

# MAXIM

## Precision Low Voltage Micropower Operational Amplifier

OP90

### General Description

The OP90 is a precision bipolar micropower operational amplifier with flexible power supply capability. Both the input voltage range and output voltage swing of the OP90 include the negative rail, allowing "ground-sensing" operation when the part is driven from a single positive voltage supply. The OP90 will accept a single power supply voltage of any value in the range +1.6V to +36V. Alternatively, the amplifier can be operated from dual power supplies in the range of  $\pm 0.8V$  to  $\pm 18V$ .

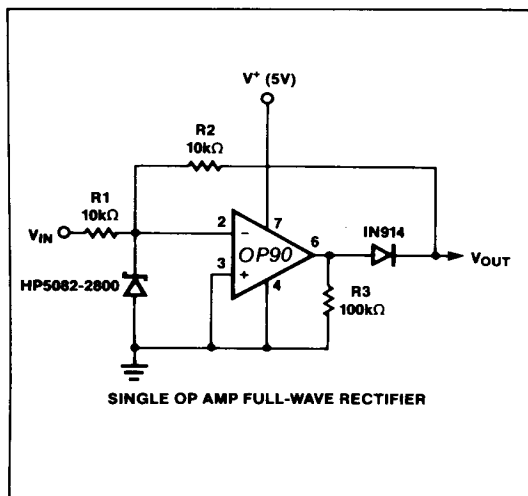
Unlike most other micropower operational amplifiers, the OP90 requires no external current setting resistor, and consumes less than 20 $\mu A$  of quiescent current, allowing operation from a lithium battery of greater than 10,000 hours. Even with this minimal current consumption, the amplifier can sink or source 5mA of current into the load.

Every OP90 (A/E grade) is internally trimmed to guarantee an input offset voltage of less than 150 $\mu V$ . This eliminates the need for external nulling in most applications, although null pins are provided if required. The guaranteed minimum open loop gain of 700,000 together with power supply rejection ratio of 5.6 $\mu V/V$  and common-mode rejection ratio of 100dB allow the OP90 to be used in applications requiring low power operation together with precision performance.

### Applications

Precision Micropower Amplifiers  
Micropower Signal Processing  
Battery Powered Analog Circuits

### Typical Operating Circuit



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### Features

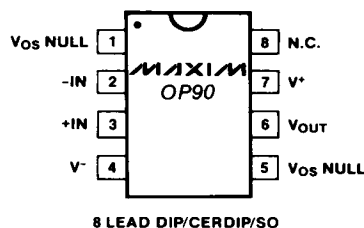
- ◆ Single/Dual Supply Operation: +1.6V to +36V,  $\pm 0.8V$  to  $\pm 18V$
- ◆ True Single-Supply Operation: Input and Output Voltage Ranges Include Ground
- ◆ Low Supply Current: 20 $\mu A$  Max
- ◆ High Output Drive: 5mA Min
- ◆ Low Input Offset Voltage: 150 $\mu V$  Max
- ◆ High Open Loop Gain: 700V/mV Min
- ◆ High PSRR: 5.6 $\mu V/V$  Max
- ◆ Standard 741 Pin Out With Nulling to V<sup>-</sup>

### Ordering Information

PART	TEMP. RANGE	PACKAGE
OP90AZ	-55°C to +125°C	8 Lead Cerdip
OP90EZ	-25°C to +85°C	8 Lead Cerdip
OP90FZ	-25°C to +85°C	8 Lead Cerdip
OP90GP	0°C to +70°C	8 Lead Plastic DIP
OP90GS	0°C to +70°C	8 Lead SO
OP90GC/D	0°C to +70°C	Dice

### Pin Configuration

TOP VIEW



3

Maxim Integrated Products 3-69