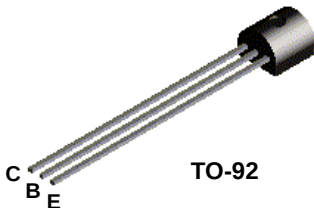




Discrete POWER & Signal
Technologies

2N5307



NPN Darlington Transistor

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

Absolute Maximum Ratings* TA = 25°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 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 state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		2N5307	
P _D	Total Device Dissipation Derate above 25°C	625 5.0	mW mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	83.3	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	200	°C/W

NPN Darlington Transistor
(continued)

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage*	I _C = 10 mA, I _B = 0	40		V
V _{(BR)CBO}	Collector-Base Breakdown Voltage	I _C = 0.1 μA, I _E = 0	40		V
V _{(BR)EBO}	Emitter-Base Breakdown Voltage	I _E = 0.1 μA, I _C = 0	12		V
I _{CBO}	Collector Cutoff Current	V _{CB} = 40 V, I _E = 0 V _{CB} = 40 V, I _E = 0, T _A = 100 °C		0.1 20	μA μA
I _{EBO}	Emitter Cutoff Current	V _{EB} = 12 V, I _C = 0		0.1	μA
ON CHARACTERISTICS*					
h _{FE}	DC Current Gain	V _{CE} = 5.0 V, I _C = 2.0 mA V _{CE} = 5.0 V, I _C = 100 mA	2,000 6,000	20,000	
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C = 200 mA, I _B = 0.2 mA		1.4	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 200 mA, I _B = 0.2 mA		1.6	V
V _{BE(on)}	Base-Emitter On Voltage	I _C = 200 mA, V _{CE} = 5.0 V		1.5	V
SMALL SIGNAL CHARACTERISTICS					
C _{cb}	Collector-Base Capacitance	V _{CB} = 10 V, f = 1.0 MHz		10	pF
h _{fe}	Small-Signal Current Gain	I _C = 2.0 mA, V _{CE} = 5.0 V, f = 1.0 kHz I _C = 2.0 mA, V _{CE} = 5.0 V, f = 10 MHz	2,000 6.0		

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

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