

## Ultra-low power gas sensor for Ethanol detection

### Cambridge CMOS Sensors Technology Advantage

Our patented CMOS MEMS 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.

Our resistive 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 support the MOX gas sensors family, for maximum sensitivity, selectivity, drift compensation, and for self-calibration; enabling easy and timely integration into a wide range of products and applications.

### Product Overview

The CCS803 is an ultra-low power MOX gas sensor for monitoring Ethanol.

The sensitivity of CCS803 to Ethanol 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 ( $R_S$ ).

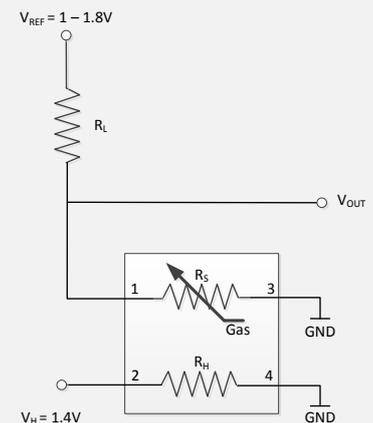
$V_H$  can be set using a low-dropout (LDO) regulator or operated in pulsed PWM mode to reduce power consumption. The sensor resistance ( $R_S$ ) is determined using a series load resistor ( $R_L$ ), a reference voltage ( $V_{REF}$ ), and an output voltage ( $V_{OUT}$ ) read by an Analogue-to-Digital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

### Miniaturisation

The CCS803 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 response time
- Compact 2mm x 3mm DFN package for small form factor designs



### Recommended Sensor Configuration

### Applications

- Alcohol breathalyser in consumer devices

