



# THE DATASHEET OF ZTX601B



# ZTX600 ZTX601

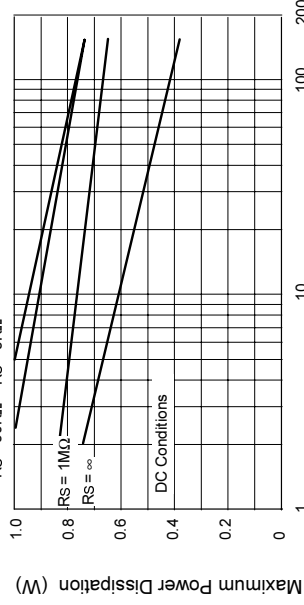
# NPN SILICON PLANAR ME DARLINGTON TRANSISTOR

ISSUE 2 – JUNE 94

## ELECTRICAL CHARACTERISTICS (at T<sub>amb</sub> = 25°C unless otherwise stated).

PARAMETER	SYMBOL		ZTX600		ZTX601		UNIT	CONDITIONS.
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Static Forward Current Transfer Ratio	h <sub>FE</sub>	1K 2K 1K	100K	1K 2K 1K		100K		I <sub>C</sub> =50mA, V <sub>CE</sub> =10V* I <sub>C</sub> =0.5A, V <sub>CE</sub> =10V* I <sub>C</sub> =1A, V <sub>CE</sub> =10V*
	Group A	1K 2K 1K	20K	2K 5K 1K	2K 5K 3K	20K		I <sub>C</sub> =50mA, V <sub>CE</sub> =10V* I <sub>C</sub> =0.5A, V <sub>CE</sub> =10V* I <sub>C</sub> =1A, V <sub>CE</sub> =10V*
		5K 10K 5K	10K 20K 10K	100K	5K 10K 5K	10K 20K 10K	100K	
Transition Frequency	f <sub>T</sub>	150	250	150	250		MHz	I <sub>C</sub> =100mA, V <sub>CE</sub> =10V, f=20MHz
Input Capacitance	C <sub>ibo</sub>		60	90	60	90	pF	V <sub>EB</sub> =0.5V, f=1MHz
Output Capacitance	C <sub>obo</sub>		10	15	10	15	pF	V <sub>CE</sub> =10V, f=1MHz
Switching Times	t <sub>on</sub>		0.75		0.75		μs	I <sub>C</sub> =0.5A, V <sub>CE</sub> =10V I <sub>B</sub> =I <sub>B2</sub> =0.5mA
	t <sub>off</sub>		2.2		2.2		μs	

\* Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%



V<sub>CE</sub> - Collector-Emitter Voltage (Volts)

### Voltage Derating Graph

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

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

T<sub>amb(max)</sub> = Maximum operating ambient temperature

Power(max) = Maximum power dissipation figure, obtained from the above graph for a given V<sub>CE</sub> and source resistance (R<sub>S</sub>)

Power(actual) = Actual power dissipation in users circuit

## FEATURES

- \* 160 Volt V<sub>CE0</sub>
- \* 1 Amp continuous current
- \* Gain of 5K at I<sub>C</sub>=1 Amp
- \* P<sub>tot</sub> = 1 Watt

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	
Collector-Base Voltage	
Collector-Emitter Voltage	
Emitter-Base Voltage	
Peak Pulse Current	
Continuous Collector Current	
Power Dissipation	at T <sub>amb</sub> =25°C derate above 25°C
Operating and Storage Temperature Range	

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	ZTX600		ZTX601	
		MIN.	TYP.	MIN.	TYP.
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>		160		
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>		140		
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>		10		
Collector Cut-Off Current	I <sub>CBO</sub>				
Emitter Cut-Off Current	I <sub>EBO</sub>				
Collector-Emitter Cut-Off Current	I <sub>CES</sub>				
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	0.7	0.8	0.7	0.8
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	1.1		1.1	
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>	1.1		1.1	

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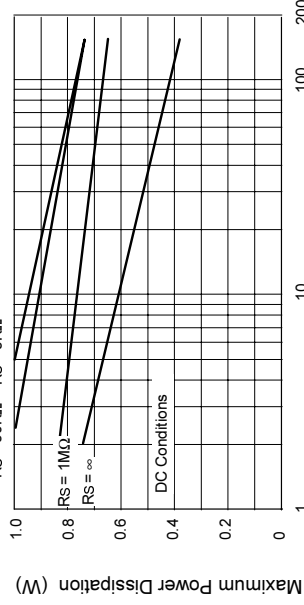
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	Group A	1K 2K 1K	20K	2K 5K 1K	2K 5K 3K			I <sub>C</sub> =50mA, V <sub>CE</sub> =10V* I <sub>C</sub> =0.5A, V <sub>CE</sub> =10V* I <sub>C</sub> =1A, V <sub>CE</sub> =10V*
		Group B	5K 10K 5K	100K	10K 20K 10K	10K 20K 10K		
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## ABSOLUTE MAXIMUM RATINGS

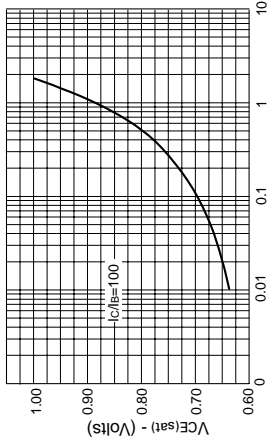
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## ELECTRICAL CHARACTERISTICS

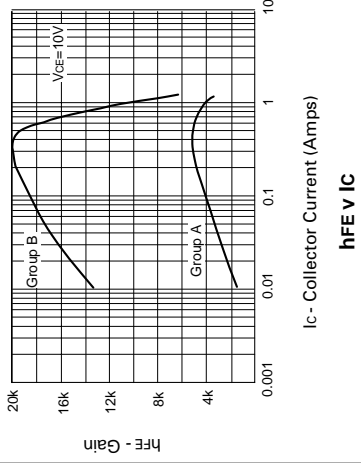
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Collector-Emitter Cut-Off Current	I <sub>CES</sub>				
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>		0.7		0.8
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>		1.1		1.1
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>		1.1		1.1

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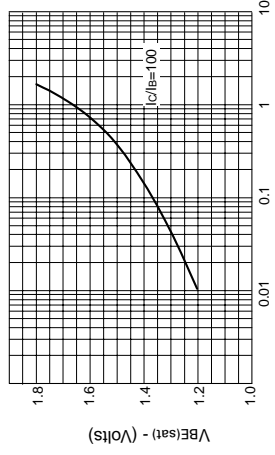
## TYPICAL CHARACTERISTICS



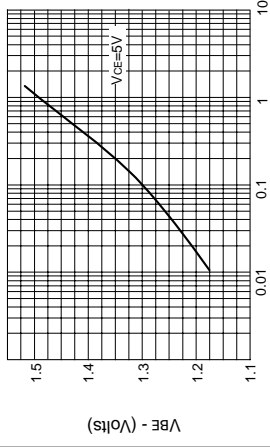
IC - Collector Current (Amps)  
VCE(sat) v IC



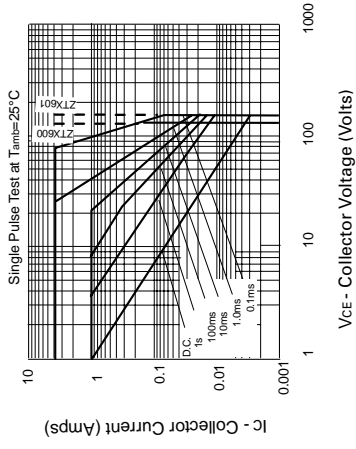
IC - Collector Current (Amps)  
hFE v IC



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





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




VCE - Collector Voltage (Volts)  
Safe Operating Area

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