

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

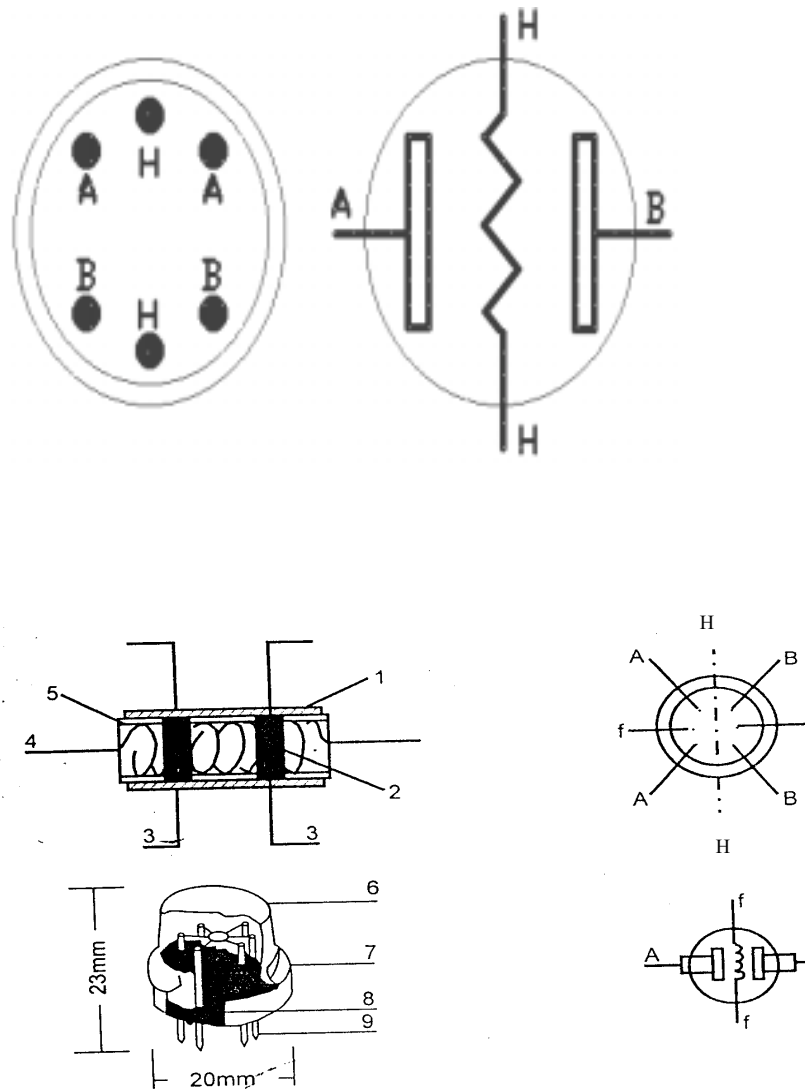


Fig.1

| series | Parts | Materials |
|--------|------------------------------------|---|
| 1 | gas sensing layer | SnO ₂ |
| 2 | measurement electrode | Au |
| 3 | measurement electrode ignited line | Pt |
| 4 | Heater | Ni-Cr alloy |
| 5 | tubular ceramic basic body | Al ₂ O ₃ |
| 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 |

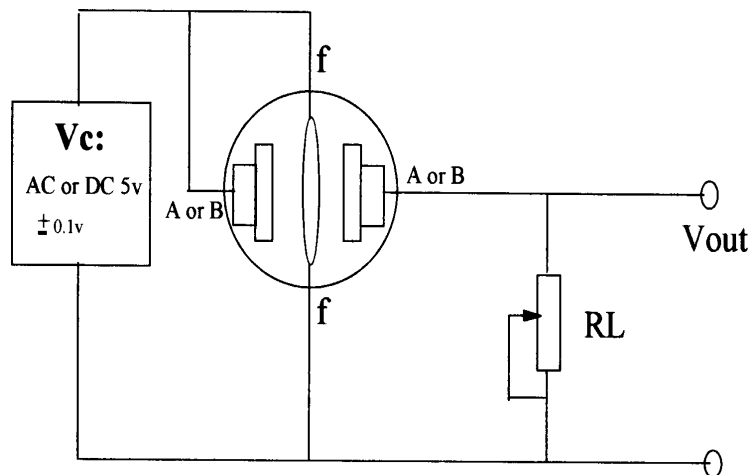


Fig:2

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 _c | circuit voltage | 5V | AC OR DC |
| V _H | Heating voltage | 5V | ACOR DC |
| P _L | load resistance | can be adjustable | Ps <25mW |
| R _H | heater resistance | 33 Ω ± 5% | room Tem |
| P _H | heating consumption | less than 800mw | |

4.2 Environment condition

| Symbol | Parameter name | Technical condition | Remarks |
|-----------------|------------------|---------------------|---------|
| T _{ao} | Uaing Tem | -20°C-50°C | |
| T _{as} | storage Tem | -20°C-70°C | |
| RH | related humidity | less than 95%Rh | |

| | | | |
|----------------|----------------------|--|--------------------------|
| O ₂ | oxygen concentration | 21%(standard condition)Oxygen concentration can affect sensitivity | minimum value is over 2% |
|----------------|----------------------|--|--------------------------|

4.3 Sensitivity characteristic

| Symbol | Parameter name | Technical parameter | Remark |
|-------------------------------|-------------------------------------|-------------------------------------|--|
| Rs | 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% | Vc:5V±0.1 Vh: 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

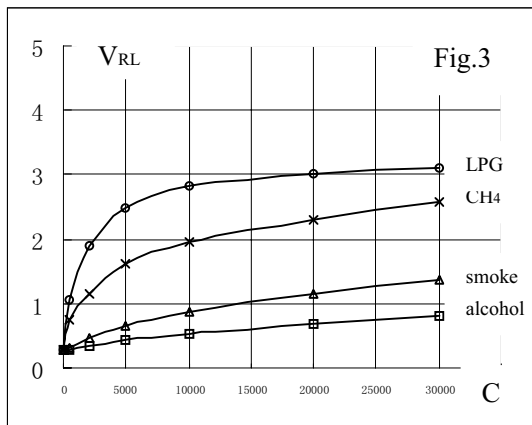


Fig 3 is relation curve of V_{RL} and gas concentration.

in their: Temp: 20°C、 Humidity: 65%、 O₂ concentration 21% RL =5k Ω

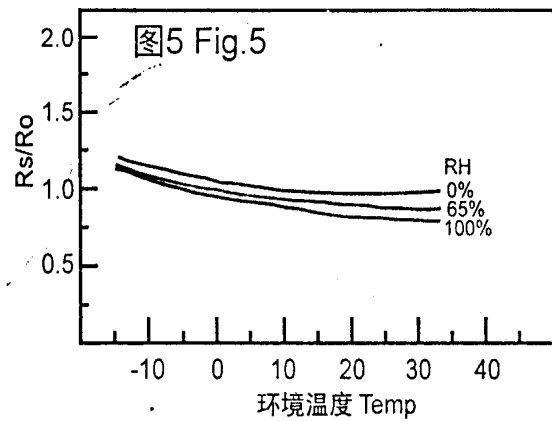


Fig 4 is relation curve between surface resistance of HS-133 and environment related humidity. Under the conditions of:

R_o = 20°C, RH= 0% in 2000ppmLPG

Rs = resistance value in other Temp.

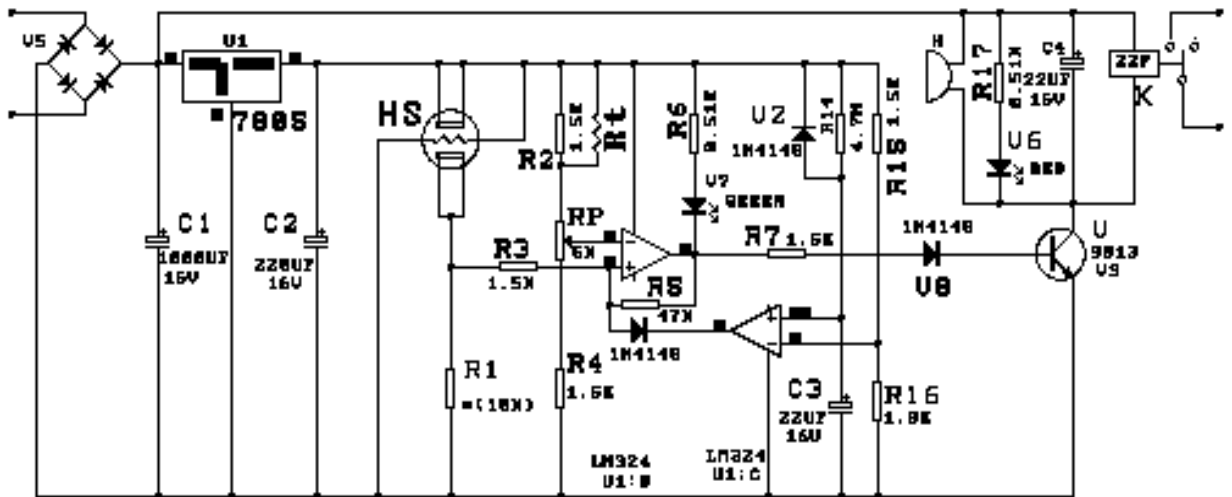
6. Sensitivity adjustment

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



Any questions, please advise:

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