

Precision Zero-Drift 1.8V, Micropower CMOS Dual Operational Amplifier

The AS2333 is a dual channel operational amplifier using chopper stabilization to provide ultra-low input offset voltage ($8\mu\text{V}$) and near zero-drift over time and temperature.

It also provides reduced $1/f$ noise and input crossover-distortion – present in most rail-to-rail input op-amps.

This low quiescent current, high-precision amplifier offers low bias current inputs that have a common-mode range 100mV beyond the rails, and a rail-to-rail output that swings within 50mV of the rails.

Single or dual supplies as low as 1.8V ($\pm 0.9\text{V}$) and up to 5V ($\pm 2.5\text{V}$) can be used covering a wide number of battery topologies. These attributes of precision and micropower make the AS2333 suitable for the high amplification of very low-level signals from sensors in a wide variety of battery powered applications.

The AS2333 is available in SO-8 and MSOP-8 packages with operating temperature of -40°C to $+125^\circ\text{C}$.



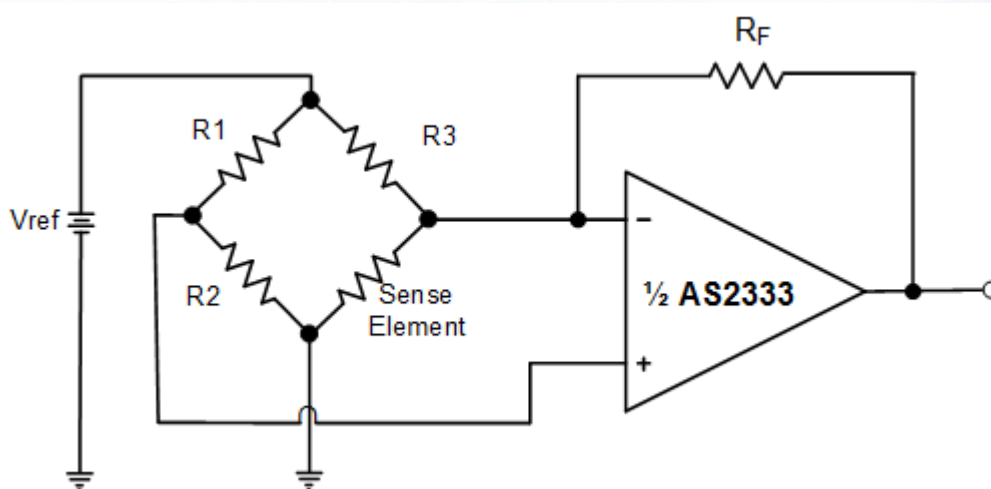
The Diodes Advantage

- Operating Voltage from 1.8V to 5.5V**
 Supports typical battery voltage ranges - 2 & 3 NiMH cells as well as Li-rechargeable cells
- High Precision Low $8\mu\text{V}$ Offset Voltage with Large 120dB Open-Loop Gain**
 Maintains accuracy supporting large amplification of small signals
- Near Zero-Offset Voltage Drift ($0.2\mu\text{V}/^\circ\text{C}$) Over Time and Temperature**
 Higher accuracy readings with improved repeatability
- Low Quiescent Current of $12\mu\text{A}$ Per Amplifier**
 Suited for use in battery / handheld applications
- Chopper Stabilized**
 Eliminates $1/f$ noise and V_{os} crossover distortion

Applications

- Battery-powered instruments
- Handheld test equipment
- Medical instrumentation
- Laboratory instrumentation
- Sensor signal conditioning
- Low voltage current sensing

Conceptual Application



The Wheatstone Bridge circuit, along with a precision amplifier, is used to exercise a sense element (such as a thermistor, strain gauge, or chemical sensor), to measure temperature, weight, force, pressure or chemical concentration.

Low Supply Voltage Operational Amplifier Portfolio Overview

| Part Number | Channels | Supply Voltage Range (V) | Supply Current @ 5V (/ch) (μ A) | Input Offset Voltage (μ V) | Input Bias Current (pA) | Max. Input Common-mode Voltage (V) | Rail-Rail | Ambient Temperature Range ($^{\circ}$ C) | Packages |
|---------------|----------|--------------------------|--------------------------------------|---------------------------------|-------------------------|------------------------------------|----------------------|---|---------------------|
| AZV831 | 1 | 1.6 to 5.5 | 900 | 500 | 1 | V+ +0.2 | Input/ Output | -40~85 | SOT25 |
| AZV832 | 2 | 1.6 to 5.5 | 900 | 500 | 1 | V+ +0.2 | Input/ Output | -40~85 | MSOP-8, SO-8 |
| AS2333 | 2 | 1.8 to 5.5 | 12 | 8 | 70 | V+ +0.1 | Input/ Output | -40~125 | MSOP-8, SO-8 |
| LMV321 | 1 | 2.5 to 5.5 | 110 | 1700 | 15 | V+ - 1 | Output | -40~125 | SOT25, SOT353 |
| LMV324 | 4 | 2.5 to 5.5 | 85 | 1700 | 15 | V+ - 1 | Output | -40~125 | SO-14, TSSOP-14 |
| LMV358 | 2 | 2.5 to 5.5 | 95 | 1700 | 15 | V+ - 1 | Output | -40~125 | MSOP-8, SO-8 |
| TLV271 | 1 | 2.7 to 16 | 550 | 500 | 1 | V+ -1.35 | Output | -40~125 | SO-8, SOT25 |
| TLV272 | 2 | 2.7 to 16 | 550 | 500 | 1 | V+ -1.35 | Output | -40~125 | MSOP-8, SO-8 |

To find out more information: <https://www.diodes.com/part/AS2333>

Ordering Information

| Part Number | Packaging | Marking Identification | Tape and Reel Quantity | Tape Width | Reel size |
|-------------|-----------|------------------------|------------------------|------------|-----------|
| AS2333S-13 | SO-8 | AS2333 | 2500 | 12mm | 13" |
| AS2333M8-13 | MSOP-8 | AS2333 | 2500 | 12mm | 13" |

All variants are in packages using "Green" Molding Compound. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant