

MP135 For Air contaminants Detection

MP135 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 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:

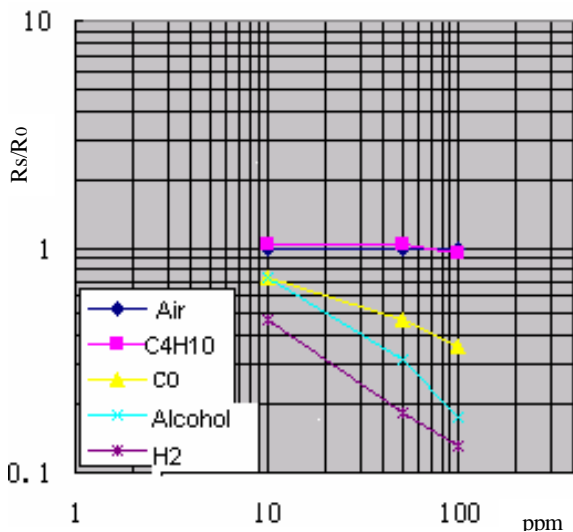
- * High Sensitivity to H_2
- * Small size
- * 5V steady voltage, low powerconsumption
- * Fast response and resume
- * Simple Drive circuit
- * High stability and long life

Application

Widely used in family , bad gas detection, automatic air exhaust, air fresher.



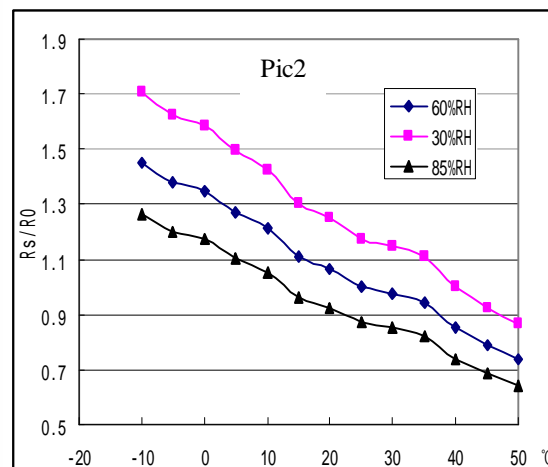
Sensitivity Characteristics:



Pic 1 is typical sensitivity characteristics.

Ordinate is sensor's resistance ratio (R_s/R_o)
 Abscissa is gas concentration. R_s is a resistance In different gas concentration. R_o is In 50ppm H_2 Resistance. All the testing is finished in standard Testing condition.

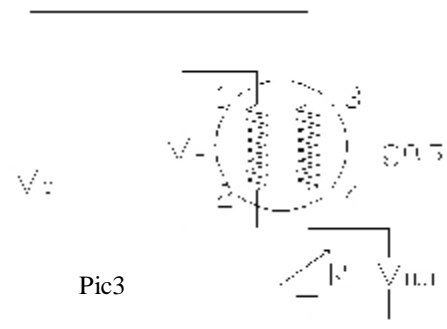
Temperature/Humidity Dependency:



Pic 2 is typical temperature and humidity depency. Ordinate is sensor's resistance ratio (R_s/R_o)
 Abscissa is testing temperature. R_s is a resistance In 50ppm H_2 and a variety of temperature / Humidity . R_o is In a resistance 50ppm H_2 and $20^\circ C/65\%RH$.

Basic measuring circuit:

Pic 3 is a basic measuring circuit of a sensor. This sensor need to add 2 voltage: Heater voltage (V_H) and measuring voltage (V_C) ; V_H Is a given working temperature applied for sensor. V_C is measuring (V_{RL}) of load resistance (R_L) which is in series with the sensor. This sensor have light polarity , V_C need to use DC power . On the premise of satisfy with sensors electrical property demand, V_C and V_H



may use a same power circuit . In order to use the sensor' s performance, need to choose suitable R_L .

Specifications:

A. standard working conditions

Symbol	Parameter Name	Technical condition	Remark
V_c	Loop Voltage	$\leq 24V$	DC
V_H	Heater Voltage	$5.0V \pm 0.2V$	AC or DC
R_L	Loading Resistance	Adjusted	
R_H	Heating Resistance	$130\Omega \pm 20\Omega$	Room Temperature
P_H	Heating Power Consumption	$\leq 240mW$	

B. Environment Conditions

Symbol	Parameter Name	Technical condition	Remark
T_{ao}	Using Temperature	$-10^\circ C - +50^\circ C$	
T_{as}	Storage Temperature	$-20^\circ C - +70^\circ C$	
RH	Relative Humidity	Less than 95% RH	
O_2	Oxygen Concentration	21%(Standard conditions) Oxygen Concentration can impact to sensitivity speciality	Least more than 2 %

C. Sensitivity Speciality

Symbol	Parameter Name	Technical condition	Remark
R_s	Sensitivity face resistance	$10K\Omega - 100K\Omega$ (50ppm H_2)	Suitable range: 10-1000ppm H_2 10-1000Alcohol 10-500ppmCO
S	Sensitivity(50ppm H_2)	$R_{in\ air} / R_{in\ typical\ gas} \geq 3$	
Standard Working Conditions	$V_c: 5.0V \pm 0.2V$ $V_H: 5.0V \pm 0.2V$ Temperature: $20^\circ C \pm 2^\circ C$ Relative Humidity: $65\% \pm 5\%$		
Preheating Time	More than 48 hours		

Sensitivity consumption (P_s) calculate formula: $P_s = V_c^2 \times R_s / (R_s + R_L)^2$

Sensor resistance (R_s) calculate formula: $R_s = (V_c / V_{RL} - 1) \times R_L$

D. Structure and configuration

Please view Pic 4, MP135 is comprised of subminiature Al_2O_3 ceramic plate, SnO_2 sensitivity layer, Heater, sensitivity components with heater and measuring electrode fixed in the metal antrum, Heater supplied a necessary work conditions. The sensor with encapsulation have 4 needle shape pin, two of them (1#, 2#) is used to supply heating current, (3#, 4#) is used to signal output.

