

Features

- $BV_{CEO} > 60V$
- Max continuous current $I_C = 1A$
- $h_{FE} > 100 @ I_C = 150mA, V_{CE} = 150mV$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

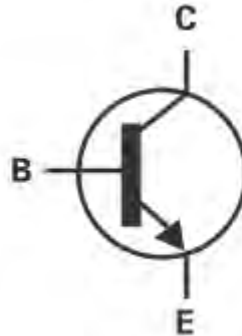
- Case: SOT89
- Case material: molded Plastic. "Green" molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

Applications

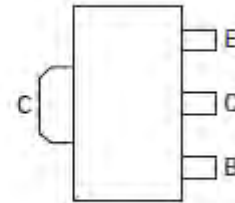
- LED TV backlight



Top View



Device symbol



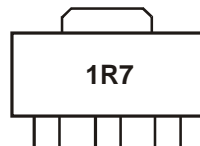
Top View
Pin Out

Ordering Information (Note 3)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|---------|--------------------|-----------------|-------------------|
| ZXTN4000ZTA | 1S7 | 7 | 12 | 1000 units |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
 3. For Packaging Details, go to our website at <http://www.diodes.com>.

Marking Information



1R7 = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

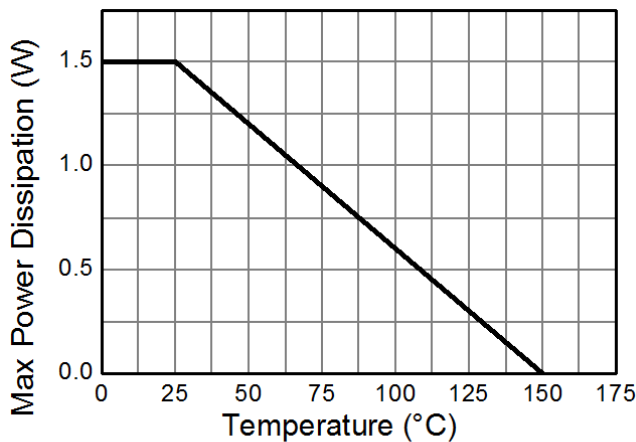
| Characteristic | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | 60 | V |
| Collector-Emitter Voltage | V_{CEO} | 60 | V |
| Emitter-Base Voltage | V_{EBO} | 7 | V |
| Continuous Collector Current | I_C | 1 | A |
| Peak Pulse Current (Note 4) | I_{CM} | 3 | A |
| Base Current | I_B | 500 | mA |

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

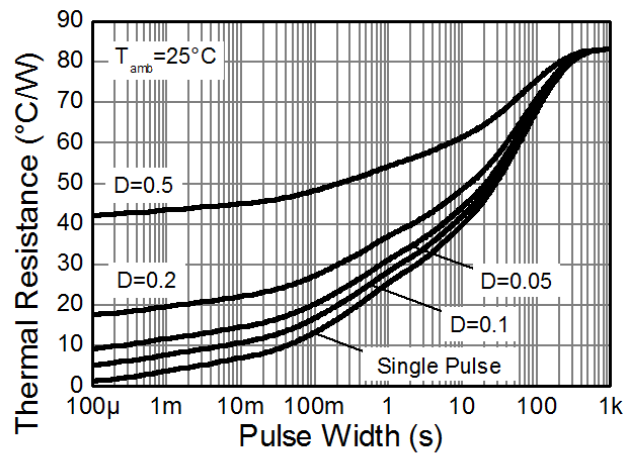
| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 5) | P_D | 1.5 | W |
| Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 83 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Leads (Note 6) | $R_{\theta JL}$ | 28 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

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

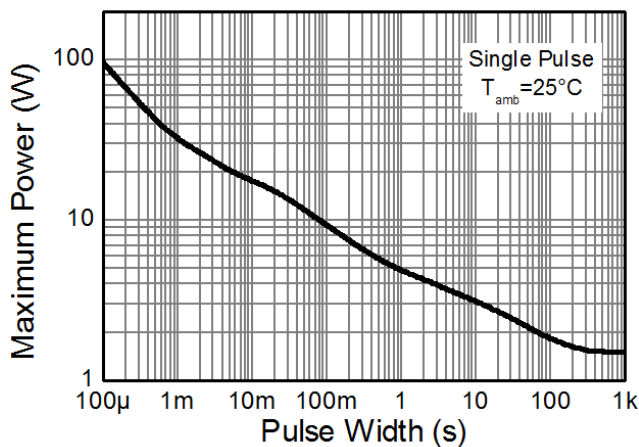
Thermal Characteristics and Derating information



Derating Curve



Transient Thermal Impedance



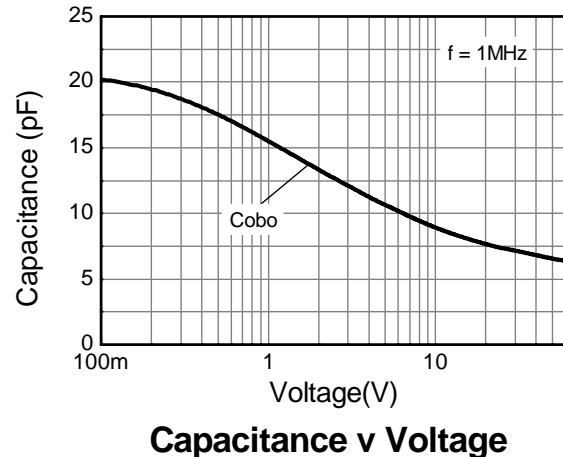
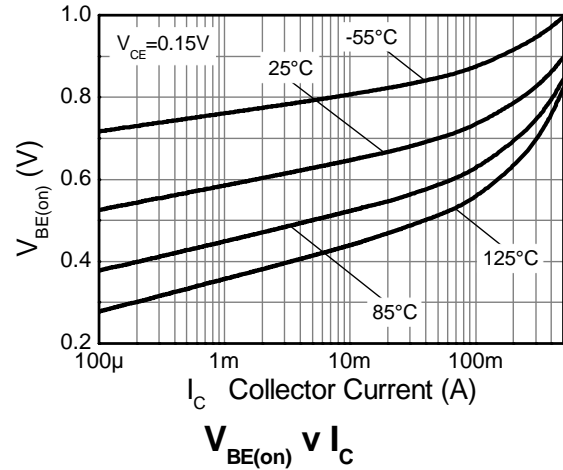
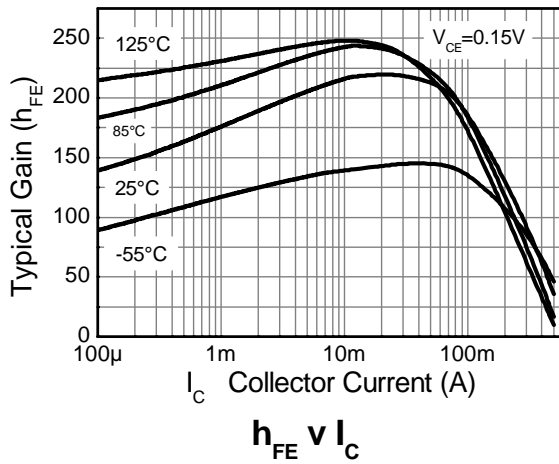
Pulse Power Dissipation

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

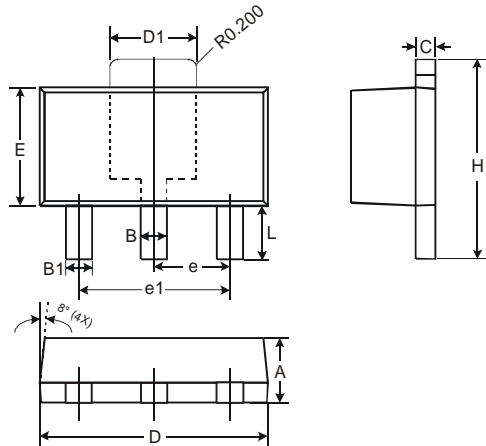
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--------------|-----------|--------|--------|------|---|
| Collector-Base Breakdown Voltage | BV_{CBO} | 60 | | - | V | $I_C = 100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage (Note 7) | BV_{CEO} | 60 | | - | V | $I_C = 10\text{mA}$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | 7 | 8.3 | - | V | $I_E = 100\mu\text{A}$ |
| Collector Cut-off Current | I_{CBO} | - | - | 50 | nA | $V_{CB} = 60\text{V}$ |
| Emitter Cut-off Current | I_{EBO} | - | - | 50 | nA | $V_{EB} = 7\text{V}$ |
| Static Forward Current Transfer Ratio (Note 7) | h_{FE} | 60 100 | - - | - - | - | $I_C = 85\text{mA}, V_{CE} = 0.1\text{V}$ $I_C = 150\text{mA}, V_{CE} = 0.15\text{V}$ |
| Base-Emitter Turn-On Voltage (Note 7) | $V_{BE(on)}$ | - | 0.76 | 0.95 | V | $I_C = 150\text{mA}, V_{CE} = 0.15\text{V}$ |
| Delay Time | $t(d)$ | - | 300 | - | ns | $V_{CC} = 48\text{V}, I_C = 150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = 0.15\text{V}$ |
| Rise Time | $t(r)$ | - | 292 | - | ns | |
| Storage Time | $t(s)$ | - | 805 | - | ns | |
| Fall Time | $t(f)$ | - | 226 | - | ns | $V_{CC} = 48\text{V}, I_C = 150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = 4\text{V}$ |
| Storage Time | $t(s)$ | - | 25 | - | ns | |
| Fall Time | $t(f)$ | - | 202 | - | ns | |

Notes: 7. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$

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

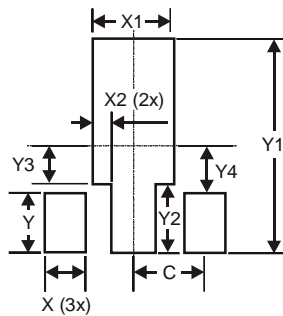


Package Outline Dimensions



| SOT89 | | |
|-----------------------------|----------|------|
| Dim | Min | Max |
| A | 1.40 | 1.60 |
| B | 0.44 | 0.62 |
| B1 | 0.35 | 0.54 |
| C | 0.35 | 0.43 |
| D | 4.40 | 4.60 |
| D1 | 1.52 | 1.83 |
| E | 2.29 | 2.60 |
| e | 1.50 Typ | |
| e1 | 3.00 Typ | |
| H | 3.94 | 4.25 |
| L | 0.89 | 1.20 |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.900 |
| X1 | 1.733 |
| X2 | 0.416 |
| Y | 1.300 |
| Y1 | 4.600 |
| Y2 | 1.475 |
| Y3 | 0.950 |
| Y4 | 1.125 |
| C | 1.500 |

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