



**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

**SFT5013-4 & SFT5014-4  
 SFT5013/5 & SFT5014/5  
 SFT5013/39 & SFT5014/39**

**0.5 AMP, 800 – 900 Volts  
 NPN Transistor**

**DESIGNER'S DATA SHEET**

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

SFT50

Screening <sup>2/</sup>  
 — = Not Screened  
 TX = TX Level  
 TXV = TXV Level  
 S = S Level

Package  
 /39: TO-39 /5: TO-5 -4: LCC4

Family / Voltage  
 13 = 800V 14 = 900V

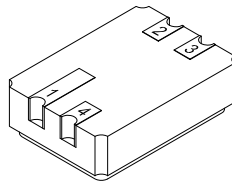
- FEATURES:**
- BV<sub>CER</sub> to 900 volts
  - Low Saturation Voltage
  - Low Leakage at High Temperature
  - High Gain, Low Saturation
  - 200° C Operating, Gold Eutectic Die Attach
  - 2N5010 thru 2N5012 Also Available, Contact Factory
  - TX, TXV, and S-Level Screening Available

Maximum Ratings		Symbol	Value	Units
Collector – Emitter Voltage (R <sub>BE</sub> = 1 kΩ)	5013	V <sub>CER</sub>	800	V
	5014		900	
Collector – Base Voltage	5013	V <sub>CB0</sub>	800	V
	5014		900	
Emitter – Base Voltage		V <sub>EBO</sub>	5	V
Collector – Emitter Breakdown Voltage	5013	BV <sub>CEO</sub>	300	V
	5014		400	
Peak Collector Current		I <sub>C</sub>	0.5	A
Peak Base Current		I <sub>B</sub>	250	mA
Total Device Dissipation @ T <sub>C</sub> = 25° C @ T <sub>A</sub> = 25° C Derate above T <sub>C</sub> = 25° C @ T <sub>C</sub> = 100° C Derate above T <sub>C</sub> = 100° C	-4    /39 & /5	P <sub>D</sub>	1.0	W
			2.0	W
			20	mW/°C
			2.0	W
20	mW/°C			
Operating and Storage Temperature		T <sub>OP</sub> , T <sub>STG</sub>	-65 to +200	°C
Thermal Resistance, Junction to Case	-4 /39 & /5	R <sub>θJC</sub> / R <sub>θJA</sub>	175 / 440	°C/W
		R <sub>θJC</sub>	50 (typ 30)	

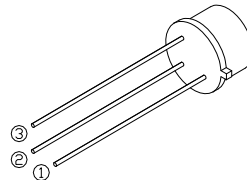
**Notes:**

- 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.
- 4/ Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2%

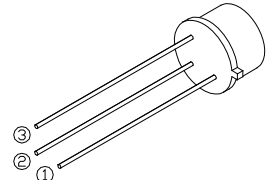
**4 PIN CLCC (LCC4)**



**TO-39**



**TO-5**





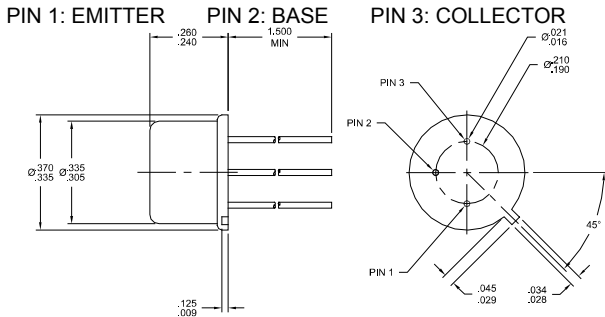
**Solid State Devices, Inc.**

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

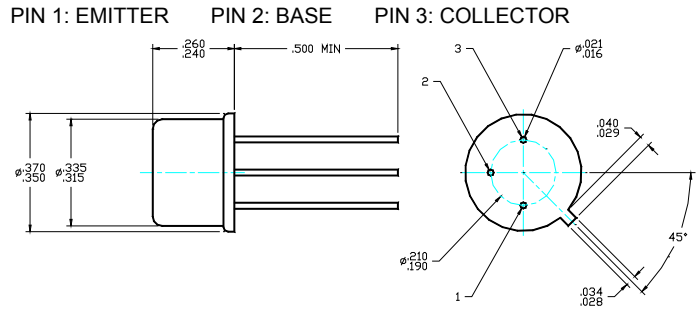
**SFT5013-4 & SFT5014-4**  
**SFT5013/5 & SFT5014/5**  
**SFT5013/39 & SFT5014/39**

Electrical Characteristic <sup>3/</sup>		Symbol	Min	Typ	Max	Units
<b>Collector – Emitter Breakdown Voltage</b> (I <sub>C</sub> = 200 μA <sub>DC</sub> , R <sub>BE</sub> = 1 KΩ)	5013 5014	<b>BV<sub>CER</sub></b>	800 900		—	V
<b>Collector–Base Breakdown Voltage</b> (I <sub>C</sub> = 200 μA <sub>DC</sub> )	5013 5014	<b>BV<sub>CBO</sub></b>	800 900		—	V
<b>Emitter–Base Breakdown Voltage</b> (I <sub>E</sub> = 50 μA <sub>DC</sub> )		<b>BV<sub>EBO</sub></b>	5	11.5	—	V
<b>Collector Cutoff Current</b> (V <sub>CB</sub> = 650 V) (V <sub>CB</sub> = 700 V) (V <sub>CB</sub> = 650 V, T <sub>C</sub> = 100°C) (V <sub>CB</sub> = 700 V, T <sub>C</sub> = 100°C)	5013 5014 5013 5014	<b>I<sub>CBO</sub></b>	— — — —		12 12 100 100	μAdc
<b>Emitter Cutoff Current</b> (V <sub>EB</sub> = 4V)		<b>I<sub>EBO</sub></b>	—	0.001	20	μA
<b>DC Current Gain</b> <sup>4/</sup> (I <sub>C</sub> = 5 mA <sub>DC</sub> , V <sub>CE</sub> = 10 V <sub>DC</sub> ) (I <sub>C</sub> = 20 mA <sub>DC</sub> , V <sub>CE</sub> = 10 V <sub>DC</sub> )		<b>h<sub>FE</sub></b>	10 30	60 70	- 180	—
<b>Collector – Emitter Saturation Voltage</b> <sup>4/</sup> (I <sub>C</sub> = 20 mA <sub>DC</sub> , I <sub>B</sub> = 5 mA <sub>DC</sub> )		<b>V<sub>CE(Sat)</sub></b>	—	0.07	1.6	Vdc
<b>Base – Emitter Saturation Voltage</b> <sup>4/</sup> (I <sub>C</sub> = 20 mA <sub>DC</sub> , I <sub>B</sub> = 5 mA <sub>DC</sub> )		<b>V<sub>BE(Sat)</sub></b>	—	0.73	1.0	Vdc
<b>Current Gain Bandwidth Product</b> (I <sub>C</sub> = 20 mA <sub>DC</sub> , V <sub>CE</sub> = 10 V <sub>DC</sub> , f = 20 MHz)		<b>f<sub>T</sub></b>	20	30	—	MHz
<b>Output Capacitance</b> (V <sub>CB</sub> = 10 V <sub>DC</sub> , I <sub>E</sub> = 0 A <sub>DC</sub> , f = 1.0 MHz)		<b>Cob</b>	—	6.6	30	pF
<b>Delay Time</b> <b>Rise Time</b> <b>Storage Time</b> <b>Fall Time</b>	V <sub>CC</sub> = 125 V <sub>DC</sub> , I <sub>C</sub> = 100 mA <sub>DC</sub> , I <sub>B1</sub> = 20 mA <sub>DC</sub> , I <sub>B2</sub> = 20 mA <sub>DC</sub>	<b>td</b> <b>tr</b> <b>ts</b> <b>tf</b>	— — — —	50 200 2200 400	200 1200 3000 800	nsec

**Case Outline: TO-5**

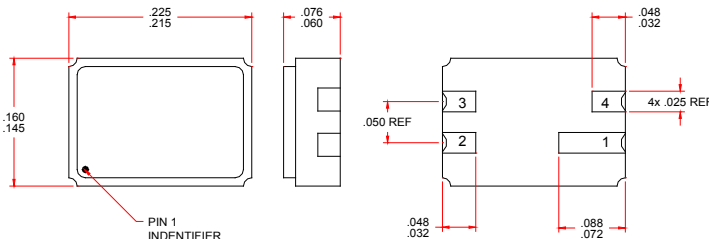


**Case Outline: TO-39**



**Case Outline: 4 PIN CLCC (LCC4)**

PIN 1: COLLECTOR PIN 2: EMITTER PIN 3: BASE PIN 4: N/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 #: XN0031H**

**DOC**