

ZXTP4003G

100V PNP LED DRIVING TRANSISTOR IN SOT223

Features

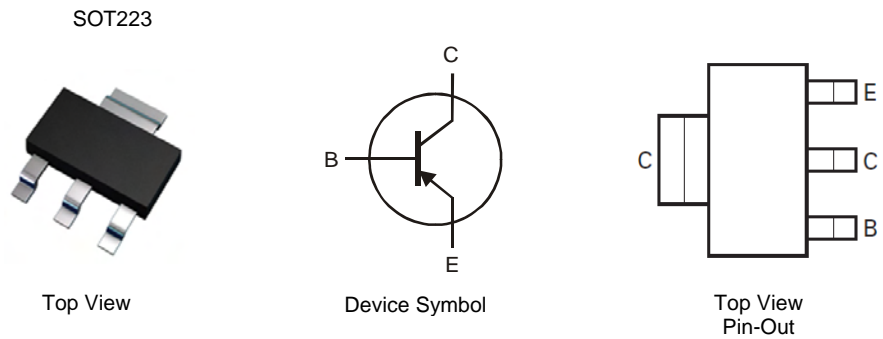
- $BV_{CEO} > -100V$
- Maximum continuous current $I_C = -1A$
- $h_{FE} > 100 @ I_C = -150mA, V_{CE} = -0.2V$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Applications

- LED TV backlight

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: Matte Tin Finish
- Weight: 0.112 grams (Approximate)

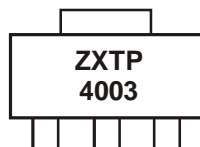


Ordering Information

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|----------|--------------------|-----------------|-------------------|
| ZXTP4003GTA | ZXTP4003 | 7 | 12 | 1,000 |

Notes: 1. No purposefully added lead.
2. "Green" devices, Halogen and Antimony Free, Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>

Marking Information



ZXTP4003 = Product type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

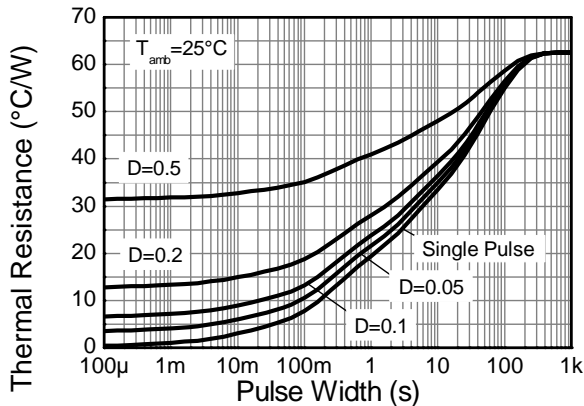
| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CB0} | -100 | V |
| Collector-Emitter Voltage | V _{CEO} | -100 | V |
| Emitter-Base Voltage | V _{EBO} | -7 | V |
| Continuous Collector Current | I _C | -1 | A |
| Peak Pulse Current (Note 4) | I _{CM} | -3 | A |
| Base Current | I _B | -500 | mA |

Thermal Characteristics @T_A = 25°C unless otherwise specified

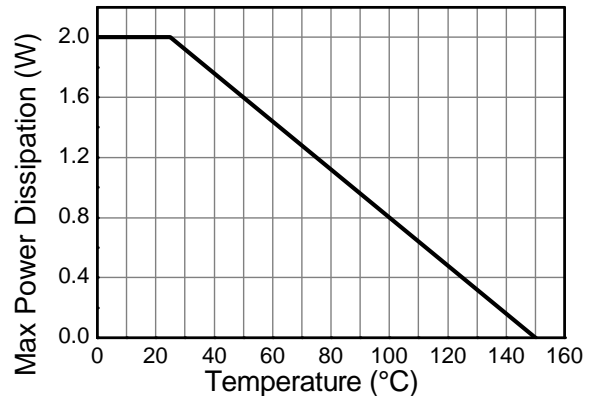
| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 3) | P _D | 2 | W |
| Thermal Resistance, Junction to Ambient (Note 3) | R _{θJA} | 62.5 | °C/W |
| Thermal Resistance, Junction to Leads (Note 5) | R _{θJL} | 28.75 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

- Notes:
3. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.
 5. Thermal resistance from junction to solder-point (on the exposed collector pad).

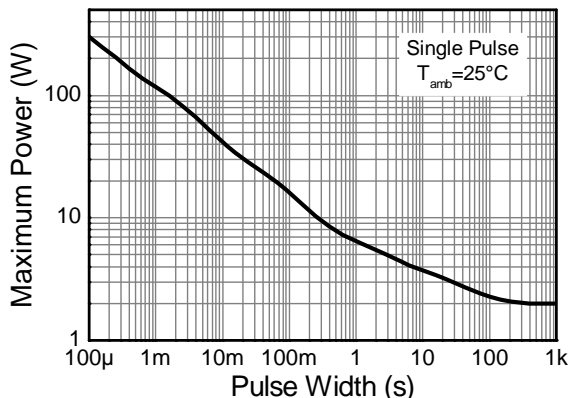
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Derating Curve



Pulse Power Dissipation

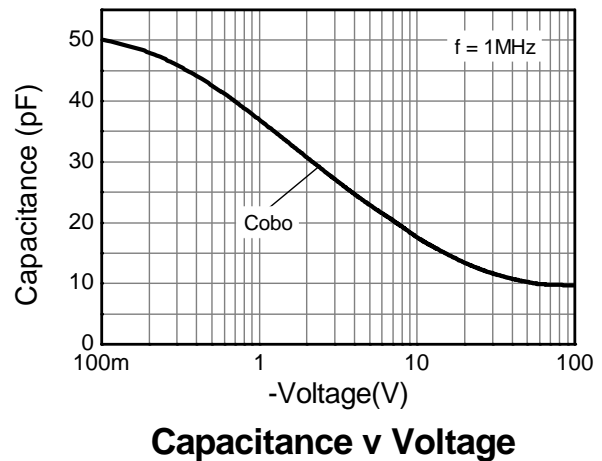
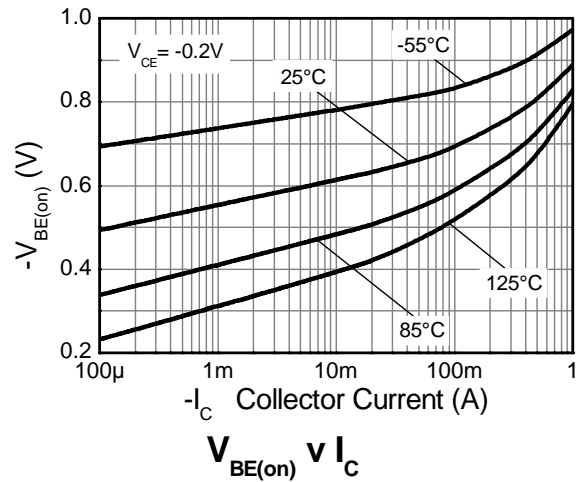
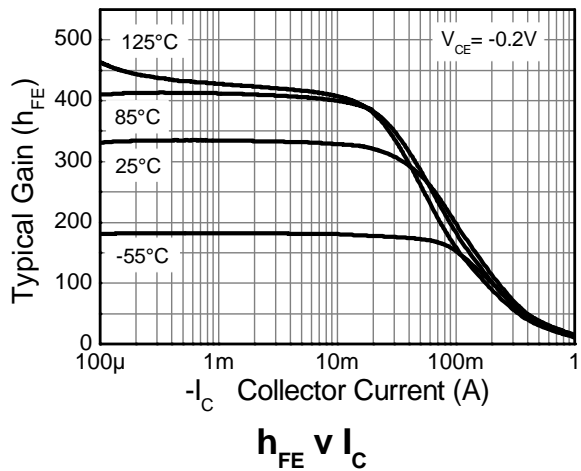
ZXTP4003G

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

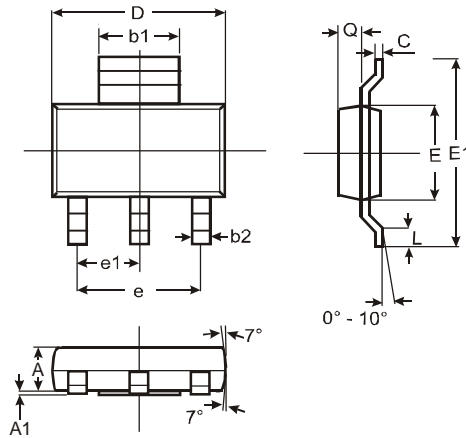
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--------------|-----------|------------|--------|------|---|
| Collector-Emitter Breakdown Voltage (Note 6) | BV_{CEO} | -100 | -170 | - | V | $I_C = -10\text{mA}$ |
| Collector Cut-off Current | I_{CBO} | - | - | -50 | nA | $V_{CB} = -100\text{V}$ |
| Emitter Cut-off Current | I_{EBO} | - | - | -50 | nA | $V_{EB} = -7\text{V}$ |
| Static Forward Current Transfer Ratio (Note 6) | h_{FE} | 60 100 | 133 112 | - - | - | $I_C = -85\text{mA}, V_{CE} = -0.15\text{V}$ $I_C = -150\text{mA}, V_{CE} = -0.2\text{V}$ |
| Base-Emitter Turn-On Voltage (Note 6) | $V_{BE(on)}$ | - | -0.71 | -0.95 | V | $I_C = -150\text{mA}, V_{CE} = -0.2\text{V}$ |
| Delay Time | t_d | - | 378 | - | ns | $V_{CC} = -80\text{V}, I_C = -150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = -0.2\text{V}$ |
| Rise Time | t_r | - | 388 | - | ns | |
| Storage Time | t_s | - | 1348 | - | ns | |
| Fall Time | t_f | - | 382 | - | ns | |
| Storage Time | t_s | - | 75 | - | ns | |
| Fall Time | t_f | - | 363 | - | ns | $V_{CC} = -80\text{V}, I_C = -150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = -4\text{V}$ |

Notes: 6. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

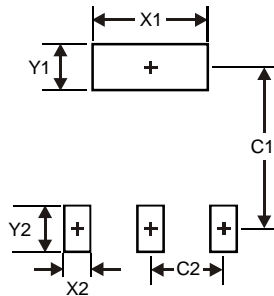


Package Outline Dimensions



| SOT223 | | | |
|----------------------|-------|------|------|
| Dim | Min | Max | Typ |
| A | 1.55 | 1.65 | 1.60 |
| A1 | 0.010 | 0.15 | 0.05 |
| b1 | 2.90 | 3.10 | 3.00 |
| b2 | 0.60 | 0.80 | 0.70 |
| 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



| Dimensions | Value (in mm) |
|------------|---------------|
| X1 | 3.3 |
| X2 | 1.2 |
| Y1 | 1.6 |
| Y2 | 1.6 |
| C1 | 6.4 |
| C2 | 2.3 |

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