

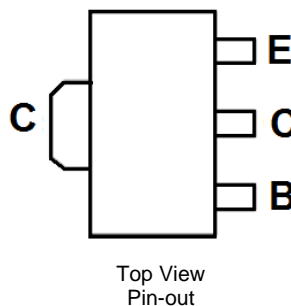
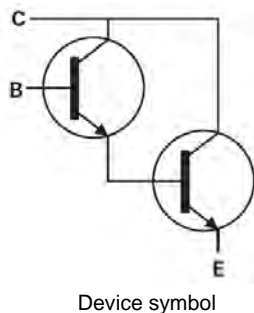
**80V NPN SILICON PLANAR DARLINGTON TRANSISTOR
IN SOT89**

Features

- $BV_{CEO} > 80V$
- High current gain
- Max Continuous Current $I_C = 500mA$
- Fast switching
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT89
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

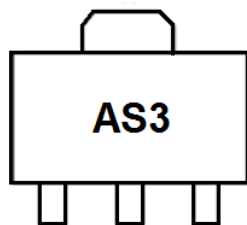


Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BST52TA	AS3	7	12	1,000

- Notes:
1. No purposefully added lead.
 2. Halogen and Antimony Free. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
 3. For packaging details, go to our website at <http://www.diodes.com>

Marking Information



AS3 = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

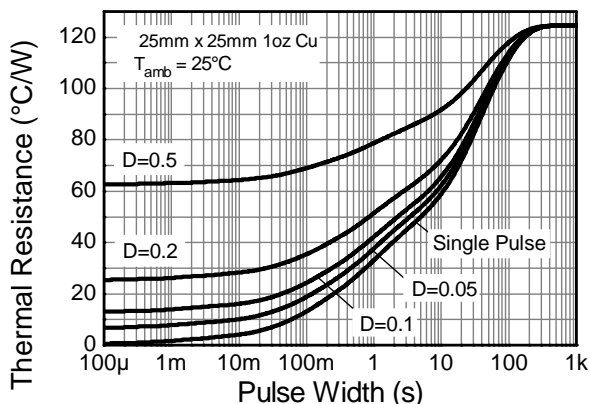
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	90	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	10	V
Continuous Collector Current	I_C	500	mA
Peak Pulse Current	I_{CM}	1.5	A
Base Current	I_B	100	mA

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

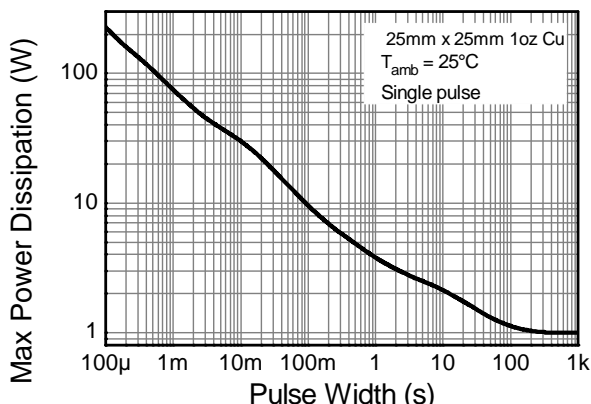
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 4)	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Leads (Note 5)	$R_{\theta JL}$	8.66	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
4. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 5. Thermal resistance from junction to solder-point (on the exposed collector pad).

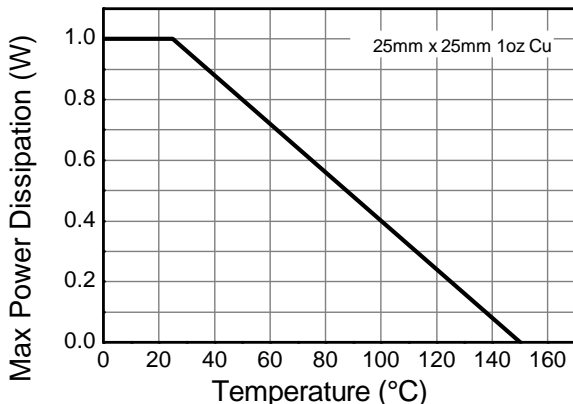
Thermal Characteristics



Transient Thermal Impedance



Pulse Power Dissipation



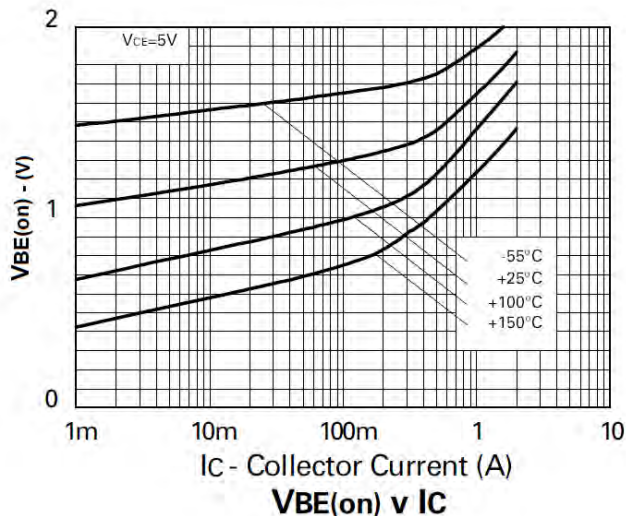
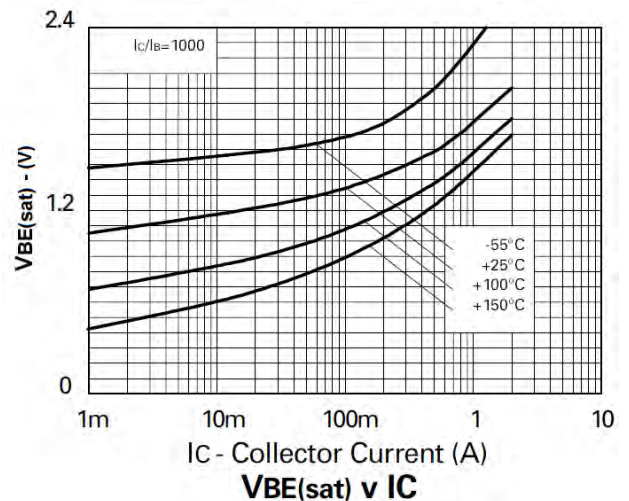
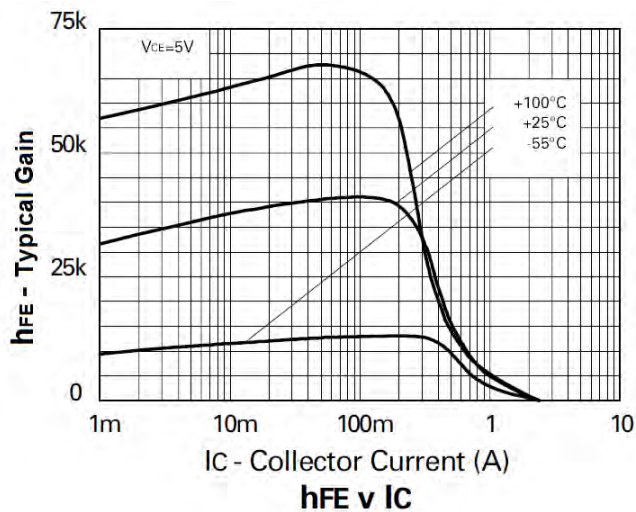
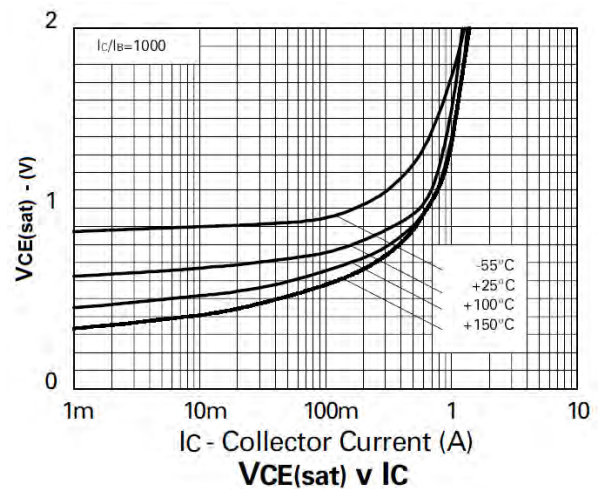
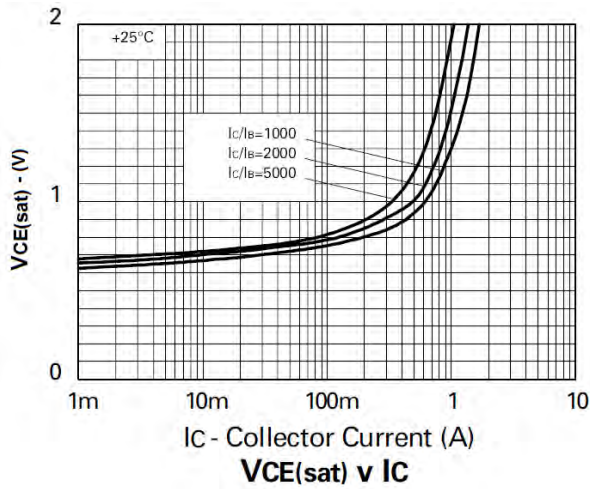
Derating Curve

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

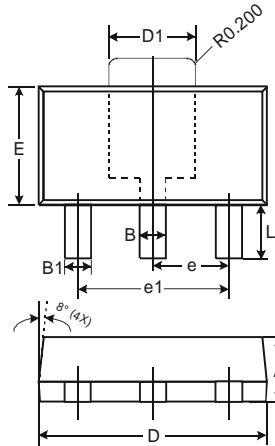
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	90	-	-	V	$I_C = 10\mu\text{A}$
Collector-Emitter Breakdown Voltage (Notes 6)	BV_{CEO}	80	-	-	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	10	-	-	V	$I_E = 10\mu\text{A}$
Collector Cutoff Current	I_{CES}	-	-	10	μA	$V_{CE} = 80\text{V}$
Emitter Cutoff Current	I_{EBO}	-	-	10	μA	$V_{EB} = 8\text{V}$
DC current transfer Static ratio (Notes 6)	h_{FE}	1000 2000	-	-		$I_C = 150\text{mA}, V_{CE} = 10\text{V}$ $I_C = 500\text{mA}, V_{CE} = 10\text{V}$
Collector-Emitter Saturation Voltage (Notes 6)	$V_{CE(sat)}$	-	-	1.3 1.3	V	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$ $I_C = 500\text{mA}, I_B = 0.5\text{mA}, T_J = 150^\circ\text{C}$
Base-Emitter Saturation Voltage (Notes 6)	$V_{BE(sat)}$	-	-	1.9	V	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$
Turn On Time	t_{ON}	-	0.4	-	μs	$I_C = 500\text{mA},$ $I_{Bon} = I_{Boff} = 0.5\text{mA}$
Turn Off Time	t_{OFF}		1.5			

Notes: 6. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Typical Electrical Characteristics

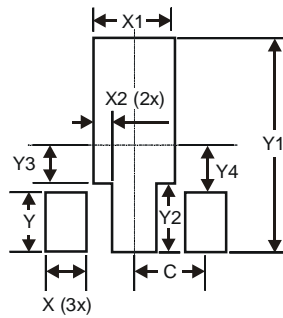


Package Outline Dimensions



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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