

## Features

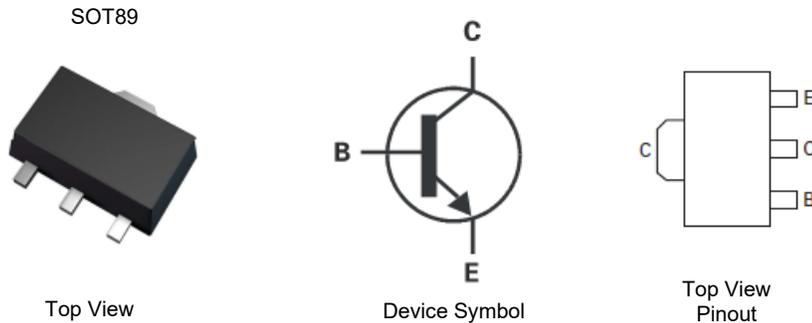
- $BV_{CEO} > 200V$
- $I_C = 1A$  Continuous Current
- $I_{CM} = 3A$  Peak Pulse Current
- $1.5W =$  Power Dissipation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SOT89
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.052 grams (Approximate)

## Applications

- LED TV backlight

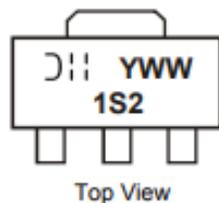


## Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
ZXTN4006ZTA	SOT89	1S2	7	12	1,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



1S2 = Product Type Marking Code  
 YWW = Date Code Meaning  
 Y = Last Digit of Year (ex: 5 = 2025)  
 WW = Week Code (01 to 53)

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	200	V
Collector-Emitter Voltage	V <sub>CEO</sub>	200	V
Emitter-Base Voltage	V <sub>EB0</sub>	7	V
Continuous Collector Current	I <sub>C</sub>	1	A
Peak Pulse Current	I <sub>CM</sub>	3	A
Base Current	I <sub>B</sub>	500	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

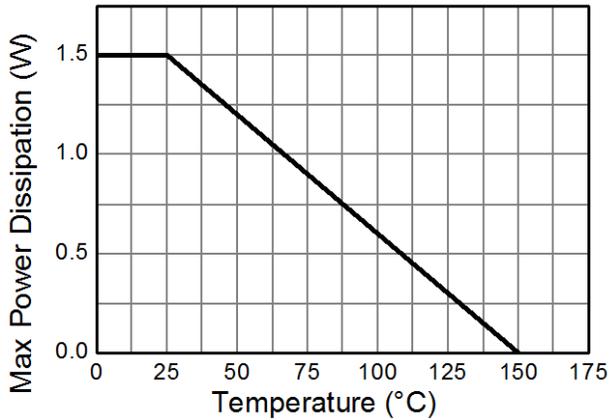
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	83	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R <sub>θJL</sub>	16.7	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 7)

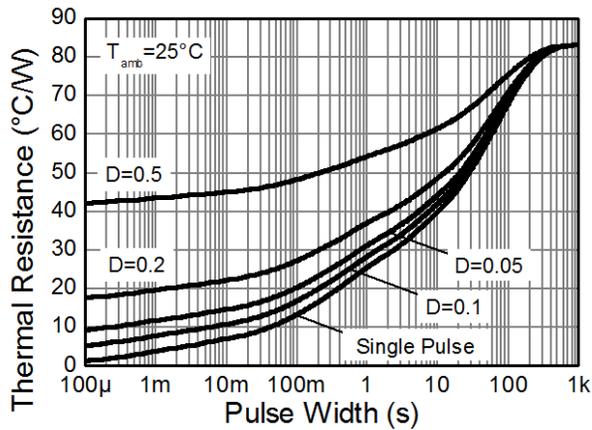
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	400	V	C
Electrostatic Discharge – Charged Device Model	ESD CDM	1,000	V	IV

- Notes:
- 5. For a device mounted with the collector lead on 18mm x 18mm 2oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady state.
  - 6. Thermal resistance from junction to solder-point (at the end of the leads).
  - 7. Refer to JEDEC specifications JESD22-A114, JESD22-A115 & JESD22-C101

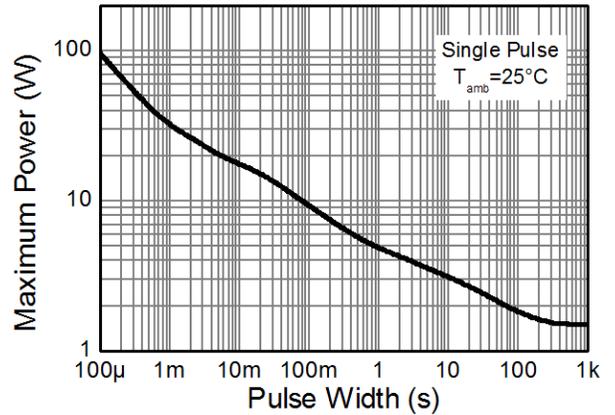
**Thermal Characteristics and Derating Information**



**Figure 1. Derating Curve**



**Figure 2. Transient Thermal Impedance**



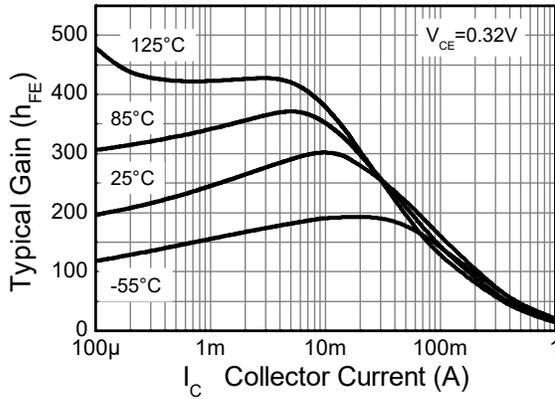
**Figure 3. Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

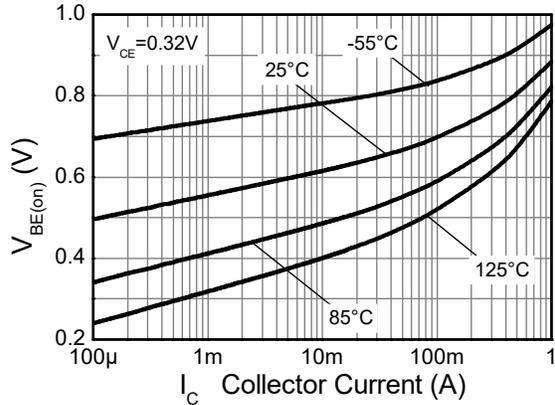
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Emitter Breakdown Voltage (Note 8)	BV <sub>CEO</sub>	200	—	—	V	I <sub>C</sub> = 10mA
Collector-Base Cutoff Current	I <sub>CBO</sub>	—	—	50	nA	V <sub>CB</sub> = 200V
Emitter-Base Cutoff Current	I <sub>EBO</sub>	—	—	50	nA	V <sub>EB</sub> = 7V
<b>ON CHARACTERISTICS (Note 8)</b>						
DC Current Gain	h <sub>FE</sub>	60 100	— —	— —	—	I <sub>C</sub> = 85mA, V <sub>CE</sub> = 0.25V I <sub>C</sub> = 150mA, V <sub>CE</sub> = 0.32V
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>	—	0.72	0.95	V	I <sub>C</sub> = 150mA, V <sub>CE</sub> = 0.32V
<b>SMALL-SIGNAL CHARACTERISTICS</b>						
Switching Time	t <sub>(d)</sub>	—	600	—	ns	V <sub>CC</sub> = 160V, I <sub>C</sub> = 150mA, -I <sub>B2</sub> = 1.5mA, V <sub>CE(ON)</sub> = 0.32V
	t <sub>(r)</sub>	—	496	—	ns	
	t <sub>(s)</sub>	—	2730	—	ns	
	t <sub>(f)</sub>	—	293	—	ns	
	t <sub>(s)</sub>	—	56	—	ns	V <sub>CC</sub> = 80V, I <sub>C</sub> = 150mA, I <sub>B1</sub> = -I <sub>B2</sub> = 1.5mA, V <sub>CE(ON)</sub> = 4V
	t <sub>(f)</sub>	—	243	—	ns	
Transition Frequency	f <sub>T</sub>	—	147	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 50mA, f = 100MHz

Note: 8. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%.

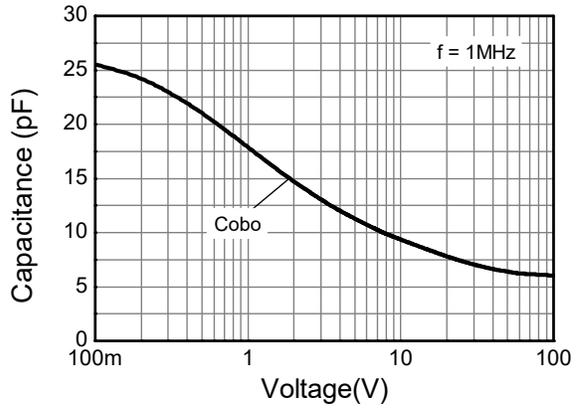
**Electrical Characteristics**



**Figure 4.  $h_{FE}$  vs.  $I_C$**



**Figure 5.  $V_{BE(on)}$  vs.  $I_C$**

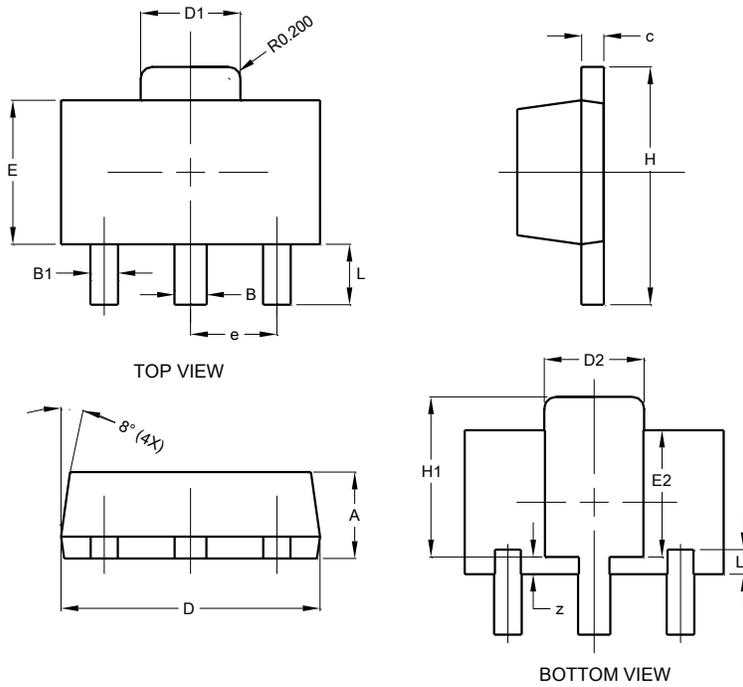


**Figure 6. Capacitance vs. Voltage**

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**

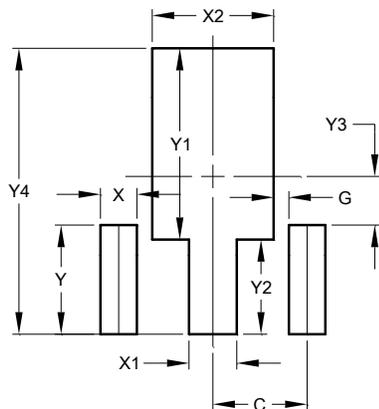


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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