

ZTX600 ZTX601

NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

ZTX600 ZTX601

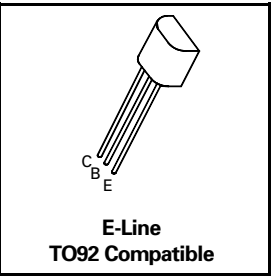
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Static Forward Current Transfer Ratio	h_{FE}	1K		100K	1K		100K		$I_C=50mA, V_{CE}=10V^*$ $I_C=0.5A, V_{CE}=10V^*$ $I_C=1A, V_{CE}=10V^*$
		2K			2K				
		1K			1K				
Group A		1K	2K	20K	1K	2K	20K		$I_C=50mA, V_{CE}=10V^*$ $I_C=0.5A, V_{CE}=10V^*$ $I_C=1A, V_{CE}=10V^*$
		2K	5K		2K	5K			
		1K	3K		1K	3K			
Group B		5K	10K	100K	5K	10K	100K		$I_C=50mA, V_{CE}=10V^*$ $I_C=0.5A, V_{CE}=10V^*$ $I_C=1A, V_{CE}=10V^*$
		10K	20K		10K	20K			
		5K	10K		5K	10K			
Transition Frequency	f_T	150	250		150	250		MHz	$I_C=100mA, V_{CE}=10V, f=20MHz$
Input Capacitance	C_{ibo}		60	90		60	90	pF	$V_{EB}=0.5V, f=1MHz$
Output Capacitance	C_{obo}		10	15		10	15	pF	$V_{CE}=10V, f=1MHz$
Switching Times	t_{on}		0.75			0.75		μs	$I_C=0.5A, V_{CE}=10V$ $I_{B1}=I_{B2}=0.5mA$
	t_{off}		2.2			2.2		μs	

ISSUE 2 - JUNE 94

FEATURES

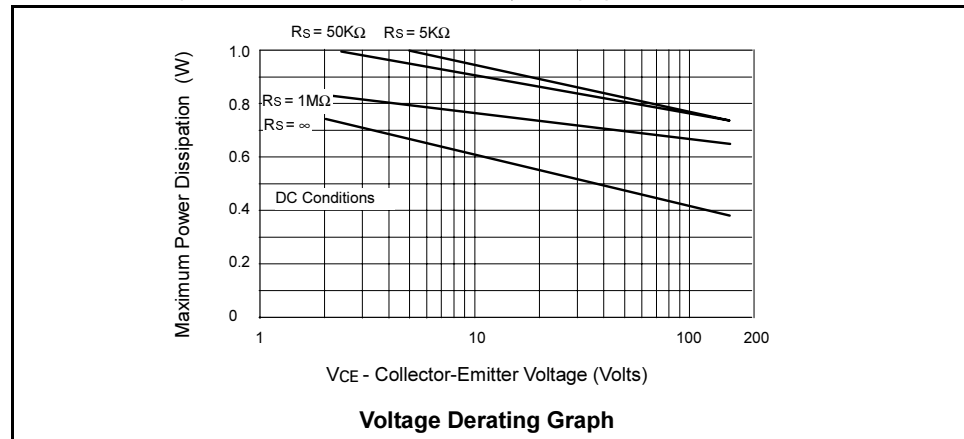
- * 160 Volt V_{CEO}
- * 1 Amp continuous current
- * Gain of 5K at $I_C=1$ Amp
- * $P_{tot} = 1$ Watt



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	ZTX600	ZTX601	UNIT
Collector-Base Voltage	V_{CBO}	160	180	V
Collector-Emitter Voltage	V_{CEO}	140	160	V
Emitter-Base Voltage	V_{EBO}	10		V
Peak Pulse Current	I_{CM}	4		A
Continuous Collector Current	I_C	1		A
Power Dissipation at $T_{amb}=25^{\circ}C$ derate above $25^{\circ}C$	P_{tot}	1 5.7		W mW/°C
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200		°C

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



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

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

$T_{amb(max)}$ = 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

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

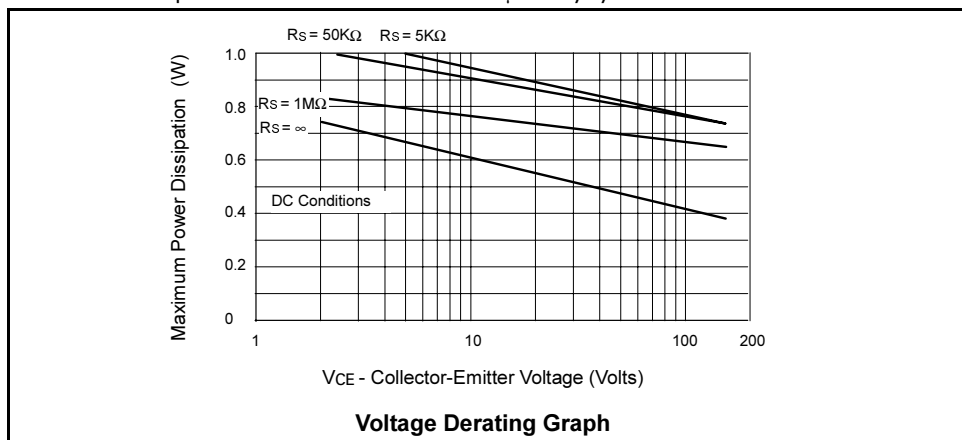
PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	160			180			V	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	140			160			V	$I_C=10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	10			10			V	$I_E=100\mu A$
Collector Cut-Off Current	I_{CBO}			0.01			0.01	μA	$V_{CB}=140V$ $V_{CB}=160V$ $V_{CB}=140V, T_a=100^{\circ}C$ $V_{CB}=160V, T_a=100^{\circ}C$
				10			10	μA	
Emitter Cut-Off Current	I_{EBO}			0.1			0.1	μA	$V_{EB}=8V$
Collector-Emitter Cut-Off Current	I_{CES}			10			10	μA	$V_{CES}=140V$ $V_{CES}=160V$
								μA	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	0.75	1.1		0.75	1.1		V	$I_C=0.5A, I_B=5mA^*$ $I_C=1A, I_B=10mA^*$
		0.85	1.2		0.85	1.2		V	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	1.7	1.9		1.7	1.9		V	$I_C=1A, I_B=10mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	1.5	1.7		1.5	1.7		V	$I_C=1A, V_{CE}=5V^*$

ZTX600 ZTX601

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

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Group A		1K	2K	20K	1K	2K	20K		I _C =50mA, V _{CE} =10V* I _C =0.5A, V _{CE} =10V* I _C =1A, V _{CE} =10V*
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Group B		5K	10K	100K	5K	10K	100K		I _C =50mA, V _{CE} =10V* I _C =0.5A, V _{CE} =10V* I _C =1A, V _{CE} =10V*
		10K	20K		10K	20K			
		5K	10K		5K	10K			
Transition Frequency	f _T	150	250		150	250		MHz	I _C =100mA, V _{CE} =10V f=20MHz
Input Capacitance	C _{ibo}		60	90		60	90	pF	V _{EB} =0.5V, f=1MHz
Output Capacitance	C _{obo}		10	15		10	15	pF	V _{CE} =10V, f=1MHz
Switching Times	t _{on}		0.75			0.75		μs	I _C =0.5A, V _{CE} =10V I _{B1} =I _{B2} =0.5mA
	t _{off}		2.2			2.2		μs	

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



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

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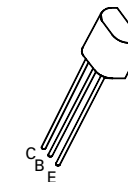
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ISSUE 2 - JUNE 94

FEATURES

- * 160 Volt V_{CEO}
- * 1 Amp continuous current
- * Gain of 5K at I_C=1 Amp
- * P_{tot} = 1 Watt



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ABSOLUTE MAXIMUM RATINGS.

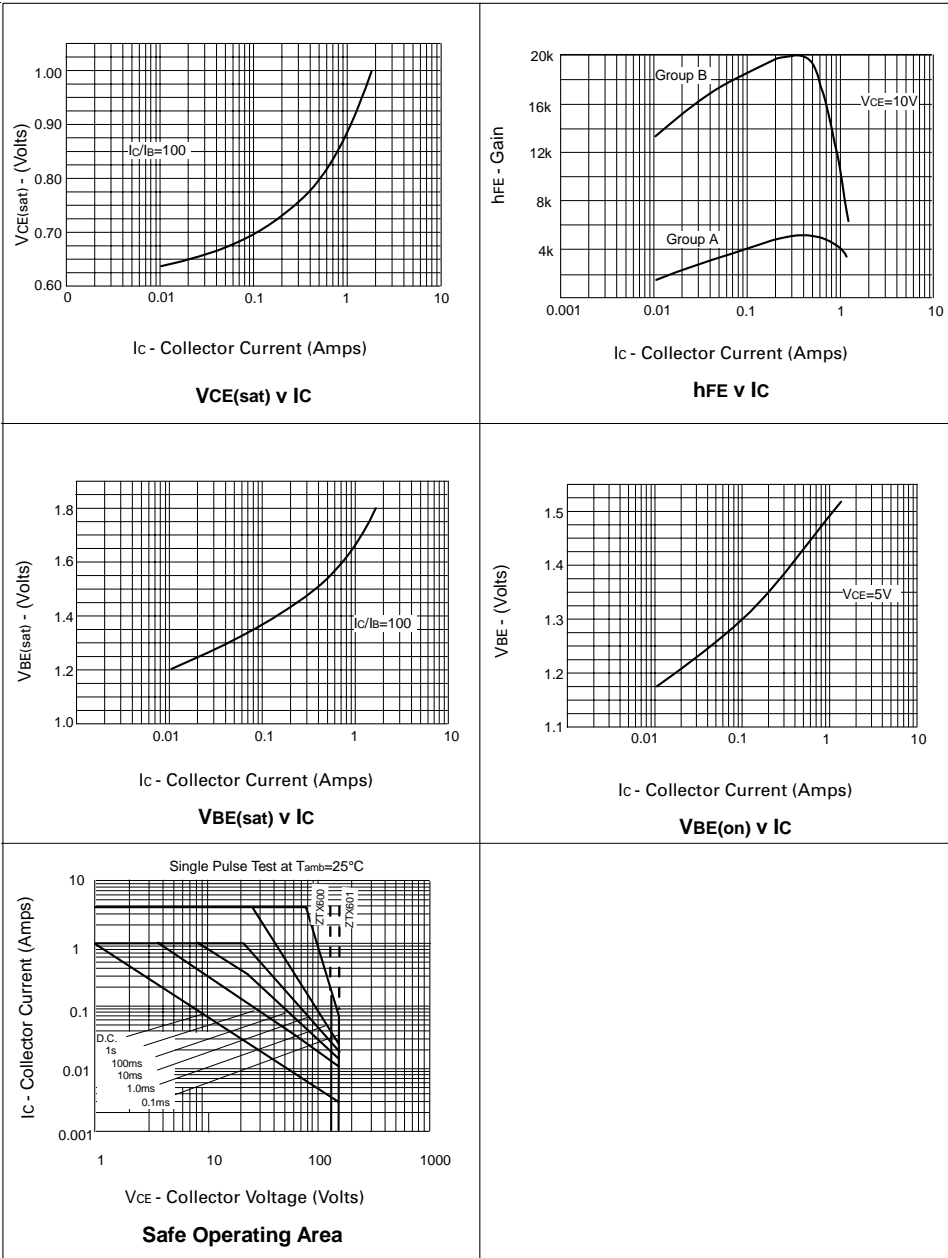
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Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	140			160			V	I _C =10mA*
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	10			10			V	I _E =100μA
Collector Cut-Off Current	I _{CBO}			0.01			0.01	μA	V _{CB} =140V V _{CB} =160V V _{CB} =140V, T _a =100°C V _{CB} =160V, T _a =100°C
Emitter Cut-Off Current	I _{EBO}			0.1			0.1	μA	V _{EB} =8V
Collector-Emitter Cut-Off Current	I _{CES}			10			10	μA	V _{CE} =140V V _{CE} =160V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	0.75	1.1	1.2	0.75	1.1	1.2	V	I _C =0.5A, I _B =5mA* I _C =1A, I _B =10mA*
Base-Emitter Saturation Voltage	V _{BE(sat)}	1.7	1.9		1.7	1.9		V	I _C =1A, I _B =10mA*
Base-Emitter Turn-On Voltage	V _{BE(on)}	1.5	1.7		1.5	1.7		V	I _C =1A, V _{CE} =5V*

ZTX600
ZTX601

TYPICAL CHARACTERISTICS



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