Solid State Devices, Inc.
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SFT6678 SERIES

DESIGNER'S DATA SHEET

Part Number / Ordering Information [1/]

SFT6678 M __ TX

+ **Screening** [2/] __ = Not Screen
TX = TX Level
TXV = TXV Level
S = S Level

+ **Lead Bend** [3/ 4/] _ = Straight Leads
UB = Up Bend
DB = Down Bend

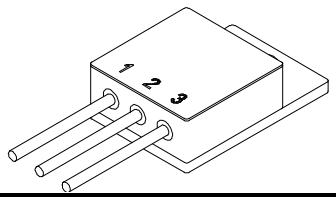
+ **Package** [3/] M = TO-254
Z = TO-254Z
/3 = TO-3

15 AMPS
400 Volts
NPN High Speed
Power Transistor

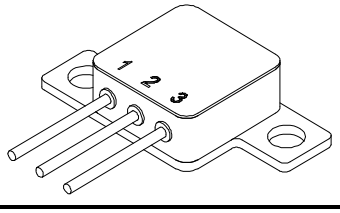
Application Notes:
- **Replaces Industry Standard 2N6678**
- **Designed for High Voltage, High Speed, Power Switching Applications Such as:**
- **Off-Line Supplies**
- **Converter Circuits**
- **Pulse Width Modulated Regulators**
- **Motor Controls**
- **Deflection Circuits**

Maximum Ratings	Symbol	Value	Units
Collector – Emitter Voltage	V_{CEO}	400	**Volts**
Collector – Base Voltage	V_{CBO}	650	**Volts**
Emitter – Base Voltage	V_{EBO}	8.0	**Volts**
Continuous Collector Current	I_C	15	**Amps**
Continuous Base Current	I_B	5.0	**Amps**
Operating and Storage Temperature	T_J, T_{STG}	-65 to +200	**°C**
Total Power Dissipation @ T_C=25°C **Derate above 25°C**	P_D	175 1.0	**W** **W/°C**
Maximum Thermal Resistance (Junction to Case)	$R_{\theta JC}$	1.0	**°C/W**

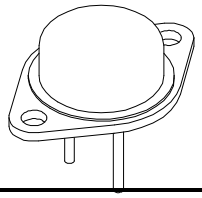
TO-254 (M)



TO-254 (Z)



TO-3 (/3)



Available Part Numbers:

SFT6678/3	**SFT6678M**	**SFT6678Z**
	SFT6678MDB	**SFT6678ZDB**
	SFT6678MUB	**SFT6678ZUB**

PIN ASSIGNMENT (Standard)

Package	Collector	Emitter	Base
TO-3 (/3)	Case	Pin 2	Pin 3
TO-254 (M)	Pin 1	Pin 2	Pin 3
TO-254 (Z)	Pin 1	Pin 2	Pin 3

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

DATA SHEET #: TR0019C DOC

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Electrical Characteristics		Symbol	Min	Max	Units
Collector Cutoff Current V_{CE}=650V_{DC}, V_{BE}(off) =1.5V_{DC}	T_C=25°C T_C=100°C	I_{CEV}	- -	0.1 1.0	mA
Collector – Base Leakage Current	V_{CB} =650V	I_{CBO}	-	1	mA
Emitter Cutoff Current	(V_{EB} = 8V, I_C = 0)	I_{EBO}	-	2	mA
Collector-Emitter Sustaining Voltage (I_C = 200mA, I_B = 0)		$V_{CEO(sus)}$	400	-	V_{DC}
DC Current Gain *	VCE=3V, 1C=15A, TA= 25°C VCE=3V, 1C=1A, TA= 25°C VCE=3V, 1C=15A,TA= -55°C	H_{FE1} H_{FE2} H_{FE3}	8 15 4	- - -	
Base-Emitter Saturation Voltage * (IC = 15A_{DC}, IB = 3A_{DC})		V_{BE} (SAT)	-	1.5	V_{DC}
Collector-Emitter Saturation Voltage * (IC = 15A, IB = 3A)	(TC = 25°C) (TC = 100°C)	V_{CE} (SAT)		1.5 2.0	V_{DC}
Second Breakdown (t = 1.0 sec, T_C = 25°C)	(VCC = 11.7V) (VCC = 20V) (VCC = 100V)	$I_{S/b1}$ $I_{S/b2}$ $I_{S/b3}$	15.0 8.75 0.3	- - -	A A A
Reverse Bias Second Breakdown (V_{BE} (off) = 1 to 6V, V_{CLAMP} = 450V, $T_C \leq 100$°C)		**RBSOA**	15.0	-	A
Current Gain (I_C = 1A, V_{CE} = 10V_{DC}, f = 5MHz)		$\|h_{FE}\|$	3	10	
Output Capacitance (V_{CB} = 10V_{DC}, f = 0.1MHz)		C_{ob}	150	500	pF
Delay Time **Storage Time** **Rise Time** **Fall Time**	(V_{CC} = 200V_{DC}, I_C = 15A_{DC}, I_{B1} = I_{B2} = 3A_{DC}, t_P = 50 µsec, Duty Cycle ≤ 2% V_B = 6V_{DC}, R_L = 13.5Ω)	t_d t_s t_r t_f	 — —	0.1 0.6 2.5 0.5	µsec
Cross Over Time (I_C = 15 A(pk), V_{CLAMP} = 450V, I_{B1} = 3 A, $V_{BE(off)}$ = 6V)		t_c	—	0.5	µsec

NOTES:

* Pulse Test: Pulse Width = 300 µs, 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/ Up and Down Bend Configurations Available for M and Z (TO-254 and TO-254Z) Packages Only.

5/ All Electrical Characteristics @ 25°C, Unless Otherwise Specified.