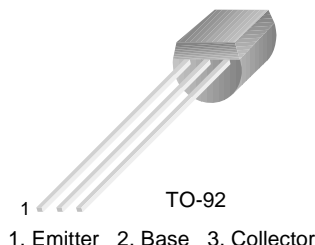


PN930

NPN General Purpose Amplifier

- This device is designed for low noise, high gain, general purpose applications at collector currents from 1μA to 50mA.



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

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	45	V
V_{CBO}	Collector-Base Voltage	45	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	100	mA
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:

- 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.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	45		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{nA}, I_C = 0$	5.0		V
I_{CEO}	Collector Cutoff Current	$V_{CE} = 5.0\text{V}$		2.0	nA
I_{CBO}	Collector Cutoff Current	$V_{CB} = 45\text{V}, I_E = 0$		10	nA
I_{CES}	Collector Cutoff Current	$V_{CB} = 45\text{V}, I_E = 0$ $V_{CB} = 45\text{V}, I_E = 0, T_A = 170^\circ\text{C}$		10	nA μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 5.0\text{V}, I_C = 0$		10	nA
On Characteristics					
h_{FE}	DC Current Gain	$V_{CE} = 5.0\text{V}, I_C = 10\mu\text{A}$ $V_{CE} = 5.0\text{V}, I_C = 10\mu\text{A}, T_A = -55^\circ\text{C}$ $V_{CE} = 5.0\text{V}, I_C = 500\mu\text{A}$ $V_{CE} = 5.0\text{V}, I_C = 10\text{mA}$	10 20 150	300 600	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$		1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	0.6	1.0	V
Small Signal Characteristics					
C_{ob}	Output Capacitance	$V_{CB} = 5.0\text{V}, f = 1.0\text{MHz}$		8.0	pF
h_{fe}	Small Signal Current Gain	$I_C = 500\mu\text{A}, V_{CE} = 5.0\text{V}, f = 20\text{MHz}$ $I_C = 1.0\text{mA}, V_{CE} = 5.0\text{V}, f = 1.0\text{KHz}$	1.5 150	600	
h_{ib}	Input Impedance	$I_C = 1.0\text{mA}, V_{CE} = 5.0\text{V}, f = 1.0\text{KHz}$	25	32	Ω
h_{rb}	Voltage Feedback Ratio			600	$\times 10^{-6}$
h_{ob}	Output Admittance			1.0	μmho
NF	Noise Figure	$V_{CE} = 5.0\text{V}, I_C = 10\mu\text{A}$ $R_G = 10\text{K}\Omega, B_W = 15.7\text{KHz}$		3.0	dB

* Pulse Test: Pulse Width $\leq 300\text{ms}$, 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	$\text{mW}/^{\circ}\text{C}$
$R_{\theta\text{JC}}$	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

PN930

TO-92



Dimensions in Millimeters

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PRODUCT STATUS DEFINITIONS

Definition of Terms

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