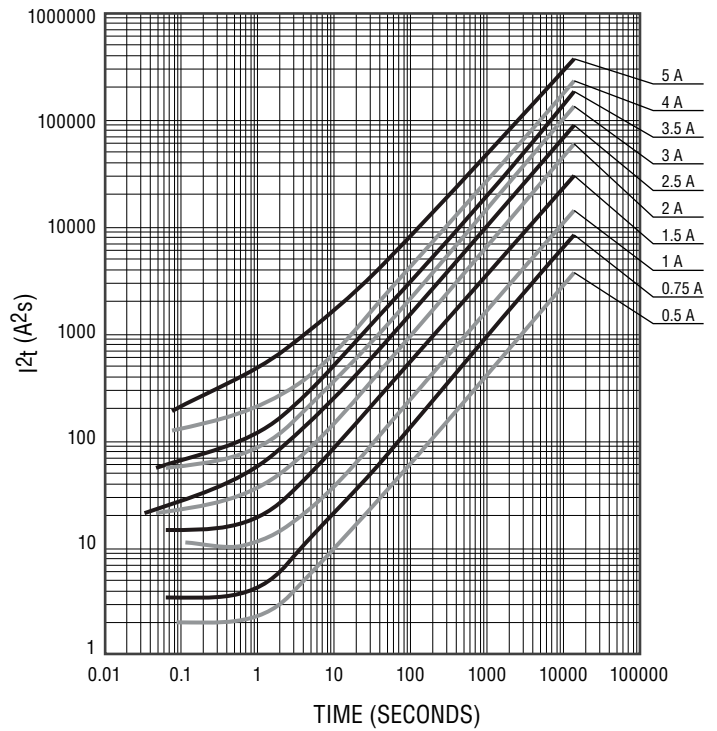
- Lighting systems
- Power adaptors
- Power supplies
- AC/DC converters
- Telecom equipment system power

## SF-3812TL-T Series – Time Lag & Low Power SMD Fuses **BOURNS®**

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



**Average I²t vs. t Curves**



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# SF-3812TL-T Series – Time Lag & Low Power SMD Fuses



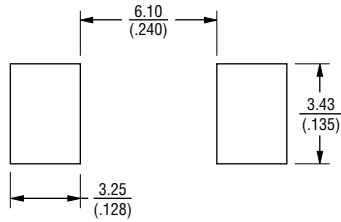
## Typical Part Marking

Represents total content. Layout may vary.



Rated Current	Part Marking
0.50 A	i500mA
0.75 A	i750mA
1.00 A	i1A
1.50 A	i1.5A
2.00 A	i2A
2.50 A	i2.5A
3.00 A	i3A
3.50 A	i3.5A
4.00 A	i4A
5.00 A	i5A

## Recommended Pad Layout



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

## Packaging

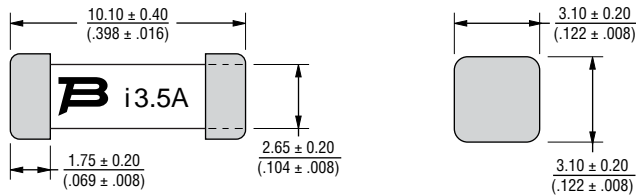
Reel Dimension	13-inch Tape and Reel
Specification	EIA 481-2
Quantity	2,500 pieces
Packaging Code	-2

## How to Order

**SF - 3812 TL 050 T - 2**

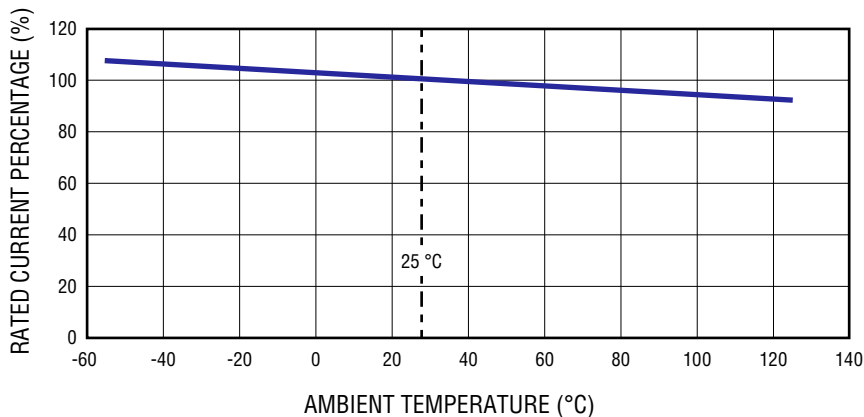
SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 3812 = EIA 3812  
 (10030 metric)  
 Fuse Blow Type \_\_\_\_\_  
 TL = Time Lag & Low Power  
 Rated Current \_\_\_\_\_  
 050 - 500 (0.50 A ~ 5.00 A)  
 Structure Type \_\_\_\_\_  
 T = Ceramic Tube  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel

## Product Dimensions



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

## Current Rating Thermal Derating Curve

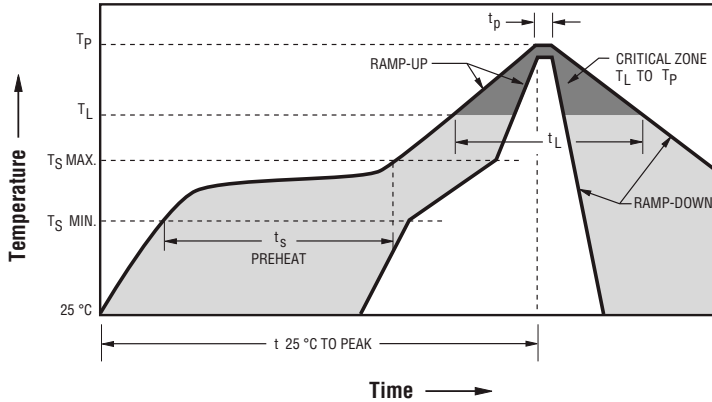


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**Solder Reflow Recommendations**

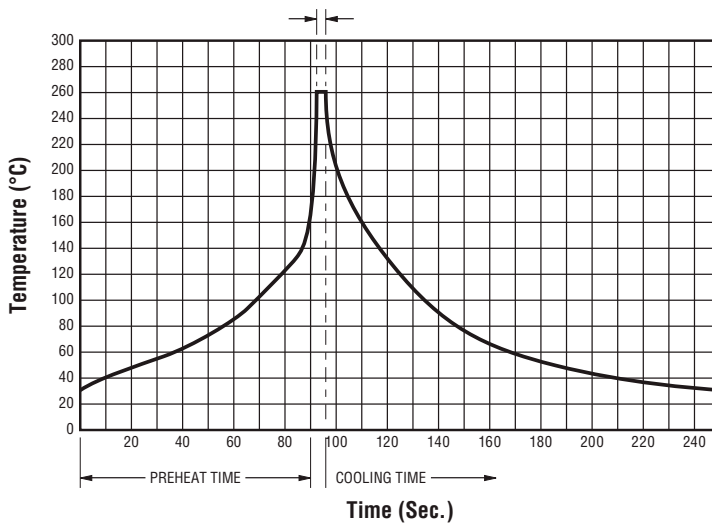


Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. ( $T_{smin}$ ) Temperature Max. ( $T_{smax}$ ) Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	150 °C 200 °C 60–180 seconds
Ramp Up Rate ( $T_L$ to $T_p$ )	3 °C / second max.
Ramp Up Rate ( $T_{smax}$ to $T_L$ )	5 °C / second max.
Liquidous Temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	217 °C 60–90 seconds
Peak Package Body Temperature ( $T_p$ )	235 °C ± 5 °C
Time within 5 °C of actual peak temperature ( $T_p$ )	20–30 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	240 °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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## 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: 235 ±5 °C Time setup: 30 ± 5 sec.	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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