

# TECHNICAL DATA

# MQ-5 GAS SENSOR

## FEATURES

- \* High sensitivity to LPG, natural gas , town 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 LPG, natural gas , town gas, 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	31 ± 10%	Room Tem
P <sub>H</sub>	Heating consumption	less than 800mw	

### B. Environment condition

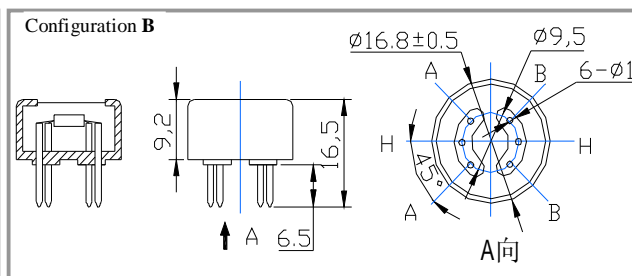
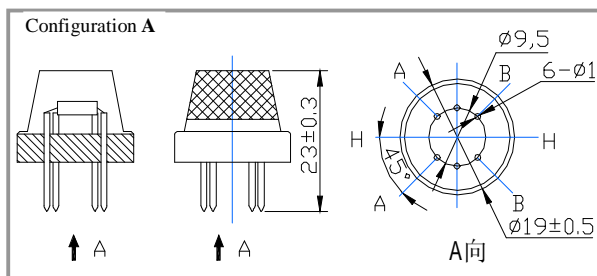
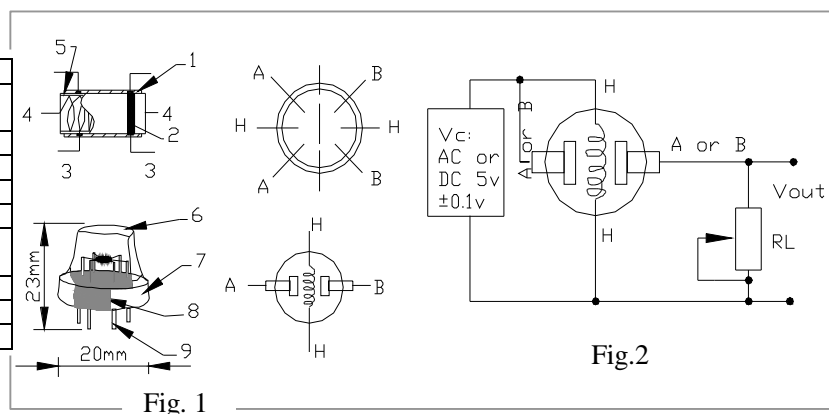
Symbol	Parameter name	Technical condition	Remarks
T <sub>ao</sub>	Using Tem	-10℃-50℃	
T <sub>as</sub>	Storage Tem	-20℃-70℃	
R <sub>H</sub>	Related humidity	less than 95% Rh	
O <sub>2</sub>	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value is over 2%

### C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Remarks
Rs	Sensing Resistance	10K Ω - 60K Ω (5000ppm methane )	Detecting concentration scope: 200-10000ppm LPG,LNG Natural gas, iso-butane, propane Town gas
α (5000ppm/1000 ppm CH <sub>4</sub> )	Concentration slope rate	≤0.6	
Standard detecting condition	Temp: 20℃ ± 2℃ Humidity: 65% ± 5%	Vc: 5V ± 0.1 Vh: 5V ± 0.1	
Preheat time	Over 24 hour		

### D. Strucyure 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-5 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-5 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-5

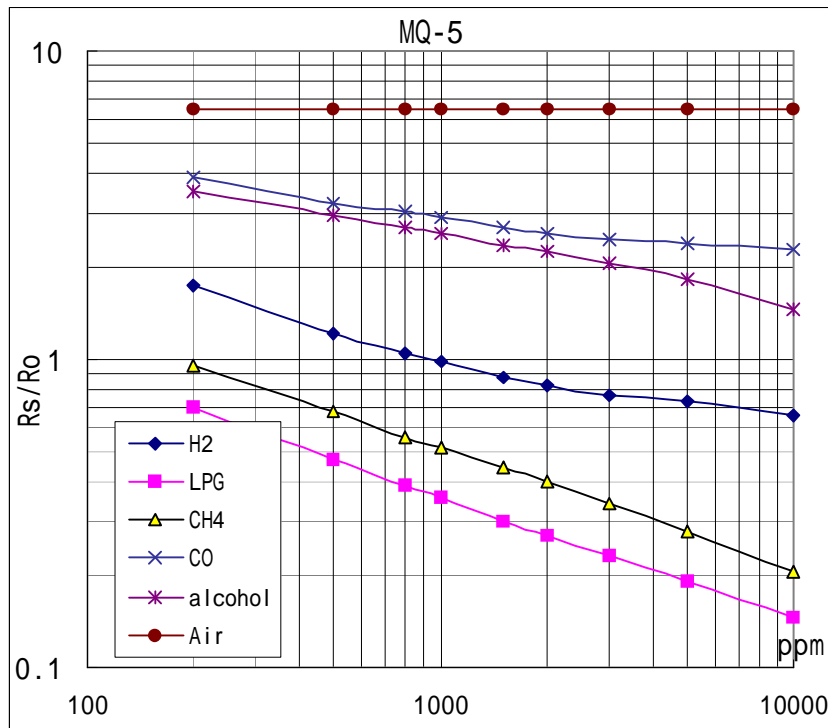


Fig.3 is shows the typical sensitivity characteristics of the MQ-5 for several gases.

in their: Temp: 20°C、

Humidity: 65%、

O<sub>2</sub> concentration 21%

RL=20k  $\Omega$

Ro: sensor resistance at 1000ppm of H<sub>2</sub> in the clean air.

Rs:sensor resistance at various concentrations of gases.

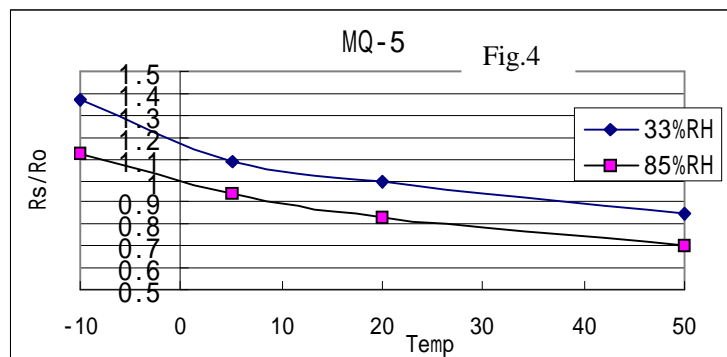


Fig.4 is shows the typical dependence of the MQ-5 on temperature and humidity.

Ro: sensor resistance at 1000ppm of H<sub>2</sub> in air at 33%RH and 20 degree.

Rs: sensor resistance at different temperatures and humidities.

#### SENSITIVITY ADJUSTMENT

Resistance value of MQ-5 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 1000ppm H<sub>2</sub> or LPG concentration in air and use value of Load resistance ( $R_L$ ) about 20 K  $\Omega$  (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.