

ZTX600
ZTX601

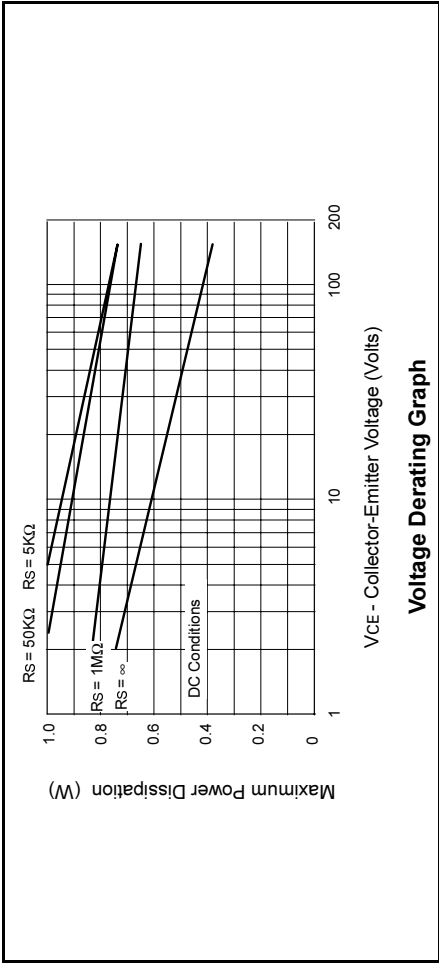
NPN SILICON PLANAR MEDIUM POWER
DARLINGTON TRANSISTORS

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		100K	1K		100K		I _C =50mA, V _{CE} =10V*
		2K			2K				I _C =0.5A, V _{CE} =10V*
		1K		1K	1K				I _C =1A, V _{CE} =10V*
Group A		1K	2K	20K	1K	2K	20K		I _C =50mA, V _{CE} =10V*
		2K	5K	2K	2K	5K			I _C =0.5A, V _{CE} =10V*
		1K	3K	1K	1K	3K			I _C =1A, V _{CE} =10V*
Group B		5K	10K	100K	5K	10K	100K		I _C =50mA, V _{CE} =10V*
		10K	20K		10K	20K			I _C =0.5A, V _{CE} =10V*
		5K	10K		5K	10K			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
	t _{off}		2.2			2.2		μs	I _B =I _{B2} =0.5mA

*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

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

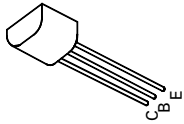
T_{amb(max)}= Maximum operating ambient temperature

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

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
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 _{IBR/CBO}	160			180			V	I _C =100μA
Collector-Emitter Breakdown Voltage	V _{IBR/CEO}	140			160			V	I _C =10mA *
Emitter-Base Breakdown Voltage	V _{IBREBO}	10			10			V	I _E =100μA
Collector Cut-Off Current	I _{CBO}			0.01			0.01	μA	V _{CE} =140V V _{CB} =160V
				10			10	μA	V _{CE} =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 0.85	1.1 1.2		0.75 0.85	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*

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A graph showing the relationship between the DC current gain (h_{FE}) and the collector current (I_C) for two groups of transistors, Group A and Group B, at a constant collector-emitter voltage ($V_{CE} = 10V$).

The Y-axis represents h_{FE} - Gain, ranging from 4k to 20k. The X-axis represents I_C - Collector Current (Amps) on a logarithmic scale, ranging from 0.001 to 10.

Group A (upper curve) shows h_{FE} increasing from approximately 4k at $I_C = 0.01A$ to a peak of about 5k at $I_C \approx 0.1A$, then decreasing to about 3k at $I_C = 1A$.

Group B (lower curve) shows h_{FE} increasing from approximately 12k at $I_C = 0.01A$ to a peak of about 18k at $I_C \approx 0.1A$, then decreasing to about 15k at $I_C = 1A$.

Graph of $V_{BE(on)}$ vs I_C for $V_{CE}=5V$.

I_C (Amps)	$V_{BE(on)}$ (Volts)
0.01	1.20
0.02	1.22
0.05	1.25
0.1	1.28
0.2	1.32
0.5	1.40
1.0	1.50

Single Pulse Test at $T_{amb}=25^{\circ}\text{C}$

Y-axis: I_C - Collector Current (Amps)

X-axis: V_{CE} - Collector Voltage (Volts)

Curves shown for pulse widths: D.C., 100ms, 10ms, 1ms, 0.1ms.

Transistor types: 1009K17, 009K17.

Safe Operating Area