Semiconductor gas-sensitive element instructions

Model: MQ-G4

Version: V1.3

Date: Jan.1st, 2019

Taiyuan Tengxing sensor technology Co., Ltd

Declaration

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5. Please make sure it's valid before using the instructions. Any good suggestions from you is welcomed.
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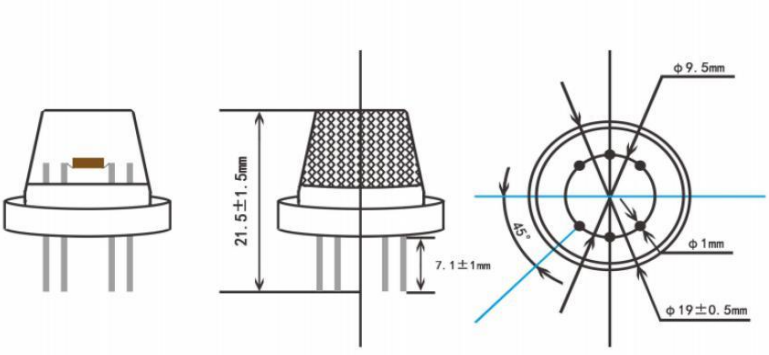
1.**Product Feature**:

This product is specially customized according to the new national standard 《GB15322.2-2019》 for household alarms, and fully complies with the requirements of the new national standard. The product has stable performance, fast response time and recovery time, good anti-vibration performance (special anti-vibration structure), strong anti-interference and anti-silicon poisoning; good adaptability to high and low temperature working; long service life

2. **Application**:

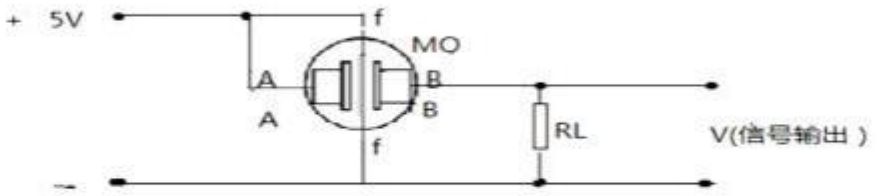
The product is suitable for use as a sensor element in the detection instruments and monitoring equipment for combustible gases such as natural gas, methane, liquefied petroleum gas, hydrogen, and city gas.

3. Technical specifications



Product model			MQ-G4
Product type			Semiconductor gas sensor
Standard packaging			Metal encapsulation
Detect gas			Methane, butane gas
Temperature range			Operating temperature:-10℃~+50℃ Storage temperature:-20℃~+60℃
Humidity range			＜95%RH
Detect concentration			100~10000ppm
Standard circuit conditions	Heat voltage (DC)	V_H	5.0V±0.1V
	Circuit voltage(Dc)	Vc	5.0V±0.1V
	Load resistance	R_L	adjustable
Characteristics of gas sensing components under standard testing conditions	Heating wire power	P_H	⩽800mW(VH=5V)
	Response time	T_X	⩽20S
	Recovery time	T_H	⩽20S
Standard testing conditions	Temperature/humidity		20℃±2℃; 65%±5%RH
	Test Circuit Parameter		VC: 5V±0.1V; VH: 5V±0.1V
	Aging time		24 hours
Product Life			8 years

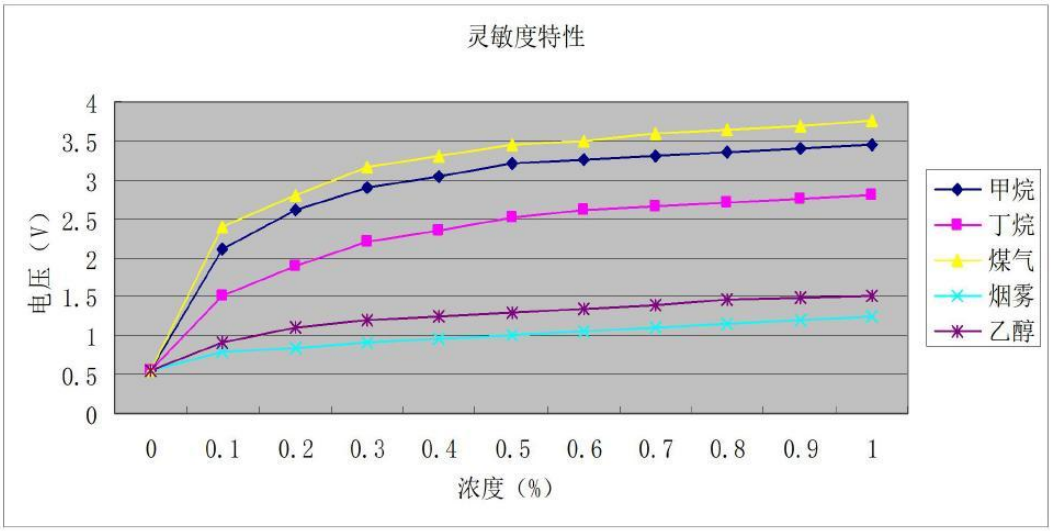
4.Test circuit



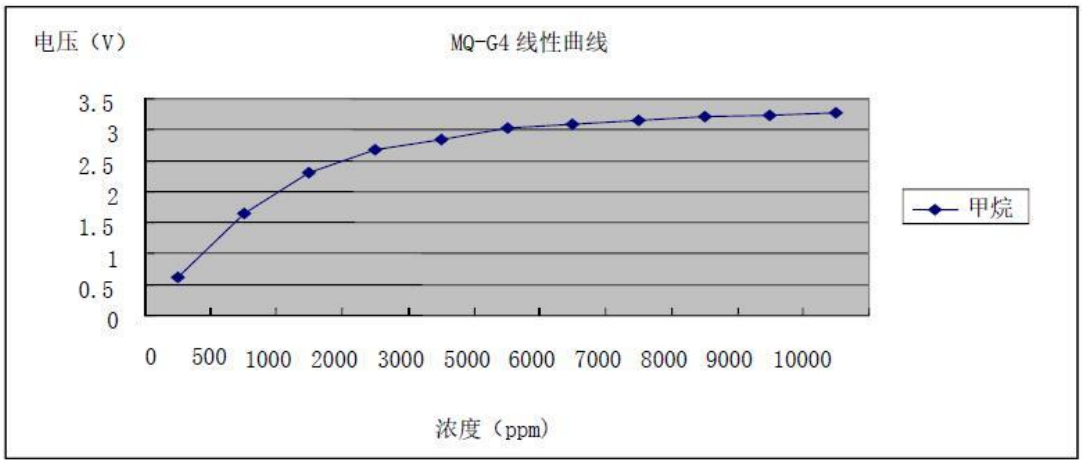
工作电压--5V 负载电阻--RL V--信号输出电压
AA--测量极一端 BB--测量极另一端 f--f--加热极

5.Sensor Characterization

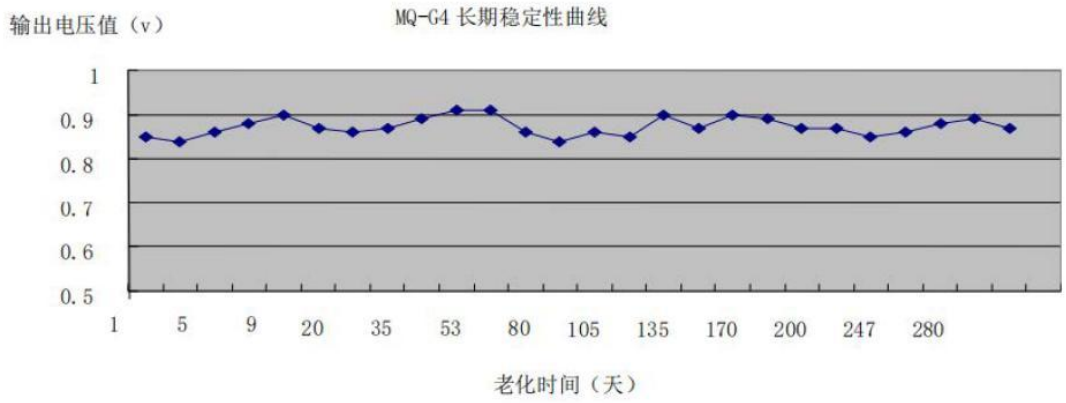
5.1 MQ-G4 curves of different gas concentrations



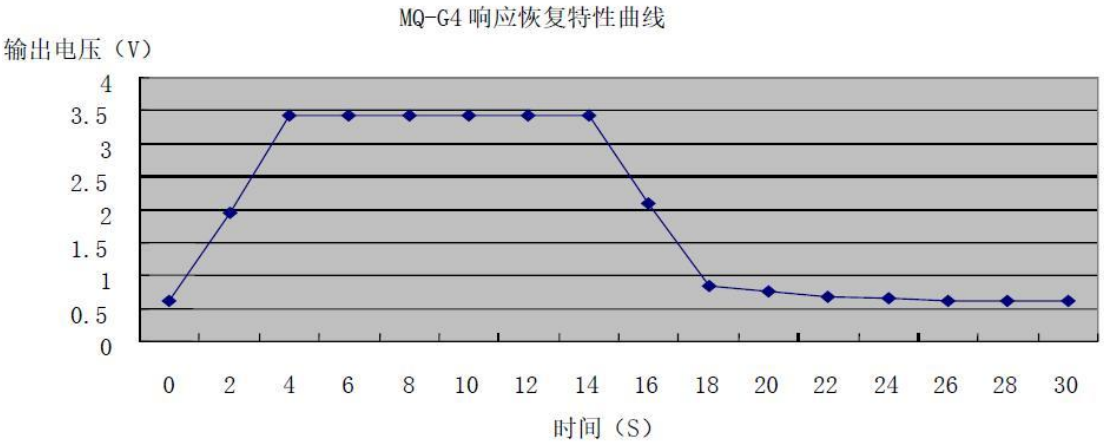
5.2 MQ-G4 type methane gas concentration change curve



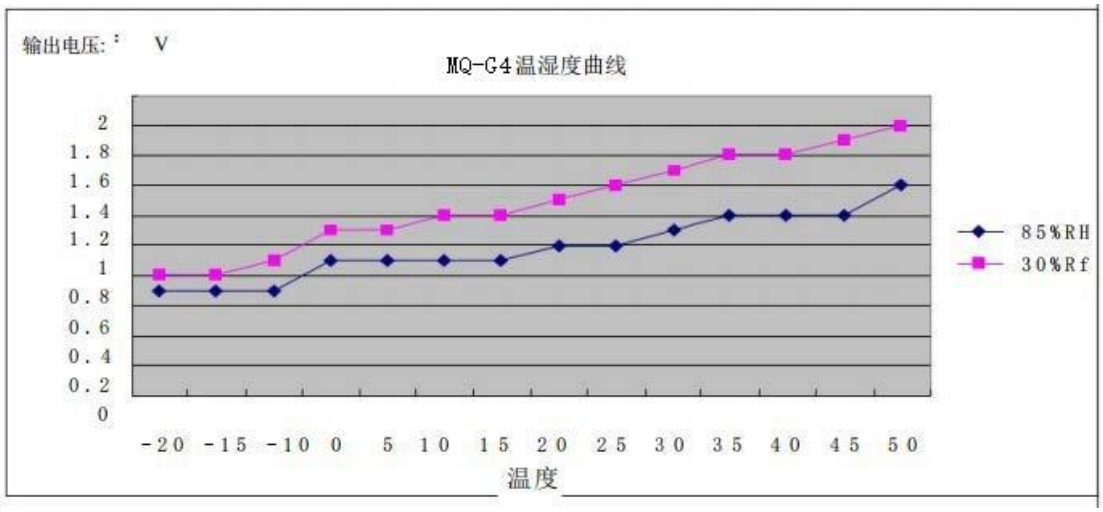
5.3 Static voltage long-term stability test curve



5.4 Sensor response recovery curve

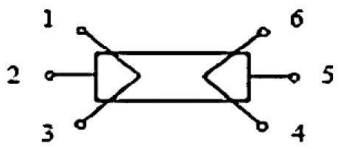


5.5 Temperature and humidity change curve



6.Precautions for use:

1. As shown in the figure, the sensor 2 and 5 are heating electrodes, 1 and 3 or 4 and 6 are measuring electrodes. If the voltage is applied to 1 and 3 or 4 and 6, the measuring electrodes will burn out. If the voltage is applied to 2 and 4, no signal will be obtained.



上图：MQ-G4 内部结构示意图

2. Do not apply high voltage, which will cause sensor damage or performance changes.

3. Avoid long-term exposure to volatile silicon compound vapor, such as hair spray, silicone adhesive, putty, which will cover the sensitive material and make the product invalid.

4. The sensor is prohibited from contacting water or liquid, which will cause the sensitive material to fall off, resulting in sensor performance changes or failure.

5. Avoid using it in a highly corrosive environment, such as using it in an environment containing hydrochloric acid, nitric acid, strong alkaline substances or alkali metal salts, which will cause the sensitive material to deteriorate, the electrode to corrode, and the sensor to be damaged.

6. Avoid using it in extreme environments, such as long-term use in high-concentration gas, high humidity, high temperature, and high-pollution environments, which will cause changes in the performance of the sensor.

7. Avoid strong vibration and impact, such as vibration during transportation and falling from a high place, which will cause the sensor electrode to break or be damaged.

8. When welding, try to use manual welding, welding temperature $\leqslant$ 250 degrees, welding time less than 3 seconds, equipment welding, such as wave soldering, use flux with less chlorine content, speed 1-2

meters/minute, temperature 250 ± 10 degrees, one-time welding, if conditions permit, apply film treatment to the sensor mesh cap to avoid strong odor changing the sensor performance.

9. Product storage period and power-on stability time:

Storage time	Recommended power-on stabilization time when using
Within one month	8h-12h
Within half a year	12-18h
One year or more	18-24h

10. Stability: The continuous use range is 24 hours as a cycle. In each cycle, the voltage drift of the gas sensor on the load resistor RL in clean air is <±10%.