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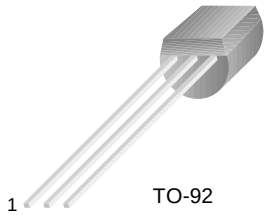
PN930

NPN General Purpose Amplifier

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



TO-92

1. Emitter 2. Base 3. Collector

Absolute Maximum Ratings* T_A=25°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	°C

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

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°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	I_C = 10mA, I_B = 0	45		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10µA, I_E = 0	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10nA, I_C = 0	5.0		V
I_{CEO}	Collector Cutoff Current	V_{CE} = 5.0V		2.0	nA
I_{CBO}	Collector Cutoff Current	V_{CB} = 45V, I_E = 0		10	nA
I_{CES}	Collector Cutoff Current	V_{CB} = 45V, I_E = 0 V_{CB} = 45V, I_E = 0, T_A = 170°C		10 10	nA µA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 5.0V, I_C = 0		10	nA
On Characteristics					
h_{FE}	DC Current Gain	V_{CE} = 5.0V, I_C = 10µA V_{CE} = 5.0V, I_C = 10µA, T_A = -55°C V_{CE} = 5.0V, I_C = 500µA V_{CE} = 5.0V, I_C = 10mA	10 20 150	300 600	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 10mA, I_B = 0.5mA		1.0	V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = 10mA, I_B = 0.5mA	0.6	1.0	V
Small Signal Characteristics					
C_{ob}	Output Capacitance	V_{CB} = 5.0V, f = 1.0MHz		8.0	pF
h_{fe}	Small Signal Current Gain	I_C = 500µA, V_{CE} = 5.0V, f = 20MHz I_C = 1.0mA, V_{CE} = 5.0V, f = 1.0KHz	1.5 150	 600	
h_{ib}	Input Impedance	I_C = 1.0mA, V_{CE} = 5.0V, f = 1.0KHz	25	32	Ω
h_{rb}	Voltage Feedback Ratio			600	x10^{-6}
h_{ob}	Output Admittance			1.0	µmho
NF	Noise Figure	V_{CE} = 5.0V, I_C = 10µA R_G = 10KΩ, B_W = 15.7KHz		3.0	dB

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

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Thermal Characteristics T_A=25°C unless otherwise noted

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

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Package Dimensions

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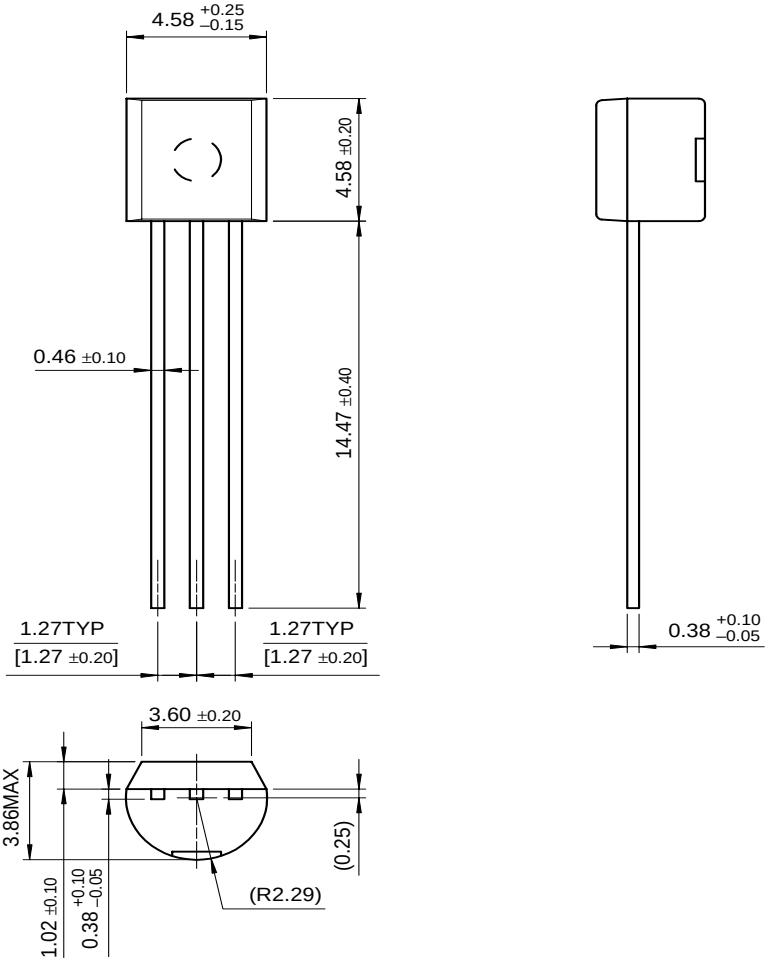

Dimensions in Millimeters

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The Power Franchise™		OPTOLOGIC®	SILENT SWITCHER®	VCX™
Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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