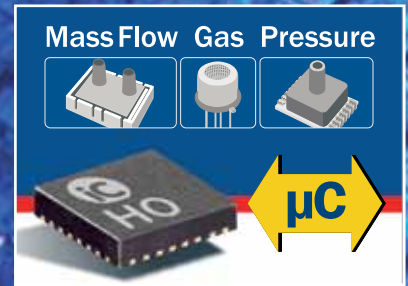


iC-HO

GENERAL PURPOSE SENSOR INTERFACE



iC-HO suits for various applications: mass flow metering, gas sensing and pressure sensing. Besides the IC only a few external components are required: a cost effective microcontroller and/or an EEPROM, and the sensor itself. iC-HO is completely controllable and monitorable by the microcontroller via SPI. Alternatively, stand-alone applications can boot from the CRC-secured external SPI EEPROM.

Instrumentation PGA inputs allow gain and offset calibration, and temperature stabilization. An integrated look-up table (LUT) featuring 10 breakpoints can be used to correct nonlinear sensor characteristics directly within the sensor interface IC.

A digital PI-controller is available to drive a wide range of MEMS heater resistors with up to 236 mW in an absolute or relative temperature range from +25 °C to +660 °C. A fixed set point or sequence controller mode can be selected.

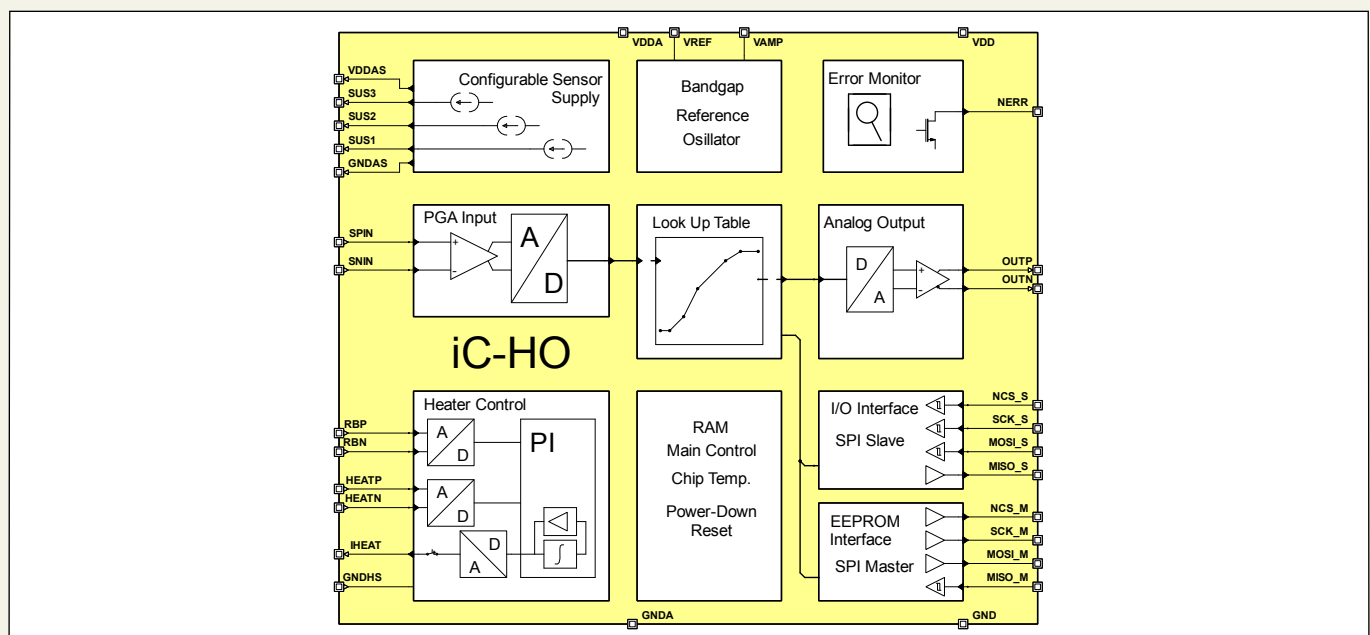
Matching constant current sources are available to bias up to three sensor resistors. The analog ratiometric differential output signal is implemented with a 10-bit D/A converter.

Applications

- Flow Sensors
- Pressure Sensors
- Gas Sensors

Features

- Ultra-low offset and low-noise PGA inputs
- 16-bit analog to digital conversion
- Signal offset correction
- Configurable temperature drift compensation
- Linearization of sensor characteristic by look-up table
- Measurement data output digital and analog
- Differential output of ratiometric voltage (10-bit D/A)
- Adjustable PI heater control
- Signal and system monitoring functions
- Fault indication at open-drain error output
- Sensor resistor bias by adjustable current sources
- Integrated 8-bit temperature sensing
- SPI master (for EEPROM) and SPI slave interfaces for device configuration and controller operation
- 5 V supply voltage
- Operating temperature range of -25 °C to +100 °C

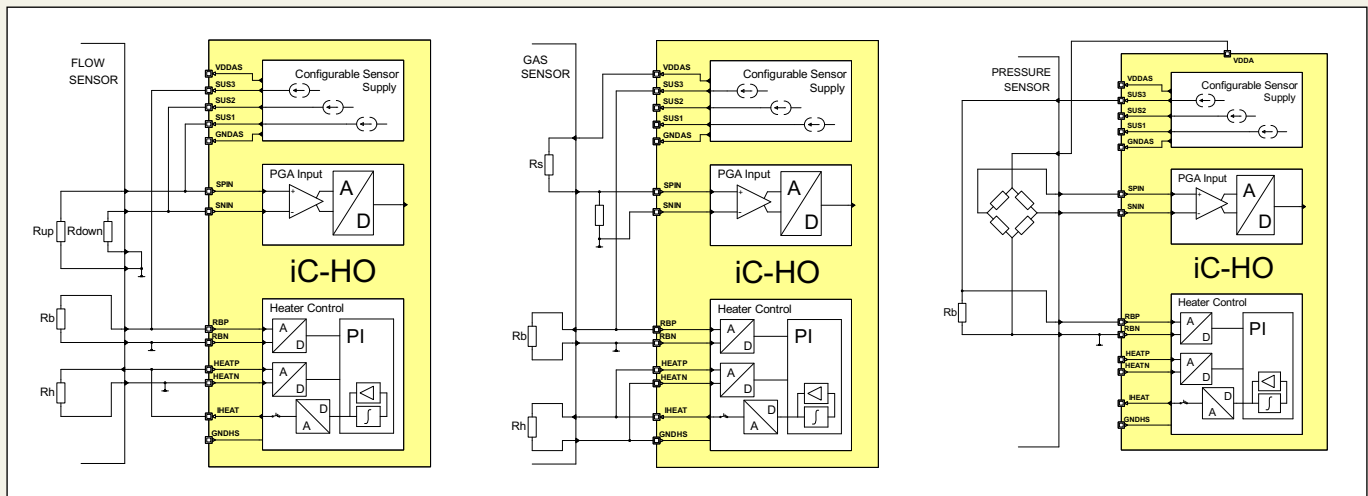




iC-HO

GENERAL PURPOSE SENSOR INTERFACE

Applications



Pin Functions

No.	Name	Function
1	VDDAS	Switched Sensor Supply Output
2	IHEAT	Heater DAC Output Current
3	SPIN	Positive Sensor Input
4	SNIN	Negative Sensor Input
5	GNDAS	Switched Sensor Ground
6	GNDHS	Switched Heater Ground
7	HEATN	Heater R ADC Negative Port
8	HEATP	Heater R ADC Positive Port
9	RBN	Bulk R ADC Negative Port
10	n.c.	not connected
11	RBP	Bulk R ADC Positive Port
12	n.c.	not connected
13	VDD	+5 V Digital Supply Voltage
14	GND	Digital Ground
15	NCS_M	SPI Master (EEPROM), chip select
16	SCK_M	SPI Master (EEPROM), clock line
17	MOSI_M	SPI Master (EEPROM), data output
18	MISO_M	SPI Master (EEPROM), data input
19	NCS_S	SPI Slave, chip select
20	SCK_S	SPI Slave, clock line
21	MOSI_S	SPI Slave, data input
22	MISO_S	SPI Slave, data output
23	NERR	Error Message Output (low active)
24	OUTP	Positive Analog Output
25	OUTN	Negative Analog Output
26	GNDA	Analog Ground
27	VDDA	+5 V Analog Supply Voltage
28	VAMP	ADC Voltage Range Reference I/O
29	VREF	ADC Center Voltage Reference I/O
30	SUS3	Sensor Bias Output 3
31	SUS2	Sensor Bias Output 2
32	SUS1	Sensor Bias Output 1
	TP	Thermal Pad

Key Specifications

General

Supply Voltage	+5 V +/- 10 %
Operating Temperature Range	-25 °C to +100 °C

Heater Driver

Heater Driver Current	up to 71.66 mA
Heater Voltage	up to 3300 mV max.
PI Control Sampling Frequency	10 kHz
Resistor Temp. Coefficient	1953 ... 3902 ppm/°K

Differential Analog Output

Differential Output Voltage	+/- 80 % of VDDA
DAC Resolution	10 bit

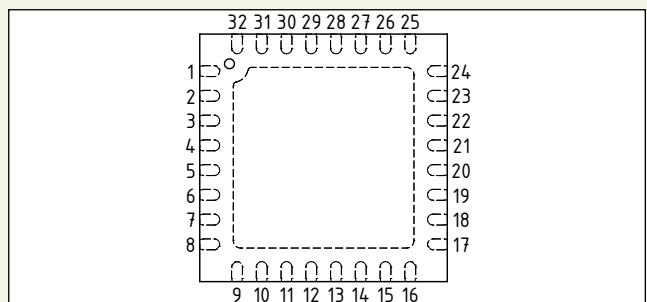
Linearization Look-Up Table

Number of Breakpoints	10
Breakpoint Resolution	8 bit (address)
Correction Value	16 bit

SPI Interfaces

SPI Slave	to master MCU (host)
SPI Master	to slave EEPROM

Pin Configuration QFN32 5x5 mm²



This preliminary information is not a guarantee of device characteristics or performance. All rights to technical changes reserved.