



# Semiconductor gas-sensitive element instructions

Model: MQ-K1

Version: V1.2

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Taiyuan Tengxing sensor technology Co., Ltd

## Declaration

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### 1. Product Feature:



This product has low power consumption, strong long-term stability, simple application circuit and strong anti-interference and anti-silicon poisoning capabilities.

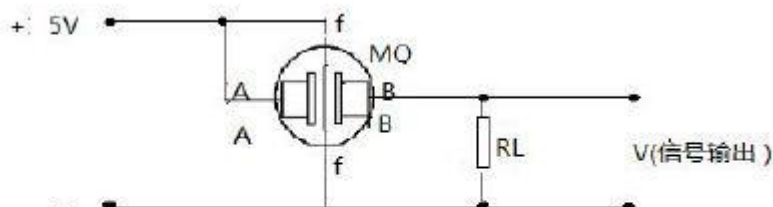
### 2. Application:

The product is suitable for use as a sensor element in monitoring equipment such as automatic exhaust devices for detecting harmful gases in home environments, detection instruments for air purifiers, and range hoods. (It is very sensitive to many trace reducing gases, such as: ammonia, hydrogen, alcohol, carbon monoxide, methane, propane, glycane, styrene, propylene glycol, phenol, toluene, ethylbenzene, xylene, formaldehyde and other organic volatile gases, smoke, oil smoke, etc.)

### 3. Main technical indicators

Model	MQ-K1		
Product type	Semiconductor gas sensor		
Packaging form	Metal packaging		
Test object	VOC Air Quality		
Temperature range	Operating temperature: $-10^{\circ}\text{C}\sim+50^{\circ}\text{C}$ Storage temperature: $-20^{\circ}\text{C}\sim+60^{\circ}\text{C}$		
Humidity range	$<95\%RH$		
Test range	Gas concentration $100\sim10000\text{ppm}$		
Standard circuit parameters	Heating voltage(DC)	VH	$5V\pm 0.1V$
	Heating voltage(DC)	VC	$5V\pm 0.1V$
	Load resistance	RL	variable
Electrical parameters under standard test conditions	Heating wire power	PH	$\leq\leq 800\text{mW}$ (VH=5V)
	Response time	TX	$\leq 20\text{S}$
	Recovery time	TH	$\leq 30\text{S}$
Standard test conditions	Temperature and humidity range		
	Test circuit parameters		
	Aging time		24 hours
Service life	5 years		

#### 4. Test circuit

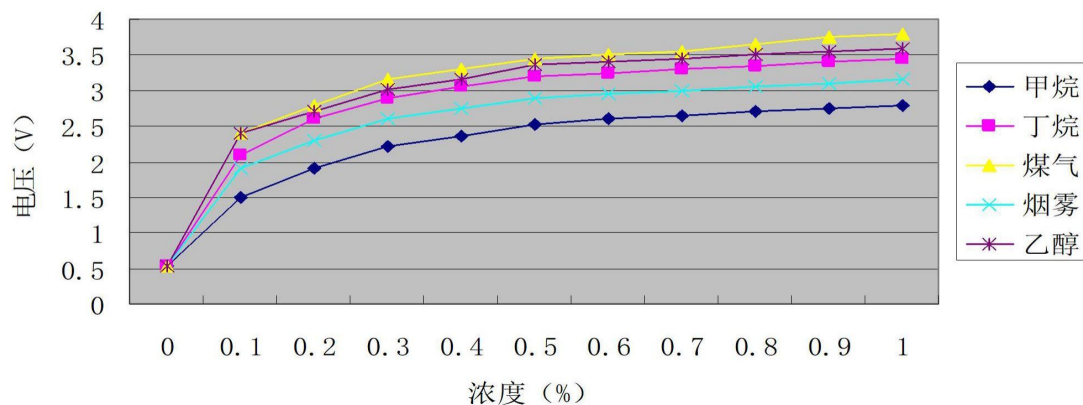


工作电压--5V 负载电阻--RL V--信号输出电压  
AA--测量板一端 BB--测量板另一端 f--f--加热极

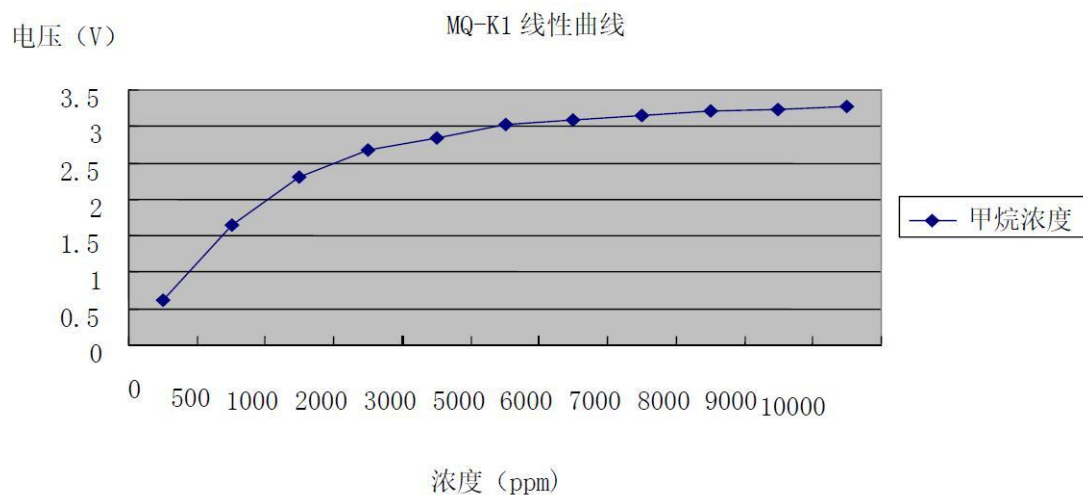
#### 5. Sensor Characterization

##### 5.1 MQ-K1 curves of different gas concentrations

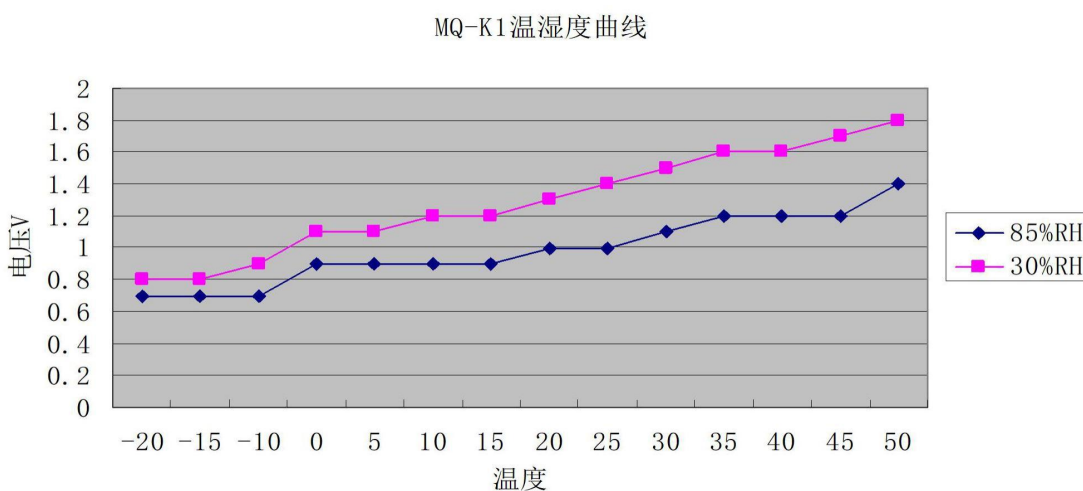
MQ-K1灵敏度特性



### 5.2 MQ-K1 type methane gas concentration change curve

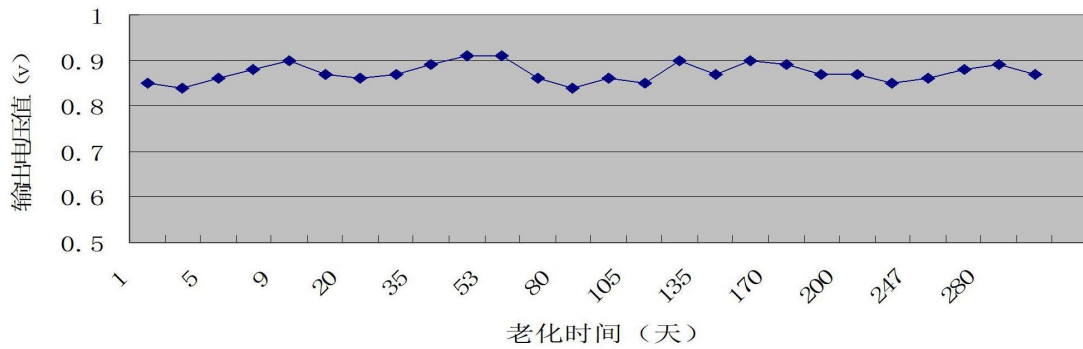


### 5.3 MQ-K1 temperature and humidity change curve



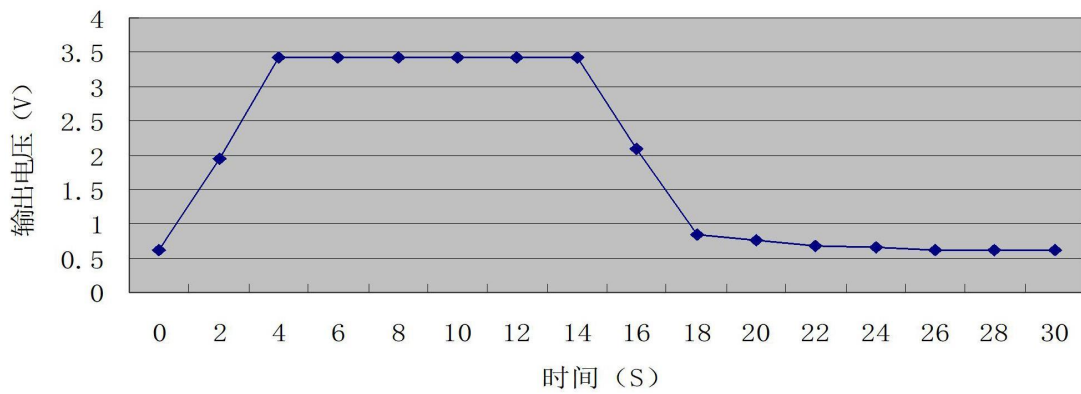
### 5.4 Static voltage long-term stability test curve

MQ-K1长期稳定性曲线



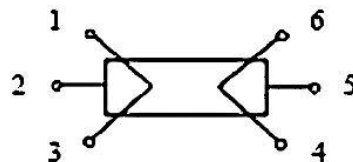
### 5.5 Sensor response recovery curve

MQ-K1响应恢复特性曲线



### 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.



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  $\leq$  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  $250 \pm 10$  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