



**SOLID STATE DEVICES, INC.**

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**DESIGNER'S DATA SHEET**

**SFT5002/SFT5004  
 SERIES**

**10 AMP  
 150 VOLTS  
 NPN HIGH SPEED  
 POWER TRANSISTOR**

**Part Number /Ordering Information** <sup>1/</sup>  
**SFT5002 J UB TX**  
**SFT5004 J UB TX**

Screening <sup>2/</sup>: \_ = Not Screened  
 TX = TX Level  
 TXV = TXV Level  
 S = Space Level

Lead Bend: <sup>3/</sup> \_ = Straight  
 UB = Up Bend  
 DB = Down Bend

Package: <sup>3/</sup> J = TO-257  
 /59 = TO-59

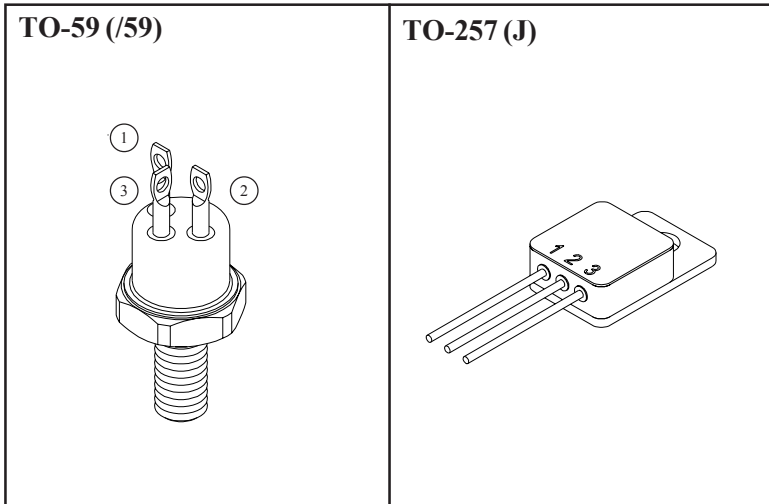
- FEATURES**
- **BV<sub>CEO</sub> 120V min.**
  - **Fast Switching**
  - **High Frequency**
  - **High Linear Gain, Low Saturation Voltage.**
  - **Radiation Tolerant**
  - **200°C Operating, Gold Eutectic Die Attach.**
  - **High Current, High Voltage Version of 2N5002 and 2N5004**

MAXIMUM RATINGS	SYMBOL	VALUE	UNITS
Collector-Base Voltage	V <sub>CBO</sub>	150	Volts
Collector-Emitter Voltage	V <sub>CEO</sub>	120	Volts
Emitter-Base Voltage	V <sub>EBO</sub>	6.0	Volts
Continuous Collector Current	I <sub>C</sub>	10	Amps
Base Current	I <sub>B</sub>	2	Amps
Operating and Storage Temperature	T <sub>J</sub> , T <sub>STG</sub>	-65 to +200	°C
Total Device Dissipation @ T <sub>C</sub> # 25°C Derate above 25°C	P <sub>D</sub>	50 0.33	W W/°C
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	3.0	°C/W

**Available Part Numbers:**

SFT5002/59	SFT5004/59
SFT5002J	SFT5004J
SFT5002JUB	SFT5004JUB
SFT5002JDB	SFT5004JDB

PIN ASSIGNMENT				
CODE	FUNCTION	PIN 1	PIN 2	PIN 3
-	Normal	Collector	Emitter	Base



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

**DATA SHEET #: TR0020C**

# SFT5002/SFT5004 SERIES



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ELECTRICAL CHARACTERISTICS <sup>4/</sup>		SYMBOL	MIN	MAX	UNITS
Collector-Emitter Breakdown Voltage ( $I_C = 100\text{mA}$ )		$BV_{CEO}$	120	-	$V_{DC}$
Collector-Base Sustaining Voltage ( $I_C = 200\mu\text{A}$ )		$BV_{CBO}$	150	-	$V_{DC}$
Emitter-Base Sustaining Voltage ( $I_E = 200\mu\text{A}$ )		$BV_{EBO}$	6	-	$V_{DC}$
Collector Cutoff Current ( $V_{CE} = 60V_{DC}$ , $V_{BE} = 2V_{DC}$ , $T_C = 150^\circ\text{C}$ ) ( $V_{CE} = 40V_{DC}$ )		$I_{CEV}$ $I_{CEO}$	- -	500 50	$\mu\text{ADC}$ $\mu\text{ADC}$
Collector Cutoff Current $V_{CE} = 60V_{DC}$ $V_{CE} = 100V_{DC}$		$I_{CES}$	- -	1.0 1.0	$\mu\text{ADC}$ $\text{mADC}$
Emitter Cutoff Current $V_{EB} = 5V_{DC}$ $V_{EB} = 6V_{DC}$		$I_{EBO}$	- -	1.0 1.0	$\mu\text{ADC}$ $\text{mADC}$
DC Current Gain* (SFT5002) $I_C = 50\text{mADC}$ , $V_{CE} = 5V_{DC}$ $I_C = 2.5\text{ADC}$ , $V_{CE} = 5V_{DC}$ (SFT5004) $I_C = 5.0\text{ADC}$ , $V_{CE} = 5V_{DC}$ $I_C = 10\text{ADC}$ , $V_{CE} = 5V_{DC}$ $I_C = 50\text{mADC}$ , $V_{CE} = 5V_{DC}$ $I_C = 2.5\text{ADC}$ , $V_{CE} = 5V_{DC}$ $I_C = 5.0\text{ADC}$ , $V_{CE} = 5V_{DC}$ $I_C = 10\text{ADC}$ , $V_{CE} = 5V_{DC}$		$H_{FE}$	20 30 20 15 50 70 40 22	150 200	
Collector-Emitter Saturation Voltage * $I_C = 2.5\text{ADC}$ , $I_B = 250\text{mADC}$ $I_C = 5.0\text{ADC}$ , $I_B = 500\text{mADC}$		$V_{CE(SAT)}$	- -	0.75 1.5	$V_{DC}$
Base-Emitter Saturation Voltage * $I_C = 2.5\text{ADC}$ , $I_B = 250\text{mADC}$ $I_C = 5.0\text{ADC}$ , $I_B = 500\text{mADC}$		$V_{BE(SAT)}$	-	1.45 2.2	$V_{DC}$
Current Gain Bandwidth Product ( $I_C = 500\text{mADC}$ , $V_{CE} = 5V_{DC}$ , $f = 10\text{MHz}$ )		$f_T$	60 70	- -	MHz
Output Capacitance ( $V_{CB} = 10V_{DC}$ , $I_E = 0$ , $f = 1\text{MHz}$ )		$C_{ob}$	-	250	pF
On Time	$V_{CC} = 30V_{DC}$ , $I_{B1} = I_{B2} = 500\text{mADC}$ , $I_C = 5\text{ADC}$ , $V_{BE(off)} = 3.7V_{DC}$ , $R_L = 6\ \Omega$	$t_{on}$	-	500	ns
Off Time		$t_{off}$	-	1.3	$\mu\text{s}$

## NOTES:

- 1/ For Ordering Information, Price, and Availability Contact Factory.
  - 2/ Screening per MIL-PRF-19500.
  - 3/ For Package Outlines Contact Factory.
  - 4/  $T_C = 25^\circ\text{C}$ , Unless Otherwise Specified.
- \* Pulse Test: Pulse Width = 300us, Duty Cycle = 2%

## Package Outline

Part Number	Document
SFT5002/59/SFT5004/59	60-0149-059
SFT5002J/SFT5004J	60-0149-504
SFT5002JDB/SFT5004JDB	60-0149-504
SFT5002JUB/SFT5004JUB	60-0149-504