OBSOLETE

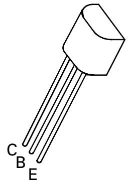
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

ISSUE 2 – JUNE 94

ZTX600
ZTX601

FEATURES

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



E-Line
TO92 Compatible

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°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°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=100μA
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 10			 0.01 10	μA μA μA 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
Colllector-Emitter Cut-Off Current	I_{CES}			10			 10	μA μA	V_{CES}=140V V_{CES}=160V
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=0.5A, 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	IC=1A, V_{CE}=5V*

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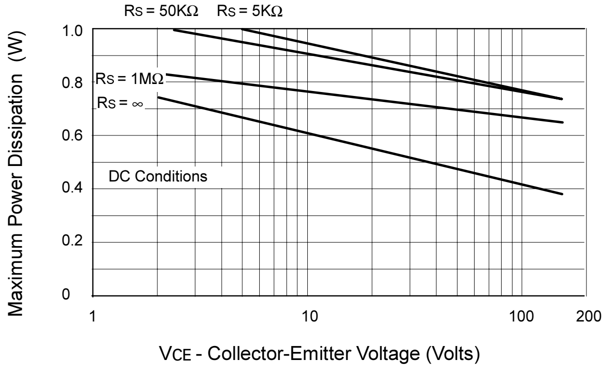
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

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



Voltage Derating Graph

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

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

$T_{amb(max)}$= 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