



## Solid State Devices, Inc.

14701 Firestone Blvd \* La Mirada, CA 90638  
 Phone: (562) 404-4474 \* Fax: (562) 404-1773  
 ssdi@ssdi-power.com \* www.ssdi-power.com

### DESIGNER'S DATA SHEET

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

SFT5095

SFT5097

Screening <sup>2/</sup>

— = Not Screened

TX = TX Level

TXV = TXV Level

S = S Level

Package

-4 = 4 Pin CLCC

/5 = TO-5

G = CERPACK

S.22 = SMD.22

## SFT5095 and SFT5097 Series

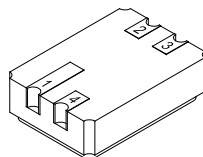
**1 AMP**  
**High Voltage NPN Transistor**  
 500-600 Volts

#### Features:

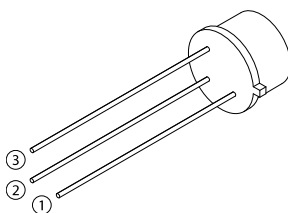
- $BV_{CEO}$  to 450 Volts
- Low saturation voltage
- Very low leakage
- 200°C operating temperature
- Gold eutectic die attach
- Designed for complementary use with 2N5094 and 2N5096
- Available with TO-5, Cerpack, CLCC, and SMD.22 Cases
- TX, TXV, and S Level Screening Available

| Maximum Ratings <sup>3/</sup>                                       | Symbol                                                                                                              | SFT5095               | SFT5097    | Units           |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|------------|-----------------|
| Collector – Emitter Voltage<br>( $R_{BE} = 1k\Omega$ )              | $V_{CEO}$<br>$V_{CER}$                                                                                              | 400<br>500            | 450<br>600 | Volts<br>Volts  |
| Collector – Base Voltage                                            | $V_{CBO}$                                                                                                           | 500                   | 600        | Volts           |
| Emitter – Base Voltage                                              | $V_{EBO}$                                                                                                           | 6                     |            | Volts           |
| Collector Current                                                   | $I_C$                                                                                                               | 1.0                   |            | Amps            |
| Base Current                                                        | $I_B$                                                                                                               | 0.5                   |            | Amps            |
| Total Power Dissipation @ $T_C = 100^\circ C$<br>Derate above 100°C | $P_D$                                                                                                               | 2.0<br>20             |            | Watts<br>mW /°C |
| Operating & Storage Temperature                                     | $T_J$ & $T_{STG}$                                                                                                   | -65 to +200           |            | °C              |
| Thermal Resistance<br>(Junction to Case)                            | 4 Pin CLCC<br>$R_{\theta JA}$<br>TO-5<br>$R_{\theta JC}$<br>CERPACK<br>$R_{\theta JC}$<br>SMD.22<br>$R_{\theta JC}$ | 175<br>37.5<br>9<br>9 |            | °C/W            |

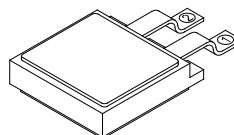
4 Pin CLCC (-4)



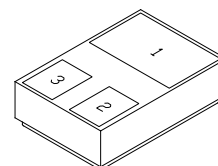
TO-5 (/5)



CERPACK (G)



SMD.22 (S22)



**NOTES:** 1/ For ordering information, price, operating curves, and availability - contact factory.

2/ Screening based on MIL-PRF-19500. Screening flows available on request.

3/ Unless otherwise specified, maximum ratings/electrical characteristics at 25°C.

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

**DATA SHEET #: TR0118A**

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## SFT5095 and SFT5097 Series

| Electrical Characteristics <sup>3/</sup>                                                                   |                                                                                                                                                        | Symbol                      | Min            | Max               | Units   |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------|-------------------|---------|
| <b>Collector – Emitter Breakdown Voltage*</b><br>(I <sub>C</sub> = 50 mA)                                  | SFT5095<br>SFT5097                                                                                                                                     | <b>BV<sub>CEO</sub></b>     | 400<br>450     | —<br>—            | Volts   |
| <b>Collector – Emitter Breakdown Voltage*</b><br>(I <sub>C</sub> = 100 $\mu$ A, R <sub>BE</sub> = 1K Ohms) | SFT5095<br>SFT5097                                                                                                                                     | <b>BV<sub>CER</sub></b>     | 500<br>600     | —<br>—            | Volts   |
| <b>Collector – Base Breakdown Voltage</b><br>(I <sub>C</sub> = 100 $\mu$ A)                                | SFT5095<br>SFT5097                                                                                                                                     | <b>BV<sub>CBO</sub></b>     | 500<br>600     | —<br>—            | Volts   |
| <b>Emitter – Base Breakdown Voltage</b><br>(I <sub>E</sub> = 20 $\mu$ A)                                   |                                                                                                                                                        | <b>BV<sub>EBO</sub></b>     | 6              | —                 | Volts   |
| <b>Collector Cutoff Current</b>                                                                            | SFT5095 V <sub>CB</sub> = 400V<br>SFT5097 V <sub>CB</sub> = 500V                                                                                       | <b>I<sub>CBO</sub></b>      | —              | 500               | nA      |
| <b>Emitter Cutoff Current</b>                                                                              | (V <sub>EB</sub> = 4 V)                                                                                                                                | <b>I<sub>EBO</sub></b>      | —              | 250               | nA      |
| <b>DC Current Gain*</b>                                                                                    | (I <sub>C</sub> = 1 mA, V <sub>CE</sub> = 5 V)<br>(I <sub>C</sub> = 25 mA, V <sub>CE</sub> = 5 V)<br>(I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 10 V) | <b>H<sub>FE</sub></b>       | 25<br>50<br>15 | 250<br>300<br>250 |         |
| <b>Collector-Emitter Saturation Voltage*</b><br>(I <sub>C</sub> = 25 mA, I <sub>B</sub> = 2.5 mA)          |                                                                                                                                                        | <b>V<sub>CE (SAT)</sub></b> | —              | 500               | mV      |
| <b>Base-Emitter Voltage</b>                                                                                | (I <sub>C</sub> = 25 mA, V <sub>CE</sub> = 5 V)                                                                                                        | <b>V<sub>BE (ON)</sub></b>  | —              | 1.0               | Volts   |
| <b>Current Gain Bandwidth Product*</b><br>(I <sub>C</sub> = 50 mA, V <sub>CE</sub> = 10 V, f = 20 MHz)     |                                                                                                                                                        | <b>f<sub>T</sub></b>        | 25             | —                 | MHz     |
| <b>Output Capacitance</b>                                                                                  | V <sub>CB</sub> = 15 V, I <sub>E</sub> = 0 A, f = 2.0MHz                                                                                               | <b>C<sub>ob</sub></b>       | —              | 15                | pF      |
| Electrical Characteristics <sup>3/</sup>                                                                   |                                                                                                                                                        | Symbol                      | Typical        |                   | Units   |
| <b>Delay Time</b>                                                                                          | V <sub>CC</sub> = 125 V<br>I <sub>C</sub> = 100 mA<br>I <sub>B1</sub> = I <sub>B2</sub> = 10 mA                                                        | <b>t<sub>d</sub></b>        | 50             |                   | ns      |
| <b>Rise Time</b>                                                                                           |                                                                                                                                                        | <b>t<sub>r</sub></b>        | 100            |                   | ns      |
| <b>Storage Time</b>                                                                                        |                                                                                                                                                        | <b>t<sub>s</sub></b>        | 1.5            |                   | $\mu$ s |
| <b>Fall Time</b>                                                                                           |                                                                                                                                                        | <b>t<sub>f</sub></b>        | 300            |                   | ns      |

**Notes:** \* Pulse Test: Pulse Width = 300  $\mu$ s. Duty Cycle = 2%.

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**PIN ASSIGNMENT (Standard)**

| Package                | Collector | Emitter | Base  |
|------------------------|-----------|---------|-------|
| <b>4 Pin CLCC (-4)</b> | Pin 1     | Pin 2   | Pin 3 |
| <b>TO-5 (/5)</b>       | Pin 3     | Pin 1   | Pin 2 |
| <b>CERPACK (G)</b>     | CASE      | Pin 1   | Pin 2 |
| <b>SMD.22</b>          | Pin 1     | Pin 2   | Pin 3 |

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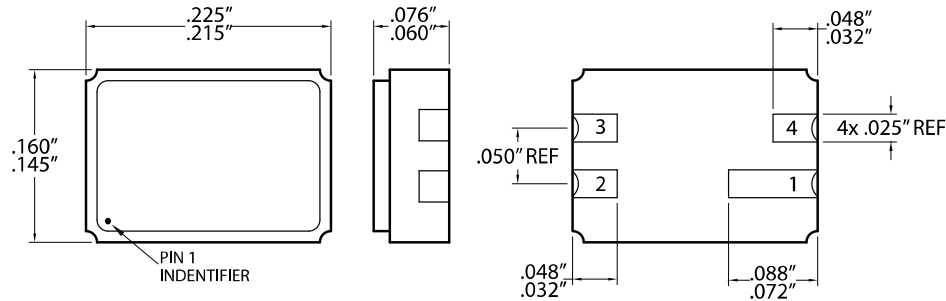
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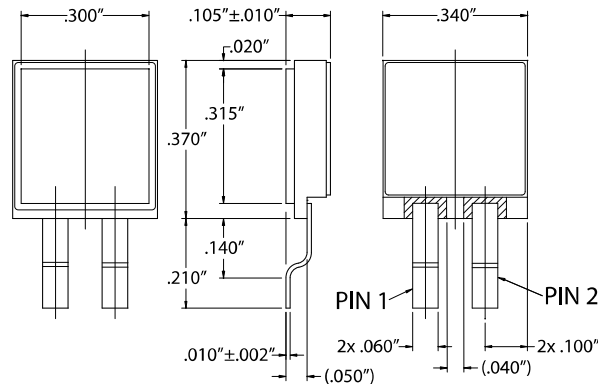
## SFT5095 and SFT5097 Series

**FIGURE 1 – CASE OUTLINES**

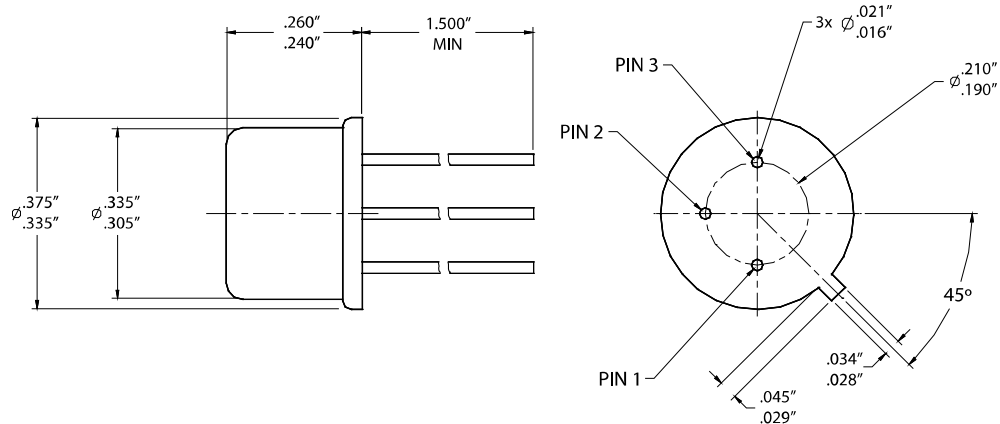
**4 Pin CLCC (-4):**



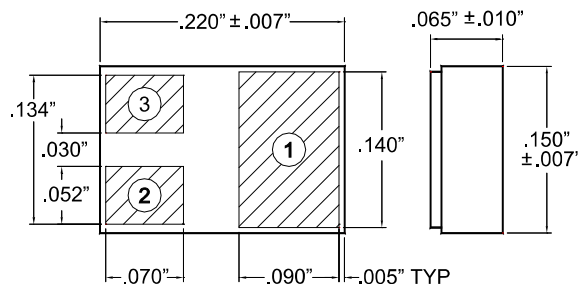
**CERPACK (G):**



**TO-5 (/5):**



**SMD.22 (S.22):**



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