



PRELIMINARY

# SFT4407

## Solid State Devices, Inc.

14701 Firestone Blvd \* La Mirada, CA 90638  
Phone: (562) 404-4474 \* Fax: (562) 404-1773  
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### SURFACE MOUNT 2 AMP PNP TRANSISTOR 60 VOLTS

#### DESIGNER'S DATA SHEET

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

SFT4407

Screening<sup>2/</sup>

— = Not Screened  
TX = TX Level  
TXV = TXV Level  
S = S Level

Package S.22 = SMD.22

##### Features:

- Very Small Footprint: SMD.22
- Radiation Tolerant
- Fast Switching
- High Frequency
- Low Saturation Voltage
- Enhanced performance replacement for 2N3765, 2N4406, and 2N4407
- TX, TXV, and S Level Screening Available<sup>2/</sup>

##### Maximum Ratings<sup>3/</sup>

	Symbol	Values	Units
Collector – Emitter Voltage	$V_{CEO}$	60	Volts
Collector – Base Voltage	$V_{CBO}$	75	Volts
Emitter – Base Voltage	$V_{EBO}$	7	Volts
Collector Current	$I_C$	2.0	Amps
Base Current	$I_B$	0.5	Amps
Total Device Dissipation $T_C = 100^\circ\text{C}$ Derate above $T_C = 100^\circ\text{C}$	$P_D$	5.5 55	Watts mW/ $^\circ\text{C}$
Operating & Storage Temperature	$T_J$ & $T_{STG}$	-65 to +200	$^\circ\text{C}$
Thermal Resistance	$R_{\theta JC}$	18 (typ 10)	$^\circ\text{C}/\text{W}$

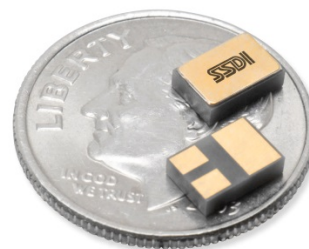
##### NOTES:

<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 $^\circ\text{C}$ .

SMD.22 (S.22)



(dime used for size reference)

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

DATA SHEET #: TR0138A

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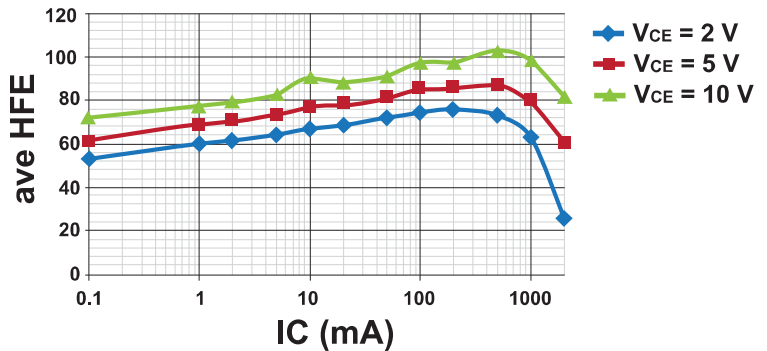
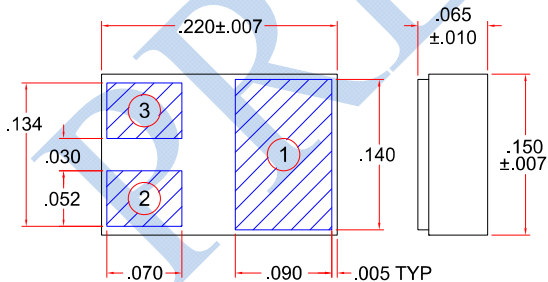
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Electrical Characteristics <sup>3/</sup>		Symbol	Min	Typ	Max	Units
Collector – Emitter Breakdown Voltage	$I_C = 10 \text{ mA}$	$BV_{CEO}$	60	65	-	Volts
Collector – Base Breakdown Voltage	$I_C = 10 \text{ } \mu\text{A}$	$BV_{CBO}$	75	80	-	Volts
Emitter – Base Breakdown Voltage	$I_E = 10 \text{ } \mu\text{A}$	$BV_{EBO}$	7.5	8.75	-	Volts
Collector – Base Cutoff Current	$V_{CB} = 30 \text{ V}, T_C = 25^\circ\text{C}$	$I_{CBO}$	-	0.005	0.1	$\mu\text{A}$
	$V_{CB} = 60 \text{ V}, T_C = 25^\circ\text{C}$		-	0.01	1	
	$V_{CB} = 30 \text{ V}, T_C = 150^\circ\text{C}$		-	10	50	
Collector – Emitter Cutoff Current	$V_{CE} = 30 \text{ V}, V_{EB} = 3 \text{ V}, T_C = 25^\circ\text{C}$	$I_{CEX}$	-	10	100	nA
	$V_{CE} = 30 \text{ V}, V_{EB} = 3 \text{ V}, T_C = 150^\circ\text{C}$		-	10	100	$\mu\text{A}$
Emitter Cutoff Current	$V_{BE} = 5 \text{ V}$	$I_{EBO}$	-	2	100	nA
DC Current Gain*	$I_C = 10 \text{ mA}, V_{CE} = 1 \text{ V}$	$H_{FE}$	35	60	-	
	$I_C = 150 \text{ mA}, V_{CE} = 1 \text{ V}$		40	68	-	
	$I_C = 500 \text{ mA}, V_{CE} = 1 \text{ V}$		40	65	140	
	$I_C = 1 \text{ A}, V_{CE} = 1.5 \text{ V}$		20	53	80	
	$I_C = 1.5 \text{ A}, V_{CE} = 5 \text{ V}$		20	70	-	
DC Current Gain*	$I_C = 150 \text{ mA}, V_{CE} = 1 \text{ V}, T_C = -55^\circ\text{C}$	$H_{FE}$	-	-	20	
	$I_C = 500 \text{ mA}, V_{CE} = 1 \text{ V}, T_C = -55^\circ\text{C}$		-	-	15	
Collector-Emitter Saturation Voltage*	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$	$V_{CE(SAT)}$	-	0.10	0.15	V
	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$		-	0.17	0.22	
	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$		-	0.35	0.5	
	$I_C = 1 \text{ A}, I_B = 0.1 \text{ A}$		-	0.60	0.9	
Base-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$	$V_{BE(SAT)}$	-	0.67	0.80	V
	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$		-	0.82	1.00	
	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$		-	1.00	1.20	
	$I_C = 1 \text{ A}, I_B = 0.1 \text{ A}$		-	1.30	1.50	
Current Gain Bandwidth Product	$I_C = 50 \text{ mA}, V_{CE} = 10 \text{ V}, f = 100 \text{ MHz}$	$f_T$	100	150	-	MHz
Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0 \text{ A}, f = 1.0 \text{ MHz}$	$C_{ob}$	-	18.5	25	pF
Input Capacitance	$V_{BE} = -0.5 \text{ V}, I_C = 0 \text{ A}, f = 1.0 \text{ MHz}$	$C_{ib}$	-	80	100	pF
Turn On Time ( $t_d + t_r$ )	$V_{CC} = 30 \text{ V}, I_C = 500 \text{ mA}, I_{B1} = I_{B2} = 50 \text{ mA}$	$t_{(on)}$	-	30	40	nsec
Turn Off Time ( $t_s + t_f$ )		$t_{(off)}$	-	65	90	nsec

**CASE OUTLINE: SMD.22**



**PIN ASSIGNMENT (Standard)**

Package	Collector	Emitter	Base
SMD.22 (S.22)	1	2	3

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

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