



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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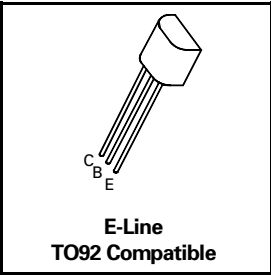
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

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



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).

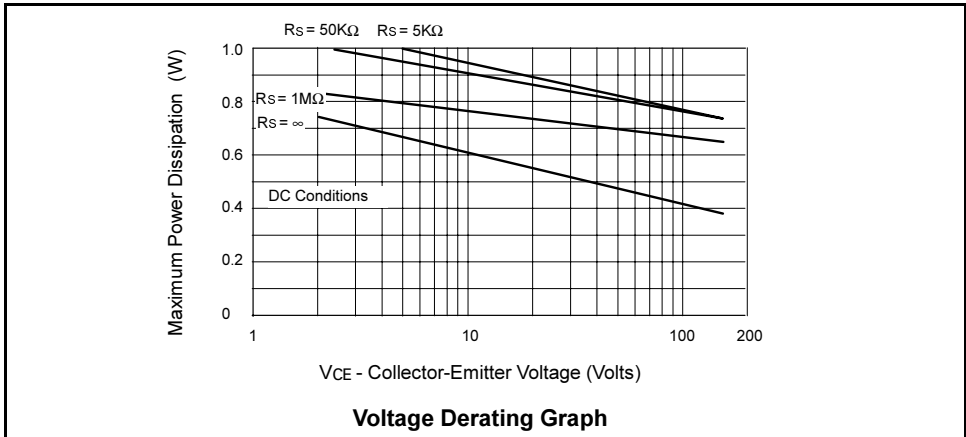
PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	160			180			V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	140			160			V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	10			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 $T_{amb} = 25^{\circ}C$ unless otherwise stated).

PARAMETER	SYMBOL	ZTX600			ZTX601			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Static Forward Current Transfer Ratio	h_{FE}	1K 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=300 μs . Duty cycle $\leq 2\%$



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

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

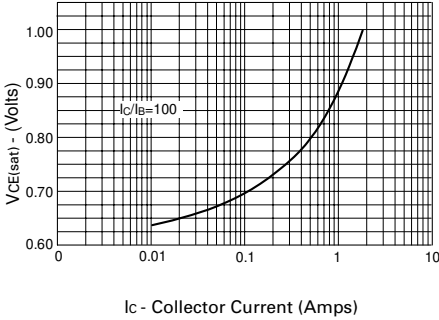
$T_{amb(max)}$ = Maximum operating ambient temperature

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

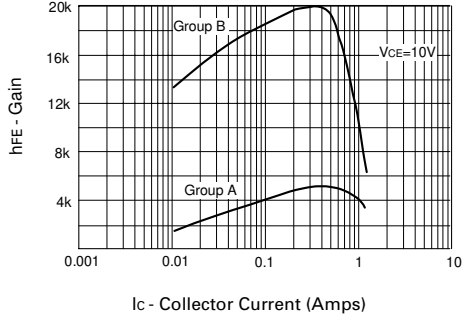
Power(actual) = Actual power dissipation in users circuit

ZTX600 ZTX601

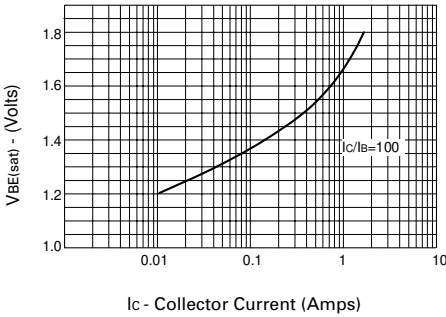
TYPICAL CHARACTERISTICS



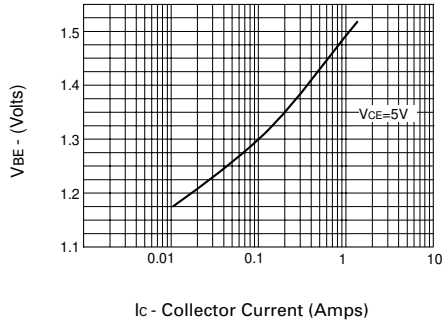
$V_{CE(sat)}$ v I_C



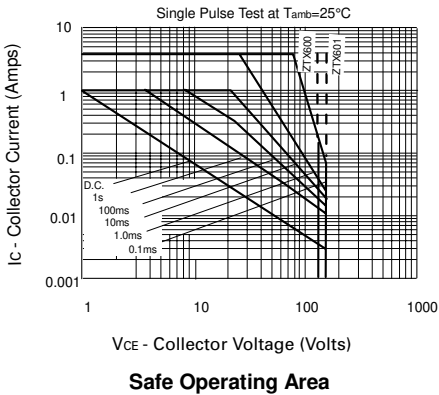
h_{FE} v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Safe Operating Area