

## Ultra-low power gas sensor for monitoring carbon monoxide

### Cambridge CMOS Sensors Technology Advantage

Our Micro-hotplate technology provides a unique silicon platform for our Metal Oxide (MOX) gas sensors and enables sensor miniaturisation, significantly lower power consumption and fast heating times.

The Micro-hotplates are fabricated using a robust silicon dioxide membrane and includes an embedded tungsten heater acting as a heating element for the MOX based sensing material. The micro-hotplate can be used to heat the MOX material to up to 400°C and its electrical resistance can be monitored to detect the target gas. Through enabling fast heater cycling times, temperature modulation techniques can be used to reduce the device power consumption and implement advanced gas sensing methods.

Advanced algorithms enable support for; gas discrimination, temperature & humidity drift compensation, and self-calibration.

### Product Overview

CCS802 is an ultra-low power MOX sensor for monitoring Carbon Monoxide (CO).

The sensitivity of CCS802 to Carbon Monoxide is optimised by adapting the supply voltage ( $V_H$ ) of the integrated micro-heater, and the gas concentration can be correlated to the change in resistance of the MOX sensing layer ( $R_S$ ).

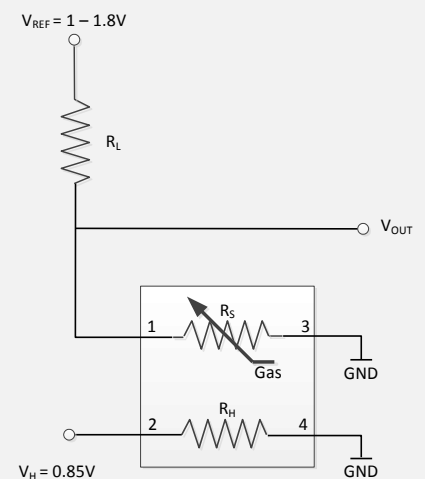
$V_H$  can be set using a low-dropout (LDO) regulator or operated in pulsed PWM mode to reduce power consumption. The sensor resistance ( $R_S$ ) is determined using a series load resistor ( $R_L$ ), a reference voltage ( $V_{REF}$ ), and an output voltage ( $V_{OUT}$ ) read by an Analogue-to-Digital Converter (ADC).

### Miniaturisation

The CCS802 gas sensor is supported in a compact 2 mm x 3 mm DFN (Dual Flat No lead) package as standard. Other package options may be available on request. The inherent design of this sensor enables ultra-low power consumption for battery operated portable handheld devices.

### Key Benefits

- Ultra-low power consumption for battery operated devices
- High sensitivity and fast heating times
- Compact 2mm x 3mm DFN package for small form factor designs



### Recommended Sensor Configuration

### Applications

- In-vehicle and indoor air quality monitoring in smartphones
- Gas leakage detection

