TECHNICAL DATA

MQ-3 GAS SENSOR

FEATURES
* High sensitivity to alcohol and small sensitivity to Benzine.
* Fast response and High sensitivity
* Stable and long life
* Simple drive circuit

APPLICATION
They are suitable for alcohol checker, Breathalyser.

SPECIFICATIONS

A. Standard work condition

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter name</th>
<th>Technical condition</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vc</td>
<td>Circuit voltage</td>
<td>5V±0.1 AC OR DC</td>
<td></td>
</tr>
<tr>
<td>Vh</td>
<td>Heating voltage</td>
<td>5V±0.1 AC OR DC</td>
<td></td>
</tr>
<tr>
<td>Rl</td>
<td>Load resistance</td>
<td>200K Ω</td>
<td></td>
</tr>
<tr>
<td>Rh</td>
<td>Heater resistance</td>
<td>33 Ω ±5% Room Tem</td>
<td></td>
</tr>
<tr>
<td>Pd</td>
<td>Heating consumption</td>
<td>less than 750mw</td>
<td></td>
</tr>
</tbody>
</table>

B. Environment condition

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter name</th>
<th>Technical condition</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tao</td>
<td>Using Tem</td>
<td>-10°C-50°C</td>
<td></td>
</tr>
<tr>
<td>Tas</td>
<td>Storage Tem</td>
<td>-20°C-70°C</td>
<td></td>
</tr>
<tr>
<td>Rr</td>
<td>Related humidity</td>
<td>less than 95%Rh</td>
<td></td>
</tr>
<tr>
<td>O2</td>
<td>Oxygen concentration</td>
<td>21%(standard condition)</td>
<td>can affect sensitivity minimum value is over 2%</td>
</tr>
</tbody>
</table>

C. Sensitivity characteristic

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter name</th>
<th>Technical parameter</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs</td>
<td>Sensing Resistance</td>
<td>1MΩ - 8 MΩ</td>
<td>Detecting concentration scope: 0.05mg/L—10mg/L Alcohol</td>
</tr>
<tr>
<td>α</td>
<td>Concentration slope rate</td>
<td>≤0.6</td>
<td></td>
</tr>
</tbody>
</table>

Standard detecting condition:
Temp: 20°C±2°C Vc:5V±0.1
Humidity: 65%±5% Vh: 5V±0.1
Preheat time: Over 24 hour

D. Structure and configuration, basic measuring circuit

Fig. 1

Fig. 2

Parts | Materials
--- | ---
1 | Gas sensing layer SnO2
2 | Electrode Au
3 | Electrode line Pt
4 | Heater coil Ni-Cr alloy
5 | Tubular ceramic Al2O3
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
Structure and configuration of MQ-3 gas sensor is shown as Fig. 1 (Configuration A or B), sensor composed by micro Al₂O₃ ceramic tube, Tin Dioxide (SnO₂) 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-3 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.3 is shows the typical sensitivity characteristics of the MQ-3 for several gases. in their: Temp: 20℃, Humidity: 65%, O₂ concentration 21%

RL=200kΩ
Ro: sensor resistance at 0.4mg/L of Alcohol in the clean air.
Rs: sensor resistance at various concentrations of gases.

Fig.4 is shows the typical dependence of the MQ-3 on temperature and humidity.

Rs: sensor resistance at 0.4mg/L of Alcohol at different temperatures and humidities.

SENSITIVITY ADJUSTMENT

Resistance value of MQ-3 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 0.4mg/L (approximately 200ppm) of Alcohol concentration in air and use value of Load resistance(RL) about 200 KΩ (100KΩ to 470 KΩ).

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