

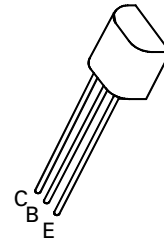
# NPN SILICON PLANAR MEDIUM POWER TRANSISTORS

## ZTX454 ZTX455

ISSUE 2 – MARCH 1994

### FEATURES

- \* 140 Volt  $V_{CEO}$
- \* 1 Amp continuous current
- \*  $P_{tot} = 1$  Watt



E-Line  
TO92 Compatible

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                       | SYMBOL         | ZTX454      | ZTX455 | UNIT             |
|---|----------------|-------------|--------|------------------|
| Collector-Base Voltage                          | $V_{CBO}$      | 140         | 160    | V                |
| Collector-Emitter Voltage                       | $V_{CEO}$      | 120         | 140    | V                |
| Emitter-Base Voltage                            | $V_{EBO}$      |             | 5      | V                |
| Peak Pulse Current                              | $I_{CM}$       |             | 2      | A                |
| Continuous Collector Current                    | $I_C$          |             | 1      | A                |
| Power Dissipation at $T_{amb}=25^\circ\text{C}$ | $P_{tot}$      |             | 1      | W                |
| Operating and Storage Temperature Range         | $T_j; T_{stg}$ | -55 to +200 |        | $^\circ\text{C}$ |

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

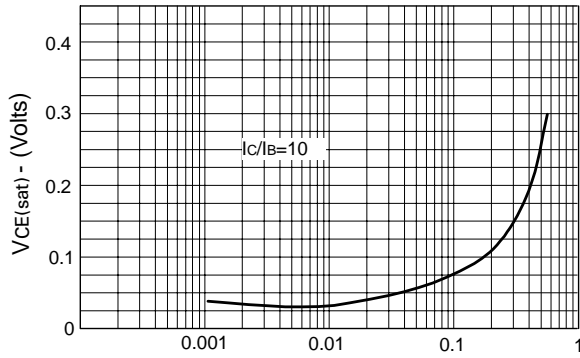
| PARAMETER                             | SYMBOL         | ZTX454           |            | ZTX455     |      | UNIT                           | CONDITIONS.   |
|---------------------------------------|----------------|------------------|------------|------------|------|--------------------------------|---|
|                                       |                | MIN.             | MAX.       | MIN.       | MAX. |                                |   |
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$  | 140              |            | 160        |      | V                              | $I_C=100\mu\text{A}$  |
| Collector-Emitter Sustaining Voltage  | $V_{CEO(sus)}$ | 120              |            | 140        |      | V                              | $I_C=10\text{mA}^*$   |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$  | 5                |            | 5          |      | V                              | $I_E=100\mu\text{A}$  |
| Collector Cut-Off Current             | $I_{CBO}$      |                  | 0.1        |            | 0.1  | $\mu\text{A}$<br>$\mu\text{A}$ | $V_{CB}=140\text{V}$<br>$V_{CB}=120\text{V}$  |
| Emitter Cut-Off Current               | $I_{EBO}$      |                  | 0.1        |            | 0.1  | $\mu\text{A}$                  | $V_{EB}=4\text{V}$  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$  |                  | 0.7<br>1.0 |            | 0.7  | V                              | $I_C=150\text{mA}, I_B=15\text{mA}$<br>$I_C=200\text{mA}, I_B=20\text{mA}$  |
| Static Forward Current Transfer Ratio | $h_{FE}$       | 100<br>30<br>10† | 300        | 100<br>10† | 300  |                                | $I_C=150\text{mA}, V_{CE}=10\text{V}^*$<br>$I_C=200\text{mA}, V_{CE}=1\text{V}^*$<br>$I_C=1\text{A}, V_{CE}=10\text{V}^*$ |
| Transition Frequency                  | $f_T$          | 100              |            | 100        |      | MHz                            | $I_C=50\text{mA}, V_{CE}=10\text{V}$<br>$f=100\text{MHz}$   |
| Output Capacitance                    | $C_{obo}$      |                  | 15         |            | 15   | pF                             | $V_{CB}=10\text{V}, f=1\text{MHz}$  |

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

† Typical

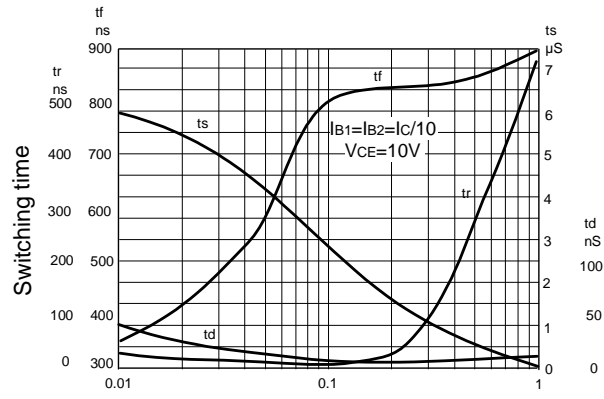
# ZTX454 ZTX455

## TYPICAL CHARACTERISTICS



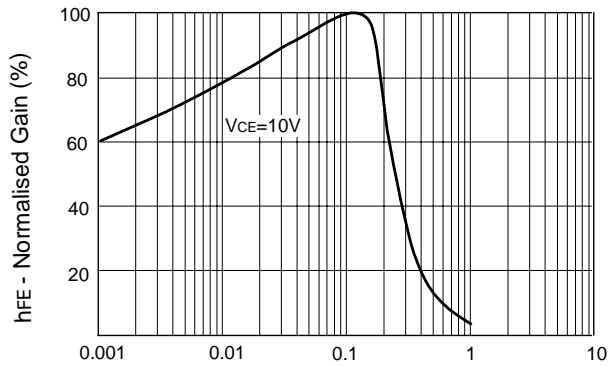
$I_C$  - Collector Current (Amps)

**$V_{CE(sat)}$  v  $I_C$**



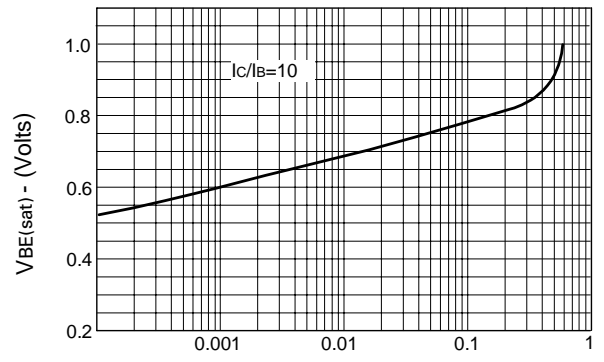
$I_C$  - Collector Current (Amps)

**Typical Switching Speeds**



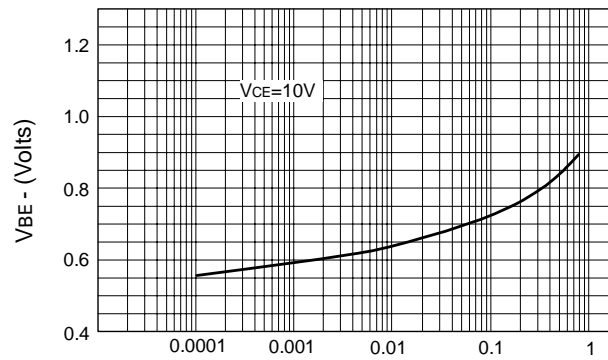
$I_C$  - Collector Current (Amps)

**$h_{FE}$  v  $I_C$**



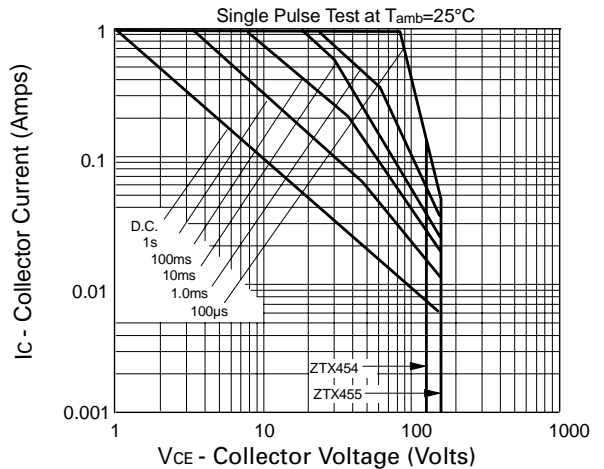
$I_C$  - Collector Current (Amps)

**$V_{BE(sat)}$  v  $I_C$**



$I_C$  - Collector Current (Amps)

**$V_{BE(on)}$  v  $I_C$**



$V_{CE}$  - Collector Voltage (Volts)

**Safe Operating Area**