TGS2611 Gas Sensor for Methane Detection

characteristic：

* low power consumption
* High sensitivity to methane gas
* Long service life and low cost
* Simple application circuit

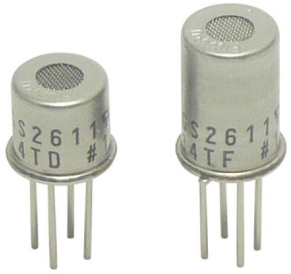
apply：

* Household gas leak alarm
Portable gas detector
* Leak detection of gas facilities

The TGS2611 sensor demonstrates exceptional methane detection sensitivity. Its low sensitivity to volatile alcohol (a common household interference gas) makes it an ideal choice for residential gas leak alarms. Featuring a compact sensor element, the device requires only 56mA heating current while housing its detection unit in a standard TO-5 metal package.

TGS2611-C00 is not only small in size, but also excellent in responsiveness. It is the best choice for gas leak detector.

The TGS2611-E00 is equipped with a filter that eliminates interference gases such as alcohol, featuring highly sensitive selectivity for methane gas. It is particularly suitable for detecting complex atmospheres and stringent household environments, making it the ideal sensor for home gas leak detectors.

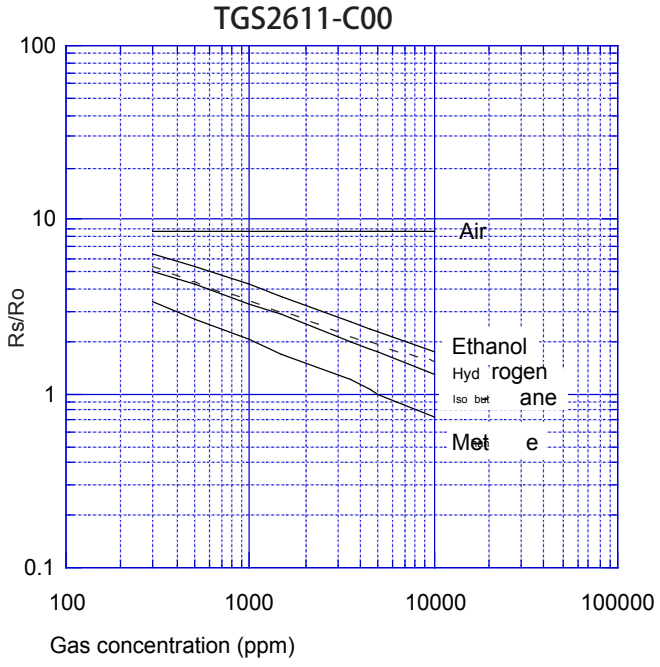


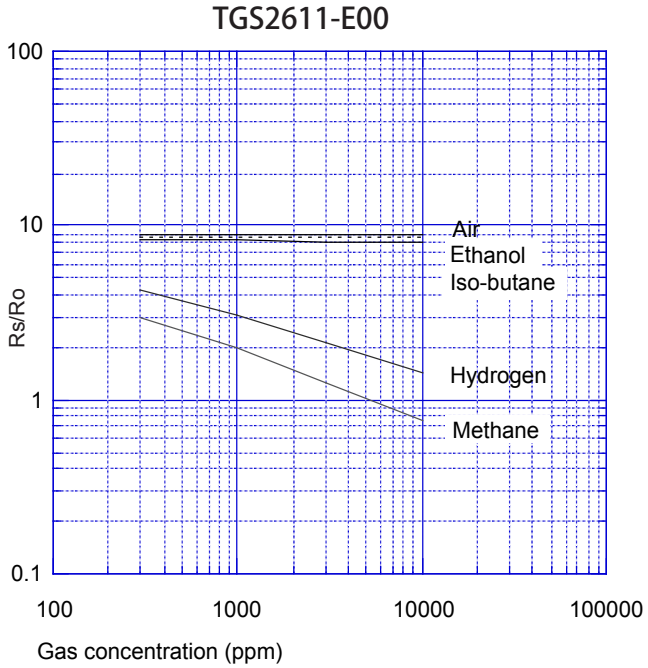
Sensitivity characteristics:

The representative sensitivity characteristic curve is shown in the figure below under standard test conditions (see back).

The vertical axis indicates the ratio of sensor resistance Rs / Ro, where Rs and Ro are defined as follows: Rs = the resistance value of the sensor in various concentrations of gas

Ro = Resistance of the sensor in 5000ppm methane

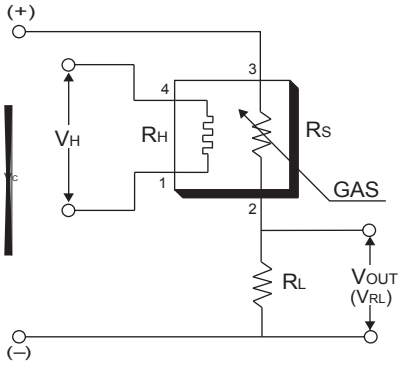




Basic test circuit:

This sensor requires both heater voltage (V H) and loop voltage (V C). V H is applied to the integrated heater to maintain a temperature in the sensing element that corresponds to the target gas. V C measures the loop output voltage (V RL) across the load resistor (R L) connected in series with the sensor.

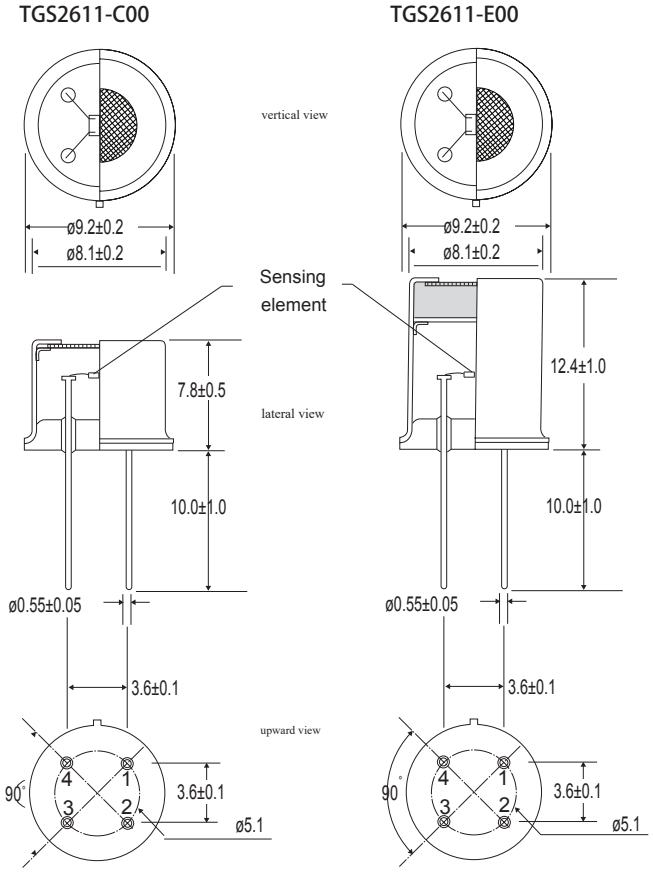
This sensor has polarity requirements, so the circuit must be powered by DC. As long as the electrical characteristics of the sensor are satisfied, V C and V H can share the same power supply circuit. When selecting the load resistance, choose values that provide optimal response ranges for the detected gas concentrations. Additionally, the maximum power consumption (P S) of the sensor components should remain below 15mW at the maximum load resistance values (R L) within the detected concentration range. The power consumption reaches its peak when the resistance value of R L exposed to gas equals that of R S.



specifications：

model			TGS2611	
The detection principle			Oxidized semiconductor type	
Standard encapsulation			TO-5 Metals	
Object gas			Methane, natural gas	
Scope of detection			500 ~ 10,000ppm	
Standard loop conditions	heater voltage	VH	5.0±0.2V AC/DC	
	loop voltage	VC	5.0±0.2V DC	Ps≤15mW
	load resistance	RL	variable	0.45kΩ min.
Electrical characteristics under standard test conditions	Heating element resistance	RH	Room temperature about 59Ω	
	Heater current	IH	56±5mA	
	Heater power consumption	PH	280mW±25mW	
	Sensor resistor	RS	0.68~6.8kΩ 5000 ppm methane in	
	sensitivity (rate of change in R S)		0.60±0.06	Rs (9000ppm) / Rs (3000ppm)
standard test conditions	Test gas conditions		Methane in air 20±2. C, 65±5%RH	
	Loop conditions		VC = 5.0±0.01V DC VH = 5.0±0.05V DC	
	preheating time		7 sky	

Structure and size:



Unit：mm

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:

$$P_S = \frac{(V_C - V_{RL})^2}{R_S}$$

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

pin connection：

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

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

Figaro Technology Research Co., LTD
11,1-5-11, Funamachi West, Kaminami City, Osaka
Zip code: 562-8505
Tel: + 81727282561
Fax: 81-72-728-0467
Mail: figaro@figaro.co.jp
URL: www.figaro.co.jp