

VOC Sensor



AS-MLV

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

Unique micro machined, low power sensor design

AppliedSensor's AS-MLV high-performance sensor component is highly sensitive to volatile organic compounds for superior monitoring of indoor air quality. Produced using a combination of thin-film, thick-film and other patent-pending proprietary technologies developed by AppliedSensor, the AS-MLV component is available in a variety of packages for ultimate design flexibility.

AS-MLV sensor component chips are fabricated using silicon technology. The heater and inter-digital electrode structures are placed on an approximately one micrometer-thin LPCVD silicon nitride membrane to achieve the lowest possible power consumption. A highly reproducible tin dioxide-based sensitive layer is deposited over the inter-digital electrodes, forming a gas concentration-dependent conductivity.

Key Benefits

- High sensitivity to volatile organic compounds (VOCs)
- Very low power consumption
- Long-term stability
- Long lifetime

Typical Applications

- Monitoring indoor air quality



Features

Dimensions:

Chip size	2 x 2 mm
Including header	Ø: 10 mm, height: 11 mm

Operational Conditions:

Typical operation temperature	320°C
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Environmental Conditions:

Ambient temperature range	-40° to 120°C (lower than op. temp.)
Ambient humidity	5 to 95% RH, non-condensing

Electrical Characteristics:

Power consumption	41 mW at 320°C
Typical sensor resistance in unpolluted air	100-500k Ω range
Signal output component	Resistance

Heater:

Typical heater voltage	~2.7 V for 320°C
Typical heater resistance at RT	95 Ω

Sensing Properties:

VOCs detected	Alcohols, aldehydes, ketones, organic acids, amines, aliphatic and aromatic hydrocarbons
Typical response / recovery time	Seconds
Expected lifetime	Years
Cross sensitivity	Limited cross-sensitivity to humidity, hydrogen and hydrocarbons

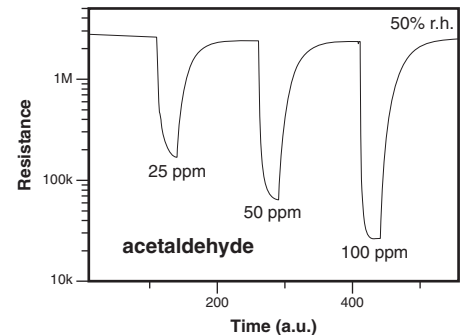
Packaging Options:

Standard TO-39 (solid TO-5) package with protection membrane.
Pre-mould packages.
Chip on board solutions.

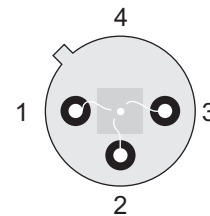
Restrictions:

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

Typical Sensor Response



Pin Connections

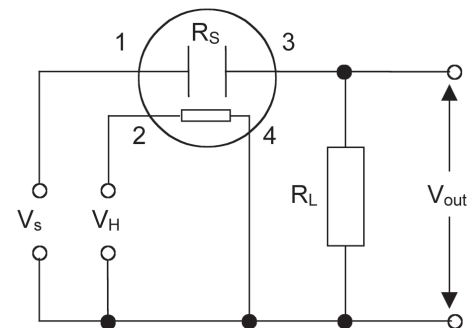


Top view AS-MLV Sensor Component

Pin Function

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

Basic Measuring Circuit (Exemplified and Simplified)



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