

# NPN SILICON PLANAR AVALANCHE TRANSISTOR

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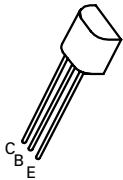
## ZTX415

### FEATURES

- \* Specifically designed for Avalanche mode operation
- \* 60A Peak Avalanche Current (Pulse width=20ns)
- \* Low inductance package

### APPLICATIONS

- \* Laser LED drivers
- \* Fast edge generation
- \* High speed pulse generators
- \* Suitable for single, series and parallel operation



**E-Line**  
**TO92 Compatible**

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                 | SYMBOL         | VALUE       | UNIT |
|-------------------------------------------|----------------|-------------|------|
| Collector-Base Voltage                    | $V_{CBO}$      | 260         | V    |
| Collector-Emitter Voltage                 | $V_{CEO}$      | 100         | V    |
| Emitter-Base Voltage                      | $V_{EBO}$      | 6           | V    |
| Continuous Collector Current              | $I_C$          | 500         | mA   |
| Peak Collector Current (Pulse Width=20ns) | $I_{CM}$       | 60          | A    |
| Power Dissipation                         | $P_{tot}$      | 680         | mW   |
| Operating and Storage Temperature Range   | $T_j; T_{stg}$ | -55 to +175 | °C   |

### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ unless otherwise stated).

| PARAMETER                             | SYMBOL         | MIN.     | TYP. | MAX.      | UNIT                           | CONDITIONS.                                                                      |
|---------------------------------------|----------------|----------|------|-----------|--------------------------------|----------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CES}$  | 260      |      |           | V                              | $I_C=1\text{mA}$<br>$T_{amb} = -55 \text{ to } +175^\circ\text{C}$               |
| Collector-Emitter Breakdown Voltage   | $V_{CEO(sus)}$ | 100      |      |           | V                              | $I_C=100\mu\text{A}$                                                             |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$  | 6        |      |           | V                              | $I_E=10\mu\text{A}$                                                              |
| Collector Cut-Off Current             | $I_{CBO}$      |          |      | 0.1<br>10 | $\mu\text{A}$<br>$\mu\text{A}$ | $V_{CB}=180\text{V}$<br>$V_{CB}=180\text{V}, T_{amb}=100^\circ\text{C}$          |
| Emitter Cut-Off Current               | $I_{EBO}$      |          |      | 0.1       | $\mu\text{A}$                  | $V_{EB}=4\text{V}$                                                               |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$  |          |      | 0.5       | V                              | $I_C=10\text{mA}, I_B=1\text{mA}^*$                                              |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$  |          |      | 0.9       | V                              | $I_C=10\text{mA}, I_B=1\text{mA}^*$                                              |
| Current in Second Breakdown (Pulsed)  | $I_{SB}$       | 15<br>25 |      |           | A<br>A                         | $V_C=200\text{V}, C_{CE}=620\text{pF}$<br>$V_C=250\text{V}, C_{CE}=620\text{pF}$ |
| Static Forward Current Transfer Ratio | $h_{FE}$       | 25       |      |           |                                | $I_C=10\text{mA}, V_{CE}=10\text{V}^*$                                           |
| Transition Frequency                  | $f_T$          | 40       |      |           | MHz                            | $I_C=10\text{mA}, V_{CE}=20\text{V}$<br>$f=20\text{MHz}$                         |
| Collector-Base Capacitance            | $C_{cb}$       |          |      | 8         | pF                             | $V_{CB}=20\text{V}, I_E=0$<br>$f=100\text{MHz}$                                  |

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

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## TYPICAL CHARACTERISTICS

