

1. DESCRIPTION:

This alcohol sensor is suitable for detecting alcohol concentration in your breath, just like any other common breathalyzer. It has a high sensitivity and fast response time. This Sensor provides an analog resistive output based on alcohol concentration.

2. Reference Source:

/* Testing MQ-3 GAS sensor with serial monitor
Suitable for detecting of alcohol*/

```
const int gasPin = A0; //GAS sensor output pin to Arduino analog A0 pin
```

```
void setup()  
{  
  Serial.begin(9600); //Initialize serial port - 9600 bps  
}
```

```
void loop()  
{  
  Serial.println(analogRead(gasPin));  
  delay(1000); // Print value every 1 sec.  
}
```

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 _c	Circuit voltage	5V±0.1	AC OR DC
V _H	Heating voltage	5V±0.1	ACOR DC
R _L	Load resistance	200KΩ	
R _H	Heater resistance	33Ω ±5%	Room Tem
P _H	Heating consumption	less than 750mw	

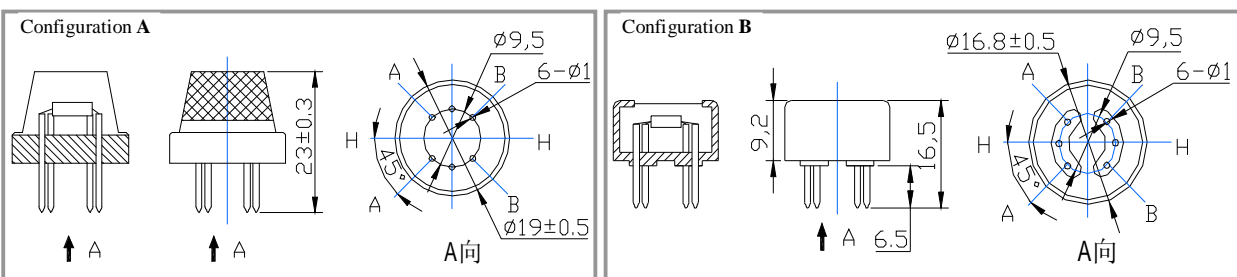
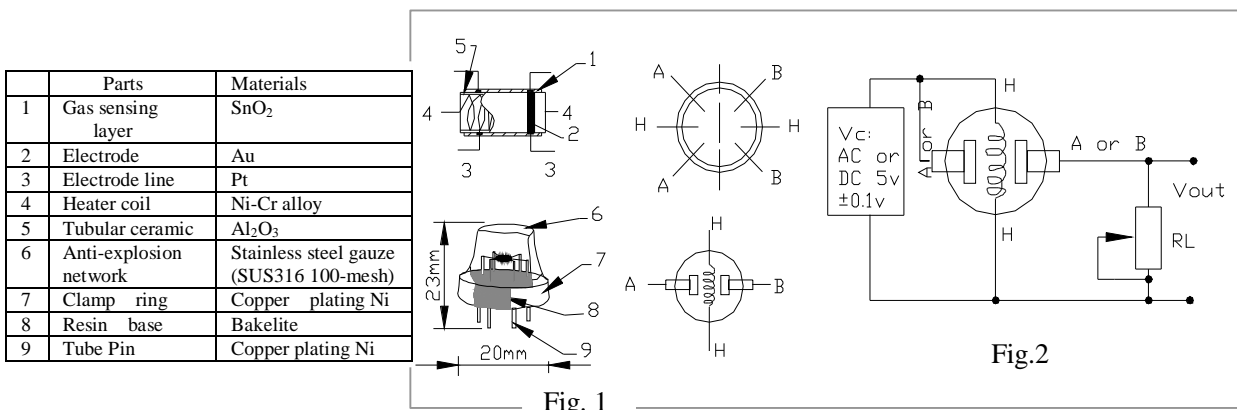
B. Environment condition

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 _H	Related humidity	less than 95%Rh	
O ₂	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	

C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Remarks
R _s	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 _c :5V±0.1 V _h : 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

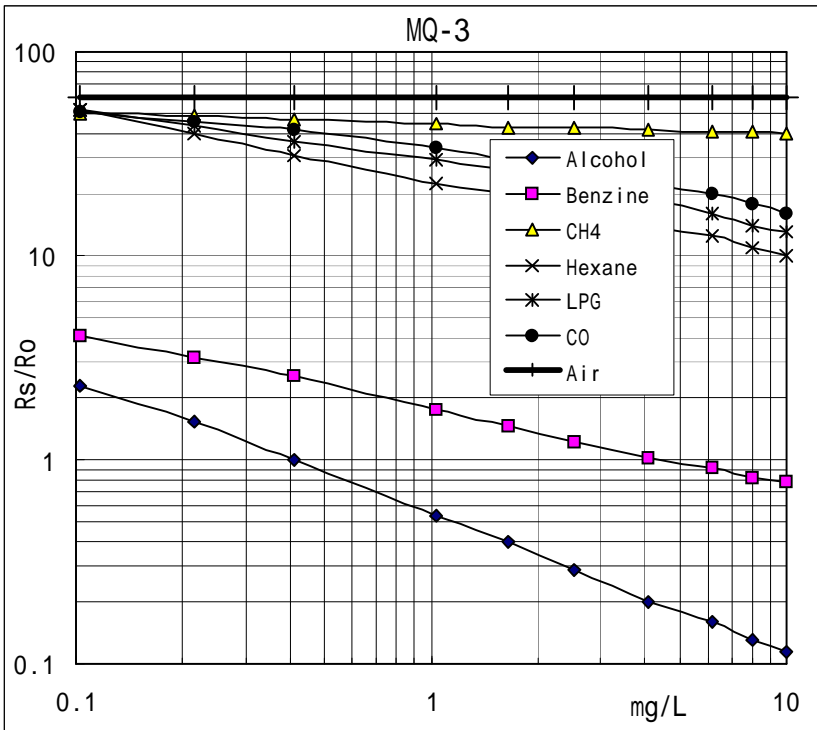


Fig.2 sensitivity characteristics of the MQ-3

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

in their: Temp: 20°C,
Humidity: 65% ,
O₂ concentration 21%
RL=200kΩ

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

Rs:sensor resistance at various concentrations of gases.

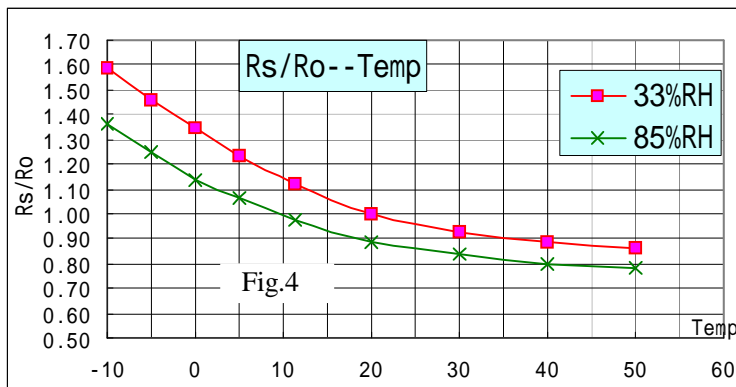


Fig.4 is shows the typical dependence of the MQ-3 on temperature and humidity.

Ro: sensor resistance at 0.4mg/L of Alcohol in air at 33%RH and 20 °C

Rs: 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_L) about 200 KΩ (100KΩ to 470 KΩ).

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