



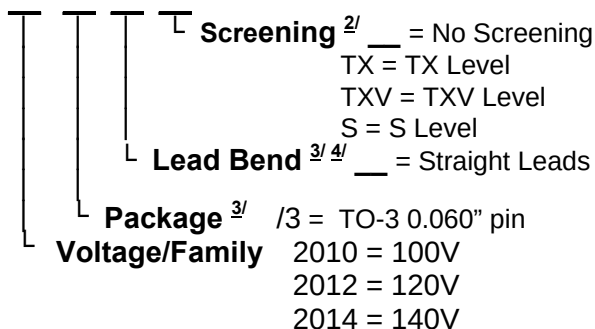
## Solid State Devices, Inc.

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### DESIGNER'S DATA SHEET

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

SFT



## SFT2010 thru SFT2014

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

#### Features:

- $BV_{CBO} = 250 \text{ V MIN}$
- 600 Watts Power Dissipation
- Excellent SOA Curve
- $E_s/b$  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                               | $V_{CEO}$                 | 100<br>120<br>140 | Volts                        |
| Collector – Base Voltage                         |                                                             | $V_{CBO}$                 | 250               | Volts                        |
| Emitter – Base Voltage                           |                                                             | $V_{EBO}$                 | 8                 | Volts                        |
| Collector Current                                |                                                             | $I_C$                     | 200               | Amps                         |
| Base Current                                     |                                                             | $I_B$                     | 75                | Amps                         |
| Total Device Dissipation                         | $T_C = 50^\circ\text{C}$<br>Derate above $50^\circ\text{C}$ | $P_D$                     | 600<br>4          | Watts<br>W/ $^\circ\text{C}$ |
| Operating & Storage Temperature                  |                                                             | $T_J \text{ \& } T_{STG}$ | -65 to +200       | $^\circ\text{C}$             |
| Maximum Thermal Resistance<br>(Junction to Case) |                                                             | $R_{\theta JC}$           | 0.25              | $^\circ\text{C/W}$           |

**NOTES:** \*Pulse Test: Pulse Width = 300μsec, Duty Cycle = 2%

<sup>1/</sup> For Ordering Information, Price, and Availability Contact Factory.

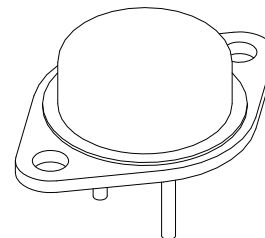
<sup>2/</sup> Screening per MIL-PRF-19500.

<sup>3/</sup> For Package Outlines Contact Factory.

<sup>4/</sup> Up and Down Bend Configurations are Available for 'M' (TO-254) Packages Only.

<sup>5/</sup> Unless Otherwise Specified, All Electrical Characteristics @25°C.

TO-3



**NOTE:** All specifications are subject to change without notification.  
 SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: TR0108A

DOC



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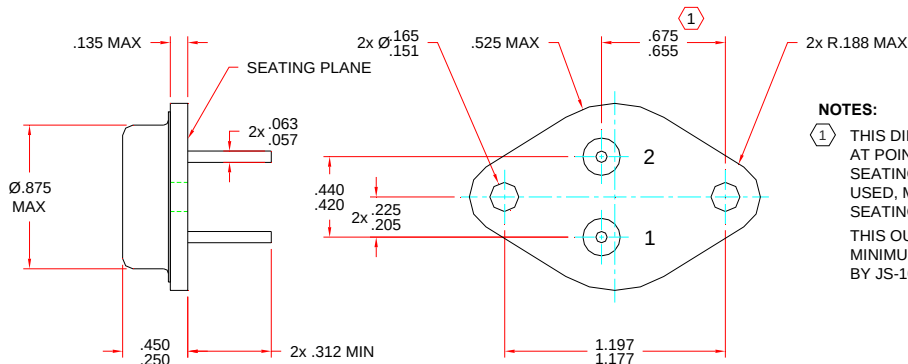
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## SFT2010 thru SFT2014

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



### 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.

### PIN ASSIGNMENT (Standard)

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

### Available Part Numbers:

SFT2010/3  
SFT2012/3  
SFT2014/3

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**DOC**