



## 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 listed
- Meets IEC 60127-1 and IEC 60127-7 requirements
- Surface mount packaging for automated assembly
- RoHS compliant\* and halogen free\*\*

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

### Electrical Characteristics

Model	Rated Current (A)	Fusing Time	Resistance (Ω) Typ.***	Rated Voltage	Interrupting Rating	Typical I <sup>2</sup> t (A <sup>2</sup> s) ****	Agency Recognition	
							UL	TUV
SF-3812TL050T-2	0.5	Open within 120 sec. at 250 % rated current	0.5479	250 VAC	50 A @ 250 VAC	1.963	•	<i>pending</i>
SF-3812TL075T-2	0.75		0.26			3.375	•	<i>pending</i>
SF-3812TL100T-2	1		0.18			11.22	•	•
SF-3812TL150T-2	1.5		0.1027			14.85	•	•
SF-3812TL200T-2	2		0.0504			19.84	•	•
SF-3812TL250T-2	2.5		0.037			20.5	•	•
SF-3812TL300T-2	3		0.028			54	•	•
SF-3812TL350T-2	3.5		0.0199			57.82	•	•
SF-3812TL400T-2	4		0.0158			125.6	•	•
SF-3812TL500T-2	5		0.012			185	•	•

\*\*\* Resistance value measured with  $\leq 10$  % rated current at 25 °C ambient. Tolerance  $\pm 30$  %.

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

### Reliability Testing

No.	Test	Test Condition	Requirement	Test Reference
1	Solderability	Temperature setup: 235 $\pm$ 5 °C Time setup: 10 $\pm$ 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 $\pm$ 5 °C Time setup: 30 $\pm$ 5 sec.	DCR change $\leq \pm 15$ %	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 $\leq \pm 15$ % No mechanical damage	MIL-STD-202G Method 107G Test Condition B
4	Humidity unload	Heat (85 $\pm$ 0.5 °C) High Humidity (85 $\pm$ 1 % RH) 240 hours	DCR change $\leq \pm 15$ % No mechanical damage	MIL-STD-202G Method 103B Test Condition A
5	Salt spray	Salt spray concentration: 5 $\pm$ 1 % Test liquid temperature: 35 $\pm$ 0.5 °C 96 hours	DCR change $\leq \pm 15$ % 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 $\leq \pm 15$ %	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 $\leq \pm 15$ % No mechanical damage	MIL-STD-202G Method 201A



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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

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## 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

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#### 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

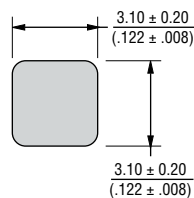
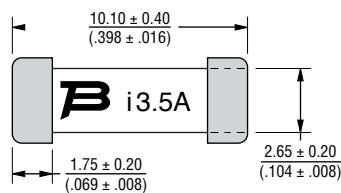
#### Typical Part Marking

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

#### Product Dimensions



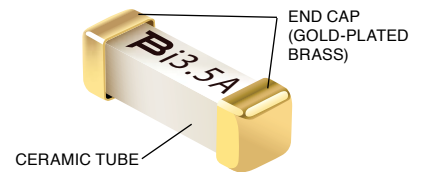
DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

#### Agency Recognition

UL File Number ..... E198545

TUV File Number..... R 50421699

#### Construction



#### Packaging Quantity

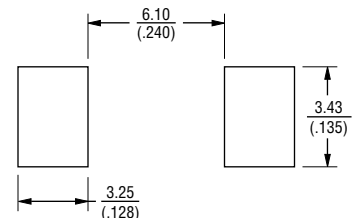
2,500 pieces per 13-inch reel

#### 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

#### Recommended Pad Layout



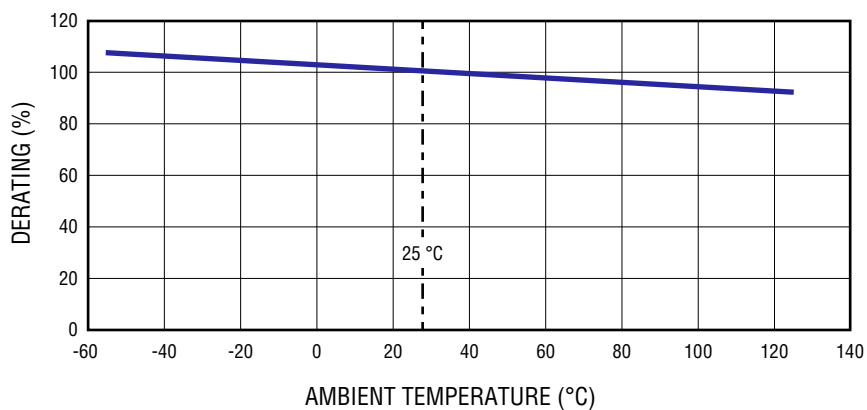
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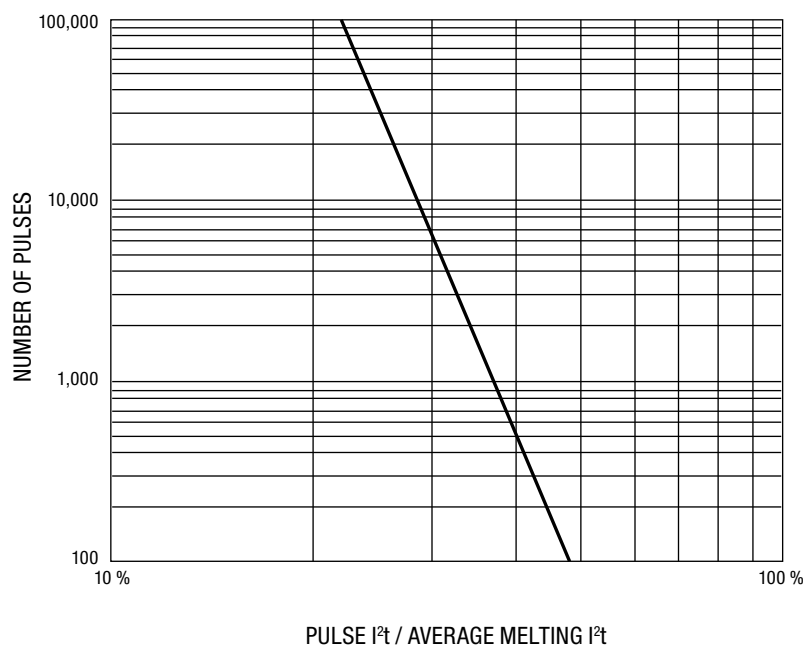
Users should verify actual device performance in their specific applications.

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## Current Rating Thermal Derating Curve



## Pulse Cycle Withstand Capability



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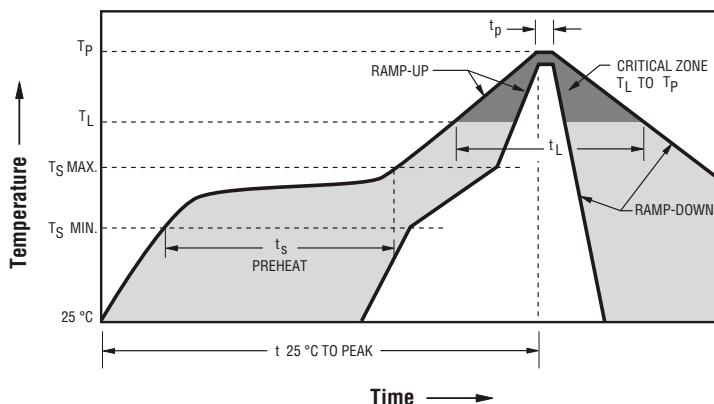
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### Solder Reflow Recommendations

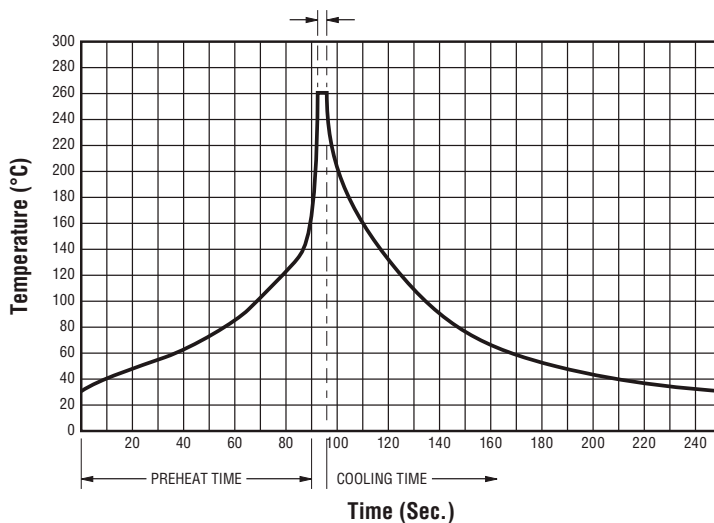


Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. ( $T_{smin}$ ) Temperature Max. ( $T_{smax}$ ) Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	150 °C 200 °C 60~180 seconds
Ramp Up Rate ( $T_L$ to $T_P$ )	3 °C / second max.
Ramp Up Rate ( $T_{smax}$ to $T_L$ )	5 °C / second max.
Liquidous Temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	217 °C 60~90 seconds
Peak Package Body Temperature ( $T_P$ )	235 °C $\pm$ 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)



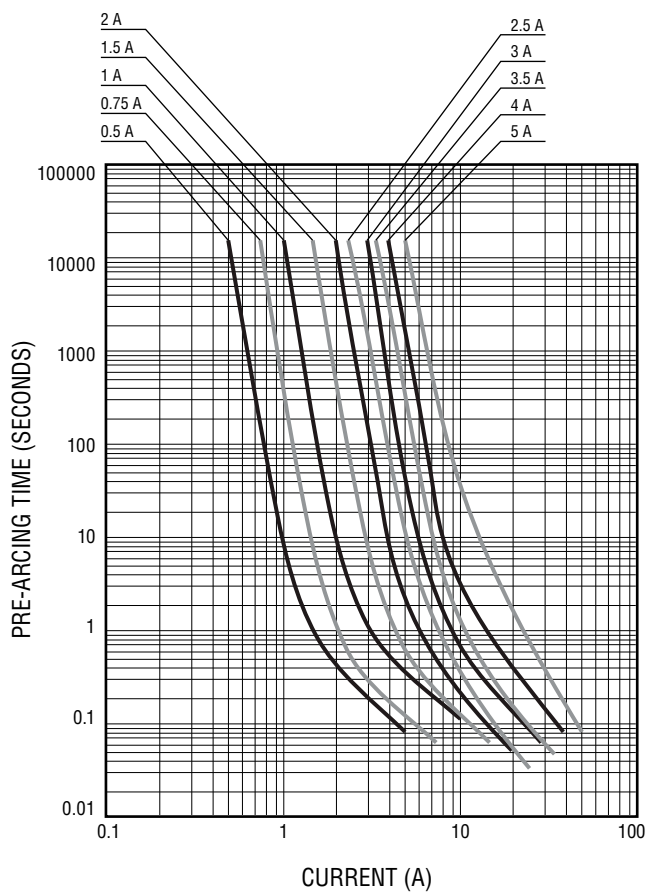
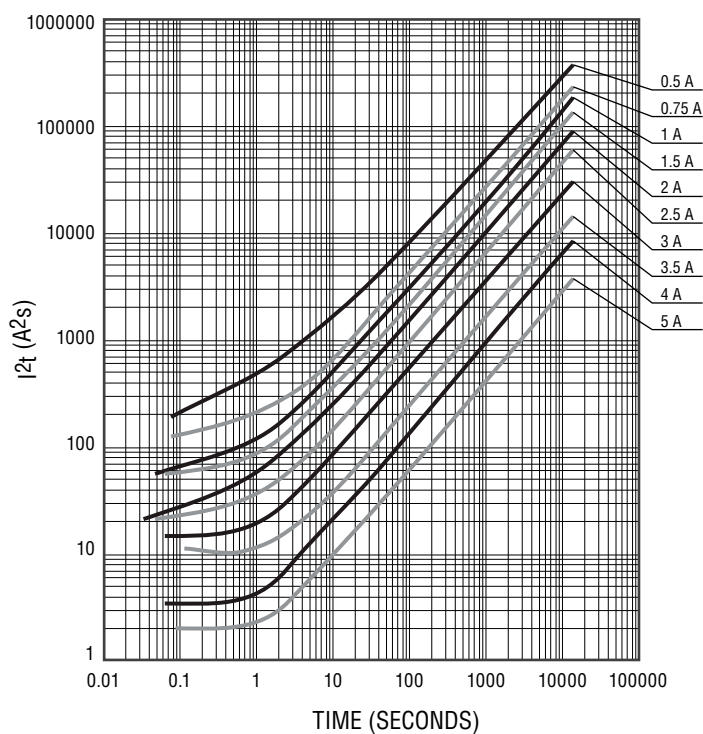
Profile Feature	Pb-Free Assembly
Preheat: Temperature Max. ( $T_{smax}$ ) Time (Min. to Max.)	150 °C 60~90 seconds
Solder Pot Temperature	260 °C max.
Solder Dwell Time	2~3 seconds

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Average Pre-Arcing Time vs. Current Curves

Average  $I^2t$  vs.  $t$  Curves

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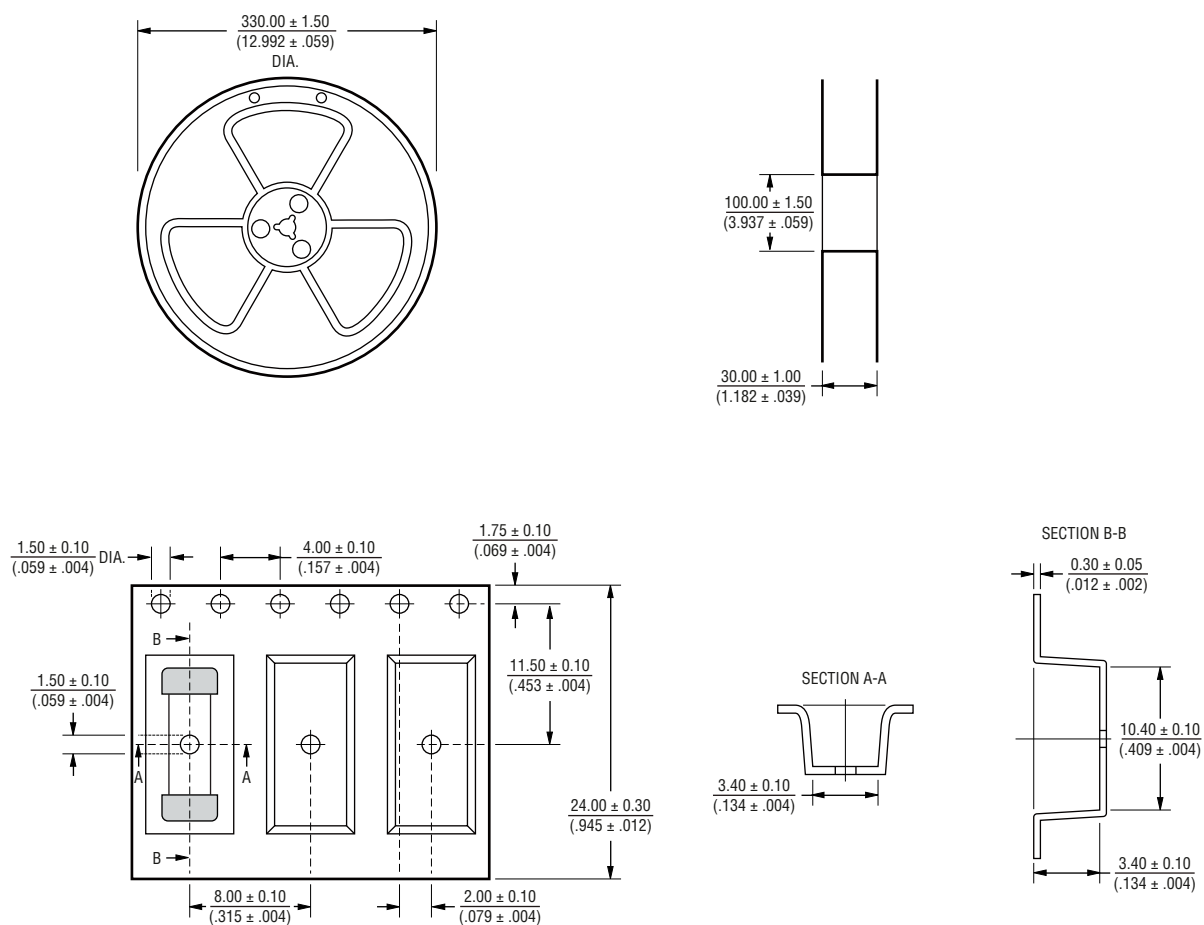
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### Packaging Specifications



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

**BOURNS®**

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