



**THE DATASHEET OF
ZTX690BSTZ**



ZTX690B

NPN SILICON PLANAR MEDIUM GAIN HIGH GAIN TRANSISTOR

ISSUE 1 - MAY 94

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	f_T	150			MHz	$I_C=50\text{mA}$, $V_{CE}=5\text{V}$ $f=50\text{MHz}$
Input Capacitance	C_{ibo}		200		pF	$V_{EB}=0.5\text{V}$, $f=1\text{MHz}$
Output Capacitance	C_{obo}		16		pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}$
Switching Times	t_{on}		33		ns	$I_C=500\text{mA}$, $I_{B1}=50\text{mA}$
	t_{off}		1300		ns	$I_{B2}=50\text{mA}$, $V_{CC}=10\text{V}$

*Measured under pulsed conditions. Pulse width=300 μ s. Duty cycle $\leq 2\%$

THERMAL CHARACTERISTICS

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

† Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.

FEATURES

- * 45 Volt V_{CE0}
- * Gain of 400 at $I_C=1$ Amp
- * Very low saturation voltage

APPLICATIONS

- * Darlington replacement
- * Siren Drivers
- * Battery powered circuits
- * Motor drivers

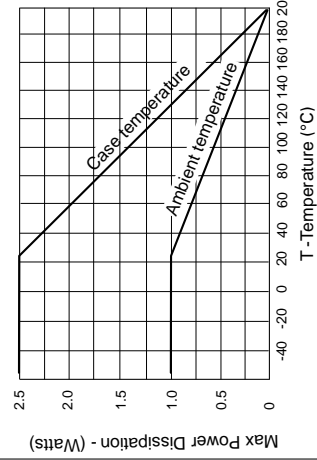
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL
Collector-Base Voltage	$V_{(BR)CBO}$
Collector-Emitter Voltage	$V_{(BR)CEO}$
Emitter-Base Voltage	$V_{(BR)EBO}$
Peak Pulse Current	I_{CP}
Continuous Collector Current	I_C
Practical Power Dissipation*	P_D
Power Dissipation at $T_{amb}=25^{\circ}\text{C}$ derate above 25°C	$P_{D(25^{\circ}\text{C})}$
Operating and Storage Temperature Range	T_{stg}

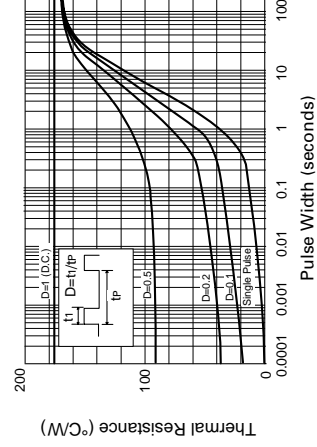
*The power which can be dissipated as a function of ambient temperature. P.C.B. with copper equal to 1 inch square.

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$
Collector Cut-Off Current	I_{CBO}
Emitter Cut-Off Current	I_{EBO}
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$
Static Forward Current Transfer Ratio	h_{FE}



Derating curve



Maximum transient thermal impedance

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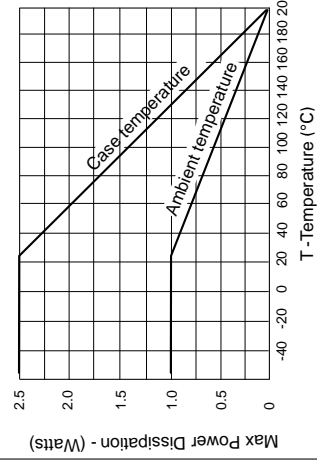
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Collector-Emitter Voltage	$V_{(BR)CEO}$
Emitter-Base Voltage	$V_{(BR)EBO}$
Peak Pulse Current	I_{CB0}
Continuous Collector Current	I_{EBO}
Practical Power Dissipation*	$V_{CE(sat)}$
Power Dissipation at $T_{amb}=25^{\circ}C$	$V_{BE(sat)}$
derate above $25^{\circ}C$	$V_{BE(on)}$
Operating and Storage Temperature Range	h_{FE}

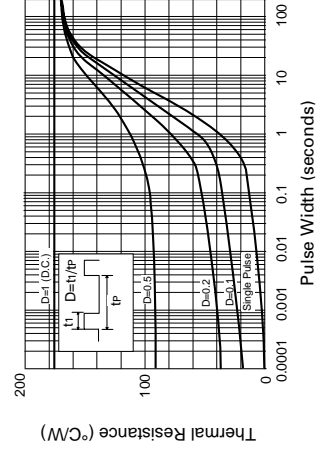
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ELECTRICAL CHARACTERISTICS

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Collector-Emitter Saturation Voltage	$V_{CE(sat)}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$
Static Forward Current Transfer Ratio	h_{FE}



Derating curve



Maximum transient thermal impedance

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