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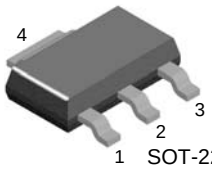
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

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%

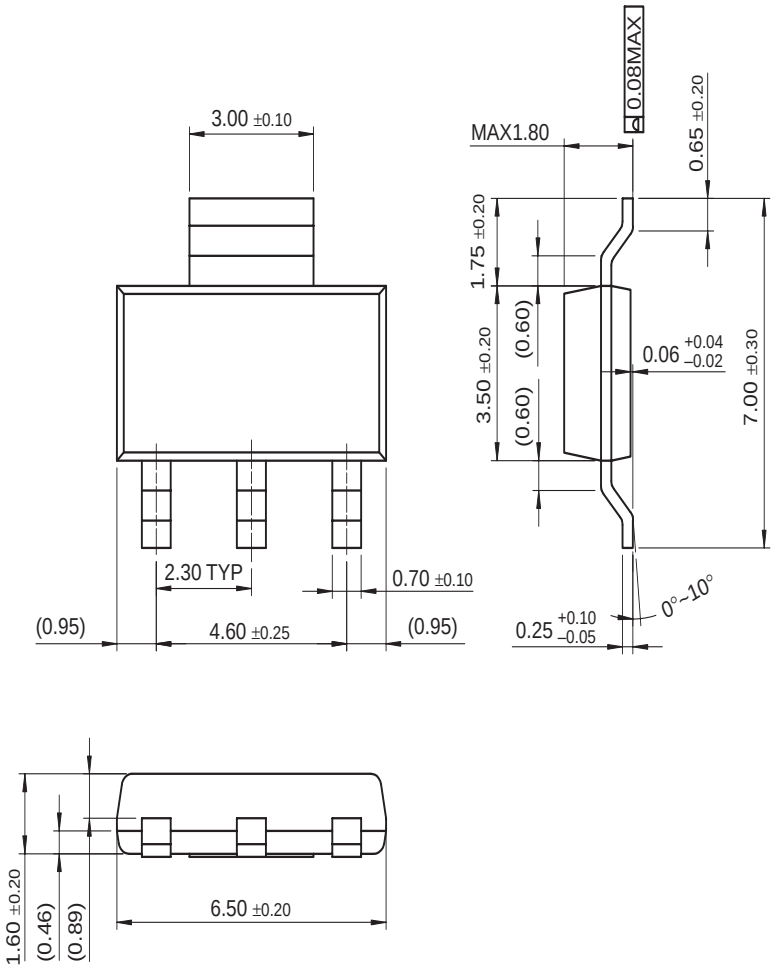
Thermal Characteristics T_a = 25°C unless otherwise noted

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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Datasheet Identification	Product Status	Definition
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

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NZT605

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Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9