

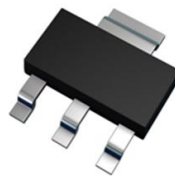
Features

- $BV_{CEO} > -500V$
- $I_C = -150mA$ 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)**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([ZXTP01500BGQ](#))**

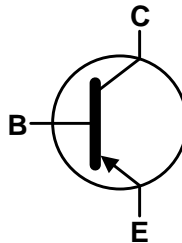
Mechanical Data

- 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)

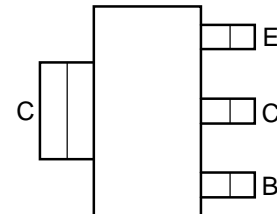
SOT223



Top View



Device Symbol



Top View
Pin-Out

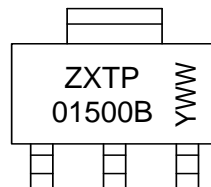
Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|---------------|------------|-------------|--------------------|-----------------|-------------------|
| ZXTP01500BGTC | Standard | ZXTP 01500B | 13 | 12 | 4,000 |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

SOT223



ZXTP01500B = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 9 = 2019)
 WW or $\bar{W}W$ = Week Code (01 to 53)

Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CB0} | -500 | V |
| Collector-Emitter Voltage | V_{CEO} | -500 | V |
| Emitter-Base Voltage | V_{EBO} | -7 | V |
| Continuous Collector Current | I_C | -150 | mA |
| Peak Pulse Current | I_{CM} | -500 | mA |

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

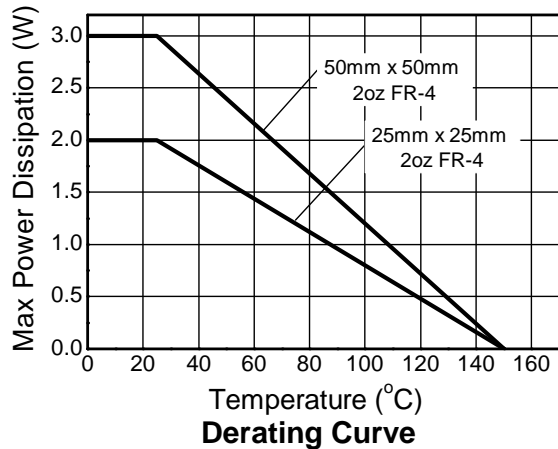
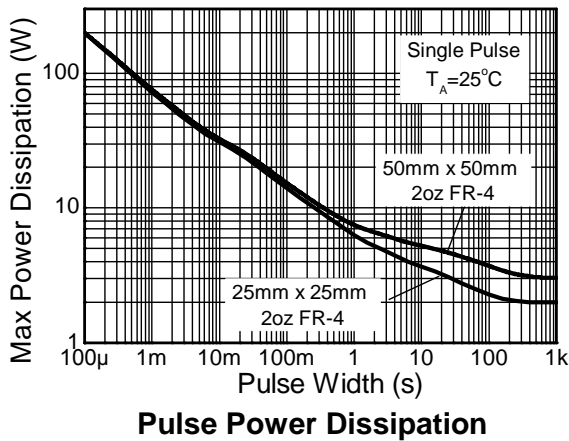
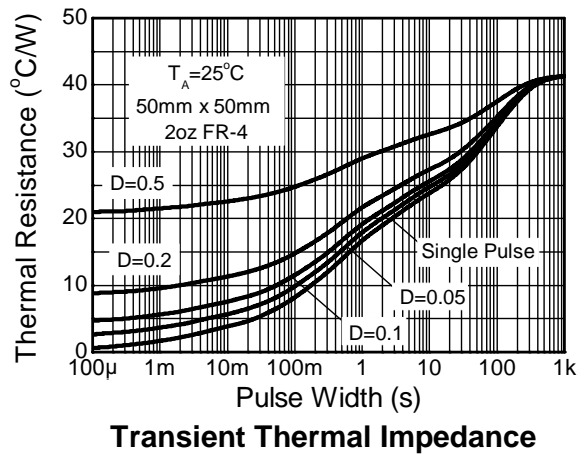
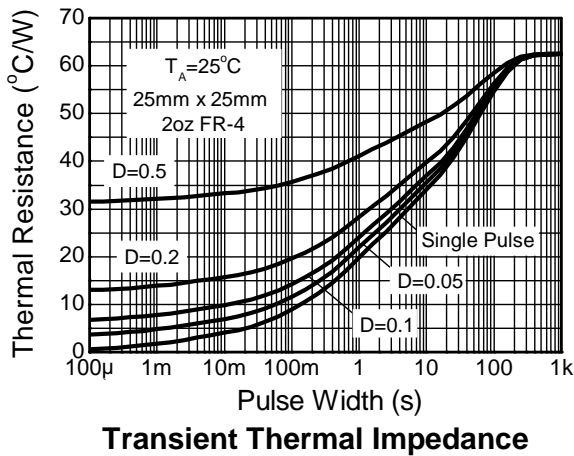
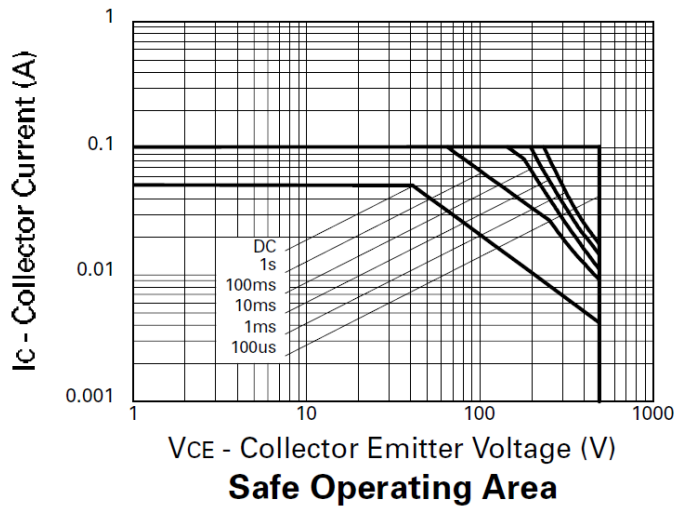
| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation | P_D | 2 | W |
| | | 3 | W |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 62.5 | $^\circ\text{C/W}$ |
| | | 41.7 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Leads | $R_{\theta JL}$ | 14.8 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

ESD Ratings (Note 8)

| 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 25mm × 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.
 6. Same as note (5), except the device is mounted on 50mm × 50mm 2oz copper.
 7. Thermal resistance from junction to solder-point (at the end of the collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

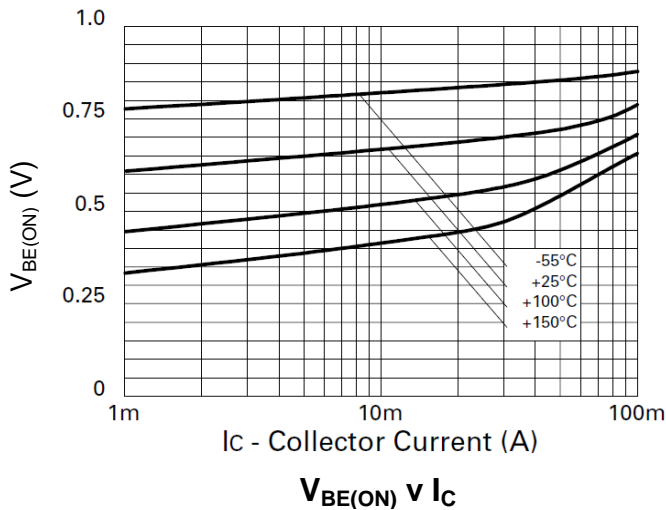
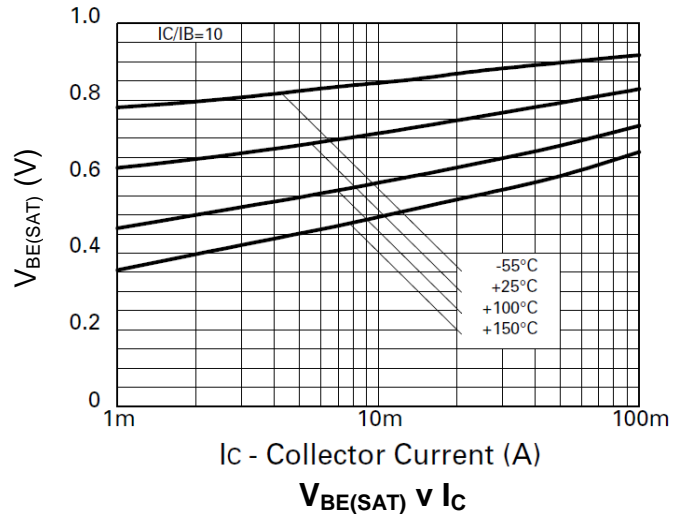
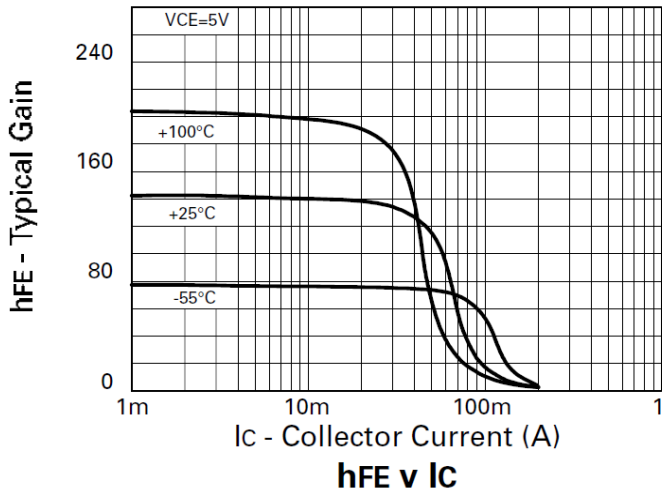
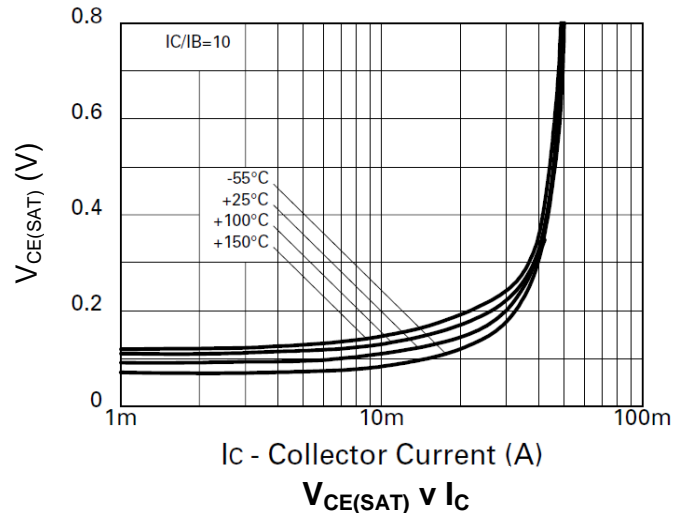
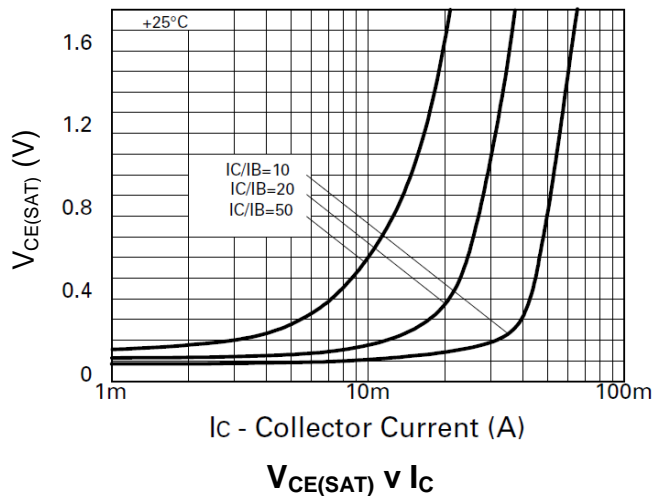


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|----------------------|------|-----|------|------|---|
| Collector-Base Breakdown Voltage | BV _{CB0} | -500 | — | — | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 9) | BV _{CEO} | -500 | — | — | V | I _C = -1mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -7 | — | — | V | I _E = -100μA |
| Collector Cut-Off Current | I _{CBO} | — | — | -100 | nA | V _{CB} = -500V |
| Collector Cut-Off Current | I _{CES} | — | — | -100 | nA | V _{CE} = -500V |
| Emitter Cut-Off Current | I _{EBO} | — | — | -100 | nA | V _{EB} = -5.6V |
| Collector-Emitter Saturation Voltage (Note 9) | V _{CE(SAT)} | — | — | -200 | mV | I _C = -20mA, I _B = -2mA |
| | | — | — | -500 | | I _C = -50mA, I _B = -10mA |
| Base-Emitter Saturation Voltage (Note 9) | V _{BE(SAT)} | — | — | -900 | mV | I _C = -50mA, I _B = -10mA |
| Base-Emitter Turn-On Voltage (Note 9) | V _{BE(ON)} | — | — | -900 | mV | I _C = -50mA, V _{CE} = -10V |
| DC Current Gain (Note 9) | h _{FE} | 100 | — | 300 | — | I _C = -1mA, V _{CE} = -10V |
| | | 80 | — | 300 | | I _C = -50mA, V _{CE} = -10V |
| | | — | 15 | — | | I _C = -100mA, V _{CE} = -10V |
| Current Gain-Bandwidth Product | f _T | 60 | — | — | MHz | V _{CE} = -20V, I _C = -10mA f = 50MHz |
| Turn-On Time | t _{ON} | — | 110 | — | ns | V _{CC} = -100V, I _C = -50mA |
| Turn-Off Time | t _{OFF} | — | 1.5 | — | μs | I _{B1} = -5mA, I _{B2} = 10mA |
| Output Capacitance | C _{OBO} | — | — | 8 | pF | V _{CB} = -20V, f = 1MHz |

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

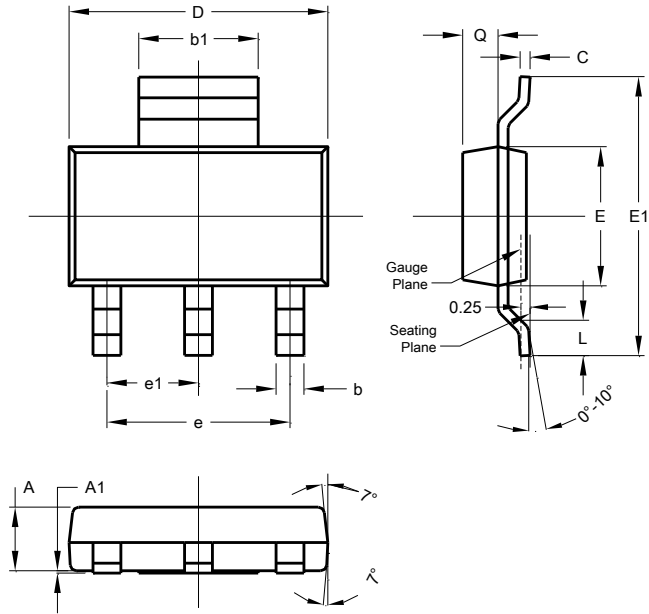
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT223

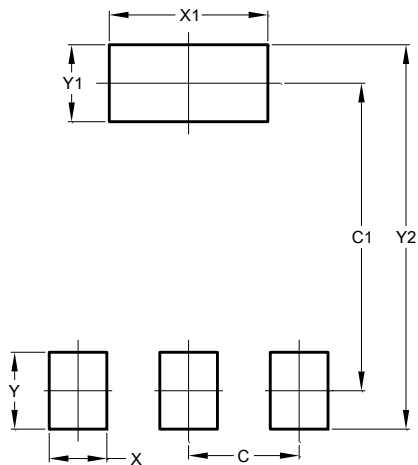


| SOT223 | | | |
|-----------------------------|-------|------|------|
| Dim | Min | Max | Typ |
| A | 1.55 | 1.65 | 1.60 |
| A1 | 0.010 | 0.15 | 0.05 |
| b | 0.60 | 0.80 | 0.70 |
| b1 | 2.90 | 3.10 | 3.00 |
| C | 0.20 | 0.30 | 0.25 |
| D | 6.45 | 6.55 | 6.50 |
| E | 3.45 | 3.55 | 3.50 |
| E1 | 6.90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

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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