

# PNP SILICON PLANAR HIGH SPEED SWITCHING TRANSISTOR

## ZTX510

ISSUE 2 – MARCH 94

### FEATURES

- \* 12 Volt  $V_{CEO}$
- \*  $f_T=400\text{MHz}$



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

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-12	V
Collector-Emitter Voltage	$V_{CEO}$	-12	V
Emitter-Base Voltage	$V_{EBO}$	-4	V
Base Current	$I_B$	-40	mA
Continuous Collector Current	$I_C$	-200	mA
Power Dissipation at $T_{amb}=25^\circ\text{C}$	$P_{tot}$	300	mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +175	$^\circ\text{C}$

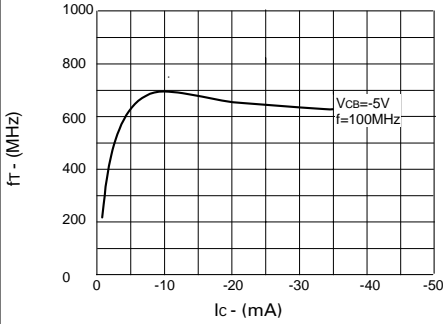
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ ).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-12			V	$I_C=-10\mu\text{A}$
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	-12			V	$I_C=-10\text{mA}$
Collector Cut-Off Current	$I_{CBO}$			-0.1	$\mu\text{A}$	$V_{CB}=-6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.15 -0.2 -0.5	V V V	$I_C=-10\text{mA}, I_B=-1\text{mA}^*$ $I_C=-30\text{mA}, I_B=-3\text{mA}^*$ $I_C=-100\text{mA}, I_B=-10\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-0.76 -0.82 -1.7		-0.98 -1.2	V V V	$I_C=-10\text{mA}, I_B=-1\text{mA}^*$ $I_C=-30\text{mA}, I_B=-3\text{mA}^*$ $I_C=-100\text{mA}, I_B=-10\text{mA}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	30 40 20		150		$I_C=-10\text{mA}, V_{CE}=-0.3\text{V}^*$ $I_C=-30\text{mA}, V_{CE}=-0.5\text{V}^*$ $I_C=-100\text{mA}, V_{CE}=-1\text{V}^*$
Transition Frequency	$f_T$	400			MHz	$I_C=-30\text{mA}, V_{CE}=-5\text{V}$ $f=100\text{MHz}$
Output Capacitance	$C_{obo}$			6	pF	$V_{CB}=-5\text{V}, f=140\text{KHz}$
Input Capacitance	$C_{ibo}$			6	pF	$V_{EB}=-0.5\text{V}, f=140\text{KHz}$
Switching Times	$t_{on}$			60	ns	$I_C=-30\text{mA}, I_{B1}=I_{B2}=-1.5\text{mA}$
	$t_{off}$			90	ns	

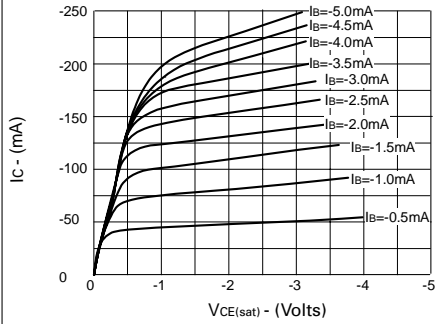
\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

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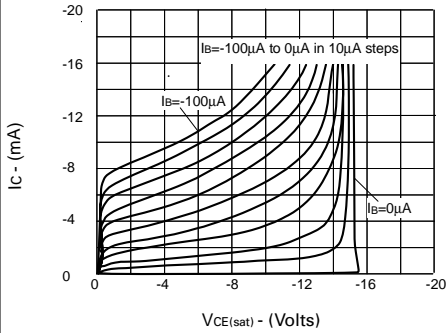
## TYPICAL CHARACTERISTICS



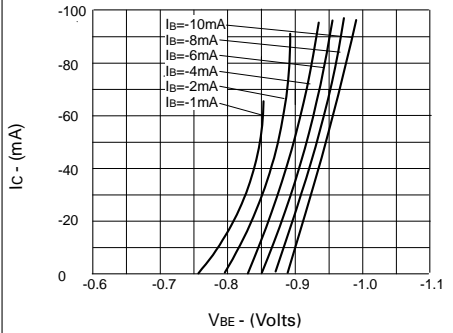
**$I_c$  v  $f_t$**



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



**$V_{CE}$  v  $I_c$**



**$V_{BE}$  v  $I_c$**