

DESCRIPTION

The PGS1000 series of hydrogen sensors detects hydrogen concentration in air by measuring the change in thermal conductivity of the gas mixture. Hydrogen and air have very different thermal conductivity. Variation in hydrogen concentration results in significant changes in the thermal conductivity of the gas mixture.

The PGS1000 series uses Posifa's second generation thermal conductivity die that is packaged in an SMD form factor. It uses two thermal conductivity dies in a differential configuration: one sealed in dry air and acting as a reference; the other exposed to the gas mixture. Such a design achieves an excellent signal-to-noise ratio due to common-mode noise rejection and maximization of signal amplification. In addition, the sensor is excited with a pulsed waveform (400 ms on and 1000 ms off), resulting in a heater temperature that is almost the same as the ambient. This feature lends the sensor to intrinsic safety.

Like any thermal-conductivity-based hydrogen sensors, Posifa sensors are subject to specific cross sensitivity with other gases whose thermal conductivity are also significantly different from that of air, such as humidity, and hydrocarbon gases (e.g. methane). Therefore Posifa's hydrogen sensors perform optimally in applications where interfering gases are absent, or their cross sensitivity is within acceptable margin of error required by the application.

When deployed in a suitable environment, Posifa's MEMS thermal conductivity hydrogen sensor is superior to competing technologies. It is fast responding, long-term stable, and low cost.



FEATURES

- Broadest available ranges, up to 100% vol
- Fast response time < 1.4 s
- Temperature compensation
- Pulsed excitation minimizes heater temperature for safe operation
- Long-term stable

APPLICATIONS

- Hydrogen leak detection
- Process monitoring

ABSOLUTE MAXIMUM RATINGS

- Operating Temperature: -25 to 85 °C
- Storage Temperature: -40 to 90 °C
- Shock: 100 g peak (5 drops, 3 axis)

ELECTRICAL CHARACTERISTICS

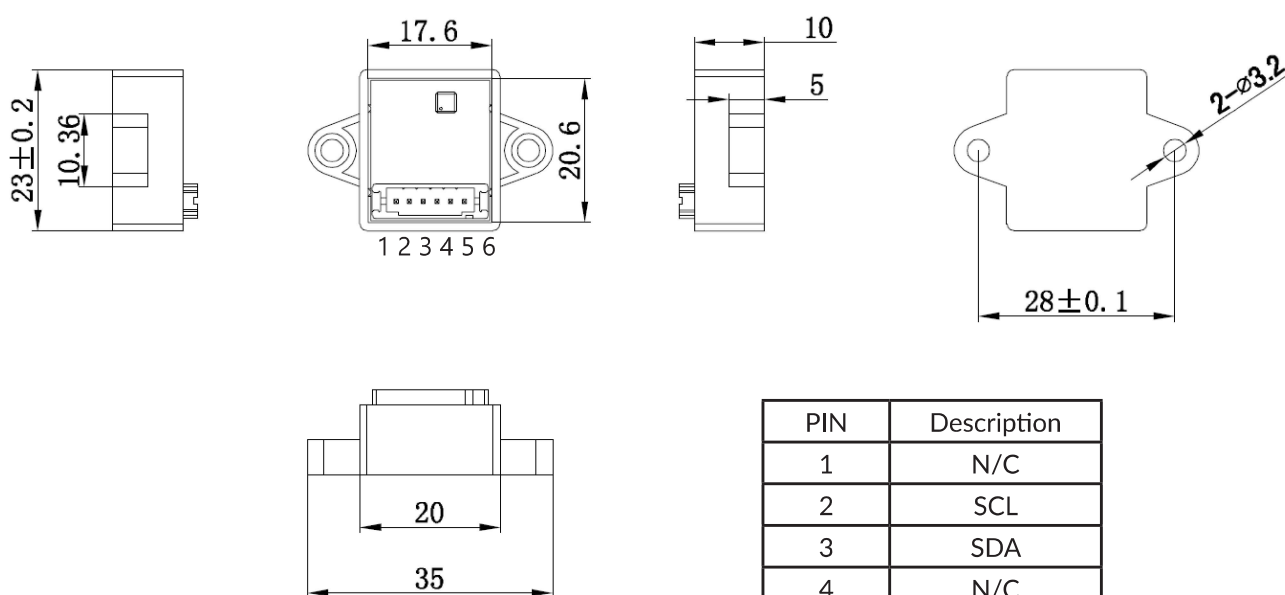
Test Conditions: Vdd = 3.3 Vdc, Ta=21°C					
SPECIFICATIONS	MIN	TYP	MAX	UNIT	CONDITIONS
Detection Gas	Hydrogen in Air				
Principle of Detection	Thermal Conductivity				
Range (PGS1004)	0 - 4			vol%	
Output	0		40000	count	I ² C communication
Resolution (PGS1004)		1		ppm	
Accuracy		6		% reading	
Repeatability		0.05		% F.S.	
Long-term Stability		0.1		% F.S./year	
Response Time			1.4	second	
Start-up Time		0.5		second	
Operating Temperature	-25		85	°C	
Storage Temperature	-40		90	°C	
Supply Voltage	4.75	5	5.25	V	
Current Consumption		8		mA	Average
Cross Sensitivity to Humidity		30		ppm / %RH	at 25 °C
Cross Sensitivity to CH ₄		13		%	
Weight		6		g	

OUTPUT DESCRIPTION

Hydrogen concentration in ppm = output count

For example when the output count = 15000, the hydrogen concentration is 15000 ppm (or 1.5% vol).

PACKAGE DIMENSIONS



Unit: mm

PIN	Description
1	N/C
2	SCL
3	SDA
4	N/C
5	GND
6	VDD

Note
Mating connector is JST S6B-PH-SM4-TB.

ORDERING INFORMATION

PART NUMBER	SPECIFICATIONS
PGS1004	0 to 4% vol, I2C output

EUROPEAN DISTRIBUTOR

BS-rep GmbH

Eichertstr. 68, D-56745 Weibern, Germany

Tel: +49 (0) 2655 / 96 26 476

Email: info@sensor-rep.de

www.sensor-rep.de