Arsine gas sensor

Model: MQ-E3-AsH3

Version: V1.3

Date: May.10th, 2016

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1. Description

MQ-E3-AsH3 Electrochemical gas sensors

The MQ-E3-AsH3 electrochemical element operates according to the principles of electrochemistry, utilizing the electrochemical oxidation process of the test gas at the working electrode in the electrolytic cell. Electronic circuitry maintains the working and reference electrodes of the electrolytic cell at an appropriate potential, allowing electrochemical oxidation of the test gas to occur. Because the Faraday current generated by the oxidation and reduction of oxygen is negligible, the current generated by the electrochemical reaction of the test gas is proportional to its concentration and follows Faraday's law. Thus, the concentration of the test gas can be determined by measuring the current.

2. Module Features

*Low power consumption

*High precision

*High sensitivity

*Wide linear range

*Strong anti-interference capability

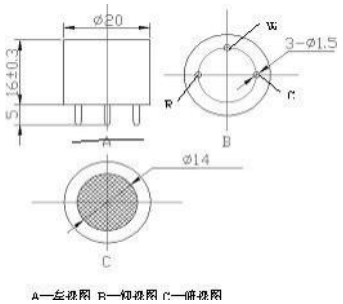
*Excellent repeatability and stability

3.Main applications:

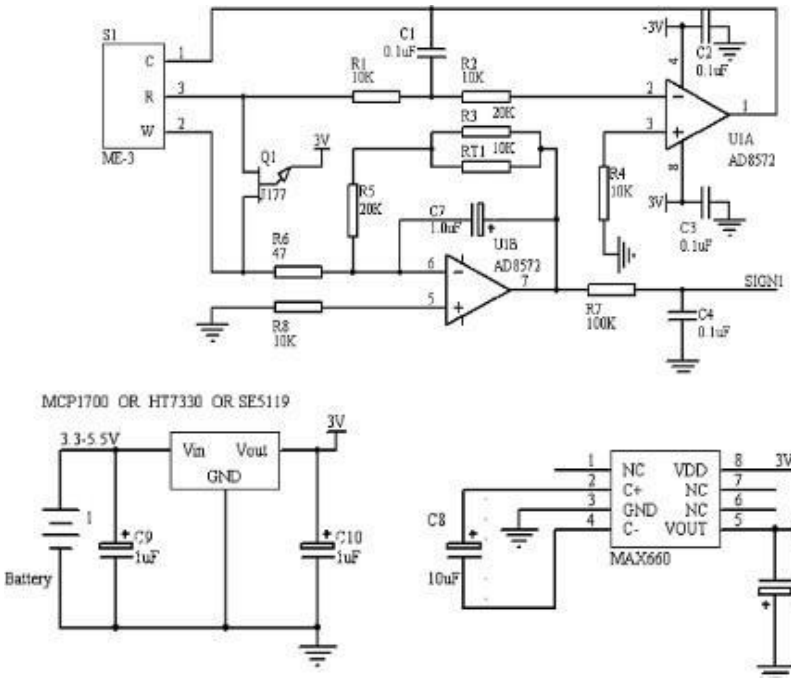
Widely suitable for the detection of AsH3 in industry, underground mines and environmental protection

4.Technical indicators

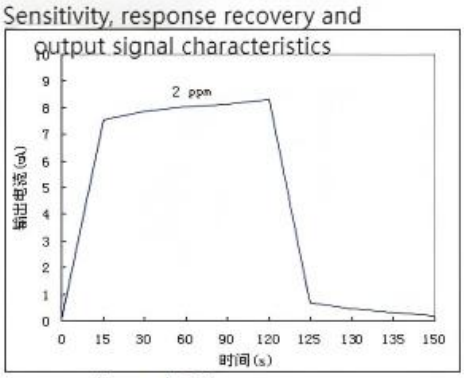
Product Model	MQ-E3-AsH3
Product Type	Electrochemical gas sensors
Product Package	Plastic package (MQ-E3)
Detection Range	0—3ppm
Maximum Measurement Limit	20ppm
Expected Life	2 years
Sensitivity	4±1.5 uA/ppm
Resolution	0.01ppm
Operating Temperature Range	-20℃~+50℃
Operating Pressure Range	Standard atmospheric pressure±10%
Response Time (T90)	≤30S
Humidity Range	15% — 90%RHNo condensation
Zero Drift (-20° C to +40° C)	≤0.07ppm
Stability (per month)	<2%
Load Resistance (recommended)	10Ω
Repeatability	<2%Output value
Output Linearity	Linear



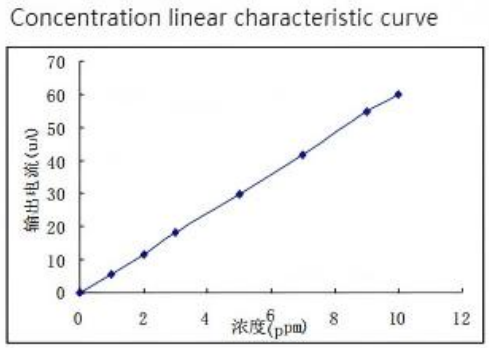
5. Basic Circuit

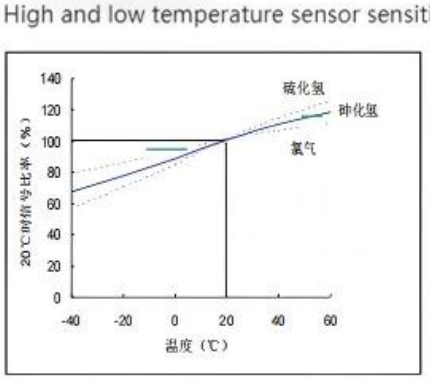


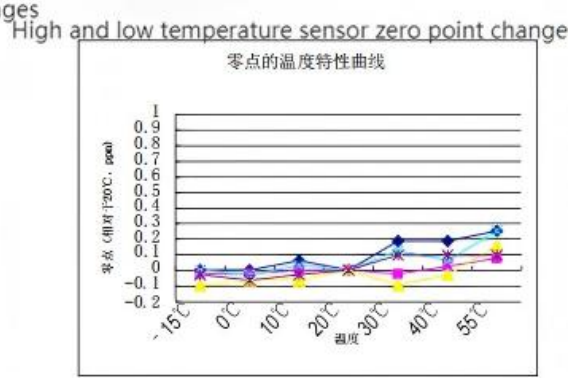
6. Sensor Characterization



(2ppm AsH3)







7. Interference Resistance

The MQ-E3-AsH3 sensor can respond to gases other than the target gas. The

sensor's response characteristics to several common interfering gases are listed in the table below for reference. The data in the table represent typical responses at given gas concentrations.

Gas	Concentration	MQ-E3-ASH3
PH3	10ppm	10ppm
$(CH_3)_2SiO$	900ppb	900ppb
B_2H_6	300ppb	105 ppb
SO2	5ppm	1ppm
H2	1000ppm	30ppm
C_2H_4	100ppm	1.8ppm
CO	1000ppm	1ppm

8. Precautions:

Do not use soldering during installation.

Do not break or bend the pins.

Aging time must be at least 48 hours before use.

Electrolyte leakage can cause damage; do not disassemble the sensor at will.

Avoid contact with organic solvents (including silicone rubber and other adhesives), paints, chemicals, fuel oils, and high-concentration gases.

Electrochemical sensors must not be completely encapsulated with resin materials or left in an oxygen-free environment for extended periods, as this will impair sensor performance.

Electrochemical sensors must not be left in environments containing corrosive gases for extended periods, as these can damage the sensor.

Gas zero point measurements must be performed in a clean atmosphere.

Avoid vertical air intake from the front during sensor testing and application.

The sensor's air intake must not be blocked or contaminated.

The waterproof and breathable membrane above the sensor must not be removed or damaged.

Do not subject the sensor to excessive impact or vibration.

Do not use if the housing is damaged or deformed.

Recovery to its initial state after extended use in a high-concentration gas environment can be slow.

When storing biased sensors, the working and reference electrodes should be in an open circuit state.

Do not use hot melt adhesive or sealants with a curing temperature above 80° C to seal the sensor.

Do not store or use the sensor in high-concentration alkaline gases for extended periods of time.