



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

SFT5152 and SFT5154

**10 AMP
 POWER TRANSISTORS
 SILICON NPN
 100 VOLTS
 10 WATTS**

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFT5152 — — —
 SFT5154 — — —

Screening ^{2/}
 — = Not Screened
 TX = TX Level
 TXV = TXV Level
 S = S Level

Lead Bend Options
 — = Straight Leads
 UB = Up Bend
 DB = Down Bend

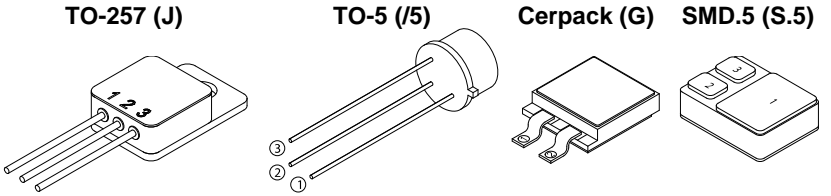
Package
 J = TO-257
 /5 = TO-5
 G = Cerpack
 S.5 = SMD.5

- Features:**
- Radiation Tolerant
 - Fast Switching, 500 nsec max t_{on}
 - High Frequency, Typical $f_t = 85$ MHz
 - BVCEO 80 Volts Min
 - High Linear Gain, Low Saturation Voltage
 - 200°C Operating Temperature
 - Designed for Complementary Use with SFT5151 and SFT5153
 - Replacement for 2N5152 and 2N5154
 - TX, TXV, S-Level Screening Available^{2/} - Consult Factory

Maximum Ratings	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	80	V
Collector – Base Voltage	V_{CBO}	100	V
Emitter – Base Voltage	V_{EBO}	5.5	V
Collector Current	I_C	10	A
Base Current	I_B	2.5	A
Total Device Dissipation @ TC = 50°C Derate above 50°C	P_D	10 66.6	W mW/°C
Operating & Storage Temperature	$T_{OP} \& T_{STG}$	-65 to +200	°C
Maximum Thermal Resistance Junction to Case	TO-257 (J) TO-5 (/5) Cerpack (G) SMD.5 (S.5)	$R_{\theta JC}$	5 10 3 3
			°C/W

NOTES:
 *Pulse Test: Pulse Width = 300 μ sec, Duty Cycle = 2%
 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, all electrical characteristics @ 25°C.

Available parts:
 SFT5152J, SFT5152/5, SFT5152G, SFT5152S.5
 SFT5154J, SFT5154/5, SFT5154G, SFT5154S.5





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Electrical Characteristic ^{3/}		Symbol	Min	Max	Unit	
Collector – Emitter Breakdown Voltage*		$I_C = 100 \text{ mA}$	BV_{CEO}	80	—	V
Collector – Base Breakdown Voltage		$I_C = 200 \mu\text{A}$	BV_{CBO}	100	—	V
Emitter – Base Breakdown Voltage		$I_E = 200 \mu\text{A}$	BV_{EBO}	5.5	—	V
Collector – Cutoff Current		$V_{CE} = 40 \text{ V}$	I_{CEO}	—	50	μA
Collector – Cutoff Current		$V_{CE} = 60 \text{ V}, V_{BE} = 2 \text{ V}, T_C = 150^\circ\text{C}$	I_{CEV}	—	25	μA
Collector – Cutoff Current		$V_{CE} = 60 \text{ V}$ $V_{CE} = 100 \text{ V}$	I_{CES}	— —	1.0 1.0	μA mA
Emitter – Cutoff Current		$V_{EB} = 4 \text{ V}$ $V_{EB} = 5.5 \text{ V}$	I_{EBO}	— —	1.0 1.0	μA mA
DC Current Gain*	SFT5152	$V_{CE} = 5 \text{ V}, I_C = 50 \text{ mA}$	h_{FE}	20	—	—
		$V_{CE} = 5 \text{ V}, I_C = 2.5 \text{ A}$		30	250	
	$V_{CE} = 5 \text{ V}, I_C = 2.5 \text{ A}, T_A = -55^\circ\text{C}$	15		—		
	$V_{CE} = 5 \text{ V}, I_C = 5 \text{ A}$	20		—		
SFT5154	$V_{CE} = 5 \text{ V}, I_C = 50 \text{ mA}$	50	—			
	$V_{CE} = 5 \text{ V}, I_C = 2.5 \text{ A}$	70	250			
	$V_{CE} = 5 \text{ V}, I_C = 2.5 \text{ A}, T_A = -55^\circ\text{C}$	25	—			
	$V_{CE} = 5 \text{ V}, I_C = 5 \text{ A}$	40	—			
Collector – Emitter Saturation Voltage*		$I_C = 2.5 \text{ A}, I_B = 250 \text{ mA}$ $I_C = 5.0 \text{ A}, I_B = 500 \text{ mA}$	$V_{CE(Sat)}$	— —	0.75 1.50	V
Base – Emitter Saturation Voltage*		$I_C = 2.5 \text{ A}, I_B = 250 \text{ mA}$ $I_C = 5.0 \text{ A}, I_B = 500 \text{ mA}$	$V_{BE(Sat)}$	— —	1.45 2.20	V
Common Emitter Small Signal Gain	$V_{CE} = 5 \text{ V}, I_C = 0.1 \text{ A}, f = 1 \text{ kHz}$	SFT5152 SFT5154	h_{fe}	20 50	—	—
Current Gain Bandwidth Product	$V_{CE} = 5 \text{ V}, I_C = 0.5 \text{ A}, f = 10 \text{ MHz}$	SFT5152 SFT5154	f_T	60 70	—	MHz
Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0 \text{ A}, f = 1 \text{ MHz}$		C_{ob}	—	250	pF
Base – Emitter Voltage*	$V_{CE} = 5 \text{ V}, I_C = 2.5 \text{ A}$		$V_{BE(ON)}$	—	1.45	V
Safe Operating Area	$V_{CE} = 5 \text{ V}, I_C = 2.0 \text{ A}, 1 \text{ sec}$ $V_{CE} = 32 \text{ V}, I_C = 310 \text{ mA}, 1 \text{ sec}$ $V_{CE} = 80 \text{ V}, I_C = 12.5 \text{ mA}, 1 \text{ sec}$		SOA_1 SOA_2 SOA_3	— — —	— — —	— — —
ON Time	$V_{CC} = 30 \text{ V}, V_{EB(off)} = 3.7 \text{ V}$ $I_C = 5 \text{ A}$		t_{ON}	—	500	nsec
OFF Time			t_{OFF}	—	1500	
Storage Time	$V_{EB(off)} = 3.7 \text{ V}, I_{B1} = I_{B2} = 0.5 \text{ A},$ $R_L = 6 \text{ Ohms}$		t_s	—	1.4	μsec
Fall Time			t_f	—	0.5	

NOTES: *Pulse Test: Pulse Width = 300 μsec , Duty Cycle = 2%

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TO-257 (J)

PIN ASSIGNMENT

Package	Pin 1	Pin 2	Pin 3
TO-257	Collector	Emitter	Base

TO-5 (I5)

PIN ASSIGNMENT

Package	Pin 1	Pin 2	Pin 3 (Case)
TO-5	Emitter	Base	Collector

Cerpack (G)

PIN ASSIGNMENT

Package	Pin 1	Pin 2	Tab
Cerpack	Emitter	Base	Collector

SMD.5 (S.5)

PIN ASSIGNMENT

Package	Pin 1	Pin 2	Pin 3
SMD.5	Collector	Emitter	Base