

# TECHNICAL DATA

# MQ-4 GAS SENSOR

## FEATURES

- \* High sensitivity to CH<sub>4</sub>, Natural gas.
- \* Small sensitivity to alcohol, smoke.
- \* Fast response .      \* Stable and long life      \* Simple drive circuit

## APPLICATION

They are used in gas leakage detecting equipments in family and industry, are suitable for detecting of CH<sub>4</sub>, Natural gas, LNG, avoid the noise of alcohol and cooking fumes and cigarette smoke.

## SPECIFICATIONS

### A. Standard work condition

Symbol	Parameter name	Technical condition	Remarks
V <sub>c</sub>	Circuit voltage	5V±0.1	AC OR DC
V <sub>H</sub>	Heating voltage	5V±0.1	AC OR DC
P <sub>L</sub>	Load resistance	20K Ω	
R <sub>H</sub>	Heater resistance	33 Ω ±5%	Room Tem
P <sub>H</sub>	Heating consumption	less than 750mw	

### B. Environment condition

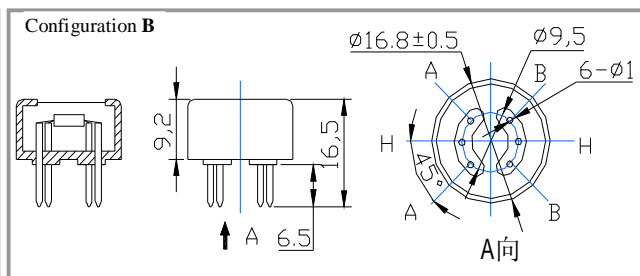
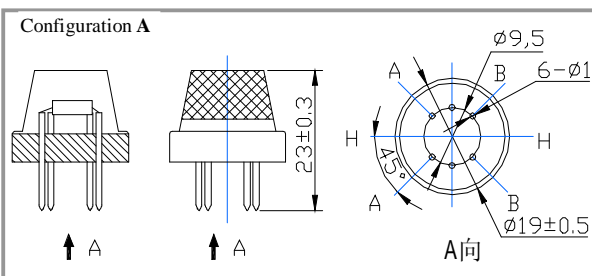
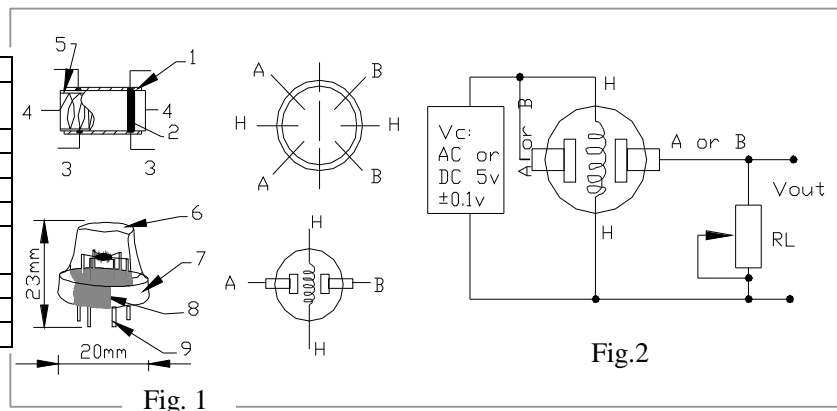
Symbol	Parameter name	Technical condition	Remarks
T <sub>ao</sub>	Using Tem	-10°C-50°C	minimum value is over 2%
T <sub>as</sub>	Storage Tem	-20°C-70°C	
R <sub>H</sub>	Related humidity	less than 95% Rh	
O <sub>2</sub>	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	

### C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Remark 2
R <sub>s</sub>	Sensing Resistance	10K Ω - 60K Ω (1000ppm CH <sub>4</sub> )	Detecting concentration scope: 200-10000ppm CH <sub>4</sub> , natural gas
α (1000ppm/ 5000ppm CH <sub>4</sub> )	Concentration slope rate	≤0.6	
Standard detecting condition	Temp: 20°C ±2°C Humidity: 65%±5%	V <sub>c</sub> :5V±0.1 V <sub>H</sub> : 5V±0.1	
Preheat time	Over 24 hour		

### D. Structure and configuration, basic measuring circuit

Parts	Materials
1 Gas sensing layer	SnO <sub>2</sub>
2 Electrode	Au
3 Electrode line	Pt
4 Heater coil	Ni-Cr alloy
5 Tubular ceramic	Al <sub>2</sub> O <sub>3</sub>
6 Anti-explosion network	Stainless steel gauze (SUS316 100-mesh)
7 Clamp ring	Copper plating Ni
8 Resin base	Bakelite
9 Tube Pin	Copper plating Ni



Structure and configuration of MQ-4 gas sensor is shown as Fig. 1 (Configuration A or B), sensor composed by micro  $Al_2O_3$  ceramic tube, Tin Dioxide ( $SnO_2$ ) sensitive layer, measuring electrode and heater are fixed into a crust made by plastic and stainless steel net. The heater provides necessary work conditions for work of sensitive components. The enveloped MQ-4 have 6 pin ,4 of them are used to fetch signals, and other 2 are used for providing heating current.

Electric parameter measurement circuit is shown as Fig.2  
 E. Sensitivity characteristic curve

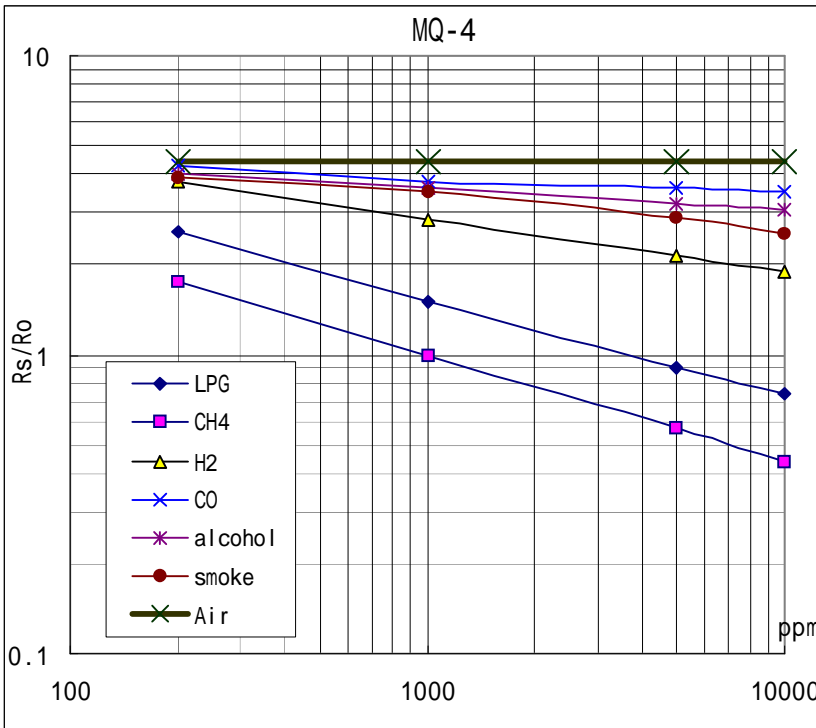


Fig.2 sensitivity characteristics of the MQ-4

Fig.3 is shows the typical sensitivity characteristics of the MQ-4 for several gases. in their: Temp: 20°C、 Humidity: 65%、  $O_2$  concentration 21%  $R_L=20k\ \Omega$

$R_o$ : sensor resistance at 1000ppm of  $CH_4$  in the clean air.  
 $R_s$ :sensor resistance at various concentrations of gases.

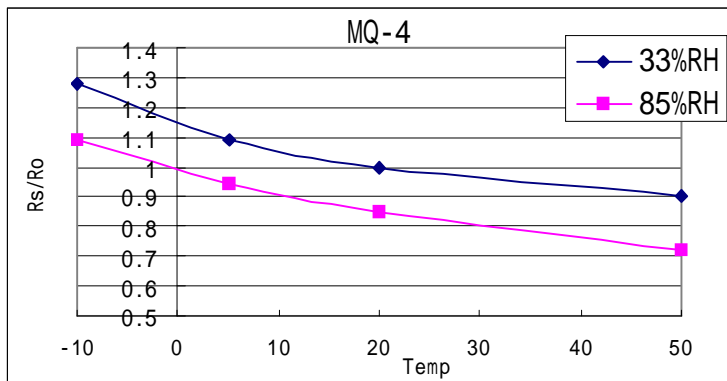


Fig.4 is shows the typical dependence of the MQ-4 on temperature and humidity.  $R_o$ : sensor resistance at 1000ppm of  $CH_4$  in air at 33%RH and 20 degree.  
 $R_s$ : sensor resistance at 1000ppm of  $CH_4$  in air at different temperatures and humidities.

**SENSITIVITY ADJUSTMENT**

Resistance value of MQ-4 is difference to various kinds and various concentration gases. So,When using this components, sensitivity adjustment is very necessary. we recommend that you calibrate the detector for 5000ppm of  $CH_4$  concentration in air and use value of Load resistance ( $R_L$ ) about  $20K\ \Omega$  ( $10K\ \Omega$  to  $47K\ \Omega$ ).

When accurately measuring, the proper alarm point for the gas detector should be determined after considering the temperature and humidity influence.