

# LPG gas sensor HS-133 specifications

## 1.Characteristics

- 1.1 High sensitive, good selectivity to fume and alcohol.
- 1.2 Long period using life and reliable stability.

## 2. Application

- 2.1 Gas leakage detecting in family and industry
- 2.2 Suitable for detecting equipments of LPG、isobutane、propane、methane.

## 3. Structure

- 3.1 Structure and configuration of HS-133 as below Fig. 1

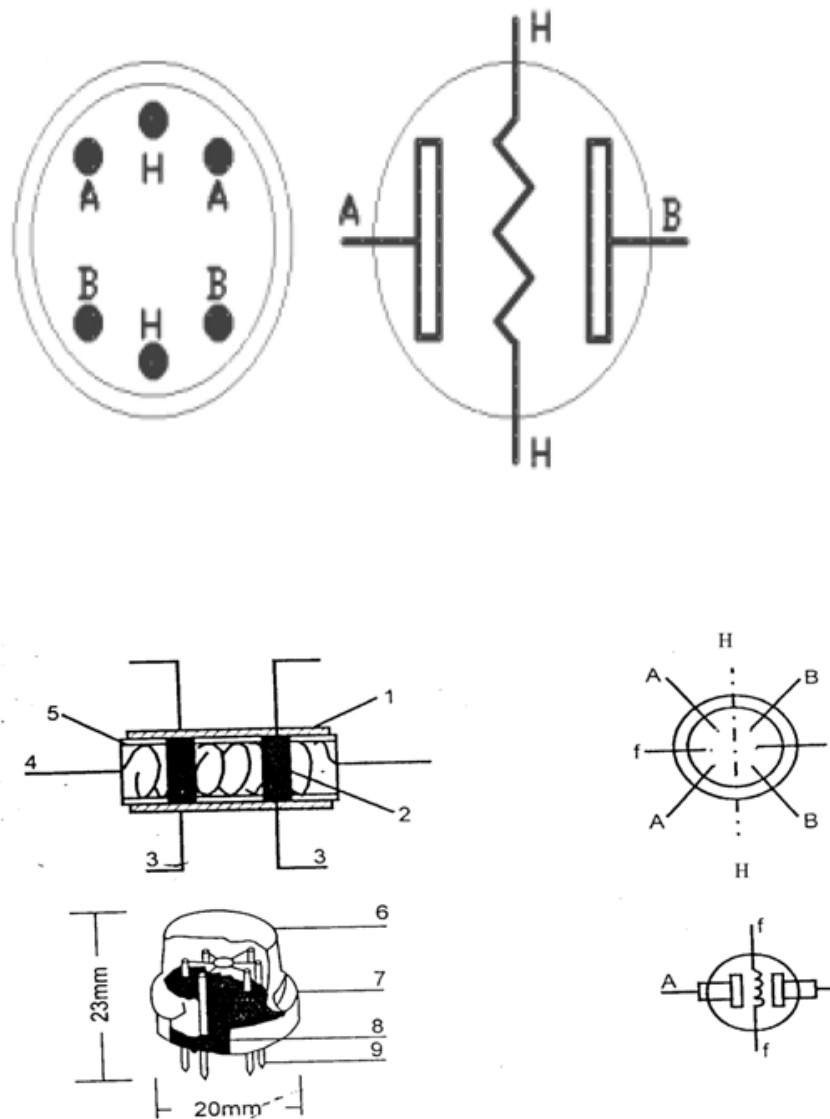


Fig.1

series	Parts	Materials
1	gas sensing layer	SnO <sub>2</sub>
2	measurement electrode	Au
3	measurement electrode ignited line	Pt
4	Heater	Ni-Cr alloy
5	tubular ceramic basic body	Al <sub>2</sub> O <sub>3</sub>
6	anti-explosion network	100 dual layer atainless steel (SUS316)
7	clamp ring	materials valcanized Ni
8	basic seat	bakelite
9	tube foot	materils valcanized Ni

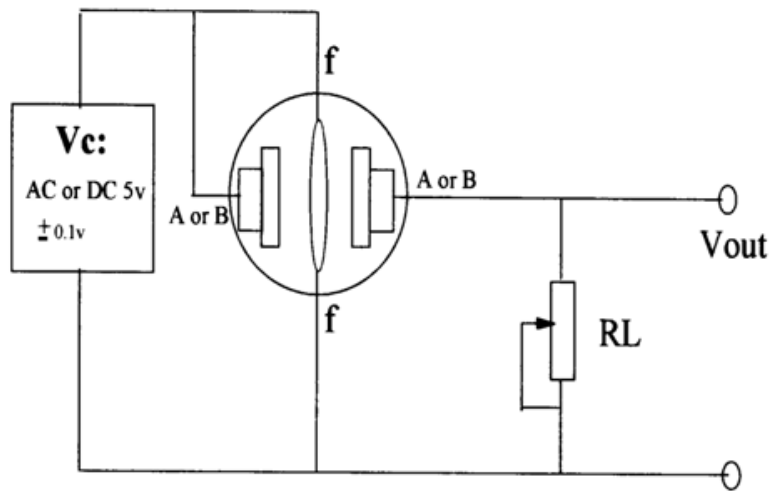


Fig:2

3.2 HS-133 have 6 pins, 4 of them are used to catch signals, and other 2 are used for providing heating current. Electric parameter measurement circuit is shown as Fig.2

## 4. Property

### 4.1 Standard work condition

Symbol	Parameter name	Technical condition	Remarks
V <sub>c</sub>	circuit voltage	5V	AC OR DC
V <sub>H</sub>	Heating voltage	5V	ACOR DC
P <sub>L</sub>	load resistance	can be adjustable	P <sub>s</sub> <25mW
R <sub>H</sub>	heater resistance	33 Ω ± 5%	room Tem
P <sub>H</sub>	heating consumption	less than 800mw	

### 4.2 Environment condition

Symbol	Parameter name	Technical condition	Remarks
T <sub>ao</sub>	Uaing Tem	-20°C-50°C	
T <sub>as</sub>	storage Tem	-20°C-70°C	
RH	related humidity	less than 95%Rh	

O <sub>2</sub>	oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value is over 2%
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#### 4.3 Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Remark
R <sub>s</sub>	sensing body resistance	2k Ω -20k Ω (2000ppm isobutane )	Detecting concentration scope:  300ppm-10000ppm isobutane or LPG
α (5000/1000) isobutane	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		

#### 4.4 Machinery characteristic

Project	Condition	Property
Vibration	frequency 100cpm	Should be conformed to given sensitivity characteristic
	vertical vibrating amplitude	
	time 1 hour	
Punch	Acceleration 100G	
	punch times 5	

### 5. Sensitivity characteristic curve of HS-133

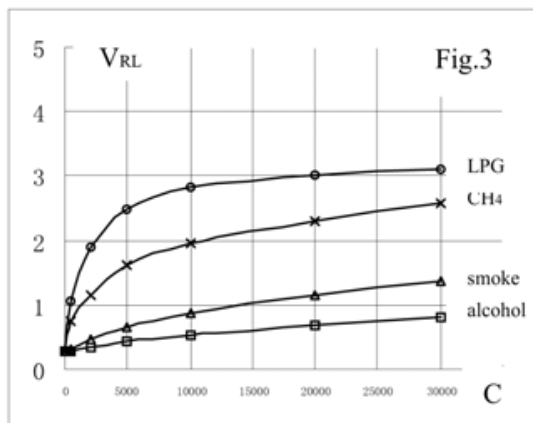


Fig 3 is relation curve of  $V_{RL}$  and gas concentration.

in their: Temp: 20°C、 Humidity: 65%、 O<sub>2</sub> concentration 21%  $R_L = 5k \Omega$

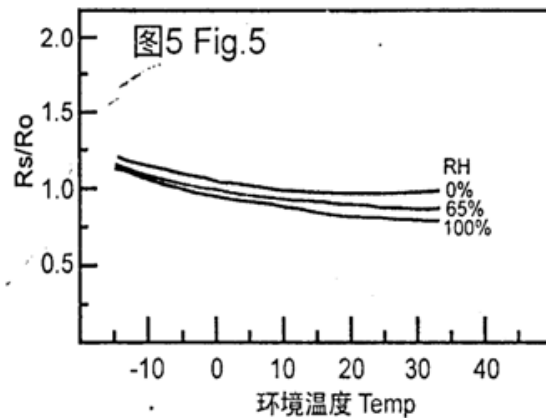


Fig 4 is relation curve between surface resistance of HS-133 and environment related humidity. Under the conditions of:

$R_o = 20^\circ C$ , RH= 0% in 2000ppmLPG

$R_s$ = resistance value in other Temp.

## 6. Sensitivity adjustment

Resistance value will be changing in the different spices and different concentration gas. So, when user operating the components, sensitivity adjustment is necessary. We suggest that use 300ppm-2000ppm isobutane  $C_4H_{10}$  or LPG as standard sensitivity adjustment concentration gas.

Adjustment steps:

- Input HS-133 to application circuits.
- Before test the long storage HS-133 we suggest the pre-heating time should not be shorter than 24 hours in order to guarantee HS-133 property can reach stability completely.
- In the detecting gas concentration, adjust the load resistance RL until suitable signal output.

## 7. Application circuit which have temperature compensation function.

