## Description

The FS1012 MEMS mass flow sensor module measures the flow rate using the thermo-transfer (calorimetric) principle. The FS1012 is capable of measuring a gas or liquid medium.

The FS1012 offers key advantages over resistor-based flow solutions. The sensor utilizes thermopile sensing, which provides an excellent signal-to-noise ratio. The sensor comprises a “solid” thermal isolation technology and silicon-carbide coating to protect it from abrasive wear and provides robustness and long-term reliability. In comparison, other sensors typically contain a fragile membrane above an etched cavity for the thermal isolation base.

The FS1012 features the sensor fully assembled and wire-bonded out to a 6-pin header.

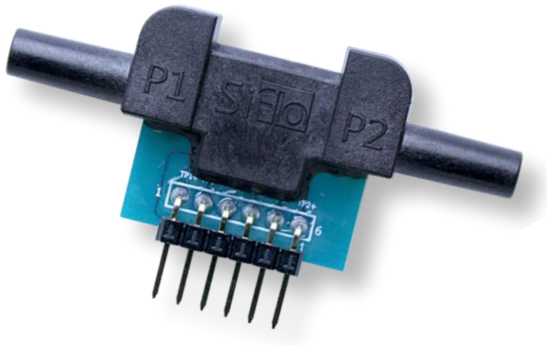
## Features

- Gas or liquid mediums
- Robust “solid” isolation technology
- Resistant to surface contamination
- No cavity to cause clogging
- Resistant to vibration and pressure shock
- Low power application
- Sensitive at low flow rates and differential pressure levels
- Fast response: 2ms
- Millivolt output
- Supply voltage: 3V to 5V
- Module operating temperature range: 0°C to +85°C

## Typical Applications

- Process controls and monitoring
- Oil and gas leak detection
- HVAC and air control systems
- CPAP and respiratory devices
- Automotive mas air flow meter
- Liquid dispensing system

## FS1012 Flow Sensor Module




## Basic Application Circuits

**Figure 1. Single-Ended Circuit Example**

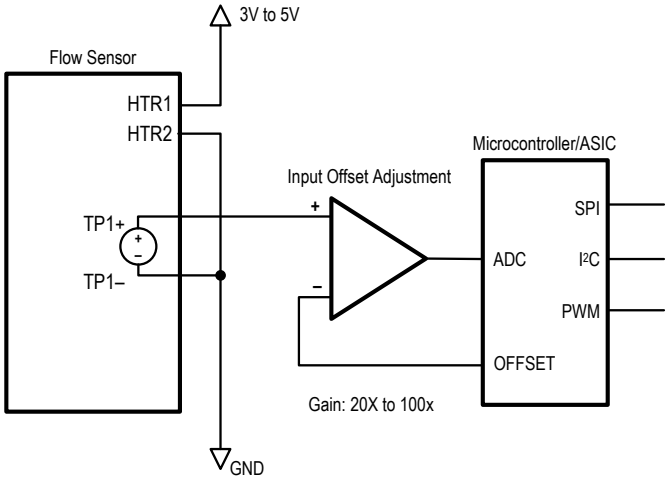
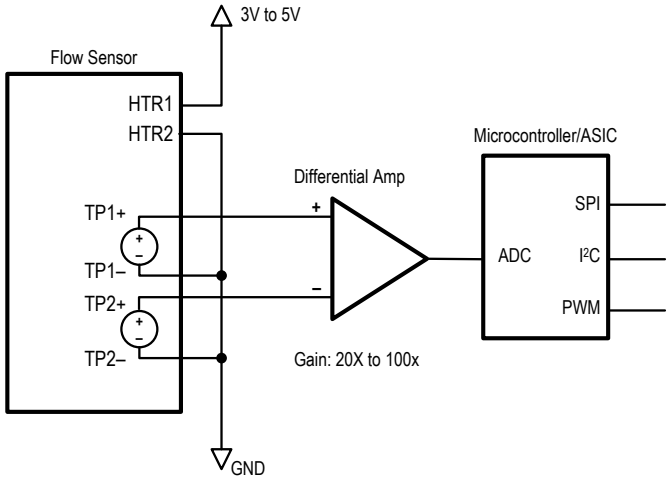
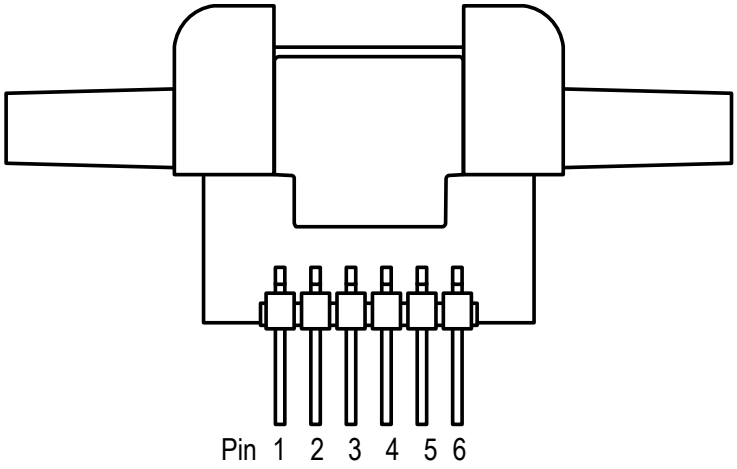



**Figure 2. Differential Circuit Example**



# Pin Assignments

**Figure 3. Pin Assignments for Module – Top View**




# Pin Descriptions

**Table 1. Pin Descriptions**

| Pin Number | Pad Name | Type | Description |
|---|---|---|---|
| 1 | TP1+ | Output | Thermopile 1 (+) |
| 2 | TP1– | Output | Thermopile 1 (–) |
| 3 | HTR1 | Input | Heater |
| 4 | HTR2 | Input | Heater |
| 5 | TP2– | Output | Thermopile 2 (–) |
| 6 | TP2+ | Output | Thermopile 2 (+) |

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