

# Ultra-Low Power Gas Sensor SGPC3

Experts in Environmental Sensing

## **SGPC3 – Metal-Oxide Gas Sensors for Battery-Driven and Mobile Applications**

- Ultra-low power consumption
- Outstanding long-term stability based on Sensirion's MOXSens® Technology
- Calibrated and humidity-compensated TVOC indoor air quality signal
- Very small DFN package and I<sup>2</sup>C interface

### **Important Note**

All information and specifications in this document are preliminary and subject to change without prior notice

**SENSIRION**  
THE SENSOR COMPANY

# SGPC3 Ultra-Low Power Gas Sensor

The SGPC3 makes indoor air quality sensing available for mobile and battery-driven applications. With an average supply current of less than 0.08 mA the SGPC3 is able to provide indoor air quality measurements with several years of battery lifetime. Based on Sensirion's SGP multi-pixel platform the SGPC3 offers a complete gas sensor system integrated into a very small  $2.45 \times 2.45 \times 0.9 \text{ mm}^3$  DFN package featuring an I<sup>2</sup>C interface and a fully calibrated and humidity-compensated air quality output signal. Sensirion's MOXSens® Technology provides the SGPC3 with an unmatched robustness against contamination by siloxanes resulting in unique long-term stability and accuracy.

The unprecedented combination of long-term stability and ultra-low power consumption makes the SGP the perfect choice for indoor air quality monitoring in mobile and battery-driven smart home applications.

## Overview SGP Multi-Pixel Gas Sensors



### SGP30

- Multi-pixel air quality sensor
- TVOC and CO<sub>2</sub>eq outputs
- Humidity compensation



### SGPC3

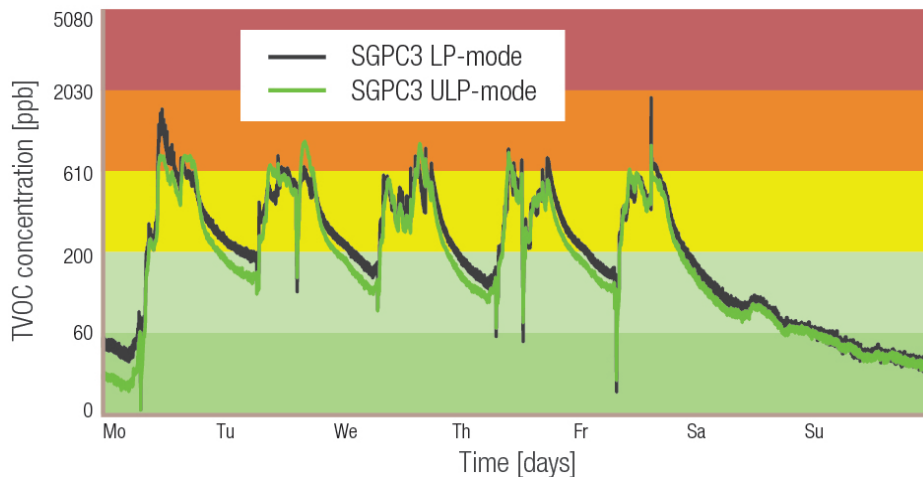
- Ultra-low power (0.065 mA) air quality sensor
- TVOC output
- Humidity compensation

	SGP30	SGPC3
Output	<div><div></div>Total VOC in ppb</div> <div><div></div>H<sub>2</sub>-based CO<sub>2</sub>eq in ppm</div>	<div><div></div>Total VOC in ppb</div>
Supply voltage	1.62–1.98V	
Average current	48 mA	low power mode: 1mA ultra-low power mode: 0.065 mA
Package	6-pin DFN 2.45 x 2.45 x 0.9 mm <sup>3</sup>	
Interface	I <sup>2</sup> C 1.8V	
Indoor Air Quality		
Typ accuracy	15% of measured value	15% of measured value
Output range <sup>1</sup>	TVOC: 0–60'000 ppb CO <sub>2</sub> eq: 0–60'000 ppm	TVOC: 0–60'000 ppb
Sampling rate	1s	low power mode: 2s ultra-low power mode: 30s
Long-term stability	MOXSens® siloxane resistance: typ 1.3% accuracy drift per year in siloxane accelerated lifetime test	
Baseline compensation	On-chip baseline compensation algorithm	
Humidity compensation	Yes <sup>1</sup>	

<sup>1</sup> To use the humidity compensation feature of the SGP an additional humidity sensor like the SHTxx is required.

# SGPC3 Application Example

The graph below shows a typical example of the tVOC output of two SGPC3 sensors (low-power and ultra-low-power operation mode) operated in the cafeteria of an office building. The sensors in both operation modes nicely capture the VOC increase during lunch time and the decrease of the VOC levels overnight and at weekends.



## SGP Long-Term Stability

Traditional metal-oxide gas sensors suffer from poor long-term stability caused through irreversible contamination by siloxanes.

### Siloxanes are everywhere

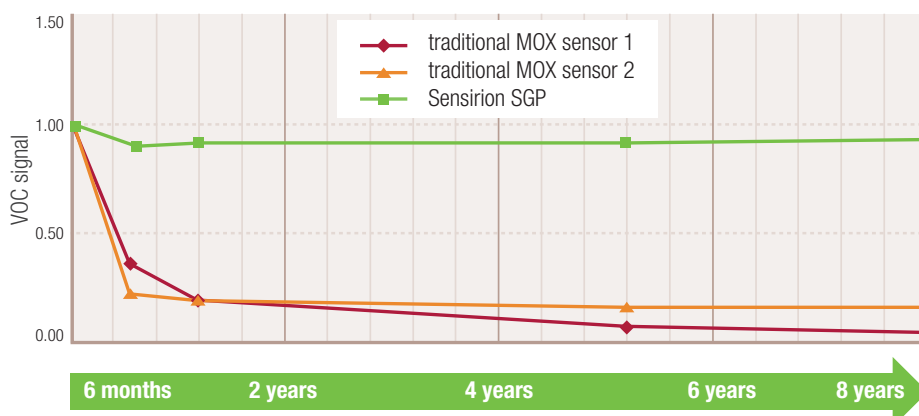
- Indoor environments
- “Most abundant VOC emitted by humans”
- Consumer products

### Siloxanes destroy metal-oxide sensors

- Significant loss of VOC sensitivity
- Strong increase of response time

### Solution

Sensirion's proprietary MOXSens® Technology provides the SGP with an unmatched robustness against siloxanes, resulting in unique long-term stability and accuracy.



# Sensing. Anytime. Anywhere.

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