80V NPN SILICON PLANAR DARLINGTON TRANSISTOR IN SOT89

Features

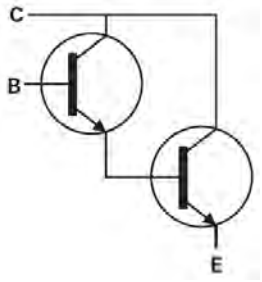
- BV_{CEO} > 80V
- High current gain
- Max Continuous Current I_C = 500mA
- Fast switching
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

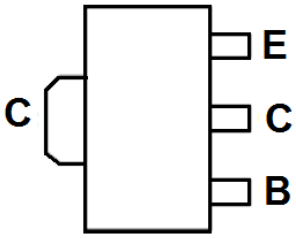
- Case: SOT89
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

SOT89

Top View



Device symbol



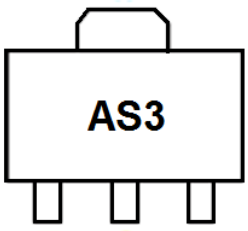
Top View
Pin-out

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

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Maximum Ratings @T_A = 25°C unless otherwise specified

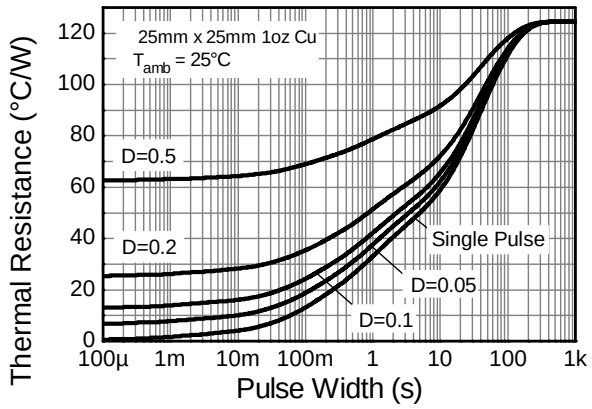
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	90	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	10	V
Continuous Collector Current	I_C	500	mA
Peak Pulse Current	I_{CM}	1.5	A
Base Current	I_B	100	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

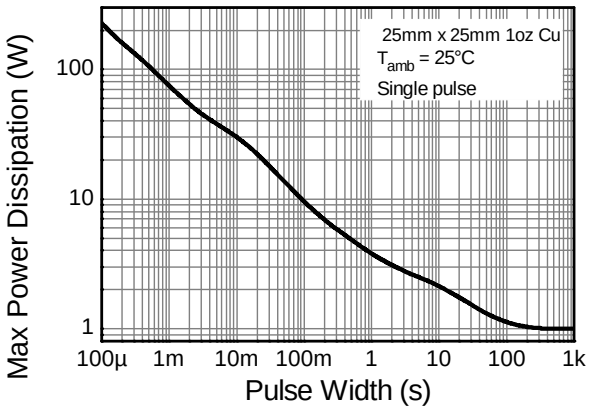
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 4)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 5)	$R_{\theta JL}$	8.66	°C/W
Operating and Storage Temperature Range	T_J,T_{STG}	-55 to +150	°C

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).

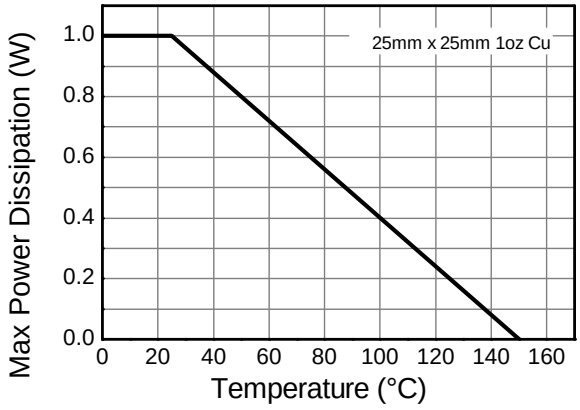
Thermal Characteristics



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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Electrical Characteristics @T_A = 25°C unless otherwise specified

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

Notes: 6. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤2%.

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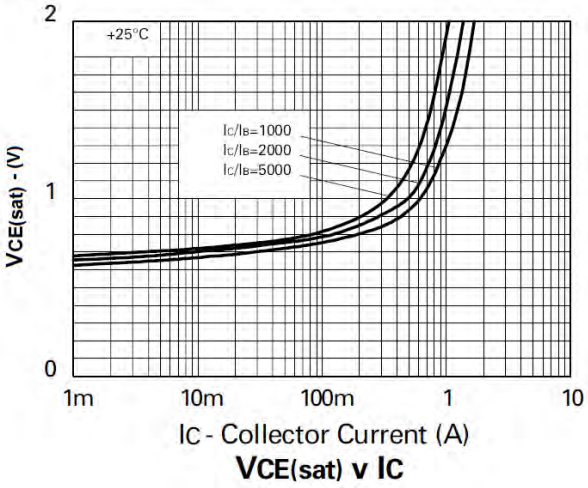
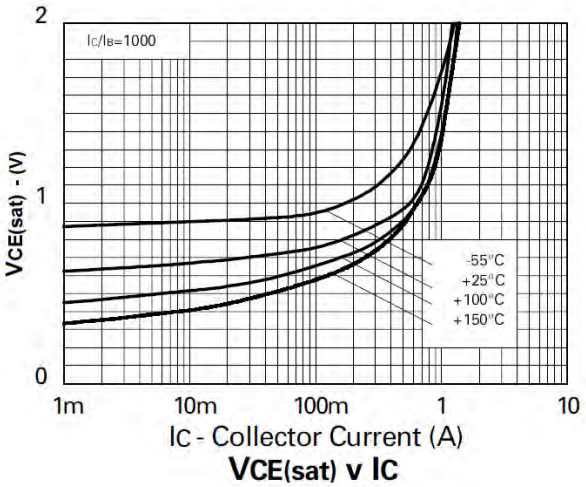
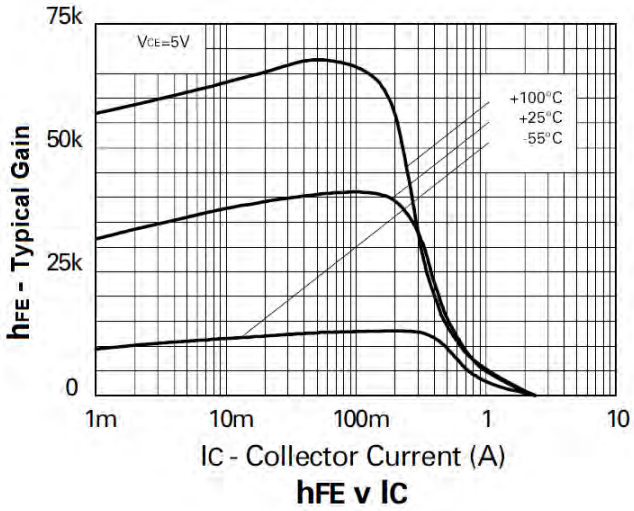
Typical Electrical Characteristics



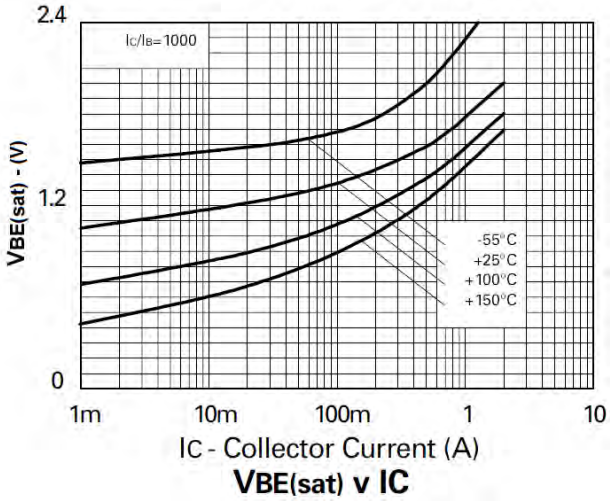
VCE(sat) v IC



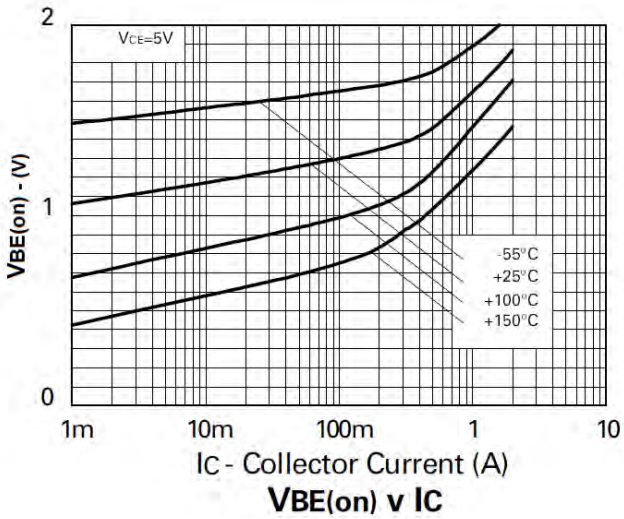
VCE(sat) v IC



hFE v IC



VBE(sat) v IC



VBE(on) v IC

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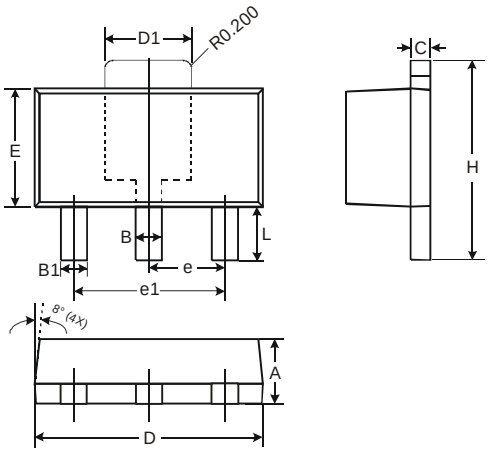
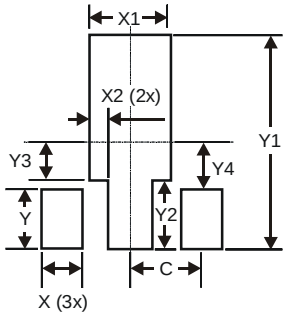
Package Outline Dimensions



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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