

# 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	ACOR 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
Tao	Using Tem	-10°C-50°C	minimum value is over 2%
Tas	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	Remarks
R <sub>s</sub>	Sensing Resistance	1MΩ - 8 MΩ (0.4mg/L alcohol )	Detecting concentration scope: 0.05mg/L—10mg/L Alcohol
α (0.4/1 mg/L)	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

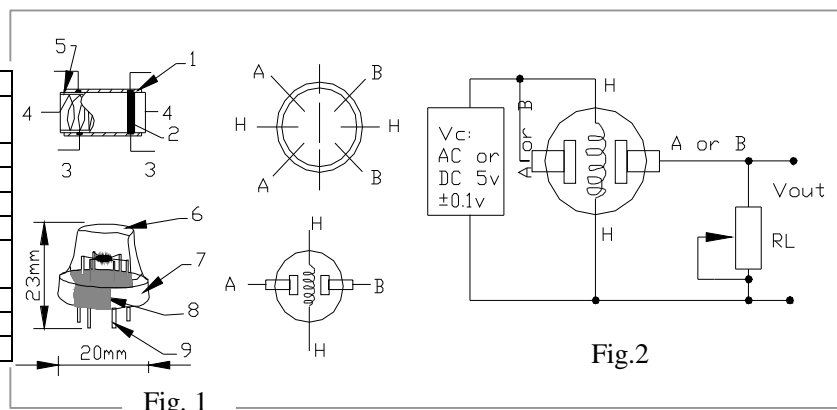
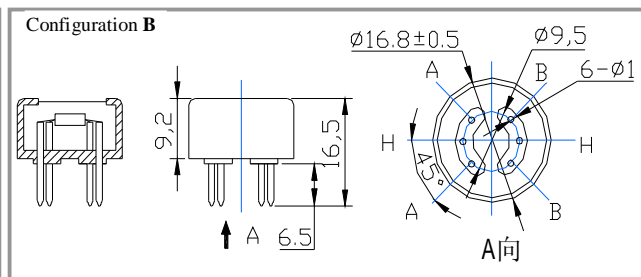
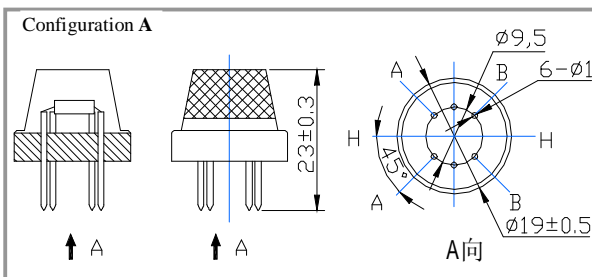


Fig. 1

Fig.2



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

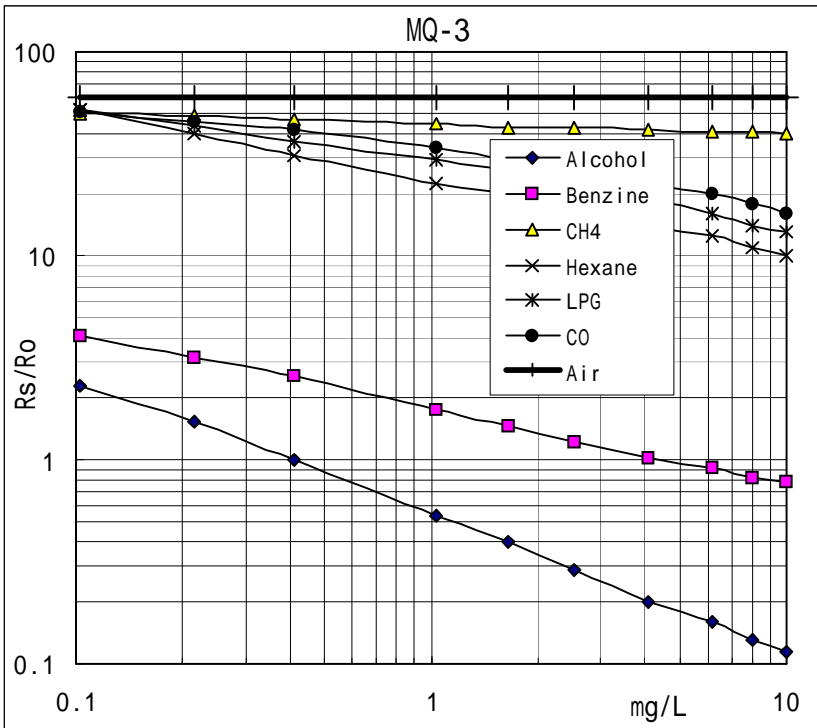


Fig.2 sensitivity characteristics of the MQ-3

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

in their: Temp: 20°C,  
Humidity: 65% ,  
O<sub>2</sub> concentration 21%  
RL=200k Ω

R<sub>o</sub>: sensor resistance at 0.4mg/L of Alcohol in the clean air.

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

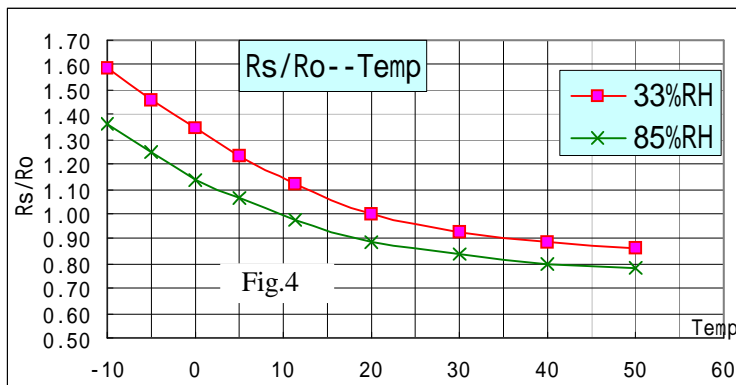


Fig.4 is shows the typical dependence of the MQ-3 on temperature and humidity.

R<sub>o</sub>: sensor resistance at 0.4mg/L of Alcohol in air at 33%RH and 20 °C

R<sub>s</sub>: 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 resistancethat( R<sub>L</sub>) about 200 K Ω (100K Ω to 470 K Ω).

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