

## Features

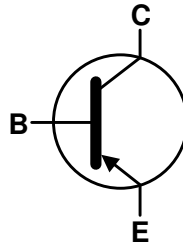
- $BV_{CEO} > -500V$
- $I_C = -150mA$  High Continuous Current
- $I_{CM} = -500mA$  Peak Pulse Current
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Mechanical Data

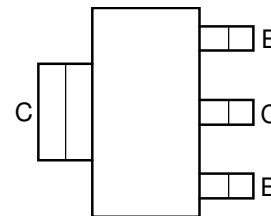
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208
- Weight: 0.112 grams (Approximate)



Top View



Device Symbol



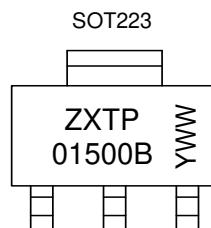
Top View  
Pin-Out

## Ordering Information (Note 5)

Part number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXTP01500BGQTA	Automotive	ZXTP01500B	7	12	1,000
ZXTP01500BGQTC	Automotive	ZXTP01500B	13	12	4,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



ZXTP01500B = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 7 = 2017)  
 WW or  $\bar{W}W$  = Week Code (01 to 53)

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-500	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-500	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-150	mA
Peak Pulse Current	I <sub>CM</sub>	-500	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

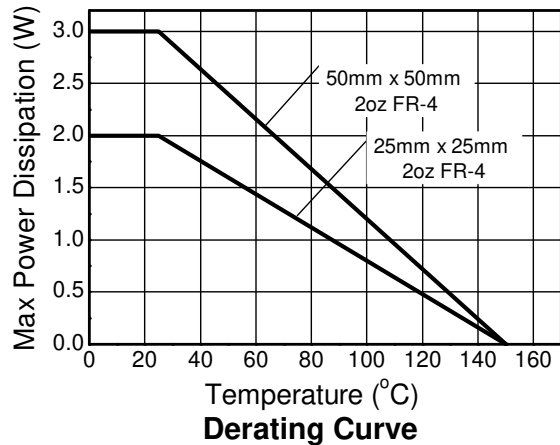
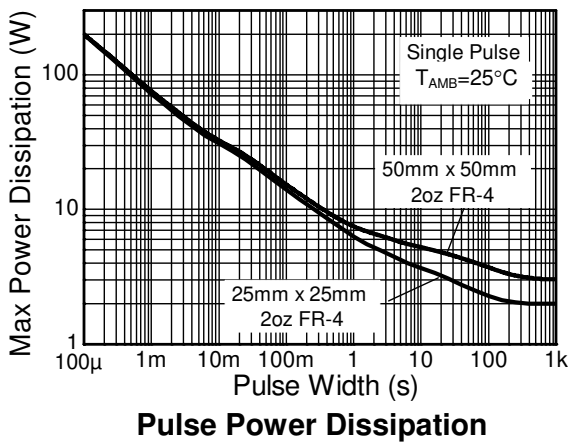
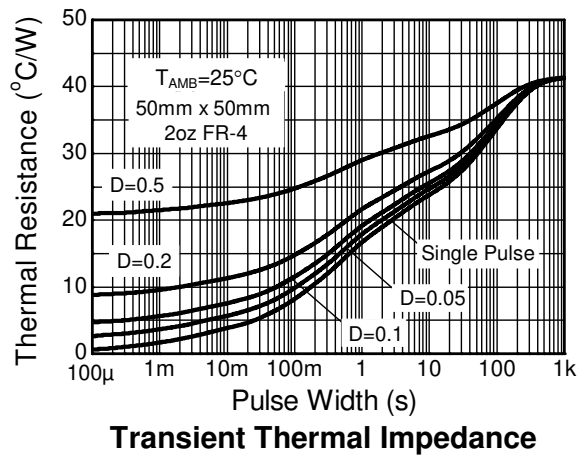
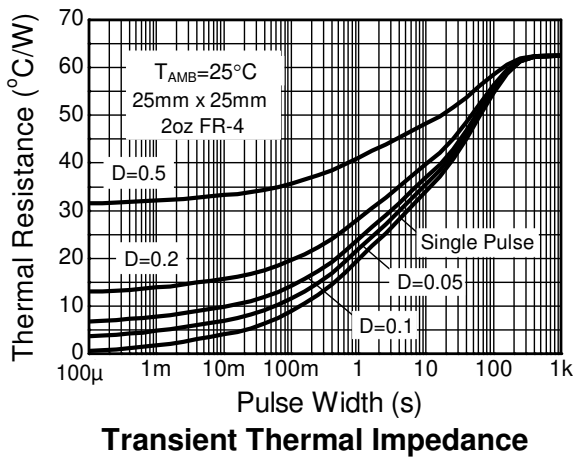
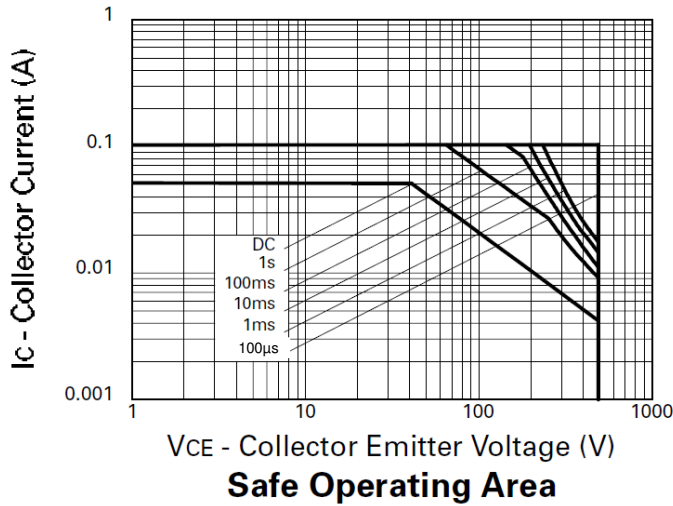
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	2	W
		3	W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	62.5	°C/W
		41.7	°C/W
Thermal Resistance, Junction to Leads	R <sub>θJL</sub>	14.8	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 9)

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:
6. For a device mounted with the collector lead on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in steady-state.
  7. Same as note (6), except the device is mounted on 50mm x 50mm 2oz copper.
  8. Thermal resistance from junction to solder-point (at the end of the collector lead).
  9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

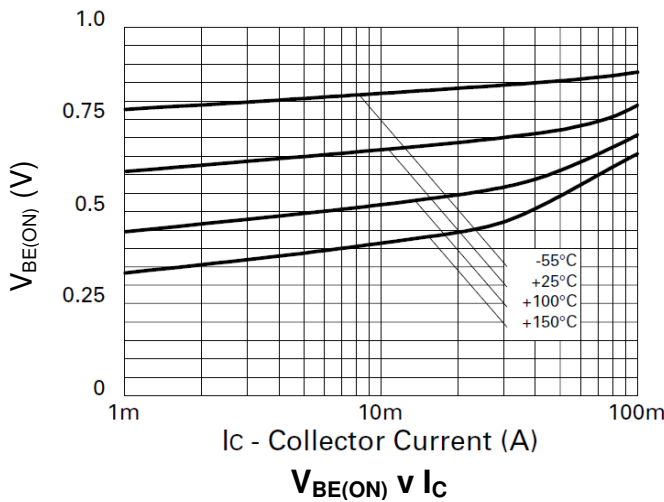
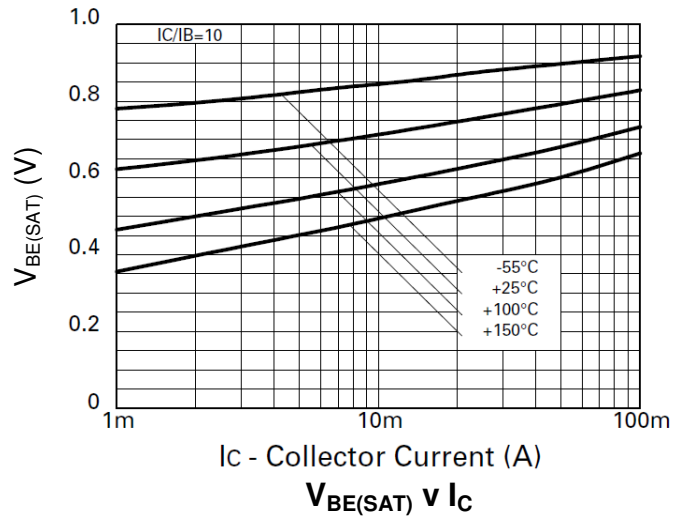
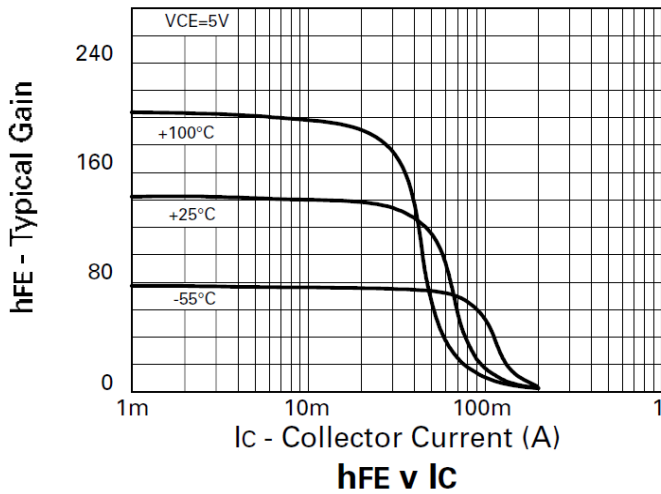
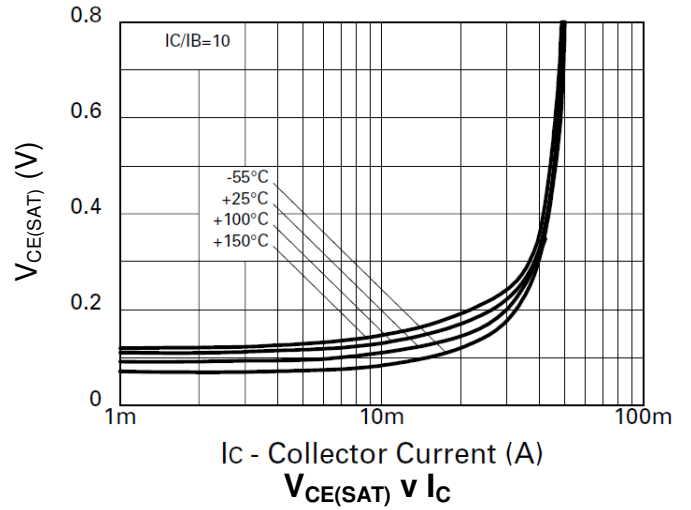
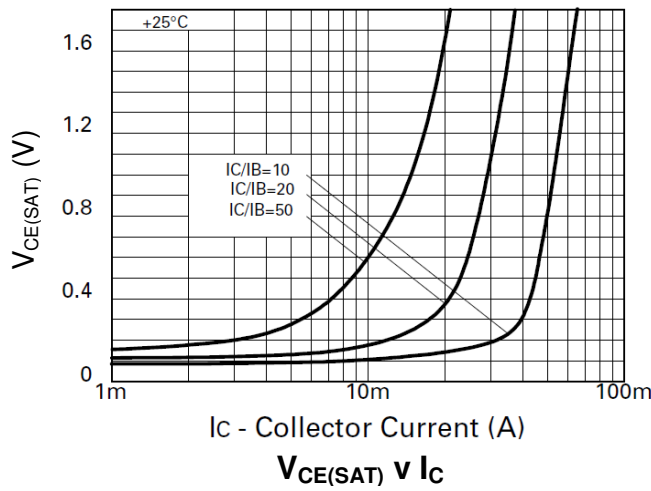


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	-500	—	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV <sub>CEO</sub>	-500	—	—	V	I <sub>C</sub> = -1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	—	—	V	I <sub>E</sub> = -100μA
Collector Cut-off Current	I <sub>CB0</sub>	—	—	-100	nA	V <sub>CB</sub> = -500V
Collector Cut-off Current	I <sub>CES</sub>	—	—	-100	nA	V <sub>CE</sub> = -500V
Emitter Cut-off Current	I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -5.6V
Collector-Emitter Saturation Voltage (Note 10)	V <sub>CE(SAT)</sub>	—	—	-200	mV	I <sub>C</sub> = -20mA, I <sub>B</sub> = -2mA
		—	—	-500		I <sub>C</sub> = -50mA, I <sub>B</sub> = -10mA
Base-Emitter Saturation Voltage (Note 10)	V <sub>BE(SAT)</sub>	—	—	-900	mV	I <sub>C</sub> = -50mA, I <sub>B</sub> = -10mA
Base-Emitter Turn-On Voltage (Note 10)	V <sub>BE(ON)</sub>	—	—	-900	mV	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V
DC Current Gain (Note 10)	h <sub>FE</sub>	100	—	300	—	I <sub>C</sub> = -1mA, V <sub>CE</sub> = -10V
		80	—	300		I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V
		—	15	—		I <sub>C</sub> = -100mA, V <sub>CE</sub> = -10V
Current Gain-Bandwidth Product	f <sub>T</sub>	60	—	—	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA f = 50MHz
Turn-On Time	t <sub>ON</sub>	—	110	—	ns	V <sub>CC</sub> = -100V, I <sub>C</sub> = -50mA
Turn-Off Time	t <sub>OFF</sub>	—	1.5	—	μs	I <sub>B1</sub> = -5mA, I <sub>B2</sub> = 10mA
Output Capacitance	C <sub>OBO</sub>	—	—	8	pF	V <sub>CB</sub> = -20V, f = 1MHz

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

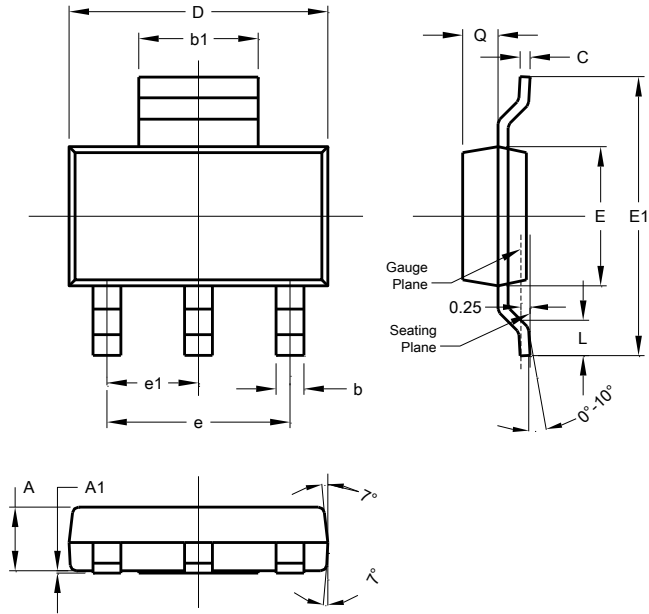
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT223**

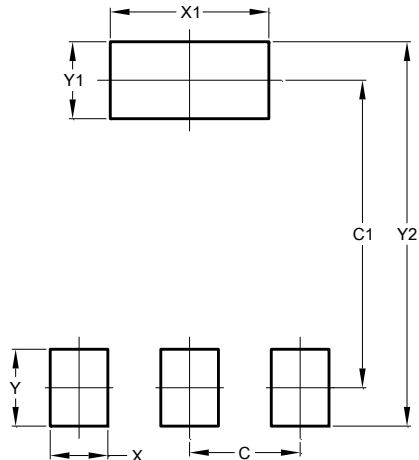


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT223**



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

Note: 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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