



## Solid State Devices, Inc.

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 Phone: (562) 404-4474 \* Fax: (562) 404-1773  
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### DESIGNER'S DATA SHEET

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

SFT22907

GW



Screening <sup>2/</sup> = Commercial  
 TX = TX Level  
 TXV = TXV Level  
 S = S Level

Package GW = Gullwing

## SFT22907GW

### Series

### Dual Microminiature Package

### 600 mA 60 Volts

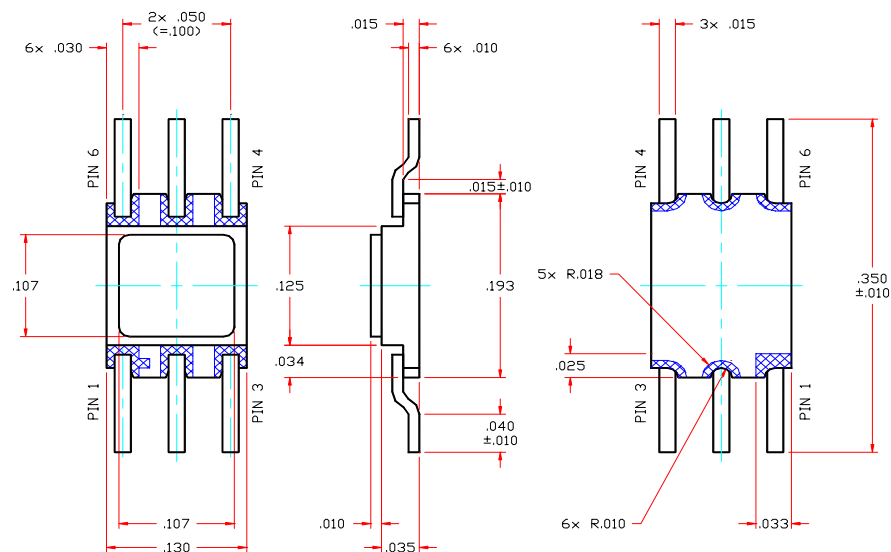
### Complimentary NPN & PNP Transistor

#### Features:

- High Speed Switching Transistor
- Multiple Devices Reduce Board Space
- High Power Dissipation: Up to 1.2 W / device
- TX, TXV, S-Level screening available
- Replaces both 2N2222AU & 2N2907AU

| Maximum Ratings                               |            | Symbol                             | 2N2222<br>NPN | 2N2907<br>PNP | Units |
|-----------------------------------------------|------------|------------------------------------|---------------|---------------|-------|
| Collector – Emitter Voltage                   |            | V <sub>CEO</sub>                   | 50            | 60            | Volts |
| Collector – Base Voltage                      |            | V <sub>CBO</sub>                   | 75            | 60            | Volts |
| Emitter – Base Voltage                        |            | V <sub>EBO</sub>                   | 6             | 5             | Volts |
| Continues Collector Current                   |            | I <sub>C</sub>                     | 800           | 600           | mAmps |
| Power Dissipation @ T <sub>A</sub> = 25°C     | Per device | P <sub>D</sub>                     | 500           | 500           | mW    |
| Power Dissipation @ T <sub>A</sub> = 25°C     | Total      |                                    | 660           |               |       |
| Operating & Storage Temperature               |            | T <sub>op</sub> & T <sub>stg</sub> | -65 to +200   | -65 to +200   | °C    |
| Maximum Thermal Resistance<br>Junction to PCB |            | R <sub>OJ-PCB</sub>                | 245           | 245           | °C/W  |

#### Gullwing (GW)



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

DATA SHEET #: TR0032E



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## SFT22907GW Series

| Electrical Characteristics <sup>4/</sup>                                  | Symbol        | NPN Bias                                                                                                                                                                                                                                         | Limit                                                     | PNP Bias                                                                                                                                                                                                                                        | Limit                                                     |
|---------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Collector – Emitter Sustaining Voltage                                    | $BV_{CEO}$    | $I_C = 10 \text{ mA}$                                                                                                                                                                                                                            | 50V                                                       | $I_C = 10 \text{ mA}$                                                                                                                                                                                                                           | 60V                                                       |
| Collector Cutoff Current                                                  | $I_{CES}$     | $V_{CE} = 50 \text{ V}$                                                                                                                                                                                                                          | 50 nA max                                                 | $V_{CE} = 30 \text{ V}$                                                                                                                                                                                                                         | 50 nA max                                                 |
| Collector Cutoff Current                                                  | $I_{CBO}$     | $V_{CB} = 60 \text{ V}$<br>$V_{CB} = 75 \text{ V}$<br>$V_{CB} = 60 \text{ V}, T_A = 150^\circ\text{C}$                                                                                                                                           | 10 nA max<br>10 $\mu\text{A}$ max<br>10 $\mu\text{A}$ max | $V_{CB} = 50 \text{ V}$<br>$V_{CB} = 60 \text{ V}$<br>$V_{CB} = 50 \text{ V}, T_A = 150^\circ\text{C}$                                                                                                                                          | 10 nA max<br>10 $\mu\text{A}$ max<br>10 $\mu\text{A}$ max |
| Emitter Cutoff Current                                                    | $I_{EBO}$     | $V_{EB} = 4 \text{ V}$<br>$V_{EB} = 6 \text{ V}$                                                                                                                                                                                                 | 10 nA max<br>10 $\mu\text{A}$ max                         | $V_{EB} = 4 \text{ V}$<br>$V_{EB} = 5 \text{ V}$                                                                                                                                                                                                | 50 nA max<br>10 $\mu\text{A}$ max                         |
| DC Current Forward Transfer Ratio *                                       | $h_{FE}$      | $I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}$ | 50 min<br>75 - 325<br>100 min<br>100 - 300<br>30 min      | $I_C = 100 \mu\text{A}, V_{CE} = 10 \text{ V}$<br>$I_C = 1 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}$ | 75 min<br>100 - 450<br>100 min<br>100 - 300<br>50 min     |
| DC Current Forward Transfer Ratio *                                       | $h_{FE}$      | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$T_A = -55^\circ\text{C}$                                                                                                                                                                        | 35 min                                                    | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$<br>$T_A = -55^\circ\text{C}$                                                                                                                                                                       | 50 min                                                    |
| Small Signal Current Gain<br>( $f = 1 \text{ kHz}$ )                      | $h_{fe}$      | $I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ V}$                                                                                                                                                                                                    | 50 - 300                                                  | —                                                                                                                                                                                                                                               | —                                                         |
| Collector-Emitter Saturation Voltage *                                    | $V_{CE(SAT)}$ | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$<br>$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$                                                                                                                                                       | 0.3V max<br>1.0V max                                      | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$<br>$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$                                                                                                                                                      | 0.4 V max<br>1.6 V max                                    |
| Base-Emitter Saturation Voltage *                                         | $V_{BE(SAT)}$ | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$<br>$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$                                                                                                                                                       | 0.6 – 1.2V<br>2.0V max                                    | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$<br>$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$                                                                                                                                                      | 0.6 - 1.3 V<br>2.6 V max                                  |
| Frequency Transition (Small signal<br>current gain) @ $f = 100\text{MHz}$ | $f_T$         | $V_{CE} = 20 \text{ V}, I_C = 20 \text{ mA},$<br>$f = 100 \text{ MHz}$                                                                                                                                                                           | 250 MHz<br>min                                            | $V_{CE} = 20 \text{ V}, I_C = 20 \text{ mA},$<br>$f = 100 \text{ MHz}$                                                                                                                                                                          | 200 MHz min                                               |
| Output Capacitance                                                        | $C_{ob}$      | $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$                                                                                                                                                                                                       | 8.0 pF max                                                | $V_{CB} = 10 \text{ V}, f = 1.0 \text{ MHz}$                                                                                                                                                                                                    | 8.0 pF max                                                |
| Input Capacitance                                                         | $C_{ib}$      | $V_{EB} = 0.5 \text{ V}, f = 1 \text{ MHz}$                                                                                                                                                                                                      | 25 pF max                                                 | $V_{BE} = 2.0 \text{ V}, f = 1.0 \text{ MHz}$                                                                                                                                                                                                   | 30 pF max                                                 |
| Switching Times                                                           | $t_{(on)}$    | $V_{cc} = -30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = I_{B2} = 15 \text{ mA}, V_{BE(off)} = 3\text{V}$                                                                                                                                         | 35 ns max                                                 | $V_{cc} = -30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = I_{B2} = 15 \text{ mA}, V_{BE(off)} = 3\text{V}$                                                                                                                                        | 45 ns max                                                 |
|                                                                           | $t_{(off)}$   | $V_{cc} = -30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = I_{B2} = 15 \text{ mA}, V_{BE(off)} = 3\text{V}$                                                                                                                                         | 300 ns max                                                | $V_{cc} = -30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = I_{B2} = 15 \text{ mA}, V_{BE(off)} = 3\text{V}$                                                                                                                                        | 300 ns max                                                |

### NOTES:

\* Pulse Test: Pulse Width = 300 $\mu\text{sec}$ , 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/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

### Available Part Numbers:

SFT22907GW

### PIN ASSIGNMENT

| Package | Pin 1                | Pin 2           | Pin 3              | Pin 4                | Pin 5           | Pin 6              |
|---------|----------------------|-----------------|--------------------|----------------------|-----------------|--------------------|
| GW      | Collector<br>SFT2222 | Base<br>SFT2222 | Emitter<br>SFT2222 | Collector<br>SFT2907 | Base<br>SFT2907 | Emitter<br>SFT2907 |
|         |                      |                 |                    |                      |                 |                    |

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**DATA SHEET #: TR0032E**