

TGS822TF Artificial Coal Gas Detection

characteristic :

- High sensitivity to hydrogen and carbon monoxide in coal gas
- Low interference from organic solvents such as ethanol
- Long life, low cost
- It can be used in simple circuits

The gas sensor element of the Figaro gas sensor utilizes tin dioxide (SnO₂), a low-conductivity material found in clean air. When detecting target gases, the sensor's conductivity increases proportionally with rising gas concentrations. A simple circuitry converts these conductivity changes into corresponding output signals that directly reflect gas concentration levels.

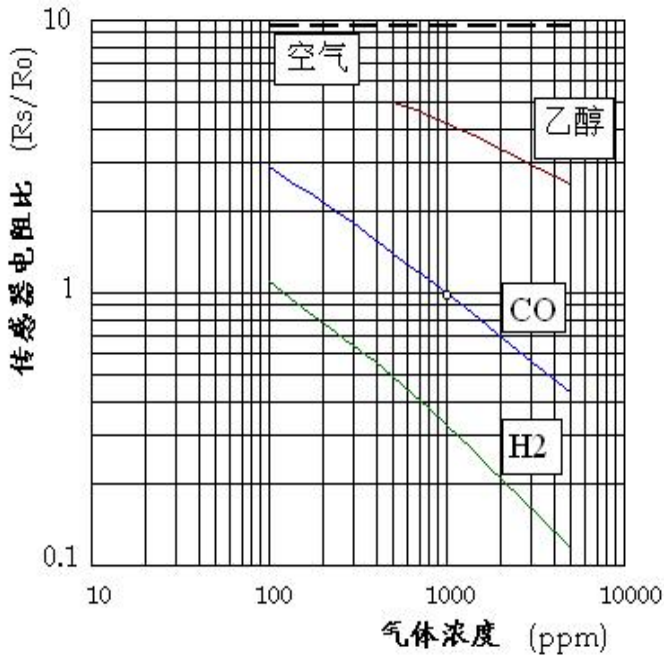
The TGS822TF sensor is equipped with an activated carbon filter, which eliminates the influence of impurity gas, has low sensitivity to organic solvents or other volatile gases, and high sensitivity to hydrogen and carbon monoxide, which is very suitable for the detection of artificial coal gas.

The following figure shows typical sensitivity characteristics, all obtained under standard test conditions. (See back)

The vertical coordinate is expressed as the sensor resistance ratio (R_s/R_0), where R_s and R_0 are defined as follows:

- R_s = resistance value in gas at different concentrations
- R_0 = resistance value in 1000ppm carbon monoxide

Sensitivity characteristics:



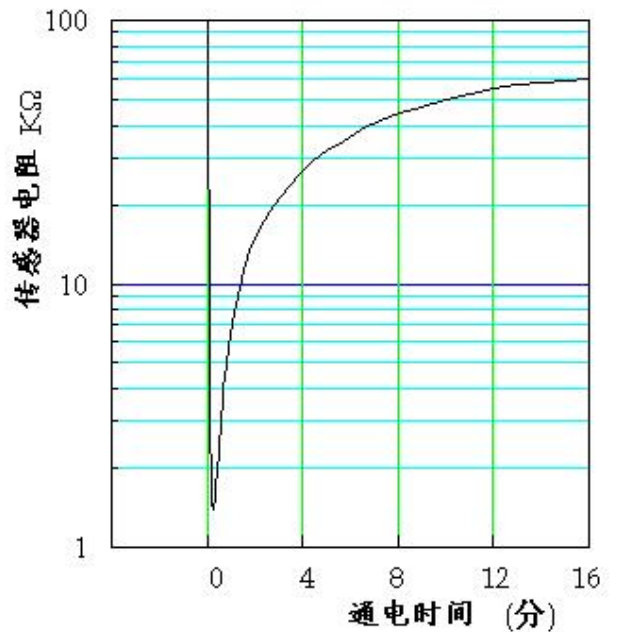
apply :

- Household and business coal gas alarm
- portable coal gas detection



The figure below shows the typical initial stabilization time curve of the TGS822TF sensor. This period refers to the duration required for the sensor to transition from non-operational state to normal functionality after being stored without power. During this phase, the sensor's resistance drops sharply before gradually stabilizing. The longer the storage duration without power, the longer this stabilization time becomes. Alarm design must account for this stabilization period (ranging from tens of minutes to several hours).

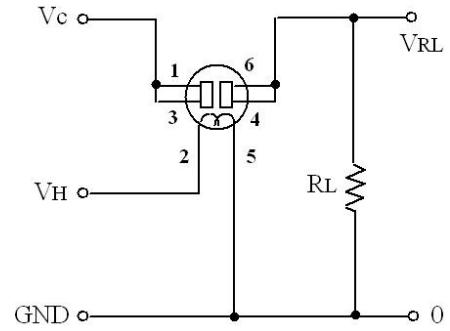
Temperature and humidity effects:



Basic test loop:

This sensor requires two voltage supplies: Heater Voltage (V_H) and Circuit Voltage (V_C). The V_H is applied to the integrated heater to maintain a temperature specific to the target gas within the sensing element. The V_C serves to measure the transmission...

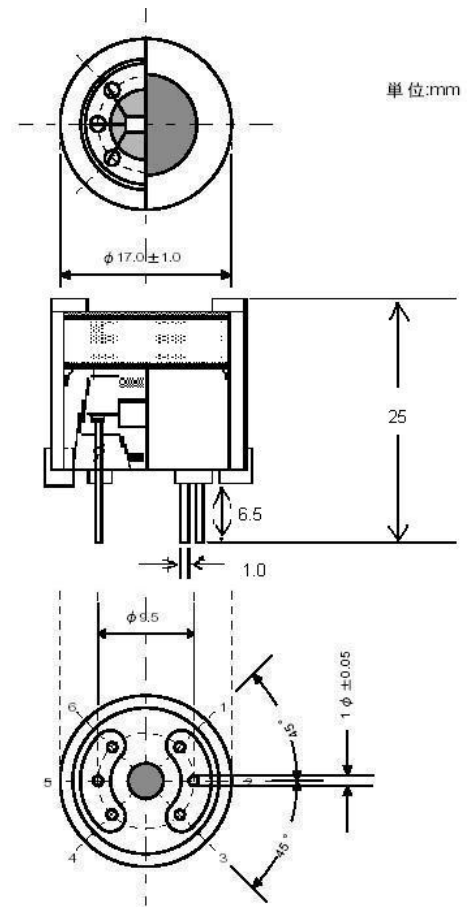
The voltage across the load resistor (R_L) in series with the sensor (V_{RL}). As this sensor has polarity, V_C requires a DC power supply. Provided the electrical requirements of the sensor are met, V_C and V_H can share the same power circuit. To optimize the threshold value and keep the sensing element's power consumption (P_S) below the 15mW limit, the resistance value of R_L must be carefully selected.



specifications :

Structure and size:

model		TGS822TF	
Subtype		8 series	
Standard encapsulation		The plastic and metal mesh are equipped with activated carbon filter	
Object gas		Hydrogen in artificial coal gas production	
Scope of detection		200~5,000 ppm	
Standard loop conditions	heater voltage	VH	5.0±0.2V DC/AC
	loop voltage	VC	MAX 24V Ps ≤ 15mW
	load resistance	RL	variable Ps ≤ 15mW
Electrical characteristics under standard test conditions	Heating element resistance	RH	38±3.0 Ω (room temperature)
	Heater power consumption	PH	660±55mW VH = 5.0V
	Sensor resistor	Rs	300ppm hydrogen in 1-12KΩ
	Sensitivity (the rate of change of Rs)		0.4~0.63 $\frac{Rs(H2:300ppm)}{Rs(H2:100ppm)}$
standard test conditions	Test gas conditions	20±2°C, 65±5%RH	
	Loop conditions	VC = 10.0±0.1V DC/AC VH = 5.0±0.05V DC/AC RL=10.0 KΩ ±1%	
	preheating time	7 Above the sky	



The power consumption (P_s) value can be calculated by the following formula:

$$P_s = \frac{V_C^2 \times R_s}{(R_s + R_L)^2}$$

Sensor resistance (R_s) can be calculated by the following formula:

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

Sensor pin connection 1 or 3:

- 4 or 6: Sensors
- 2 : calorifier
- 5: Heater

This specification is subject to change without prior notice for the purpose of improving performance.

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
手机: 13662266995 马少良 电话: 0755-83951311
官网: cn-sensor.com

邮编: 518031
传真: 0755-83952401
电邮: jackson@jmcomponents.com