



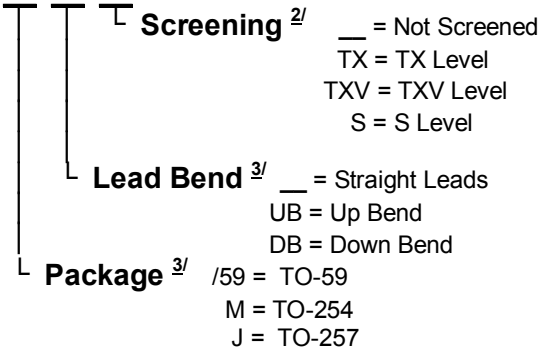
**Solid State Devices, Inc.**

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**DESIGNER'S DATA SHEET**

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

SFT5002  
 SFT5004



**SFT5002/SFT5004  
 Series**

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

**Features:**

- BV<sub>CEO</sub> 120V min.
- Fast Switching
- High Frequency
- High Linear Gain, Low Saturation Voltage
- Radiation Tolerant
- 200°C Operating Temperature
- High Current, High Voltage Version of 2N5002 and 2N5004
- TX, TXV, S-Level Screening Available - Consult Factory.

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
Total Device Dissipation @ T <sub>c</sub> = 25°C Derate Above 25°C	P <sub>D</sub>	50 0.33	Watts W/°C
Operating & Storage Temperature	T <sub>J</sub> & T <sub>STG</sub>	-65 to +200	°C
Maximum Thermal Resistance (Junction to Case)	R <sub>θJC</sub>	3.0	°C/W

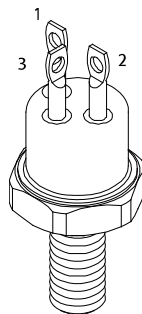
Available Part Numbers:

SFT5002/59	SFT5004J	SFT5002MDB
SFT5004/59	SFT5004JUB	SFT5004M
SFT5002J	SFT5004JDB	SFT5004MUB
SFT5002JUB	SFT5002M	SFT5004MDB
SFT5002JDB	SFT5002MUB	

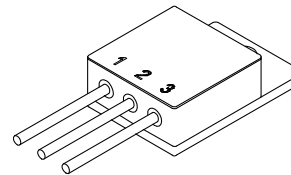
**PIN ASSIGNMENT**

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

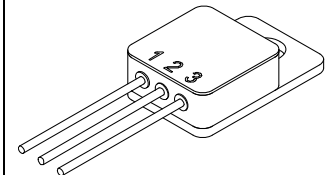
**TO-59 (/59)**



**TO-254 (M)**



**TO-257 (J)**



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

**DATA SHEET #: TR0020D**

**DOC**



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**SFT5002/SFT5004  
 Series**

Electrical Characteristics <sup>4/</sup>		Symbol	Min	Max	Units
Collector – Emitter Blocking Voltage	(I <sub>C</sub> = 100mA)	BV <sub>CEO</sub>	120	—	Volts
Collector – Base Sustaining Voltage	(I <sub>C</sub> = 200μA)	BV <sub>CBO</sub>	150	—	Volts
Emitter – Base Sustaining Voltage	(I <sub>E</sub> = 200μA)	BV <sub>EBO</sub>	6	—	Volts
Collector Cutoff Current	(V <sub>CE</sub> = 40V) (V <sub>CB</sub> = 60V, V <sub>BE</sub> = 2V, T <sub>C</sub> = 150°C)	I <sub>CEO</sub>	—	50	μA
		I <sub>CEV</sub>	—	500	μA
Collector Cutoff Current	(V <sub>CE</sub> = 60V) (V <sub>CE</sub> = 100V)	I <sub>CES</sub>	—	1.0	μA
		I <sub>CES</sub>	—	1.0	μA
Emitter Cutoff Current	(V <sub>EB</sub> = 5V) (V <sub>EB</sub> = 6V)	I <sub>EBO</sub>	—	1.0	μA
		I <sub>EBO</sub>	—	1.0	mA
DC Current Gain *	SFT5002 - (I <sub>C</sub> = 50mA, V <sub>CE</sub> = 5V) (I <sub>C</sub> = 2.5A, V <sub>CE</sub> = 5V) (I <sub>C</sub> = 5.0 A, V <sub>CE</sub> = 5V) SFT5004 - (I <sub>C</sub> = 10A, V <sub>CE</sub> = 5V) (I <sub>C</sub> = 50mA, V <sub>CE</sub> = 5V) (I <sub>C</sub> = 2.5A, V <sub>CE</sub> = 5V) (I <sub>C</sub> = 5.0A, V <sub>CE</sub> = 5V) (I <sub>C</sub> = 10A, V <sub>CE</sub> = 5V)	h <sub>FE</sub>	20	150	
			30		
			20		
			15	200	
			50		
			70		
			40		
22					
Collector-Emitter Saturation Voltage *	(I <sub>C</sub> = 2.5A, I <sub>B</sub> = 250mA) (I <sub>C</sub> = 5.0A, I <sub>B</sub> = 500mA)	V <sub>CE(SAT)</sub>	—	0.75 1.5	Volts
Base-Emitter Saturation Voltage *	(I <sub>C</sub> = 2.5A, I <sub>B</sub> = 250mA) (I <sub>C</sub> = 5.0 A, I <sub>B</sub> = 500mA)	V <sub>BE(SAT)</sub>	—	1.45 2.2	Volts
Current Gain – Bandwidth Product	SFT5002 - V <sub>CE</sub> = 5V, I <sub>C</sub> = 0.5A, f = 10MHz SFT5004 - V <sub>CE</sub> = 5V, I <sub>C</sub> = 0.5A, f = 10MHz	f <sub>T</sub>	60 70	—	MHz
Output Capacitance	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1.0MHz	C <sub>ob</sub>	—	250	pF
On Time	(V <sub>CC</sub> = 30 V, I <sub>C</sub> = 5.0 A, V <sub>BE(off)</sub> = 3.7 V, I <sub>B1</sub> = I <sub>B2</sub> = 500 mA, R <sub>L</sub> = 6Ω)	t <sub>(on)</sub>	—	500	ns
Off Time		t <sub>(off)</sub>	—	1.3	ns

**NOTES:**

- \* Pulse Test: Pulse Width = 300μsec, Duty Cycle = 2%
- 1/ For Ordering Information, Price, and Availability Contact Factory.
- 2/ Screening per MIL-PRF-19500
- 3/ For Package Outlines Contact Factory.
- 4/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

PACKAGE OUTLINE	
Part Number	Document
SFT5002/59 and SFT5004/59	60-0149-059
SFT5002J and SFT5004J	60-0149-504
SFT5002M and SFT5004M	60-0149-503

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