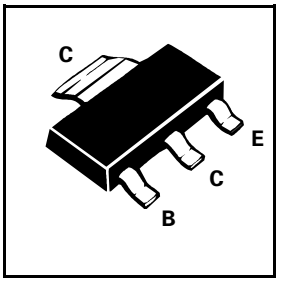
SOT223 PNP SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

FZT948
FZT949

ISSUE 2 - NOVEMBER 1995

FEATURES

* Extremely low equivalent on-resistance; $\mathbf{R_{CE(sat)}}$
* 6 Amps continuous current
* Up to 20 Amps peak current
* Very low saturation voltage
* Excellent h_{FE} characteristics specified upto 20 Amps



PARTMARKING DETAILS — DEVICE TYPE IN FULL

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FZT948	FZT949	UNIT
Collector-Base Voltage	V_{CBO}	-40	-50	V
Collector-Emitter Voltage	V_{CEO}	-20	-30	V
Emitter-Base Voltage	V_{EBO}	-6		V
Peak Pulse Current	I_{CM}	-20		A
Continuous Collector Current	I_C	-6	-5.5	A
Power Dissipation at T_{amb}=25°C	P_{tot}	**3**		**W**
Operating and Storage Temperature Range	T_j:Tstg	-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 4 square inch minimum

ZETEX

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40	-55		V	I_C=-100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-40	-55		V	I_C=-1μA, RB ≤1kΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-20	-30		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}=-30V V_{CB}=-30V, T_{amb}=100°C
Collector Cut-Off Current	I_{CER} R ≤1kΩ			-50 -1	nA μA	V_{CB}=-30V V_{CB}=-30V, T_{amb}=100°C
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-60 -110 -200 -360	-130 -180 -280 -450	mV mV mV mV	I_C=-0.5A, I_B=-10mA* I_C=-2A, I_B=-200mA* I_C=-4A, I_B=-400mA* I_C=-6A, I_B=-250mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1050	-1200	mV	I_C=-5A, I_B=-300mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-870	-1050	mV	I_C=-6A, V_{CE}=-1V*
Static Forward Current Transfer Ratio	h_{FE}	100 100 75 60 15	200 200 160 130 40	300		I_C=-10mA, V_{CE}=-1V I_C=-1A, V_{CE}=-1V* I_C=-5A, V_{CE}=-1V* I_C=-10A, V_{CE}=-1V* I_C=-20A, V_{CE}=-2V*
Transition Frequency	f_T		80		MHz	I_C=-100mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{obo}		163		pF	V_{CB}=-10V, f=1MHz
Switching Times	t_{on} t_{off}		120 126		ns ns	I_C=-4A, I_{B1}=-400mA I_{B2}=400mA, V_{CC}=-10V

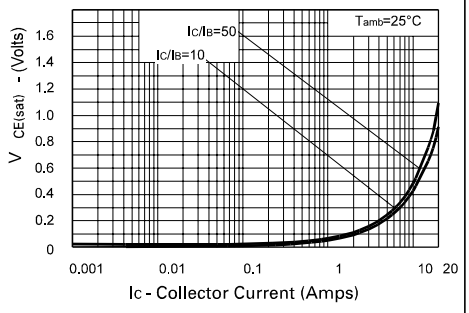
*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%

Spice parameter data is available upon request for this device

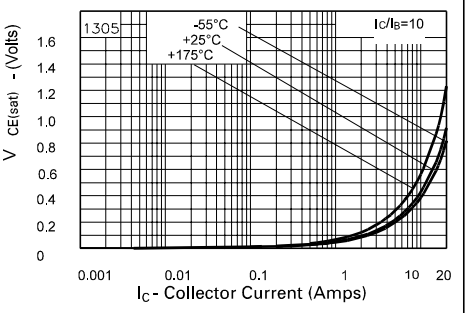
$R_{CE(sat)}$46mΩ at 5A

FZT948

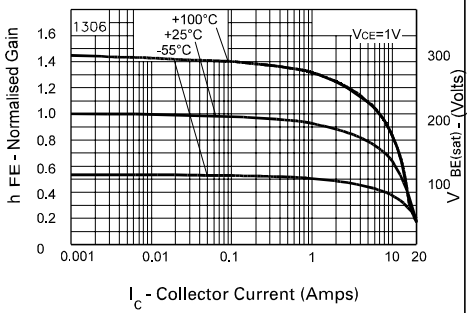
TYPICAL CHARACTERISTICS



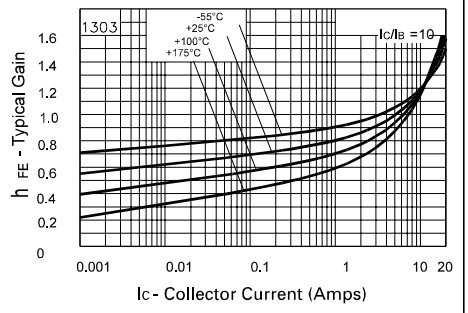
VCE(sat) v IC



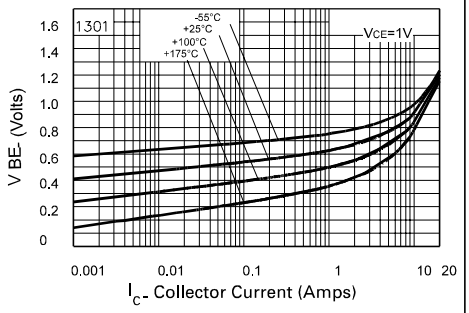
VCE(sat) v IC



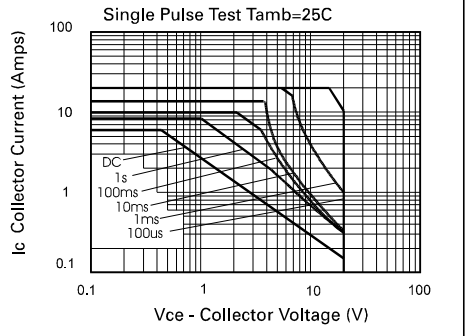
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

ZETEX

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-50	-80		V	I_C=-100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-50	-80		V	I_C=-1μA, RB ≤1kΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-30	-45		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}=-40V V_{CB}=-40V, T_{amb}=100°C
Collector Cut-Off Current	I_{CER} R ≤1kΩ			-50 -1	nA μA	V_{CB}=-40V V_{CB}=-40V, T_{amb}=100°C
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-50 -85 -190 -350	-75 -140 -270 -440	mV mV mV mV	I_C=-0.5A, I_B=-20mA* I_C=-1A, I_B=-20mA* I_C=-2A, I_B=-200mA* I_C=-5.5A, I_B=-500mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1100	-1250	mV	I_C=-5.5A, I_B=-500mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-900	-1060	mV	I_C=-5.5A, V_{CE}=-1V*
Static Forward Current Transfer Ratio	h_{FE}	100 100 75	200 200 140 35	300		I_C=-10mA, V_{CE}=-1V I_C=-1A, V_{CE}=-1V* I_C=-5A, V_{CE}=-1V* I_C=-20A, V_{CE}=-2V*
Transition Frequency	f_T		100		MHz	I_C=-100mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{obo}		122		pF	V_{CB}=-10V, f=1MHz
Switching Times	t_{on} t_{off}		120 130		ns ns	I_C=-4A, I_{B1}=-400mA I_{B2}=400mA, V_{CC}=-10V

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

Spice parameter data is available upon request for this device

$R_{CE(sat)}$ 44mΩ at 4.5A

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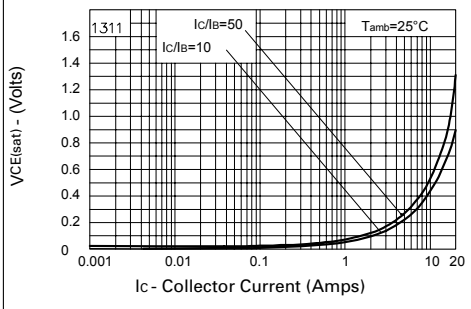
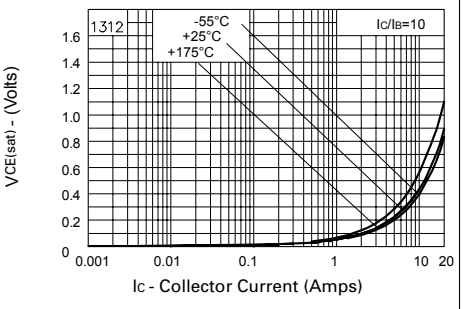
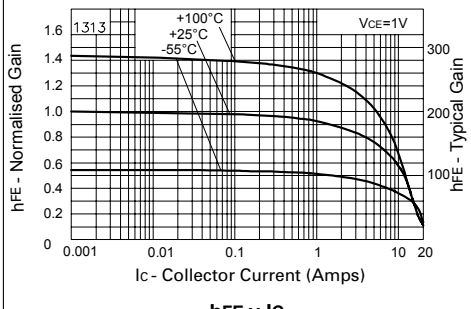
TYPICAL CHARACTERISTICS



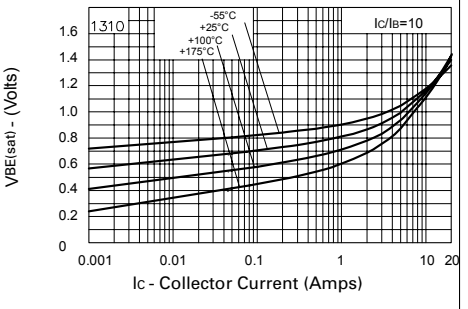
VCE(sat) v IC



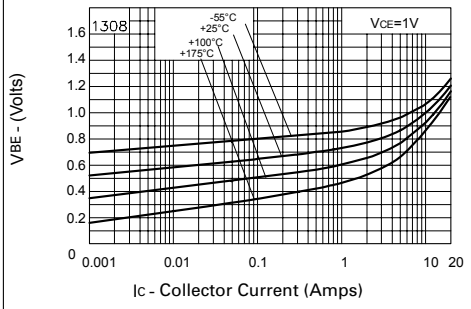
VCE(sat) v IC



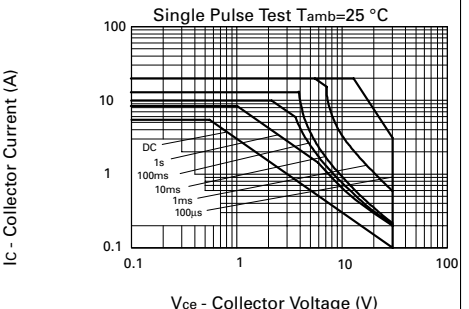
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

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