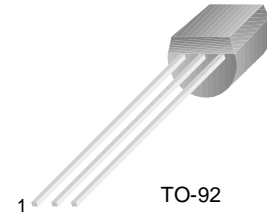


2N5306

2N5306

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.



1. Emitter 2. Collector 3. Base

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

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	25	V
V_{CBO}	Collector-Base Voltage	25	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	$^\circ\text{C}$

* 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 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
Off Characteristics						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	25			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 0.1\mu\text{A}, I_E = 0$	25			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	$V_{CB} = 25\text{V}, I_E = 0$ $V_{CB} = 25\text{V}, I_E = 0, T_a = 100^\circ\text{C}$			0.1 20	μA μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 12\text{V}, I_C = 0$			0.1	μA
On Characteristics *						
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	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 200\text{mA}, I_B = 0.2\text{mA}$			1.4	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 200\text{mA}, I_B = 0.2\text{mA}$			1.6	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 200\text{mA}, V_{CE} = 5.0\text{V}$			1.5	V
Small Signal Characteristics						
C_{cb}	Collector-Base Capacitance	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$			10	pF
h_{fe}	Small-Signal Current Gain	$I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V},$ $f = 1.0\text{KHz}$ $I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V},$ $f = 10\text{MHz}$	7000 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	625	mW
	Derate above 25°C	5.0	mW/ $^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	$^{\circ}\text{C}/\text{W}$

Package Dimensions

2N5306

TO-92



Dimensions in Millimeters

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CoolFET™	FASTr™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
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