FIGARO

PRODUCT INFORMATION

TGS 2611-E00 - for the detection of Methane

Features:

* High selectivity to methane
* Low power consumption
* Long life and low cost
* Uses simple electrical circuit

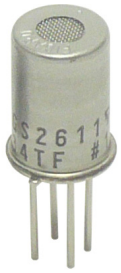
Applications:

* Domestic gas alarms
* Portable gas detectors
* Gas leak detector for gas appliances

TGS2611-E00 is a semiconductor type gas sensor which combines very high sensitivity to methane gas with low power consumption and long life. Due to miniaturization of its sensing chip, TGS2611-E00 requires a heater current of only 56mA and the device is housed in a standard TO-5 package.

TGS2611-E00 uses filter material in its housing which eliminates the influence of interference gases such as alcohol, resulting in highly selective response to methane gas. This feature makes the sensor ideal for residential gas leakage detectors which require durability and resistance against interference gas.

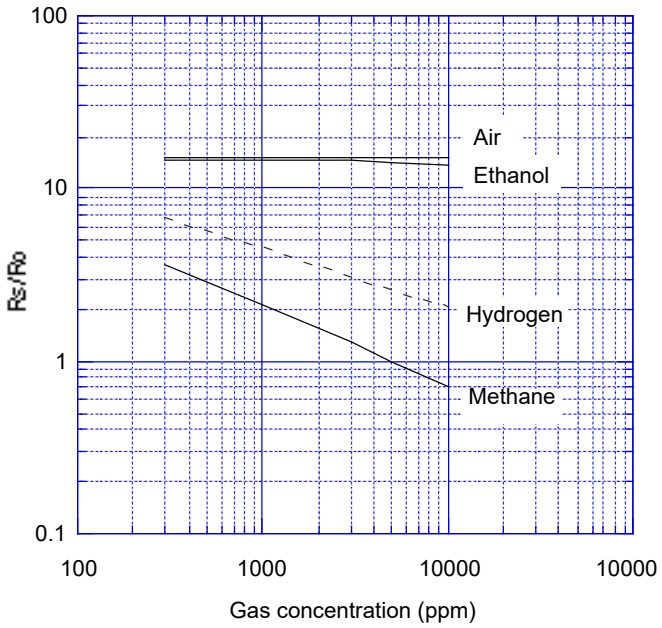
The TGS2611-E00 is able to satisfy the requirements of performance standards such as UL1484 and EN50194.



The figure below represents typical sensitivity characteristics, all data having been gathered at standard test conditions (see reverse side of this sheet). The Y-axis indicates sensor resistance ratio (Rs/Ro) which is defined as follows:

Rs = Sensor resistance at various concentrations
Ro = Sensor resistance in 5000ppm of methane

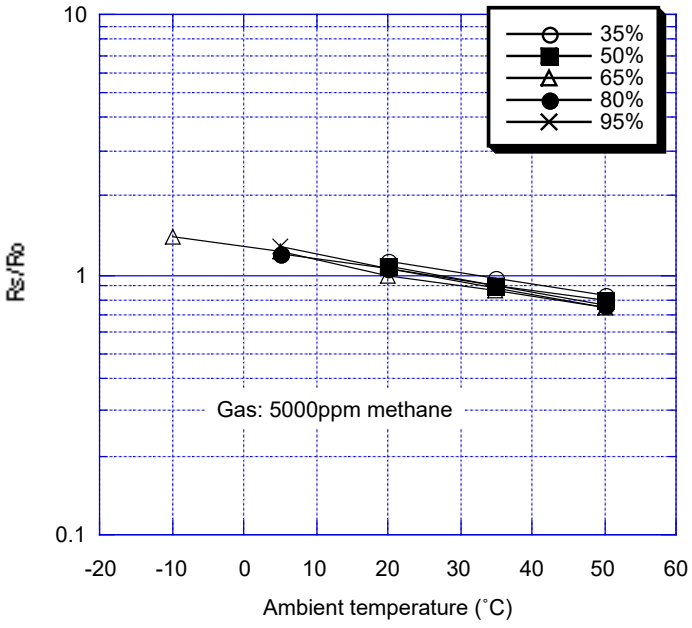
Sensitivity Characteristics:



The figure below represents typical temperature and humidity dependency characteristics. The Y-axis indicates sensor resistence ratio (Rs/Ro), defined as follows:

Rs = Sensor resistance in 5000ppm of methane at various temp/humidities
Ro = Sensor resistance in 5000ppm of methane at 20˚C/65%RH

Temperature and Humidity Dependency:



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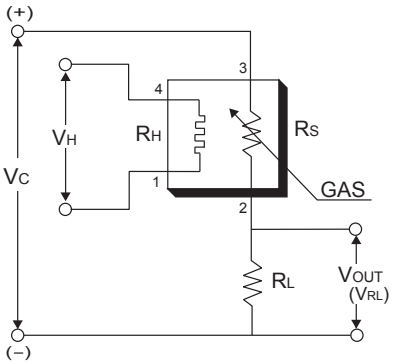
Basic Measuring Circuit:

The sensor requires two voltage inputs: heater voltage (V_H) and circuit voltage (V_C). The heater voltage (V_H) is applied to the integrated heater in order to maintain the sensing element at a specific temperature which is optimal for sensing. Circuit voltage (V_C) is applied to allow measurement of voltage V_{OUT}(V_{RL}) across a load resistor (R_L) which is connected in series with the sensor.

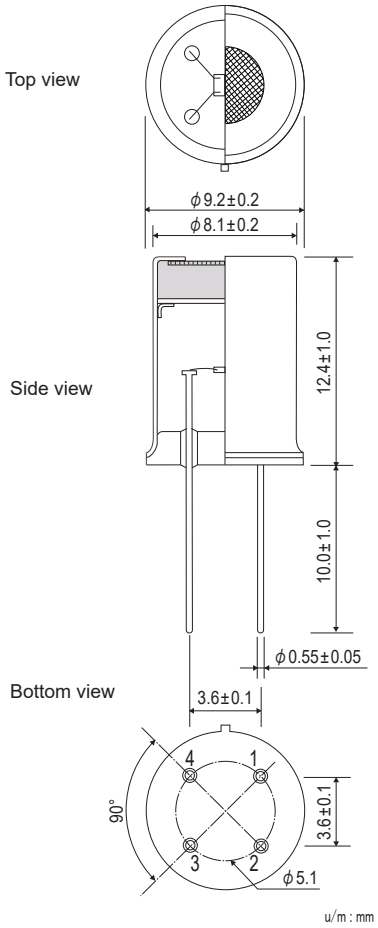
A common power supply circuit can be used for both V_C and V_H to fulfill the sensor's electrical requirements. The value of the load resistor (R_L) should be chosen to optimize the alarm threshold value, keeping power dissipation (P_S) of the semiconductor below a limit of 15mW. Power dissipation (P_S) will be highest when the value of Rs is equal to R_L on exposure to gas.



Specifications:

Model number			TGS2611-E00	
Sensing principle			MOS type	
Standard package			TO-5 metal can	
Target gases			Methane, Natural Gas	
Typical detection range			1~25% LEL	
Standard circuit conditions	Heater voltage	V_H	5.0±0.2V DC	
	Circuit voltage	V_C	5.0±0.2V DC	Ps≤15mW
	Load resistance	R_L	variable	0.45kΩ min.
Electrical characteristics under standard test conditions	Heater resistance	R_H	approx 59Ω at room temp.	
	Heater current	I_H	56±5mA	
	Heater power consumption	P_H	280mW±25mW	
	Sensor resistance	R_S	0.83~8.30kΩ in 5000ppm methane	
	Sensitivity (change ratio of Rs)		0.52~0.65 in methane	$\frac{Rs\ (9000ppm)}{Rs\ (3000ppm)}$
Standard test conditions	Test gas conditions		Methane in air at 20±2˚C, 65±5%RH	
	Circuit conditions		V_C = 5.0±0.01V DC V_H = 5.0±0.05V DC	
	Preheating period before test		4 days	

Structure and Dimensions:



The value of power dissipation (P_S) can be calculated by utilizing the following formula:

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

Sensor resistance (Rs) is calculated with a measured value of V_{OUT}(V_{RL}) by using the following formula:

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

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

For information on warranty, please refer to Standard Terms and Conditions of Sale of Figaro USA Inc. All sensor characteristics shown in this brochure represent typical characteristics. Actual characteristics vary from sensor to sensor. The only characteristics warranted are those in the Specification table above.

Before purchasing this product, please read the Warranty Statements shown in our webpage by scanning this QR code.

https://figarosensor.com/pdf/Figaro_USA_Sales_T&C.pdf

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