

# ZTX658

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

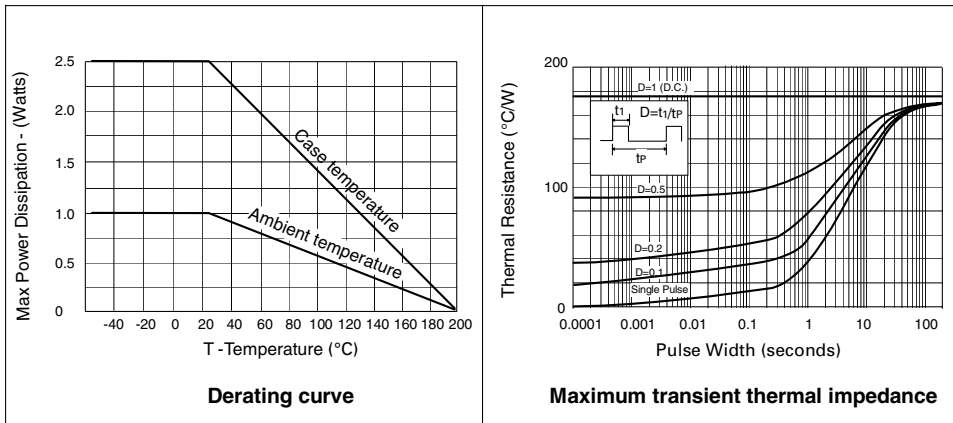
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	$f_T$	50			MHz	$I_C=20\text{mA}$ , $V_{CE}=20\text{V}$ $f=20\text{MHz}$
Output capacitance	$C_{obo}$			10	pF	$V_{CB}=20\text{V}$ , $f=1\text{MHz}$
Switching times	$t_{on}$		130		ns	$I_C=100\text{mA}$ , $V_C=100\text{V}$ $I_{B1}=10\text{mA}$ , $I_{B2}=-20\text{mA}$
	$t_{off}$		3300		ns	

\* 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 <sub>1</sub>	$R_{th(j-amb)1}$	175	$^{\circ}\text{C/W}$
Junction to Ambient <sub>2</sub>	$R_{th(j-amb)2} \dagger$	116	$^{\circ}\text{C/W}$
Junction to Case	$R_{th(j-case)}$	70	$^{\circ}\text{C/W}$

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



# NPN SILICON PLANAR MEDIUM POWER HIGH VOLTAGE TRANSISTOR

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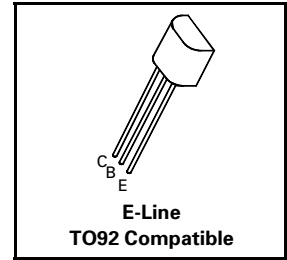
ISSUE 2 - APRIL 2002

## FEATURES

- \* 400 Volt  $V_{CEO}$
- \* 0.5 Amp continuous current
- \*  $P_{tot}=1$  Watt

## APPLICATIONS

- \* Telephone dialler circuits



## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	400	V
Collector-Emitter Voltage	$V_{CEO}$	400	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Peak Pulse Current	$I_{CM}$	1	A
Continuous Collector Current	$I_C$	500	mA
Power Dissipation at $T_{amb}=25^{\circ}\text{C}$ derate above $25^{\circ}\text{C}$	$P_{tot}$	1	W
		5.7	mW/ $^{\circ}\text{C}$
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200	$^{\circ}\text{C}$

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	400			V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	400			V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			100	nA	$V_{CB}=320\text{V}$
Collector Cut-Off Current	$I_{CBO}$			100	nA	$V_{CE}=320\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			100	nA	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	0.3			V	$I_C=20\text{mA}$ , $I_B=1\text{mA}$
		0.25			V	$I_C=50\text{mA}$ , $I_B=5\text{mA}^*$
		0.5			V	$I_C=100\text{mA}$ , $I_B=10\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9		V	$I_C=100\text{mA}$ , $I_B=10\text{mA}^*$
Base-Emitter Turn On Voltage	$V_{BE(on)}$		0.9		V	$I_C=100\text{mA}$ , $V_{CE}=5\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	50				$I_C=1\text{mA}$ , $V_{CE}=5\text{V}^*$
		50				$I_C=100\text{mA}$ , $V_{CE}=5\text{V}^*$
		40				$I_C=200\text{mA}$ , $V_{CE}=10\text{V}^*$

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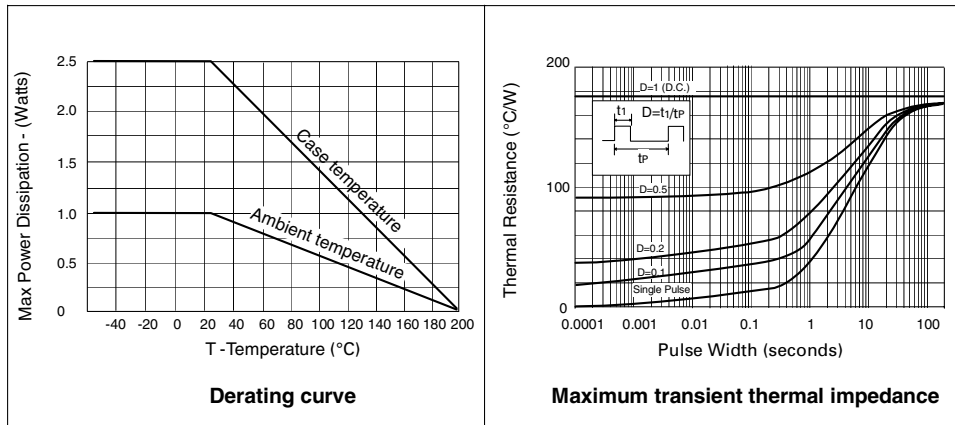
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\* Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

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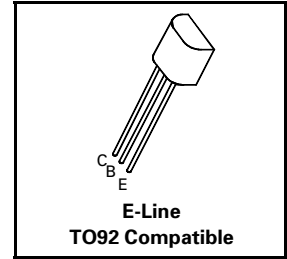
ISSUE 2 – APRIL 2002

## FEATURES

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## APPLICATIONS

- \* Telephone dialler circuits



## ABSOLUTE MAXIMUM RATINGS.

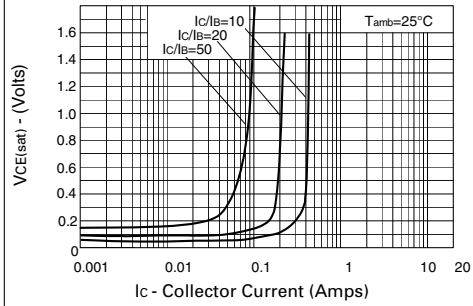
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Collector-Emitter Voltage	$V_{CEO}$	400	V
Emitter-Base Voltage	$V_{EBO}$	5	V
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Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200	$^{\circ}\text{C}$

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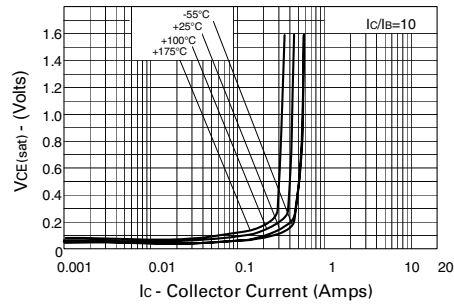
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Collector Cut-Off Current	$I_{CBO}$			100	nA	$V_{CB}=320\text{V}$
Collector Cut-Off Current	$I_{CBO}$			100	nA	$V_{CE}=320\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			100	nA	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.3		V	$I_C=20\text{mA}$ , $I_B=1\text{mA}$
			0.25		V	$I_C=50\text{mA}$ , $I_B=5\text{mA}^*$
			0.5		V	$I_C=100\text{mA}$ , $I_B=10\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9		V	$I_C=100\text{mA}$ , $I_B=10\text{mA}^*$
Base-Emitter Turn On Voltage	$V_{BE(on)}$			0.9	V	$I_C=100\text{mA}$ , $V_{CE}=5\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	50				$I_C=1\text{mA}$ , $V_{CE}=5\text{V}^*$
		50				$I_C=100\text{mA}$ , $V_{CE}=5\text{V}^*$
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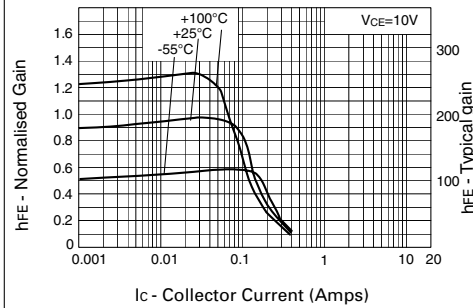
## TYPICAL CHARACTERISTICS



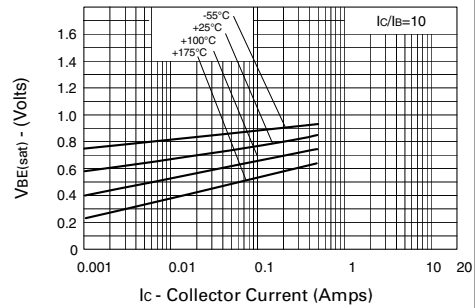
**$V_{CE(sat)}$  v  $I_C$**



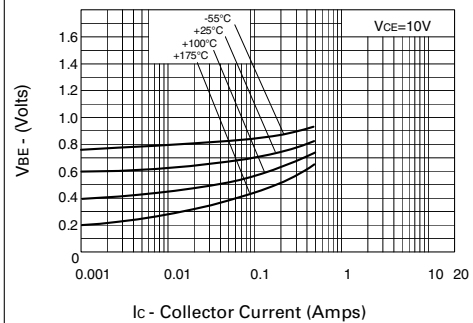
**$V_{CE(sat)}$  v  $I_C$**



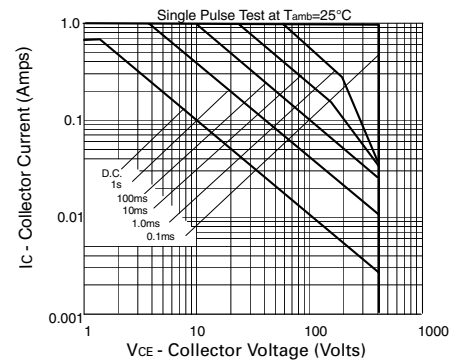
**$h_{FE}$  v  $I_C$**



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



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



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