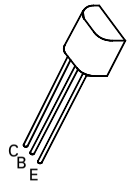
PNP SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ZTX957

ISSUE 3 – JUNE 94

FEATURES

* 1 Amp continuous current
* Up to 2 Amps peak current
* Very low saturation voltage
* Excellent gain characteritics up to 1 Amp
* Spice model available



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-330	V
Collector-Emitter Voltage	V_{CEO}	-300	V
Emitter-Base Voltage	V_{EBO}	-6	V
Peak Pulse Current	I_{CM}	-2	A
Continuous Collector Current	I_C	-1	A
Practical Power Dissipation*	P_{totp}	1.58	W
Power Dissipation at T_{amb}=25°C	P_{tot}	1.2	W
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +200	°C

*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-330	-440		V	I_C=-100µA
Collector-Emitter Breakdown Voltag	$V_{(BR)CER}$	-330	-440		V	IC=-1µA, RB ≤1KΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-300	-400		V	I_C=-10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	I_E=-100µA
Collector Cut-Off Current	I_{CBO}			-50 -1	nA µA	V_{CB}=-300V V_{CB}=-300V, T_{amb}=100°C
Collector Cut-Off Current	I_{CER} R ≤1KΩ			-50 -1	nA µA	V_{CB}=-300V V_{CB}=-300V, T_{amb}=100°C
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-60 -100 -140	-100 -150 -200	mV mV mV	I_C=-100mA, I_B=-10mA* I_C=-500mA, I_B=-100mA* I_C=-1A, I_B=-300mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-870	-1000	mV	I_C=-1A, I_B=-300mA*

ZTX957

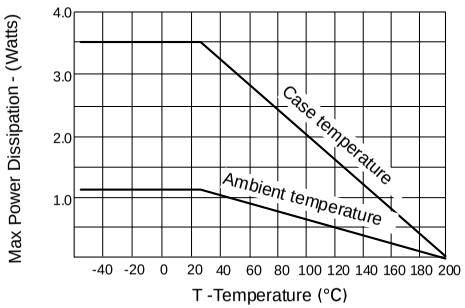
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-710	-850	mV	IC=-1A, V_{CE}=-10V*
Static Forward Current Transfer Ratio	h_{FE}	100 100 90	200 200 170 10	300		I_C=-10mA, V_{CE}=-10V* I_C=-0.5A, V_{CE}=-10V* I_C=-1A, V_{CE}=-10V* I_C=-2A, V_{CE}=-10V*
Transition Frequency	f_T		85		MHz	I_C=-100mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{obo}		23		pF	V_{CB}=-20V, f=1MHz
Switching Times	t_{on} t_{off}		108 2500		ns ns	I_C=-500mA, I_{B1}=-50mA I_{B2}=50mA, V_{CC}=-100V

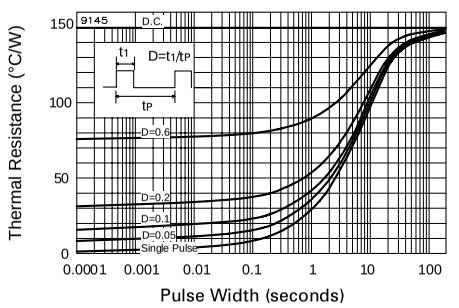
*Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤2%

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient Junction to Case	$R_{th(j-amb)}$ $R_{th(j-case)}$	150 50	°C/W °C/W



Derating curve



Maximum transient thermal impedance

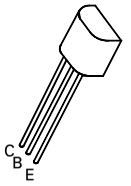
PNP SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ZTX957

ISSUE 3 – JUNE 94

FEATURES

* 1 Amp continuous current
* Up to 2 Amps peak current
* Very low saturation voltage
* Excellent gain characteritics up to 1 Amp
* Spice model available



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-330	V
Collector-Emitter Voltage	V_{CEO}	-300	V
Emitter-Base Voltage	V_{EBO}	-6	V
Peak Pulse Current	I_{CM}	-2	A
Continuous Collector Current	I_C	-1	A
Practical Power Dissipation*	P_{totp}	1.58	W
Power Dissipation at T_{amb}=25°C	P_{tot}	1.2	W
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +200	°C

*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-330	-440		V	I_C=-100µA
Collector-Emitter Breakdown Voltag	$V_{(BR)CER}$	-330	-440		V	IC=-1µA, RB ≤1KΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-300	-400		V	I_C=-10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	I_E=-100µA
Collector Cut-Off Current	I_{CBO}			-50 -1	nA µA	V_{CB}=-300V V_{CB}=-300V, T_{amb}=100°C
Collector Cut-Off Current	I_{CER} R ≤1KΩ			-50 -1	nA µA	V_{CB}=-300V V_{CB}=-300V, T_{amb}=100°C
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-60 -100 -140	-100 -150 -200	mV mV mV	I_C=-100mA, I_B=-10mA* I_C=-500mA, I_B=-100mA* I_C=-1A, I_B=-300mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-870	-1000	mV	I_C=-1A, I_B=-300mA*

ZTX957

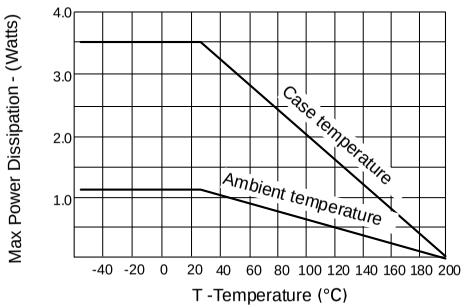
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-710	-850	mV	IC=-1A, V_{CE}=-10V*
Static Forward Current Transfer Ratio	h_{FE}	100 100 90	200 200 170 10	300		I_C=-10mA, V_{CE}=-10V* I_C=-0.5A, V_{CE}=-10V* I_C=-1A, V_{CE}=-10V* I_C=-2A, V_{CE}=-10V*
Transition Frequency	f_T		85		MHz	I_C=-100mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{obo}		23		pF	V_{CB}=-20V, f=1MHz
Switching Times	t_{on} t_{off}		108 2500		ns ns	I_C=-500mA, I_{B1}=-50mA I_{B2}=50mA, V_{CC}=-100V

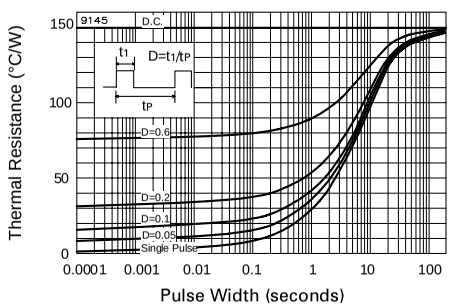
*Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤2%

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient Junction to Case	$R_{th(j-amb)}$ $R_{th(j-case)}$	150 50	°C/W °C/W



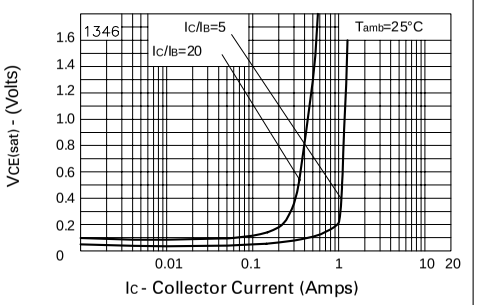
Derating curve



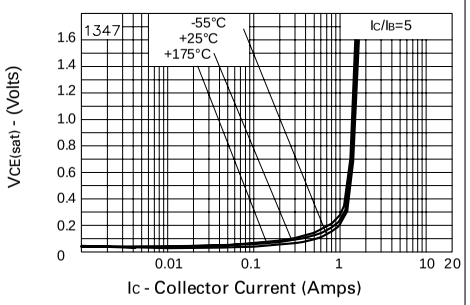
Maximum transient thermal impedance

ZTX957

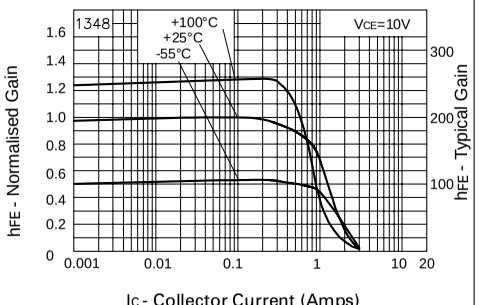
TYPICAL CHARACTERISTICS



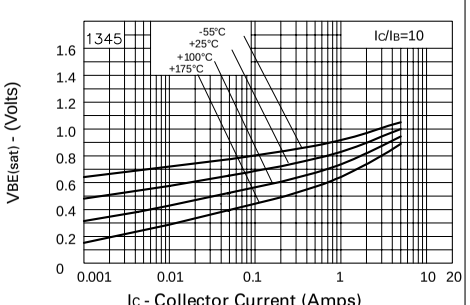
VCE(sat) v IC



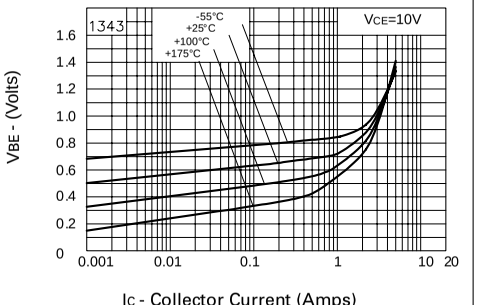
VCE(sat) v IC



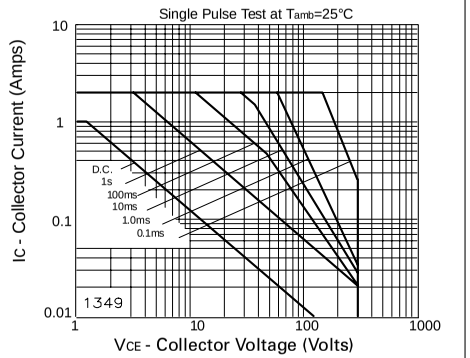
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area