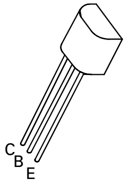
NPN SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ZTX857

ISSUE 1 – APRIL 94

FEATURES

- 300 Volt V_{CEO}
- 3 Amps continuous current
- Up to 5 Amps peak current
- Very low saturation voltage
- P_{tot}= 1.2 Watt



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}	5	A
Continuous Collector Current	I_C	3	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	475		V	I_C=100μA
Collector-Emitter Breakdown Voltag	$V_{(BR)CER}$	330	475		V	IC=1μA, RB ≤1KΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	300	350		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	$V_{CE(sat)}$		50 80 140 170	100 140 200 250	mV mV mV mV	I_C=0.5A, I_B=50mA* I_C=1A, I_B=100mA* I_C=2A, I_B=200mA* I_C=3A, I_B=600mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		870	1000	mV	I_C=2A, I_B=200mA*

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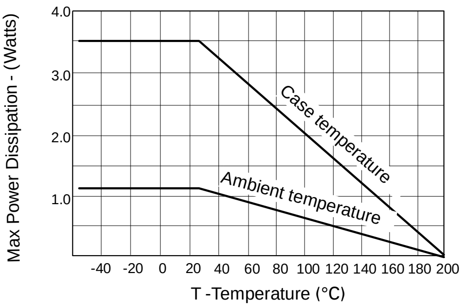
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		810	950	mV	IC=2A, V_{CE}=5V*
Static Forward Current Transfer Ratio	h_{FE}	100 100 15	200 200 25 15	 300		I_C=10mA, V_{CE}=5V I_C=500mA, V_{CE}=10V* I_C=2A, V_{CE}=10V* I_C=3A, V_{CE}=10V*
Transition Frequency	f_T		80		MHz	I_C=100mA, V_{CE}=10V f=100MHz
Output Capacitance	C_{obo}		11		pF	V_{CB}=20V, f=1MHz
Switching Times	t_{on} t_{off}		100 5300		ns ns	I_C=250mA, I_{B1}=25mA I_{B2}=25mA, V_{CC}=50V

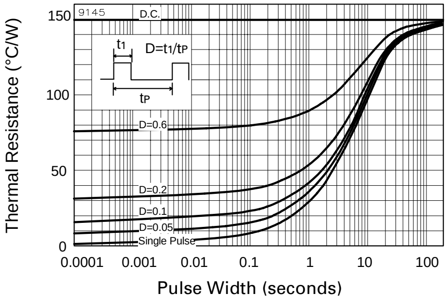
*Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤2%

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

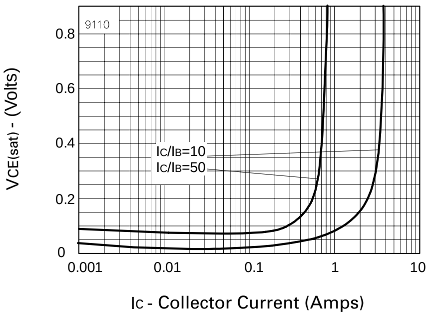


Derating curve

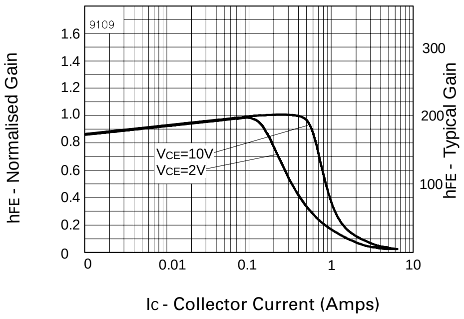


Maximum transient thermal impedance

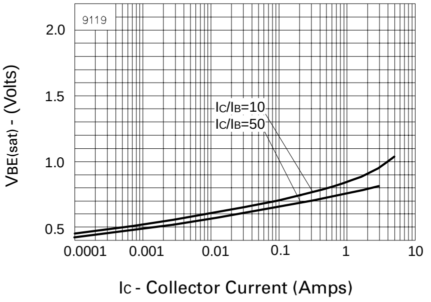
TYPICAL CHARACTERISTICS



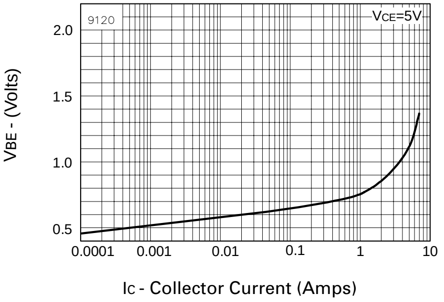
VCE(sat) v IC



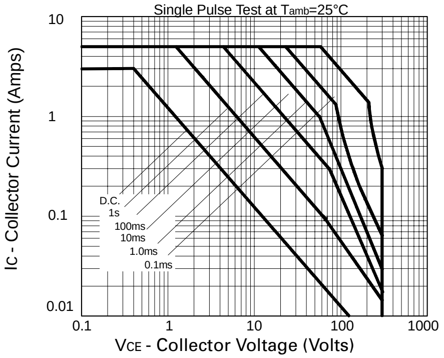
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area