

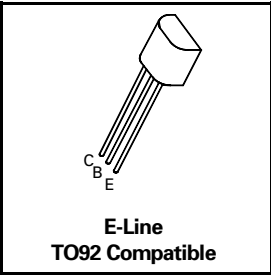
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS



ISSUE 2 – JUNE 94

FEATURES

- * 160 Volt V_{CE0}
- * 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 $T_{amb}=25^\circ\text{C}$ derate above 25°C	P_{tot}	1 5.7		W mW/°C
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200		°C

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

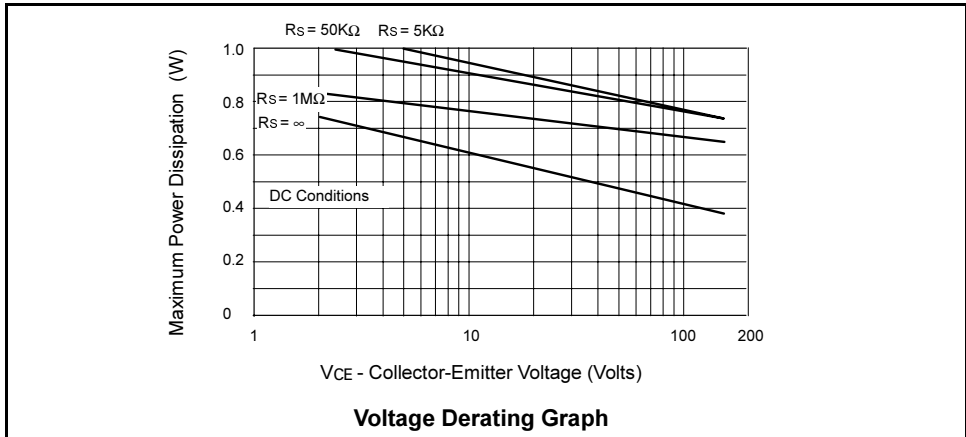
PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	160			180			V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	140			160			V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	10	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

ZTX600
ZTX601

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

PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Static Forward Current Transfer Ratio	h _{FE}	1K			1K				I _C =50mA, V _{CE} =10V* I _C =0.5A, V _{CE} =10V* I _C =1A, V _{CE} =10V*
		2K		100K	2K		100K		
		1K			1K				
Group A		1K	2K		1K	2K			I _C =50mA, V _{CE} =10V* I _C =0.5A, V _{CE} =10V* I _C =1A, V _{CE} =10V*
		2K	5K	20K	2K	5K	20K		
		1K	3K		1K	3K			
Group B		5K	10K		5K	10K			I _C =50mA, V _{CE} =10V* I _C =0.5A, V _{CE} =10V* I _C =1A, V _{CE} =10V*
		10K	20K	100K	10K	20K	100K		
		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%



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

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

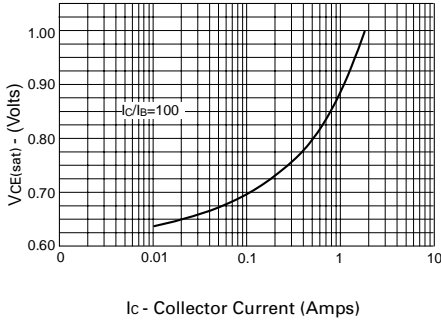
T_{amb(max)} = Maximum operating ambient temperature

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

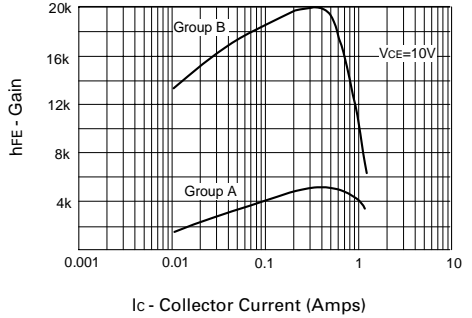
Power(actual) = Actual power dissipation in users circuit

ZTX600 ZTX601

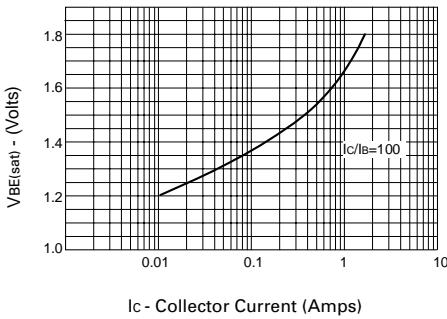
TYPICAL CHARACTERISTICS



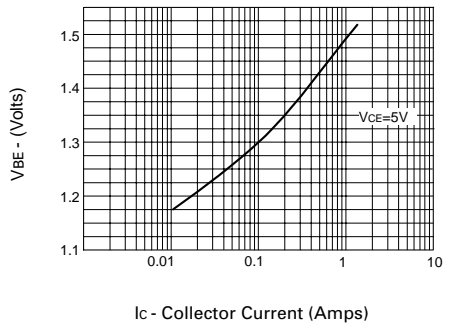
$V_{CE(sat)}$ v I_C



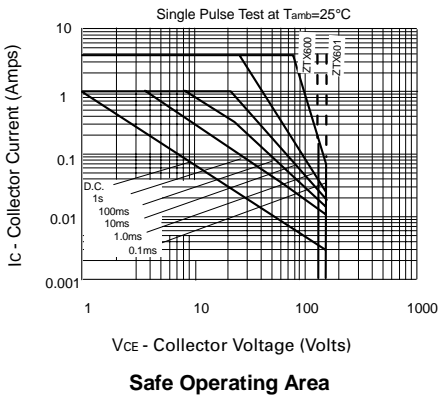
h_{FE} v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Safe Operating Area

Mouser Electronics

Authorized Distributor

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