ZXTP03200BG
200V PNP Low V_{CE}(sat) transistor in SOT223

Summary

BV_{CEO} > -200V

BV_{ECO} > -2V

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

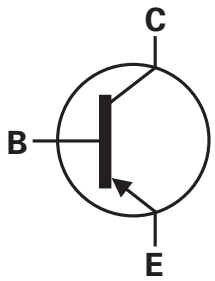
$V_{CE(sat)}$ < -160mV @ -1A

$R_{CE(sat)}$ = 135mΩ

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

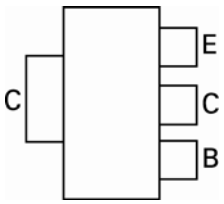


Features

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

Applications

- DC-DC conversion



Pin out - top view

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°C (a) Linear Derating Factor	P_D	1.25 10	W mW/°C
Power Dissipation at T_A=25°C (b) Linear Derating Factor	P_D	1.65 13.2	W mW/°C
Power Dissipation at T_A=25°C (c) Linear Derating Factor	P_D	3 24	W mW/°C
Power Dissipation at T_A=25°C (d) Linear Derating Factor	P_D	5.8 46.5	W mW/°C
Power Dissipation at T_C=25°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.

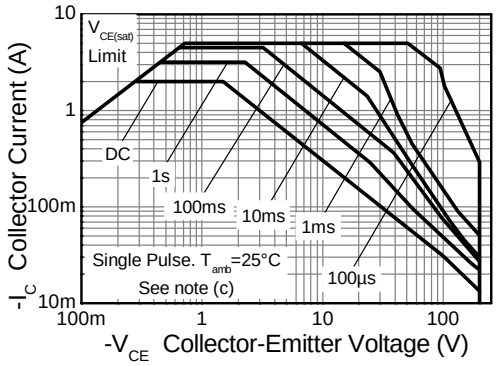
(b) Mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.

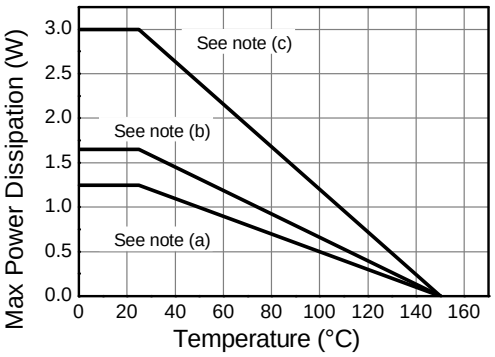
(d) As (c) above measured at t<5 seconds.

(e) Junction to Lead from Collector Tab.Typical

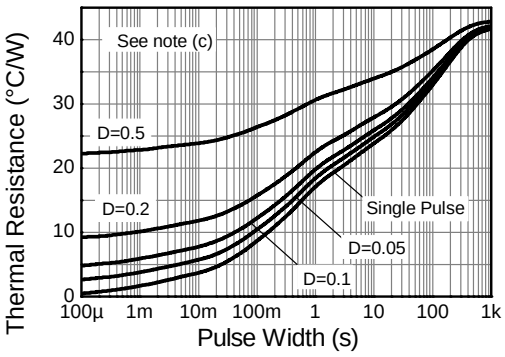
Thermal Characteristics



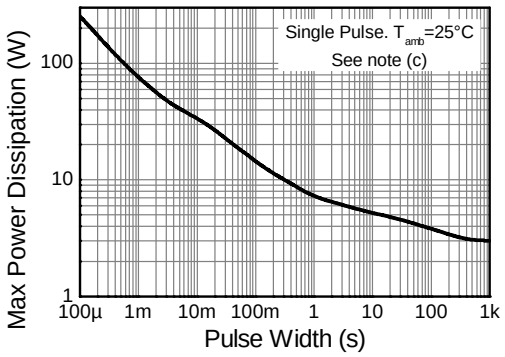
Safe Operating Area



Derating Curve



Transient Thermal Impedance



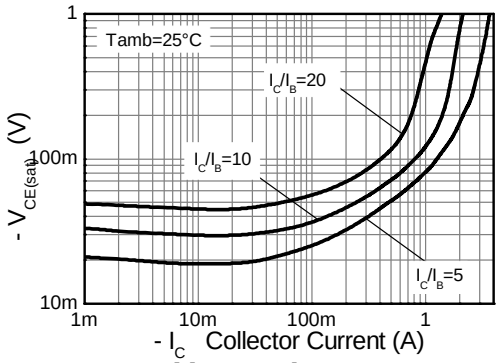
Pulse Power Dissipation

Electrical Characteristics (at T_{amb} = 25°C unless otherwise stated)

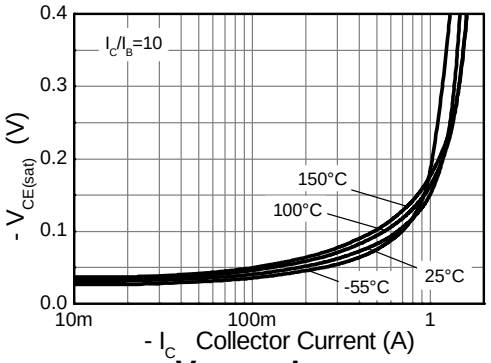
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-Base Breakdown Voltage	BV_{CBO}	-220	-245		V	I_C = -100μA
Collector-Emitter Breakdown Voltage	BV_{CER}	-220	-245		V	I_C = -1μA, R_{BE}≤ 1kΩ
Collector-Emitter Breakdown voltage	BV_{CEO}	-200	-225		V	I_C = -10mA (*)
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.4		V	I_E = -100μA
Collector-Base Cut-off Current	I_{CBO}		<1	-50 -0.5	nA μA	V_{CB}= -200V V_{CB}= -200V,T_{amb}=100˚C
Emitter Cut-off Current	I_{EBO}		<1	-10	nA	V_{EB}= -6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-37 -130 -135 -180	-50 -155 -160 -275	mV mV mV mV	I_C = -0.1A, I_B = -10mA (*) I_C = -0.5A, I_B = -25mA (*) I_C = -1A, I_B = -100mA (*) I_C = -2A, I_B = -400mA (*)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-955	-1100	mV	I_C = -2A, I_B = -400mA (*)
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-860	-1000	mV	I_C = -2A, V_{CE} = -5V (*)
Static Forward Current Transfer Ratio	h_{FE}	100 100 20	195 170 50 5	300		I_C = -10mA, V_{CE} = -5V (*) I_C = -1A, V_{CE} = -5V (*) I_C = -2A, V_{CE} = -5V (*) I_C = -5A, V_{CE} = -5V (*)
Transition Frequency	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	I_C = -1A, V_{CC} = -50V, I_{B1} = -I_{B2} = -100mA
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 ≤ 300μs; duty cycle ≤ 2%.

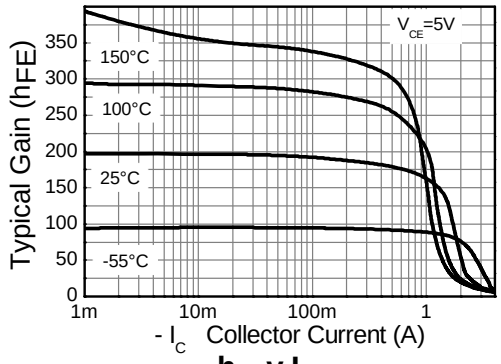
Typical Characteristics



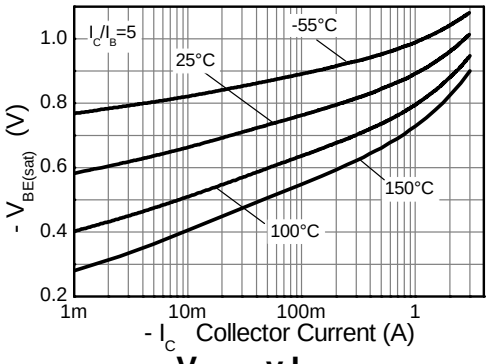
$V_{CE(sat)}$ v I_C



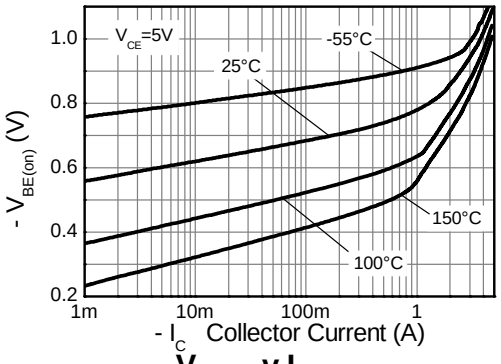
$V_{CE(sat)}$ v I_C



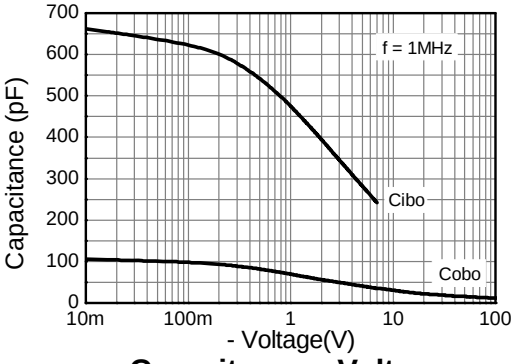
h_{FE} v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Capacitance v Voltage

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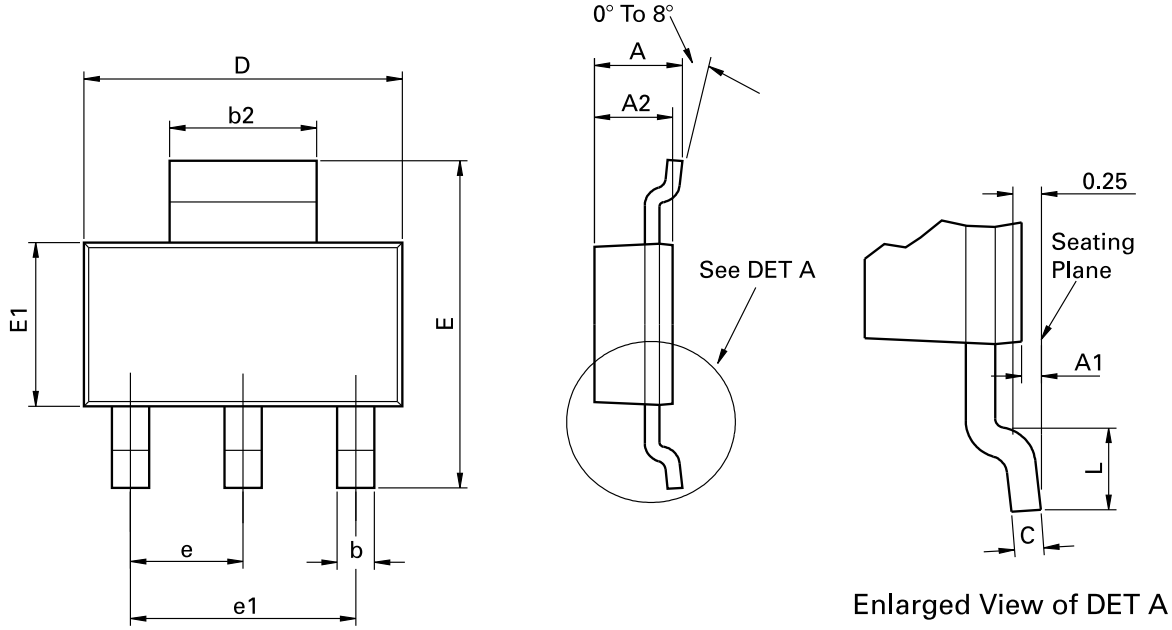
Package Information – SOT223



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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