FIGARO

PRODUCT INFORMATION

TGS 2610 - for the detection of LP Gas

Features:

* Low power consumption
* High sensitivity to LP and its component gases (e.g. propane and butane)
* Long life and low cost
* Uses simple electrical circuit

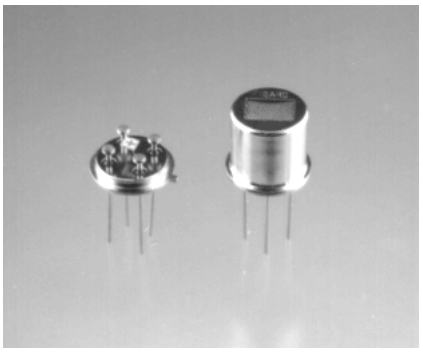
Applications:

* Residential LP leak detectors and alarms
* Portable LP detectors
* LP gas and vapor detection

The sensing element is comprised of a metal oxide semiconductor layer formed on an alumina substrate of a sensing chip together with an integrated heater. In the presence of a detectable gas, the sensor's conductivity increases depending on the gas concentration in the air. A simple electrical circuit can convert the change in conductivity to an output signal which corresponds to the gas concentration.

The **TGS 2610** has high sensitivity to propane and butane, making it ideal for LPG monitoring. Due to its low sensitivity to alcohol vapors (a typical interference gas in the residential environment), the sensor is ideal for consumer market gas alarms.

Due to miniaturization of the sensing chip, TGS 2610 requires a heater current of only 56mA and the device is housed in a standard TO-5 package.

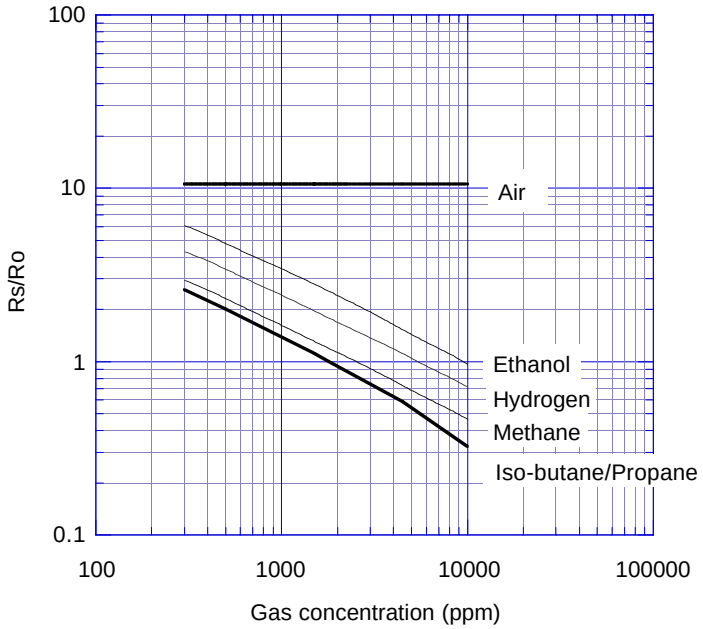


The figure below represents typical sensitivity characteristics, all data having been gathered at standard test conditions (see reverse side of this sheet). The Y-axis is indicated as *sensor resistance ratio* (Rs/Ro) which is defined as follows:

Rs = Sensor resistance in displayed gases at various concentrations

Ro = Sensor resistance in 1800ppm of iso-butane

Sensitivity Characteristics:

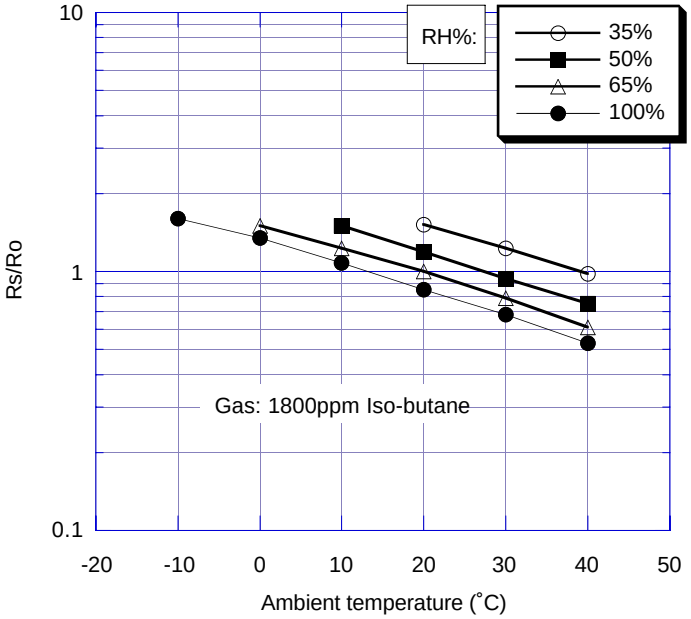


The figure below represents typical temperature and humidity dependency characteristics. Again, the Y-axis is indicated as *sensor resistance ratio* (Rs/Ro), defined as follows:

Rs = Sensor resistance at 1800ppm of iso-butane at various temperatures/humidities

Ro = Sensor resistance at 1800ppm of iso-butane at 20°C and 65% R.H.

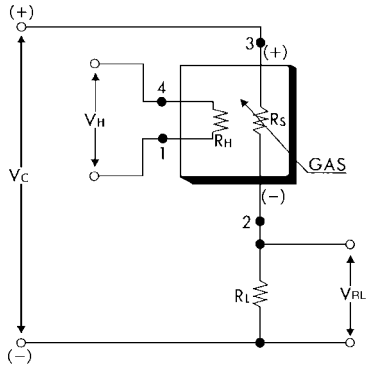
Temperature/Humidity Dependency:



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_{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			TGS 2610	
Sensing element type			D1	
Standard package			TO-5 metal can	
Target gases			Butane, LP gas	
Typical detection range			500 ~ 10,000 ppm	
Standard circuit conditions	Heater Voltage	V_H	5.0±0.2V DC/AC	
	Circuit voltage	V_C	5.0±0.2V DC/AC	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	VH = 5.0V DC
	Sensor resistance	Rs	0.68~6.8kΩ in 1800ppm iso-butane	
	Sensitivity (change ratio of Rs)		0.56 ± 0.06	Rs (3000ppm) / Rs (1000ppm)
Standard test conditions	Test gas conditions		Iso-butane 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	
	Conditioning period before test		7 days	

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

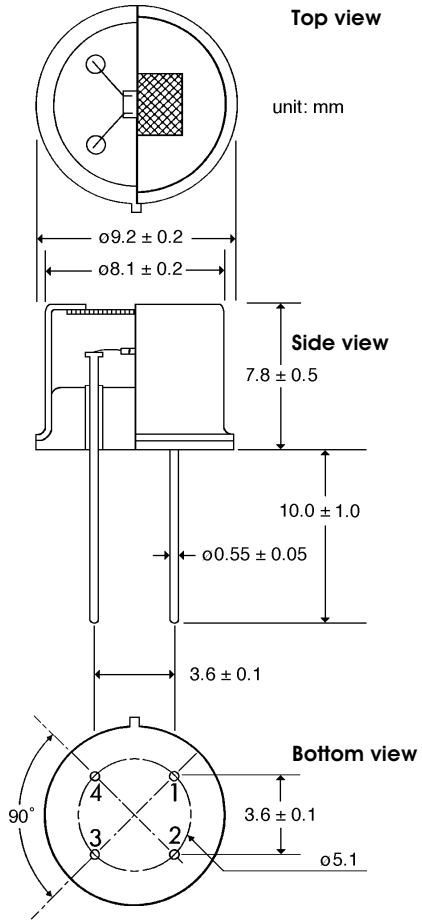
$$P_S = \frac{(V_C - V_{RL})^2}{R_S}$$

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

$$R_S = \frac{V_C - V_{RL}}{V_{RL}} \times R_L$$

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.

Structure and Dimensions:



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

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