

SOT223 NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

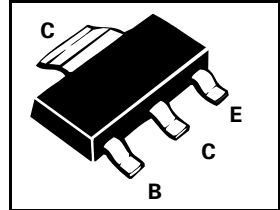
FZT604
FZT605

ISSUE 3 - OCTOBER 1995

FEATURES

- * Guaranteed h_{FE} Specified up to 2A
- * Fast Switching

PARTMARKING DETAIL - DEVICE TYPE IN FULL
 COMPLEMENTARY TYPES - FZT604 - FZT704
 FZT605 - FZT705



ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | FZT604 | FZT605 | UNIT |
|---|----------------|-------------|--------|------|
| Collector-Base Voltage | V_{CBO} | 120 | 140 | V |
| Collector-Emitter Voltage | V_{CEO} | 100 | 120 | V |
| Emitter-Base Voltage | V_{EBO} | 10 | | V |
| Peak Pulse Current | I_{CM} | 4 | | A |
| Continuous Collector Current | I_C | 1.5 | | A |
| Power Dissipation | P_{tot} | 2 | | W |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | | °C |

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

| PARAMETER | SYMBOL | MIN. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|---------------|------------------------|-------------|--------------------------------|---|
| Collector-Base Breakdown Voltage | FZT604 | 120 | | V | $I_C = 100\mu\text{A}$ $I_C = 100\mu\text{A}$ |
| | FZT605 | 140 | | V | |
| Collector-Emitter Breakdown Voltage | FZT604 | 100 | | V | $I_C = 10\text{mA}^*$ $I_C = 10\text{mA}^*$ |
| | FZT605 | 120 | | V | |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 10 | | V | $I_E = 100\mu\text{A}$ |
| Collector Cut-Off Current | FZT604 | | 0.01 10 | μA μA | $V_{CB} = 100\text{V}$ $V_{CB} = 100\text{V}, T_{amb} = 100^\circ\text{C}$ |
| | FZT605 | | 0.01 10 | μA μA | |
| Emitter Cut-Off Current | I_{EBO} | | 0.1 | μA | $V_{EB} = 8\text{V}$ |
| Collector-Emitter Cut-Off Current | FZT604 | | 10 | μA | $V_{CES} = 100\text{V}$ $V_{CES} = 120\text{V}$ |
| | FZT605 | | 10 | μA | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | 1.0, 1.5 | V V | $I_C = 250\text{mA}, I_B = 0.25\text{mA}^*$ $I_C = 1\text{A}, I_B = 1\text{mA}^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | 1.8 | V | $I_C = 1\text{A}, I_B = 1\text{mA}^*$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | 1.7 | V | $I_C = 1\text{A}, V_{CE} = 5\text{V}^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 2K 5K 2K 0.5K | 100K | | $I_C = 50\text{mA}, V_{CE} = 5\text{V}$ $I_C = 500\text{mA}, V_{CE} = 5\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 5\text{V}^*$ $I_C = 2\text{A}, V_{CE} = 5\text{V}^*$ |

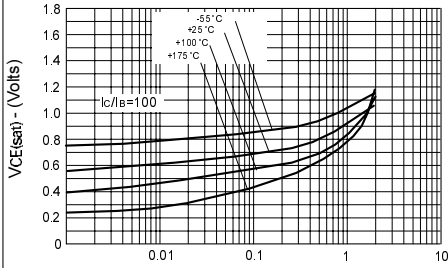
FZT604 FZT605

| PARAMETER | SYMBOL | MIN. | MAX. | UNIT | CONDITIONS |
|----------------------|-----------|-------------|------|------|---|
| Transition Frequency | f_T | 150 | | MHz | $I_C=100\text{mA}, V_{CE}=10\text{V}$ $f=20\text{MHz}$ |
| Input capacitance | C_{ibo} | 90 Typical | | pF | $V_{EB}=500\text{mV}, f=1\text{MHz}$ |
| Output Capacitance | C_{obo} | 15 Typical | | pF | $V_{CB}=10\text{V}, f=1\text{MHz}$ |
| Switching Times | t_{on} | 0.5 Typical | | pF | $I_C=500\text{mA}, V_{CE}=10\text{V}$ $I_{B1} = I_{B2} = 0.5\text{mA}$ |
| | t_{off} | 1.6 Typical | | pF | |

* Measured under pulsed conditions. Pulse width = 300 μ s. Duty cycle 2%
Spice parameter data is available upon request for these devices.

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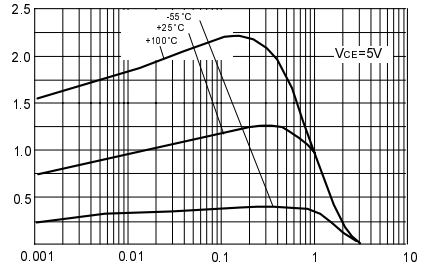
TYPICAL CHARACTERISTICS



I_C - Collector Current (Amps)

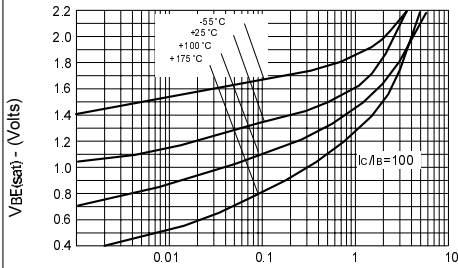
$V_{CE(sat)}$ v I_C

h_{FE} - Gain normalised to 1 Amp



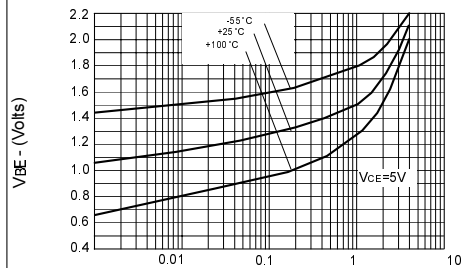
I_C - Collector Current (Amps)

h_{FE} v I_C



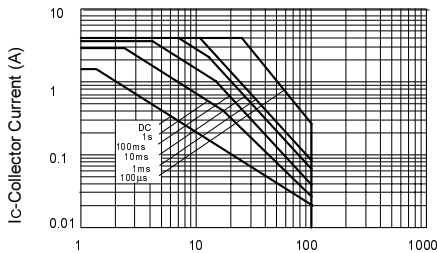
I_C - Collector Current (Amps)

$V_{BE(sat)}$ v I_C



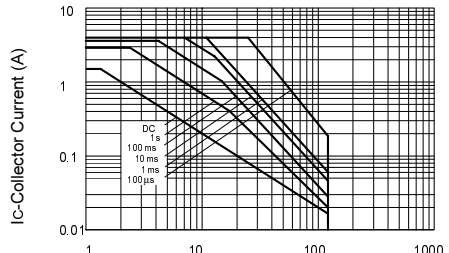
I_C - Collector Current (Amps)

$V_{BE(on)}$ v I_C



V_{CE} - Collector Emitter Voltage (V)

FZT604 Safe Operating Area



V_{CE} - Collector Emitter Voltage (V)

FZT605 Safe Operating Area