

# TECHNICAL DATA

# MQ-3 GAS SENSOR

## FEATURES

- \* High sensitivity to alcohol and small sensitivity to Benzine .
- \* Fast response and High sensitivity
- \* Stable and long life
- \* Simple drive circuit

## APPLICATION

They are suitable for alcohol checker, Breathalyser.

## 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 |
| R <sub>L</sub> | Load resistance     | 200KΩ               |          |
| R <sub>H</sub> | Heater resistance   | 33Ω ± 5%            | Room Tem |
| P <sub>H</sub> | Heating consumption | less than 750mw     |          |

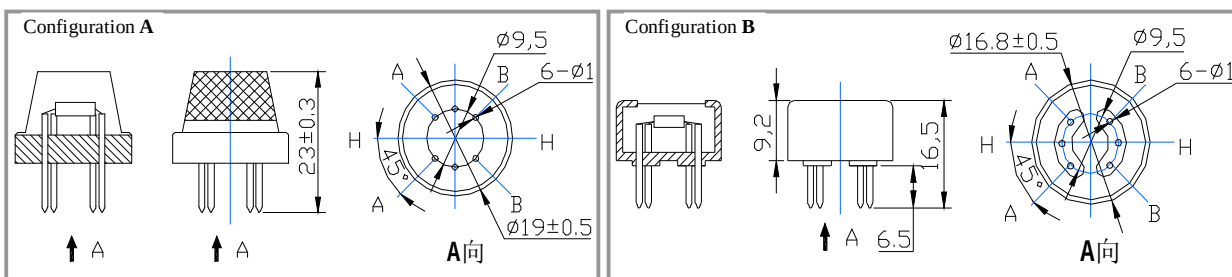
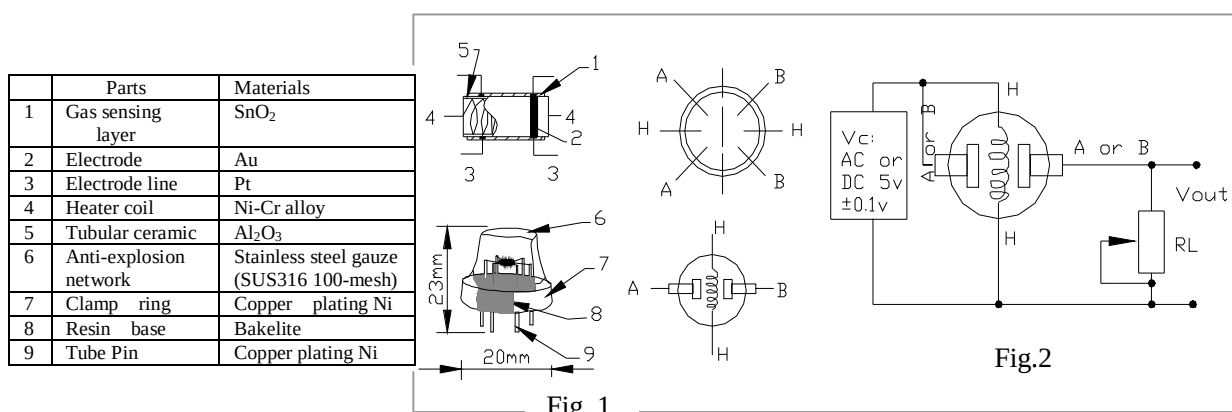
### B. Environment condition

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

### C. Sensitivity characteristic

| Symbol                       | Parameter name                   | Technical parameter              | Remarks                                                   |
|------------------------------|----------------------------------|----------------------------------|-----------------------------------------------------------|
| Rs                           | Sensing Resistance               | 1MΩ - 8 MΩ<br>(0.4mg/L alcohol ) | Detecting concentration scope:<br>0.05mg/L—10mg/L Alcohol |
| α<br>(0.4/1 mg/L)            | Concentration slope rate         | ≤0.6                             |                                                           |
| Standard detecting condition | Temp: 20℃±2℃<br>Humidity: 65%±5% | Vc:5V±0.1<br>Vh: 5V±0.1          |                                                           |
| Preheat time                 | Over 24 hour                     |                                  |                                                           |

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



Structure and configuration of MQ-3 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-3 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

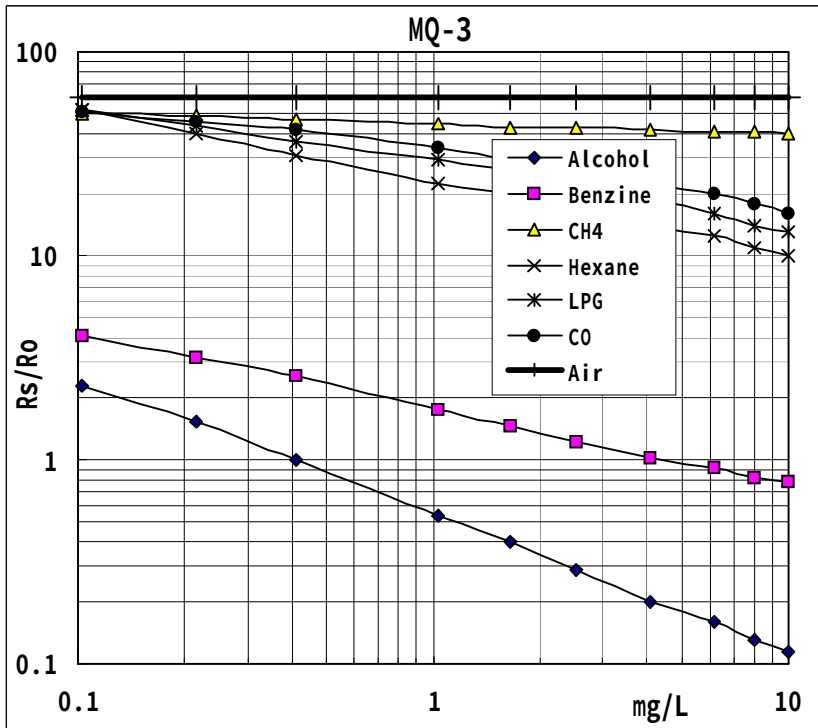


Fig.2 sensitivity characteristics of the MQ-3

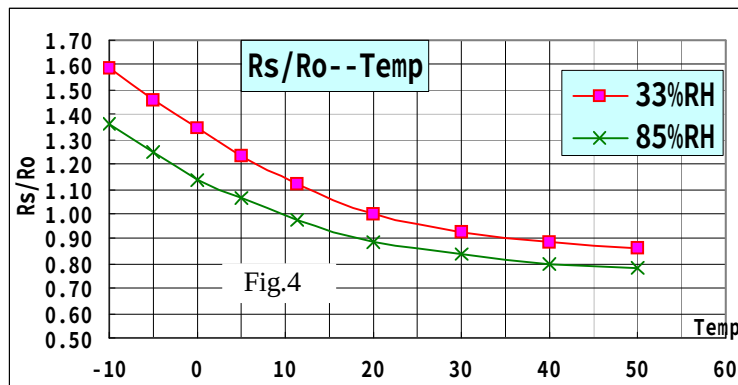


Fig.3 is shows the typical sensitivity characteristics of the MQ-3 for several gases.

in their: Temp: 20℃、  
Humidity: 65%、  
 $O_2$  concentration 21%  
 $R_L=200k\Omega$

$R_o$ : sensor resistance at 0.4mg/L of Alcohol in the clean air.

$R_s$ :sensor resistance at various concentrations of gases.

Fig.4 is shows the typical dependence of the MQ-3 on temperature and humidity.

$R_o$ : sensor resistance at 0.4mg/L of Alcohol in air at 33%RH and 20℃

$R_s$ : sensor resistance at 0.4mg/L of Alcohol at different temperatures and humidities.

## SENSITIVITY ADJUSTMENT

Resistance value of MQ-3 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 0.4mg/L ( approximately 200ppm ) of Alcohol concentration in air and use value of Load resistance that ( $R_L$ ) about 200 K $\Omega$  (100K $\Omega$  to 470 K $\Omega$ ).

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