

## Features

- $BV_{CEO} > 100V$
- $BV_{ECO} > 6V$
- $I_C = 2.5A$  Continuous Collector Current
- $I_{CM} = 3.5A$  Peak Collector Current
- $V_{CE(SAT)} < 100mV @ 1A$
- $R_{CE(SAT)} = 80m\Omega$  for a Low Equivalent On-Resistance
- Complementary PNP Type: ZXP25100CZ
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

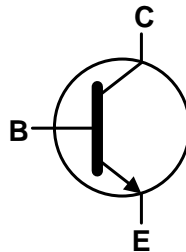
## Mechanical Data

- Case: SOT89
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability 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: 0.05 grams (Approximate)

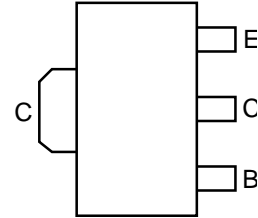
SOT89



Top View



Device Symbol



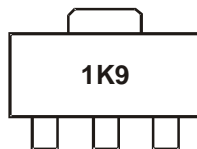
Top View  
Pin Out

## Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
ZXTN25100DZTA	AEC-Q101	1K9	7	12	1,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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



1K9 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	180	V
Collector-Emitter Voltage (Forward Blocking)	V <sub>CEx</sub>	180	V
Collector-Emitter Voltage	V <sub>CE0</sub>	100	V
Emitter-Collector Voltage (Reverse Blocking)	V <sub>EC0</sub>	6	V
Emitter-Base Voltage	V <sub>EBO</sub>	7	V
Continuous Collector Current	I <sub>C</sub>	2.5	A
Peak Pulse Current	I <sub>CM</sub>	3.5	A
Base Current	I <sub>B</sub>	1	A

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

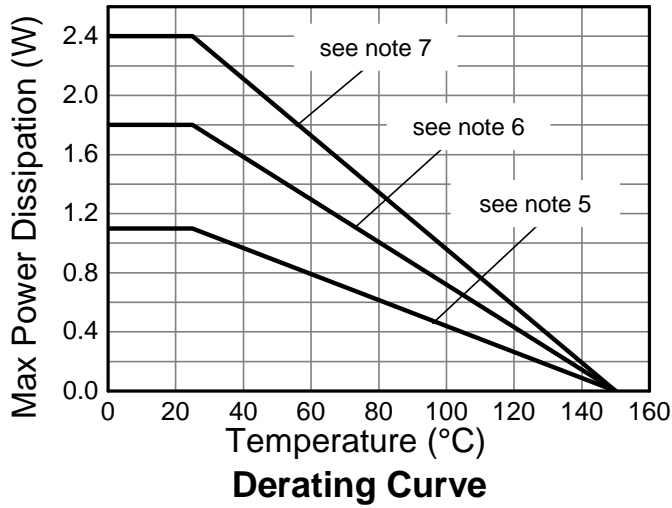
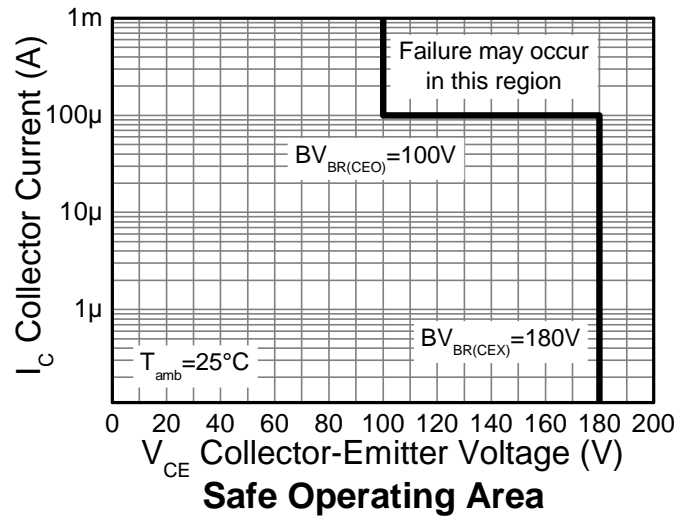
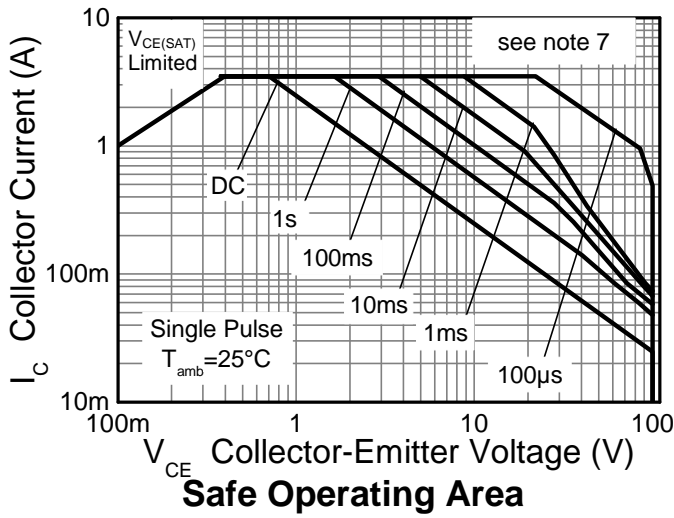
Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P <sub>D</sub>	1.1	W mW/°C
		8.8	
		1.8	
		14.4	
		2.4	
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	19.2	°C/W
		4.46	
		35.7	
		117	
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	68	°C/W
		51	
		28	
		7.95	
Thermal Resistance, Junction to Lead	R <sub>θJL</sub>	7.95	°C
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 10)

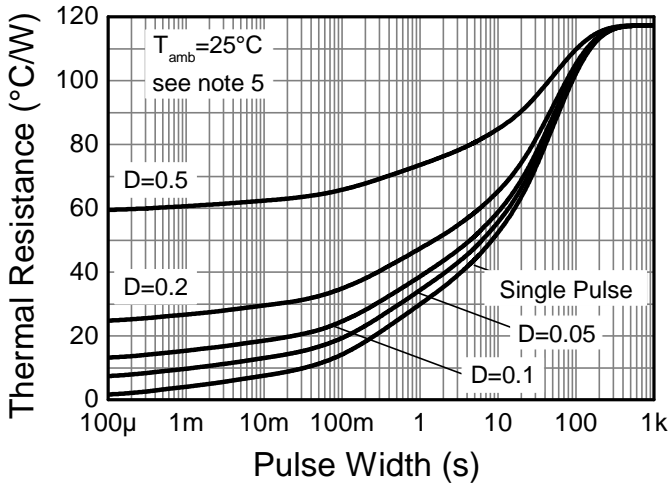
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 0.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  - Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
  - Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
  - Same as Note 7, except the device is measured at t<5 seconds.
  - Thermal resistance from junction to solder-point (on the exposed collector pad).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

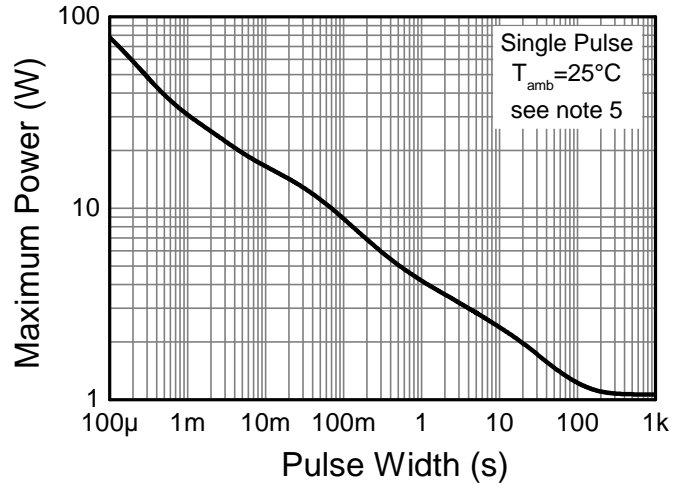
**Thermal Characteristics and Derating Information**



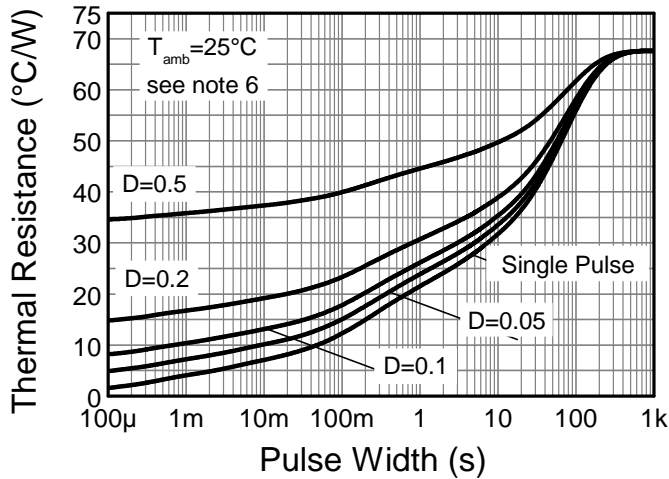
**Thermal Characteristics and Derating Information**



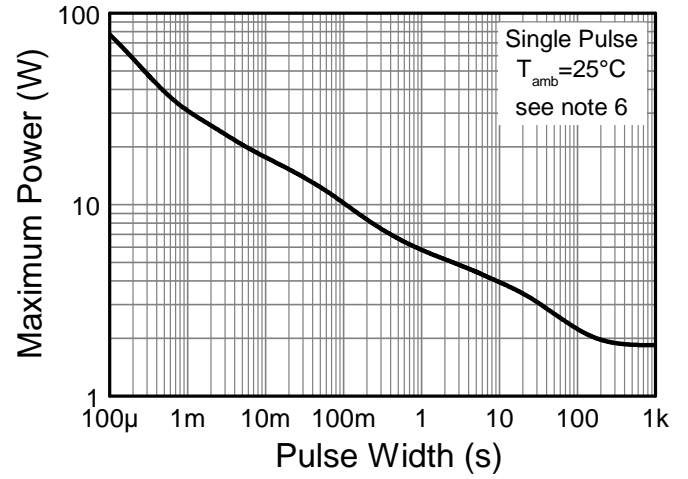
**Transient Thermal Impedance**



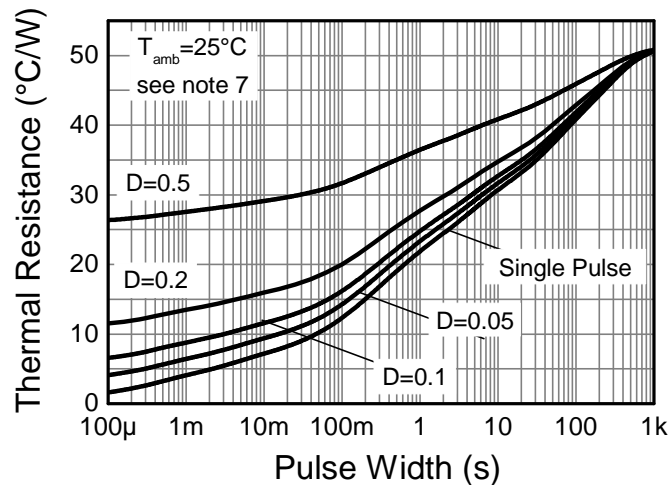
**Pulse Power Dissipation**



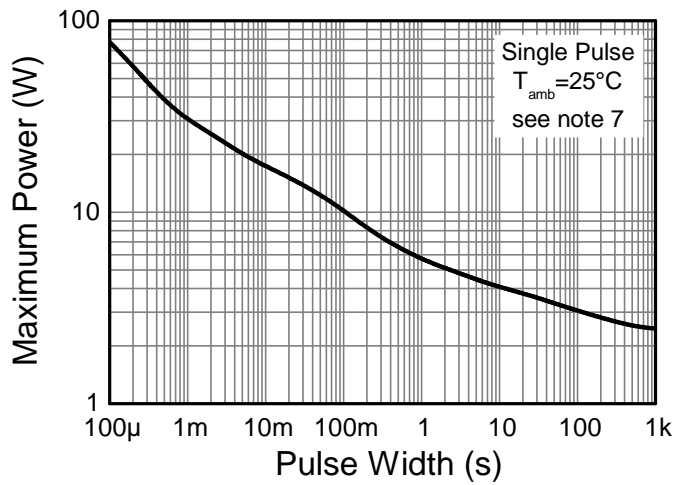
**Transient Thermal Impedance**



**Pulse Power Dissipation**



**Transient Thermal Impedance**



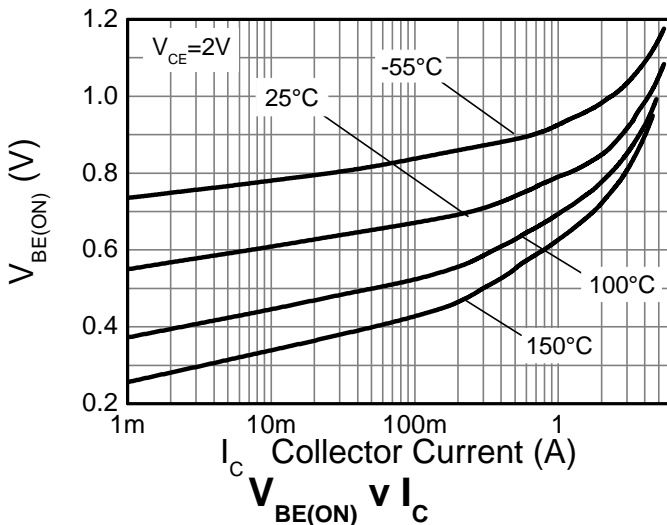
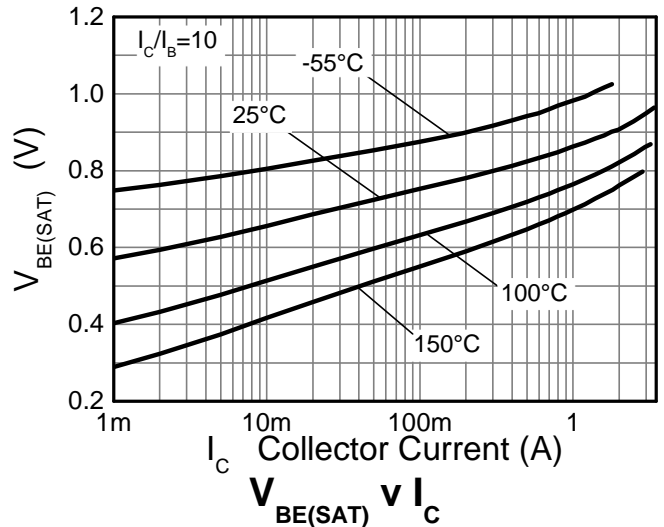
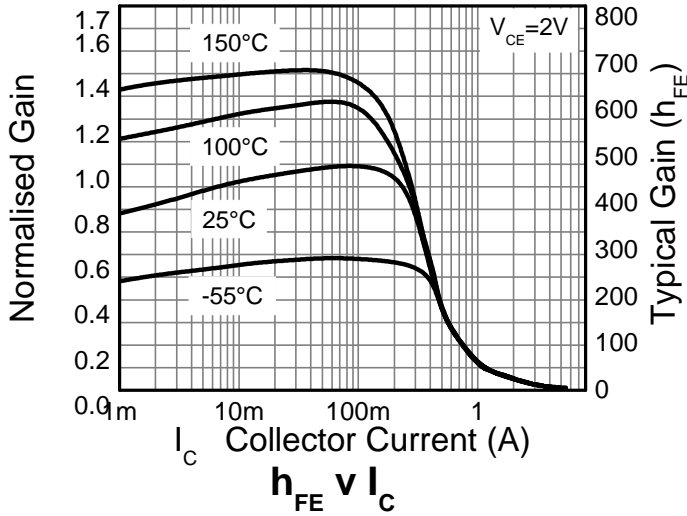
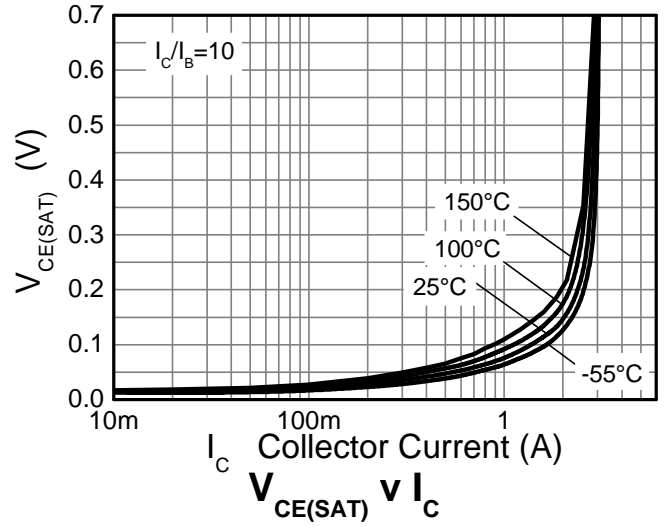
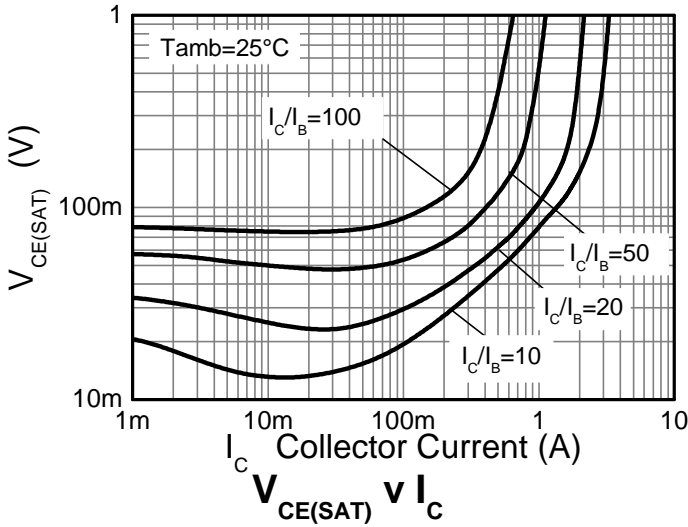
**Pulse Power Dissipation**

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	180	220	—	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage (Forward Blocking)	BV <sub>CEX</sub>	180	220	—	V	I <sub>C</sub> = 100μA, R <sub>BE</sub> < 1kΩ or -1V > V <sub>BE</sub> > 0.25V
Collector-Emitter Breakdown Voltage (Note 11)	BV <sub>CEO</sub>	100	130	—	V	I <sub>C</sub> = 10mA
Emitter-Collector Breakdown Voltage (Reverse Blocking)	BV <sub>ECX</sub>	6	8.2	—	V	I <sub>E</sub> = 100μA, R <sub>BC</sub> < 1kΩ or 0.25V > V <sub>BC</sub> > -0.25V
Emitter-Collector Breakdown Voltage (Reverse Blocking)	BV <sub>ECO</sub>	6	8.7	—	V	I <sub>E</sub> = 100μA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7	8.3	—	V	I <sub>E</sub> = 100μA
Collector-Base Cutoff Current	I <sub>CBO</sub>	—	<1	50 0.5	nA μA	V <sub>CB</sub> = 180V V <sub>CB</sub> = 180V, T <sub>A</sub> = +100°C
Collector-Emitter Cutoff Current	I <sub>CEX</sub>	—	—	100	nA	V <sub>CE</sub> = 100V, R <sub>BE</sub> < 1kΩ or 1V < V <sub>BE</sub> < 0.25V
Emitter Cutoff Current	I <sub>EBO</sub>	—	<1	50	nA	V <sub>EB</sub> = 5.6V
DC Current Transfer Static Ratio (Note 11)	h <sub>FE</sub>	300 120 40 —	450 170 60 20	900 — — —	—	I <sub>C</sub> = 10mA, V <sub>CE</sub> = 2V I <sub>C</sub> = 0.5A, V <sub>CE</sub> = 2V I <sub>C</sub> = 1A, V <sub>CE</sub> = 2V I <sub>C</sub> = 2.5A, V <sub>CE</sub> = 2V
Collector-Emitter Saturation Voltage (Note 11)	V <sub>CE(SAT)</sub>	—	120 80 220	170 100 345	mV	I <sub>C</sub> = 0.5A, I <sub>B</sub> = 10mA I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA I <sub>C</sub> = 2.5A, I <sub>B</sub> = 250mA
Base-Emitter Saturation Voltage (Note 11)	V <sub>BE(SAT)</sub>	—	935	1000	mV	I <sub>C</sub> = 2.5A, I <sub>B</sub> = 250mA
Base-Emitter Turn-on Voltage (Note 11)	V <sub>BE(ON)</sub>	—	890	950	mV	I <sub>C</sub> = 2.5A, V <sub>CE</sub> = 2V
Transitional Frequency	f <sub>T</sub>	—	175	—	MHz	I <sub>E</sub> = 50mA, V <sub>CE</sub> = 10V f = 100MHz
Input Capacitance	C <sub>IBO</sub>	—	154	250	pF	V <sub>EB</sub> = 0.5V, f = 1MHz
Output Capacitance	C <sub>OBO</sub>	—	8.7	15	pF	V <sub>CB</sub> = 10V, f = 1MHz
Delay Time	t <sub>D</sub>	—	16.4	—	ns	I <sub>C</sub> = 500mA, V <sub>CC</sub> = 10V, I <sub>B1</sub> = -I <sub>B2</sub> = 50mA
Rise Time	t <sub>R</sub>	—	115	—	ns	
Storage Time	t <sub>S</sub>	—	763	—	ns	
Fall Time	t <sub>F</sub>	—	158	—	ns	

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

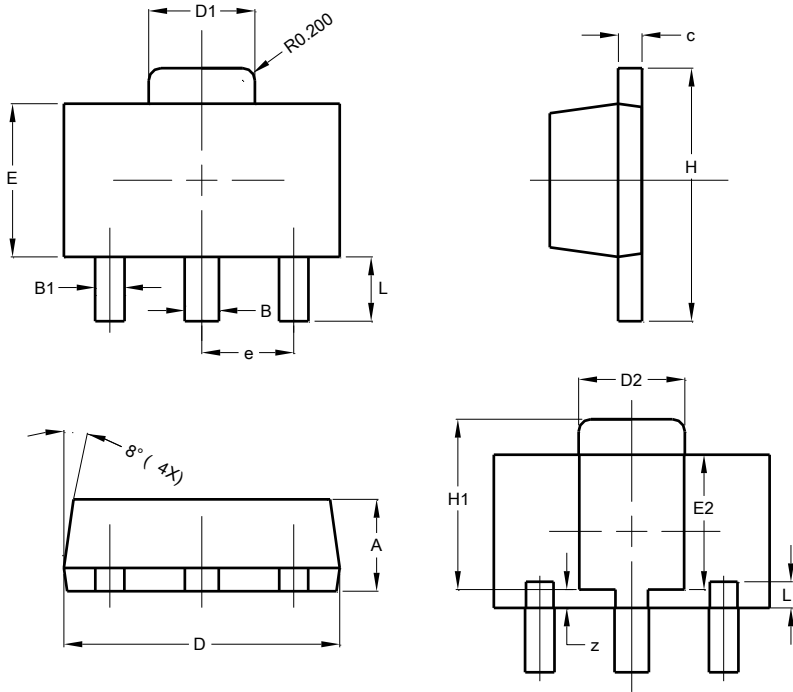
**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



**Package Outline Dimensions**

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

**SOT89**

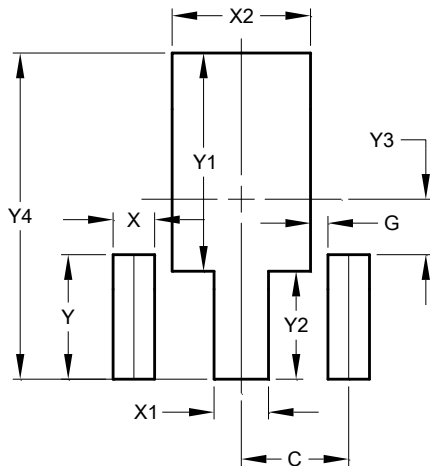


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in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

**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

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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