



# THE DATASHEET OF ZTX605STZ



# ZTX604 ZTX605

## NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTOR

ISSUE 1 – MARCH 94

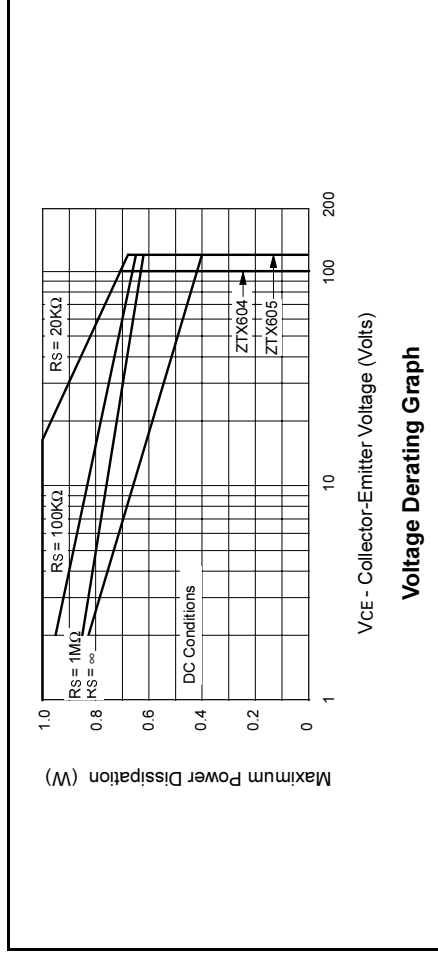
### FEATURES

- \* 120 Volt  $V_{CE0}$
- \* 1 Amp continuous current
- \* Gain of 2K at  $I_C=1$  Amp
- \*  $P_{tot}=1$  Watt

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

PARAMETER	SYMBOL	ZTX604		ZTX605		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Static Forward Current Transfer Ratio	$h_{FE}$	2K	100K	2K	100K		$I_C=50\text{mA}, V_{CE}=5\text{V}$
		5K		5K			$I_C=500\text{mA}, V_{CE}=5\text{V}^*$
		2K		2K			$I_C=1\text{A}, V_{CE}=5\text{V}^*$
		0.5K		0.5K			$I_C=2\text{A}, V_{CE}=5\text{V}^*$
Transition Frequency	$f_T$	150		150		MHz	$I_C=100\text{mA}, V_{CE}=10\text{V}$ $f=20\text{MHz}$
Input Capacitance	$C_{ibo}$	90 Typical				pF	$V_{EB}=500\text{mV}, f=1\text{MHz}$
Output Capacitance	$C_{obo}$	15 Typical				pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Switching Times	$t_{on}$	0.5 Typical				$\mu\text{s}$	$I_C=500\text{mA}, V_{CE}=10\text{V}$ $I_B=I_C=0.5\text{mA}$
	$t_{off}$	1.6 Typical				$\mu\text{s}$	

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



The maximum permissible operational temperature can be obtained from this graph using the following equation

$$T_{amb(max)} = \frac{Power(max) - Power(act)}{0.0057} + 25^\circ\text{C}$$

$T_{amb(max)}$  = Maximum operating ambient temperature

Power(max) = Maximum power dissipation figure, obtained from the above graph for a given  $V_{CE}$  and source resistance ( $R_S$ )

Power(actual) = Actual power dissipation in users circuit

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN.	MAX.
Collector-Base Voltage		120
Collector-Emitter Voltage		100
Emitter-Base Voltage		10
Peak Pulse Current		
Continuous Collector Current		
Power Dissipation at $T_{amb}=25^\circ\text{C}$ derate above $25^\circ\text{C}$		

Operating and Storage Temperature Range

### ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	Z
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	120
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	100
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	10
Collector Cut-Off Current	$I_{CBO}$	
Emitter Cut-Off Current	$I_{EBO}$	
Collector-Emitter Cut-Off Current	$I_{CES}$	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	

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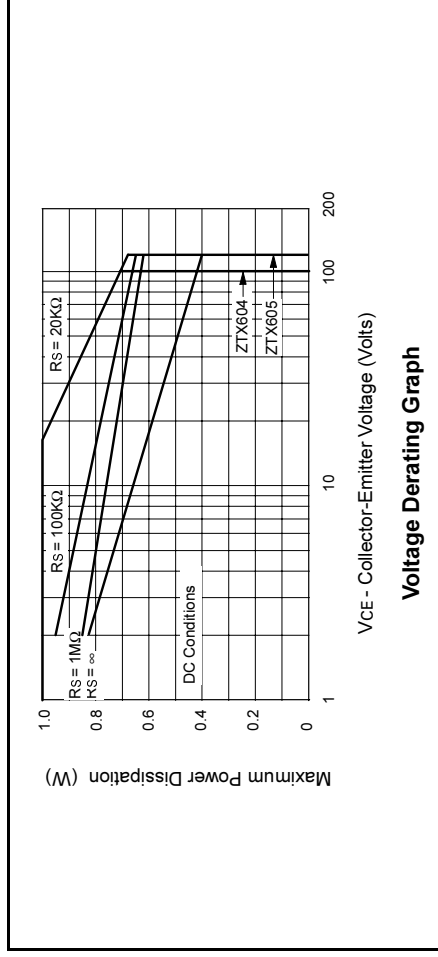
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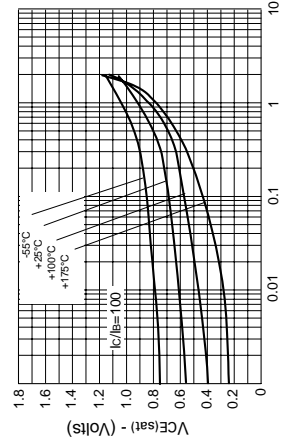
Operating and Storage Temperature Range

### ELECTRICAL CHARACTERISTICS

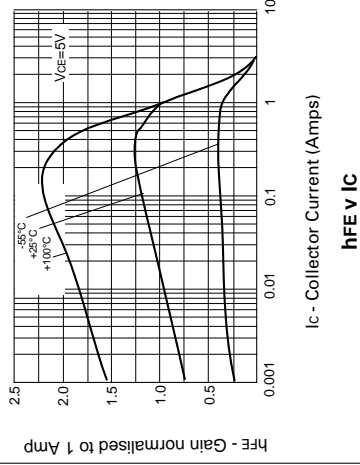
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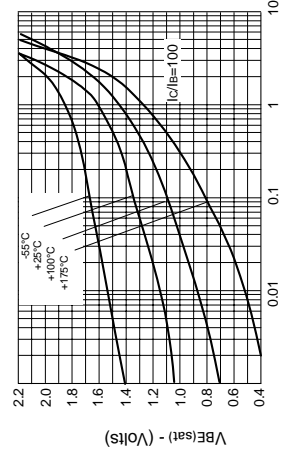
## TYPICAL CHARACTERISTICS



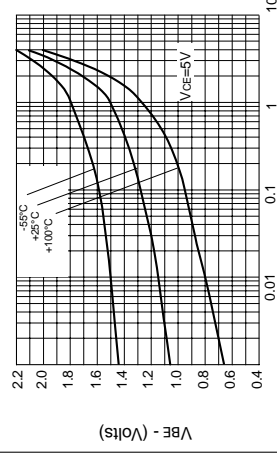
IC - Collector Current (Amps)  
**VCE(sat) v IC**



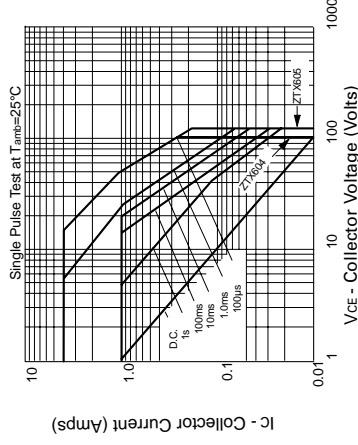
IC - Collector Current (Amps)  
**hFE v IC**



IC - Collector Current (Amps)  
**VBE(sat) v IC**





IC - Collector Current (Amps)  
**VBE(on) v IC**



**Safe Operating Area**

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