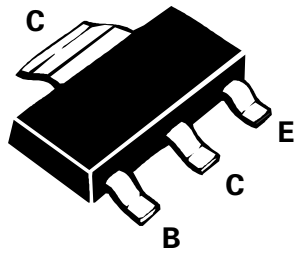
PNP SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ISSUE 1 - JANUARY 1997

FZT1147A

FEATURES

* V_{CEO} = -12V
* 5 Amp Continuous Current
* 20 Amp Pulse Current
* Low Saturation Voltage
* High Gain



SOT223

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-15	V
Collector-Emitter Voltage	V_{CEO}	-12	V
Emitter-Base Voltage	V_{EBO}	-5	V
Peak Pulse Current	I_{CM}	-20	A
Continuous Collector Current	I_C	-5	A
Base Current	I_B	-500	mA
Power Dissipation at T_{amb}=25°C †	P_{tot}	2.5	W
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°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 2 inches by 2 inches

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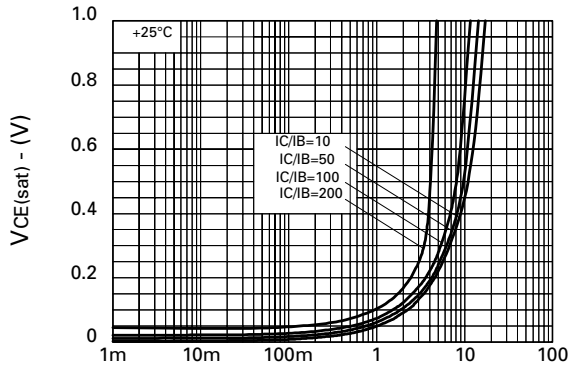
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C).

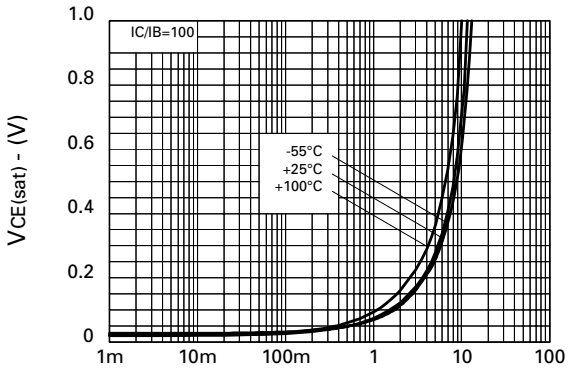
PARAMETER	SYMBOL	VALUE			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-15	-35		V	I_C=-100µA
Collector-Emitter Breakdown Voltage	V_{CES}	-12	-25		V	I_C=-100µA
Collector-Emitter Breakdown Voltage	V_{CEO}	-12	-25		V	I_C=-10mA *
Collector-Emitter Breakdown Voltage	V_{CEV}	-12	-25		V	I_C=-100µA, V_{EB}=+1V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-8.5		V	I_E=-100µA
Collector Cut-Off Current	I_{CBO}		-0.3	-100	nA	V_{CB}=-12V
Emitter Cut-Off Current	I_{EBO}		-0.3	-100	nA	V_{EB}=-4V
Collector Emitter Cut-Off Current	I_{CES}		-0.3	-100	nA	V_{CE}=-10V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-25 -70 -90 -115 -250	-50 -110 -130 -170 -400	mV mV mV mV mV	I_C=-0.1A, I_B=-1.0mA* I_C=-0.5A, I_B=-2.5mA* I_C=-1A, I_B=-6mA* I_C=-2A, I_B=-20mA* I_C=-5A, I_B=-50mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-950	-1050	mV	I_C=-5A, I_B=-50mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-905	-1000	mV	I_C=-5A, V_{CE}=-2V*
Static Forward Current Transfer Ratio	h_{FE}	270 250 200 150 90	450 400 340 245 145 50	850		I_C=-10mA, V_{CE}=-2V* I_C=-0.5A, V_{CE}=-2V* I_C=-2A, V_{CE}=-2V* I_C=-5A, V_{CE}=-2V* I_C=-10A, V_{CE}=-2V* I_C=-20A, V_{CE}=-2V*
Transition Frequency	f_T		115		MHz	I_C=-50mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{cb}		80		pF	VCB=-10V, f=1MHz
Switching Times	t_{on}		150		ns	I_C=-4A, I_B=-40mA, V_{CC}=-10V
	t_{off}		220		ns	I_C=-4A, I_B=±40mA, V_{CC}=-10V

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

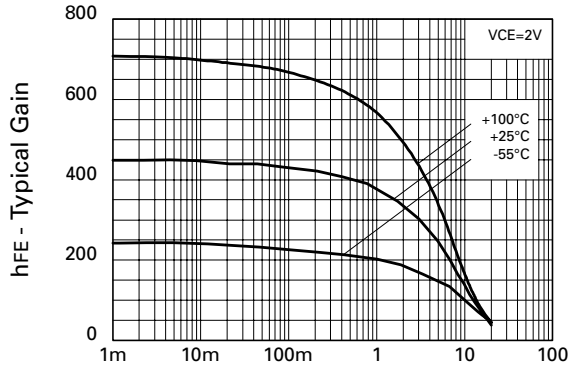
TYPICAL CHARACTERISTICS



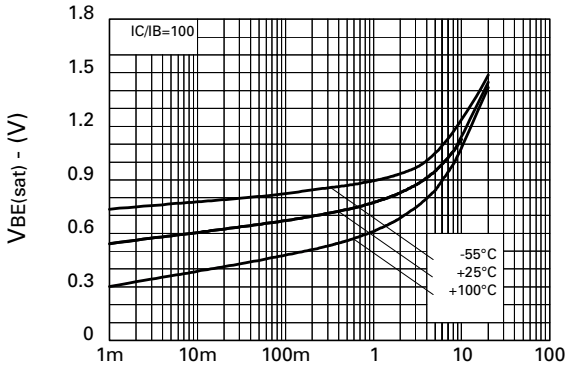
VCE(sat) v IC



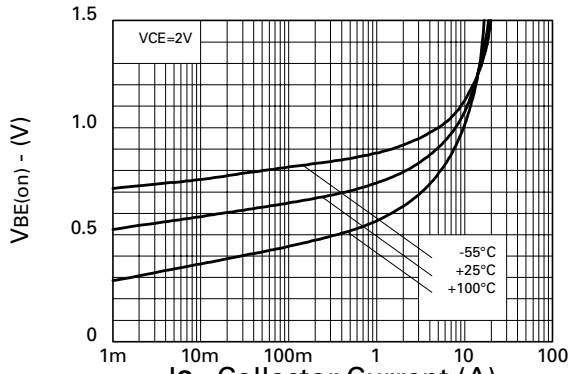
VCE(sat) v IC



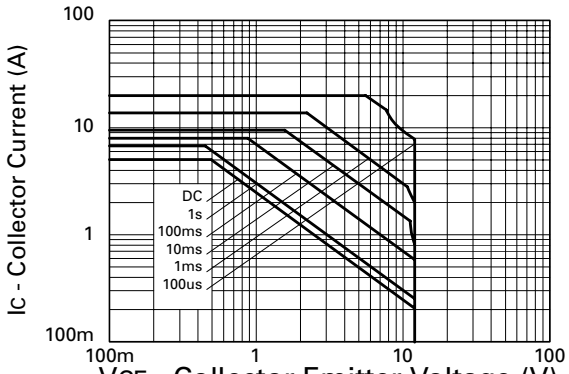
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

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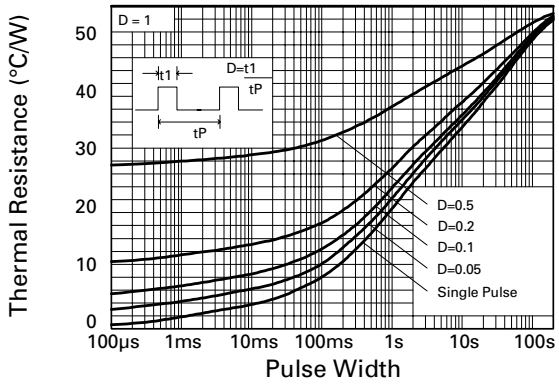
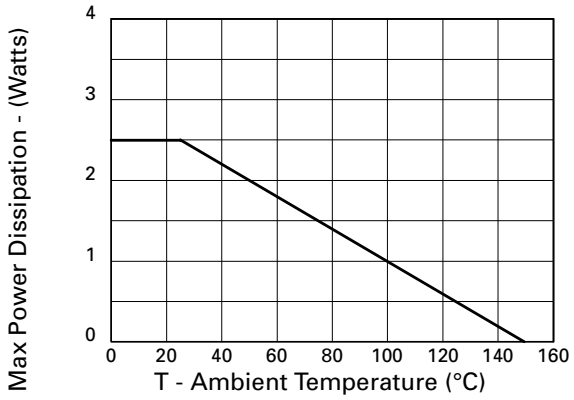
THERMAL CHARACTERISTICS



Transient Thermal Resistance



Derating curve

SPICE PARAMETERS

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*  ZETEX  FZT1147A  Spice model  Last revision 10/12/96
*
.MODEL      FZT1147A  PNP IS=1.272e-12 NF=0.989 ISE=2.5e-13 NE=1.65
+           BF=500 VAF=14.59 IKF=8  NR=1  ISC=8e-14 NC= 1.6
+           BR=90 VAR=3.1 IKR=1.2  RE=15e-3  RB=145e-3
+           RC=13e-3 CJE=560e-12
+           CJC=255e-12  VJC=0.6288
+           MJC=0.4048 TF=1.2e-9  TR=13e-9
*
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