



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

SFT6039 series

4 AMP NPN Darlington Power Transistor 80 Volts

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFT6039

Screening^{2/}

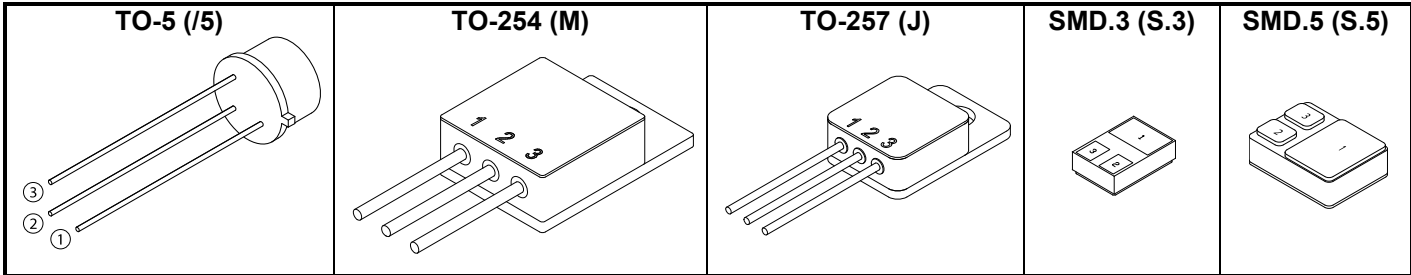
- = Not Screened
- TX = TX Level
- TXV = TXV Level
- S = S Level

Package

- /5 = TO-5
- M = TO-254
- J = TO-257
- S.3 = SMD.3
- S.5 = SMD.5

- Features:**
- V_{CEO} to 80 Volts
 - Low saturation voltage
 - Very low leakage
 - 200°C operating temperature
 - Gold eutectic die attach
 - Complement for SFT6036
 - Available with TO-5, TO-254, TO-257, SMD.3 and SMD.5 Cases
 - TX, TXV, and S Level Screening Available^{2/}

Maximum Ratings ^{3/}	Symbol	Values	Units
Collector – Emitter Voltage	V_{CEO}	80	Volts
Collector – Base Voltage	V_{CBO}	80	Volts
Emitter – Base Voltage	V_{EBO}	5	Volts
Collector Current	$I_{C\ cont}$ $I_{C\ pk}$	4 8	Amps
Base Current	I_B	0.1	Amps
Total Power Dissipation @ $T_c = 100^\circ C$	TO-5 TO-254 TO-257 SMD.3 SMD.5	- 20 20 28.5 31	Watts
Operating & Storage Temperature	T_J & T_{STG}	-65 to 200	°C
Thermal Resistance (Junction to Case)	TO-5 TO-254 TO-257 SMD.3 SMD.5	175 5 5 3.5 3.2	°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.



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Electrical Characteristics ^{3/}	Symbol	Min	Typ	Max	Units
Collector – Emitter Breakdown Voltage*	$I_C = 100\text{mA}$ BV_{CEO}	80	95	-	Volts
Collector – Emitter Cutoff Current,	$V_{CE} = 80\text{V}, I_B = 0$ I_{CEO}	-	0.05	100	μA
Collector – Emitter Cutoff Current	$V_{CE} = 80\text{V}, V_{BE(off)} = 1.5\text{V}$ $V_{CE} = 80\text{V}, V_{BE(off)} = 1.5\text{V}, T_C = 125^\circ\text{C}$ I_{CEX}	-	0.05 12.5	100 500	μA
Collector Cutoff Current	$V_{CB} = 80\text{V}$ I_{CBO}	-	0.05	500	μA
Emitter Cutoff Current	$V_{BE} = 5\text{V}$ I_{EBO}		0.80	2	mA
DC Current Gain*	$I_C = 0.5\text{A}, V_{CE} = 3\text{V}$ $I_C = 2\text{A}, V_{CE} = 3\text{V}$ $I_C = 4\text{A}, V_{CE} = 3\text{V}$ H_{FE}	500 750 100	4,000 10,000 6000	- 15,000 -	
Collector-Emitter Saturation Voltage*	$I_C = 2\text{A}, I_B = 8\text{mA}$ $I_C = 4\text{A}, I_B = 40\text{mA}$ $V_{CE(SAT)1}$ $V_{CE(SAT)2}$	-	1.2 2.0	2 3	V
Base-Emitter Saturation Voltage*	$I_C = 4\text{A}, I_B = 40\text{mA}$ $V_{BE(SAT)2}$	-	2.2	4	V
Base-Emitter Voltage	$I_C = 2\text{A}, V_{CE} = 3\text{V}$ $V_{BE(ON)}$	-	1.65	2.8	V
Small Signal Current Gain	$I_C = 0.75\text{A}, V_{CE} = 10\text{V}, f = 1\text{MHz}$ h_{fe}	25	400	-	
Output Capacitance	$V_{CB} = 15\text{V}, I_E = 0\text{A}, f = 2.0\text{MHz}$ C_{ob}	-	30	100	pF

Electrical Characteristics ^{3/}	Symbol	Typical	Units
Delay Time	$V_{CC} = -30\text{V}$ t_d	90	ns
Rise Time	$I_C = 4\text{A}$ t_r	320	ns
Storage Time	$I_{B1} = I_{B2} = 16\text{mA}$ t_s	1100	μs
Fall Time	t_f	1600	ns

Notes: * Pulse Test: Pulse Width = 300 μs . Duty Cycle = 2%.
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 3/ Unless otherwise specified, maximum ratings/electrical characteristics at 25°C.

PIN ASSIGNMENT (Standard)			
Package	Collector	Emitter	Base
TO-5 (I5)	3	1	2
TO-254(M)	1	2	3
TO-257(J)	1	2	3
SMD.3 (S.3)	1	2	3
SMD.5 (S.5)	1	2	3



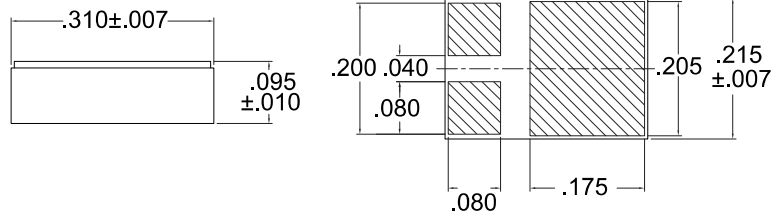
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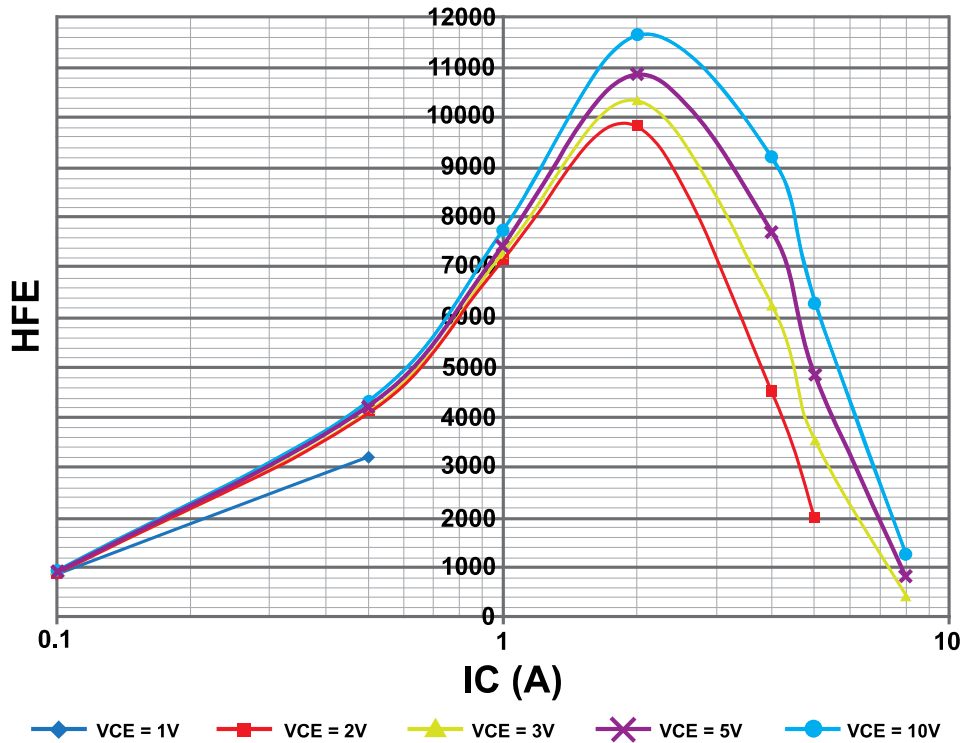
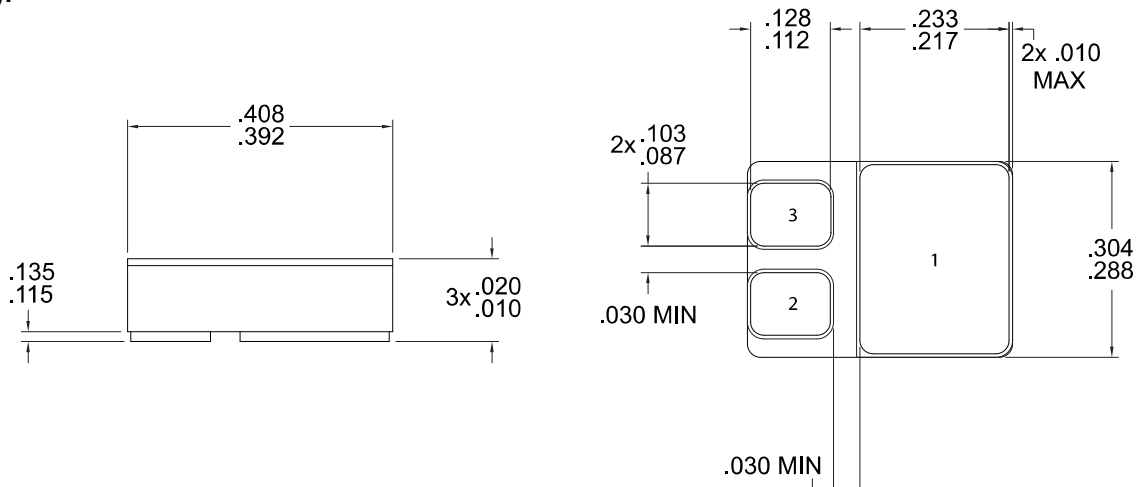
SFT6039

CASE OUTLINES

SMD.3 (S.3):



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 #: TR0121A

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