

TGS2615-E00 Gas Sensor for Detecting Hydrogen

characteristic :

- * Enhanced selective filter layer
- × low power consumption
- × Long service life and low cost
- × Simple application circuit

apply :

- * Household gas alarm ×
- portable gas detector × gas
- appliance leakage detection
- Hydrogen leak detection in × fuel cell systems

The sensor element consists of an integrated heater and a metal oxide semiconductor on an alumina substrate, housed in a standard TO-5 metal package. When the detected gas is present in the air, its concentration increases, causing the sensor's conductivity to rise. A simple circuitry converts these conductivity changes into corresponding signal outputs that directly reflect the gas concentration.

TGS2615-E00 A filter layer is provided to eliminate the influence of interfering gases such as alcohol, and shows a sensitive sensitivity characteristic with high selectivity for hydrogen.

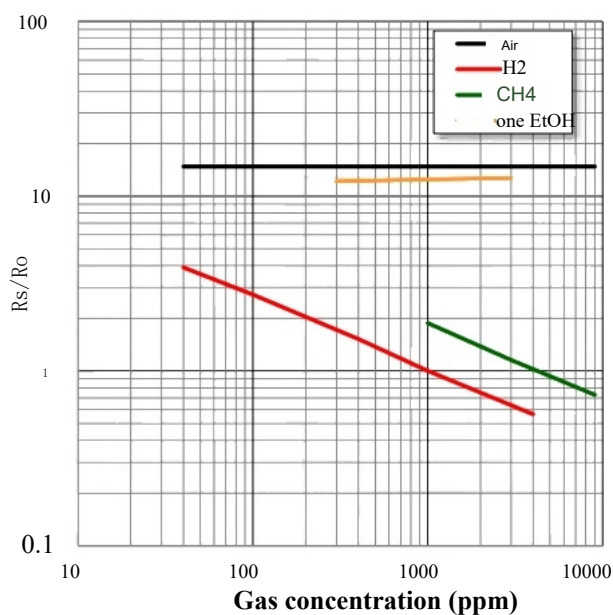


Sensitivity characteristics:

The figure below shows a representative sensitivity characteristic curve measured under standard test conditions (see back).

The vertical axis represents the sensor resistance ratio R_s/R_o , where R_s and R_o are defined as follows:

R_s = resistance of the sensor in various concentrations of gas
 R_o = resistance of the sensor in 1000 ppm hydrogen



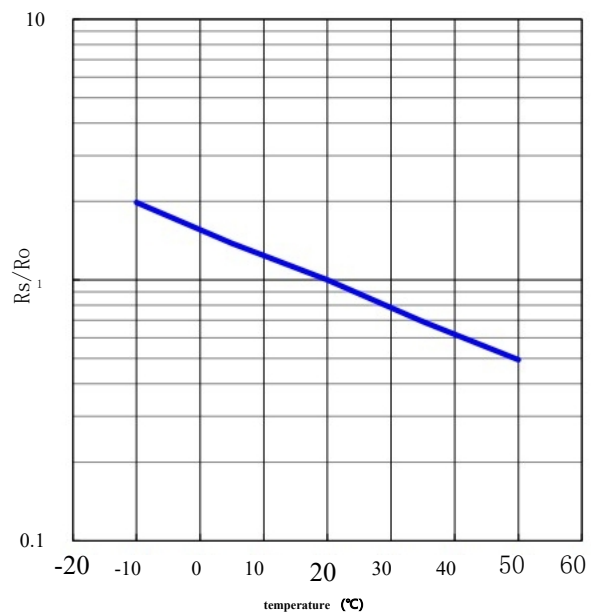
Temperature/humidity characteristics:

The following figure shows the representative characteristic curve affected by temperature and humidity.

The vertical axis represents the sensor resistance ratio R_s/R_o , where R_s and R_o are defined as follows:

R_s = resistance value of the sensor in air with 1000ppm hydrogen under various temperature and humidity conditions

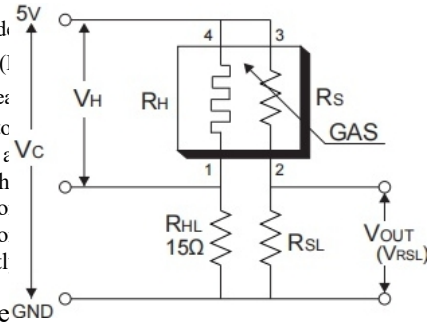
R_o = sensor resistance in 20°C, 65% RH air containing 1000 ppm hydrogen



Basic test circuit:

The sensor requires a 5.00V circuit voltage (V_c), and optimal driving conditions must be considered during design. To ensure the built-in heater achieves maximum voltage, the sensor's heater resistor (R_H) should be connected in series with the 150Ω heater load resistor (RHL). In this configuration, the heater voltage (V_H) is approximately 4.25V. To obtain the sensor output (V_{out}), a load resistor (R_{SL}) must be connected in series with the negative terminal of the sensor's resistance (R_S) at pin 2. As this sensor has polarity, the circuit requires a DC power supply. When selecting the load resistor (R_{SL}), choose a value that allows the target gas to reach its optimal detection concentration range. However, it should be noted that to keep the sensor's power consumption within the allowable tolerance range, all specifications in the following table must be strictly followed.

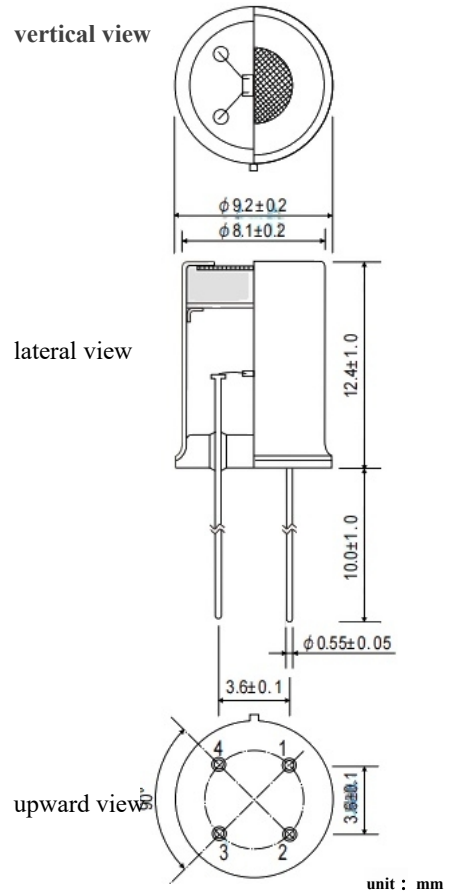
The port numbers of the sensor symbols in the circuit diagram correspond one-to-one with the pin numbers recorded in the size diagram.



specifications

model		TGS2615-E00	
Detection principle		Oxidized semiconductor type	
Standard encapsulation		metal	
Object gas		hydrogen	
Detection concentration range		40~4000ppm	
Standard circuit conditions	circuit voltage	V_c	5.0±0.1V
	Heater load resistance	RHL	15Ω ±1%, >100mW
	Sensor load resistance	R _{SL}	variable 460Ω min
Electrical characteristics under standard test conditions	heater voltage	V_H	4.25±0.05V
	Heater power consumption	PH	212±20mW
	Sensor resistor	R _S	1.0~10kΩ (1000ppm hydrogen)
	Sensitivity (R _S variation rate)		0.55~0.75
standard test conditions	Test gas conditions	Hydrogen atmosphere gas 20±2°C, 65±5%R.H.	
	Circuit conditions	$V_c=5.00±0.01V$ DC	
	Stable time before test	7 days	

Structure and size:



- Pin connection:**
- 1 Heater electrodes
 - 2 Sensor electrode (-)
 - 3 Sensor electrode (+)
 - 4 Heater electrodes

The sensor resistance (R_S) can be calculated according to the measured value of V_{out} (V_{RSL}) by the following formula:

$$R_S = \left(\frac{V_c}{V_{RSL}} - 1 \right) \times R_{SL}$$

Shenzhen Jiashengxing Electronics Co., LTD JM Components Limited

Address: Room 2007, South Block, Dingcheng International Building, No.7 Zhonghang Road, Futian District, Shenzhen Zip code: 518031

Mobile: 13662266995 Ma Shaoliang Tel: 0755-83951311

Fax: 0755-83952401

Official website: cn-sensor.com

Email: jackson@jmcomponents.com