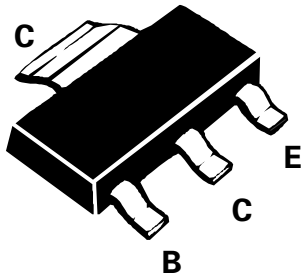
SOT223 PNP SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

FZT951
FZT953

ISSUE 3 - APRIL 2000

FEATURES

* 5 Amps continuous current , up to 15 Amps peak current
* Very low saturation voltages
* Excellent gain characteristics specified up to 10 Amps
* **P_{tot} = 3 watts**
* FZT951 exhibts extremely low equivalent on resistance; **$R_{CE(sat)}$ 55mΩ at 4A**



COMPLEMENTARY TYPES - FZT951 = FZT851
FZT953 = FZT853

PARTMARKING DETAILS - DEVICE TYPE IN FULL

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FZT951	FZT953	UNIT
Collector-Base Voltage	V_{CBO}	-100	-140	V
Collector-Emitter Voltage	V_{CEO}	-60	-100	V
Emitter-Base Voltage	V_{EBO}	-6		V
Peak Pulse Current	I_{CM}	-15	-10	A
Continuous Collector Current	**I_C**	**-5**		**A**
Power Dissipation at T_{amb}=25°C	**P_{tot}**	**3**		**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 4 square inch minimum

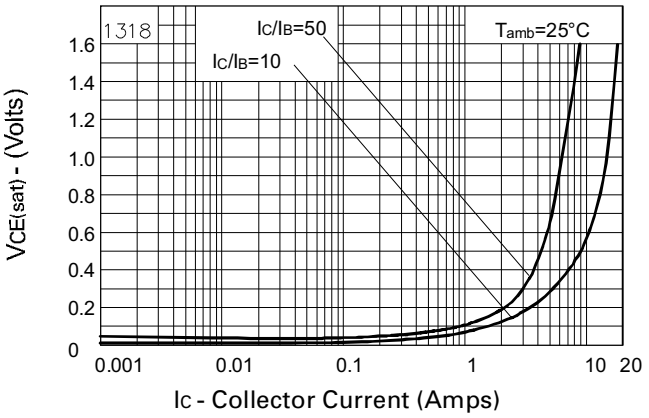
FZT951

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

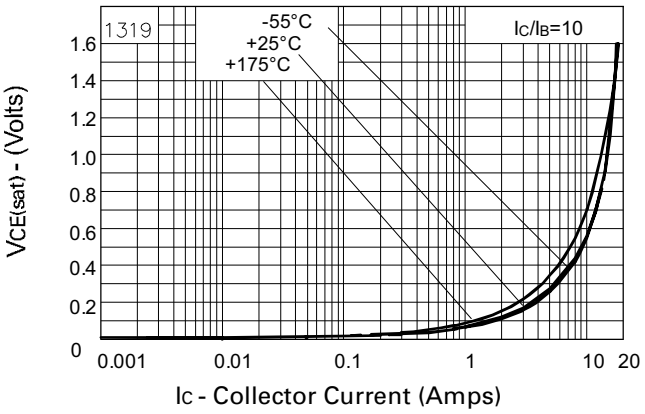
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-100	-140		V	I_C=-100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-100	-140		V	I_C=-1μA, RB ≤1kΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60	-90		V	I_C=-10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	I_E=-100μA
Collector Cut-Off Current	I_{CBO}			-50 -1	nA μA	V_{CB}=-80V V_{CB}=-80V, T_{amb}=100°C
Collector Cut-Off Current	I_{CER} R ≤1kΩ			-50 -1	nA μA	V_{CB}=-80V V_{CB}=-80V, T_{amb}=100°C
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-20 -85 -155 -370	-50 -140 -210 -460	mV mV mV mV	I_C=-100mA, I_B=-10mA* I_C=-1A, I_B=-100mA* I_C=-2A, I_B=-200mA* I_C=-5A, I_B=-500mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1080	-1240	mV	I_C=-5A, I_B=-500mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-935	-1070	mV	I_C=-5A, V_{CE}=-1V*
Static Forward Current Transfer Ratio	h_{FE}	100 100 75 10	200 200 90 25	300		I_C=-10mA, V_{CE}=-1V* I_C=-2A, V_{CE}=-1V* I_C=-5A, V_{CE}=-1V* I_C=-10A, V_{CE}=-1V*
Transition Frequency	f_T		120		MHz	I_C=-100mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{obo}		74		pF	V_{CB}=-10V, f=1MHz
Switching Times	t_{on} t_{off}		82 350		ns ns	I_C=-2A, I_{B1}=-200mA I_{B2}=200mA, V_{CC}=-10V

* Measured under pulsed conditions. Pulse width =300μs. duty cycle ≤ 2%
Spice parameter data is available upon request for this device

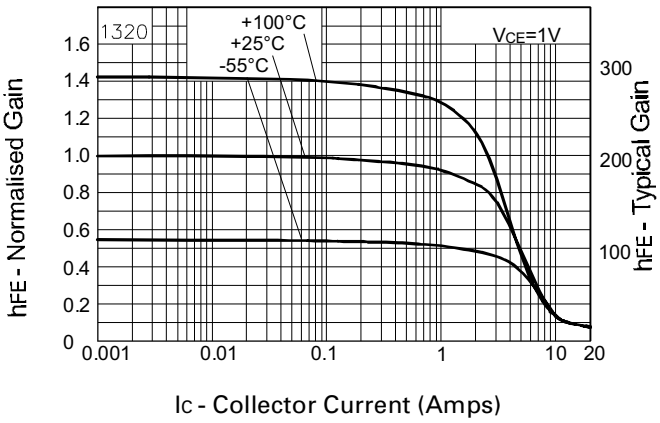
TYPICAL CHARACTERISTICS



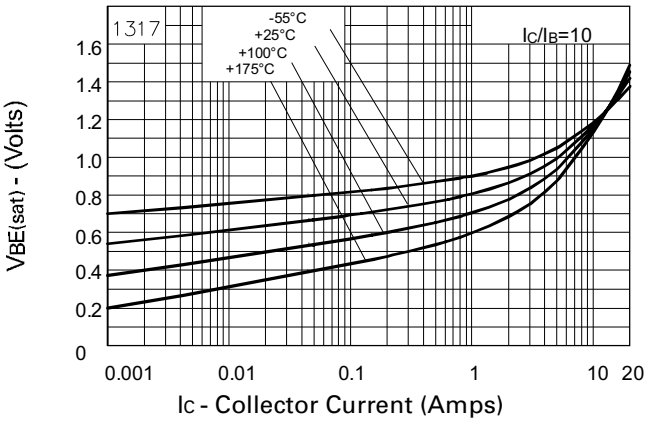
VCE(sat) v IC



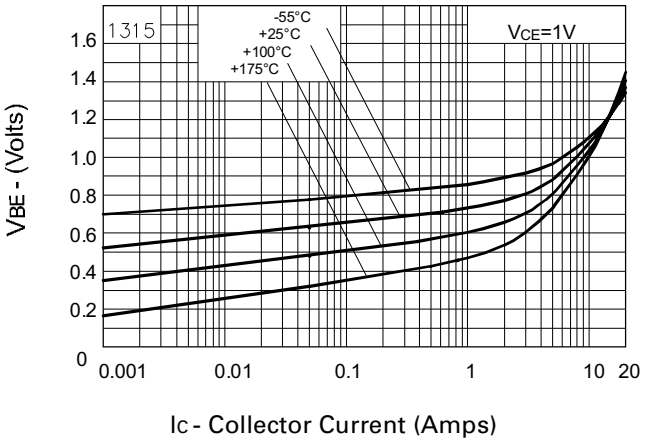
VCE(sat) v IC



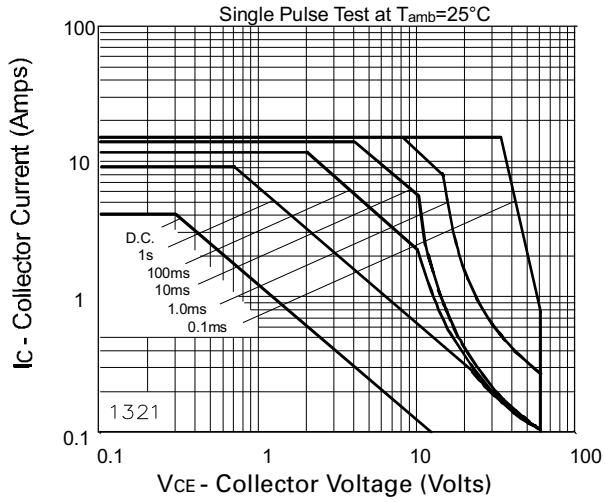
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

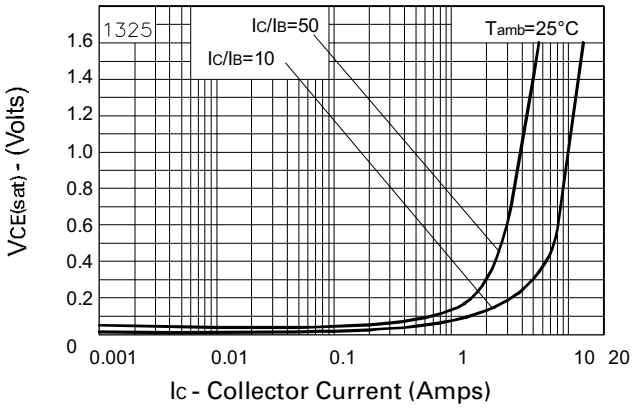
FZT953

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

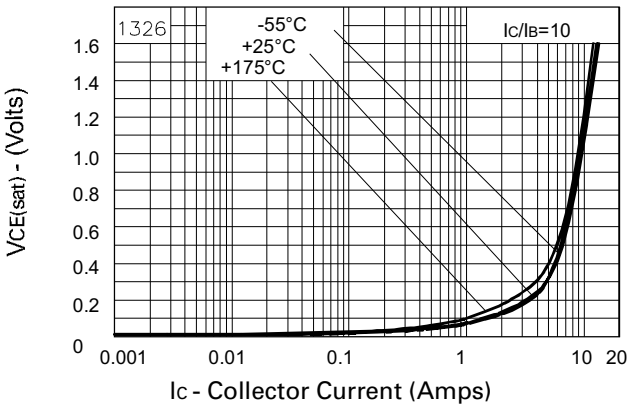
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-140	-170		V	I_C=-100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-140	-170		V	I_C=-1μA, RB ≤1kΩ
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-100	-120		V	I_C=-10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	I_E=-100μA
Collector Cut-Off Current	I_{CBO}			-50 -1	nA μA	V_{CB}=-100V V_{CB}=-100V, T_{amb}=100°C
Collector Cut-Off Current	I_{CER} R ≤1kΩ			-50 -1	nA μA	V_{CB}=-100V V_{CB}=-100V, T_{amb}=100°C
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-20 -90 -160 -300	-50 -115 -220 -420	mV mV mV mV	I_C=-100mA, I_B=-10mA* I_C=-1A, I_B=-100mA* I_C=-2A, I_B=-200mA* I_C=-4A, I_B=-400mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1010	-1170	mV	I_C=-4A, I_B=-400mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-925	-1160	mV	I_C=-4A, V_{CE}=-1V*
Static Forward Current Transfer	h_{FE}	100 100 50 30	200 200 90 50 15	300		I_C=-10mA, V_{CE}=-1V* I_C=-1A, V_{CE}=-1V* I_C=-3A, V_{CE}=-1V* I_C=-4A, V_{CE}=-1V* I_C=-10A, V_{CE}=-1V*
Transition Frequency	f_T		125		MHz	I_C=-100mA, V_{CE}=-10V f=50MHz
Output Capacitance	C_{obo}		65		pF	V_{CB}=-10V, f=1MHz
Switching Times	t_{on} t_{off}		110 460		ns ns	I_C=-2A, I_{B1}=-200mA I_{B2}=200mA, V_{CC}=-10V

*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%
Spice parameter data is available upon request for this device

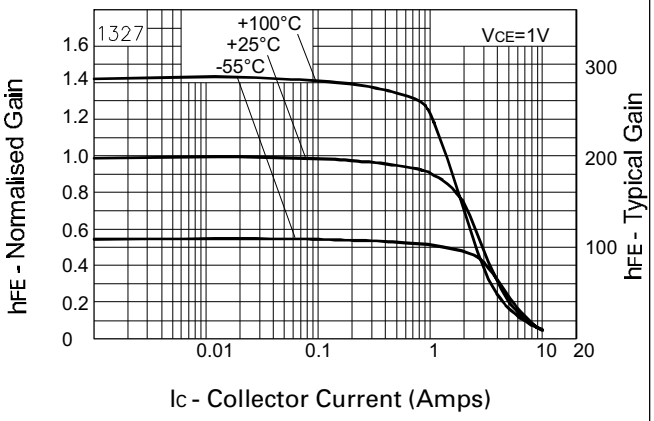
TYPICAL CHARACTERISTICS



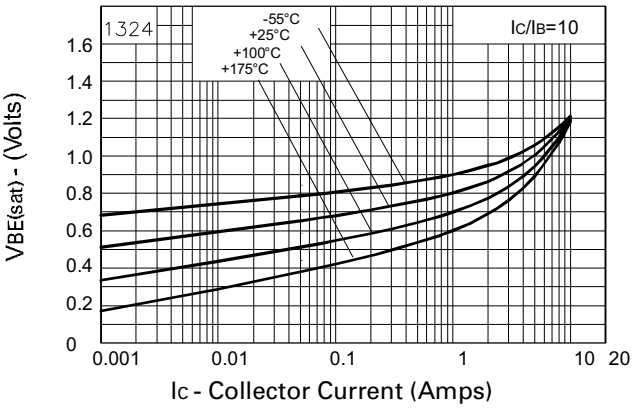
VCE(sat) v IC



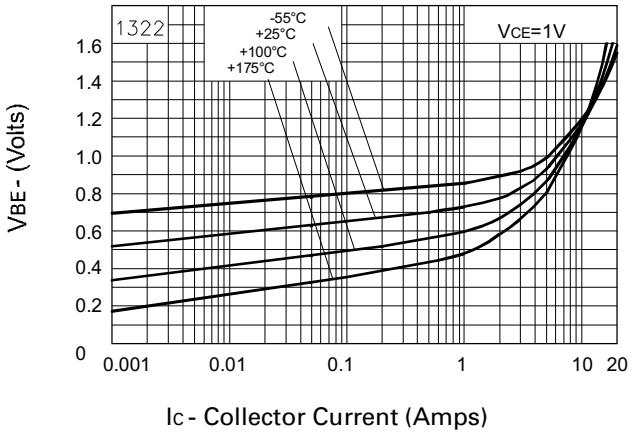
VCE(sat) v IC



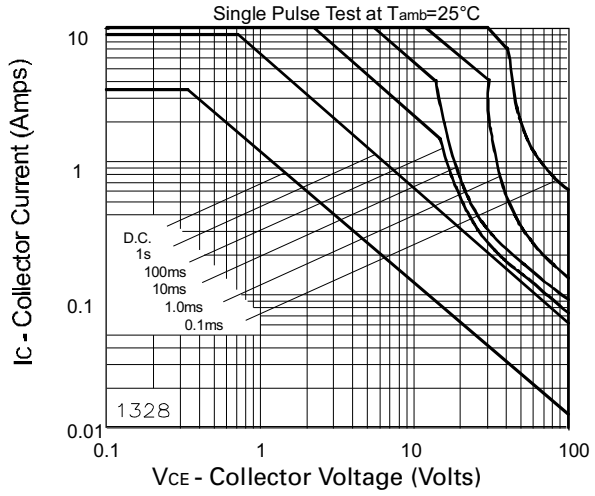
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area