

TGS 5342 - for the detection of Carbon Monoxide

Features:

- * Battery operable
- * Compact size
- * High repeatability/selectivity to CO
- * Linear relationship between CO gas concentration and sensor output
- * Simple calibration
- * Long life
- * UL recognized component
- * Meets UL2034, EN50291, and RoHS requirements

Applications:

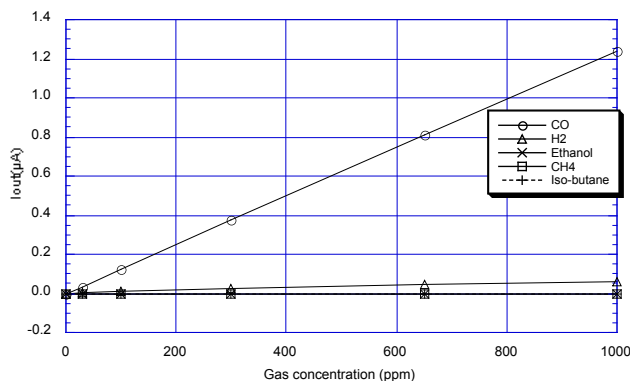
- * Residential and commercial CO detectors
- * CO monitors for industrial applications
- * Ventilation control for indoor parking garages
- * Fire detection

Figaro's **TGS5342** is a battery operable electrochemical sensor which offers several advantages over traditional electrochemical sensors. Its electrolyte is environmentally friendly, it poses no risk of electrolyte leakage, can detect concentrations as high as 1% CO, operates in a range from -20° and +60°C, and it has lower sensitivity to interference gases. With a long life, good long term stability, and high accuracy, this sensor is the ideal choice for CO detectors with digital display. OEM customers will find individual sensors data printed on each sensor in bar code form, enabling users to skip the costly gas calibration process and allowing for individual sensor tracking. The length of TGS5342 is 60% of the TGS5042.



The figure below represents typical sensitivity characteristics, all data having been gathered at standard test conditions (see reverse side of this sheet). The Y-axis shows the output current of the sensor ($I_{out}/\mu A$) in each gas. Output current is linear to CO concentration, with a deviation of less than $\pm 5\%$ in the range of 0~500ppm.

Sensitivity Characteristics:

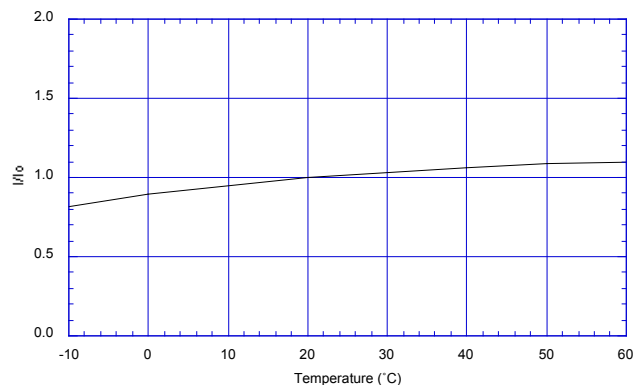


The figure below represents typical temperature dependency characteristics. The Y-axis shows the sensor output ratio (I/I_0) as defined below. The linear relationship between I/I_0 and CO concentration is constant regardless of the CO concentration range.

I = Sensor output current in 400ppm of CO at various temperatures

I_0 = Sensor output current in 400ppm at 20°C/50%RH

Temperature Dependency:



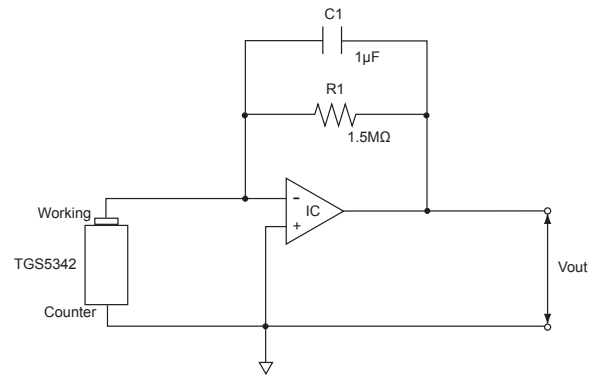
Basic Measuring Circuit:

The diagram at the right shows the basic measuring circuit of TGS5342. The sensor generates a minute electric current which is converted into sensor output voltage (V_{out}) by an op-amp/resistor (R_1) combination.

Figaro recommends the following electrical parts:

R1 : 1.5M Ω
 C1 : 1 μ F
 IC : AD708

NOTE: When voltage is applied to the sensor output terminal, the sensor may be damaged. Voltage applied to the sensor should be strictly limited to less than ± 10 mV. An additional resistor or FET is required to prevent polarization of the sensor when V_c is off.



Basic measuring circuit of TGS5342

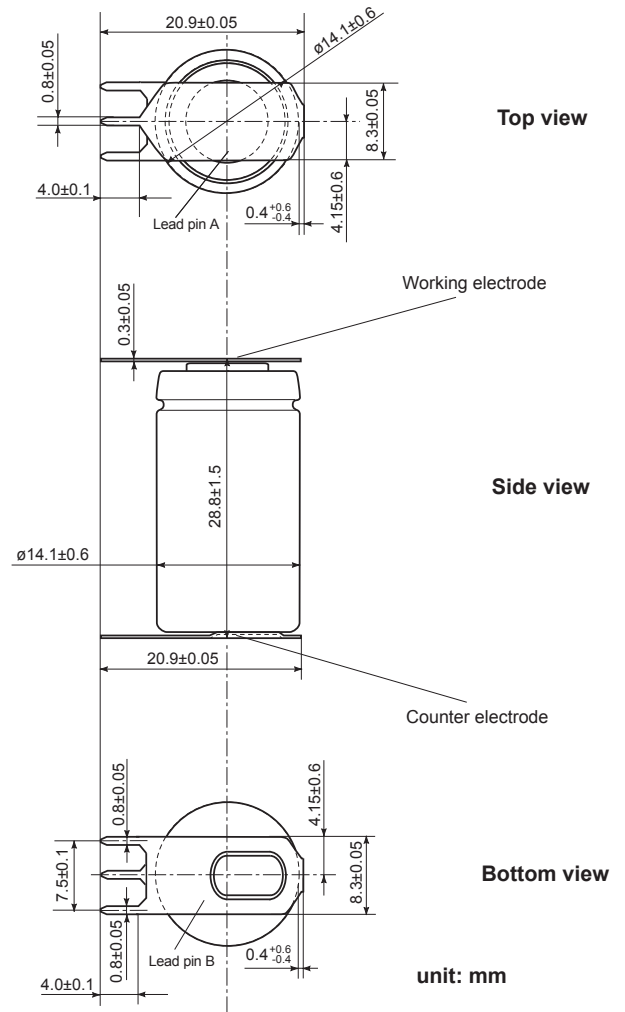
Specifications:

Item	Specification
Model number	TGS5342
Target gases	Carbon monoxide
Typical detection range	0 ~ 10,000ppm
Output current in CO	0.7~1.4nA/ppm
Baseline offset(*)	< ± 10 ppm equivalent
Operating temperature(*2)	-10°C ~ +50°C (continuous) -20°C ~ +60°C (intermittent)
Operating humidity	5 ~ 99%RH (no condensation)
Response time (T90)	within 60 seconds
Storage conditions(*2)	-10°C ~ +50°C (continuous) -20°C ~ +60°C (intermittent)
Weight	approx. 7g
Standard test conditions	20 \pm 2°C, 40 \pm 10%RH

(*) Represents sensor output in air under operating conditions

(*2) Should water in the reservoir freeze very rapidly (as typically occurs only under artificially created conditions), irreversible change to sensor characteristics would occur. To avoid this risk, it is recommended that the sensor be positioned with the cap (working electrode) facing up.

Structure and Dimensions:



Note: Rotation between lead pins A and B is 8° maximum

All sensor characteristics shown in this brochure represent typical characteristics. Actual characteristics vary from sensor to sensor. The only characteristics warranted are those in the Specification table above.

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