



## SinglFuse™ SF-2410F-T Series Features

- Single blow fuse for overcurrent protection
- EIA 2410 (6125 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-2410F-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 |

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### Electrical Characteristics

| Model           | Rated Current<br>(A) | Resistance<br>(Ω) Typ.*** | Rated<br>Voltage | Interrupting<br>Rating                                                               | Typical<br>I <sup>2</sup> t (A <sup>2</sup> s) **** | Certifications               |
|-----------------|----------------------|---------------------------|------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------|
|                 |                      |                           |                  |                                                                                      |                                                     | cUL: <a href="#">E198545</a> |
| SF-2410F1200T-2 | 12                   | 0.0045                    | 86 VAC<br>86 VDC | 50 A @ 65 VAC<br>50 A @ 65 VDC<br>200 A @ 86 VAC<br>200 A @ 86 VDC<br>300 A @ 24 VDC | 52.91                                               | ✓                            |
| SF-2410F1500T-2 | 15                   | 0.003                     |                  |                                                                                      | 90.9                                                | ✓                            |
| SF-2410F2000T-2 | 20                   | 0.0025                    | 65 VAC<br>65 VDC | 50 A @ 65 VAC<br>50 A @ 65 VDC<br>300 A @ 24 VDC                                     | 140.8                                               | ✓                            |
| SF-2410F2500T-2 | 25                   | 0.002                     |                  |                                                                                      | 246.55                                              | ✓                            |

\*\*\* 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 ..... +5 °C to +35 °C

Humidity.....40 % to 75 %

Shelf Life..... 2 years from manufacturing date

Moisture Sensitivity Level ..... 1

ESD Classification (HBM)..... Class 6

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

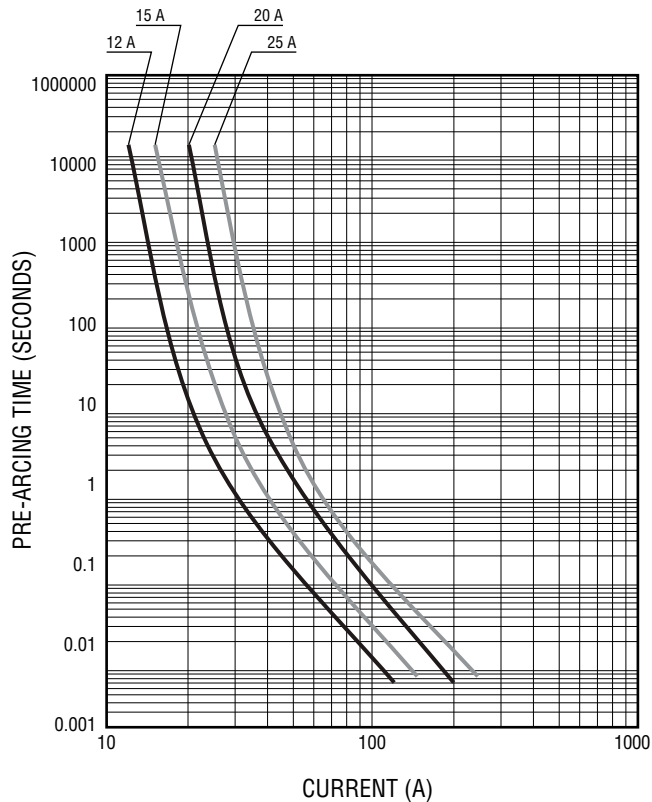
## SinglFuse™ SF-2410F-T Series Applications

- Notebooks
- LCD Monitors
- LCD Backlight Inverters
- POE, POE+
- PC Servers
- Power Supplies
- Game Consoles
- White Goods

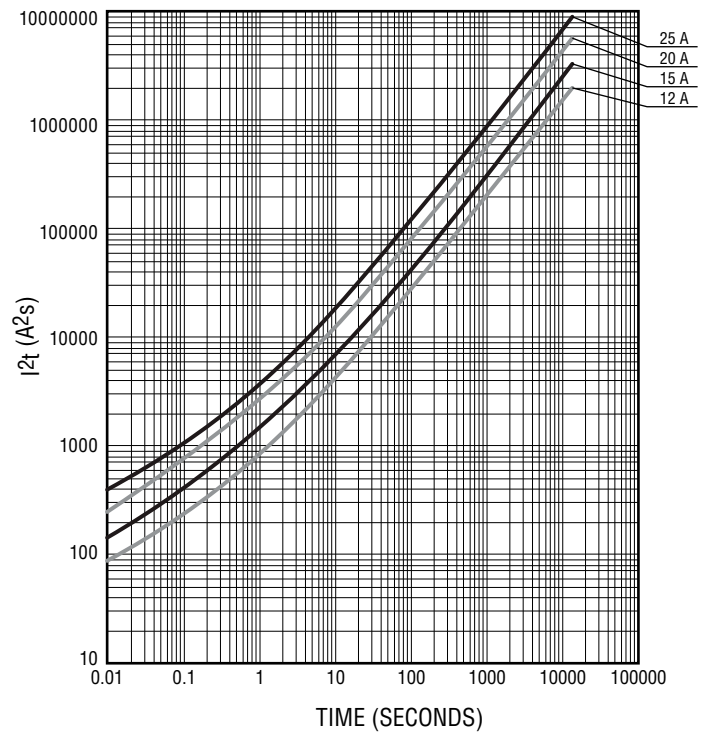
## SF-2410F-T Series - Fast Acting SMD Fuses

**BOURNS®**

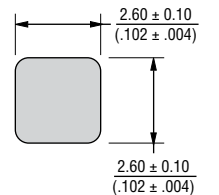
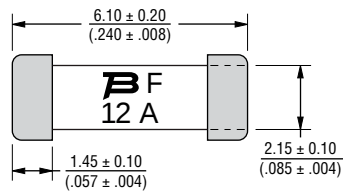
Average Pre-Arcing Time vs. Current Curves



Average  $I^2t$  vs. t Curves

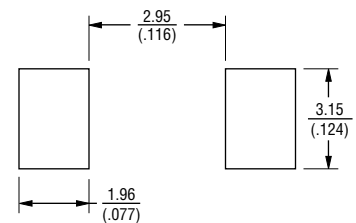


Product Dimensions



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

Recommended Pad Layout



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

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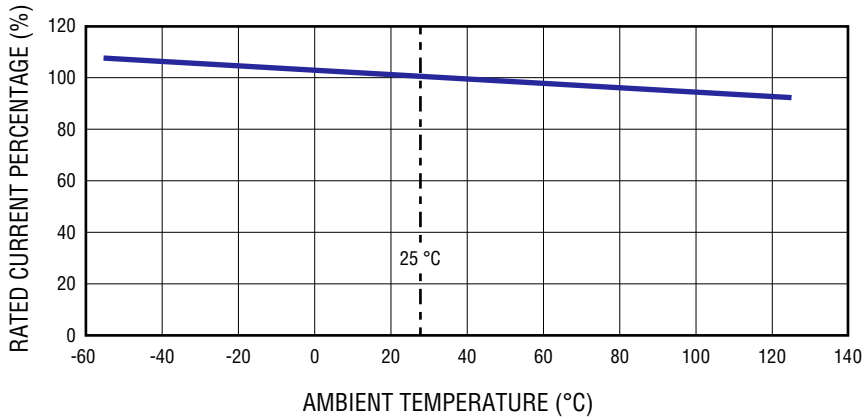
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## SF-2410F-T Series - Fast Acting SMD Fuses

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**Current Rating Thermal Derating Curve**



### How to Order

**SF - 2410 F 1200 T - 2**

SinglFuse™  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 2410 = EIA 2410 (6125 metric)  
 Fuse Blow Type \_\_\_\_\_  
 F = Fast Acting  
 Rated Current \_\_\_\_\_  
 1200 ~ 2500 (12 A ~ 25 A)  
 Structure Type \_\_\_\_\_  
 = Ceramic Tube  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel

### Packaging

|                |                      |
|----------------|----------------------|
| Reel Dimension | 7-inch Tape and Reel |
| Specification  | EIA 481-2            |
| Quantity       | 1,000 pieces         |
| Packaging Code | -2                   |

### Typical Part Marking

Represents total content. Layout may vary.



| Rated Current | Part Marking |
|---------------|--------------|
| 12 A          | 12A          |
| 15 A          | 15A          |
| 20 A          | 20A          |
| 25 A          | 25A          |

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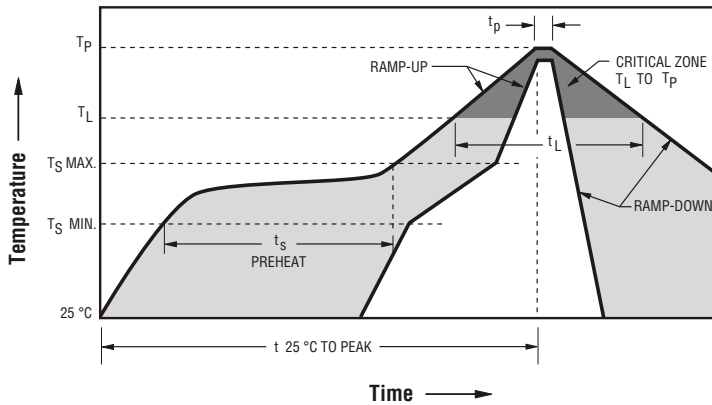
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## SF-2410F-T Series - Fast Acting SMD Fuses

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### Solder Reflow Recommendations

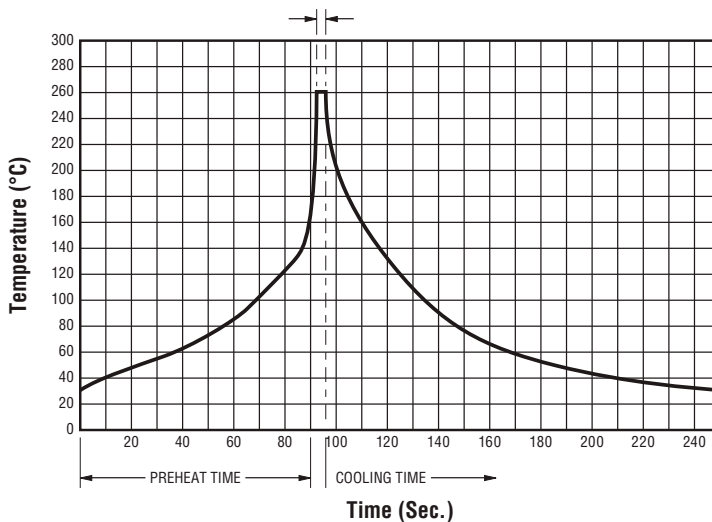


| Profile Feature                                                                                                                           | Pb-Free Assembly                   |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Preheat / Soak:<br>Temperature Min. ( $T_{smin}$ )<br>Temperature Max. ( $T_{smax}$ )<br>Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ ) | 150 °C<br>200 °C<br>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 ( $T_L$ )<br>Time ( $t_L$ ) maintained above $T_L$                                                                  | 217 °C<br>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:<br>Temperature Max. ( $T_{smax}$ )<br>Time (Min. to Max.) | 150 °C<br>60~90 seconds |
| Solder Pot Temperature                                             | 260 °C max.             |
| Solder Dwell Time                                                  | 2~3 seconds             |

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**SF-2410F-T Series - Fast Acting SMD Fuses****BOURNS®****Reliability Testing**

| No. | Test                         | Test Condition                                                                                                                                                                                                                                                       | Requirement                                                          | Test Reference                                  |
|-----|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------|
| 1   | Solderability                | Temperature setup: 235 $\pm$ 5 $^{\circ}$ C<br>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 $^{\circ}$ C<br>Time setup: 30 $\pm$ 5 sec.                                                                                                                                                                                           | DCR change $\leq$ $\pm$ 15 %                                         | IEC 60068-2-58                                  |
| 3   | Thermal shock                | Temperature setup:<br>25 $^{\circ}$ C $\sim$ -65 $^{\circ}$ C $\sim$ 25 $^{\circ}$ C $\sim$ 125 $^{\circ}$ C<br>Time setup: -65 $^{\circ}$ C (30 min)<br>$\sim$ 25 $^{\circ}$ C (5 min) $\sim$ 125 $^{\circ}$ C (30 min)<br>$\sim$ 25 $^{\circ}$ C (5 min), 5 cycles | DCR change $\leq$ $\pm$ 15 %<br>No mechanical damage                 | MIL-STD-202G<br>Method 107G<br>Test Condition B |
| 4   | Humidity unload              | Heat (85 $\pm$ 0.5 $^{\circ}$ C)<br>High Humidity (85 $\pm$ 1 % RH)<br>240 hours                                                                                                                                                                                     | DCR change $\leq$ $\pm$ 15 %<br>No mechanical damage                 | MIL-STD-202G<br>Method 103B<br>Test Condition A |
| 5   | Salt spray                   | Salt spray concentration: 5 $\pm$ 1 %<br>Test liquid temperature: 35 $\pm$ 0.5 $^{\circ}$ C<br>96 hours                                                                                                                                                              | DCR change $\leq$ $\pm$ 15 %<br>No mechanical damage                 | MIL-STD-202G<br>Method 101E<br>Test Condition A |
| 6   | Bending                      | The board shall be bent by 1 mm<br>at a rate of 1 mm/sec.                                                                                                                                                                                                            | DCR change $\leq$ $\pm$ 15 %                                         | IEC 60127-4                                     |
| 7   | Vibration                    | Frequency setup: 10 $\sim$ 55 $\sim$ 10 Hz<br>Time setup: 1 Minute/cycle<br>(X-Y-Z, 120 cycles, 6 hours)                                                                                                                                                             | DCR change $\leq$ $\pm$ 15 %<br>No mechanical damage                 | MIL-STD-202G<br>Method 201A                     |

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