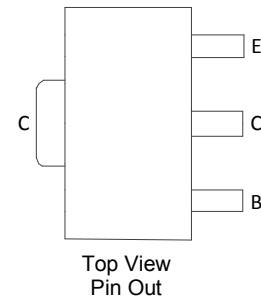
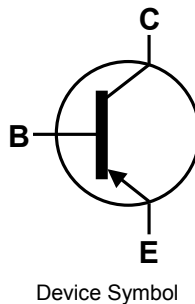


Features

- $BV_{CEO} > -150V$
- $I_C = -600mA$ Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < -0.5V @ -50mA$
- $P_D = 1.2W$ Power Dissipation
- Complementary part number ZXTN5551Z
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen- and Antimony-Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Case: SOT89
- 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 ③
- Weight: 0.05 grams (Approximate)

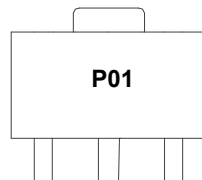


Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity Per Reel |
|-------------|------------|---------|--------------------|-----------------|-------------------|
| ZXTP5401ZTA | Standard | P01 | 7 | 12 | 1,000 |

- 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



P01 = Product Type Marking Code

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

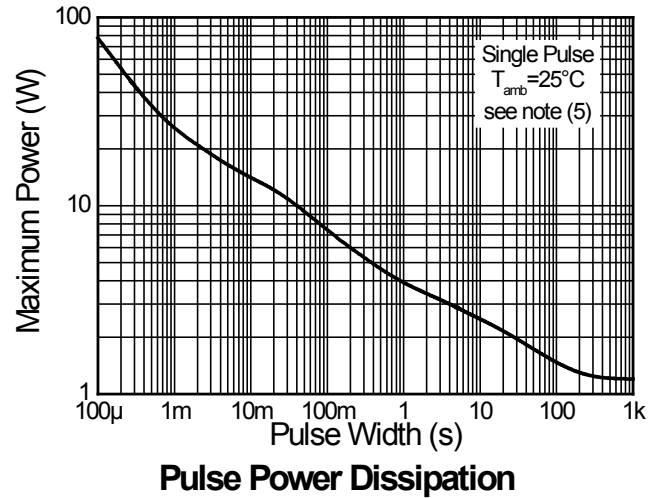
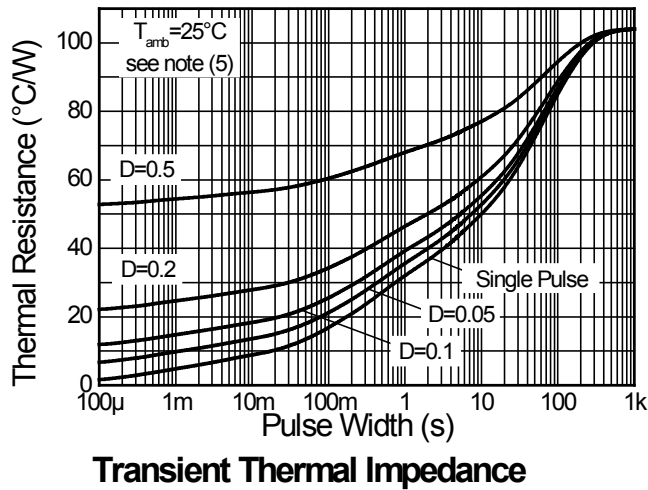
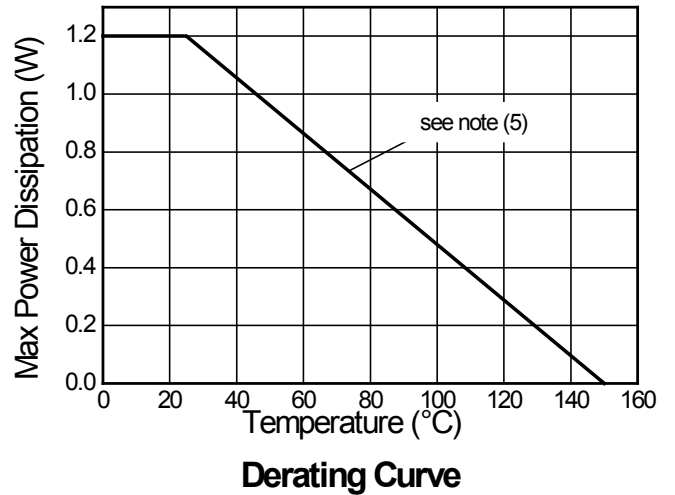
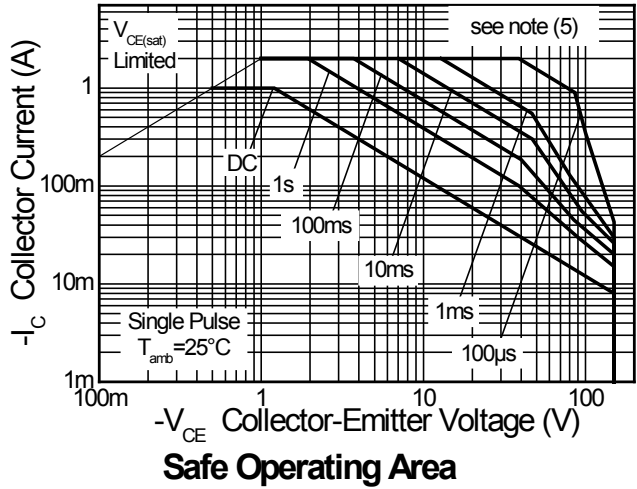
| Characteristic | Symbol | Value | Unit |
|---|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | -160 | V |
| Collector-Emitter Voltage | V_{CEO} | -150 | V |
| Emitter-Base Voltage | V_{EBO} | -5 | V |
| Continuous Collector Current | I_C | -600 | mA |
| Peak Pulse Collector Current (single pulse) | I_{CM} | -2 | A |

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

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|----------------------|
| Power Dissipation (Note 5) | P_D | 1.2 | W |
| Linear Derating Factor | — | 9.6 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | — | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Note: 5. For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz weight copper, in still air conditions.

Thermal Characteristics and Derating Information

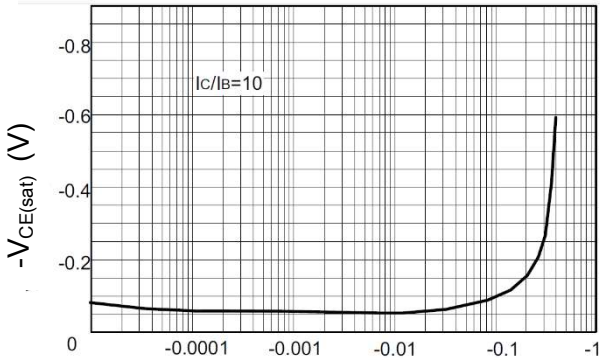


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---------------|----------------|-------------------|---------------|---------------------|--|
| Collector-Base Breakdown Voltage | BV_{CBO} | -160 | -270 | — | V | $I_C = -100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | BV_{CEO} | -150 | -240 | — | V | $I_C = -1\text{mA}$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | -5 | -8.1 | — | V | $I_E = -100\mu\text{A}$ |
| Collector Cut-Off Current | I_{CBO} | — | -1 | -50 | nA μA | $V_{CB} = -120\text{V}$ $V_{CB} = -120\text{V}, T_A = +100^\circ\text{C}$ |
| Collector-Emitter Saturation Voltage (Note 6) | $V_{CE(sat)}$ | — | -50 | -200 | mV mV | $I_C = -10\text{mA}, I_B = -1\text{mA}$ $I_C = -50\text{mA}, I_B = -5\text{mA}$ |
| Base-Emitter Saturation Voltage (Note 6) | $V_{BE(sat)}$ | — | -700 | -1000 | mV mV | $I_C = -10\text{mA}, I_B = -1\text{mA}$ $I_C = -50\text{mA}, I_B = -5\text{mA}$ |
| DC current gain (Note 6) | h_{FE} | 50 60 50 | 135 135 130 | — 240 — | — | $I_C = -1\text{mA}, V_{CE} = -5\text{V}$ $I_C = -10\text{mA}, V_{CE} = -5\text{V}$ $I_C = -50\text{mA}, V_{CE} = -5\text{V}$ |
| Transitional frequency | f_T | — | 100 | — | MHz | $I_C = -10\text{mA}, V_{CE} = -10\text{V}$, $f = 100\text{MHz}$ |
| Output Capacitance | C_{obo} | — | — | 6 | pF | $V_{CB} = -10\text{V}, f = 1\text{MHz}$ |
| Delay time | t_d | — | 386 | — | ns | $V_{CC} = -10\text{V}, I_C = -100\text{mA}$, $I_{B1} = -I_{B2} = -10\text{mA}$ |
| Rise time | t_r | — | 202 | — | ns | |
| Storage time | t_s | — | 1720 | — | ns | |
| Fall time | t_f | — | 275 | — | ns | |

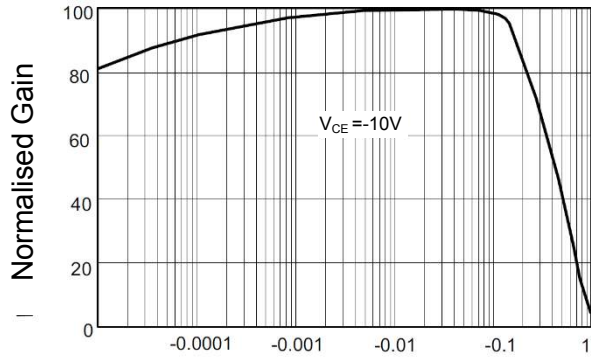
Note: 6. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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



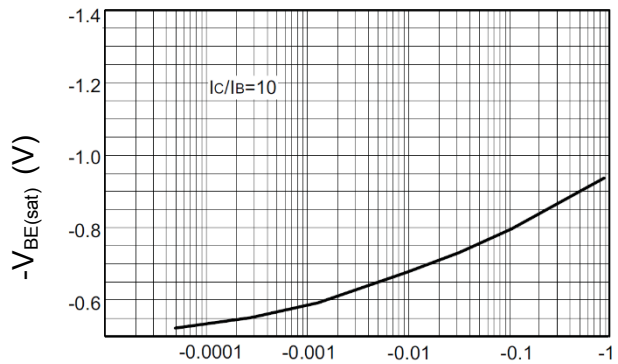
$-I_C$ Collector Current (A)

$V_{CE(sat)} \text{ v } I_C$



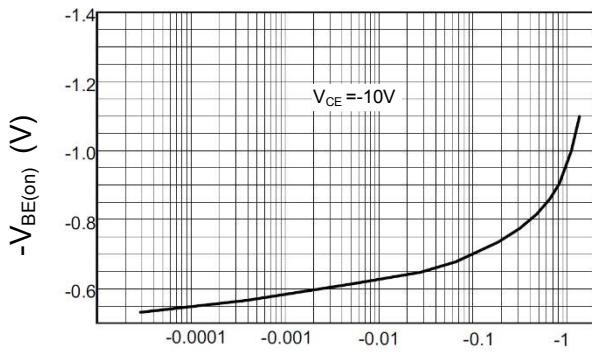
$-I_C$ Collector Current (A)

$h_{FE} \text{ v } I_C$



$-I_C$ Collector Current (A)

$V_{BE(sat)} \text{ v } I_C$



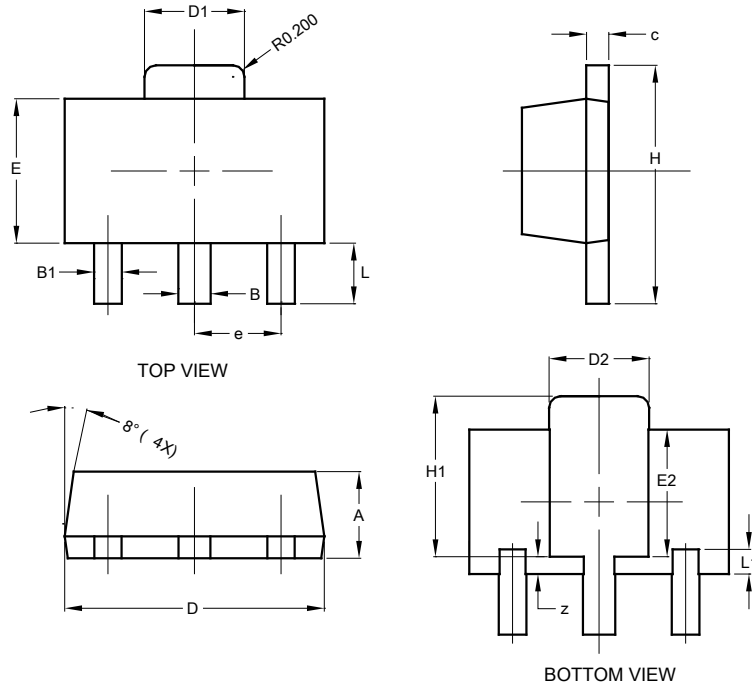
$-I_C$ Collector Current (A)

$V_{BE(on)} \text{ v } I_C$

Package Outline Dimensions

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

SOT89

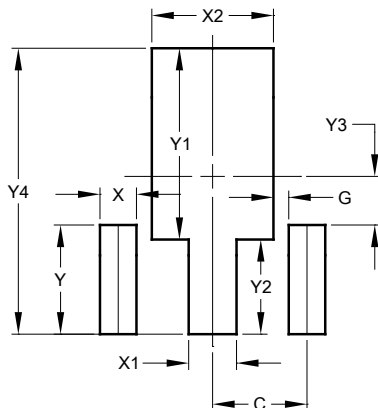


| SOT89 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 1.40 | 1.60 | 1.50 |
| B | 0.50 | 0.62 | 0.56 |
| B1 | 0.42 | 0.54 | 0.48 |
| c | 0.35 | 0.43 | 0.38 |
| D | 4.40 | 4.60 | 4.50 |
| D1 | 1.62 | 1.83 | 1.733 |
| D2 | 1.61 | 1.81 | 1.71 |
| E | 2.40 | 2.60 | 2.50 |
| E2 | 2.05 | 2.35 | 2.20 |
| e | - | - | 1.50 |
| H | 3.95 | 4.25 | 4.10 |
| H1 | 2.63 | 2.93 | 2.78 |
| L | 0.90 | 1.20 | 1.05 |
| L1 | 0.327 | 0.527 | 0.427 |
| z | 0.20 | 0.40 | 0.30 |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOT89



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 1.500 |
| G | 0.244 |
| X | 0.580 |
| X1 | 0.760 |
| X2 | 1.933 |
| Y | 1.730 |
| Y1 | 3.030 |
| Y2 | 1.500 |
| Y3 | 0.770 |
| Y4 | 4.530 |

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