TECHNICAL DATA   MP-3 Flat Surfaced GAS SENSOR

MP-3 model with advanced planar construction is comprised of heater and metal oxide semiconductor material of subminiature Al_2O_3 ceramic plate, fetch out electrode down-lead, encapsulation in metal base and cap. When the target gas（Alcohol） exist , The sensor's conductivity is more higher along with the gas concentration rising. Please use simple electrocircuit, Convert change of conductivity to correspond output signal of gas concentration.

Features:

*Full solid state semiconductor alcohol sensor
* Lower voltage and consumption
* Small size
* Fast response and resume
* Highest sensitivity
* Excellent stability and long life
* Easy circuit and big signal output
* Excellent selectivity

Application

It is used for detecting whether the driver and other people who drink alcohol, or detecting whether ethanol steamy exist in other places.
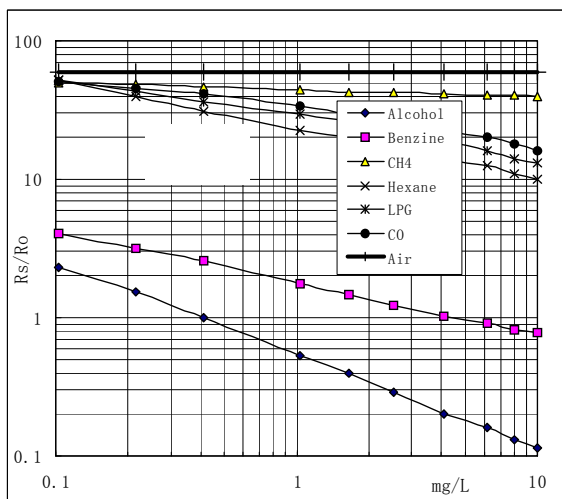
Sensitivity

Tem./ Hum

Fig.1 is the typical curve for sensor sensitivity
The horizontal ordinate is gas concentration,the vertical is gas resistance ratio.(Rs/Ro)
Ro: sensor resistance in the clean air.
All the data got from the testing in the standard conditions. The sensitivity of smoke is got from burn 10pcs cigarettes in 8cbm space,its output correspond with 0.1mg/L alcohol.
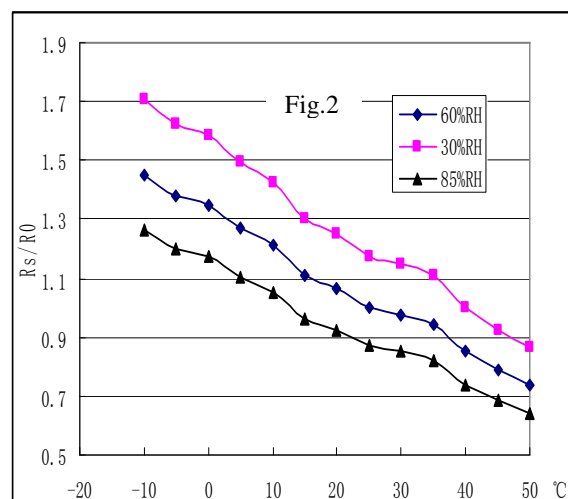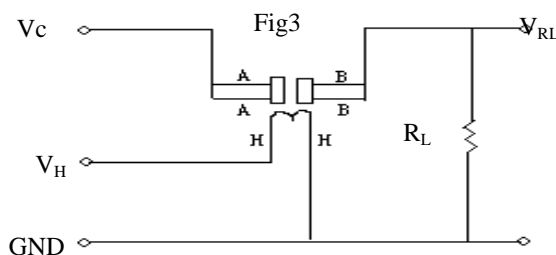
Fig.2 shows the typical dependence on temperature and humidity. The horizontal ordinate is test tempetature, the vertical is gas resistance ratio. (Rs/Ro).Rs is resistance in 0.4mg/L alcohol Tem./Hum.Ro is resistance 0.4mg/L alcohol,20℃/65%RH.

Fig3

BASIC CIRCUIT

Fig.3 shows the basic sensor. Two voltage sensor, heating voltage(Vc). V_H is used temperature and Vc is

MEASURING

measuring circuit of should be applied to this voltage(V_H) and circuit for suppling a certain used for testing the

voltage(V_{RL}) of load resistance(R_L) that connect to the sensor in series. Due to the tight polarity of sensor, Vc should be used in DC. Also,Vc and V_H could share one power supply circuit if it can meet the electronic characteristic of sensor. In order to make better use of sensor, a proper R_L is very important.

SPECIFICATIONS：

A. Standard work condition

Symbol	Parameter name	Technical condition	Remarks
V_C	Circuit voltage	≤24V	DC
V_H	Heating voltage	2.5V±0.1V	AC or DC
R_L	Load resistance	adjustable	
R_H	Heater resistance	29Ω±3Ω	Room Tem.
P_H	Heating consumption	≤250mW	

B.Environment condition

Symbol	Parameter name	Technical condition	Remark
Tao	Using Temperature	−10℃－＋50℃	
Tas	Storage Temperature	−20℃－＋70℃	
R_H	Related humidity	less than 95%Rh	
O_2	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value >2%

C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Ramark
Tres	Respond Time	≤5S(70% Response)	
Trec	Resume Time	≤30S(70% Response)	
Rs	Sensing Resistance	5KΩ-50KΩ(0.4mg/LAlcohol)	
α(R_{300}/R_{100}ppm Alcohol)	Concentration slope rate	≤0.6	Detecting concentration scope： 0.04－4mg/L Alcohol
Standard working condition	Vc: 2.5V±0.1V V_H: 2.5V±0.1V Temp：20℃±2℃ Humidity：65%±5%		
Preheat time	Over 48 hour		

Formula of sensitivity power consumption Ps： $Ps=Vc^2 \times Rs/(Rs+R_L)^2$

Formula of sensor resistance（Rs）： $Rs=(Vc/V_{RL}-1) \times R_L$

B. Structure and configuration

Structure and configuration of MP-3 gas sensor is shown as Fig. 4, sensor composed by micro AL2O3 ceramic tube, Tin Dioxide (SnO2), sensitive layer, measuring electrode and heater are fixed into a crust made by metal net. The heater provides necessary work conditions for sensitive components. The enveloped MP-4 have 4pins ,2 of them（3#、4#）are used to fetch signals, and other 2（1#、2#）are used for providing heating current.