

# SOT223 NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

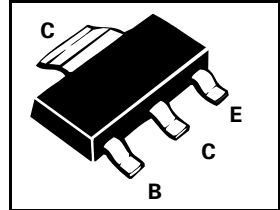
**FZT604**  
**FZT605**

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	$\mu\text{A}$ $\mu\text{A}$	$V_{CB} = 100\text{V}$ $V_{CB} = 100\text{V}, T_{amb} = 100^\circ\text{C}$
	FZT605		0.01 10	$\mu\text{A}$ $\mu\text{A}$	
Emitter Cut-Off Current	$I_{EBO}$		0.1	$\mu\text{A}$	$V_{EB} = 8\text{V}$
Collector-Emitter Cut-Off Current	FZT604		10	$\mu\text{A}$	$V_{CES} = 100\text{V}$ $V_{CES} = 120\text{V}$
	FZT605		10	$\mu\text{A}$	
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		$I_C = 50\text{mA}, V_{CE} = 5\text{V}$ $I_C = 500\text{mA}, V_{CE} = 5\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 5\text{V}^*$ $I_C = 2\text{A}, V_{CE} = 5\text{V}^*$

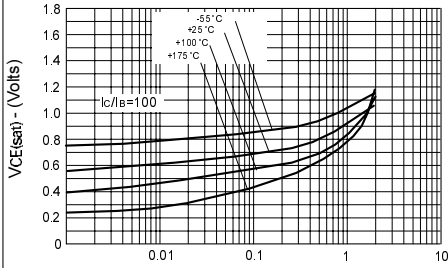
# FZT604 FZT605

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 $\mu$ s. Duty cycle 2%  
Spice parameter data is available upon request for these devices.

# FZT604 FZT605

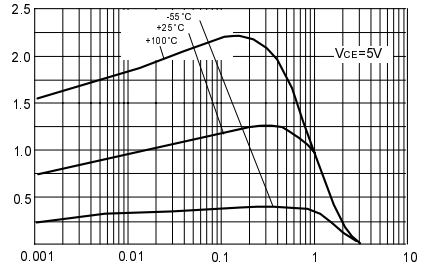
## TYPICAL CHARACTERISTICS



$I_C$  - Collector Current (Amps)

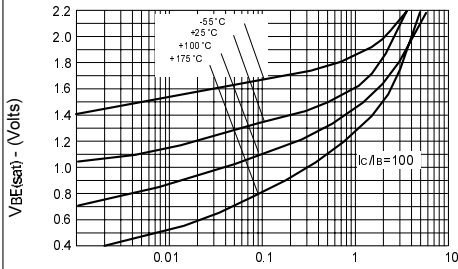
**VCE(sat) v  $I_C$**

hFE - Gain normalised to 1 Amp



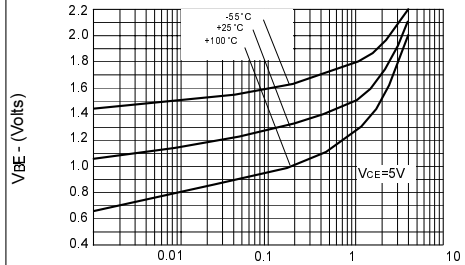
$I_C$  - Collector Current (Amps)

**hFE v  $I_C$**



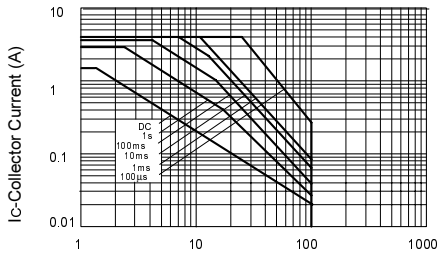
$I_C$  - Collector Current (Amps)

**VBE(sat) v  $I_C$**



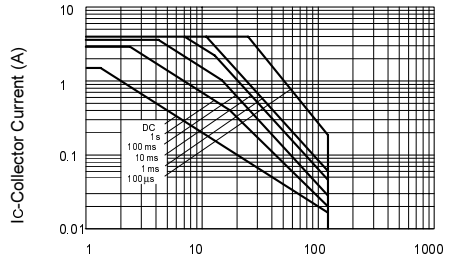
$I_C$  - Collector Current (Amps)

**VBE(on) v  $I_C$**



VCE - Collector Emitter Voltage (V)

**FZT604 Safe Operating Area**



VCE - Collector Emitter Voltage (V)

**FZT605 Safe Operating Area**