PRELIMINARY

SOLID STATE DEVICES, INC.
14830 Valley View Blvd * La Mirada, Ca 90638
Phone: (562) 404-7855 * Fax: (562) 404-1773

SFT10000/3

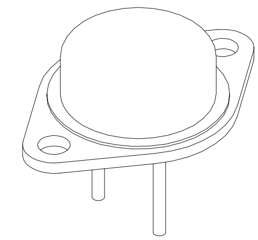
DESIGNER'S DATA SHEET

20 AMP 350 VOLTS NPN DARLINGTON TRANSISTOR

APPLICATION NOTES:
SFT10000 Darlington Transistor is direct replacement of Motorolla MJ 10000. 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:

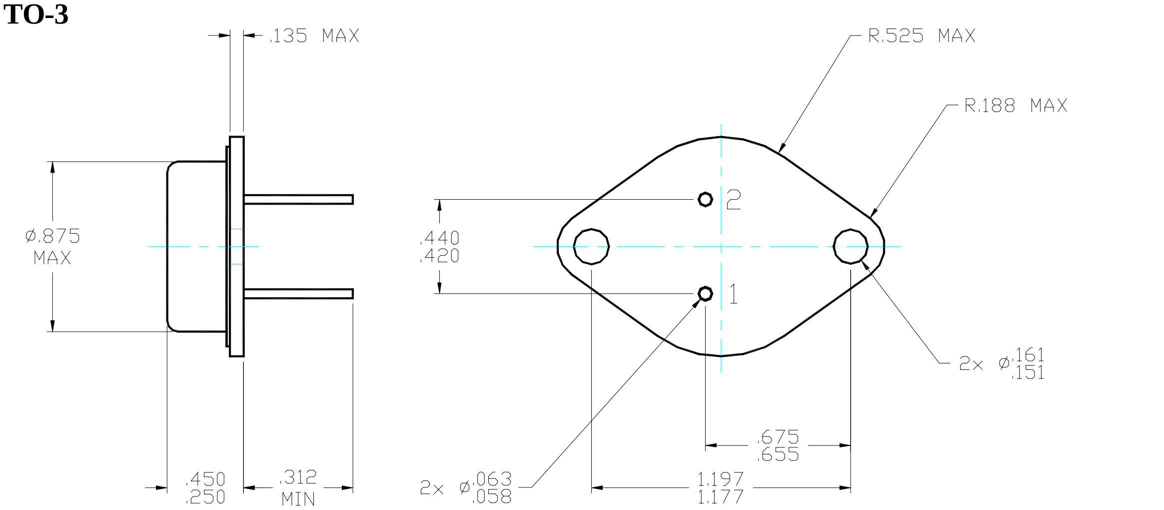
- **Switching Regulators**
- **Inverters**
- **Solenoid and Relay Drives**
- **Motor Controls**
- **Deflection Cirsuits.**

TO-3



MAXIMUM RATINGS		SYMBOL	VALUE	UNITS
Collector-Emitter Voltage		V_{CEO}	350	Volts
Collector-Emitter Voltage		V_{CEV}	450	Volts
Emitter-Base Voltage		V_{EB}	8	Volts
Collector Current	Continuous Peak	I_C I_{CM}	20 30	Amps
Base Current		I_B	2.5	Amps
Total Device Dissipation Derate above 25°C	@ T_C = 25°C @ T_C = 100°C	P_D	175 100 1	W W W/°C
Operating and Storage Temperature		T_J, T_{STG}	-65 to +200	°C
Thermal Resistance, Junction to Case		$R_{\theta JC}$	1	°C/W

CASE OUTLINE: TO-3
Pin Out:
1 - Collector
2 - Base
3 - Emmiter



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

DATA SHEET #: TR0011A

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ELECTRICAL CHARACTERISTICS		SYMBOL	MIN	MAX	UNITS
Collector-Emitter Sustaining Voltage (I_C = 250mA, I_B = 0, V_{CLAMP} = Rated V_{CEO})		$V_{CEO(sus)}$	350	-	V_{DC}
Collector-Emitter Sustaining Voltage (V_{CLAMP} = Rated V_{CEX}, T_C = 100°C)	I_C = 2 A I_C = 10 A	$V_{CEX(sus)}$	400 275	- -	V_{DC}
Collector Cutoff Current (V_{CE} = Rated Value, $V_{BE(off)}$ = 1.5V_{DC})	T_C = 25°C T_C = 100°C	I_{CBO}	- -	0.25 5.0	mA_{DC}
Collector Cutoff Current (V_{CEV} = Rated V_{CEV}, R_{BE} = 50Ω, T_C = 100°C)		I_{CEV}	-	5	mA_{DC}
Emitter Cutoff Current (V_{EB} = 8V_{DC}, I_C = 0)		I_{EBO}	-	150	mA_{DC}
DC Current Gain* (V_{CE} = 5V_{DC})	I_C = 5A_{DC} I_C = 10A_{DC}	H_{FE}	50 40	600 400	
Collector-Emitter Saturation Voltage*	I_C = 10A_{DC}, I_B = 400mA_{DC}, T_C = 25°C I_C = 20A_{DC}, I_B = 1A_{DC}, T_C = 25°C I_C = 10A_{DC}, I_B = 400mA_{DC}, T_C = 100°C	$V_{CE(SAT)}$	- - -	1.9 3.0 2.0	V_{DC}
Base-Emitter Saturation Voltage* (I_C = 10A_{DC}, I_B = 400mA_{DC})	T_C = 25°C T_C = 100°C	$V_{BE\ (SAT)}$	- -	2.5 2.5	V_{DC}
Diode Forward Voltage (I_F = 10A_{DC})		V_F	-	5.0	V_{DC}
Small Signal Current Gain (I_C = 1A_{DC}, V_{CE} = 10V_{DC}, f = 1MHz)		H_{FE}	10	-	
Output Capacitance (V_{CB}= 30V_{DC}, I_E = 0A_{DC}, f = 2.0MHz)		C_{ob}	100	325	pf
Delay Time	V_{CC} = 250V_{DC}, I_C = 10A_{DC}, I_{B1} = 400mA_{DC}, $V_{BE(off)}$ = 5V_{DC} t_P = 50µsec, Duty Cycle ≤ 2%	t_d	-	0.2	µs
Rise Time		t_r	-	0.6	µs
Storage Time		t_s	-	3.5	µs
Fall Time		t_f	-	2.4	µs
Storage Time	I_C = 10A(pk), V_{CLAMP} = Rated V_{CEX}, I_{B1} = 400mA, $V_{BE(off)}$ = 5V_{DC}, T_C = 100°C	t_{sv}	-	5.5	µs
Crossover Time		t_c	-	3.7	µs

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