TGS5042 Gas Sensor for Carbon Monoxide Detection

characteristic：

* Can be battery-powered
* High selectivity/repeatability for carbon monoxide
* High linear output characteristics for carbon monoxide
:: Easy and simple calibration
* Long service life
* Obtain UL certification
* Meet UL2034,EN50291 and RoHS requirements

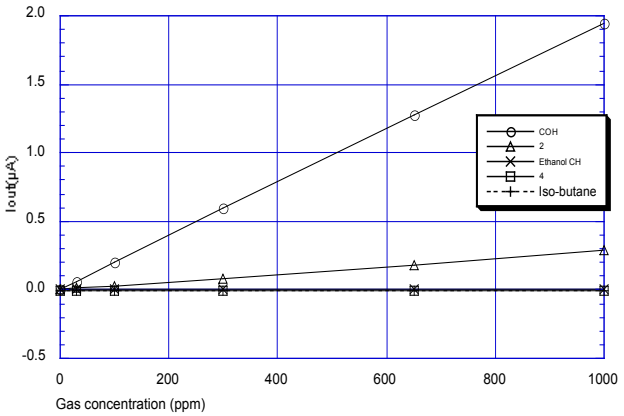
apply：

Residential and commercial carbon monoxide detectors
Industrial carbon monoxide monitoring
:: Ventilation control in indoor parking
* fire-alarm

The TGS5042 is a battery-powered electrochemical sensor developed by Figaro. Compared to existing electrochemical sensors, it offers the following advantages: eco-friendly electrolyte, no risk of electrolyte leakage, carbon monoxide detection capability up to 1% concentration, wide operating temperature range (-5˚C to 55˚C), and extremely low sensitivity to interfering gases. This sensor features long service life, excellent long-term stability, and high precision, making it one of the few ideal options for digital display applications. OEM customers will find that each sensor's barcode allows individual data printing, enabling users to avoid costly gas calibration procedures and track specific sensors. The TGS5042 adopts a standard AA battery size design.

Sensitivity characteristics:

The representative sensitivity characteristic curve is shown in the figure below under standard test conditions (see back). The vertical coordinate shows the output current (I OUT /μA) of the sensor in various gases. The deviation within 0 ~ 500 ppm range shows a high linearity of ± 5%, indicating that it has high selectivity for carbon monoxide.



Temperature and humidity characteristics:

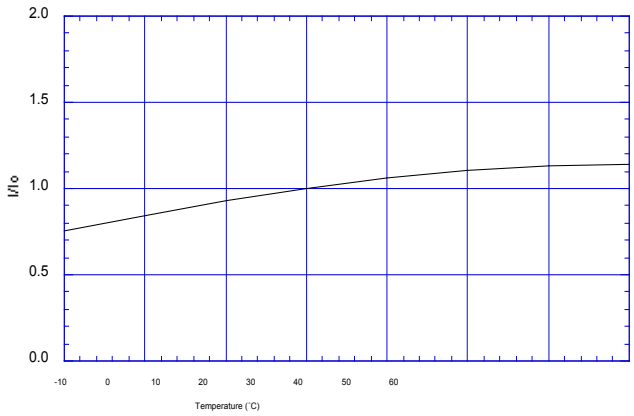
The representative temperature/humidity characteristic curve is shown in the figure below under standard test conditions (see back).

The vertical axis represents the sensor output ratio (I/Io), which is defined as follows:

The linear relationship between I/Io value and carbon monoxide concentration is constant, no matter what the carbon monoxide concentration value is.

I = output current of sensor in carbon monoxide at various temperatures from 400ppm

Io = sensor output current at 20°C and 50% R.H.400ppm carbon monoxide



Important Notice: The application conditions for Feigaro sensors may vary depending on specific customer requirements. Feigaro strongly recommends consulting our technical team prior to use, particularly when the detected gas is outside the listed range. Feigaro assumes no liability for any usage that has not undergone professional testing by Feigaro.

Basic test circuit:

The basic test circuit of TGS5042 is shown in the figure on the right. The small output current (I s) caused by the gas sensor is converted into output voltage (V out) through the synthesis of OP amplifier and resistor (R1).

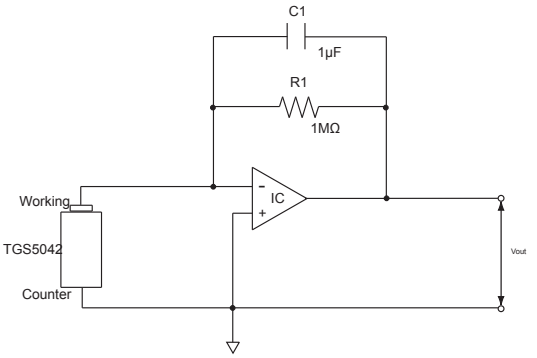
The recommended circuit constants are as follows:

· R1: 1MΩ

· C1: 1μF、IC: AD708

Note: If voltage is applied to the output terminal, the sensor may be damaged. The voltage of the sensor should be strictly controlled below ±10mV.

When the power supply V c is turned off, the sensor may be polarized. In order to prevent this situation, a resistor can be set at both poles of the sensor or an FET can be connected.



specifications：

project	specifications
model	TGS5042-A00 (pin type) TGS5042-B00 (metallic belt type)
Object gas	carbon monoxide
Typical test range	0 ~ 10,000ppm
Output current in carbon monoxide	1.2~2.4nA/ppm
Baseline shift (* 1)	<± 10ppm equivalent
Operating temperature range (* 2 * 3)	0. C ~ +50. C (common) -5. C +55. C (occasionally)
Use humidity range	5 ~ 99%RH (non-condensation)
Response time (T90)	60 Within seconds
Storage temperature conditions (2 * 3)	-5˚C ~ +55˚C
net weight	About 12g
standard test conditions	20±2˚C, 40±10%RH

(* 1) The operating conditions of the sensor in the air are represented.

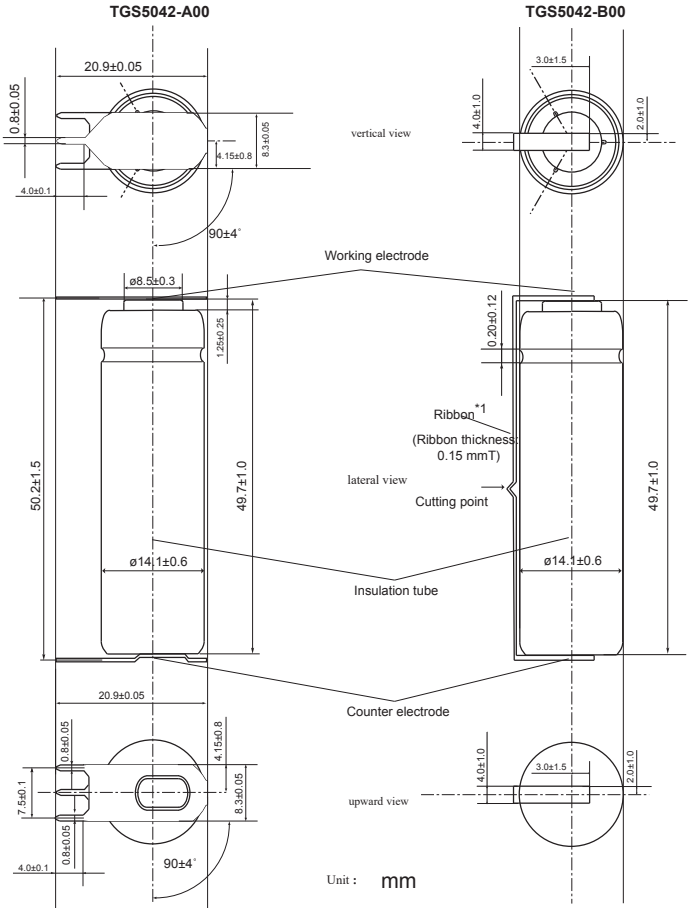
(* 2) If the water in the sensor container is frozen rapidly (usually only in the case of human intervention), irreversible changes in the characteristics of the sensor may occur. To eliminate this risk, keep the sensor cover (working electrode) up when stored.

(* 3) If you need to exceed the specified temperature range, please contact Fegraro.

Note: Please specify the full model including the suffix when selecting.

Note 1): When the TGS 5042 -B 00 sensor is shipped, the working electrode and counter electrode are connected by a metal strip(i.e., short-circuited) to prevent electrode polarization. To test the sensor output, disconnect the metal strip (-B00) and connect the sensor to the test circuit(see example). The disconnect point allows easy removal of the metal strip. The TGS 5042 -A 00 sensor is shipped in an open-circuit state, so a 1 few hours of stabilization time(typical) is recommended before use. For more details, refer to the TGS 5042 Technical Information.

Structure and size:



The typical characteristics of the sensor are shown in this product specification. The actual characteristics of the sensor vary from product to product. Please refer to the specifications of each sensor for details.

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