

## ZXTP03200BZ

### 200V PNP Low $V_{CE(sat)}$ transistor in SOT89

#### Summary

$BV_{CEO} > -200V$

$BV_{ECO} > -2V$

$I_{C(cont)} = 2A$

$V_{CE(sat)} < -160mV @ -1A$

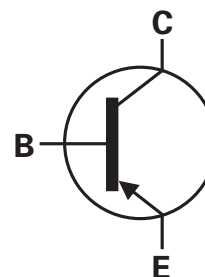
$R_{CE(sat)} = 130m\Omega$

$P_D = 2.4W$



#### Description

Packaged in the SOT89 outline this new 5<sup>th</sup> generation low saturation 200V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions

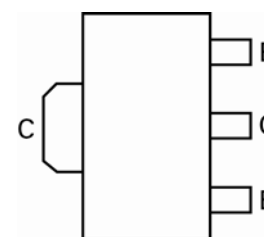


#### Features

- 2 Amps continuous current
- Up to 5 Amps peak current
- Very low saturation voltage
- Enhanced switching performance

#### Applications

- DC-DC Convertors



Pinout - top view

#### Ordering Information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP03200BZTA	7	12	1000

#### Device Marking

1N2

## Absolute Maximum Ratings

Parameter	Symbol	Limit	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 <sup>(a)</sup>	$I_C$	-2	A
Base Current	$I_B$	-1	A
Peak Pulse Current	$I_{CM}$	-5	A
Power Dissipation at $T_A=25^\circ\text{C}$ <sup>(a)</sup> Linear Derating Factor	$P_D$	1.1 8.8	W mW/°C
Power Dissipation at $T_A=25^\circ\text{C}$ <sup>(b)</sup> Linear Derating Factor	$P_D$	1.8 14.4	W mW/°C
Power Dissipation at $T_A=25^\circ\text{C}$ <sup>(c)</sup> Linear Derating Factor	$P_D$	2.4 19.2	W mW/°C
Power Dissipation at $T_A=25^\circ\text{C}$ <sup>(d)</sup> Linear Derating Factor	$P_D$	4.46 35.7	W mW/°C
Power Dissipation at $T_C=25^\circ\text{C}$ <sup>(e)</sup> Linear Derating Factor	$P_D$	38.7 309.6	W mW/°C
Operating and Storage Temperature Range	$T_j, T_{stg}$	-55 to 150	°C

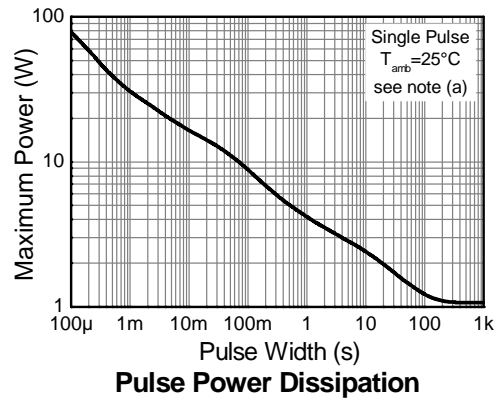
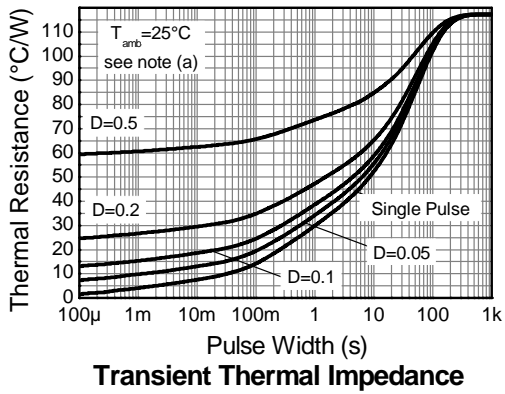
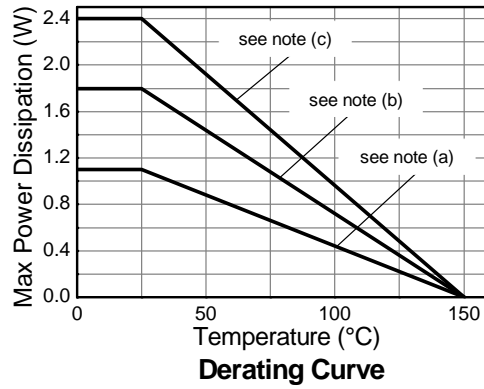
## Thermal Resistance

Parameter	Symbol	Value	Unit
Junction to Ambient <sup>(a)</sup>	$R_{\theta JA}$	117	°C/W
Junction to Ambient <sup>(b)</sup>	$R_{\theta JA}$	68	°C/W
Junction to Ambient <sup>(c)</sup>	$R_{\theta JA}$	51	°C/W
Junction to Ambient <sup>(d)</sup>	$R_{\theta JA}$	28	°C/W
Junction to Lead <sup>(e)</sup>	$R_{\theta JL}$	3.23	°C/W

### NOTES:

- (a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- (b) Mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- (c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
- (d) As (c) above measured at  $t < 5$  seconds.
- (e) Junction to Lead from Collector Tab. Typical

## Thermal Characteristics



# ZXTP03200BZ

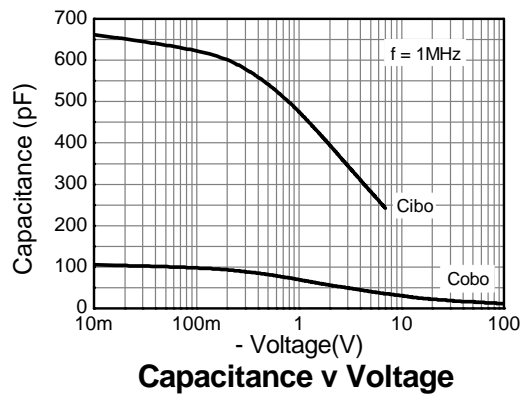
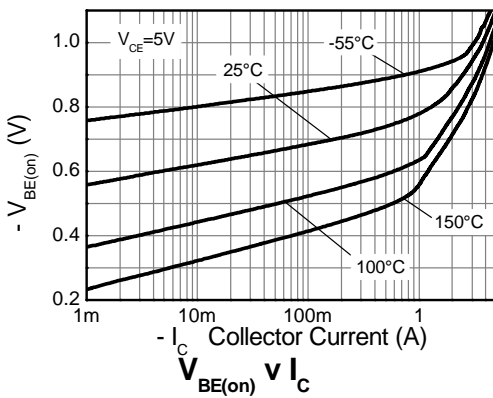
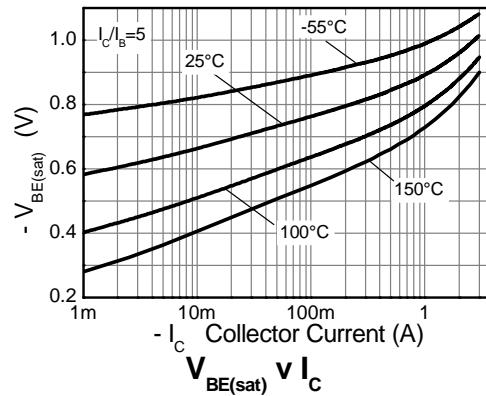
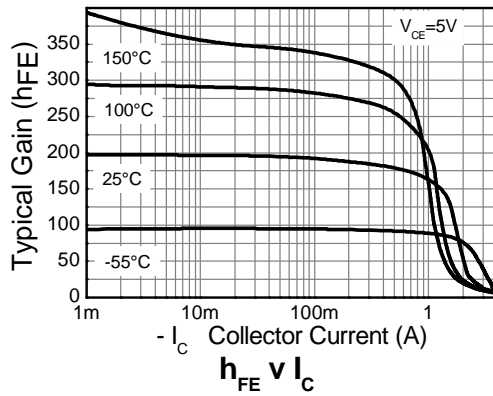
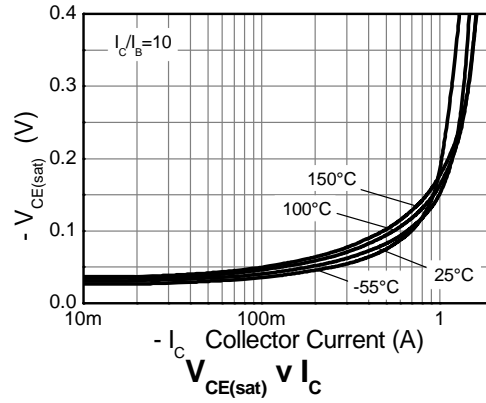
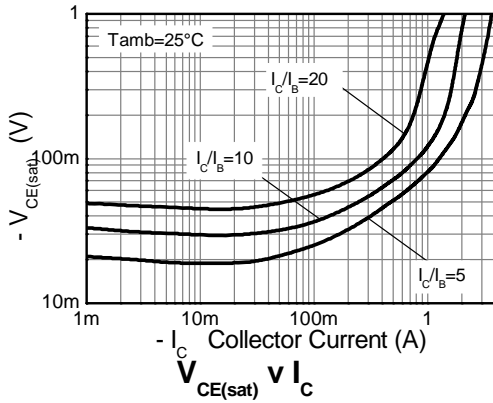
## Electrical Characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-Base Breakdown Voltage	$BV_{CBO}$	-220	-245		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown voltage	$BV_{CER}$	-220	-245		V	$I_C = -1\mu\text{A}$ , $R_{BE} \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	-200	-225		V	$I_C = -10\text{mA}$ (*)
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	-8.4		V	$I_E = -100\mu\text{A}$
Collector-Base Cut-off 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 Cut-off Current	$I_{EBO}$		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-37 -120 -130 -160	-50 -155 -160 -260	mV mV mV mV	$I_C = -0.1\text{A}$ , $I_B = -10\text{mA}$ (*) $I_C = -0.5\text{A}$ , $I_B = -25\text{mA}$ (*) $I_C = -1\text{A}$ , $I_B = -100\text{mA}$ (*) $I_C = -2\text{A}$ , $I_B = -400\text{mA}$ (*)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-940	-1100	mV	$I_C = -2\text{A}$ , $I_B = -400\text{mA}$ (*)
Base-Emitter Turn-on Voltage	$V_{BE(on)}$		-840	-1000	mV	$I_C = -2\text{A}$ , $V_{CE} = -5\text{V}$ (*)
Static Forward Current Transfer Ratio	$h_{FE}$	100 100 20	195 170 50 5	300		$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}$ (*) $I_C = -1\text{A}$ , $V_{CE} = -5\text{V}$ (*) $I_C = -2\text{A}$ , $V_{CE} = -5\text{V}$ (*) $I_C = -5\text{A}$ , $V_{CE} = -5\text{V}$ (*)
Transition Frequency	$f_T$		105		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$		31		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$ (*)
Delay Time	$t_d$		21		ns	$I_C = -1\text{A}$ , $V_{CC} = -50\text{V}$ , $I_{B1} = -I_{B2} = -100\text{mA}$
Rise Time	$t_r$		18		ns	
Storage Time	$t_s$		680		ns	
Fall Time	$t_f$		75		ns	

### NOTES:

(\*) Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

Typical Characteristics

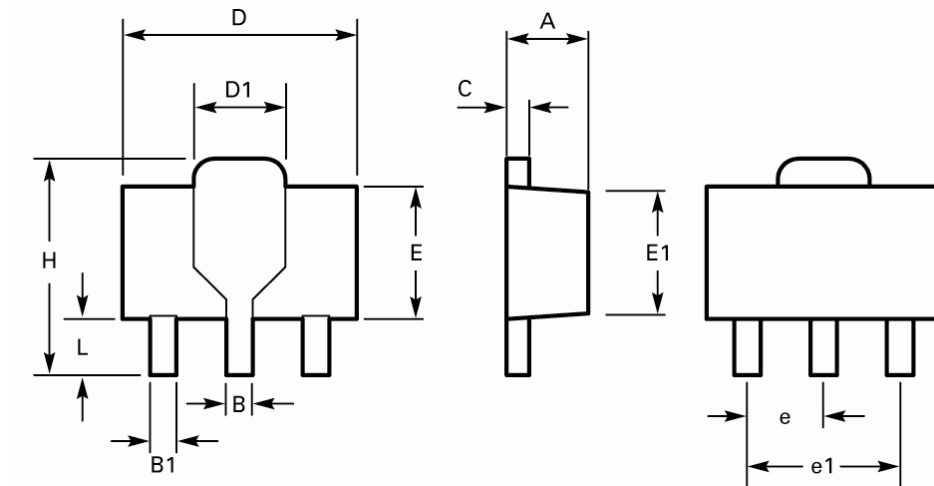


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## Package Information –SOT89



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.40	1.60	0.550	0.630	e	1.40	1.50	0.055	0.059
b	0.38	0.48	0.015	0.019	E	3.75	4.25	0.150	0.167
b1	-	0.53	-	0.021	E1	-	2.60	-	0.102
b2	1.50	1.80	0.060	0.071	G	2.90	3.00	0.114	0.118
c	0.28	0.44	0.011	0.017	H	2.60	2.85	0.102	0.112
D	4.40	4.60	0.173	0.181	-	-	-	-	-

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The Americas	Europe	Taiwan	Shanghai	Shenzhen	Korea
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