

# 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     | 20KΩ                |          |
| R <sub>H</sub> | Heater resistance   | 31± 10%             | Room Tem |
| P <sub>H</sub> | Heating consumption | less than 800mw     |          |

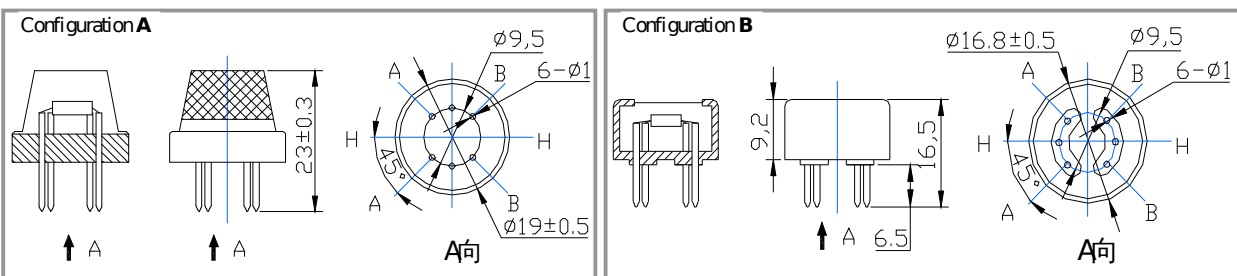
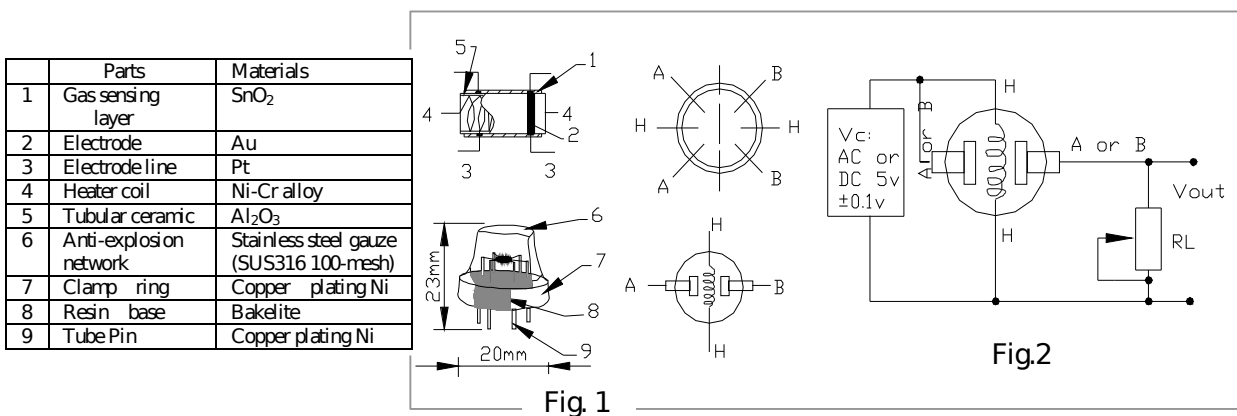
### B. Environment condition

| Symbol          | Parameter name       | Technical condition  | Remarks                  |
|-----------------|----------------------|--|--------------------------|
| T <sub>ao</sub> | Using Tem            | -10°C-50°C   |                          |
| 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 | minimum value is over 2% |

### C. Sensitivity characteristic

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

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



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

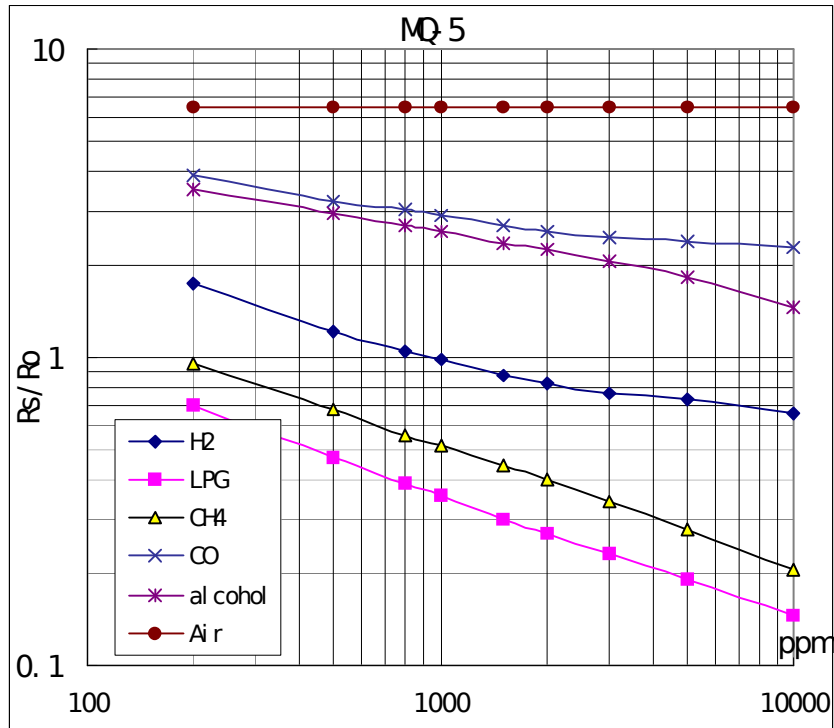


Fig.3 shows the typical sensitivity characteristics of the MQ-5 for several gases.

in their: Temp: 20°C,  
Humidity: 65%,  
O<sub>2</sub> concentration 21%  
RL=20kΩ

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

R<sub>s</sub>: sensor resistance at various concentrations of gases.

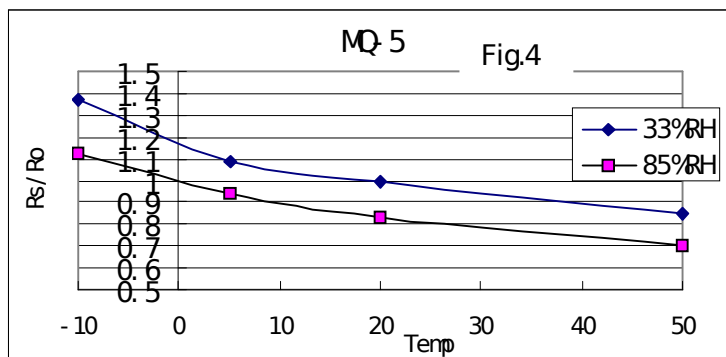


Fig.4 shows the typical dependence of the MQ-5 on temperature and humidity.

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

R<sub>s</sub>: sensor resistance at different temperatures and humidities.

### SENSITIVITY ADJUSTMENT

Resistance value of MQ-5 is different 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 KΩ (10KΩ to 47KΩ).

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