

# ZTX956

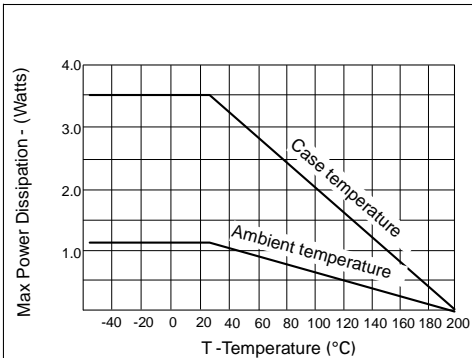
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ )

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-770	-900	mV	$I_C = -2\text{A}$ , $V_{CE} = -5\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	100 100 50	200 200 150 10	300		$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}^*$ $I_C = -1\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -2\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -5\text{A}$ , $V_{CE} = -5\text{V}^*$
Transition Frequency	$f_T$		110		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$		32		pF	$V_{CB} = -20\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		67 1140		ns ns	$I_C = -1\text{A}$ , $I_{B1} = -100\text{mA}$ $I_{B2} = 100\text{mA}$ , $V_{CC} = -50\text{V}$

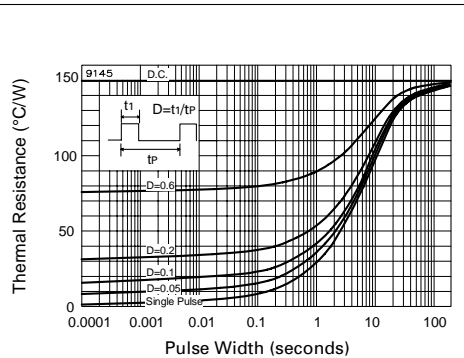
\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

## THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient	$R_{th(j-amb)}$	150	$^{\circ}\text{C/W}$
Junction to Case	$R_{th(j-case)}$	50	$^{\circ}\text{C/W}$



Derating curve



Maximum transient thermal impedance

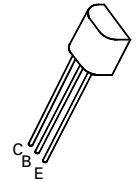
# PNP SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ISSUE 3 - JUNE 94

## FEATURES

- \* 2 Amps continuous current
- \* Up to 5 Amps peak current
- \* Very low saturation voltage
- \* Excellent gain characteristics up to 2 Amps
- \* Spice model available

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E-Line  
TO92 Compatible

## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-220	V
Collector-Emitter Voltage	$V_{CEO}$	-200	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Peak Pulse Current	$I_{CM}$	-5	A
Continuous Collector Current	$I_C$	-2	A
Practical Power Dissipation*	$P_{totp}$	1.58	W
Power Dissipation at $T_{amb} = 25^{\circ}\text{C}$	$P_{tot}$	1.2	W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200	$^{\circ}\text{C}$

\*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-220	-300		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-220	-300		V	$I_C = -1\mu\text{A}$ , $R_B \leq 1\text{K}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-200	-240		V	$I_C = -10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{K}\Omega$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-30 -110 -150	-50 -150 -250	mV mV mV	$I_C = -100\text{mA}$ , $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$ , $I_B = -400\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-920	-1050	mV	$I_C = -2\text{A}$ , $I_B = -400\text{mA}$

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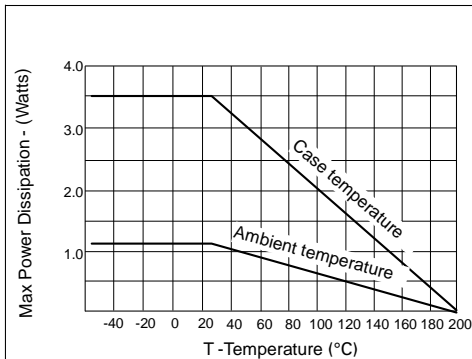
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Transition Frequency	$f_T$		110		MHz	$I_C = -100\text{mA}, V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
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Switching Times	$t_{on}$ $t_{off}$		67 1140		ns ns	$I_C = -1\text{A}, I_{B1} = -100\text{mA}$ $I_{B2} = 100\text{mA}, V_{CC} = -50\text{V}$

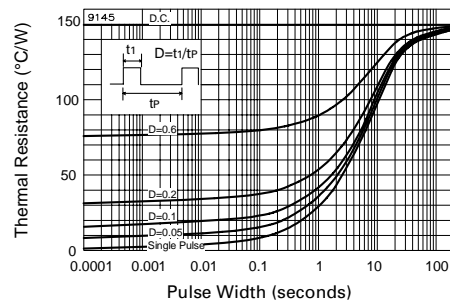
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Derating curve



Maximum transient thermal impedance

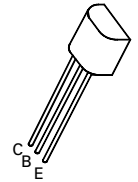
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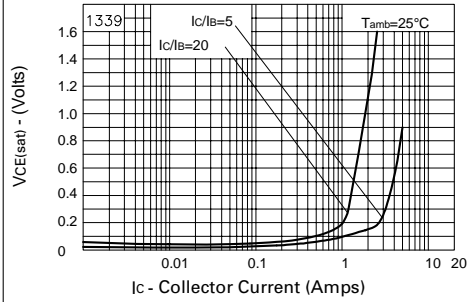
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## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

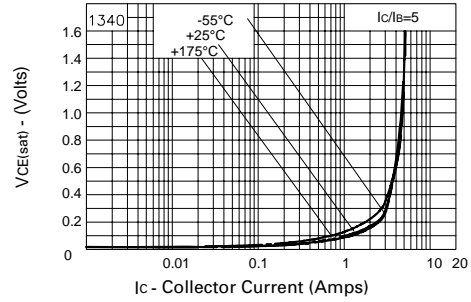
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Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-220	-300		V	$I_C = -1\mu\text{A}, R_B \leq 1\text{K}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-200	-240		V	$I_C = -10\text{mA}^*$
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Collector Cut-Off Current	$I_{CBO}$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}, T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{K}\Omega$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}, T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-30 -110 -150	-50 -150 -250	mV mV mV	$I_C = -100\text{mA}, I_B = -10\text{mA}^*$ $I_C = -1\text{A}, I_B = -100\text{mA}^*$ $I_C = -2\text{A}, I_B = -400\text{mA}^*$
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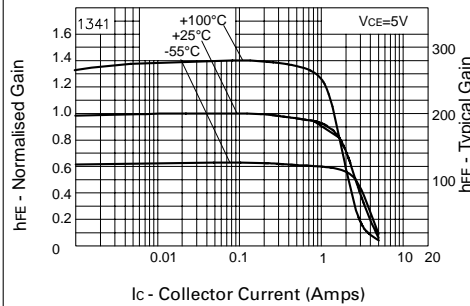
## TYPICAL CHARACTERISTICS



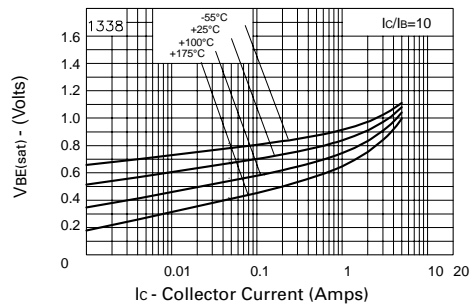
**$V_{CE(sat)}$  v  $I_C$**



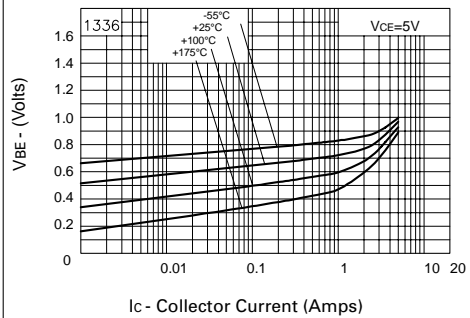
**$V_{CE(sat)}$  v  $I_C$**



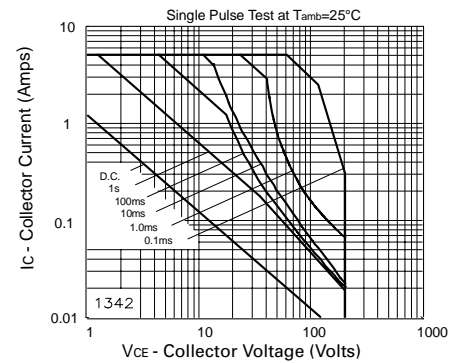
**$h_{FE}$  v  $I_C$**



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



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



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