

ZXTP03200BG

200V PNP Low $V_{CE(sat)}$ transistor in SOT223

Summary

$BV_{CEO} > -200V$

$BV_{ECO} > -2V$

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

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

$R_{CE(sat)} = 135m\Omega$

$P_D = 3W$

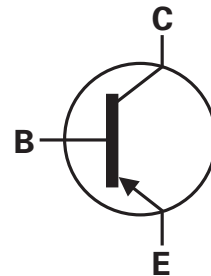


Description

Packaged in the SOT223 outline this new 5th 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

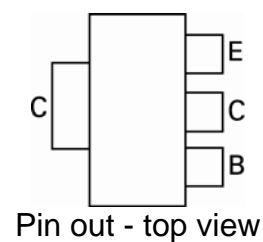


Applications

- DC-DC conversion

Ordering Information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP03200BGTA	7	12	1000



Device Marking

ZXTP03200BG

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 ^(a)	I_C	-2	A
Base Current	I_B	-1	A
Peak Pulse Current	I_{CM}	-5	A
Power Dissipation at $T_A=25^\circ\text{C}$ ^(a) Linear Derating Factor	P_D	1.25 10	W mW/°C
Power Dissipation at $T_A=25^\circ\text{C}$ ^(b) Linear Derating Factor	P_D	1.65 13.2	W mW/°C
Power Dissipation at $T_A=25^\circ\text{C}$ ^(c) Linear Derating Factor	P_D	3 24	W mW/°C
Power Dissipation at $T_A=25^\circ\text{C}$ ^(d) Linear Derating Factor	P_D	5.8 46.5	W mW/°C
Power Dissipation at $T_C=25^\circ\text{C}$ ^(e) Linear Derating Factor	P_D	11.9 95.2	W mW/°C
Operating and Storage Temperature Range	T_j, T_{stg}	-55 to 150	°C

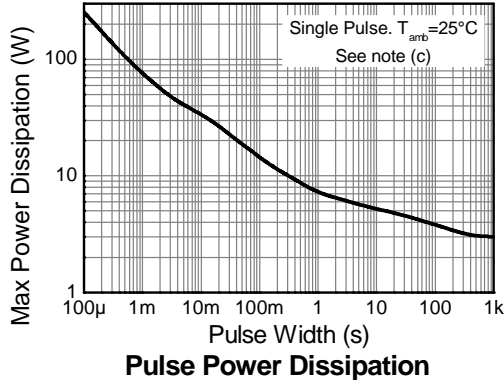
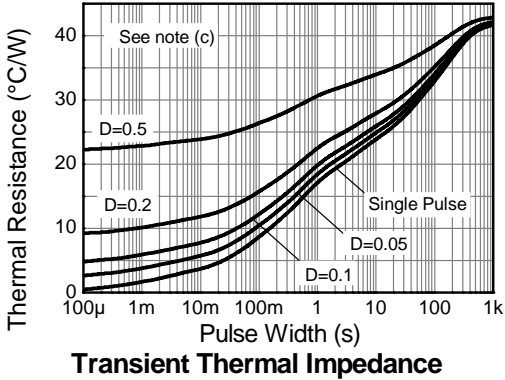
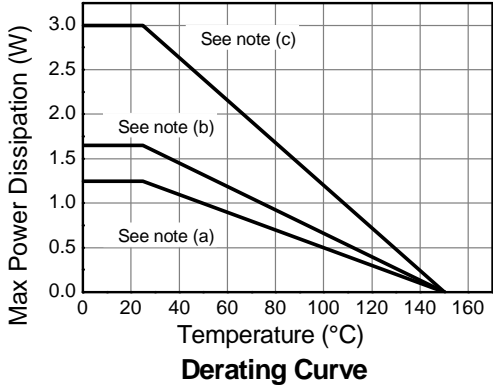
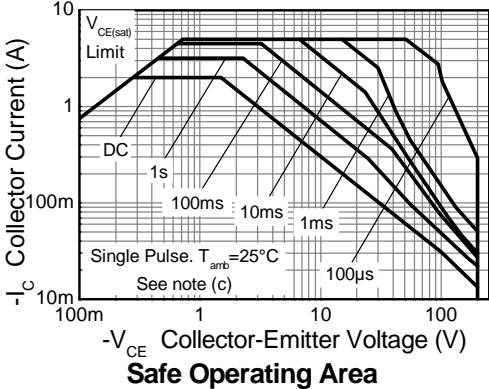
Thermal Resistance

Parameter	Symbol	Value	Unit
Junction to Ambient ^(a)	$R_{\theta JA}$	100	°C/W
Junction to Ambient ^(b)	$R_{\theta JA}$	76	°C/W
Junction to Ambient ^(c)	$R_{\theta JA}$	41.6	°C/W
Junction to Ambient ^(d)	$R_{\theta JA}$	21.5	°C/W
Junction to Lead ^(e)	$R_{\theta JL}$	10.5	°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



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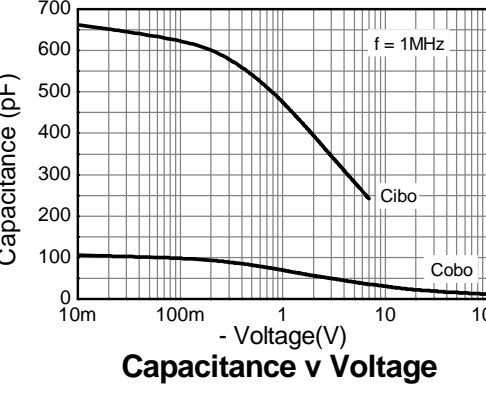
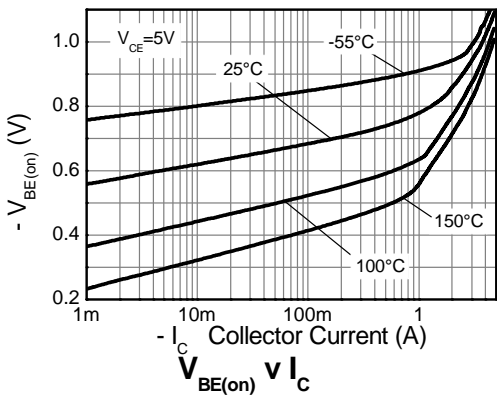
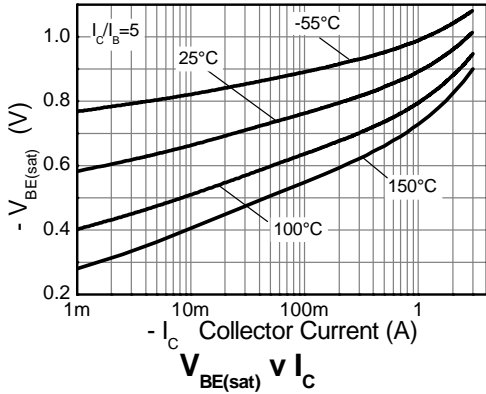
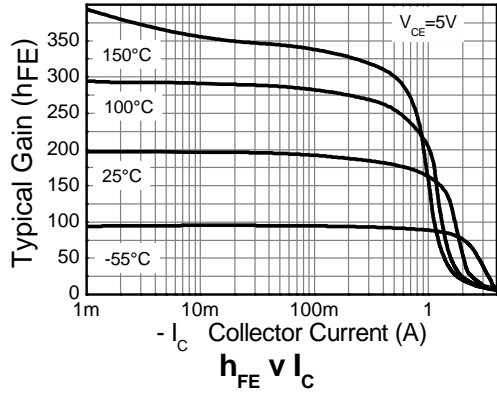
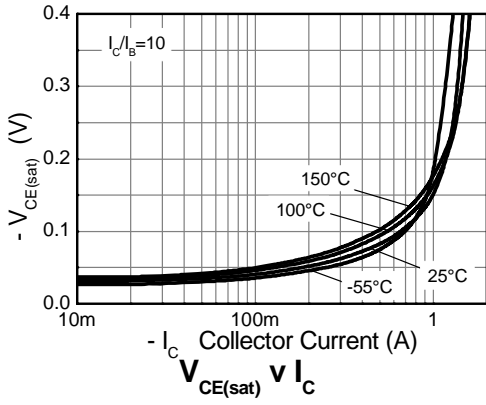
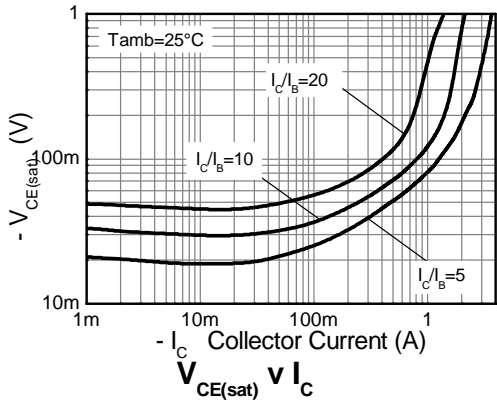
Electrical Characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

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 μA	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-off Current	I_{EBO}		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-37 -130 -135 -180	-50 -155 -160 -275	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	$V_{BE(sat)}$		-955	-1100	mV	$I_C = -2\text{A}$, $I_B = -400\text{mA}$ (*)
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-860	-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 $\leq 2\%$.

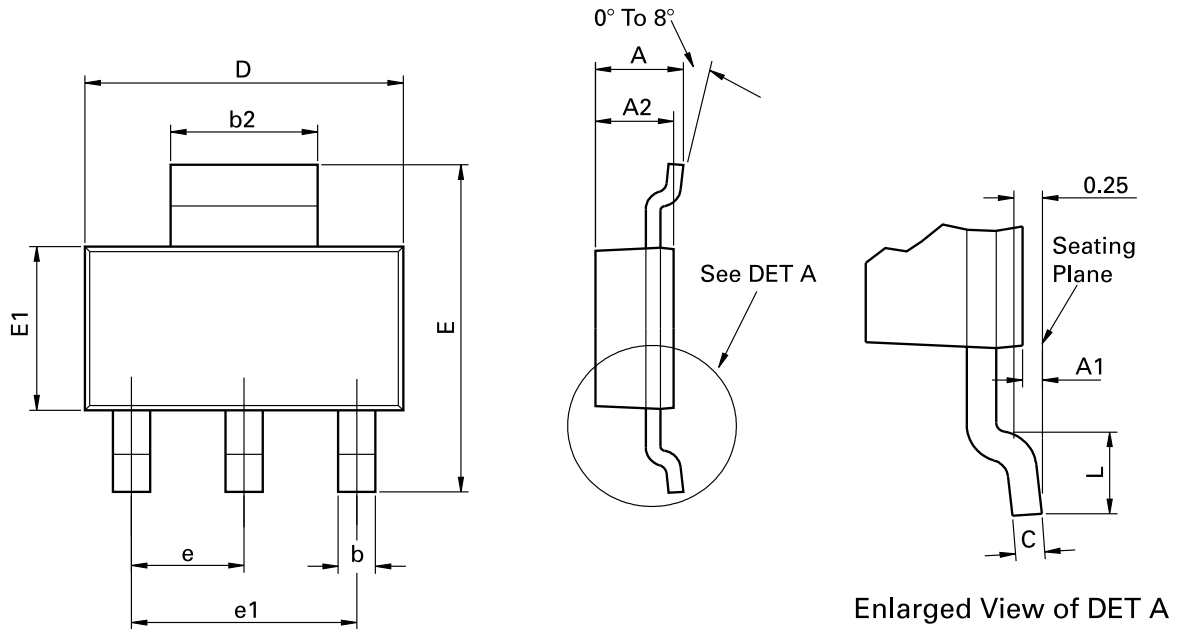
Typical Characteristics



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ZXTP03200BG

Package Information – SOT223



Conforms to JEDEC TO-261 AA Issue B

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-
D	6.30	6.70	0.248	0.264	-	-	-	-	-

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Diodes sales offices

Sales offices

The Americas

3050 E. Hillcrest Drive
Westlake Village,
CA 91362-3154
Tel: (+1) 805 446 4800
Fax: (+1) 805 446 4850

Europe

Kustermannpark
Balanstraße 59,
D-81541 München
Germany
Tel: (+49) 894 549 490
Fax: (+49) 894 549 4949

Taiwan

7F, No. 50,
Min Chuan Road
Hsin-Tien
Taipei, Taiwan
Tel: (+886) 289 146 000
Fax: (+886) 289 146 639

Shanghai

Rm. 606, No.1158
Changning Road
Shanghai, China
Tel: (+86) 215 241 4882
Fax (+86) 215 241 4891

Shenzhen

Room A1103-04,
ANLIAN Plaza, #4018
Jintian Road
Futian CBD,
Shenzhen, China
Tel: (+86) 755 882 849 88
Fax: (+86) 755 882 849 99

Korea

6 Floor, Changhwa B/D,
1005-5 Yeongtong-dong,
Yeongtong-gu, Suwon-si,
Gyeonggi-do, Korea 443-813
Tel: (+82) 312 731 884
Fax: (+82) 312 731 885

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Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru