



Solid State Devices, Inc.

14830 Valley View Blvd * La Mirada, Ca 90638

Phone: (562) 404-7855 * Fax: (562) 404-1773

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

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

SFT6678 SERIES

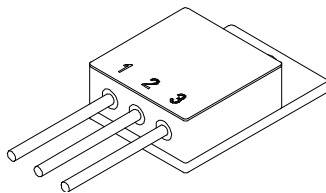
15 AMPS 400 Volts NPN High Speed Power Transistor

Application Notes:

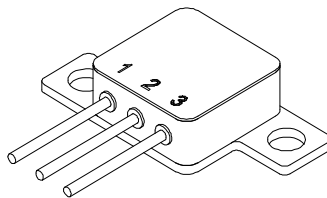
- Replaces Industry Standard 2N6678
- Designed for High Voltage, High Speed, Power Switching Applications Such as:
- Off-Line Supplies
- Converter Circuits
- Pulse Width Modulated Regulators
- Motor Controls
- Deflection Circuits

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 @ $T_C=25^{\circ}C$ 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

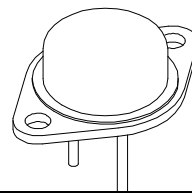
TO-254 (M)



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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SFT6678 SERIES

Electrical Characteristics		Symbol	Min	Max	Units
Collector Cutoff Current $V_{CE}=650V_{DC}$, $V_{BE}(off)=1.5V_{DC}$	$T_C=25^{\circ}C$	I_{CEV}	-	0.1	mA
	$T_C=100^{\circ}C$		-	1.0	
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 *	$V_{CE}=3V, I_C=15A, T_A= 25^{\circ}C$	H_{FE1}	8	-	
	$V_{CE}=3V, I_C=1A, T_A= 25^{\circ}C$	H_{FE2}	15	-	
	$V_{CE}=3V, I_C=15A, T_A= -55^{\circ}C$	H_{FE3}	4	-	
Base-Emitter Saturation Voltage * $(I_C = 15A_{DC}, I_B = 3A_{DC})$		$V_{BE} (SAT)$	-	1.5	V_{DC}
Collector-Emitter Saturation Voltage * $(I_C = 15A, I_B = 3A)$	$(T_C = 25^{\circ}C)$ $(T_C = 100^{\circ}C)$	$V_{CE} (SAT)$		1.5 2.0	V_{DC}
Second Breakdown $(t = 1.0 \text{ sec}, T_C = 25^{\circ}C)$	$(V_{CC} = 11.7V)$	$I_{S/b1}$	15.0	-	A
	$(V_{CC} = 20V)$	$I_{S/b2}$	8.75	-	A
	$(V_{CC} = 100V)$	$I_{S/b3}$	0.3	-	A
Reverse Bias Second Breakdown $(V_{BE} (off) = 1 \text{ to } 6V, V_{CLAMP} = 450V, T_C \leq 100^{\circ}C)$		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	$(V_{CC} = 200V_{DC}, I_C = 15A_{DC},$ $I_{B1} = I_{B2} = 3A_{DC},$ $t_p = 50 \mu\text{sec}, \text{Duty Cycle} \leq 2\%$ $V_B = 6V_{DC}, R_L = 13.5\Omega)$	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 $\leq 2\%$

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.

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