

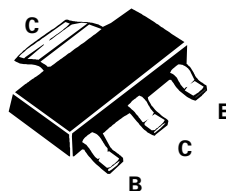
# SOT223 NPN SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

ISSUE 2 - OCTOBER 1995

**FZT851**  
**FZT853**

## FEATURES

- \* Extremely low equivalent on-resistance;  $R_{CE(sat)}$  **44m $\Omega$  at 5A**
- \* 6 Amps continuous current, up to 20 Amps peak current
- \* Very low saturation voltages
- \* Excellent  $h_{FE}$  characteristics specified up to 10 Amps



PARTMARKING DETAILS - DEVICE TYPE IN FULL

COMPLEMENTARY TYPES - FZT851 FZT951

FZT853 FZT953

## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                  | SYMBOL         | FZT851      | FZT853 | UNIT        |
|--------------------------------------------|----------------|-------------|--------|-------------|
| Collector-Base Voltage                     | $V_{CBO}$      | 150         | 200    | V           |
| Collector-Emitter Voltage                  | $V_{CEO}$      | 60          | 100    | V           |
| Emitter-Base Voltage                       | $V_{EBO}$      | 6           | 6      | V           |
| Peak Pulse Current                         | $I_{CM}$       | 20          | 10     | A           |
| Continuous Collector Current               | $I_C$          | 6           |        | A           |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | $P_{tot}$      | 3           |        | W           |
| Operating and Storage Temperature Range    | $T_j; T_{stg}$ | -55 to +150 |        | $^{\circ}C$ |

\*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 square inch minimum

# FZT851

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

| PARAMETER                             | SYMBOL                                | MIN.                   | TYP.                    | MAX.                    | UNIT                 | CONDITIONS.                                                                                                                                                                           |
|---------------------------------------|---------------------------------------|------------------------|-------------------------|-------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$                         | 150                    | 220                     |                         | V                    | $I_C = 100\mu\text{A}$                                                                                                                                                                |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CER}$                         | 150                    | 220                     |                         | V                    | $I_C = 1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$                                                                                                                                     |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$                         | 60                     | 85                      |                         | 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<br>1                 | nA<br>$\mu\text{A}$  | $V_{CB} = 120\text{V}$<br>$V_{CB} = 120\text{V}$ ,<br>$T_{amb} = 100^{\circ}\text{C}$                                                                                                 |
| Collector Cut-Off Current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                        |                         | 50<br>1                 | nA<br>$\mu\text{A}$  | $V_{CB} = 120\text{V}$<br>$V_{CB} = 120\text{V}$ ,<br>$T_{amb} = 100^{\circ}\text{C}$                                                                                                 |
| Emitter Cut-Off Current               | $I_{EBO}$                             |                        |                         | 10                      | nA                   | $V_{EB} = 6\text{V}$                                                                                                                                                                  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$                         |                        |                         | 50<br>100<br>170<br>375 | mV<br>mV<br>mV<br>mV | $I_C = 0.1\text{A}$ , $I_B = 5\text{mA}^*$<br>$I_C = 1\text{A}$ , $I_B = 50\text{mA}^*$<br>$I_C = 2\text{A}$ , $I_B = 50\text{mA}^*$<br>$I_C = 6\text{A}$ , $I_B = 300\text{mA}^*$    |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$                         |                        |                         | 1200                    | mV                   | $I_C = 6\text{A}$ , $I_B = 300\text{mA}^*$                                                                                                                                            |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$                          |                        |                         | 1150                    | mV                   | $I_C = 6\text{A}$ , $V_{CE} = 1\text{V}^*$                                                                                                                                            |
| Static Forward Current Transfer Ratio | $h_{FE}$                              | 100<br>100<br>75<br>25 | 200<br>200<br>120<br>50 | 300                     |                      | $I_C = 10\text{mA}$ , $V_{CE} = 1\text{V}$<br>$I_C = 2\text{A}$ , $V_{CE} = 1\text{V}^*$<br>$I_C = 5\text{A}$ , $V_{CE} = 1\text{V}^*$<br>$I_C = 10\text{A}$ , $V_{CE} = 1\text{V}^*$ |
| Transition Frequency                  | $f_T$                                 |                        | 130                     |                         | MHz                  | $I_C = 100\text{mA}$ , $V_{CE} = 10\text{V}$<br>$f = 50\text{MHz}$                                                                                                                    |
| Output Capacitance                    | $C_{obo}$                             |                        | 45                      |                         | pF                   | $V_{CB} = 10\text{V}$ , $f = 1\text{MHz}$                                                                                                                                             |
| Switching Times                       | $t_{on}$<br>$t_{off}$                 |                        | 45<br>1100              |                         | ns<br>ns             | $I_C = 1\text{A}$ , $I_{B1} = 100\text{mA}$<br>$I_{B2} = 100\text{mA}$ , $V_{CC} = 10\text{V}$                                                                                        |

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

FZT851

TYPICAL CHARACTERISTICS

