# SOT223 NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTOR

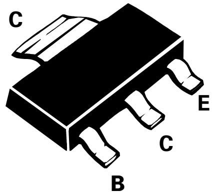
**FZT600**

**ISSUE 3 – FEBRUARY 1997**

FEATURES

- 2A continuous current
- 140 VOLT $V_{CEO}$
- Guaranteed $h_{FE}$ Specified up to 1A

PART MARKING DETAIL – FZT600



## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 160 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 140 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 10 | V |
| Peak Pulse Current | $I_{CM}$ | 4 | A |
| Continuous Collector Current | $I_C$ | 2 | A |
| Power Dissipation | $P_{tot}$ | 2 | W |
| Operating and Storage Temperature Range | $T_j$:$T_{stg}$ | -55 to +150 | °C |

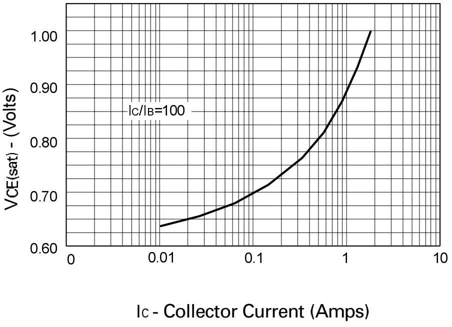
## ELECTRICAL CHARACTERISTICS (at $T_{amb}$ = 25°C unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 160 | | | V | $I_C$=100μA |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 140 | | | V | $I_C$=10mA* |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 10 | | | V | $I_E$=100μA |
| Collector Cut-Off Current | $I_{CBO}$ | | | 0.01<br>10 | μA<br>μA | $V_{CB}$=140V<br>$V_{CB}$=140V, $T_{amb}$=100°C |
| Collector Cut-Off Current | $I_{CES}$ | | | 10 | μA | $V_{CES}$=140V |
| Emitter Cut-Off Current | $I_{EBO}$ | | | 0.1 | μA | $V_{EB}$=8V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | 0.75<br>0.85 | 1.1<br>1.2 | V<br>V | $I_C$=0.5A, $I_B$=5mA*<br>$I_C$=1A, $I_B$=10mA* |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | 1.7 | 1.9 | V | $I_C$=1A, $I_B$=10mA* |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | 1.5 | 1.7 | V | $I_C$=1A, $V_{CE}$=5V* |
| Static Forward Current Transfer Ratio | $h_{FE}$ | 1k<br>2k<br>1k | | 100k | | $I_C$=50mA, $V_{CE}$=10V*<br>$I_C$=0.5A, $V_{CE}$=10V*<br>$I_C$=1A, $V_{CE}$=10V* |
| GROUP B | | 5k<br>10k<br>5k | 10k<br>20k<br>10k | 100k | | $I_C$=50mA, $V_{CE}$=10V*<br>$I_C$=0.5mA, $V_{CE}$=10V*<br>$I_C$=1A, $V_{CE}$=10V* |
| Transition Frequency | $f_T$ | 150 | 250 | | MHz | $I_C$=100mA, $V_{CE}$=10V<br>f=20MHz |
| Output Capacitance | $C_{obo}$ | | 10 | 15 | MHz | $V_{CB}$=10V, f=1MHz |
| Switching Times | $T_{on}$ | | 0.75 | | μs | $I_C$=0.5A, $V_{CE}$=10V<br>$I_{B1}$=$I_{B2}$=0.5mA |
| | $T_{off}$ | | 2.20 | | μs | |

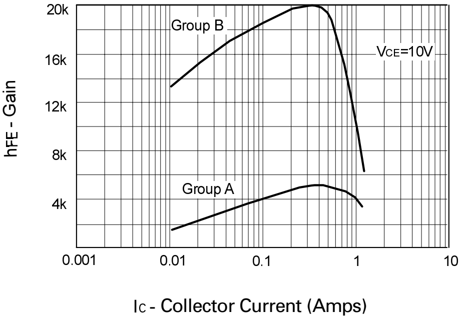
*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%
Spice parameter data is available upon request for this device

# FZT600

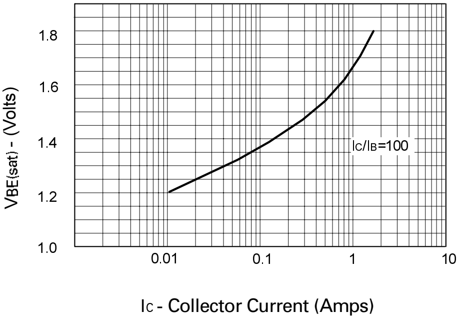
## TYPICAL CHARACTERISTICS



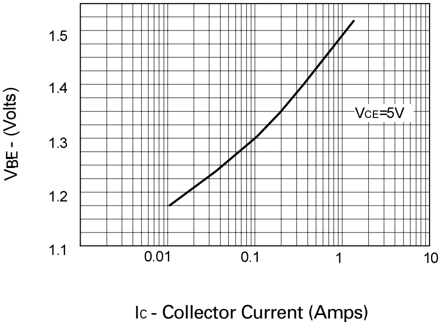
**$V_{CE(sat)}$ v $I_C$**



**$h_{FE}$ v $I_C$**



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



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