TGS5141-P00 - for the detection of Carbon Monoxide

Features:

* Ultra compact
* Battery operable
* 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 EN54-31 requirements

Figaro's TGS5141 is a battery operable electrochemical sensor which uses a unique electrolyte that eliminates the need for a water reservoir. By eliminating the water reservoir used in TGS5042, the comparative size of TGS5141 is reduced to just 10% of TGS5042. With its ultra compact size, this sensor is the ideal choice for size oriented applications such as portable CO detectors, small residential CO detectors, and multi-sensor fire detectors. 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.

Applications:

* Residential and commercial CO detectors
* Fire detection

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 ±5% in the range of 0~1000ppm.

Sensitivity Characteristics:

Temperature Dependency:

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

$$I = \text{Sensor output current in 400ppm of CO at various temperatures}$$

$$I_o = \text{Sensor output current in 400ppm at 20˚C/50%RH}$$
Basic Measuring Circuit:
The diagram at the right shows the basic measuring circuit of TGS5141. The sensor generates a minute electric current which is converted into sensor output voltage (Vout) by an op-amp/resistor (R1) combination.

Figaro recommends the following electrical parts:
- R1 : 1MΩ
- C1 : 1µF
- 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 ±10mV. An additional resistor or FET is required to prevent polarization of the sensor when Vc is off.

### Specifications:

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model number</td>
<td>TGS5141-P00</td>
</tr>
<tr>
<td>Target gases</td>
<td>Carbon monoxide</td>
</tr>
<tr>
<td>Typical detection range</td>
<td>0 ~ 5,000ppm</td>
</tr>
<tr>
<td>Output current in CO</td>
<td>1.2~3.2nA/ppm</td>
</tr>
<tr>
<td>Baseline offset(*1)</td>
<td>&lt;±10ppm equivalent</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10˚C ~ +60˚C (continuous)</td>
</tr>
<tr>
<td>Operating humidity</td>
<td>10 ~ 95%RH (no condensation)</td>
</tr>
<tr>
<td>Response time (T90)</td>
<td>within 60 seconds</td>
</tr>
<tr>
<td>Storage conditions</td>
<td>-10˚C ~ +50˚C (continuous)</td>
</tr>
<tr>
<td></td>
<td>-20˚C ~ +60˚C (intermittent)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 2.5g</td>
</tr>
<tr>
<td>Standard test conditions</td>
<td>20±2˚C, 40±10%RH</td>
</tr>
</tbody>
</table>

(*1) Represents sensor output in air under operating conditions

### Structure and Dimensions:

- **Top View**
- **Side View**
- **Bottom View**

Unit : mm

For information on warranty, please refer to Standard Terms and Conditions of Sale of Figaro USA Inc. 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.

Before purchasing this product, please read the Warranty Statements shown in our webpage by scanning this QR code.

https://figarosensor.com/pdf/Figaro_USA_Sales_T&C.pdf

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