

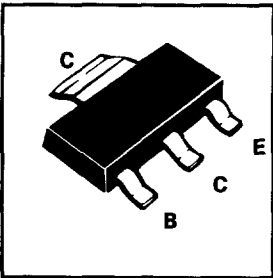
SOT223 NPN SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

**FZT851
FZT853**

ISSUE 2 - OCTOBER 1995

FEATURES

- * Extremely low equivalent on-resistance; $R_{CE(sat)}$ 44m Ω at 5A
- * 6 Amps continuous current, up to 20 Amps peak current
- * Very low saturation voltages
- * Excellent h_{FE} characteristics specified up to 10 Amps



PARTMARKING DETAILS - DEVICE TYPE IN FULL
 COMPLEMENTARY TYPES - FZT851 FZT951
 FZT853 FZT953

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FZT851	FZT853	UNIT
Collector-Base Voltage	V_{CBO}	150	200	V
Collector-Emitter Voltage	V_{CEO}	60	100	V
Emitter-Base Voltage	V_{EBO}	6	6	V
Peak Pulse Current	I_{CM}	20	10	A
Continuous Collector Current	I_C	6		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

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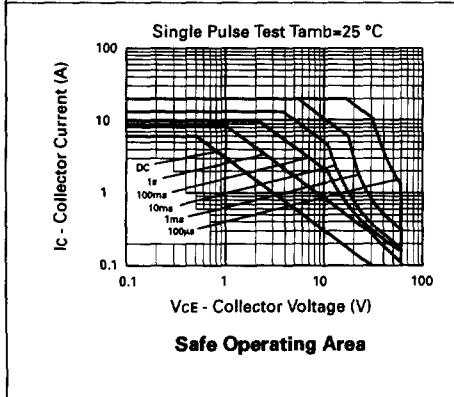
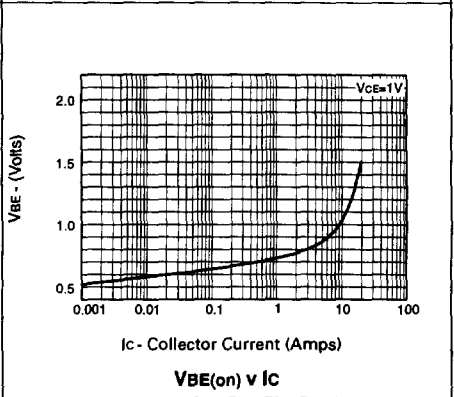
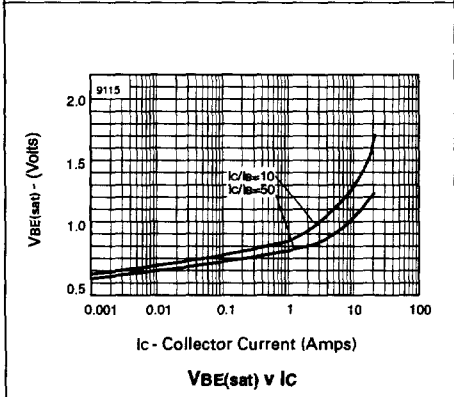
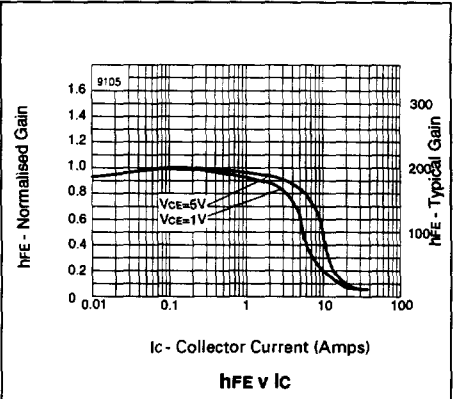
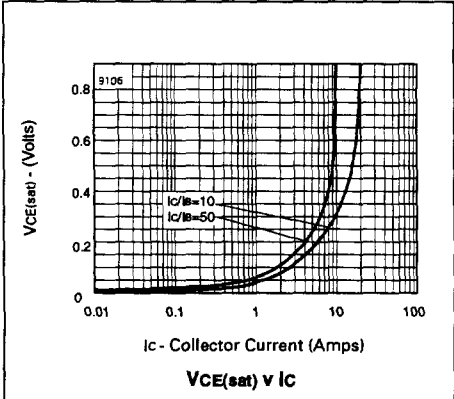
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	220		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	150	220		V	$I_C = 1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	60	85		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 μA	$V_{CB} = 120\text{V}$ $V_{CB} = 120\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	I_{CER} $R \leq 1\text{k}\Omega$			50 1	nA μA	$V_{CB} = 120\text{V}$ $V_{CB} = 120\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	I_{EBO}			10	nA	$V_{EB} = 6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			50 100 170 375	mV mV mV mV	$I_C = 0.1\text{A}$, $I_B = 5\text{mA}^*$ $I_C = 1\text{A}$, $I_B = 50\text{mA}^*$ $I_C = 2\text{A}$, $I_B = 50\text{mA}^*$ $I_C = 6\text{A}$, $I_B = 300\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1200	mV	$I_C = 6\text{A}$, $I_B = 300\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			1150	mV	$I_C = 6\text{A}$, $V_{CE} = 1\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	100 100 75 25	200 200 120 50	300		$I_C = 10\text{mA}$, $V_{CE} = 1\text{V}$ $I_C = 2\text{A}$, $V_{CE} = 1\text{V}^*$ $I_C = 5\text{A}$, $V_{CE} = 1\text{V}^*$ $I_C = 10\text{A}$, $V_{CE} = 1\text{V}^*$
Transition Frequency	f_T		130		MHz	$I_C = 100\text{mA}$, $V_{CE} = 10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	C_{obo}		45		pF	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$
Switching Times	t_{on} t_{off}		45 1100		ns ns	$I_C = 1\text{A}$, $I_{B1} = 100\text{mA}$ $I_{B2} = 100\text{mA}$, $V_{CC} = 10\text{V}$

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

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TYPICAL CHARACTERISTICS



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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	200	300		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	200	300		V	$I_C = 1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	100	120		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}			10 1	nA μA	$V_{CB} = 150\text{V}$, $T_{amb} = 25^{\circ}\text{C}$ $V_{CB} = 150\text{V}$ $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	I_{CER} $R \leq 1\text{k}\Omega$			10 1	nA μA	$V_{CB} = 150\text{V}$, $T_{amb} = 25^{\circ}\text{C}$ $V_{CB} = 150\text{V}$ $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	I_{EBO}			10	nA	$V_{EB} = 6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		14 100	50 150 340	mV mV mV	$I_C = 0.1\text{A}$, $I_B = 5\text{mA}^*$ $I_C = 2\text{A}$, $I_B = 100\text{mA}^*$ $I_C = 5\text{A}$, $I_B = 500\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1250	mV	$I_C = 5\text{A}$, $I_B = 500\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			1100	mV	$I_C = 5\text{A}$, $V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	100 100 50 20	200 200 100 30	300		$I_C = 10\text{mA}$, $V_{CE} = 2\text{V}$ $I_C = 2\text{A}$, $V_{CE} = 2\text{V}^*$ $I_C = 4\text{A}$, $V_{CE} = 2\text{V}^*$ $I_C = 10\text{A}$, $V_{CE} = 2\text{V}^*$
Transition Frequency	f_T		130		MHz	$I_C = 100\text{mA}$, $V_{CE} = 10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	C_{obo}		35		pF	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$
Switching Times	t_{on} t_{off}		50 1650		ns ns	$I_C = 1\text{A}$, $V_{CC} = 10\text{V}$ $I_{B1} = I_{B2} = 100\text{mA}$,

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

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TYPICAL CHARACTERISTICS

