

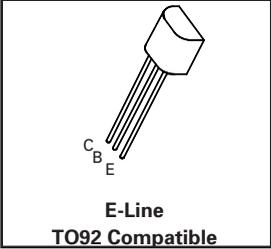
# PNP SILICON PLANAR MEDIUM POWER TRANSISTORS

## ZTX750 ZTX751

ISSUE 3 – JULY 2005

### FEATURES

- \* 60 Volt  $V_{CEO}$
- \* 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 $T_{amb}=25^\circ\text{C}$ derate above $25^\circ\text{C}$	$P_{tot}$		1 5.7	W 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 -10			-0.1 -10	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$	$V_{CB} = -45\text{V}$ $V_{CB} = -60\text{V}$ $V_{CB} = -45\text{V}, T_{amb} = 100^\circ\text{C}$ $V_{CB} = -60\text{V}, T_{amb} = 100^\circ\text{C}$
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 -0.28	-0.3 -0.5			-0.15 -0.28	V	$I_C = -1\text{A}, I_B = -100\text{mA}$ $I_C = -2\text{A}, I_B = -200\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-0.9	-1.25			-0.9	V	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-0.8	-1			-0.8	V	$I_C = -1\text{A}, V_{CE} = -2\text{V}$
Static Forward Current Transfer Ratio	$h_{FE}$	70 100 80 40	200 200 170 80	300	70 100 80 40	200 200 170 80	300		$I_C = -50\text{mA}, V_{CE} = -2\text{V}^*$ $I_C = -500\text{mA}, V_{CE} = -2\text{V}^*$ $I_C = -1\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -2\text{A}, V_{CE} = -2\text{V}^*$
Switching Times	$t_{on}$ $t_{off}$		45 800			45 800			$I_C = 500\text{mA}, V_{CC} = 10\text{V}$ $I_{B1} = I_{B2} = 50\text{mA}$
Output Capacitance	$C_{obo}$			30			30	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$

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

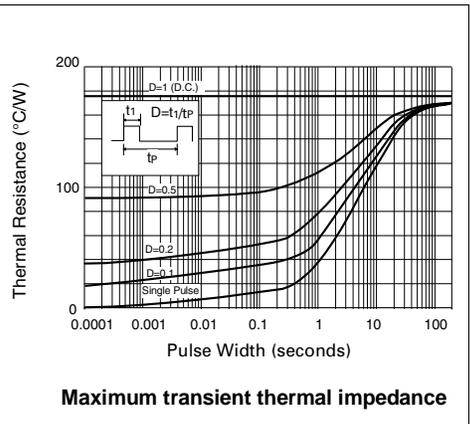
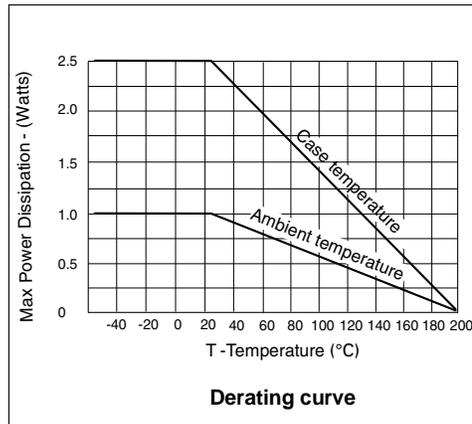
PARAMETER	SYMBOL	ZTX750			ZTX751			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Transition Frequency	$f_T$	100	140		100	140		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -5\text{V}$ $f = 100\text{MHz}$
Switching Times	$t_{on}$		40			40		ns	$I_C = -500\text{mA}$ , $V_{CC} = -10\text{V}$ $I_{B1} = I_{B2} = -50\text{mA}$
	$t_{off}$		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

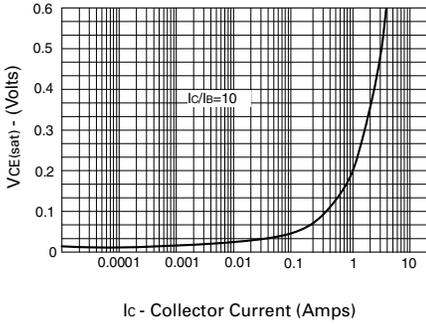
PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient <sub>1</sub>	$R_{th(j-amb)1}$	175	$^{\circ}\text{C/W}$
Junction to Ambient <sub>2</sub>	$R_{th(j-amb)2} \dagger$	116	$^{\circ}\text{C/W}$
Junction to Case	$R_{th(j-case)}$	70	$^{\circ}\text{C/W}$

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

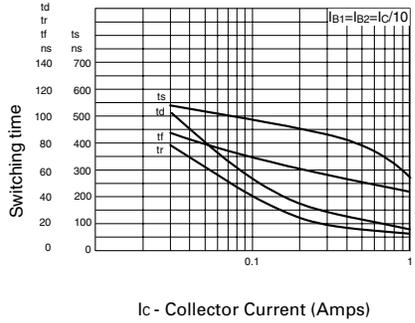


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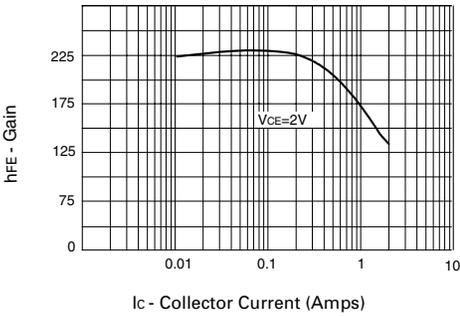
## TYPICAL CHARACTERISTICS



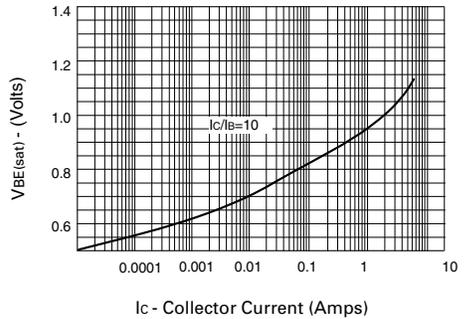
**$V_{CE(sat)}$  v  $I_C$**



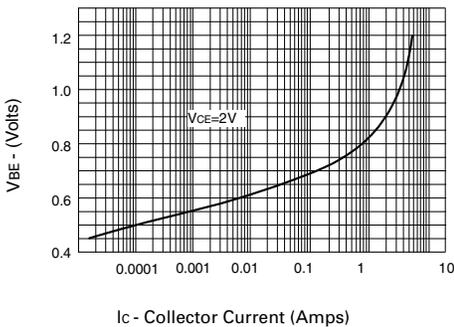
**Switching Speeds**



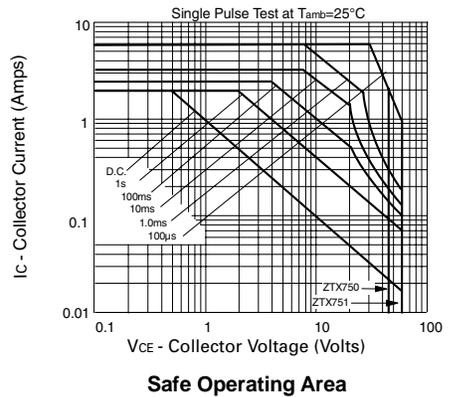
**$h_{FE}$  v  $I_C$**



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



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



**Safe Operating Area**

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