



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/}

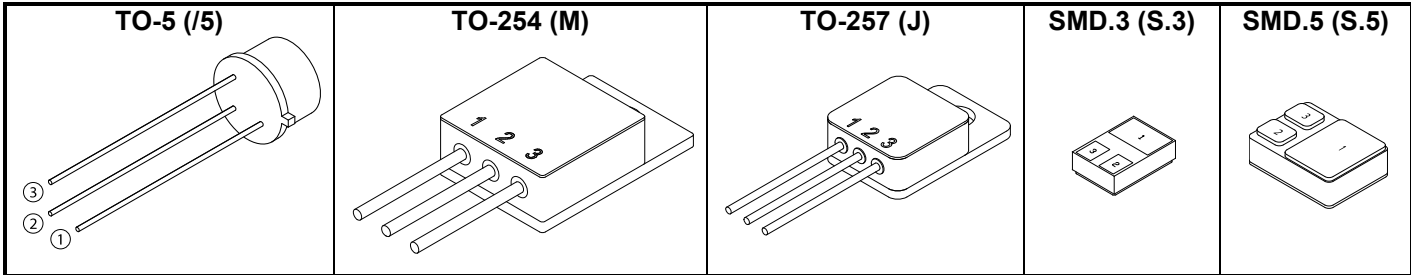
- = Not Screened
- TX = TX Level
- TXV = TXV Level
- S = S Level

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)	$R_{\theta JC}$	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 $V_{CE} = 80\text{V}, V_{BE(\text{off})} = 1.5\text{V}$ $V_{CE} = 80\text{V}, V_{BE(\text{off})} = 1.5\text{V}, T_C = 125^\circ\text{C}$	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* $I_C = 2\text{A}, I_B = 8\text{mA}$ $I_C = 4\text{A}, I_B = 40\text{mA}$	$V_{CE(\text{SAT})1}$ $V_{CE(\text{SAT})2}$	- -	1.2 2.0	2 3	V
Base-Emitter Saturation Voltage* $I_C = 4\text{A}, I_B = 40\text{mA}$	$V_{BE(\text{SAT})2}$	-	2.2	4	V
Base-Emitter Voltage $I_C = 2\text{A}, V_{CE} = 3\text{V}$	$V_{BE(\text{ON})}$	-	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

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

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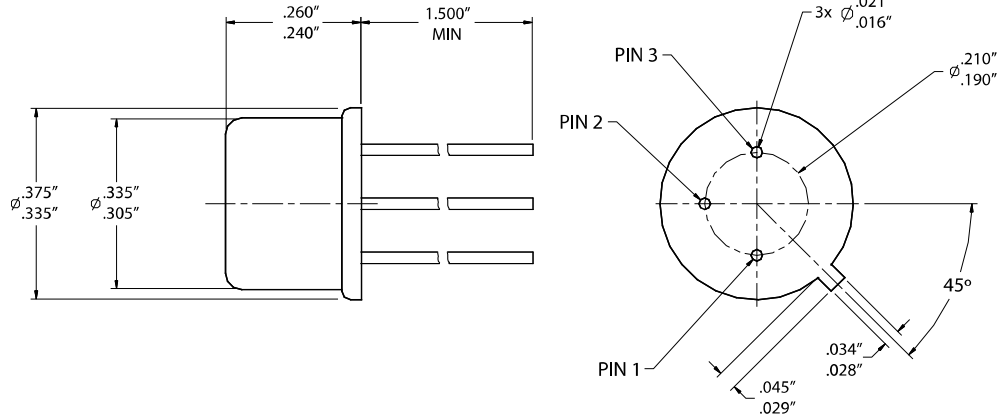
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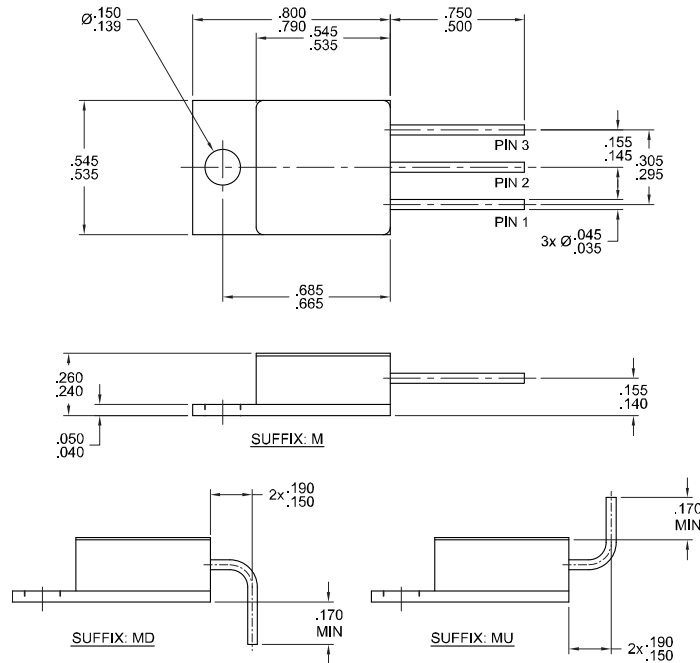
SFT6039

CASE OUTLINES

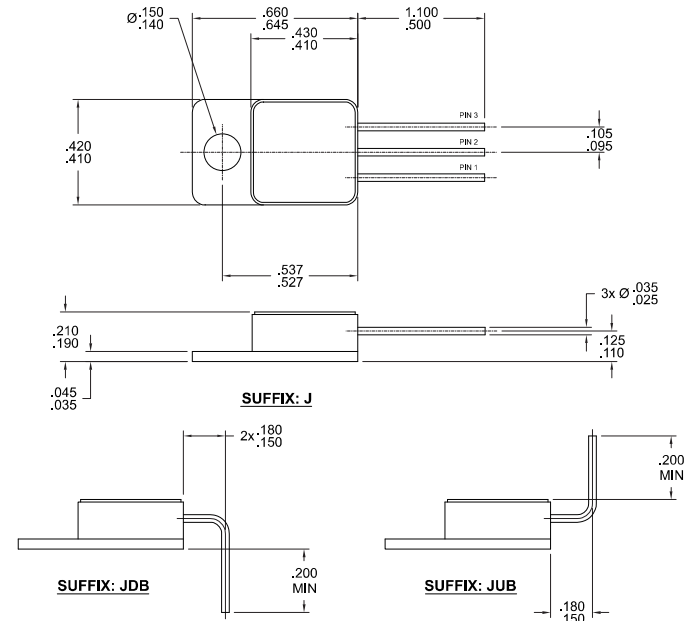
TO-5 (I5):



TO-254 (M):



TO-257 (J):



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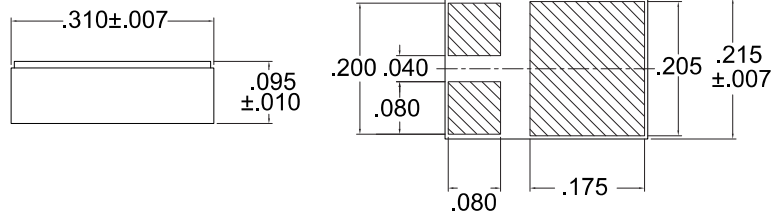
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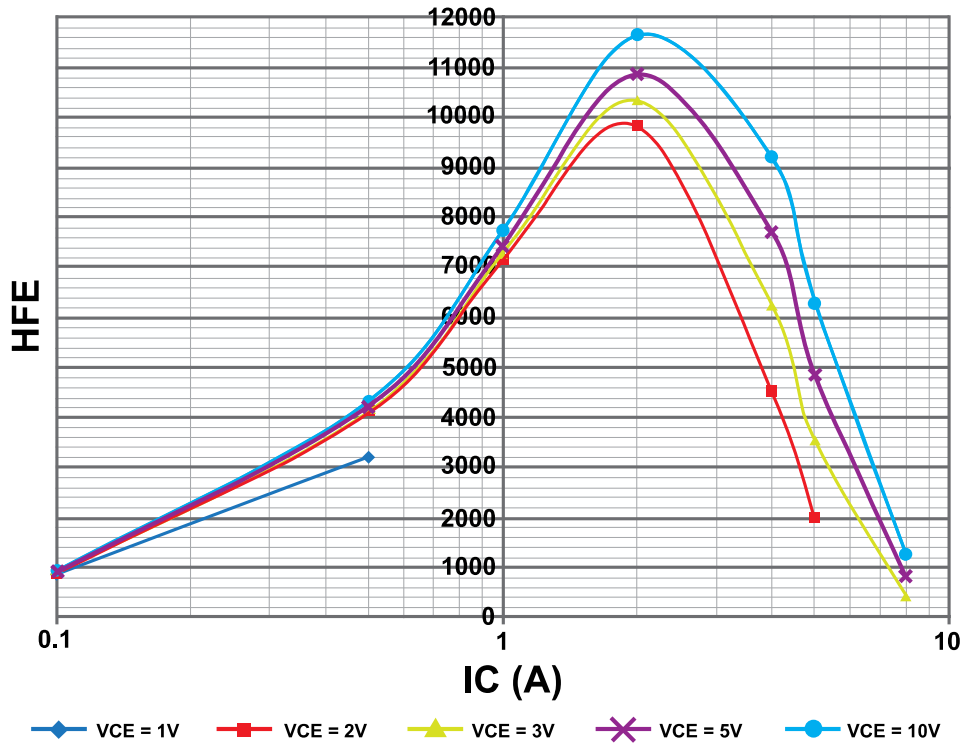
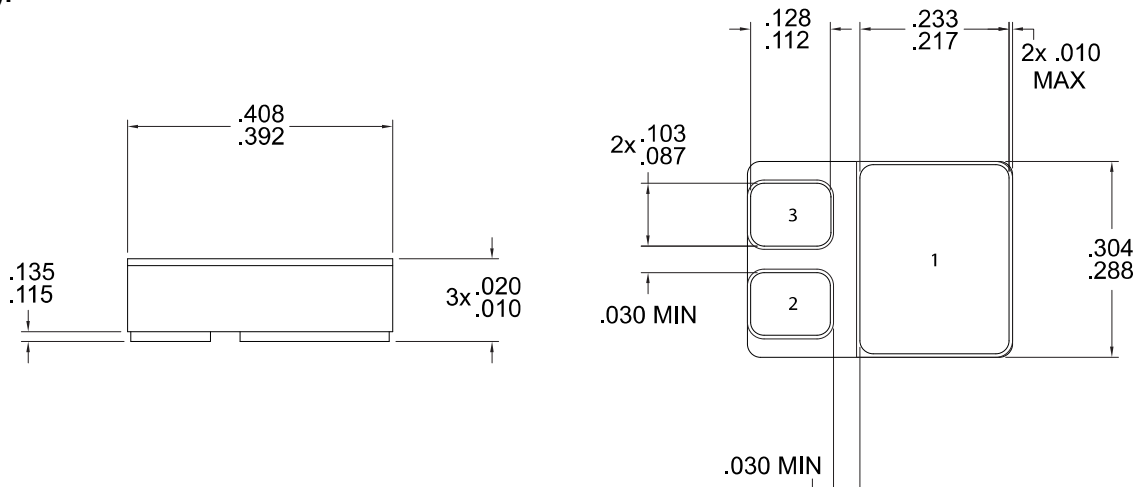
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CASE OUTLINES

SMD.3 (S.3):



SMD.5 (S.5):



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