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

SFT698

SURFACE MOUNT
1 AMP
NPN HIGH VOLTAGE TRANSISTOR
450 VOLTS

DESIGNER'S DATA SHEET

Part Number / Ordering Information 1/

SFT698 __ __

Screening2/
- __ = Not Screened
- TX = TX Level
- TXV = TXV Level
- S = S Level

Package
- S.22 = SMD.22
- /5 = TO-5
- /39 = TO-39

Features:
- Very Small Footprint: SMD.22
- Fast Switching
- High Frequency
- Low Saturation Voltage
- Enhanced Performance Replacement for 2N3439U4
- Designed for Complementary Use with SFT5096A
- TX, TXV, and S Level Screening Available2/

Maximum Ratings3/	Symbol	Values	Unit
Collector – Emitter Voltage	V_{CEO}	450	V
Collector – Base Voltage	V_{CBO}	500	V
Emitter – Base Voltage	V_{EBO}	8	V
Collector Current	I_C	1.0	A
Base Current	I_B	0.5	A
Total Device Dissipation T_C = 160°C Derate above T_C = 160°C	P_D	5.0 125	W mW/°C
Operating & Storage Temperature	T_J & T_{STG}	-65 to +200	°C
Thermal Resistance SMD.22 TO-5, TO-39	$R_{\theta JC}$	8 35	°C/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.
3/ Unless otherwise specified, maximum ratings/electrical characteristics at 25°C.

SMD.22 (S.22)

TO-5 (/5)

TO-39 (/39)

(dime used for size reference)

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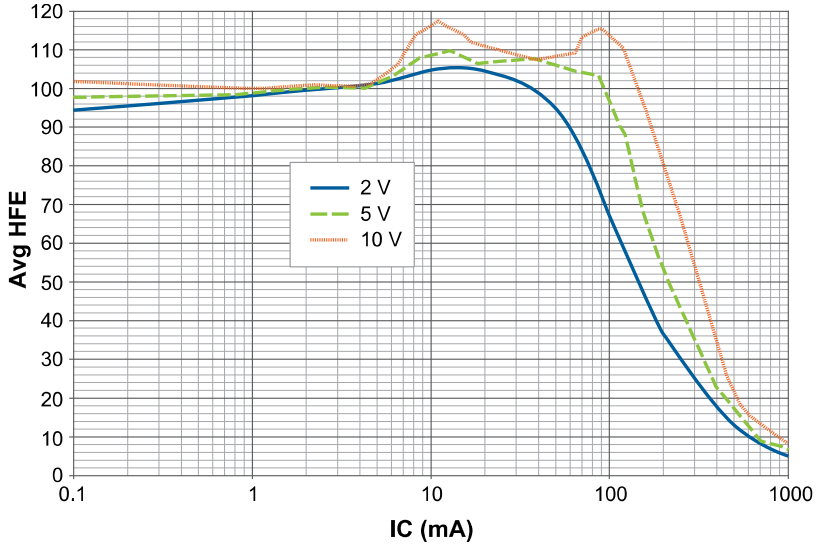
Electrical Characteristics[3/]		Symbol	Min	Typ	Max	Unit
Collector – Emitter Breakdown Voltage	I_C = 10 mA	BV_{CEO}	450	500	-	V
Collector – Base Breakdown Voltage	I_C = 100 µA	BV_{CBO}	500	600	-	V
Emitter – Base Breakdown Voltage	I_E = 100 µA	BV_{EBO}	7.0	8.3	-	V
Collector – Base Cutoff Current	V_{CB} = 360 V, T_C = 25°C V_{CB} = 450 V, T_C = 25°C V_{CB} = 360 V, T_C = 150°C	I_{CBO}	- - -	0.05 0.06 1	1 1 6	µA
Collector – Emitter Cutoff Current	V_{CE} = 300 V, V_{EB} = 3 V, T_C = 25°C V_{CE} = 450 V, V_{EB} = 1.5 V, T_C = 25°C	I_{CEO} I_{CEX}	- -	0.2 0.05	2 1	µA µA
Emitter Cutoff Current	V_{BE} = 7 V	I_{EBO}	-	0.2	100	nA
DC Current Gain*	I_C = 0.2 mA, V_{CE} = 10 V I_C = 2 mA, V_{CE} = 10 V I_C = 20 mA, V_{CE} = 10 V I_C = 100 mA, V_{CE} = 10 V I_C = 200 mA, V_{CE} = 10 V	H_{FE}	10 30 40 - -	95 98 100 110 80	- - 160 150 120	
AC Current Gain*	I_C = 5 mA, V_{CE} = 10 V, f = 1 kHz I_C = 10 mA, V_{CE} = 10 V, f = 5 MHz	h_{FE}	25 3	100 10	- 15	
Collector-Emitter Saturation Voltage*	I_C = 50 mA, I_B = 4 mA	$V_{CE\ (SAT)}$	-	0.075	0.5	V
Base-Emitter Saturation Voltage	I_C = 50 mA, I_B = 4 mA	$V_{BE\ (SAT)}$	-	0.72	1.30	V
Safe Operating Area	I_C = 1 A, V_{CE} = 5 V I_C = 14 mA, V_{CE} = 350 V	SOA1 SOA2	1	-	-	sec
Output Capacitance	V_{CB} = 10 V, I_E = 0 A, f = 1.0 MHz	C_{obo}	-	8	10	pF
Input Capacitance	V_{CB} = 5 V, I_C = 0 A, f = 1.0 MHz	C_{ibo}	-	175	200	pF
Turn On Time ($t_d + t_r$)	V_{CC} = 200 V, I_C = 20 mA, $I_{B1} = I_{B2}$ = 2 mA	$t_{(on)}$	-	0.96	1	µsec
Turn Off Time ($t_s + t_f$)		$t_{(off)}$	-	4	10	µsec



Notes: * Pulse Test: Pulse Width = 300 µs. Duty Cycle = 2%.

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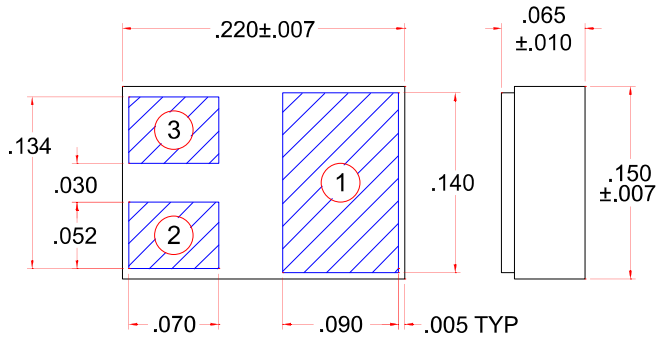
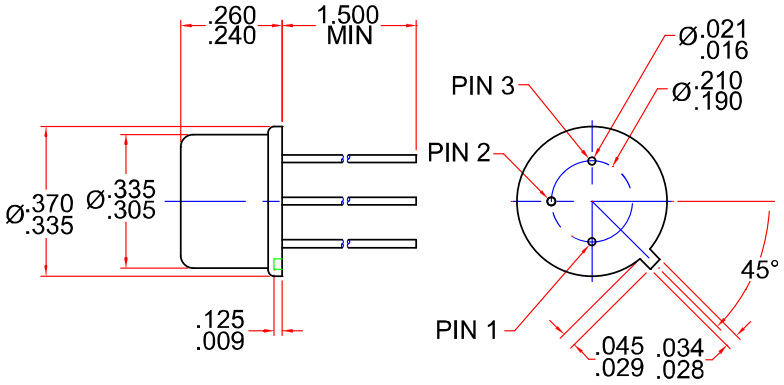
CASE OUTLINE: SMD.22

Pin Assignment (Standard)
Pin 1: Collector
Pin 2: Emitter
Pin 3: Base



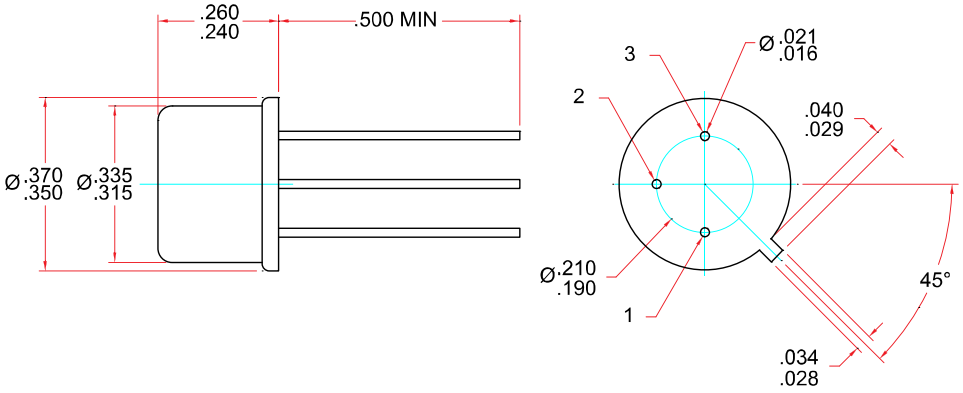
CASE OUTLINE: TO-5

Pin Assignment (Standard)
Pin 1: Emitter
Pin 2: Base
Pin 3: Collector
Case: Collector



CASE OUTLINE: TO-39

Pin Assignment (Standard)
Pin 1: Emitter
Pin 2: Base
Pin 3: Collector
Case: Collector



Notes: * Pulse Test: Pulse Width = 300 µs. Duty Cycle = 2%.
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