TGS2600 Gas Sensor for Air Pollutant Detection

characteristic：

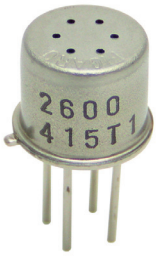
* low power consumption
* High sensitivity to polluted air
* Long service life and low cost
* Simple application circuit
* small volume

apply：

Control of air freshener
:: Ventilation control
* air quality monitoring

The sensor element consists of an integrated heater and a metal oxide semiconductor on an alumina substrate. When object detection gas is present in the air, its concentration increases, thereby raising the sensor's conductivity. A simple circuitry can convert these conductivity changes into corresponding signal outputs that directly reflect the gas concentration.

The TGS2600 demonstrates exceptional sensitivity to trace air pollutants. This sensor can detect hydrogen or carbon monoxide present in cigarette smoke at concentrations as low as a few ppm. Thanks to its compact design, it requires only 42mA of heating current while being housed in a standard TO-5 metal package.

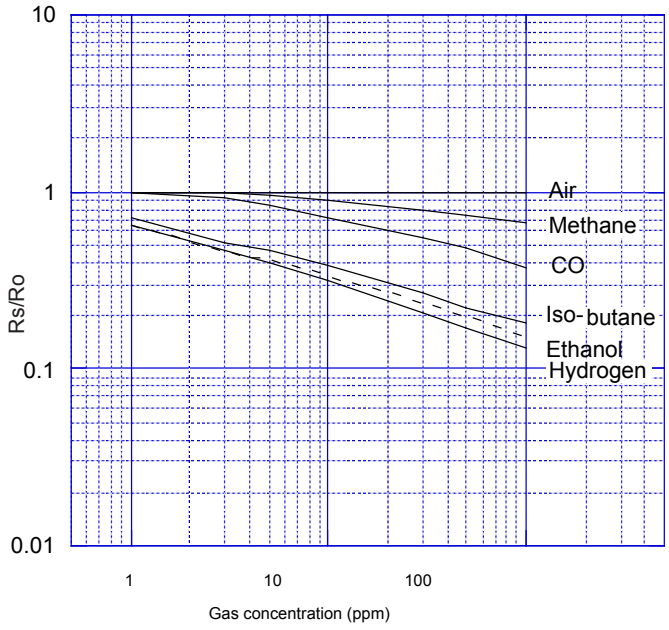


Sensitivity characteristics:

The following figure shows a typical sensitivity characteristic curve, which was measured under our company's standard test conditions (see back).

The vertical axis shows the sensor resistance ratio Rs / Ro, where Rs and Ro are defined as follows:

Rs = Sensor resistance in various gas concentrations
Ro = Sensor resistance in clean air

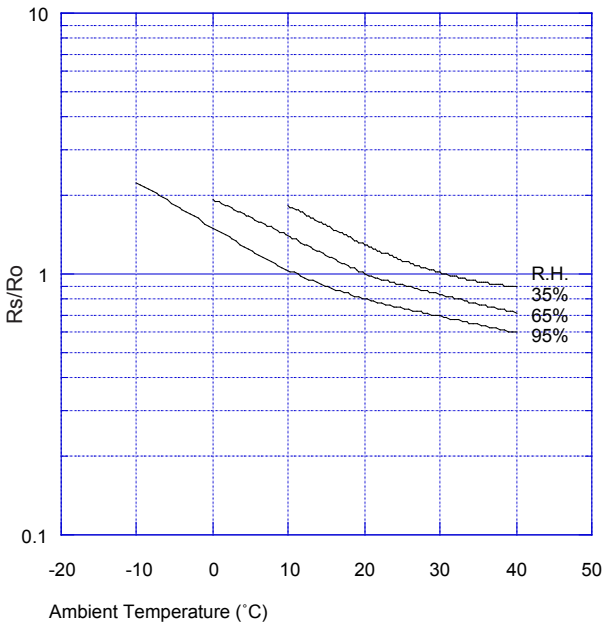


Temperature and humidity characteristics:

The figure below shows the typical characteristic curve affected by temperature and humidity.

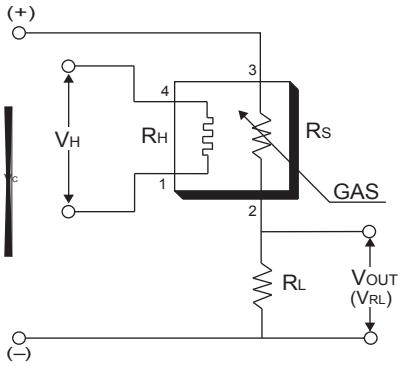
The vertical axis shows the sensor resistance ratio Rs / Ro, where Rs and Ro are defined as follows:

Rs = Resistance of the sensor at various temperatures/humidity in clean air
Ro = Sensor resistance in clean air, temperature/ humidity 20°C / 65% R.H.



Basic test circuit:

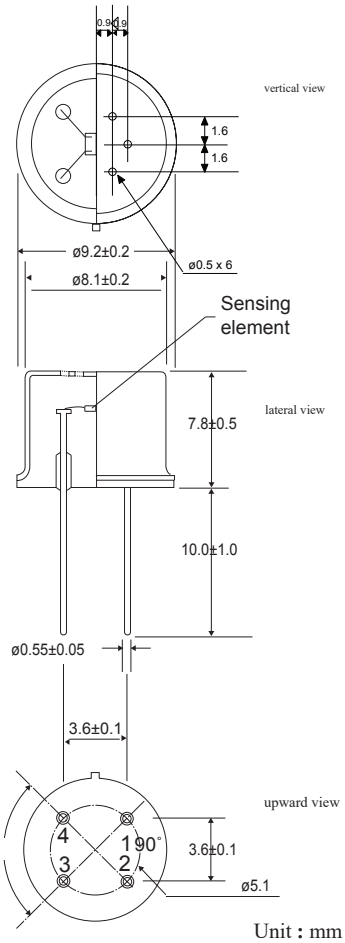
This sensor requires two applied voltages: the Heater Voltage (V_H) and Loop Voltage (V_C). When the built-in heater is energized, the sensing element reaches its optimal operating temperature required for detecting the target gas. The Loop Voltage is applied to measure the voltage across the load resistor(R_L) connected in series with the sensor. Due to the sensor's polarity requirement, the Loop Voltage must be supplied as direct current. Provided the electrical characteristics of the sensor are satisfied, the Loop Voltage (V_C) and Heater Voltage (V_H) may share a common power circuit. For the load resistor selection, the resistance value of R_L should be determined to optimize alarm threshold levels while keeping the sensing element's maximum power consumption (P_S) below the limit value of 15 mW. When the load resistor is exposed to the gas, the power consumption value P_S reaches its peak when its resistance equals that of the sensing element (R_S).



specifications：

model			TGS2600-B00	
Detection principles			Oxidized semiconductor type	
Standard encapsulation			TO-5 Metals	
Object gas			Air pollution (hydrogen, alcohol, etc.)	
Scope of detection			Hydrogen 1 ~ 30ppm	
Standard loop conditions	heater voltage	V_H	5.0±0.2V AC/DC	
	loop voltage	V_C	5.0±0.2V DC	P_S≤15mW
	load resistance	R_L	variable	0.45kΩ min.
Electrical characteristics under standard test conditions	Heating element resistance	R_H	Room temperature about 83Ω (typical state)	
	Heater current	I_H	42±4mA	
	Heater power consumption	P_H	210mW	V_H=5.0V DC
	Sensor resistor	R_S	10 ~ 90kΩ air	
	Sensitivity (rate of change of Rs)		0.3~0.6	Rs (hydrogen 10ppm) / Rs (air)
standard test conditions	Test gas conditions		Normal air 20±2. C,65 ±5%R.H.	
	Loop conditions		V_C = 5.0±0.01V DC V_H = 5.0±0.05V DC	
	preheating time		7 sky	

Structure and size:



pin connection：
1: Heater
2: Sensor electrode (-)
3: Sensor electrode (+)
4: Heater

The power consumption value (P_S) can be calculated by the following formula: The sensor resistor (R_S) depends on V_{OUT} (V_{RL})
The measured value is calculated by the following formula:

$$P_S = \frac{(V_C - V_{RL})^2}{R_S} \qquad R_S = \left(\frac{V_C}{V_{RL}} - 1\right) \times R_L$$

The typical characteristics of the sensor are shown in this product specification. The actual characteristics of the sensor vary from product to product. Please refer to the specifications for each sensor.

深圳市杰晟兴电子有限公司 JM Components Limited

地址：深圳市福田区中航路7号鼎诚国际大厦南座2007室 邮编：518031
手机：13662266995 马少良 电话：0755-83951311 传真：0755-83952401
官网：cn-sensor.com 电邮：jackson@jmcomponents.com