



# THE DATASHEET OF ZTX692B



# ZTX692B

# NPN SILICON PLANAR MEDIUM GAIN TRANSISTOR

ISSUE 1 – APRIL 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	$C_{obo}$		12		pF	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$
Switching Times	$t_{on}$		46		ns	$I_C=500\text{mA}$ , $I_B=50\text{mA}$ $I_B=50\text{mA}$ , $V_{CC}=10\text{V}$
	$t_{off}$		1440		ns	

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

## THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient <sub>1</sub> Junction to Ambient <sub>2</sub> 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.

## FEATURES

- \* 70 Volt  $V_{CEO}$
- \* Gain of 400 at  $I_C=50\text{mA}$
- \* Very low saturation voltage

## APPLICATIONS

- \* Darlington replacement
- \* Relay drivers
- \* Battery powered circuits
- \* Motor drivers

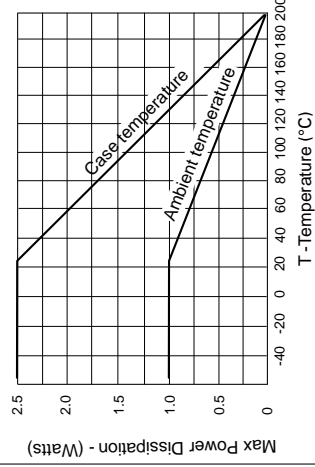
## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MAX.	UNIT
Collector-Base Voltage	$V_{CB}$	70	V
Collector-Emitter Voltage	$V_{CE}$	70	V
Emitter-Base Voltage	$V_{EB}$	5	V
Peak Pulse Current	$I_{CP}$	500	mA
Continuous Collector Current	$I_C$	500	mA
Practical Power Dissipation*	$P_D$	1.16	W
Power Dissipation	$P_D$	0.70	W
Operating and Storage Temperature Range	$T_{amb}$	-55 to 150	$^{\circ}\text{C}$

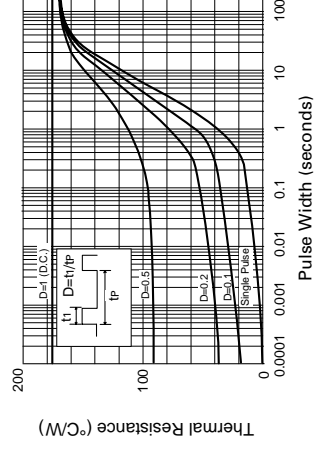
\*The power which can be dissipated as a function of ambient temperature. P.C.B. with copper equal to 1 inch square.

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	70	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	70	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	V
Collector Cut-Off Current	$I_{CBO}$	10	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	10	$\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	0.2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.7	V
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	0.7	V
Static Forward Current Transfer Ratio	$h_{FE}$	400	



Derating curve



Maximum transient thermal impedance

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Thermal Resistance: Junction to Ambient <sub>1</sub>	$R_{\theta(j-amb)1}$	175	$^{\circ}\text{C/W}$
Junction to Ambient <sub>2</sub>	$R_{\theta(j-amb)2}$	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.

## FEATURES

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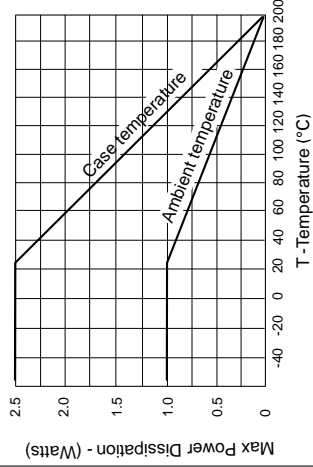
## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MAX.	UNIT
Collector-Base Voltage	$V_{CB}$	70	V
Collector-Emitter Voltage	$V_{CE}$	70	V
Emitter-Base Voltage	$V_{EB}$	5	V
Peak Pulse Current	$I_{CP}$	500	mA
Continuous Collector Current	$I_C$	500	mA
Practical Power Dissipation*	$P_D$	1.75	W
Power Dissipation	$P_D$	1.16	W
Operating and Storage Temperature Range	$T_{amb}$	-55 to 125	$^{\circ}\text{C}$

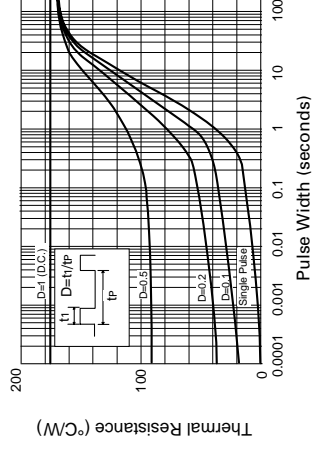
\*The power which can be dissipated as a function of ambient temperature. P.C.B. with copper equal to 1 inch square.

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Base-Emitter Turn-On Voltage	$V_{BE(on)}$	0.7	V
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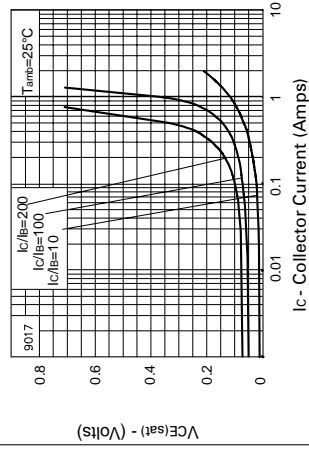
Derating curve



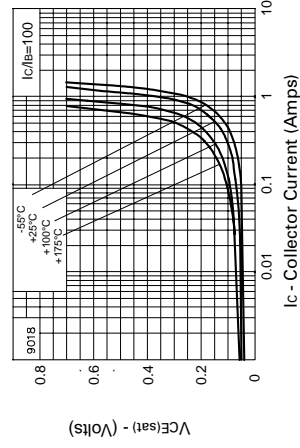
Maximum transient thermal impedance

# ZTX692B

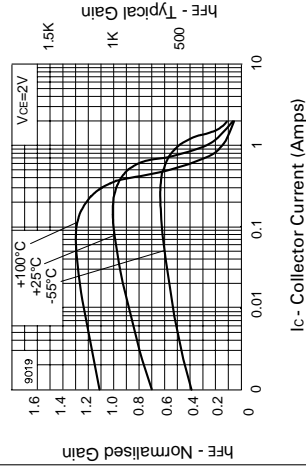
## TYPICAL CHARACTERISTICS



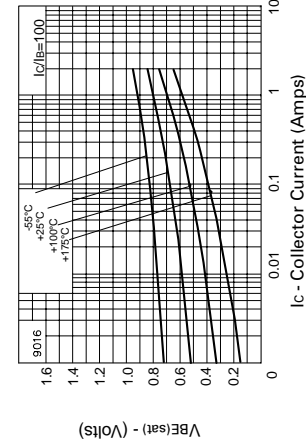
VCE(sat) v IC



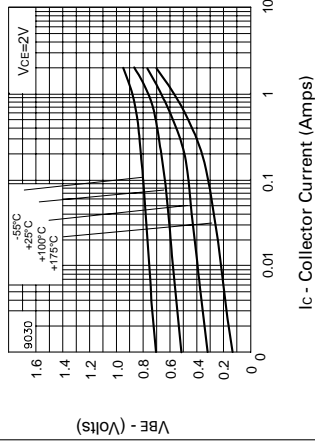
VCE(sat) v IC



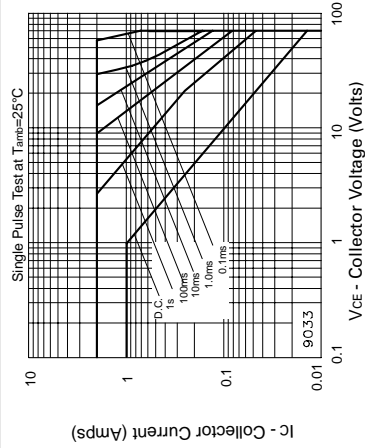
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

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