ZXTP03200BG

200V PNP MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

Features

- BV_{CEO} > -200V
- I_C = -2A High Continuous Collector Current
- I_{CM} = -5A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < -160mV @ I_C = -1A
- R_{SAT} = 135mΩ for a Low Equivalent On-Resistance
- Enhanced Switching Performance
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

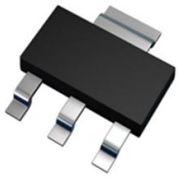
Mechanical Data

- Case: SOT223
- 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: 0.112 grams (Approximate)

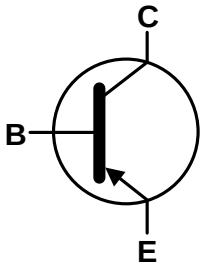
Applications

- DC-DC Conversion

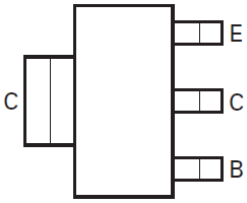
SOT223



Top View



Device Symbol



Top View
Pin-Out

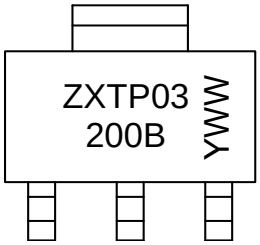
Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP03200BGTA	ZXTP03200B	7	12	1,000

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See 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 http://www.diodes.com/products/packages.html.

Marking Information

SOT223



ZXTP03200B = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 5= 2015)
WW or $\overline{WW}$ = Week Code (01~53)

Absolute Maximum Ratings (@T_A = +25°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	I_C	-2	A
Peak Pulse Current	I_{CM}	-5	A
Base Current	I_B	-1	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

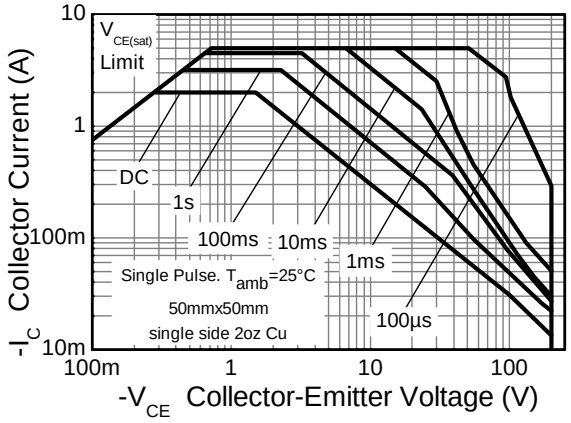
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1.25	W
	(Note 6)		1.65	
	(Note 7)		3.0	
	(Note 8)		5.8	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	100	°C/W
	(Note 6)		76	
	(Note 7)		41.6	
	(Note 8)		21.5	
Thermal Resistance, Junction to Lead	(Note 9)	$R_{\theta JL}$	10.5	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 10)

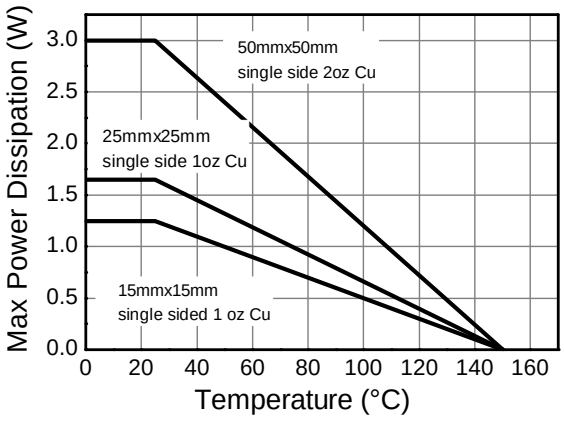
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted with the collector lead on 15mm x 15mm 1oz. copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as Note 5, except the device is mounted on 25mm x 25mm 1oz. copper.
7. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz. copper.
8. Same as Note 7, except measured at t<5 seconds.
9. Thermal resistance from junction to solder-point (at the end of the collector lead).
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

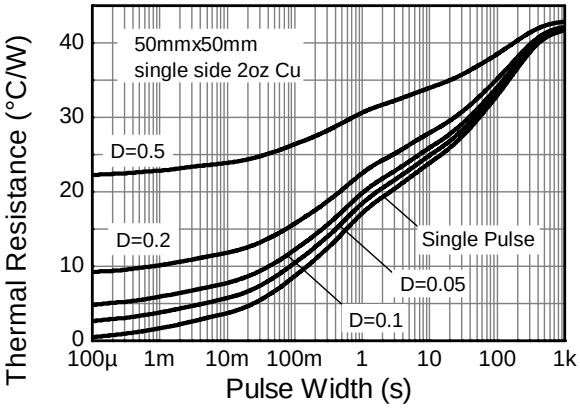
Thermal Characteristics and Derating Information



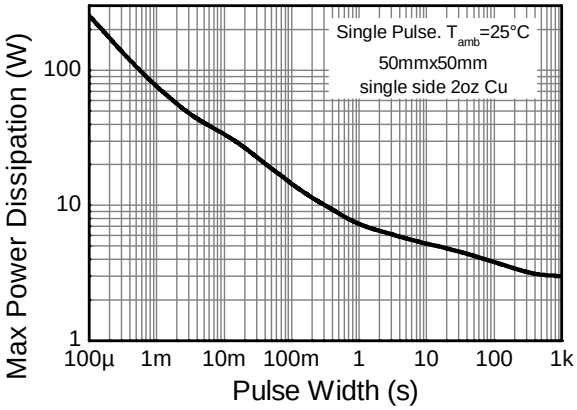
Safe Operating Area



Derating Curve



Transient Thermal Impedance



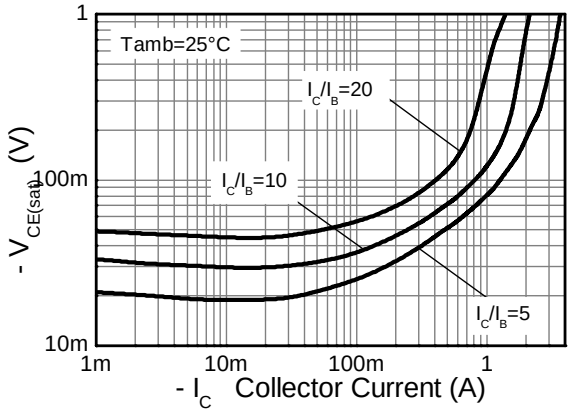
Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

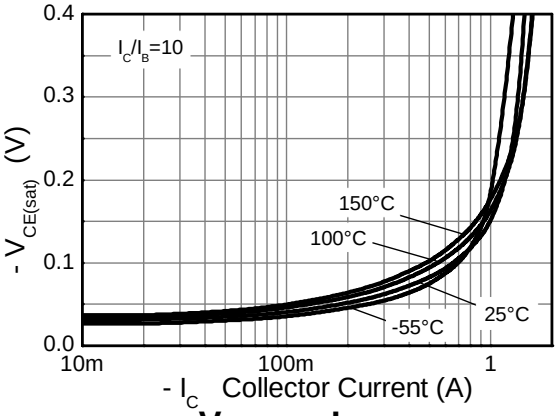
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-220	-245	-	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CER}	-220	-245	-	V	I_C = -1µA, $R_B \leq 1k\Omega$
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	-200	-225	-	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.4	-	V	I_E = -100µA
Collector Cut-Off Current	I_{CBO}	- -	< -1 -	-50 -0.5	nA µA	V_{CB} = -200V V_{CB} = -200V, T_A = +100°C
Emitter Cut-Off Current	I_{EBO}	-	< -1	-10	nA	V_{EB} = -6V
DC Current Transfer Static Ratio (Note 11)	h_{FE}	100	195	-	-	I_C = -10mA, V_{CE} = -5V
		100	170	300		I_C = -1A, V_{CE} = -5V
		20	50	-		I_C = -2A, V_{CE} = -5V
		-	5	-		I_C = -5A, V_{CE} = -5V
Collector-Emitter Saturation Voltage (Note 11)	$V_{CE(sat)}$	-	-37	-50	mV	I_C = -0.1A, I_B = -10mA
		-	-130	-155		I_C = -0.5A, I_B = -25mA
		-	-135	-160		I_C = -1A, I_B = -100mA
		-	-180	-275		I_C = -2A, I_B = -400mA
Base-Emitter Saturation Voltage (Note 11)	$V_{BE(sat)}$	-	-955	-1,100	mV	I_C = -2A, I_B = -400mA
Base-Emitter Turn-On Voltage (Note 11)	$V_{BE(on)}$	-	-860	-1,000	mV	I_C = -2A, V_{CE} = -5V
Transitional Frequency (Note 11)	f_T	-	105	-	MHz	I_C = -100mA, V_{CE} = -10V, f = 50MHz
Output Capacitance	C_{obo}	-	31	-	pF	V_{CB} = -10V, f = 1MHz
Delay Time	t_d		21	-	ns	V_{CC} = -50V, I_C = -1A, I_{B1} = -I_{B2} = -100mA
Rise Time	t_r		18	-		
Storage Time	t_s	-	680	-		
Fall Time	t_f	-	75	-		

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

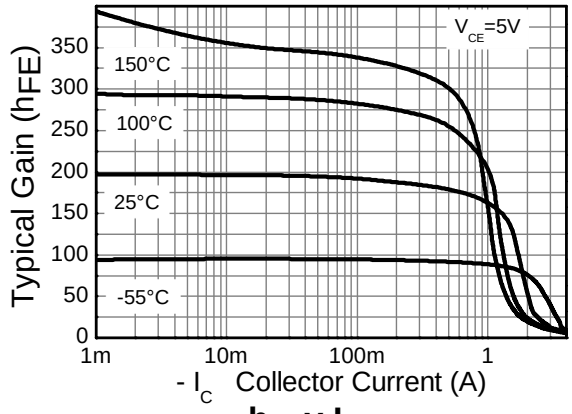
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



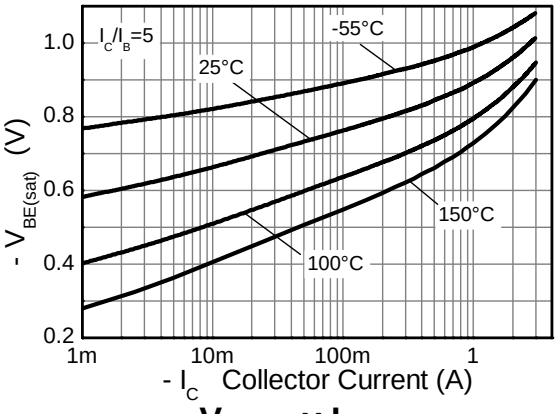
$V_{CE(sat)}$ v I_C



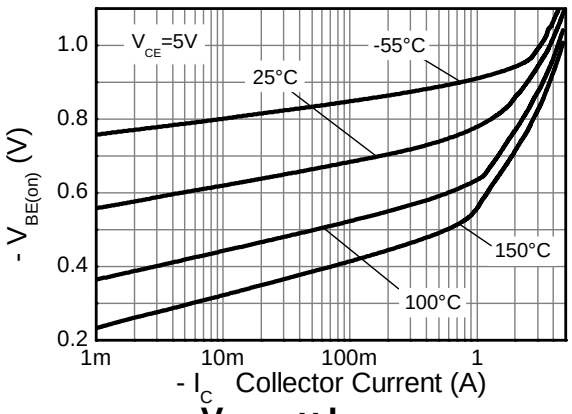
$V_{CE(sat)}$ v I_C



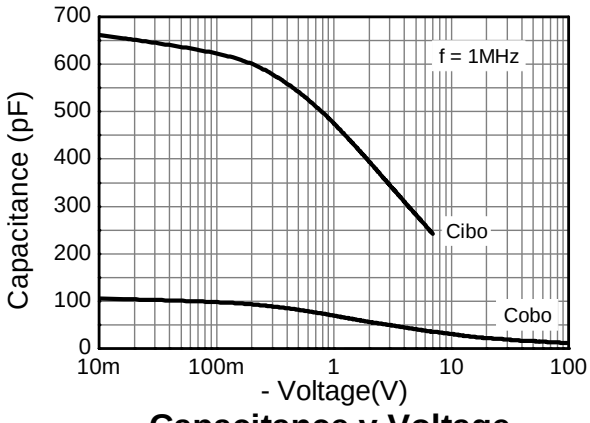
h_{FE} v I_C



$V_{BE(sat)}$ v I_C



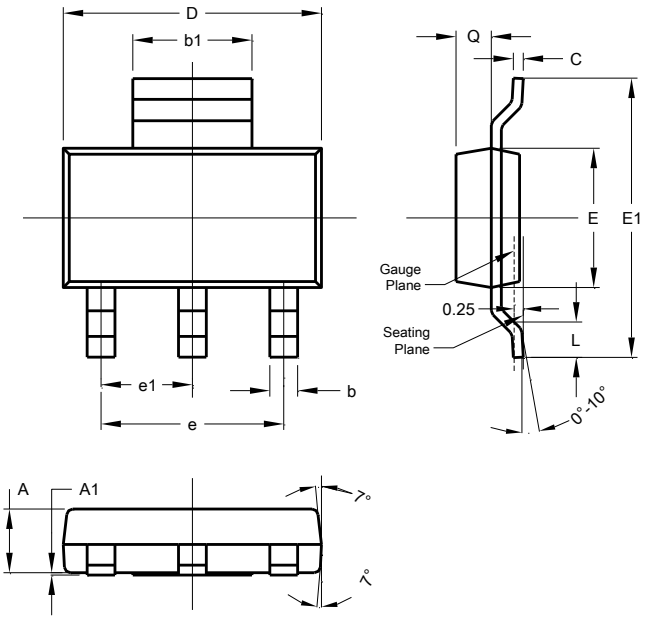
$V_{BE(on)}$ v I_C



Capacitance v Voltage

Package Outline Dimensions

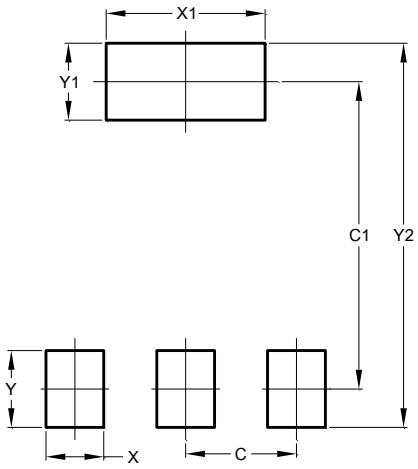
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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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