



# Solid State Devices, Inc.

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## SFT8600S.22 and SFT8600S.5

**1 AMP  
NPN Transistor  
1000 Volts**

### DESIGNER'S DATA SHEET

#### Part Number / Ordering Information <sup>1/</sup>

SFT8600

┌ Screening <sup>2/</sup>  
 └ = No Screening  
 TX = TX Level  
 TXV = TXV Level  
 S = S Level

└ Package  
 S.22 = SMD.22  
 S.5 = SMD.5

#### Features:

- BV<sub>CEO</sub> minimum 400 volts
- Very low saturation voltage
- Very low leakage
- High gain from 20 mA to 250 mA
- 200°C operating temperature
- Gold eutectic die attach
- Superior performance over JEDEC 2N5010-2N5015 series
- High speed switching, t<sub>f</sub> = 0.4 μS (typ)
- TX, TXV, and S level screening available

Maximum Ratings <sup>3/</sup>		Symbol	Max	Units
Collector – Emitter Voltage		V <sub>CEO</sub>	400	V
Collector – Emitter Voltage (RBE = 1KΩ)		V <sub>CER</sub>	1000	V
Collector – Base Voltage		V <sub>CBO</sub>	1000	V
Emitter – Base Voltage		V <sub>EBO</sub>	6	V
Collector Current		I <sub>C</sub>	1	A
Base Current		I <sub>B</sub>	0.1	A
Power Dissipation @ T <sub>c</sub> = 75°C Derate above 75°C	SMD.22	P <sub>D</sub>	8.3 67	W mW/°C
Power Dissipation @ T <sub>c</sub> = 75°C Derate above 75°C	SMD.5	P <sub>D</sub>	25 200	W mW/°C
Operating & Storage Temperature		T <sub>OP</sub> & T <sub>STG</sub>	-65 to +200	°C
Thermal Resistance	SMD.22 SMD.5	R <sub>θJC</sub>	15 5	°C/W

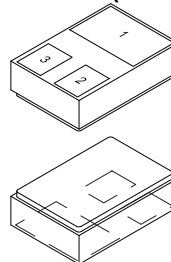
#### NOTES:

<sup>1/</sup> For ordering information, price, operating curves, and availability, contact factory.

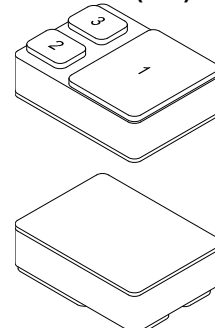
<sup>2/</sup> Screening based on MIL-PRF-19500. Screening flows available on request.

<sup>3/</sup> Unless otherwise specified, maximum ratings/electrical characteristics at 25°C.

SMD.22 (S.22)



SMD.5 (S.5)



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

DATA SHEET #: TR0083B

DOC



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# SFT8600S.22 and SFT8600S.5

Electrical Characteristics <sup>3/</sup>	Symbol	Min	Max	Units	
Collector – Emitter Breakdown Voltage	$I_C = 10 \text{ mA}$	<b>BV<sub>CEO</sub></b>	<b>400</b>	-	<b>V</b>
	$I_C = 20 \text{ }\mu\text{A}, \text{RBE} = 1\text{K}\Omega$	<b>BV<sub>CER</sub></b>	<b>1000</b>	-	<b>V</b>
Collector – Base Breakdown Voltage	$I_C = 20 \text{ }\mu\text{A}$	<b>BV<sub>CBO</sub></b>	<b>1000</b>	-	<b>V</b>
Emitter – Base Breakdown Voltage	$I_E = 20 \text{ }\mu\text{A}$	<b>BV<sub>EBO</sub></b>	<b>6</b>	-	<b>V</b>
Collector Cutoff Current	$V_{CB} = 800 \text{ V}$	<b>I<sub>CBO</sub></b>	-	<b>10</b>	<b><math>\mu\text{A}</math></b>
	$V_{CB} = 800 \text{ V}, T_A = 150^\circ\text{C}$		<b>500</b>		
Collector Cutoff Current	$V_{CE} = 400 \text{ V}$	<b>I<sub>CEO</sub></b>	-	<b>10</b>	<b><math>\mu\text{A}</math></b>
Emitter Cutoff Current	$V_{EB} = 4 \text{ V}$	<b>I<sub>EBO</sub></b>	-	<b>1</b>	<b><math>\mu\text{A}</math></b>
DC Current Gain*	$I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}, T_C = -55^\circ\text{C}$	<b>H<sub>FE</sub></b>	<b>10</b>	-	<b>--</b>
	$I_C = 5 \text{ mA}, V_{CE} = 5 \text{ V}$		<b>30</b>	-	
	$I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$		<b>40</b>	<b>200</b>	
	$I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}$		<b>20</b>	-	
	$I_C = 250 \text{ mA}, V_{CE} = 5 \text{ V}$		<b>15</b>	-	
Collector-Emitter Saturation Voltage*	$I_C = 20 \text{ mA}, I_B = 2 \text{ mA}$	<b>V<sub>CE(SAT)</sub></b>	-	<b>0.3</b>	<b>V</b>
	$I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$		-	<b>0.5</b>	
Base-Emitter Saturation Voltage*	$I_C = 20 \text{ mA}, I_B = 2 \text{ mA}$	<b>V<sub>BE(SAT)</sub></b>	-	<b>0.8</b>	<b>V</b>
	$I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$		-	<b>1.0</b>	
Current Gain Bandwidth Product	$I_C = 100 \text{ mA}, V_{CE} = 10 \text{ V}, f = 10 \text{ MHz}$	<b>f<sub>T</sub></b>	<b>8</b>	-	<b>MHz</b>
Output Capacitance	$V_{CB} = 20 \text{ V}, I_E = 0 \text{ A}, f = 1.0\text{MHz}$	<b>C<sub>ob</sub></b>	-	<b>15</b>	<b>pF</b>
Delay Time	$(V_{CC} = 125 \text{ V}, I_C = 100 \text{ mA}, I_{B1} = 20 \text{ mA}, I_{B2} = 40 \text{ mA})$	<b>t<sub>d</sub></b>	-	<b>50</b>	<b>ns</b>
Rise Time		<b>t<sub>r</sub></b>	-	<b>150</b>	<b>ns</b>
Storage Time		<b>t<sub>s</sub></b>	-	<b>3</b>	<b><math>\mu\text{s}</math></b>
Fall Time		<b>t<sub>f</sub></b>	-	<b>800</b>	<b>ns</b>

**\*Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle = 2%**

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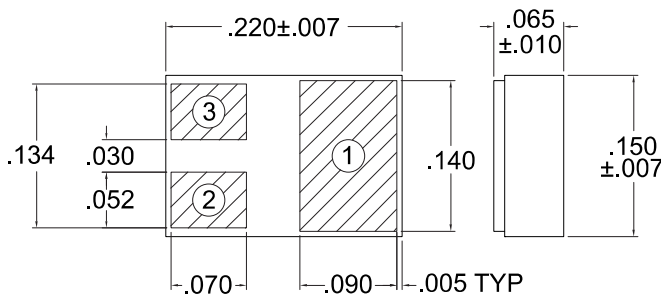
**For thermal derating curves and other characteristic curves, please contact SSDI Marketing Department.**

**PIN ASSIGNMENT (Standard)**

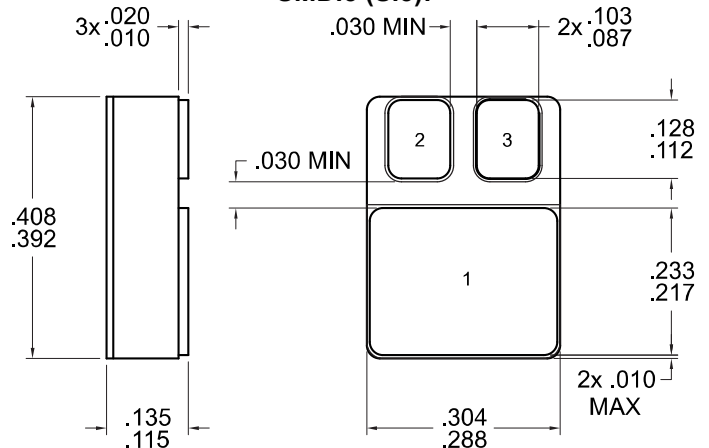
Package	Collector	Emitter	Base
<b>SMD.22 (S.22)</b>	Pin 1	Pin 2	Pin 3
<b>SMD.5 (S.5)</b>	Pin 1	Pin 2	Pin 3

## CASE OUTLINES

**SMD.22 (S.22):**



**SMD.5 (S.5):**



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