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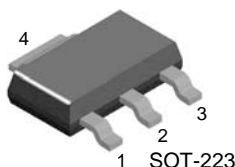
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# NZT605

## 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.



1. Base 2.4. Collector 3. Emitter

### Absolute Maximum Ratings \* $T_C = 25^\circ\text{C}$ 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	$^\circ\text{C}$

\* 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 \* $T_C = 25^\circ\text{C}$ unless otherwise noted

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

\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

# Thermal Characteristics

$T_a = 25^{\circ}\text{C}$  unless otherwise noted

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

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



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