



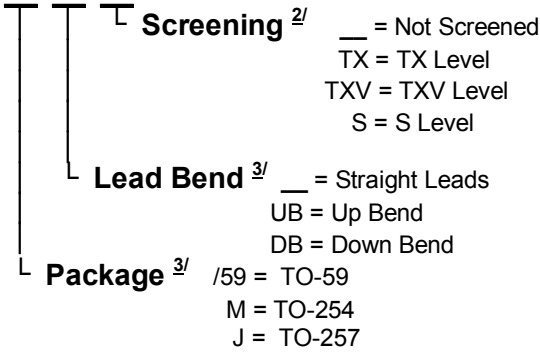
Solid State Devices, Inc.

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 ssdi@ssdi-power.com * www.ssdi-power.com

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFT5002
 SFT5004



**SFT5002/SFT5004
 Series**

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

Features:

- BV_{CEO} 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 _{CBO} | 150 | Volts |
| Collector – Emitter Voltage | V _{CEO} | 120 | Volts |
| Emitter – Base Voltage | V _{EBO} | 6.0 | Volts |
| Continuous Collector Current | I _C | 10 | Amps |
| Base Current | I _B | 2 | Amps |
| Total Device Dissipation @ T _c = 25°C Derate Above 25°C | P _D | 50 0.33 | Watts W/°C |
| Operating & Storage Temperature | T _J & T _{STG} | -65 to +200 | °C |
| Maximum Thermal Resistance (Junction to Case) | R _{θJC} | 3.0 | °C/W |

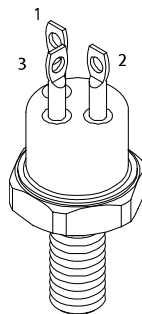
Available Part Numbers:

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

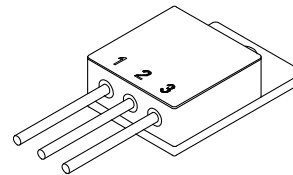
PIN ASSIGNMENT

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

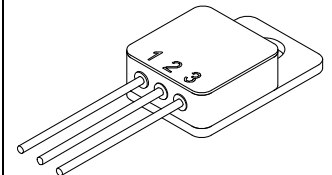
TO-59 (/59)



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