

TECHNICAL DATA

MQ-4 GAS SENSOR

FEATURES

- * High sensitivity to CH₄, Natural 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 CH₄, Natural gas, LNG, avoid the noise of alcohol and cooking fumes and cigarette smoke.

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
P _L	Load resistance	20KΩ	
R _H	Heater resistance	33Ω ±5%	Room Tem
P _H	Heating consumption	less than 750mw	

B. Environment condition

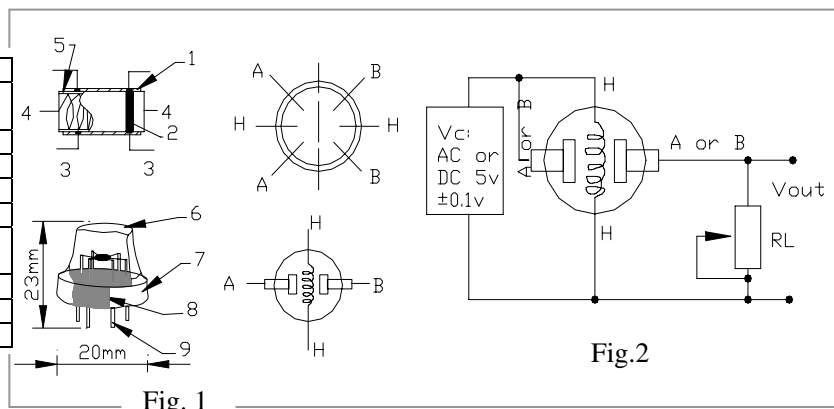
Symbol	Parameter name	Technical condition	Remarks
Tao	Using Tem	-10℃ ...+50℃	minimum value is over 2%
Tas	Storage Tem	-20℃ ...+70℃	
R _H	Related humidity	less than 95%Rh	
O ₂	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	

C. Sensitivity characteristic

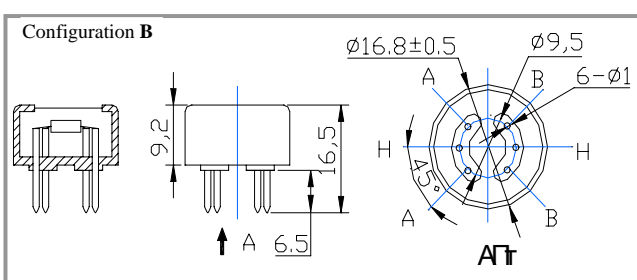
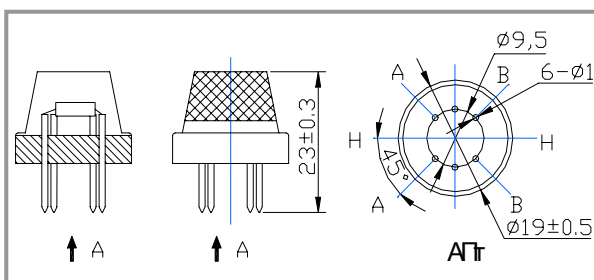
Symbol	Parameter name	Technical parameter	Remark 2
R _s	Sensing Resistance	10KΩ ...60KΩ (1000ppm CH ₄)	Detecting concentration scope : 200...10000ppm CH ₄ , natural gas
α (1000ppm/ 5000ppm CH ₄)	Concentration slope rate	≤ 0.6	
Standard detecting condition	Temp: 20℃ ±2℃ Humidity: 65% ±5%	V _c :5V±0.1 V _h : 5V±0.1	
Preheat time	Over 24 hour		

D. Structure and configuration, basic measuring circuit

Parts	Materials
1 Gas sensing layer	SnO ₂
2 Electrode	Au
3 Electrode line	Pt
4 Heater coil	Ni-Cr alloy
5 Tubular ceramic	Al ₂ O ₃
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



Configuration A



Structure and configuration of MQ-4 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-4 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

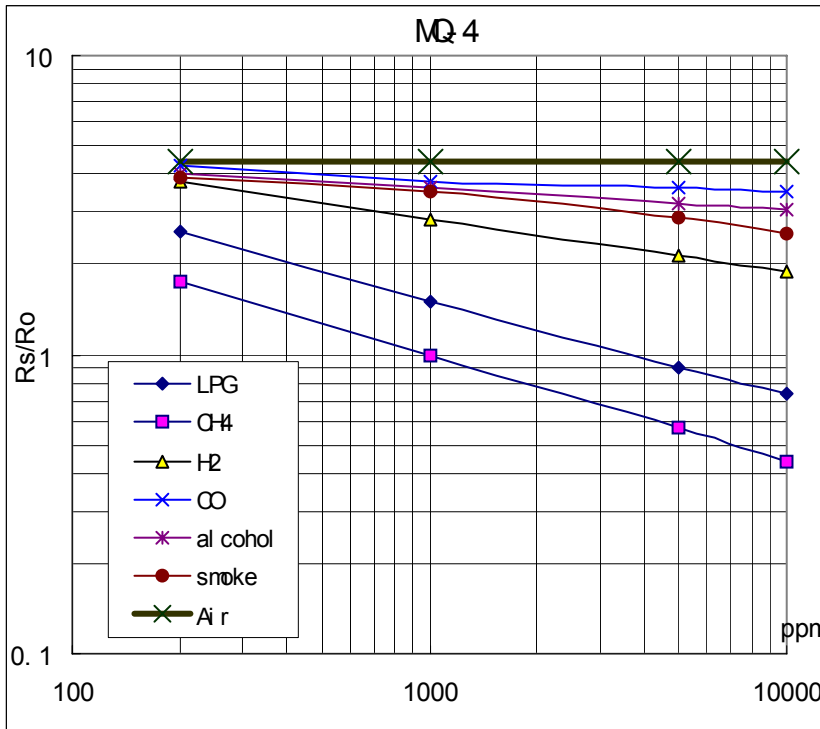


Fig.2 sensitivity characteristics of the MQ-4

Fig.3 is shows the typical sensitivity characteristics of the MQ-4 for several gases.

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

Ro: sensor resistance at 1000ppm of CH₄ in the clean air.
Rs: sensor resistance at various concentrations of gases.

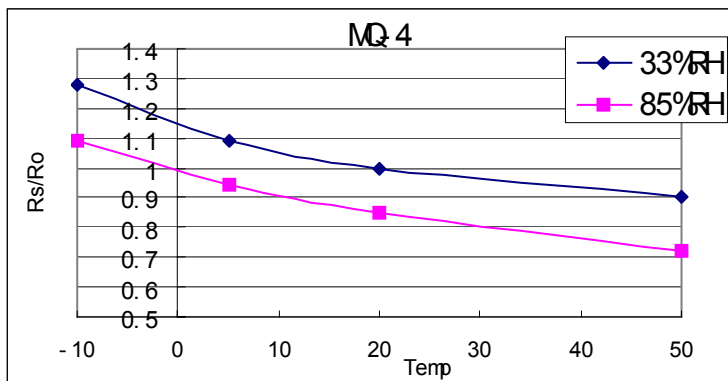


Fig.4 is shows the typical dependence of the MQ-4 on temperature and humidity.

Ro: sensor resistance at 1000ppm of CH₄ in air at 33%RH and 20 degree.

Rs: sensor resistance at 1000ppm of CH₄ in air at different temperatures and humidities.

SENSITIVITY ADJUSTMENT

Resistance value of MQ-4 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 5000ppm of CH₄ concentration in air and use value of Load resistance (R_L) about 20KΩ (10KΩ to 47KΩ).

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