



New Product Announcement

AS348/ AS2348

Low-Voltage, 1MHz, RRIO Operational Amplifiers for Portable Equipment and Photodiode Sensor Nodes

The AS348/AS2348 are single-/dual-channel rail-to-rail input and output (RRIO) amplifiers with a 1.6V to 5.5V operating supply voltage range. The rail-to-rail input/output, coupled with its wide supply range, make these products suitable for battery-powered applications in addition to standard 3.3V and 5V rails.

The devices feature a low supply current of 70 μ A per channel, making them suitable for low-voltage and/or portable systems.

The AS348/AS2348 feature a low 1pA bias current, which make them suitable for use in integrators, photodiode amplifiers, and piezoelectric sensors. They have 0.5mV (typical) input offset voltage and are unity-gain stable up to a 100pF capacitive load with 1.0MHz gain-bandwidth (GBW).

The AS348 is available in the industry-standard SOT25 package and the AS2348 is available in the industry-standard MSOP-8 and SO-8 packages. Both products have an ambient temperature range of -40°C to +125°C.



The DIODES Advantage

This wide-input range, low-power op amp is for battery-powered and portable equipment.

- **Wide 1.6V to 5.5V Supply Voltage Range**
Supports a wide range of supply rails (2-NiMH cells, 1-Li-Ion cell, 3.3V and 5V rails)
- **Rail-to-Rail Input and Output**
Supports analog front ends (AFE) that are ground and supply referenced, as well as providing maximum output swings
- **Low 1pA Input Bias Current**
Ensures minimal DC error when used in impedance signal conditioning circuits
- **Low 70 μ A Supply Current per Amplifier**
Provides good bandwidth over power ratio with 1MHz unity-gain stability for most analog sensors
- **Robust ESD Capability (HBM: 4kV)**
Improves system reliability

Applications

- Active filters
- Sensor interfaces
- Photodiode amplifiers
- Smoke alarms, CO detectors
- Battery-powered devices
- Portable equipment
- Medical instruments
- Pulse blood oximeters

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AS348/ AS2348

This is a typical application circuit for passive infrared (PIR) sensor with two-stage amplifiers. The circuit includes a low-pass and a high-pass filter to reduce noise at the output of the circuit to be able to detect motion at long distances and reduce false triggers. The output of this circuit can be followed by connecting to an analog-to-digital converter (ADC) to determine the wanted trigger level.

| Part Number | RRIO | Supply Voltage | Channels | Supply Current (Typ) | Input Offset Voltage (Typ) | Input Bias Current (Typ) | Gain-Bandwidth | Input Noise Density | Ambient Temperature Range | Package |
|------------------------|------|----------------|----------|----------------------|----------------------------|--------------------------|----------------|---------------------|---------------------------|--------------|
| | | V | | µA | mV | pA | MHz | nV/√Hz | °C | |
| AS348 | Yes | 1.6 to 5.5 | 1 | 70 | 0.5 | 1 | 1 | 27 | -40 to +125 | SOT25 |
| AS2348 | | | 2 | 140 | 0.5 | 1 | 1 | 27 | | SO-8, MSOP-8 |

| Orderable Part Number | Channels | Compliance (Only Automotive Supports PPAP) | Package | Moisture Sensitivity | Packing | |
|-----------------------------|----------|---|---------|----------------------|----------|-----------------|
| | | | | | Quantity | Carrier |
| AS348W5-7 | 1 | Standard | SOT25 | MSL-1 | 3,000 | 7" Tape & Reel |
| AS2348S-13 | 2 | Standard | SO-8 | MSL-1 | 4,000 | 13" Tape & Reel |
| AS2348M8-13 | 2 | Standard | MSOP-8 | MSL-1 | 3,000 | 13" Tape & Reel |