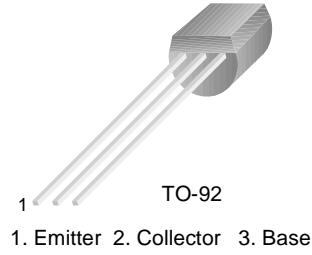


# 2N5308

## NPN Darlington Transistor

- This device is designed for applications requiring extremely high current gain at currents to 1.0A.
- Sourced from process 05.
- See MPSA14 for characteristics.



## Absolute Maximum Ratings \* $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CEO}$	Collector-Emitter Voltage	40	V
$V_{CBO}$	Collector-Base Voltage	40	V
$V_{EBO}$	Emitter-Base Voltage	12	V
$I_C$	Collector Current - Continuous	1.2	A
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 ~ +150	°C

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

### NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	40			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 0.1\mu\text{A}, I_E = 0$	40			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 0.1\mu\text{A}, I_C = 0$	12			V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 40\text{V}, I_E = 0$ $V_{CB} = 40\text{V}, I_E = 0, T_a = 100^\circ\text{C}$			0.1 20	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 12\text{V}, I_C = 0$			0.1	$\mu\text{A}$
<b>On Characteristics *</b>						
$h_{FE}$	DC Current Gain	$V_{CE} = 5.0\text{V}, I_C = 2.0\text{mA}$ $V_{CE} = 5.0\text{V}, I_C = 100\text{mA}$	7,000 20,000		70,000	
$V_{CE(\text{sat})}$	Collector-Emitter Saturation Voltage	$I_C = 200\text{mA}, I_B = 0.2\text{mA}$			1.4	V
$V_{BE(\text{sat})}$	Base-Emitter Saturation Voltage	$I_C = 200\text{mA}, I_B = 0.2\text{mA}$			1.6	V
$V_{BE(\text{on})}$	Base-Emitter On Voltage	$I_C = 200\text{mA}, V_{CE} = 5.0\text{V}$			1.5	V
<b>Small Signal Characteristics</b>						
$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$			10	pF
$h_{fe}$	Small-Signal Current Gain	$I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V}, f = 1.0\text{KHz}$ $I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V}, f = 10\text{MHz}$	7,000 6.0			

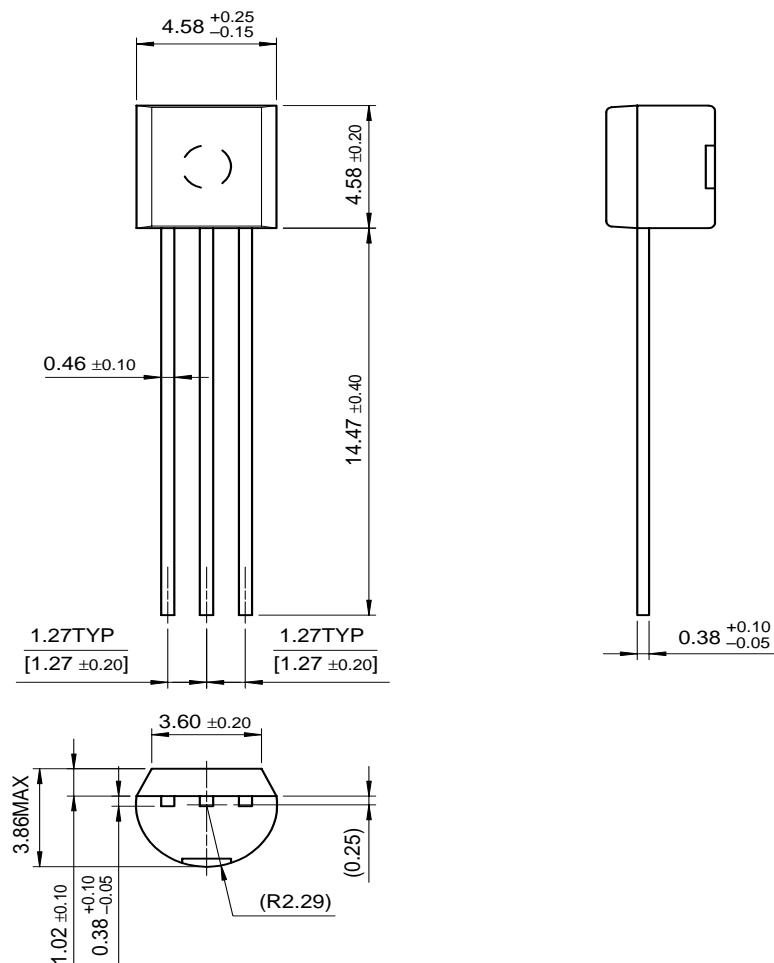
\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

**Thermal Characteristics**  $T_A=25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	625 5.0	mW mW/ $^\circ\text{C}$
$R_{\theta\text{JC}}$	Thermal Resistance, Junction to Case	83.3	$^\circ\text{C}/\text{W}$
$R_{\theta\text{JA}}$	Thermal Resistance, Junction to Ambient	200	$^\circ\text{C}/\text{W}$

## Package Dimensions

TO-92



Dimensions in Millimeters

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## PRODUCT STATUS DEFINITIONS

### Definition of Terms

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Rev. I