

# SOT223 NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

## FZT696B

ISSUE 4 – FEBRUARY 1997

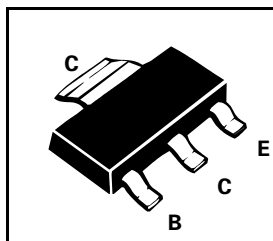
### FEATURES

- \* 250 Volt  $V_{CEO}$
- \* Gain of 500 at  $I_C=100\text{mA}$
- \* Very low saturation voltage

### APPLICATIONS

- \* Darlington replacement
- \* Battery powered circuits

PARTMARKING DETAIL – FZT696B



### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                       | SYMBOL         | VALUE       | UNIT             |
|---|----------------|-------------|------------------|
| Collector-Base Voltage                          | $V_{CBO}$      | 180         | V                |
| Collector-Emitter Voltage                       | $V_{CEO}$      | 180         | V                |
| Emitter-Base Voltage                            | $V_{EBO}$      | 5           | V                |
| Peak Pulse Current                              | $I_{CM}$       | 1           | A                |
| Continuous Collector Current                    | $I_C$          | 0.5         | A                |
| Power Dissipation at $T_{amb}=25^\circ\text{C}$ | $P_{tot}$      | 2           | W                |
| Operating and Storage Temperature Range         | $T_j; T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

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

| PARAMETER                             | SYMBOL                | MIN.       | TYP.       | MAX.               | UNIT          | CONDITIONS.   |
|---------------------------------------|-----------------------|------------|------------|--------------------|---------------|---|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$         | 180        |            |                    | V             | $I_C=100\mu\text{A}$  |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$         | 180        |            |                    | V             | $I_C=10\text{mA}^*$   |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$         | 5          |            |                    | V             | $I_E=100\mu\text{A}$  |
| Collector Cut-Off Current             | $I_{CBO}$             |            |            | 0.1                | $\mu\text{A}$ | $V_{CB}=140\text{V}$  |
| Emitter Cut-Off Current               | $I_{EBO}$             |            |            | 0.1                | $\mu\text{A}$ | $V_{EB}=4\text{V}$  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$         |            |            | 0.2<br>0.2<br>0.25 | V             | $I_C=50\text{mA}, I_B=0.5\text{mA}^*$<br>$I_C=100\text{mA}, I_B=2\text{mA}^*$<br>$I_C=200\text{mA}, I_B=5\text{mA}^*$ |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$         |            |            | 0.9                | V             | $I_C=200\text{mA}, I_B=5\text{mA}^*$  |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$          |            |            | 0.9                | V             | $I_C=200\text{mA}, V_{CE}=5\text{V}^*$  |
| Static Forward Current Transfer Ratio | $h_{FE}$              | 500<br>150 |            |                    |               | $I_C=100\text{mA}, V_{CE}=5\text{V}^*$<br>$I_C=200\text{mA}, V_{CE}=5\text{V}^*$                                      |
| Transition Frequency                  | $f_T$                 | 70         |            |                    | MHz           | $I_C=50\text{mA}, V_{CE}=5\text{V}$<br>$f=50\text{MHz}$   |
| Input Capacitance                     | $C_{ibo}$             |            | 200        |                    | pF            | $V_{EB}=0.5\text{V}, f=1\text{MHz}$   |
| Output Capacitance                    | $C_{obo}$             |            | 6          |                    | pF            | $V_{CE}=10\text{V}, f=1\text{MHz}$  |
| Switching Times                       | $t_{on}$<br>$t_{off}$ |            | 80<br>4400 |                    | ns<br>ns      | $I_C=100\text{mA}, I_{B1}=10\text{mA}$<br>$I_{B2}=10\text{mA}, V_{CC}=50\text{V}$                                     |

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

# FZT696B

## TYPICAL CHARACTERISTICS

