



THE DATASHEET OF ZTX689B



ZTX689B

NPN SILICON PLANAR MEDIUM 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}		30		ns	$I_C=500\text{mA}$, $I_B=50\text{mA}$ $I_B=50\text{mA}$, $V_{CC}=10\text{V}$
	t_{off}		800		ns	

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

FEATURES

- * 20 Volt V_{CE0}
- * Gain of 400 at $I_C=2$ Amps
- * Very low saturation voltage

APPLICATIONS

- * Darlington replacement
- * Flash gun converters
- * Battery powered circuits
- * Motor drivers

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	UNIT
Collector-Base Voltage	$V_{(BR)CBO}$	V
Collector-Emitter Voltage	$V_{(BR)CEO}$	V
Emitter-Base Voltage	$V_{(BR)EBO}$	V
Peak Pulse Current	I_{CB0}	A
Continuous Collector Current	I_{EBO}	A
Practical Power Dissipation*	$V_{CE(sat)}$	V
Power Dissipation	at $T_{amb}=25^{\circ}\text{C}$ derate above 25°C	W
Operating and Storage Temperature Range		$^{\circ}\text{C}$

*The power which can be dissipated as P.C.B. with copper equal to 1 inch square

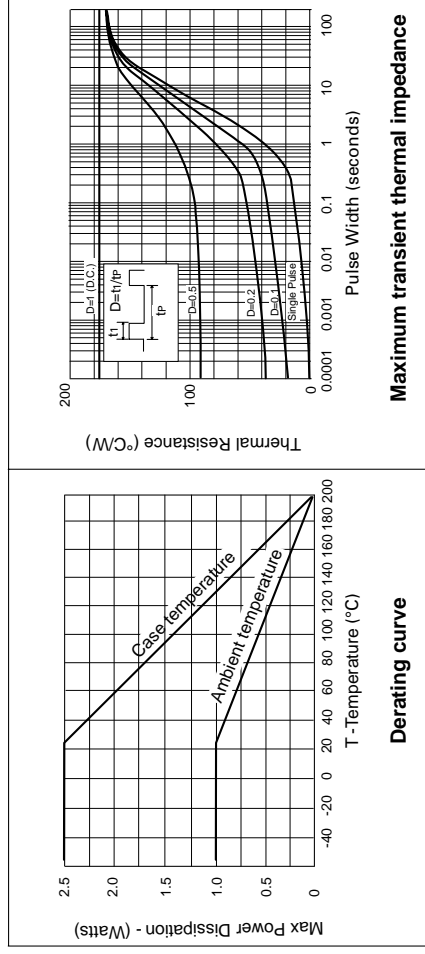
ELECTRICAL CHARACTERISTICS

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

THERMAL CHARACTERISTICS

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

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



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	t_{off}		800		ns	

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THERMAL CHARACTERISTICS

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

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

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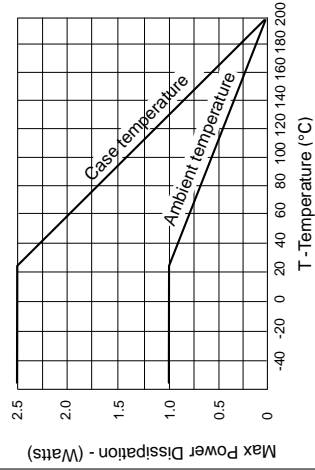
ABSOLUTE MAXIMUM RATINGS

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

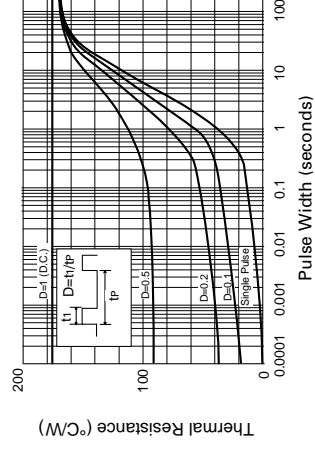
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ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$
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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}



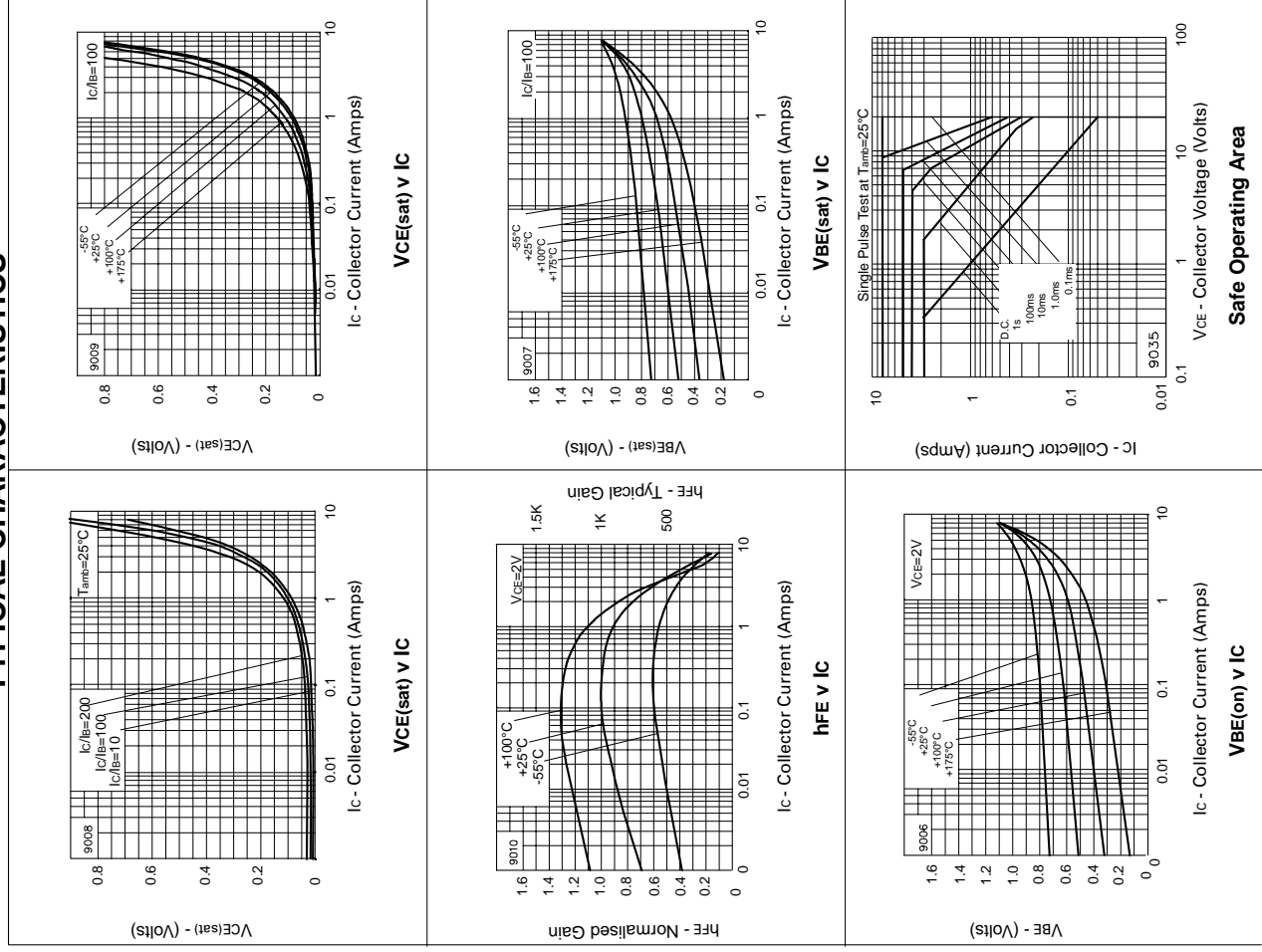
Derating curve



Maximum transient thermal impedance



ZTX689B

TYPICAL CHARACTERISTICS




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