

TGS 5141 Gas Sensor for Carbon Monoxide Detection

characteristic : _____

- * subminiature
- * 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 the requirements of UL2034, EN50291 and EN54-31

apply : _____

- Residential and commercial carbon monoxide detectors
- * fire alarm

The TGS5141, an electrochemical sensor developed by Figaro, features a battery-powered design that replaces the water reservoir with a specialized electrode. By eliminating the water reservoir component used in the TGS5042 model, the TGS5141 achieves a compact size that is merely 10% of the original's dimensions. This ultra-compact design makes it ideal for portable carbon monoxide detectors, micro-home carbon monoxide monitors, and multi-functional fire detection systems. OEM customers will appreciate the barcode-printed data labels on each sensor, which not only eliminates costly gas calibration procedures but also enables individual tracking of each unit.



Sensitivity characteristics: Temperature and humidity characteristics:

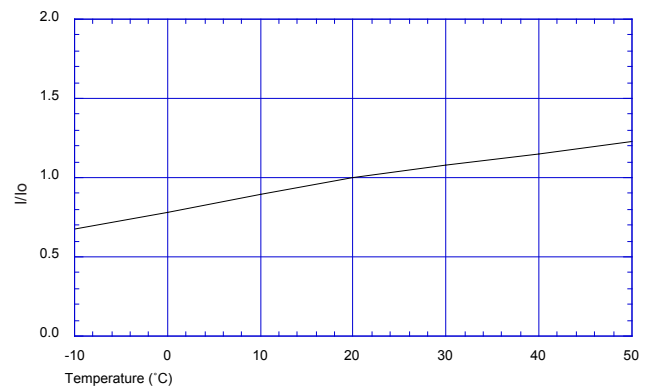
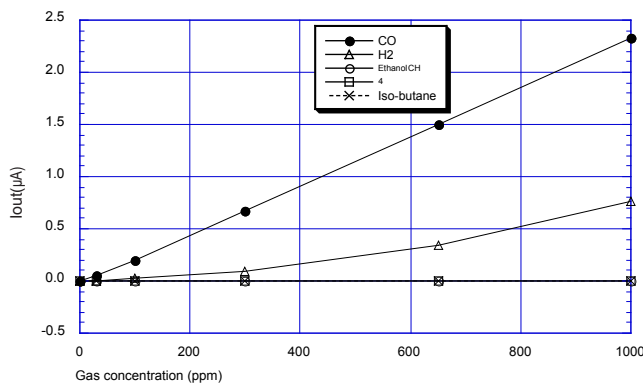
The representative sensitivity characteristic curve is shown in the figure below under standard test conditions (see back).

The vertical axis shows the output current (I_{OUT} / μA) of the sensor in various gases, and the high linearity between the output current and the concentration of carbon monoxide within the range of 0-500ppm shows a deviation of less than $\pm 5\%$.

The following figure shows a representative temperature characteristic curve. The vertical axis represents the sensor output ratio (I/I_0), which is defined as follows.

The linear relationship between I/I_0 values and carbon monoxide concentrations is constant, regardless of the range of carbon monoxide concentrations.

I = Output current of the sensor in 400ppm carbon monoxide at various temperatures
 I_0 = Output current of the sensor in 20°C carbon monoxide



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

Basic test circuit:

The basic measurement circuit of TGS5141 is shown in the right figure. The small output current caused by the gas sensor is converted into an output voltage (V_{OUT}) through the synthesis of the op-amp and the resistor (R₁).

The recommended circuit constants are as follows:

R₁: 1MΩ

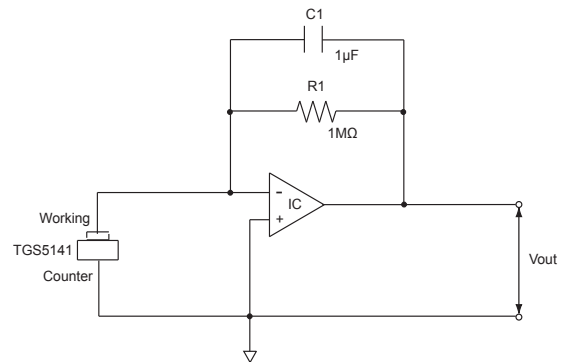
C₁: 1μF

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.

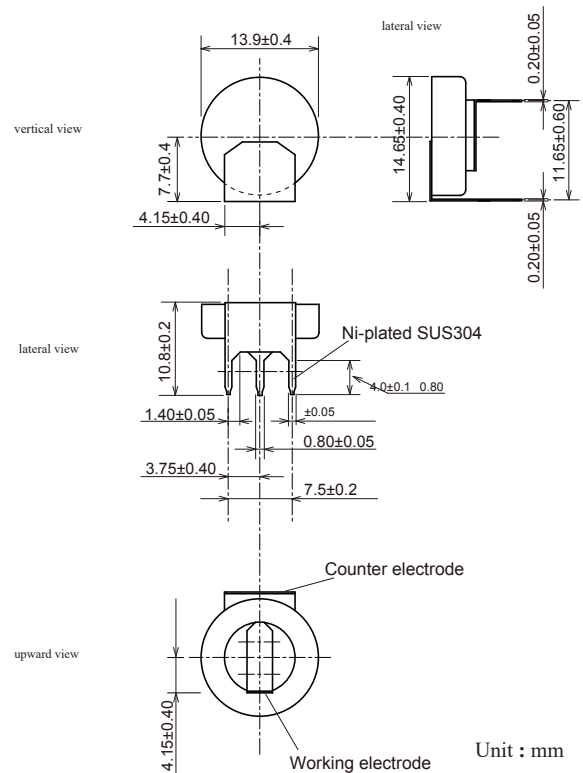


specifications :

project	specifications
model	TGS5141
tracer gas	carbon monoxide
Typical test range	0 ~ 5,000ppm
Output current in carbon monoxide	1.2~3.2nA/ppm
Baseline shift (* 1)	<±10ppm equivalent
operating temperature range	-10. C ~ +50. C (common) -20. C +60. C (occasionally)
Working humidity range	10 ~ 95%RH (non-condensation)
Response time (T90)	60 Within se- conds
Conditions of pres- ervation	-10. C ~ +50. C (common) -20. C +60. C (occasionally)
net weight	About 2.5g
standard test conditions	20±2°C, 40±10%RH

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

Structure and size:



深圳市杰晟兴电子有限公司 JM Components Limited

地址：深圳市福田区中航路7号鼎诚国际大厦南座2007室

手机：13662266995 马少良 电话：0755-83951311

官网：cn-sensor.com

邮编：518031

传真：0755-83952401

电邮：jackson@jmcomponents.com