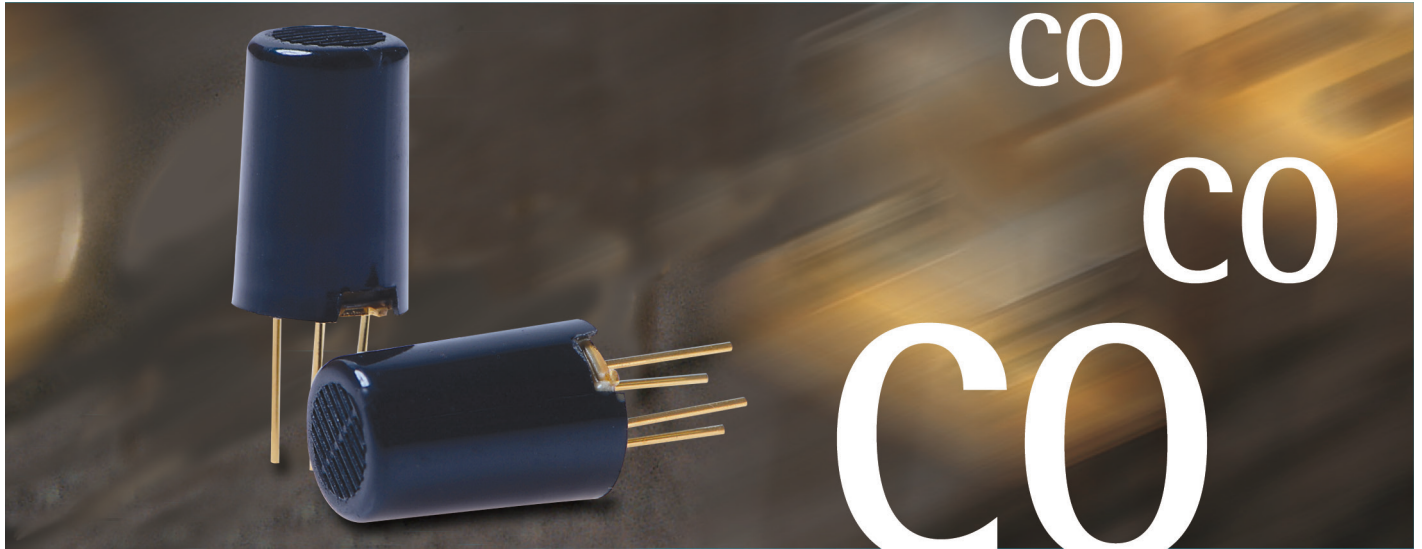


Carbon Monoxide Sensor



AS-MLC

Whether for air quality, safety or control, sensor applications have one common requirement: a reliable sensor component. AppliedSensor's ability to micromachine sensor chips using standard silicon wafer technology allows us to produce consistently reliable sensors in high volumes for mass market applications.

Unique micromachined, low-power sensor design

AppliedSensor's high-performance ML sensor components offer reduced power consumption and increased packaging flexibility. The sensors are produced by combining the benefits of thick-film, thin-film and patent-pending technologies on silicon substrate. Heater and inter-digital electrode structures are positioned on top of a 1 μm -thin membrane. A tin dioxide-based sensitive layer forms a gas concentration-dependent conductivity.

The sensor component has high sensitivity and selectivity to carbon monoxide (CO) and is packaged in a standard TO-39 4-pin header. For further cost efficiency, the low heat-generating micromachined chip may be adhered directly to a printed circuit board (Chip-on-board packaging).

AppliedSensor achieves high selectivity to CO by applying an optimized operation mode in combination with an active charcoal filter. Comprehensive application development, including complete electronics and firmware integration, is available.

Key Benefits

- High sensitivity to CO (0.5 to 500 ppm)
- Very low power consumption
- Long lifetime
- Low cross sensitivity
- Long term stability

Typical Applications

- Carbon monoxide monitoring and leakage detection

Carbon Monoxide Sensor

Features

Dimensions

Chip size	2x2 mm
Including header	Ø: 10 mm, height: 17 mm

Operational Conditions

Operation temperature range	250°C - 300°C
Typical operation temperature	270°C

Environmental Conditions

Ambient temperature range	-40°C - 50°C (lower than op. temp.)
Ambient humidity	5 - 95% RH

Electrical Characteristics

Power consumption	35 mW at 270°C
Typical sensor resistance during operation in air (50% RH)	50 kΩ range
Typical sensor resistance during operation in 30 ppm CO (50% RH)	1 kΩ range
Signal output component	Resistance

Heater

Typical heater voltage	~2.3 V for 270°C
Temperature coefficient rel. to R(20°C)	TC~1700 ppm/K
Typical heater resistance at RT	95 Ω

Sensing Properties

Concentration range	Can withstand 1% CO in air
Sensitivity range	0.5 - 500 ppm
Typical response / recovery time	Seconds
Expected lifetime	Years
Cross sensitivity	Cross sensitivity to humidity, hydrogen and hydrocarbons

Packaging Options

Standard TO-39 package with protection membrane.
Chip-on-board solutions.

Restrictions

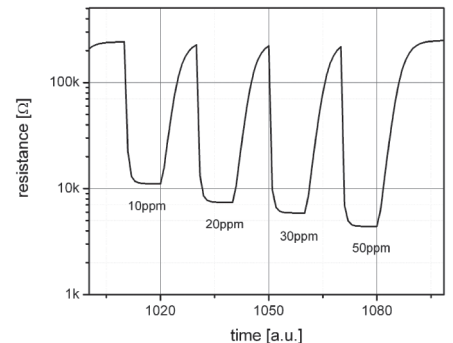
Contact of the sensitive layer with liquids shall be avoided.
Do not operate gas sensors in the vicinity of silicone and polysiloxanes.

About AppliedSensor

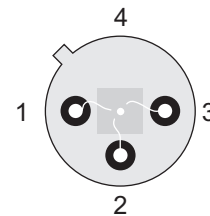
AppliedSensor GmbH designs, manufactures and markets chemical gas sensor solutions for appliance, automotive, building automation, consumer and industrial applications. Established in 2000, AppliedSensor is a world-leading supplier of safety, energy efficiency and comfort solutions for global mass markets. Corporate headquarters are located in Reutlingen, Germany.

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Typical Sensor Response



Pin Layout



Top view AS-MLC Sensor Component

Pin Function

1	Sensor electrode 1
2	Heater power
3	Sensor electrode 2
4	Heater ground

Basic Measuring Circuit (Exemplified and Simplified)

