

# SOT223 PNP SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

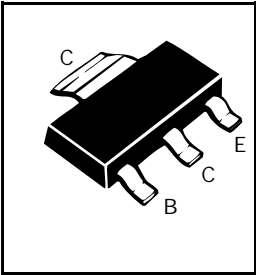
**FZT955**  
**FZT956**

ISSUE 3 – MARCH 2005

## FEATURES

- \* 4 Amps continuous current (10 Amps peak current)
- \* Very low saturation voltages
- \* Excellent gain characteristics specified up to 3 Amps

PARTMARKING DETAILS – DEVICE TYPE IN FULL  
 COMPLEMENTARY TYPES – FZT955 - FZT855  
 FZT956 - N/A



## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FZT955	FZT956	UNIT
Collector-Base Voltage	$V_{CBO}$	-180	-220	V
Collector-Emitter Voltage	$V_{CEO}$	-140	-200	V
Emitter-Base Voltage	$V_{EBO}$	-6		V
Peak Pulse Current	$I_{CM}$	-10	-5	A
Continuous Collector Current	$I_C$	-4	-2	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 4 square inch minimum

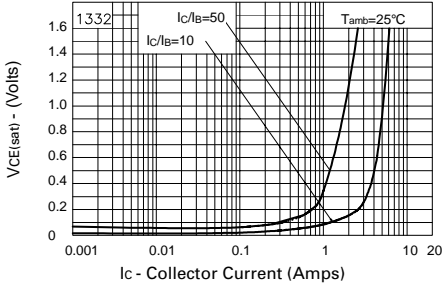
# FZT955

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

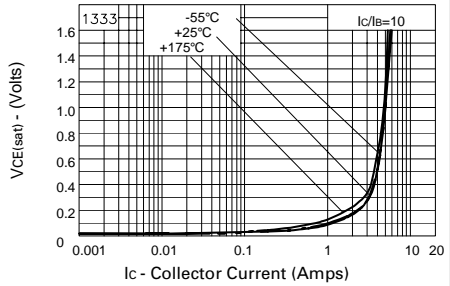
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-180	-210		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-180	-210		V	$I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-140	-170		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 $\mu\text{A}$	$V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{k}\Omega$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-30 -70 -110 -275	-60 -120 -150 -370	mV mV mV mV	$I_C = -100\text{mA}$ , $I_B = -5\text{mA}^*$ $I_C = -500\text{mA}$ , $I_B = -50\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -3\text{A}$ , $I_B = -300\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-970	-1110	mV	$I_C = -3\text{A}$ , $I_B = -300\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-830	-950	mV	$I_C = -3\text{A}$ , $V_{CE} = -5\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	100 100 75	200 200 140 10	300		$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}^*$ $I_C = -1\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -3\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -10\text{A}$ , $V_{CE} = -5\text{V}^*$
Transition Frequency	$f_T$		110		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$		40		pF	$V_{CB} = -20\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		68 1030		ns ns	$I_C = -1\text{A}$ , $I_{B1} = -100\text{mA}$ $I_{B2} = 100\text{mA}$ , $V_{CC} = -50\text{V}$

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

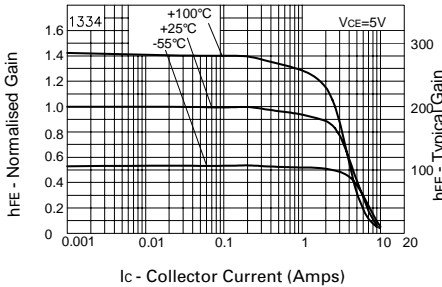
## TYPICAL CHARACTERISTICS



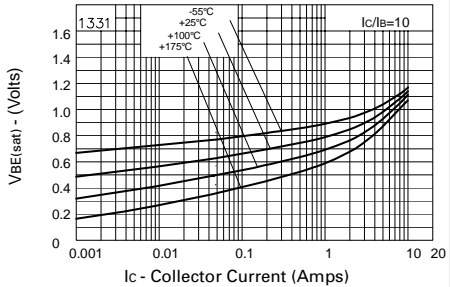
**$V_{CE(sat)}$  v  $I_C$**



**$V_{CE(sat)}$  v  $I_C$**

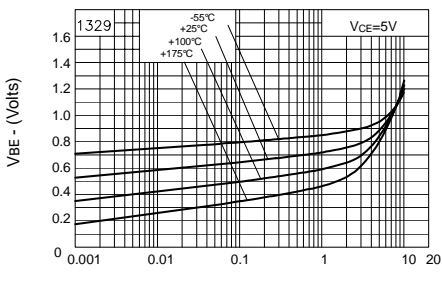


**$h_{FE}$  v  $I_C$**

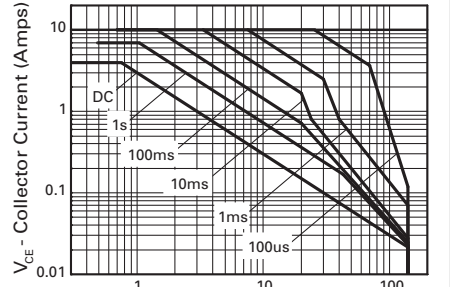


**V**

**$V_{BE(sat)}$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**



**Safe Operating Area**

# FZT956

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-220	-300		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-220	-300		V	$I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-200	-240		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 $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{k}\Omega$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -200\text{V}$ $V_{CB} = -200\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-30 -120 -168	-50 -165 -275	mV mV mV	$I_C = -100\text{mA}$ , $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$ , $I_B = -400\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-970	-1110	mV	$I_C = -2\text{A}$ , $I_B = -400\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-810	-950	mV	$I_C = -2\text{A}$ , $V_{CE} = -5\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	100 100 50	200 200 150 10	300		$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}^*$ $I_C = -1\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -2\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -5\text{A}$ , $V_{CE} = -5\text{V}^*$
Transition Frequency	$f_T$		110		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$		32		pF	$V_{CB} = -20\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		67 1140		ns ns	$I_C = -1\text{A}$ , $I_{B1} = -100\text{mA}$ $I_{B2} = 100\text{mA}$ , $V_{CC} = -50\text{V}$

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

# FZT956

## TYPICAL CHARACTERISTICS

