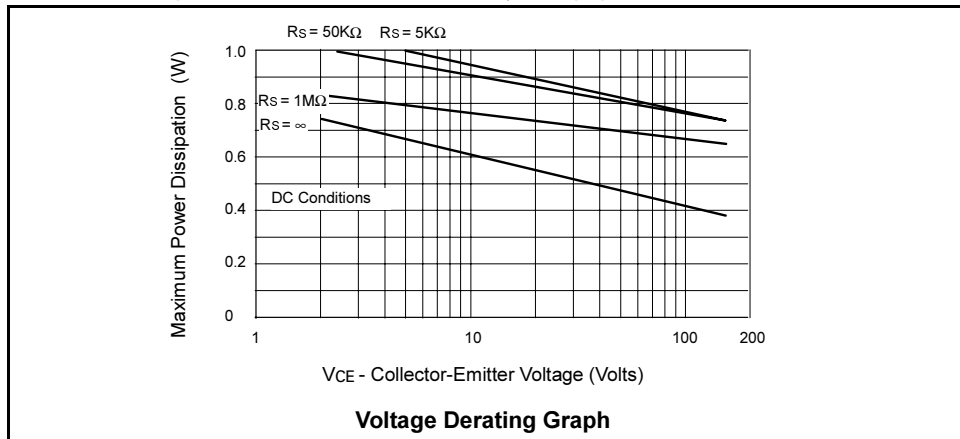


# ZTX600 ZTX601

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ 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		$I_C=50\text{mA}, V_{CE}=10\text{V}^*$ $I_C=0.5\text{A}, V_{CE}=10\text{V}^*$ $I_C=1\text{A}, V_{CE}=10\text{V}^*$
		2K			2K				
		1K			1K				
Group A		1K	2K	20K	1K	2K	20K		$I_C=50\text{mA}, V_{CE}=10\text{V}^*$ $I_C=0.5\text{A}, V_{CE}=10\text{V}^*$ $I_C=1\text{A}, V_{CE}=10\text{V}^*$
		2K	5K		2K	5K			
		1K	3K		1K	3K			
Group B		5K	10K	100K	5K	10K	100K		$I_C=50\text{mA}, V_{CE}=10\text{V}^*$ $I_C=0.5\text{A}, V_{CE}=10\text{V}^*$ $I_C=1\text{A}, V_{CE}=10\text{V}^*$
		10K	20K		10K	20K			
		5K	10K		5K	10K			
Transition Frequency	$f_T$	150	250		150	250		MHz	$I_C=100\text{mA}, V_{CE}=10\text{V}, f=20\text{MHz}$
Input Capacitance	$C_{ibo}$		60	90		60	90	pF	$V_{EB}=0.5\text{V}, f=1\text{MHz}$
Output Capacitance	$C_{obo}$		10	15		10	15	pF	$V_{CE}=10\text{V}, f=1\text{MHz}$
Switching Times	$t_{on}$		0.75			0.75		$\mu\text{s}$	$I_C=0.5\text{A}, V_{CE}=10\text{V}$ $I_{B1}=I_{B2}=0.5\text{mA}$
	$t_{off}$		2.2			2.2		$\mu\text{s}$	

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$



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

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

$T_{amb(max)}$  = 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

**OBSOLETE**

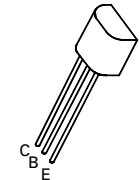
# NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

# ZTX600 ZTX601

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



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

## 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			0.01	$\mu\text{A}$	$V_{CB}=140\text{V}$ $V_{CB}=160\text{V}$ $V_{CB}=140\text{V}, T_a=100^{\circ}\text{C}$ $V_{CB}=160\text{V}, T_a=100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			0.1			0.1	$\mu\text{A}$	$V_{EB}=8\text{V}$
Collector-Emitter Cut-Off Current	$I_{CES}$			10			10	$\mu\text{A}$	$V_{CES}=140\text{V}$ $V_{CES}=160\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	0.75	1.1		0.75	1.1		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	$I_C=1\text{A}, V_{CE}=5\text{V}^*$

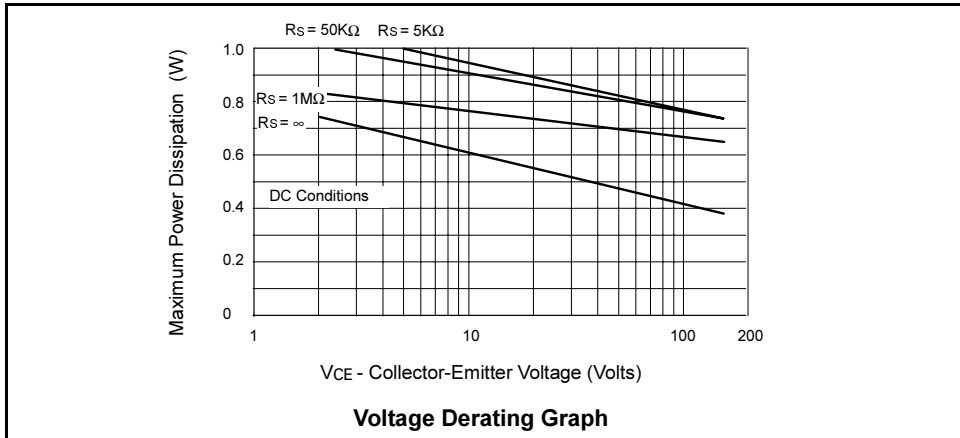
OBSOLETE

**ZTX600  
ZTX601**

**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		100K	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*
		2K			2K				
		1K			1K				
Group A		1K	2K	20K	1K	2K	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*
		2K	5K		2K	5K			
		1K	3K		1K	3K			
Group B		5K	10K	100K	5K	10K	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*
		10K	20K		10K	20K			
		5K	10K		5K	10K			
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>B1</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%



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

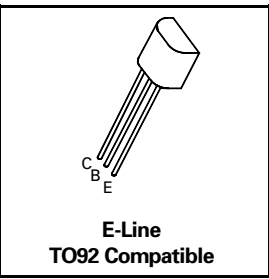
**NPN SILICON PLANAR MEDIUM POWER  
DARLINGTON TRANSISTORS**

**ZTX600  
ZTX601**

ISSUE 2 - JUNE 94

FEATURES

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



**ABSOLUTE MAXIMUM RATINGS.**

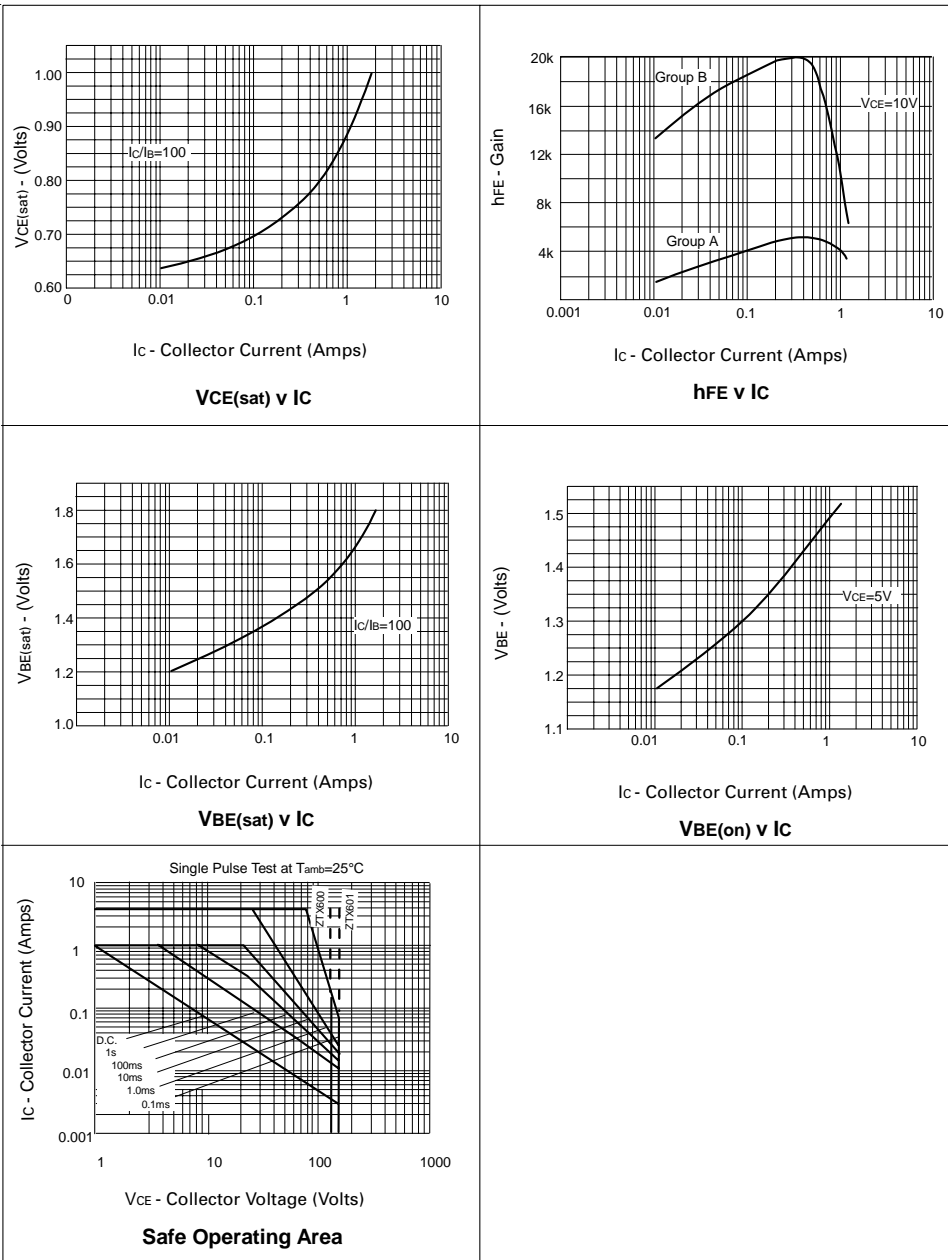
PARAMETER	SYMBOL	ZTX600	ZTX601	UNIT
Collector-Base Voltage	V <sub>CBO</sub>	160	180	V
Collector-Emitter Voltage	V <sub>CEO</sub>	140	160	V
Emitter-Base Voltage	V <sub>EBO</sub>	10		V
Peak Pulse Current	I <sub>CM</sub>	4		A
Continuous Collector Current	I <sub>C</sub>	1		A
Power Dissipation at T <sub>amb</sub> =25°C derate above 25°C	P <sub>tot</sub>	1 5.7		W mW/°C
Operating and Storage Temperature Range	T <sub>j</sub> ; T <sub>stg</sub>	-55 to +200		°C

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

PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	160			180			V	I <sub>C</sub> =100μA
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	140			160			V	I <sub>C</sub> =10mA*
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	10			10			V	I <sub>E</sub> =100μA
Collector Cut-Off Current	I <sub>CBO</sub>			0.01			0.01	μA	V <sub>CB</sub> =140V V <sub>CB</sub> =160V V <sub>CB</sub> =140V, T <sub>a</sub> =100°C V <sub>CB</sub> =160V, T <sub>a</sub> =100°C
Emitter Cut-Off Current	I <sub>EBO</sub>			0.1			0.1	μA	V <sub>EB</sub> =8V
Collector-Emitter Cut-Off Current	I <sub>CES</sub>			10			10	μA	V <sub>CE</sub> =140V V <sub>CE</sub> =160V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	0.75	1.1	1.2	0.75	1.1	1.2	V	I <sub>C</sub> =0.5A, I <sub>B</sub> =5mA* I <sub>C</sub> =1A, I <sub>B</sub> =10mA*
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	1.7	1.9		1.7	1.9		V	I <sub>C</sub> =1A, I <sub>B</sub> =10mA*
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>	1.5	1.7		1.5	1.7		V	I <sub>C</sub> =1A, V <sub>CE</sub> =5V*

**ZTX600**  
**ZTX601**

**TYPICAL CHARACTERISTICS**



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