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Fairchild Semiconductor
NZT605

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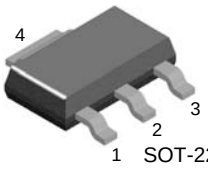
FAIRCHILD SEMICONDUCTOR®

January 2007

NZT605
NPN Darlington Transistor

- This device designed for applications requiring extremely high gain at collector currents to 1.0A and high breakdown voltage.
- Sourced from process 06.



SOT-223

1. Base 2.4. Collector 3. Emitter

Absolute Maximum Ratings * T_C = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	110	V
V_{CBO}	Collector-Base Voltage	140	V
V_{EBO}	Emitter-Base Voltage	10	V
I_C	Collector Current - Continuous	1.5	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:
1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady limits. The factory should be consulted on application involving pulsed or low duty cycle operations

Electrical Characteristics * T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Max	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	I_C = 10mA, I_B = 0	110		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100μA, I_E = 0	140		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100μA, I_C = 0	10		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 120V, I_E = 0		10	nA
I_{CES}	Collector Cutoff Current	V_{CE} = 120V, I_E = 0		10	nA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 8.0V, I_C = 0		100	nA
On Characteristics *					
h_{FE}	DC Current Gain	V_{CE} = 5.0V, I_C = 50mA V_{CE} = 5.0V, I_C = 500mA V_{CE} = 5.0V, I_C = 1.0A V_{CE} = 5.0V, I_C = 1.5A V_{CE} = 5.0V, I_C = 2.0A	2000 5000 2000 300 200	100K	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 250mA, I_B = 0.25mA I_C = 1.0A, I_B = 1.0mA		1 1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 1.0A, I_B = 1.0mA		1.8	V
$V_{BE(on)}$	Base-Emitter On Voltage	I_C = 1.0A, V_{CE} = 5.0V		1.7	V
Small Signal characteristics					
f_T	Transition Frequency	I_C = 100mA, V_{CE} = 10V, f = 20MHz	150		MHz

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

Thermal Characteristics

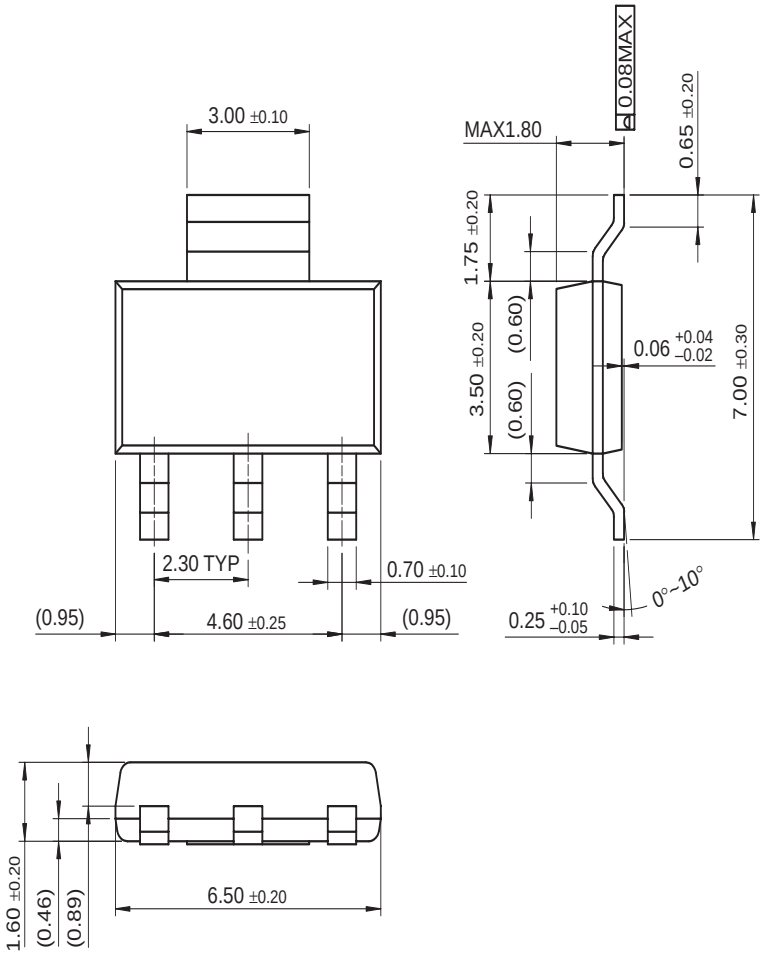
T_a = 25°C unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	1,000 8.0	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	125	°C/W

* Device mounted on FR-4PCB 36mm × 18mm × 1.5mm; mounting pad for the collector lead min. $6cm^2$

Mechanical Dimensions

SOT-223



Dimensions in Millimeters

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