

# SOT223 NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

**FZT688B**

ISSUE 3 - OCTOBER 1995

## FEATURES

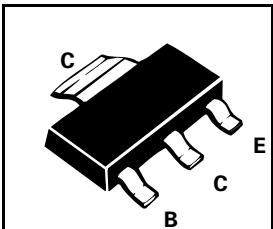
- \* Extremely low equivalent on resistance;  $R_{CE(sat)}$  **83mΩ at 3A**
- \* Gain of 400 at  $I_C=3$  Amps and very low saturation voltage

## APPLICATIONS

- \* Flash gun convertors & Battery powered circuits

PARTMARKING DETAIL – FZT688B

COMPLEMENTARY TYPE - FZT788B



## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                       | SYMBOL         | VALUE       | UNIT             |
|---|----------------|-------------|------------------|
| Collector-Base Voltage                          | $V_{CBO}$      | 12          | V                |
| Collector-Emitter Voltage                       | $V_{CEO}$      | 12          | V                |
| Emitter-Base Voltage                            | $V_{EBO}$      | 5           | V                |
| Peak Pulse Current                              | $I_{CM}$       | 10          | A                |
| Continuous Collector Current                    | $I_C$          | 4           | 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.   |
|---------------------------------------|-----------------------|------|------|------|---------------|---|
| Breakdown Voltages                    | $V_{(BR)CBO}$         | 12   |      |      | V             | $I_C=100\mu\text{A}$                                    |
|                                       | $V_{(BR)CEO}$         | 12   |      |      | V             | $I_C=10\text{mA}^*$                                     |
|                                       | $V_{(BR)EBO}$         | 5    |      |      | V             | $I_E=100\mu\text{A}$                                    |
| Collector Cut-Off Current             | $I_{CBO}$             |      |      | 0.1  | $\mu\text{A}$ | $V_{CB}=10\text{V}$                                     |
| Emitter Cut-Off Current               | $I_{EBO}$             |      |      | 0.1  | $\mu\text{A}$ | $V_{EB}=4\text{V}$                                      |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$         |      |      | 0.04 | V             | $I_C=0.1\text{A}, I_B=1\text{mA}$                       |
|                                       |                       |      |      | 0.06 | V             | $I_C=0.1\text{A}, I_B=0.5\text{mA}^*$                   |
|                                       |                       |      |      | 0.18 | V             | $I_C=1\text{A}, I_B=50\text{mA}^*$                      |
|                                       |                       |      |      | 0.35 | V             | $I_C=3\text{A}, I_B=20\text{mA}^*$                      |
|                                       |                       |      |      | 0.40 | V             | $I_C=4\text{A}, I_B=50\text{mA}^*$                      |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$         |      |      | 1.1  | V             | $I_C=3\text{A}, I_B=20\text{mA}^*$                      |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$          |      |      | 1.0  | V             | $I_C=3\text{A}, V_{CE}=2\text{V}$                       |
| Static Forward Current Transfer Ratio | $h_{FE}$              | 500  |      |      |               | $I_C=0.1\text{A}, V_{CE}=2\text{V}^*$                   |
|                                       |                       | 400  |      |      |               | $I_C=3\text{A}, V_{CE}=2\text{V}^*$                     |
|                                       |                       | 100  |      |      |               | $I_C=10\text{A}, V_{CE}=2\text{V}^*$                    |
| Transition Frequency                  | $f_T$                 | 150  |      |      | 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                    | $C_{obo}$             |      | 40   |      | pF            | $V_{CB}=10\text{V}, f=1\text{MHz}$                      |
| Switching Times                       | $t_{on}$<br>$t_{off}$ |      | 40   |      | ns            | $I_C=500\text{mA}, I_{B1}=50\text{A}$                   |
|                                       |                       |      | 500  |      | ns            | $I_{B2}=50\text{mA}, V_{CC}=10\text{V}$                 |

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

# FZT688B

## TYPICAL CHARACTERISTICS

