PNP SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

ZTX704
ZTX705

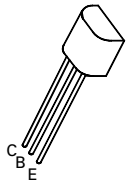
ISSUE 3 – MAY 94

FEATURES

* 120 Volt V_{CEO}
* 1 Amp continuous current
* Gain of 3K at I_C=1 Amp
* P_{tot}=1 Watt

APPLICATIONS

* Lamp, solenoid and relay drivers



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	ZTX704	ZTX705	UNIT
Collector-Base Voltage	V_{CBO}	-120	-140	V
Collector-Emitter Voltage	V_{CEO}	-100	-120	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

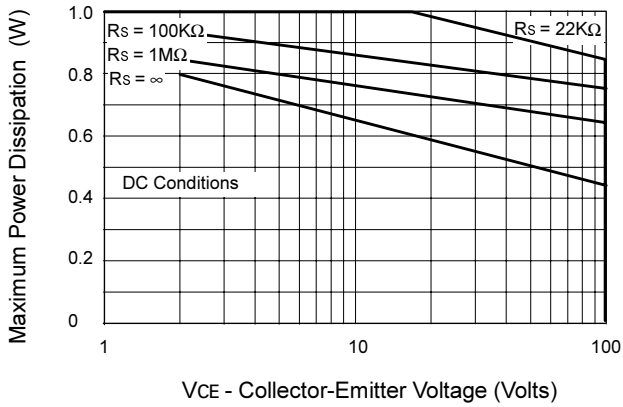
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	ZTX704		ZTX705		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-120		-140		V	I_C=-100μA
Collector-Emitter Breakdown Voltage	$V_{CEO(SUS)}$	-100		-120		V	I_C=-10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-10		-10		V	I_E=-100μA
Collector Cut-Off Current	I_{CBO}		-0.1 -10		-0.1 -10	μA μA μA μA	V_{CB}=-100V V_{CB}=-120V V_{CB}=-100V, T_{amb}=100°C V_{CB}=-120V, T_{amb}=100°C
Collector Cut-Off Current	I_{CES}		-10		-10	μA	V_{CES}=-80V
Emitter Cut-Off Current	I_{EBO}		-0.1		-0.1	μA	V_{EB}=-8V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-1.3 -2.5		-1.3 -2.5	V V	I_C=-1A, I_B=-1mA* I_C=-2A, I_B=-2mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1.8		-1.8	V	I_C=-1A, I_B=-10mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-1.7		-1.7	V	IC=-1A, V_{CE}=-5V*

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

PARAMETER	SYMBOL	ZTX704		ZTX705		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Static Forward Current Transfer Ratio	h_{FE}	3K 3K 3K 2K	30K	3K 3K 3K 2K	30K		I_C=-10mA, V_{CE}=-5V* I_C=-100mA, V_{CE}=-5V* I_C=-1A, V_{CE}=-5V* I_C=-2A, V_{CE}=-5V*
Transition Frequency	f_T	160 Typical		160 Typical		MHz	I_C=-100mA, V_{CE}=-10V f=20MHz
Input Capacitance	C_{ibo}	90 Typical		90 Typical		pF	V_{EB}=-0.5V, f=1MHz
Output Capacitance	C_{obo}	15 Typical		15 Typical		pF	V_{CE}=-10V, f=1MHz
Switching Times	t_{on}	0.6 Typical		0.6 Typical		µs	I_C=-0.5A, V_{CE}=-10V I_{B1}=I_{B2}=-0.5mA
	t_{off}	0.8 Typical		0.8 Typical		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

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

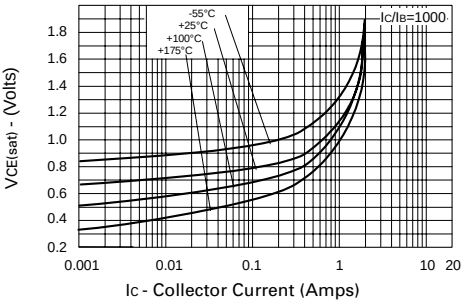
$T_{amb(max)}$= Maximum operating ambient temperature

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

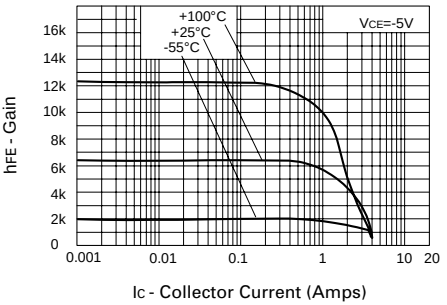
Power(actual)= Actual power dissipation in users circuit

ZTX704
ZTX705

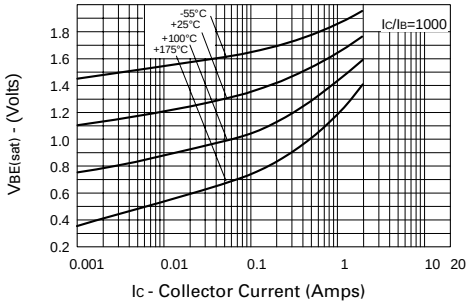
TYPICAL CHARACTERISTICS



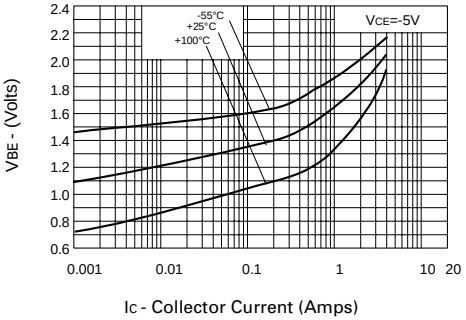
VCE(sat) v IC



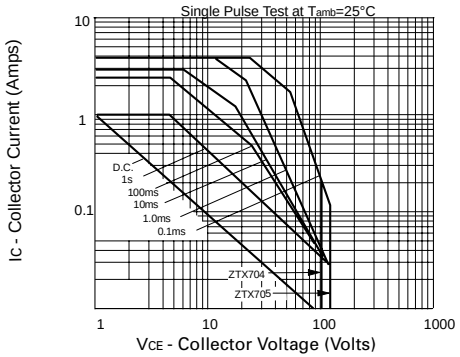
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area