

**ZXTP03200BZ**

**200V PNP LOW  $V_{CE(sat)}$  TRANSISTOR IN SOT-89**

## Features

- $BV_{CEO} > -200V$
- $BV_{ECO} > -2V$
- Continuous current  $I_{C(cont)} = 2A$
- $V_{CE(sat)} < -160mV @ -1A$
- $R_{CE(sat)} = 130m\Omega$
- $P_D = 2.4W$
- 2 Amps continuous current
- Up to 5 Amps peak current
- Very low saturation voltage
- Enhanced switching performance

## Mechanical Data

- Case: SOT-89
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (approximate)

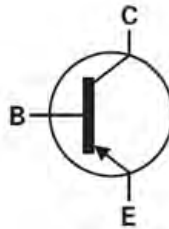
## Applications

- DC-DC Convertors

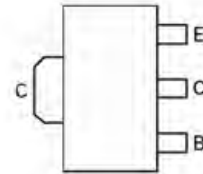
SOT-89



Top View



Device symbol

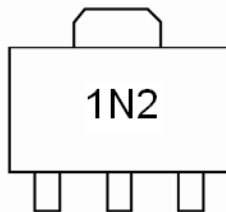


Pin Configuration

## Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP03200BZTA	1N2	7	12	1000

## Marking Information



1N2 = Product type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-220	V
Collector-Emitter Voltage	$V_{CEO}$	-200	V
Emitter-Base Voltage	$V_{EBO}$	-7	V
Continuous Collector Current (Note a)	$I_C$	-2	A
Base Current	$I_B$	-1	A
Peak Pulse Current	$I_{CM}$	-5	A

**Thermal Characteristics**

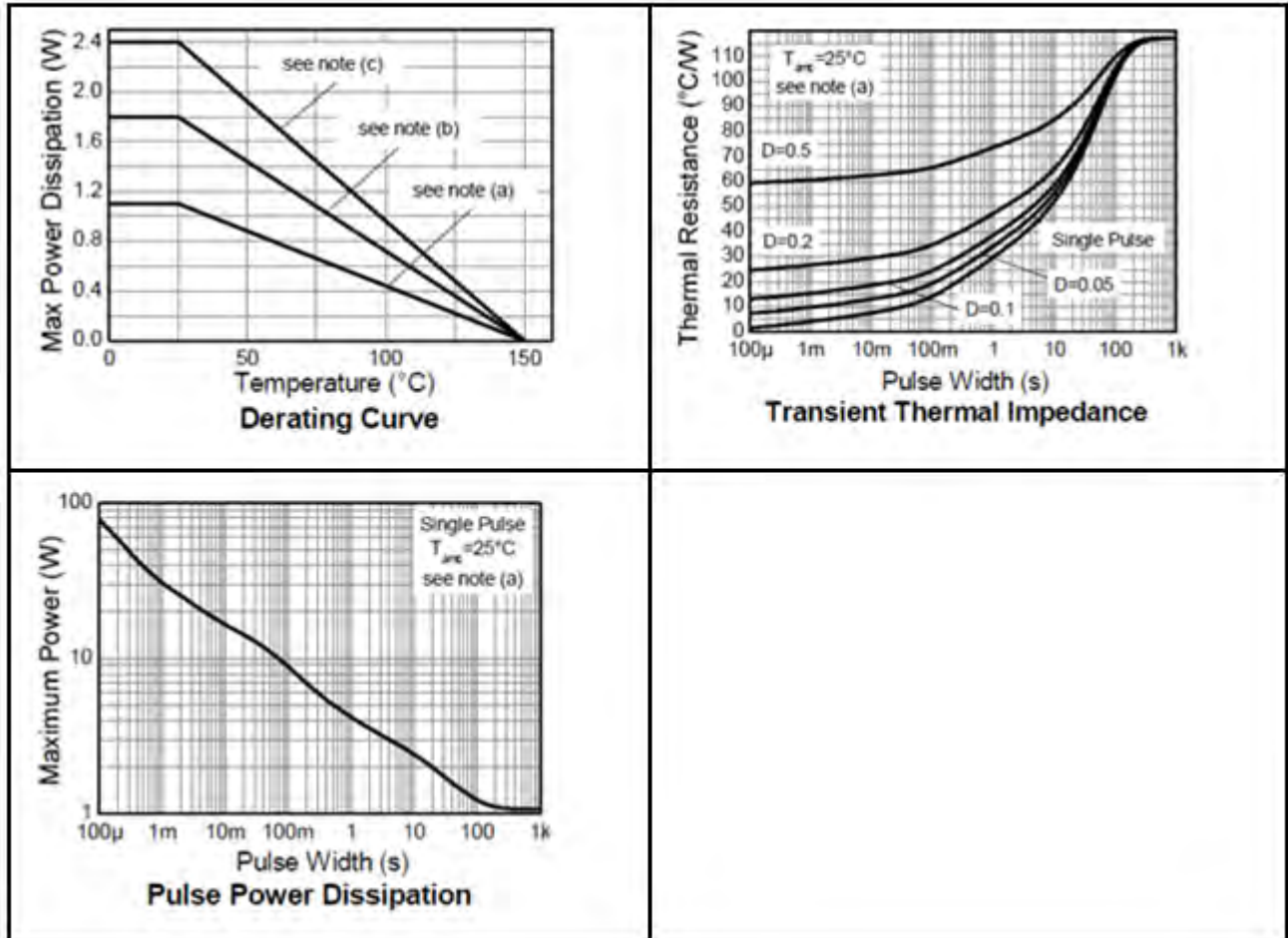
Characteristic	Symbol	Value	Unit
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note a) Linear derating factor	$P_D$	1.1 8.8	W mW/°C
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note b) Linear derating factor	$P_D$	1.8 14.4	W mW/°C
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note c) Linear derating factor	$P_D$	2.4 19.2	W mW/°C
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note d) Linear derating factor	$P_D$	4.46 35.7	W mW/°C
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note e) Linear derating factor	$P_D$	38.7 309.6	W mW/°C
Junction to Ambient (Note a)	$R_{\theta JA}$	117	°C/W
Junction to Ambient (Note b)	$R_{\theta JA}$	68	°C/W
Junction to Ambient (Note c)	$R_{\theta JA}$	51	°C/W
Junction to Ambient (Note d)	$R_{\theta JA}$	28	°C/W
Junction to Lead (Note e)	$R_{\theta JL}$	3.23	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

- Notes:
- a. For a device surface mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
  - b. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions.
  - c. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 2 oz copper, in still air conditions.
  - d. As (c) above measured at  $t < 5$  seconds
  - e. Junction to lead from collector Tab. Typical

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**Thermal Characteristics and Derating information**



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

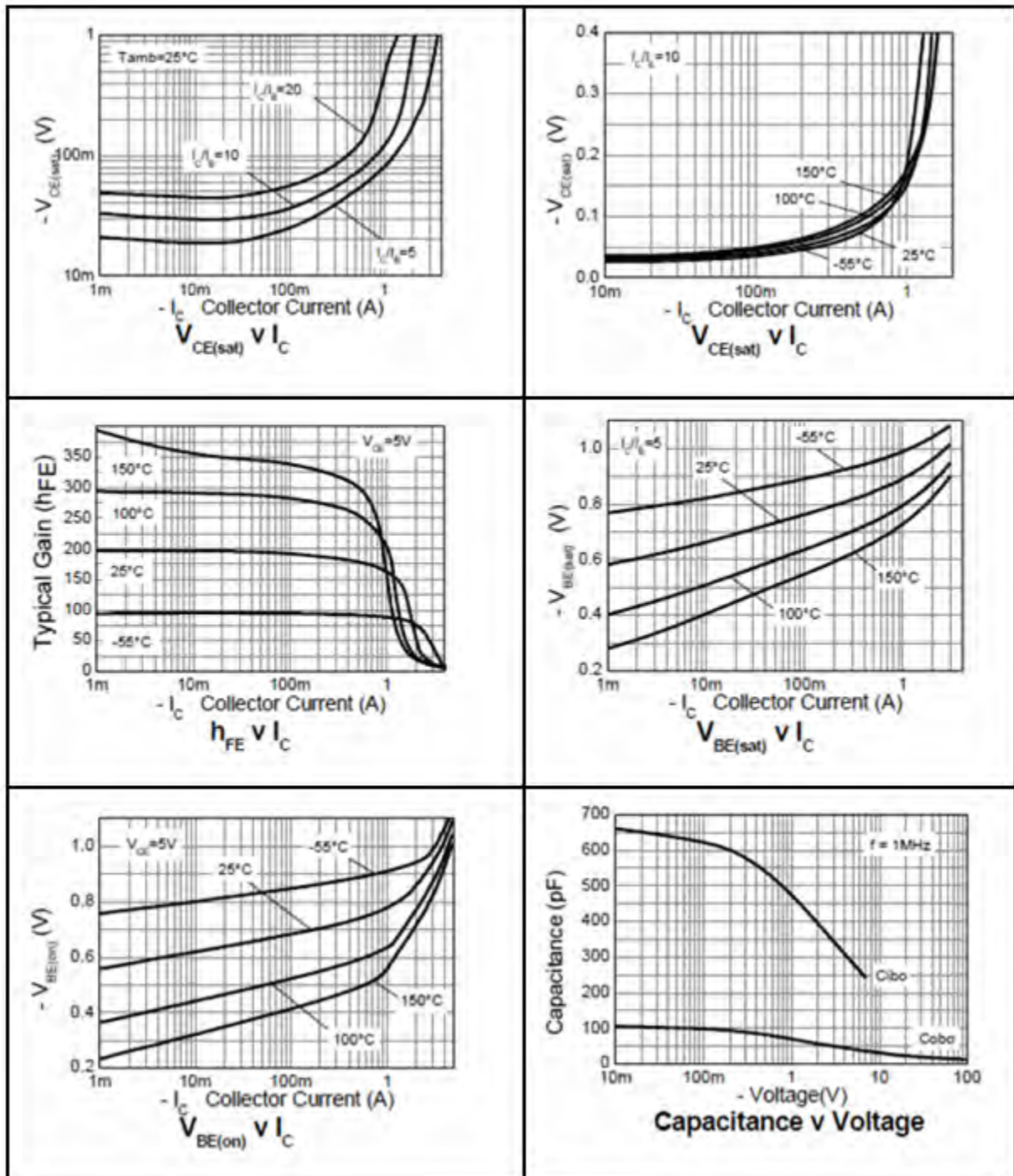
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-220	-245		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-220	-245		V	$I_C = -1\mu\text{A}$ , $R_{BE} \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note f)	$V_{(BR)CEO}$	-220	-225		V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-7	-8.4		V	$I_E = -100\mu\text{A}$
Collector-Base Cutoff Current	$I_{CBO}$		<1	-50 -0.5	nA $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}$ , $T_{amb} = 100^\circ\text{C}$
Emitter Cutoff Current	$I_{EBO}$		<1	-10	nA	$V_{EB} = -6\text{V}$
Static Forward Current Transfer Ratio (Note f)	$h_{FE}$	100 100 20	195 179 50 5	300		$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}$ $I_C = -1\text{A}$ , $V_{CE} = -5\text{V}$ $I_C = -2\text{A}$ , $V_{CE} = -5\text{V}$ $I_C = -5\text{A}$ , $V_{CE} = -5\text{V}$
Collector-Emitter Saturation Voltage (Note f)	$V_{CE(sat)}$		-37 -120 -130 -160	-50 -155 -160 -260	mV mV mV mV	$I_C = -100\text{mA}$ , $I_B = -10\text{mA}$ $I_C = -500\text{mA}$ , $I_B = -25\text{mA}$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}$ $I_C = -2\text{A}$ , $I_B = -400\text{mA}$
Base-Emitter Saturation Voltage (Note f)	$V_{BE(sat)}$		-940	-1100	mV	$I_C = -2\text{A}$ , $I_B = -400\text{mA}$
Base-Emitter Turn-On Voltage (Note f)	$V_{BE(ON)}$		-840	-1000	mV	$I_C = -2\text{A}$ , $V_{CE} = -5\text{V}$
Output Capacitance (Note f)	$C_{obo}$		31		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$
Transition Frequency	$f_T$		105		MHz	$V_{CE} = -10\text{V}$ , $I_C = -100\text{mA}$ $f = 50\text{MHz}$
Delay Time	$t_d$		21		ns	$V_{CC} = -50\text{V}$ , $I_C = -1\text{A}$ $I_{B1} = -I_{B2} = -100\text{mA}$
Rise Time	$t_r$		18		ns	
Storage Time	$T_s$		680		ns	
Fall Time	$T_f$		75		ns	

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

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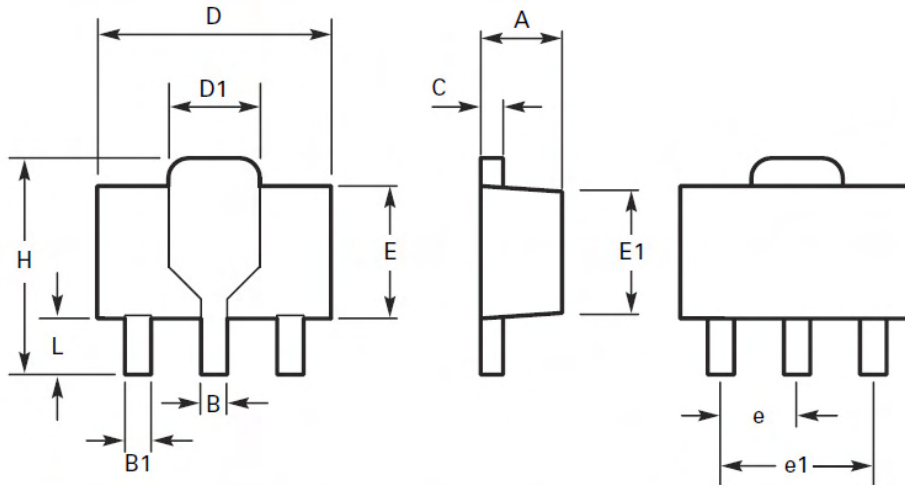
**Typical Characteristics**



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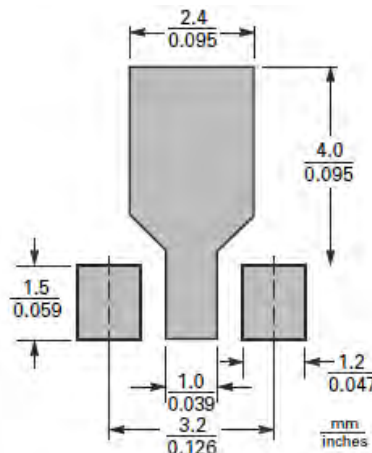
**Package Outline Dimensions**



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.40	1.60	0.550	0.630	E	2.29	2.60	0.090	0.102
B	0.44	0.56	0.017	0.022	E1	2.13	2.29	0.084	0.090
B1	0.36	0.48	0.014	0.019	e	1.50 BSC		0.059 BSC	
C	0.35	0.44	0.014	0.017	e1	3.00 BSC		0.118 BSC	
D	4.40	4.60	0.173	0.181	H	3.94	4.25	0.155	0.167
D1	1.52	1.83	0.064	0.072	L	0.89	1.20	0.035	0.047

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

**Suggested Pad Layout**



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