

**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 and SFT5014 Series

## 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**

- 4 = LCC4      G = Cerpack
- /39 = TO-39    S.22 = SMD.22
- /5 = TO-5

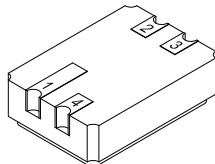
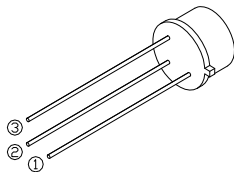
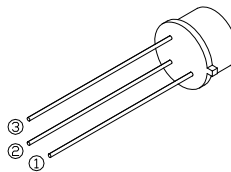
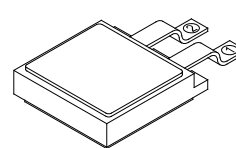
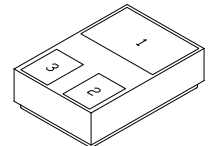
**Family / Voltage**

- 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
- Designed for Complementary Use with SFT5094 and SFT5096
- 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	-4	P <sub>D</sub>	1.0	W	
			2.0	W	
	Derate above T <sub>C</sub> = 25° C		20	mW/°C	
	/39 & /5		2.0	W	
			20	mW/°C	
	G		17.5	W	
S.22		14.5	W		
Operating and Storage Temperature		T <sub>OP</sub> & T <sub>STG</sub>	-65 to +200	°C	
Thermal Resistance, Junction to Case	-4	R <sub>θJC</sub> / R <sub>θJA</sub>	175 / 440	°C/W	
	/39 & /5	R <sub>θJC</sub>	50 (typ 30)		
	G	R <sub>θJC</sub>	10 (typ 5)		
	S.22	R <sub>θJC</sub>	12 (typ 9)		

**4 PIN CLCC (-4)****TO-39 (/39)****TO-5 (/5)****Cerpack (G)****SMD.22 (S.22)**

- Notes:** <sup>1/</sup> For ordering information, price, operating curves, and availability - contact factory.  
<sup>2/</sup> Screening based on MIL-PRF-19500. Screening flows available on request.  
<sup>3/</sup> Unless otherwise specified, maximum ratings/electrical characteristics at 25°C.  
<sup>4/</sup> Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2%

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

**DATA SHEET #: XN0031J****DOC**



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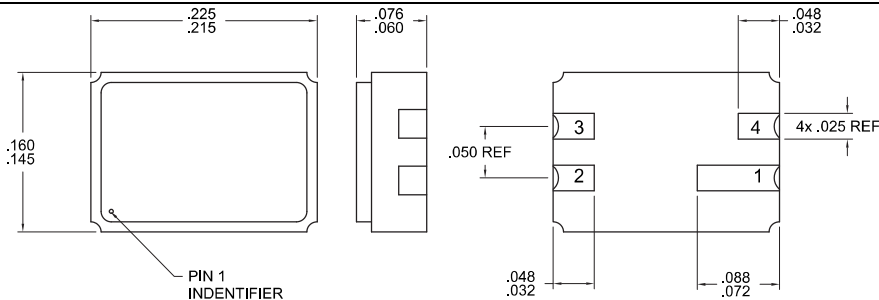
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# SFT5013 and SFT5014 Series

Electrical Characteristic <sup>3/</sup>		Symbol	Min	Typ	Max	Units
<b>Collector – Emitter Breakdown Voltage</b> ( $I_C = 200 \mu A_{DC}$ , $R_{BE} = 1 K\Omega$ )	5013 5014	$BV_{CER}$	800 900	—	—	V
<b>Collector–Base Breakdown Voltage</b> ( $I_C = 200 \mu A_{DC}$ )	5013 5014	$BV_{CBO}$	800 900	—	—	V
<b>Emitter–Base Breakdown Voltage</b> ( $I_E = 50 \mu A_{DC}$ )		$BV_{EBO}$	5	11.5	—	V
<b>Collector Cutoff Current</b> ( $V_{CB} = 650 V$ ) ( $V_{CB} = 700 V$ ) ( $V_{CB} = 650 V$ , $T_C = 100^\circ C$ ) ( $V_{CB} = 700 V$ , $T_C = 100^\circ C$ )	5013 5014 5013 5014	$I_{CBO}$	— — — —	— — — —	12 12 100 100	$\mu A_{DC}$
<b>Emitter Cutoff Current</b> ( $V_{EB} = 4V$ )		$I_{EBO}$	—	0.001	20	$\mu A$
<b>DC Current Gain</b> <sup>4/</sup> ( $I_C = 5 mA_{DC}$ , $V_{CE} = 10 V_{DC}$ ) ( $I_C = 20 mA_{DC}$ , $V_{CE} = 10 V_{DC}$ )		$h_{FE}$	10 30	60 70	- 180	—
<b>Collector – Emitter Saturation Voltage</b> <sup>4/</sup> ( $I_C = 20 mA_{DC}$ , $I_B = 5 mA_{DC}$ )		$V_{CE(Sat)}$	—	0.07	1.6	Vdc
<b>Base – Emitter Saturation Voltage</b> <sup>4/</sup> ( $I_C = 20 mA_{DC}$ , $I_B = 5 mA_{DC}$ )		$V_{BE(Sat)}$	—	0.73	1.0	Vdc
<b>Current Gain Bandwidth Product</b> ( $I_C = 20 mA_{DC}$ , $V_{CE} = 10 V_{DC}$ , $f = 20 MHz$ )		$f_T$	20	30	—	MHz
<b>Output Capacitance</b> ( $V_{CB} = 10 V_{DC}$ , $I_E = 0 A_{DC}$ , $f = 1.0 MHz$ )		$C_{ob}$	—	6.6	30	pF
<b>Delay Time</b> <b>Rise Time</b> <b>Storage Time</b> <b>Fall Time</b>	$V_{CC} = 125 V_{DC}$ , $I_C = 100 mA_{DC}$ , $I_{B1} = 20 mA_{DC}$ , $I_{B2} = 20 mA_{DC}$	$t_d$ $t_r$ $t_s$ $t_f$	— — — —	50 200 2200 400	200 1200 3000 800	nsec

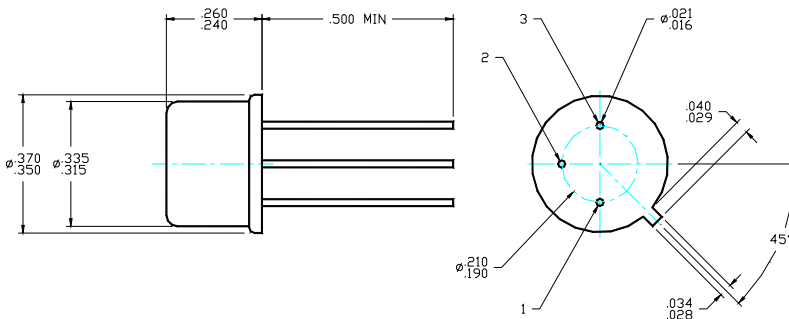
**Case Outline: 4 PIN CLCC (LCC4)**

PIN 1: COLLECTOR PIN 2: EMITTER PIN 3: BASE PIN 4: N/C



**Case Outline: TO-39 (/39)**

PIN 1: EMITTER PIN 2: BASE PIN 3: COLLECTOR



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