

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 70µA 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 unitygain stable up to a 100pF capacitive load with 1.0MHz gain-bandwidth (GBW).

The AS348 is available in the industrystandard 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.

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The DIODES Advantage

This wide-input range, low-power op amp is for batterypowered 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 70µA Supply Current per Amplifier Provides good bandwidth over power ratio with 1MHz unitygain stability for most analog sensors
- Robust ESD Capability (HBM: 4kV) Improves system reliability

Applications

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

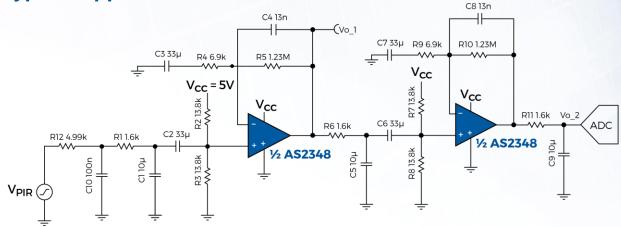
 Pulse blood oximeters

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Typical Application



Passive infrared (PIR) sensor

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.

Low-Power Rail-to-Rail Input/Output Op Amp Portfolio

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

Ordering Information

Orderable Part		Compliance		Moisture	Packing	
Number	Channels	(Only Automotive Supports PPAP)	Package	Sensitivity	Quantity	Carrier
<u>AS348W5-7</u>	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