

# TGS504X - for the detection of Carbon Monoxide

### Features:

- \* High durability over a wide temperature range
- \* Excellent long term stability
- \* High repeatability/selectivity to CO
- \* Long life
- \* Meets UL2034, UL2075, EN50291, and RoHS requirements

### Applications:

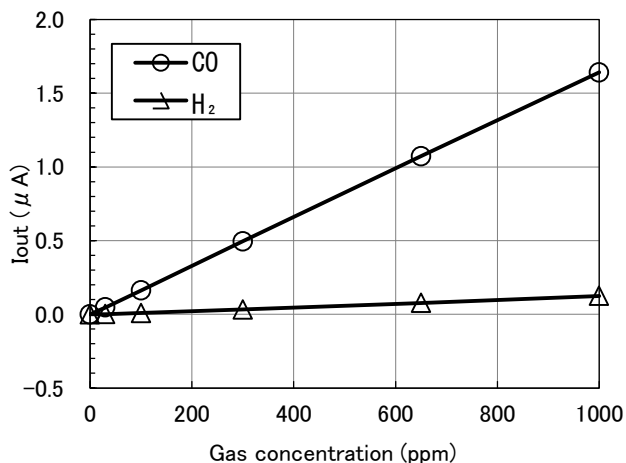
- \* CO detectors for unconditioned areas such as garages
- \* CO detectors for use in RVs, commercial vehicles, motorboats, or aircraft cockpit
- \* Commercial CO detectors

Figaro's **TGS504X** CO sensor is a new high-end model of the long-selling TGS5000 series CO sensor, which has a proven track record of more than 20 years mainly in residential applications. The remarkable features of this new CO sensor include excellent durability even at high and low temperatures ranging from -40 to 70°C, which is achieved by innovative internal structure and materials. These features make it the ideal choice for CO detectors in unconditioned areas such as garages, as well as for use in RVs, motorboats, or commercial vehicles. The TGS504X utilizes a standard AA battery size package.



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 0~1000ppm.

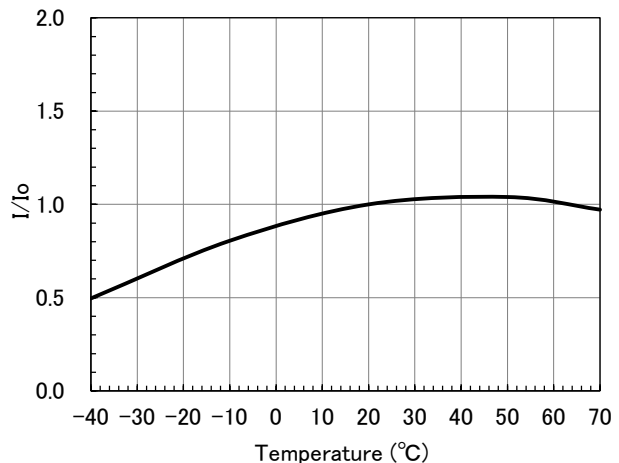
### Sensitivity Characteristics:



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:



**IMPORTANT NOTE:** OPERATING CONDITIONS IN WHICH FIGARO SENSORS ARE USED WILL VARY WITH EACH CUSTOMER'S SPECIFIC APPLICATIONS. FIGARO STRONGLY RECOMMENDS CONSULTING OUR TECHNICAL STAFF BEFORE DEPLOYING FIGARO SENSORS IN YOUR APPLICATION AND, IN PARTICULAR, WHEN CUSTOMER'S TARGET GASES ARE NOT LISTED HEREIN. FIGARO CANNOT ASSUME ANY RESPONSIBILITY FOR ANY USE OF ITS SENSORS IN A PRODUCT OR APPLICATION FOR WHICH SENSOR HAS NOT BEEN SPECIFICALLY TESTED BY FIGARO.

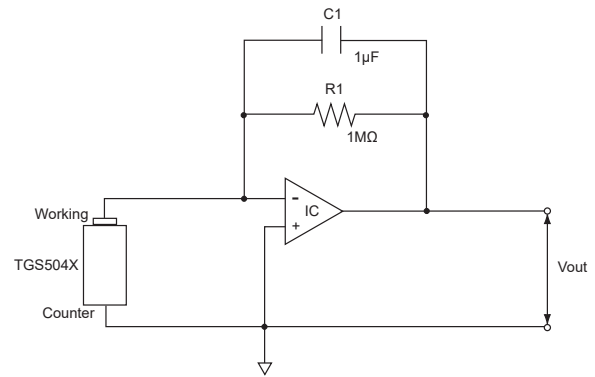
### Basic Measuring Circuit:

The diagram at the right shows the basic measuring circuit of TGS504X. 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 : 1M $\Omega$   
 C1 : 1 $\mu$ 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  $\pm 10$ mV. An additional resistor or FET is required to prevent polarization of the sensor when  $V_c$  is off.

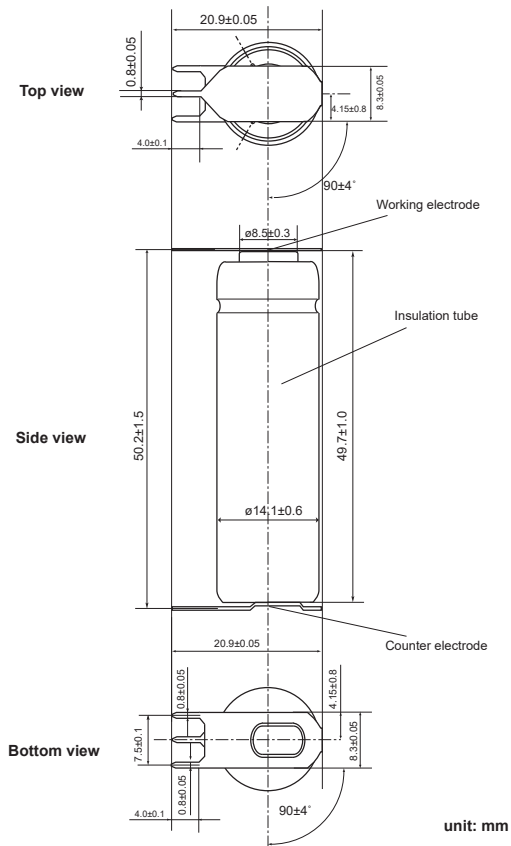


**Basic measuring circuit of TGS504X**

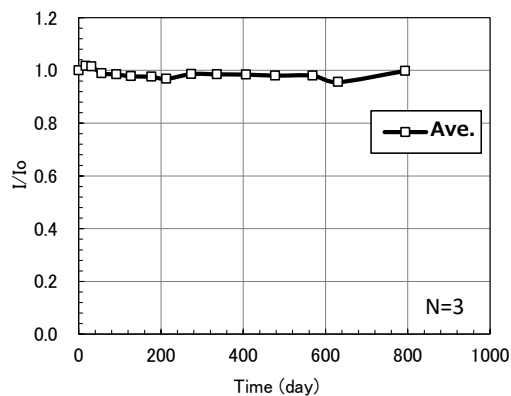
### Specifications (tentative):

Item	Specification
Model number	TGS504X(TBD)
Target gases	Carbon monoxide
Typical detection range	0 ~ 10,000ppm
Output current in CO	TBD
Operating temperature	-40°C ~ +70°C
Response time (T90)	within 60 seconds
Expected sensor life at 20°C, 50%RH	10 yrs
Weight	approx. 12g

### Structure and Dimensions:



### Durability at 65°C, 95%RH:



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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