

# SOT223 PNP SILICON PLANAR MEDIUM POWER TRANSISTOR

ISSUE 4– FEBRUARY 1996

## FEATURES

- \* Low saturation voltage
- \* Excellent  $h_{FE}$  specified up to 2A

COMPLEMENTARY TYPE – FZT653

PARTMARKING DETAIL – FZT753

## ABSOLUTE MAXIMUM RATINGS.

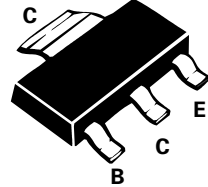
| PARAMETER                                  | SYMBOL         | VALUE       | UNIT        |
|--------------------------------------------|----------------|-------------|-------------|
| Collector-Base Voltage                     | $V_{CBO}$      | -120        | V           |
| Collector-Emitter Voltage                  | $V_{CEO}$      | -100        | V           |
| Emitter-Base Voltage                       | $V_{EBO}$      | -5          | V           |
| Peak Pulse Current                         | $I_{CM}$       | -6          | A           |
| Continuous Collector Current               | $I_C$          | -2          | 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).

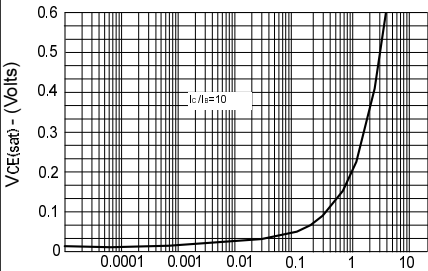
| PARAMETER                             | SYMBOL                | MIN.                  | TYP.                    | MAX.         | UNIT    | CONDITIONS.                                                                                                                   |
|---------------------------------------|-----------------------|-----------------------|-------------------------|--------------|---------|-------------------------------------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$         | -120                  |                         |              | V       | $I_C = -100\mu A$                                                                                                             |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$         | -100                  |                         |              | 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<br>-10  | $\mu A$ | $V_{CB} = -100V$<br>$V_{CB} = -100V, T_{amb} = 100^{\circ}C$                                                                  |
| Emitter Cut-Off Current               | $I_{EBO}$             |                       |                         | -0.1         | $\mu A$ | $V_{EB} = -4V$                                                                                                                |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$         |                       | -0.17<br>-0.30          | -0.3<br>-0.5 | V       | $I_C = -1A, I_B = -100mA^*$<br>$I_C = -2A, I_B = -200mA^*$                                                                    |
| 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                    | -1.0         | V       | $I_C = -1A, V_{CE} = -2V^*$                                                                                                   |
| Static Forward Current Transfer Ratio | $h_{FE}$              | 70<br>100<br>55<br>25 | 200<br>200<br>170<br>55 | 300          |         | $I_C = -50mA, V_{CE} = -2V^*$<br>$I_C = -500mA, V_{CE} = -2V^*$<br>$I_C = -1A, V_{CE} = -2V^*$<br>$I_C = -2A, V_{CE} = -2V^*$ |
| Transition Frequency                  | $f_T$                 | 100                   | 140                     |              | MHz     | $I_C = -100mA, V_{CE} = -5V$<br>$f = 100MHz$                                                                                  |
| Output Capacitance                    | $C_{obo}$             |                       |                         | 30           | pF      | $V_{CB} = -10V, f = 1MHz$                                                                                                     |
| Switching Times                       | $t_{on}$<br>$t_{off}$ |                       | 40<br>600               |              | ns      | $I_C = -500mA, V_{CC} = -10V$<br>$I_{B1} = I_{B2} = -50mA$                                                                    |

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

**FZT753**

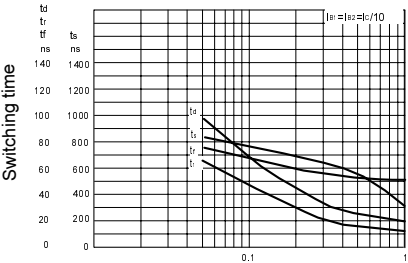


TYPICAL CHARACTERISTICS



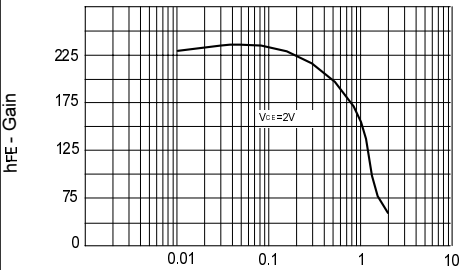
$I_C$  - Collector Current (Amps)

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



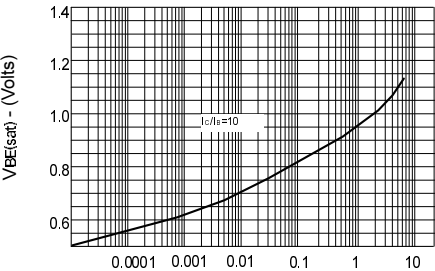
$I_C$  - Collector Current (Amps)

Switching Speeds



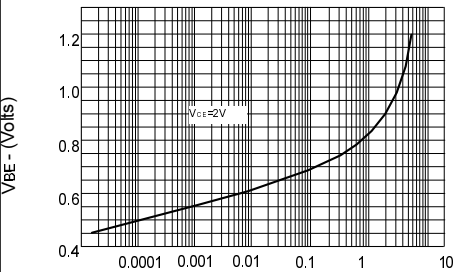
$I_C$  - Collector Current (Amps)

$h_{FE}$  v  $I_C$



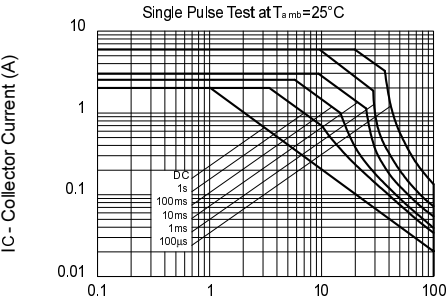
$I_C$  - Collector Current (Amps)

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



$I_C$  - Collector Current (Amps)

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



$V_{CE}$  - Collector Emitter Voltage (V)

Safe Operating Area