

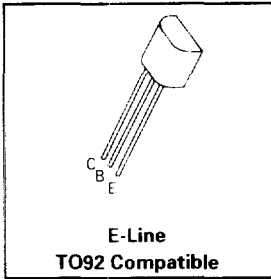
# PNP SILICON PLANAR MEDIUM POWER TRANSISTORS

**ZTX750  
ZTX751**

ISSUE 2 - JULY 94

## FEATURES

- \* 60 Volt  $V_{CE0}$
- \* 2 Amp continuous current
- \* Low saturation voltage
- \*  $P_{tot} = 1$  Watt



## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER   | SYMBOL         | ZTX750      | ZTX751   | UNIT                      |
|---|----------------|-------------|----------|---------------------------|
| Collector-Base Voltage  | $V_{CBO}$      | -60         | -80      | V                         |
| Collector-Emitter Voltage   | $V_{CEO}$      | -45         | -60      | V                         |
| Emitter-Base Voltage  | $V_{EBO}$      |             | -5       | V                         |
| Peak Pulse Current  | $I_{CM}$       |             | -6       | A                         |
| Continuous Collector Current  | $I_C$          |             | -2       | A                         |
| Power Dissipation: at $T_{amb}=25^\circ\text{C}$<br>derate above $25^\circ\text{C}$ | $P_{tot}$      |             | 1<br>5.7 | W<br>mW/ $^\circ\text{C}$ |
| Operating and Storage Temperature Range   | $T_j, T_{stg}$ | -55 to +200 |          | $^\circ\text{C}$          |

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

| PARAMETER                             | SYMBOL        | ZTX750                |                         |               | ZTX751                |                         |                        | UNIT   | CONDITIONS.   |
|---------------------------------------|---------------|-----------------------|-------------------------|---------------|-----------------------|-------------------------|------------------------|--|---|
|                                       |               | MIN.                  | TYP.                    | MAX.          | MIN.                  | TYP.                    | MAX.                   |  |   |
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$ | -60                   |                         |               | -80                   |                         |                        | V  | $I_C = -100\mu\text{A}$   |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$ | -45                   |                         |               | -60                   |                         |                        | 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<br>-10   |                       |                         | -0.1<br>-10            | $\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$ | $V_{CB} = -45\text{V}$<br>$V_{CB} = -60\text{V}$<br>$V_{CB} = -45\text{V}, T_{amb} = 100^\circ\text{C}$<br>$V_{CB} = -60\text{V}, T_{amb} = 100^\circ\text{C}$                        |
| Emitter Cut-Off Current               | $I_{EBO}$     |                       |                         | -0.1          |                       |                         | -0.1                   | $\mu\text{A}$  | $V_{EB} = 4\text{V}$  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$ |                       | -0.15<br>-0.28          | -0.3<br>-0.5  |                       |                         | -0.15<br>-0.28<br>-0.5 | V  | $I_C = -1\text{A}, I_B = -100\text{mA}$<br>$I_C = -2\text{A}, I_B = -200\text{mA}$  |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$ |                       | -0.5<br>-1.25           | -0.9<br>-1.25 |                       |                         | -0.9<br>-1.25          | V  | $I_C = -1\text{A}, I_B = -100\text{mA}$   |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$  |                       | -0.8<br>-1              |               |                       |                         | -0.8<br>-1             | V  | $I_C = -1\text{A}, V_{CE} = -2\text{V}$   |
| Static Forward Current Transfer Ratio | $h_{FE}$      | 70<br>100<br>80<br>40 | 200<br>200<br>170<br>80 | 300           | 70<br>100<br>80<br>40 | 200<br>200<br>170<br>80 | 300                    |  | $I_C = -50\text{mA}, V_{CE} = -2\text{V}^*$<br>$I_C = -500\text{mA}, V_{CE} = -2\text{V}^*$<br>$I_C = -1\text{A}, V_{CE} = -2\text{V}^*$<br>$I_C = -2\text{A}, V_{CE} = -2\text{V}^*$ |

# ZTX750 ZTX751

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

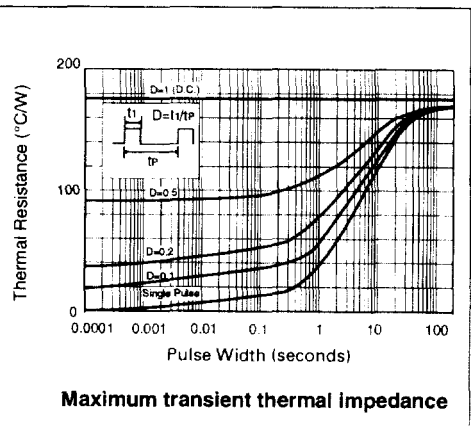
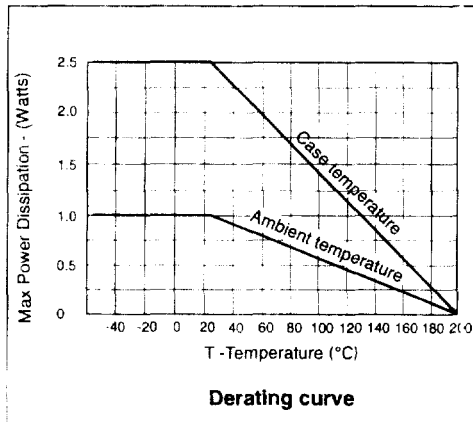
| PARAMETER            | SYMBOL    | ZTX750 |      |      | ZTX751 |      |      | UNIT | CONDITIONS.  |
|----------------------|-----------|--------|------|------|--------|------|------|------|--|
|                      |           | MIN.   | TYP. | MAX. | MIN.   | TYP. | MAX. |      |  |
| Transition Frequency | $f_T$     | 100    | 140  |      | 100    | 140  |      | MHz  | $I_C = -100\text{mA}$ , $V_{CE} = -5\text{V}$<br>$f = 100\text{MHz}$               |
| Switching Times      | $t_{on}$  |        | 40   |      |        | 40   |      | ns   | $I_C = -500\text{mA}$ , $V_{CC} = -10\text{V}$<br>$I_{B1} = I_{B2} = -50\text{mA}$ |
|                      | $t_{off}$ |        | 450  |      |        | 450  |      | ns   |  |
| Output Capacitance   | $C_{obo}$ |        |      | 30   |        |      | 30   | pF   | $V_{CB} = 10\text{V}$ $f = 1\text{MHz}$  |

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

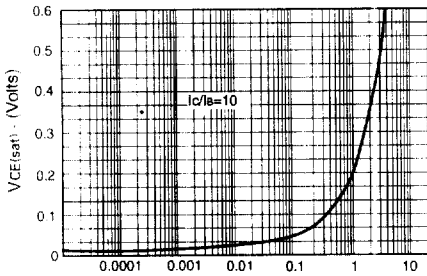
## THERMAL CHARACTERISTICS

| PARAMETER  | SYMBOL                     | MAX. | UNIT                 |
|--|----------------------------|------|----------------------|
| Thermal Resistance: Junction to Ambient <sub>1</sub> | $R_{th(j-amb)1}$           | 175  | $^{\circ}\text{C/W}$ |
| Junction to Ambient <sub>2</sub>                     | $R_{th(j-amb)2}^{\dagger}$ | 116  | $^{\circ}\text{C/W}$ |
| Junction to Case                                     | $R_{th(j-case)}$           | 70   | $^{\circ}\text{C/W}$ |

$\dagger$  Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.

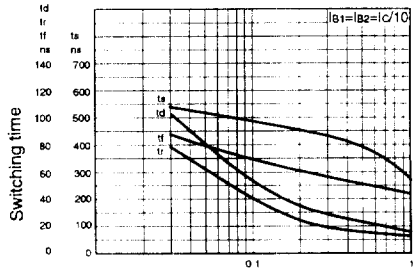


## TYPICAL CHARACTERISTICS



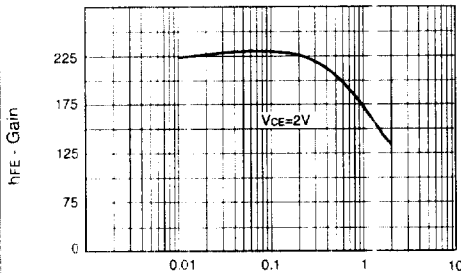
$I_C$  - Collector Current (Amps)

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



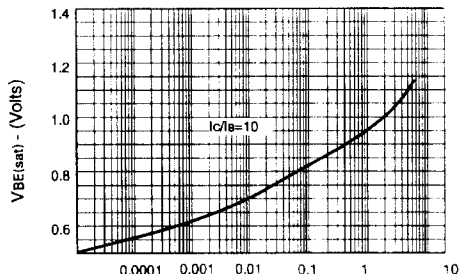
$I_C$  - Collector Current (Amps)

**Switching Speeds**



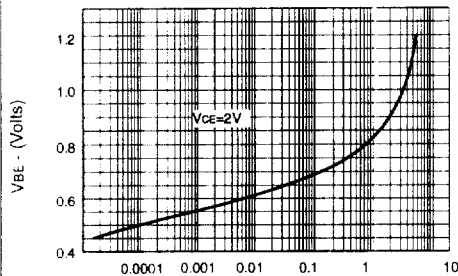
$I_C$  - Collector Current (Amps)

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



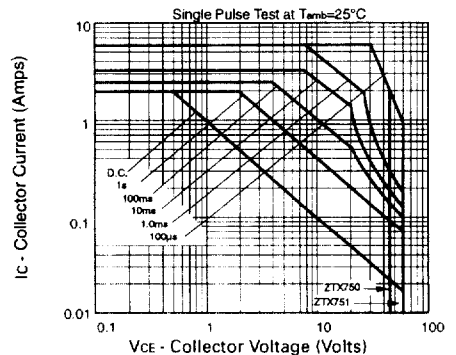
$I_C$  - Collector Current (Amps)

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



$I_C$  - Collector Current (Amps)

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



**Safe Operating Area**