



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.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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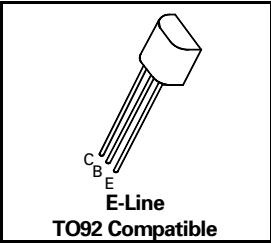
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

ZTX602
ZTX603

ISSUE 1 – MARCH 94

FEATURES

- * 80 Volt V_{CE0}
- * 1 Amp continuous current
- * Gain of 2K at $I_C=1$ Amp
- * $P_{tot} = 1$ Watt



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	ZTX602	ZTX603	UNIT
Collector-Base Voltage	V_{CBO}	80	100	V
Collector-Emitter Voltage	V_{CEO}	60	80	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/ $^\circ\text{C}$
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	ZTX602		ZTX603		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	80		100		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	60		80		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	$V_{CB}=60\text{V}$ $V_{CB}=80\text{V}$ $V_{CB}=60\text{V}, T_{amb}=100^\circ\text{C}$ $V_{CB}=80\text{V}, T_{amb}=100^\circ\text{C}$
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	$V_{CES}=60\text{V}$ $V_{CES}=80\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		1.0 1.0		1.0 1.0	V V	$I_C=400\text{mA}$, $I_B=0.4\text{mA}^*$ $I_C=1\text{A}$, $I_B=1\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		1.8		1.8	V	$I_C=1\text{A}$, $I_B=1\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		1.7		1.7	V	$I_C=1\text{A}$, $V_{CE}=5\text{V}^*$

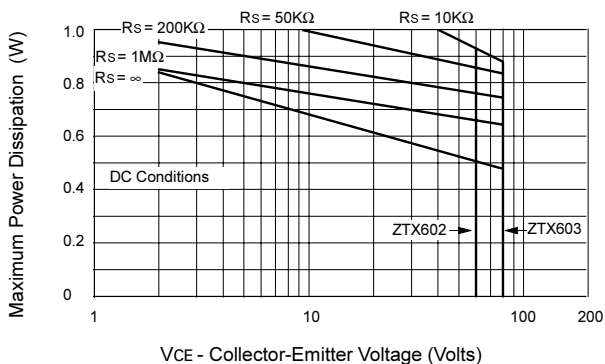
ZTX602

ZTX603

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

PARAMETER	SYMBOL	ZTX602		ZTX603		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Static Forward Current Transfer Ratio	h_{FE}	2K 5K 2K 0.5K	100K	2K 5K 2K 0.5K	100K		$I_C=50\text{mA}$, $V_{CE}=5\text{V}$ $I_C=500\text{mA}$, $V_{CE}=5\text{V}^*$ $I_C=1\text{A}$, $V_{CE}=5\text{V}^*$ $I_C=2\text{A}$, $V_{CE}=5\text{V}^*$
Transition Frequency	f_T	150		150		MHz	$I_C=100\text{mA}$, $V_{CE}=10\text{V}$ $f=20\text{MHz}$
Input Capacitance	C_{ibo}	90 Typical				pF	$V_{EB}=500\text{mV}$, $f=1\text{MHz}$
Output Capacitance	C_{obo}	15 Typical				pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}$
Switching Times	t_{on}	0.5 Typical				μs	$I_C=500\text{mA}$, $V_{CE}=10\text{V}$ $I_{B1}=I_{B2}=0.5\text{mA}$
	t_{off}	1.1 Typical				μs	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$



Voltage Derating Graph

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

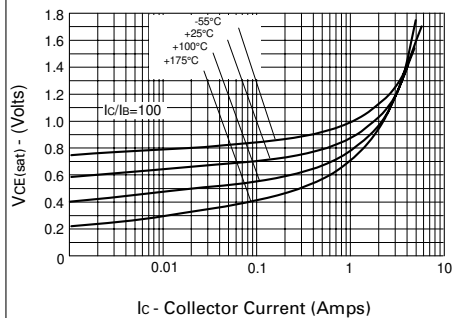
Power(max) = Maximum power dissipation figure, obtained from the above graph for a given V_{CE} and source resistance (R_S)

Power(actual) = Actual power dissipation in users circuit

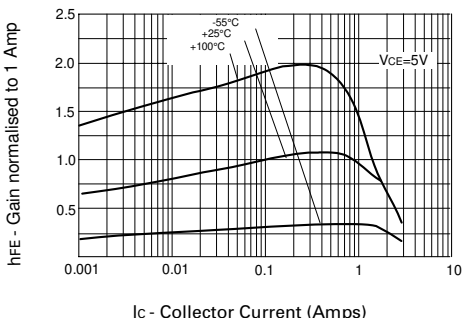
ZTX602

ZTX603

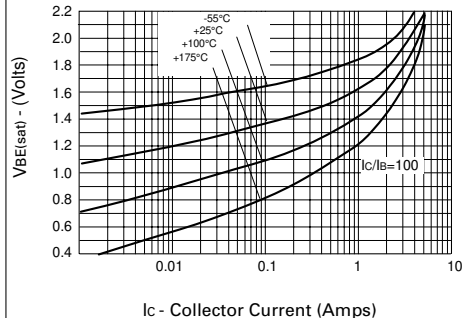
TYPICAL CHARACTERISTICS



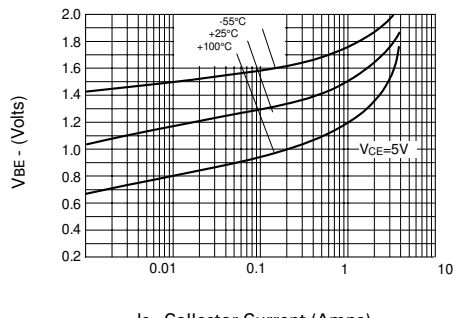
VCE(sat) v IC



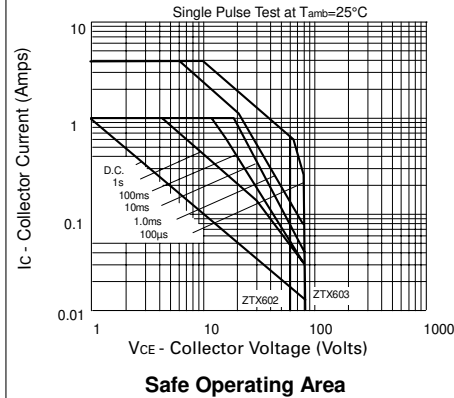
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area