

# SOT223 NPN SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTOR

## FZT857

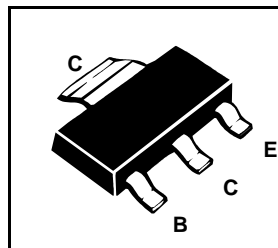
ISSUE 5 - AUGUST 2003

### FEATURES

- \* Up to 3.5 Amps continuous collector current, up to 5 Amp peak
- \*  $V_{CE0} = 300V$
- \* Very low saturation voltage
- \* Excellent  $h_{FE}$  specified up to 3 Amps

PARTMARKING DETAIL - FZT857

COMPLEMENTARY TYPE - FZT957



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	350	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	$I_C$	3.5	A
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	3	W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

\*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 square.

# FZT857

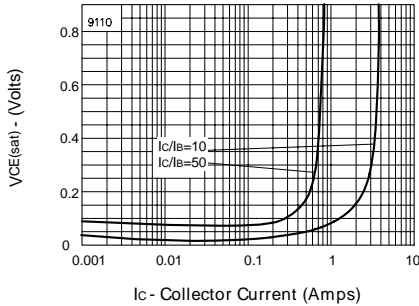
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	350	475		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	350	475		V	$I_C=1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	300	350		V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	8		V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			50 1	nA $\mu\text{A}$	$V_{CB}=300\text{V}$ $V_{CB}=300\text{V}$ , $T_{amb}=100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{k}\Omega$			50 1	nA $\mu\text{A}$	$V_{CB}=300\text{V}$ $V_{CB}=300\text{V}$ , $T_{amb}=100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			10	nA	$V_{EB}=6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			100 155 230 345	mV mV mV mV	$I_C=500\text{mA}$ , $I_B=50\text{mA}^*$ $I_C=1\text{A}$ , $I_B=100\text{mA}^*$ $I_C=2\text{A}$ , $I_B=200\text{mA}^*$ $I_C=3.5\text{A}$ , $I_B=600\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1250	mV	$I_C=3.5\text{A}$ , $I_B=600\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			1.12	V	$I_C=3.5\text{A}$ , $V_{CE}=10\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	100 100 15	200 200 25 15	300		$I_C=10\text{mA}$ , $V_{CE}=5\text{V}$ $I_C=500\text{mA}$ , $V_{CE}=10\text{V}^*$ $I_C=2\text{A}$ , $V_{CE}=10\text{V}^*$ $I_C=3\text{A}$ , $V_{CE}=10\text{V}^*$
Transition Frequency	$f_T$		80		MHz	$I_C=100\text{mA}$ , $V_{CE}=10\text{V}$ $f=50\text{MHz}$
Output Capacitance	$C_{obo}$		11		pF	$V_{CB}=20\text{V}$ , $f=1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		100 5300		ns ns	$I_C=250\text{mA}$ , $I_{B1}=25\text{mA}$ $I_{B2}=25\text{mA}$ , $V_{CC}=50\text{V}$

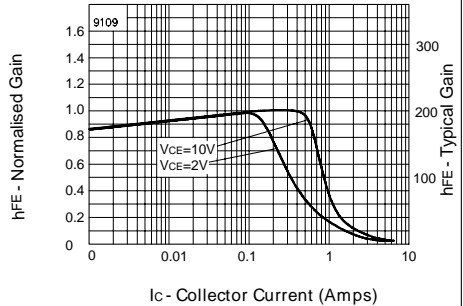
\* Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

# FZT857

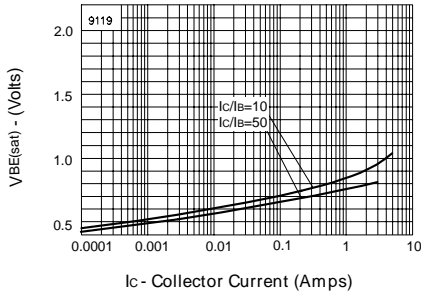
## TYPICAL CHARACTERISTICS



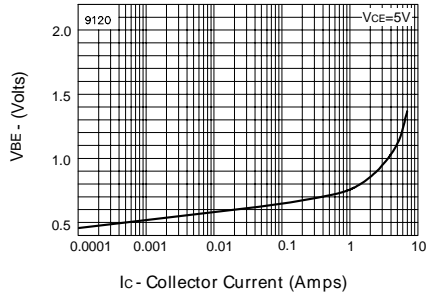
**VCE(sat) v IC**



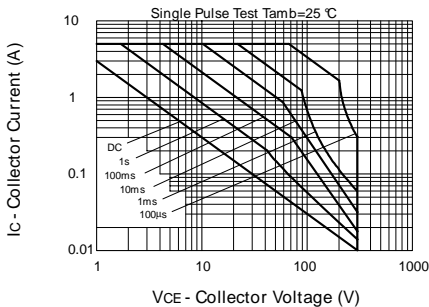
**hFE v IC**



**VBE(sat) v IC**



**VBE(on) v IC**



**Safe Operating Area**