



**Solid State Devices, Inc.**

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**SFT2010 thru SFT2014**

**200 AMP  
 100 – 140 Volt  
 High Energy  
 NPN Transistor**

**DESIGNER'S DATA SHEET**

**Part Number / Ordering Information <sup>1/</sup>**

SFT

Screening <sup>2/</sup> \_\_\_ = No Screening  
 TX = TX Level  
 TXV = TXV Level  
 S = S Level

Lead Bend <sup>3/ 4/</sup> \_\_\_ = Straight Leads

Package <sup>3/</sup> /3 = TO-3 0.060" pin

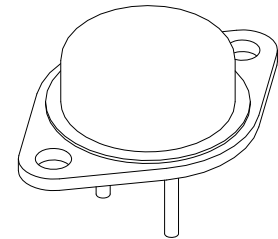
Voltage/Family 2010 = 100V  
 2012 = 120V  
 2014 = 140V

- Features:**
- BV<sub>CBO</sub> = 250 V MIN
  - 600 Watts Power Dissipation
  - Excellent SOA Curve
  - Es/b of 800mJ
  - Gain of over 5 at 200A
  - High Reliability Construction
  - Planar Chip Construction with Low Leakage and Very Fast Switching
  - TX, TXV, S-Level Screening Available<sup>2/</sup> - Consult Factory

| Maximum Ratings                                  |   | Symbol                            | Value             | Units          |
|--|---|-----------------------------------|-------------------|----------------|
| Collector – Emitter Voltage                      | SFT2010<br>SFT2012<br>SFT2014             | V <sub>CEO</sub>                  | 100<br>120<br>140 | Volts          |
| Collector – Base Voltage                         |   | V <sub>CBO</sub>                  | 250               | Volts          |
| Emitter – Base Voltage                           |   | V <sub>EBO</sub>                  | 8                 | Volts          |
| Collector Current                                |   | I <sub>C</sub>                    | 200               | Amps           |
| Base Current                                     |   | I <sub>B</sub>                    | 75                | Amps           |
| Total Device Dissipation                         | T <sub>C</sub> =50°C<br>Derate above 50°C | P <sub>D</sub>                    | 600<br>4          | Watts<br>W/ °C |
| Operating & Storage Temperature                  |   | T <sub>J</sub> & T <sub>STG</sub> | -65 to +200       | °C             |
| Maximum Thermal Resistance<br>(Junction to Case) |   | R <sub>θJC</sub>                  | 0.25              | °C/W           |

- NOTES:** \*Pulse Test: Pulse Width = 300µsec, Duty Cycle = 2%
- 1/ For Ordering Information, Price, and Availability Contact Factory.
- 2/ Screening per MIL-PRF-19500.
- 3/ For Package Outlines Contact Factory.
- 4/ Up and Down Bend Configurations are Available for 'M' (TO-254) Packages Only.
- 5/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

**TO-3**





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# SFT2010 thru SFT2014

| Electrical Characteristics              |  |                               | Symbol               | Min               | Max        | Units |
|---|--|-------------------------------|----------------------|-------------------|------------|-------|
| Collector – Emitter Breakdown Voltage * | (I <sub>C</sub> = 200 mA)  | SFT2010<br>SFT2012<br>SFT2014 | BV <sub>CEO</sub>    | 100<br>120<br>140 | —          | Volts |
| Collector – Base Breakdown Voltage *    | (I <sub>C</sub> = 100μA)   |                               | BV <sub>CBO</sub>    | 250               | —          | Volts |
| Emitter – Base Breakdown Voltage *      | (I <sub>E</sub> = 100μA)   |                               | BV <sub>EBO</sub>    | 8                 | —          | Volts |
| Collector Cutoff Current                | (V <sub>CB</sub> = 250 V)  |                               | I <sub>CBO</sub>     | —                 | 10         | μA    |
| Emitter Cutoff Current                  | (V <sub>EB</sub> = 7 V)  |                               | I <sub>EBO</sub>     | —                 | 10         | μA    |
| DC Current Gain *                       | I <sub>C</sub> = 10 A, V <sub>CE</sub> = 2 V<br>I <sub>C</sub> = 100 A, V <sub>CE</sub> = 5 V<br>I <sub>C</sub> = 200 A, V <sub>CE</sub> = 5 V |                               | h <sub>FE</sub>      | 40<br>30<br>5     | —          |       |
| Collector-Emitter Saturation Voltage *  | (I <sub>C</sub> = 120 A, I <sub>B</sub> = 12 A)<br>(I <sub>C</sub> = 200 A, I <sub>B</sub> = 30 A)   |                               | V <sub>CE(SAT)</sub> | —<br>—            | 2.0<br>3.0 | Volts |
| Base-Emitter Saturation Voltage *       | (I <sub>C</sub> = 120 A, I <sub>B</sub> = 12 A)  |                               | V <sub>BE(SAT)</sub> | —                 | 2.2        | Volts |
| Current – Gain – Bandwidth Product      | (I <sub>C</sub> = 1.0 A, V <sub>CE</sub> = 10 V,<br>f = 10MHz)   |                               | f <sub>T</sub>       | 30                | —          | Mhz   |
| Output Capacitance                      | V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1.0MHz   |                               | C <sub>ob</sub>      | —                 | 1200       | pF    |
| RB SOA                                  | I <sub>B</sub> = 1 A, R <sub>B1</sub> = R <sub>B2</sub> = 20 ohms<br>V <sub>BE(off)</sub> = 2.0 V, L = 1.0 mH                                  |                               | E <sub>s/b</sub>     | 800               | —          | mJ    |
| FB SOA                                  | V <sub>CE</sub> = 20 V, I <sub>C</sub> = 30 A<br>V <sub>CE</sub> = 100 V, I <sub>C</sub> = 0.75 A  |                               | I <sub>s/b</sub>     | 1<br>1            | —          | sec   |
| On Time                                 |  |                               | t <sub>(on)</sub>    | —                 | 800        | ns    |
| Storage Time                            | (V <sub>CC</sub> = 60 V, I <sub>C</sub> = 10 A,  |                               | t <sub>s</sub>       | —                 | 1500       | ns    |
| Fall Time                               | I <sub>B1</sub> = I <sub>B2</sub> = 1.0 A)   |                               | t <sub>f</sub>       | —                 | 400        | ns    |

**PIN ASSIGNMENT (Standard)**

| Package  | Collector | Emitter | Base  |
|----------|-----------|---------|-------|
| TO-3 (3) | Case      | Pin 2   | Pin 1 |

**Available Part Numbers:**

SFT2010/3  
SFT2012/3  
SFT2014/3

**NOTES:**

① THIS DIMENSION SHALL BE MEASURED AT POINTS .050 - .055" BELOW THE SEATING PLANE. WHEN GAGE IS NOT USED, MEASUREMENT WILL BE MADE AT SEATING PLANE.

THIS OUTLINE DOES NOT MEET THE MINIMUM CRITERIA ESTABLISHED BY JS-10 FOR REGISTRATION.