

# SOT223 NPN SILICON PLANAR HIGH PERFORMANCE TRANSISTORS

## FZT651

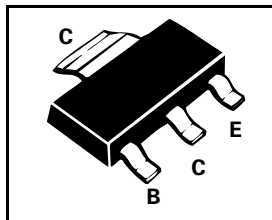
ISSUE 2 – FEBRUARY 1995

### FEATURES

- \* 60 Volt  $V_{CE0}$
- \* 3 Amp continuous current
- \* Low saturation voltage

COMPLEMENTARY TYPE – FZT751

PARTMARKING DETAIL – FZT651



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	80	V
Collector-Emitter Voltage	$V_{CEO}$	60	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Peak Pulse Current	$I_{CM}$	6	A
Continuous Collector Current	$I_C$	3	A
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	2	W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

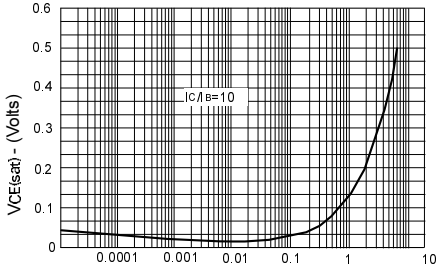
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	80			V	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	60			V	$I_C=10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu A$
Collector Cut-Off Current	$I_{CBO}$			0.1 10	$\mu A$	$V_{CB}=60V$ $V_{CE}=60V, T_{amb}=100^{\circ}C$
Emitter Cut-Off Current	$I_{EBO}$			0.1	$\mu A$	$V_{EB}=4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.12 0.43	0.3 0.6	V	$I_C=1A, I_B=100mA^*$ $I_C=3A, I_B=300mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.25	V	$I_C=1A, I_B=100mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.8	1	V	$I_C=1A, V_{CE}=2V^*$
Static Forward Current Transfer Ratio	$h_{FE}$	70 100 80 40	200 200 170 80	300		$I_C=50mA, V_{CE}=2V^*$ $I_C=500mA, V_{CE}=2V^*$ $I_C=1A, V_{CE}=2V^*$ $I_C=2A, V_{CE}=2V^*$
Transition Frequency	$f_T$	140	175		MHz	$I_C=100mA, V_{CE}=5V$ $f=100MHz$
Switching Times	$t_{on}$		45		ns	$I_C=500mA, V_{CC}=10V$
	$t_{off}$		800		ns	$I_B=I_{B2}=50mA$
Output Capacitance	$C_{obo}$			30	pF	$V_{CB}=10V, f=1MHz$

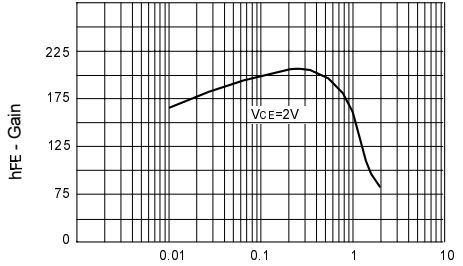
\*Measured under pulsed conditions. Pulse width=300 $\mu s$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

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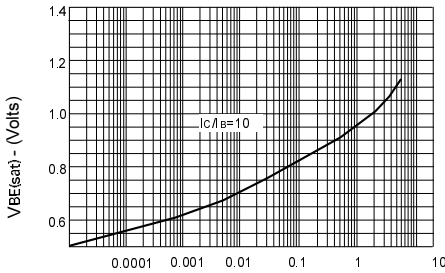
## TYPICAL CHARACTERISTICS



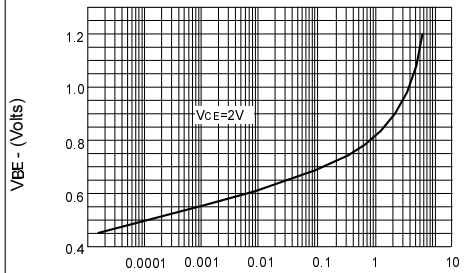
**$V_{CE(sat)}$  v  $I_C$**



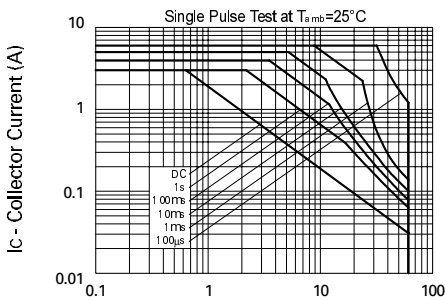
**$hFE$  v  $I_C$**



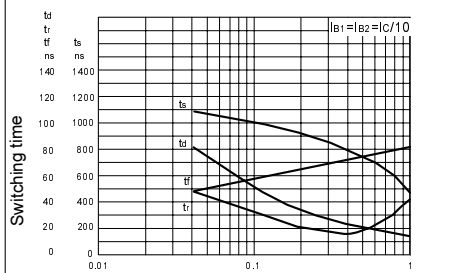
**$V_{BE(sat)}$  v  $I_C$**



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



**Safe Operating Area**



**Switching Speeds**



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