

# SOT223 NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

## FZT689B

ISSUE 3 - OCTOBER 1995

### FEATURES

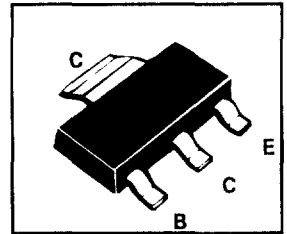
- \* Gain of 400 at  $I_C=2$  Amps and low saturation voltage
- \* Extremely low equivalent on-resistance;  $R_{CE(sat)}$  92m $\Omega$  at 3A

### APPLICATIONS

- \* Darlington replacement
- \* Flash gun convertors and Battery powered circuits

PARTMARKING DETAIL - FZT689B

COMPLEMENTARY TYPE - FZT789B



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	20	V
Collector-Emitter Voltage	$V_{CEO}$	20	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Peak Pulse Current	$I_{CM}$	8	A
Continuous Collector Current	$I_C$	3	A
Power Dissipation at $T_{amb}=25^\circ\text{C}$	$P_{tot}$	2	W
Operating and Storage Temperature Range	$T_f; T_{stg}$	-55 to +150	$^\circ\text{C}$

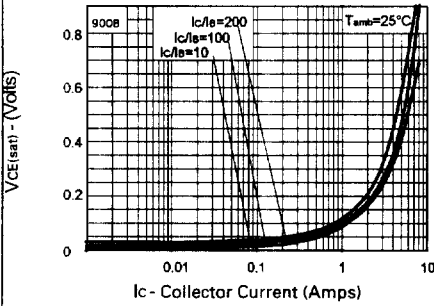
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Breakdown Voltage	$V_{(BR)CBO}$	20			V	$I_C=100\mu\text{A}$
Collector-Base	$V_{(BR)CEO}$	20			V	$I_C=10\text{mA}^*$
Collector-Emitter						
Emitter-Base	$V_{(BR)EBO}$	5			V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			0.1	$\mu\text{A}$	$V_{CB}=16\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			0.1	$\mu\text{A}$	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.10 0.50 0.45	V	$I_C=0.1\text{A}, I_B=0.5\text{mA}^*$ $I_C=2\text{A}, I_B=10\text{mA}^*$ $I_C=3\text{A}, I_B=20\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C=1\text{A}, I_B=10\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			0.9	V	$I_C=1\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	500 400 150				$I_C=0.1\text{A}, V_{CE}=2\text{V}^*$ $I_C=2\text{A}, V_{CE}=2\text{V}^*$ $I_C=6\text{A}, V_{CE}=2\text{V}^*$
Transition Frequency	$f_T$	150			MHz	$I_C=50\text{mA}, V_{CE}=5\text{V}$ $f=50\text{MHz}$
Input Capacitance	$C_{ibo}$		200		pF	$V_{EB}=0.5\text{V}, f=1\text{MHz}$
Output Capacitance	$C_{obo}$		16		pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		30 800		ns ns	$I_C=500\text{mA}, I_{B1}=50\text{mA}$ $I_{B2}=50\text{mA}, V_{CC}=10\text{V}$

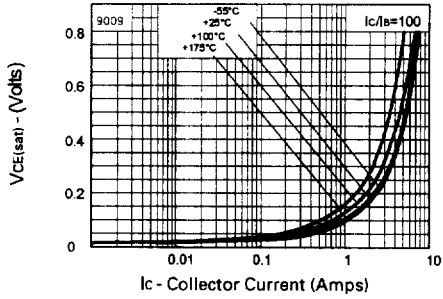
\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

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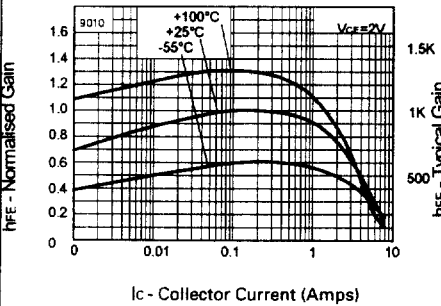
## TYPICAL CHARACTERISTICS



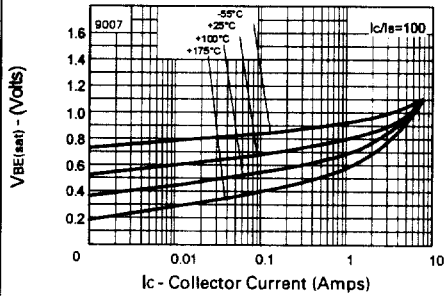
**$V_{CE(sat)}$  v  $I_C$**



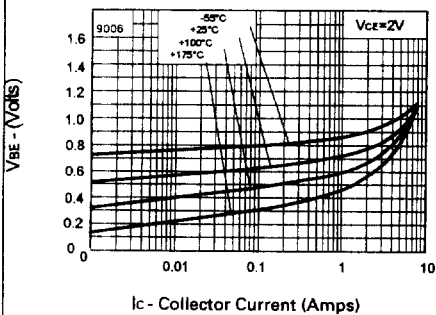
**$V_{CE(sat)}$  v  $I_C$**



**hFE v  $I_C$**



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



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

