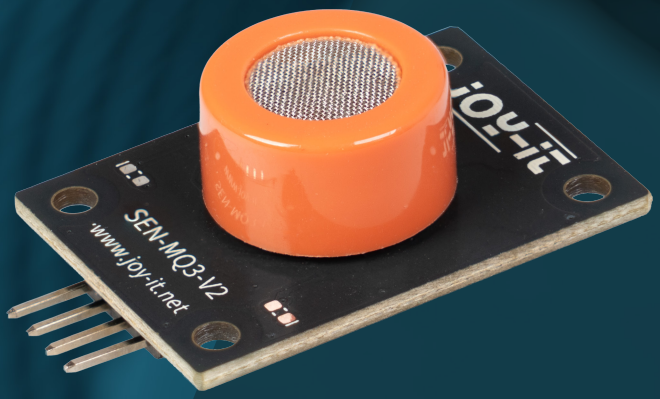
MQ-3 ALCOHOL GAS SENSOR BOARD

WITH ANALOG AND DIGITAL OUTPUT

SPECIAL FEATURES

- Optimized for detection of ethanol (alcohol), with cross-sensitivity to hydrogen
- Measurement range of approximately 100 to 10,000 ppm
- Analog output (0–5 V) for continuous gas concentration monitoring
- Digital threshold output with adjustable trigger via on-board potentiometer
- Operates from a standard 5 V DC supply with integrated heater circuit
- Compact sensor board with LED status indication and flexible mounting options



The MQ-3 gas sensor board is a semiconductor-based sensor module specifically optimized for the detection of ethanol vapors, making it suitable for alcohol concentration measurement applications such as breath alcohol testers. The sensing element exhibits high sensitivity to alcohol while also responding to hydrogen, which should be considered during application design and calibration. The typical detection range spans from 100 to 10,000 ppm.

The module operates from a 5 V DC supply and integrates the required heater circuitry to maintain the sensing element at its specified operating temperature. Gas concentration changes are reflected by variations in the sensor resistance, which are converted into an analog voltage output ranging from 0 to 5 V. In addition, the board provides a digital output generated by an onboard comparator with an adjustable threshold, allowing direct use in switching or alarm applications.

After each power-up, the sensor requires a heat-up time of approximately 10 to 15 minutes before reliable measurements can be obtained. For initial commissioning, a burn-in period of 48 to 168 hours of continuous operation is recommended to stabilize the sensing element. Following this period, a baseline resistance measurement in clean air should be recorded as a reference value. If the sensor has been powered off for several weeks or longer, repeating the burn-in and baseline procedure is advised to maintain measurement consistency.

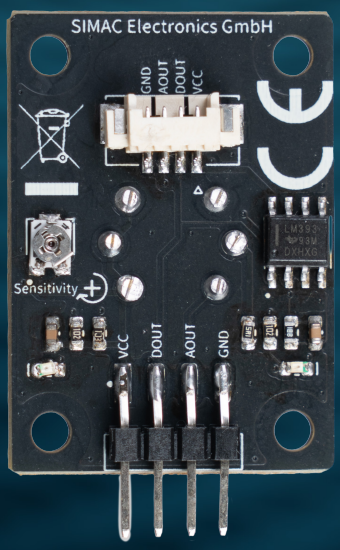
The board is equipped with power and status LEDs for visual indication of operation and detection status. For mechanical and layout flexibility, the LEDs may alternatively be soldered on the opposite side of the PCB. Electrical interfacing is provided via a 4-pin 2.54 mm header and a Molex PicoBlade connector, enabling straightforward integration into embedded systems, microcontroller platforms, and gas detection devices.

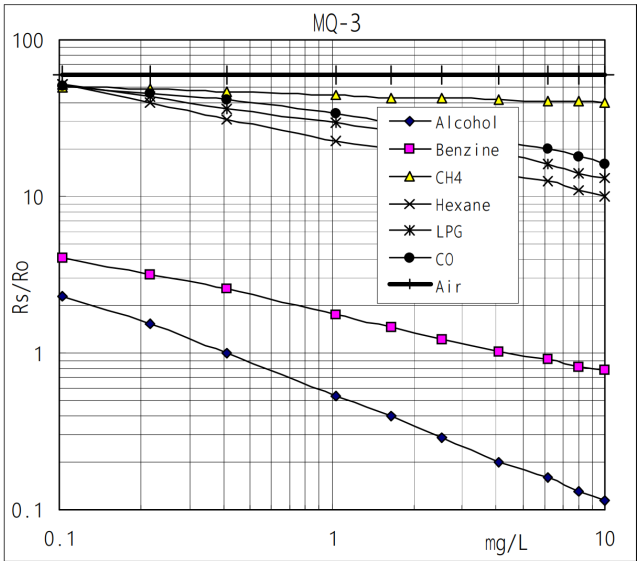
MAIN FEATURES

Measurable substances	Ethan, Alcohol over the concentration of hydrogen
Measurement range	100 - 10000 ppm
Application areas	f.e. for breath alcohol tester, robotic, microcontroller projects
Supply voltage	5 V DC
Output	Analog sensor value output 0 V - 5 V, digital threshold output 0 V / 5 V (threshold adjustable with onboard potetiometer
Heat up time	At every start of the sensor it needs to heat up for 10 to 15 minutes before the sensor can deliver a reliable value.
Burn-in time	When first used, the sensor requires a burn-in period of 48 to 168 hours of continuous operation to stabilize the sensing element; afterwards, a baseline reading should be taken in clean air to establish a reliable reference value. This procedure should be repeated if the sensor has been powered off for several weeks or longer.
LED indicator	Power LED (green), status LED (red) You can also solder the LEDs on the opposite side of the board to adapt it to the requirements of your project
Interfaces	4pin pin header (2.54 mm), molex picoblade (53261-0471)

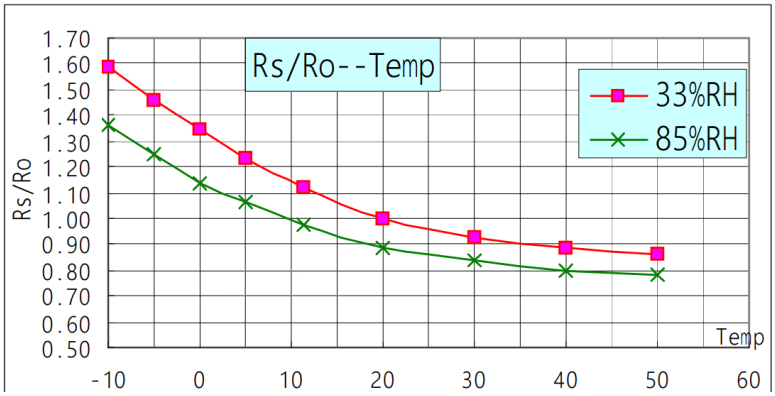
FURTHER INFORMATION

Weight	8 g
Dimensions (l x w x h)	41 x 25 x 16 mm
Article number	SEN-MQ3-V2
Scope of delivery	MQ3 sensor board
Customs tariff number	90269000
EAN	4250236830643





This shows the typical sensitivity characteristics of the MQ-3. Rs means resistance of the sensor in different gases, Ro means resistance of sensor in
1000ppm Alcohol.



Correlation between sensor resistance(Rs) and ambient temperature and humidity
The resistance of the sensor can be calculated with the following formula:

$$R_s = \left(\frac{V}{V_{RL}} - 1 \right) \times R_L$$

V= Supply voltage (5 V); V_{RL}= Analog pin voltage; R_L= Load resistance (1500 Ω)