Solid State Devices, Inc.
14701 Firestone Blvd * La Mirada, Ca 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
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SFT10015

50 AMP NPN DARLINGTON TRANSISTOR 400 VOLTS

DESIGNER'S DATA SHEET

Part Number / Ordering Information [1/]

SFT10015 __ __

- **Screening** [2/]
  - __ = Not Screened
  - TX = TX Level
  - TXV = TXV Level
  - S = S Level
- **Package**
  - /3 = TO-3

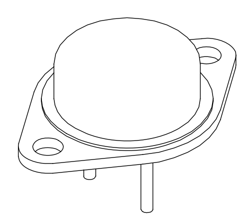
Features:
- BV_{CEO} 400 Volts
- Low Saturation Voltage
- 200°C Operating Temperature
- Hermetically Sealed, Isolated Package
- TX, TXV, S-Level Screening Available. Consult Factory.

Application Notes:
SFT10015 Darlington Transistor is a direct replacement of Motorola MJ10015. It is designed for high voltage, high speed, power switching in inductive circuits where fall time is critical. It is particularly suited for line operated switchmode applications such as:
- Switching Regulators
- Inverters
- Solenoid and Relay Drives
- Motor Controls
- Deflection Circuits

Maximum Ratings		Symbol	Value	Units
Collector – Emitter Voltage		V_{CEO}	400	**Volts**
Collector – Emitter Voltage		V_{CEV}	600	**Volts**
Emitter – Base Voltage		V_{EB}	8	**Volts**
Collector Current	Continuous Peak	I_C I_{CM}	50 75	**Amps**
Base Current	Continuous Peak	I_B I_{BM}	10 15	**Amps**
Total Power Dissipation **Derate above 50ºC**	@ T_C = 25ºC @ T_C = 100ºC	P_D	250 143 1.43	**Watts** **Watts** **W/ºC**
Operating & Storage Temperature		T_J & T_{STG}	-65 to +200	**ºC**
Maximum Thermal Resistance (Junction to Case)		$R_{\theta JC}$	0.7	**ºC/W**

NOTES:
1/ For ordering information, price, operating curves, and availability - contact factory.
2/ Screening based on MIL-PRF-19500. Screening flows available on request.

TO-3(/3)



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Electrical Characteristics, T_c= 25 ºC		Symbol	Min	Typ	Max	Units
Collector – Emitter Sustaining Voltage (I_C = 100 mA, I_B = 0, V_{CLAMP} = 400 V)		$V_{CEO(sus)}$	400	—	—	Volts
Collector Cutoff Current (V_{CEV} = 600 V, $V_{BE(off)}$ = 1.5V)		I_{CEV}	—	—	0.25	mA
Emitter Cutoff Current (V_{EB} = 2V, I_C = 0)		I_{EBO}	—	160	350	mA
DC Current Gain* (V_{CE} = 5V)	I_C = 10 A I_C = 20 A I_C = 40 A	H_{FE}	— 25 10	185 125 50	— — —	
Collector-Emitter Saturation Voltage*	I_C = 20 A, I_B = 1 A I_C = 50 A, I_B = 10 A	$V_{CE\ (SAT)}$	— —	1.3 2.1	2.2 5.0	Volts
Base-Emitter Saturation Voltage*	I_C = 20A, I_B = 1A, T_C = 25ºC	$V_{BE\ (SAT)}$	—	2.05	2.75	Volts
Diode Forward Voltage	I_F = 20 A	V_F	—	2.0	5.0	Volts
Safe Operating Area, DC (1 sec)	5V, 50A 20V, 8.75A 100V, 0.3A	SOA_1 SOA_2 SOA_3	—	—	—	
Output Capacitance (V_{CB} = 10V, I_E = 0A, f = 1MHz)		C_{ob}	—	250	750	pF
Delay Time	**Switching Times, Resistive Load** V_{CC} = 250 V, I_C = 20 A, I_{B1} = 1 A, $V_{BE\ (off)}$ = 5 V, tp = 25µs, Duty Cycle ≤ 2%	$t_{(on)}$ t_d	—	0.15	0.3	µs
Rise Time		$t_{(on)}$ t_r	—	1.0	1.2	µs
Storage Time		$t_{(off)}$ t_s	—	2.2	2.5	µs
Fall Time		$t_{(off)}$ t_f	—	0.95	1.2	µs
Storage Time	**Switching Times, Inductive Load, Clamped** I_C = 20 A(pk), V_{CLAMP} = 250 V, I_{B1} = 1 A, $V_{BE\ (off)}$ = 5 V, T_C = 25ºC	t_{sv}	—	12	—	µs
Crossover Time		t_c	—	7.3	—	µs

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

CASE OUTLINE: TO-3

Pin Out:
Case – Collector
1 – Base
2 – Emitter