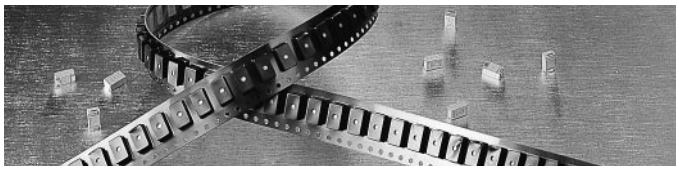
SMD TRON® Surface Mount Fuses

For .170" x .294" (4.32mm x 7.47mm) Fuses

SFT

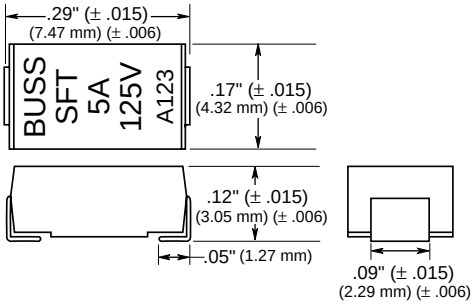


Catalog Symbol: **SFT**

Characteristics: Fast-Acting, Current-Limiting

Construction: Solid Matrix

Dimensional Data



*Packaging & Ordering Information:

	SFT	(See Table)
	Product Symbol	Rated Current

Package Code

TR/ 500 pcs., on a 7" reel, 16mm tape width.

TR1/ 2000 pcs., on a 13" reel, 16mm tape width.

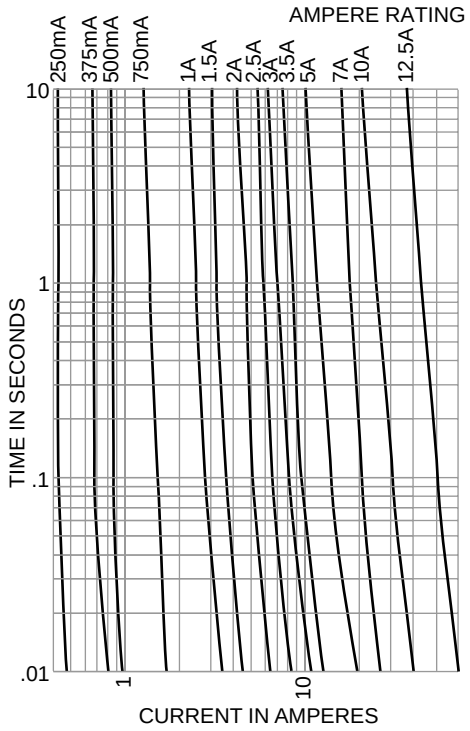
TR2/ 500 pcs., on a 7" reel, 12mm tape width.

TR3/ 2500 pcs., on a 13" reel, 12mm tape width.

Weight = **.6 lbs/500**

*See page 2.

Time-Current Characteristic Curves–Average Melt (Full Size Curves Available)



Time-Current Characteristics:

Rated Current	Percent of Rating 100%	250%
0-10	4 hrs. (min)	5 sec. (max)

Electrical Characteristics

Rated Current[5]	Rated Voltage AC (Max.)	Rated Voltage DC (Max.)	Interrupting Rating[1] AC	Interrupting Rating[1] DC	Pre-arcing I^2T (A^2sec) AC	Pre-arcing I^2T (A^2sec) DC	Typical Total Clearing[3] I^2T (A^2sec) AC	Typical Total Clearing[3] I^2T (A^2sec) DC	Typical Voltage Drop[2] Volts at 100% Rated Current	Agency** Approvals U.R.	Agency** Approvals CSA
63mA	125V	125V	50A	300A						•	•
125mA	125V	125V	50A	300A						•	•
250mA	125V	125V	50A	300A	7.49×10^{-5}	5.1×10^{-6}	2.0×10^{-4}	6.29×10^{-6}	.8	•	•
375mA	125V	125V	50A	300A	3.17×10^{-4}	2.18×10^{-5}	4.18×10^{-4}	2.67×10^{-5}	.75	•	•
500mA	125V	125V	50A	300A	4.46×10^{-4}	3.8×10^{-5}	5.74×10^{-4}	4.63×10^{-5}	.66	•	•
750mA	125V	125V	50A	300A	1.72×10^{-3}	2.27×10^{-4}	2.59×10^{-3}	2.77×10^{-4}	.525	•	•
1	125V	125V	50A	300A	.0099	.0069	.0114	.0076	.12	•	•
1.5	125V	125V	50A	300A	.0302	.0204	.0345	.0246	.20	•	•
2	125V	125V	50A	300A	.0784	.0651	.0891	.0811	.170	•	•
2.5	125V	125V	50A	300A	.1775	.1390	.2383	.1574	.145	•	•
3	125V	125V	50A	300A	.3355	.2419	.4359	.2664	.130	•	•
3.5	125V	125V	50A	300A	.4980	.3812	.6355	.4696	.155	•	•
4	125V	125V	50A	300A	.8855	.6785	1.0740	.7829	.135	•	•
5	125V	125V	50A	300A	1.7264	1.2912	2.3779	1.3556	.125	•	•
7.0A	60V	90V	50A	300A	1.64	.518	1.97	.573	.114	•	•
10.0A	60V	90V	50A	300A	3.79	1.06	3.92	1.67	.130	•	•
12.5A	48V	60V†	50A	300A	15	4.04	20	4.28	.090	•	

**Approvals: UL Recognition, Std. 248-14, Guide #JDYX2, File #E19180; CSA Certification, C22.2 No. 248.14, Class #1422-01, File #53787.

† NOTE: SFT 12.5A is UL recognized on AC Only.

1. Interrupting ratings were measured at 100% power factor on AC, and a time constant less than 1ms on DC.
2. Voltage drop was measured at 25°C ± 3°C ambient temperature at rated current with device mounted on a circuit trace.
3. I^2t measured at 50 amp, 125 VAC, .95PF, random closing angle; 300 amps, 125 VDC, TC<1ms.
4. Electrical characteristics for 12.5 amp to be determined.
5. Device designed to carry 125% of rated current for one hour minimum. An operating current of 80% or less of rated current is recommended, with further derating required at elevated ambient temperatures.

CE CE logo denotes compliance with European Union Low Voltage Directive (50-1000 VAC, 75-1500 VDC). Refer to BIF document #8002 or contact Bussmann Application Engineering at 314-527-1270 for more information.

SMD TRON® Surface Mount Fuses
For .170" x .294" (4.32mm x 7.47mm) Fuses

SFT

1.0 Materials
Body Material: Thermoplastic, with a rating of 94V-O as defined by U.L. Standard 94. Material has an oxygen index of 53% per ASTM D2863-77.

Lead Material: Base–Copper.
Barrier–Nickel (50-100 micro inches).
Finish–Electroplated Tin (400-500 micro inches with a 2-10% lead content).

2.0 Markings
Body shall be permanently and legibly marked with BUSS®, catalog symbol, ampere rating, voltage rating and date code. Markings will not become illegible or discolored when the parts are subjected to solvents normally used to remove solder/flux, fingerprints, and other contaminants from printed circuit boards, as tested per MIL-STD-202, Method 215F.

3.0 Trace Geometry Considerations
Trace geometry can affect fuse performance and should be considered when applying any subminiature fuse. Figures 1 and 2 detail the trace geometry used in generating this specification. Suitable trace geometry for a particular application depends on fuse rating, current flow, and ambient temperature. Final determination of suitability for a specific application should be based on empirical testing with all parameters involved. Printed circuit board is .096 inches thick, epoxy glass with 1 ounce copper foil, coated with 300 micro inches of 60/40 tin lead solder.

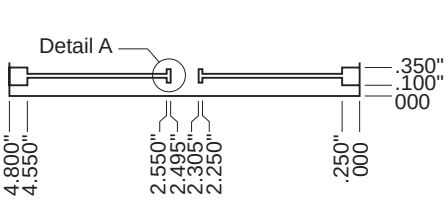


Figure 1

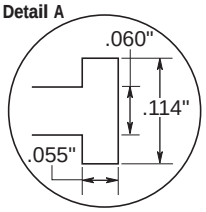


Figure 2

Note: Smaller than recommended trace width may affect the fuse performance by providing additional heat and reducing carrying capacity of the fuse.

4.0 Thermal Withstand Capability
Infrared Exposure. When the device is exposed to the time-temperature profile detailed in Figure 3, the resistance of the device will not change by more than 5%, as measured after the device has dwelled at room temperature for at least one hour.

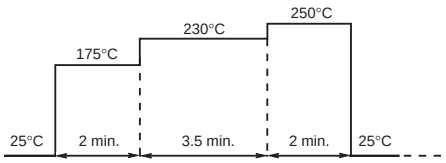


Figure 3

IR Time-Temperature Profile
Vapor Phase Exposure. When the device is exposed for ten minutes to the vapor produced by liquid fluorinert FC-5312 at 218°C, the resistance of the device will not change by more than 5%, as measured after the device has dwelled at room temperature for at least one hour.

Resistance to Soldering Heat. MIL-STD-202F, Method B. When device is immersed in a 260°C soldering pot for 10 seconds, the resistance of the device will not change by more than 5% as measured after the device has dwelled at room temperature for at least one hour.

***Better Solderability.** To eliminate solder ball extrusion and to provide improved solderability in formed areas of leads, order part number SFT-1J0367-amp. For 63mA - 10A fuses.

5.0 Mechanical Characteristics
Mechanical Shock. Fuse base shall not chip or crack when dropped from a height of 48" onto a concrete surface.

Vibration. The fuse resistance shall return to within 10% of the original value when the fuse is subjected to a frequency range cycle of one minute in each of the three mutually perpendicular directions having a vibration amplitude of .06 inches peak to peak at a frequency of 10-55Hz. per MIL-STD-202F, Method 204 Condition A.

Terminal Secureness. The fuse terminals shall not distort, and the fuse body will not chip or crack when the fuse is placed on a printed circuit board and a vertical downward force of 1/2 kilograms is applied to the top of the fuse for 10 seconds.

6.0 Packaging
All unit packaging material will be manufactured from static inhibiting materials. Tape and reel packaging will comply with EIA Std 481-2. Tape width shall be 16mm and reel diameter 7 inches or 13 inches.

Packaging Code
TR/ 500 on a 7" reel, 16mm tape width
TR1/ 2000 on a 13" reel, 16mm tape width

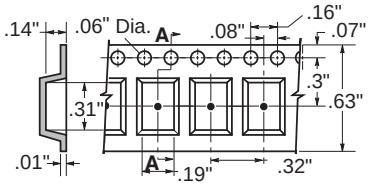


Figure 4

Embossed carrier tape which conforms to the EIA Standards EIA481-2.

Carrier material black conductive polystyrene, Non-Conductive Tape Material.

7.0 Load Cycling
Load cycling of the SMD TRON® was performed to observe the stability of the resistances and voltage drops for cycling applications. Through measurement of initial and final resistances, an assessment of the reliability of the fuse can be predicted.

Test Conditions. A duty cycle of 60 seconds on at rated current and 60 seconds off to make a total period of 120 seconds.

Other circuit parameters were:
Amplitude – 100% rated current
Rise Time – 36.8 microseconds
Ripple Average –15.9mA
System Voltage – 55 volts

Test Criteria. The fuse must complete 200,000 cycles without failure, then resistance and voltage drop measurements are compared to initial measurements, which cannot change by more than 5%.

Test Data:
Average Initial Resistance: 21.11 milli ohms
Average Final Resistance: 20.57 milli ohms
% Change: –2.55%

SFT Voltage Drop as a Percent of Rated Current (Typical)