

FZT869

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

FZT869

ISSUE 2 - JANUARY 1996

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

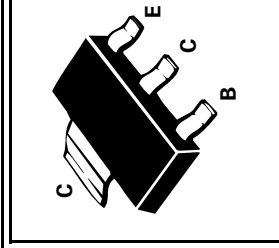
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	120		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CE}$	60	120		V	$I_C = 1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	25	35		V	$I_C = 10\text{mA}^*$
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	$V_{CE} = 50\text{V}$, $V_{BE} = 50\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	I_{CER} $R \leq 1\text{k}\Omega$		50 1		nA μA	$V_{CE} = 50\text{V}$, $V_{BE} = 50\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	I_{EBO}		10		nA	$V_{EB} = 6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		35 67 168	50 110 215 350	mV mV mV mV	$I_C = 0.5\text{A}$, $I_B = 10\text{mA}^*$ $I_C = 1\text{A}$, $I_B = 10\text{mA}^*$ $I_C = 2\text{A}$, $I_B = 10\text{mA}^*$ $I_C = 6.5\text{A}$, $I_B = 150\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1.2	V	$I_C = 6.5\text{A}$, $I_B = 300\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			1.13	V	$I_C = 6.5\text{A}$, $V_{CE} = 1\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	300 300 200 40	450 450 300 100			$I_C = 10\text{mA}$, $V_{CE} = 1\text{V}$ $I_C = 1\text{A}$, $V_{CE} = 1\text{V}^*$ $I_C = 7\text{A}$, $V_{CE} = 1\text{V}^*$ $I_C = 20\text{A}$, $V_{CE} = 2\text{V}^*$
Transition Frequency	f_T		100		MHz	$I_C = 100\text{mA}$, $V_{CE} = 10\text{V}$, $f = 50\text{MHz}$
Output Capacitance	C_{obo}		70		pF	$V_{CE} = 10\text{V}$, $f = 1\text{MHz}^*$
Switching Times	t_{on} t_{off}		60 680		ns ns	$I_C = 1\text{A}$, $I_B = 100\text{mA}$, $I_{B2} = 100\text{mA}$, $V_{CC} = 10\text{V}$

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

FEATURES

- * Extremely low equivalent on-resistance; $R_{CE(sat)} = 36\text{m}\Omega$ at 5A
- * 7 Amp continuous collector current (20 Amp peak)
- * Very low saturation voltages
- * Excellent gain characteristics specified upto 20 Amp
- * $P_{tot} = 3$ Watts

PARTMARKING DETAILS - FZT869



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	6	V
Peak Pulse Current	I_{CM}	20	A
Continuous Collector Current	I_C	7	A
Power Dissipation at $T_{amb} = 25^{\circ}\text{C}$	P_{tot}	3	W
Operating and Storage Temperature Range	T_j, T_{stg}	-55 to +150	$^{\circ}\text{C}$

*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 inch square minimum

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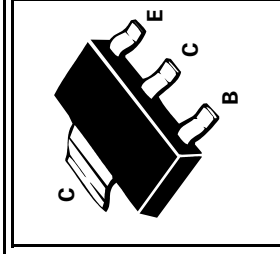
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Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	8		V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}		50 1		nA μA	$V_{CE} = 50\text{V}$, $V_{BE} = 50\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	I_{CER} $R \leq 1\text{k}\Omega$		50 1		nA μA	$V_{CE} = 50\text{V}$, $V_{BE} = 50\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	I_{EBO}		10		nA	$V_{EB} = 6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		35 67 168		mV	$I_C = 0.5\text{A}$, $I_B = 10\text{mA}^*$ $I_C = 1\text{A}$, $I_B = 10\text{mA}^*$ $I_C = 2\text{A}$, $I_B = 10\text{mA}^*$ $I_C = 6.5\text{A}$, $I_B = 150\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		1.2		V	$I_C = 6.5\text{A}$, $I_B = 300\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		1.13		V	$I_C = 6.5\text{A}$, $V_{CE} = 1\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	300 300 200 40	450 450 300 100			$I_C = 10\text{mA}$, $V_{CE} = 1\text{V}$ $I_C = 1\text{A}$, $V_{CE} = 1\text{V}^*$ $I_C = 7\text{A}$, $V_{CE} = 1\text{V}^*$ $I_C = 20\text{A}$, $V_{CE} = 2\text{V}^*$
Transition Frequency	f_T		100		MHz	$I_C = 100\text{mA}$, $V_{CE} = 10\text{V}$, $f = 50\text{MHz}$
Output Capacitance	C_{obo}		70		pF	$V_{CE} = 10\text{V}$, $f = 1\text{MHz}^*$
Switching Times	t_{on} t_{off}		60 680		ns ns	$I_C = 1\text{A}$, $I_B = 100\text{mA}$ $I_B = 100\text{mA}$, $V_{CC} = 10\text{V}$

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