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# BaroSense



Miniaturized, low-power, reliable, high-resolution silicon barometric sensor

## What is BaroSense?

This miniaturized, low-power barometric sensor ( $< 2 \text{ mm}^2$ ) is manufactured using silicon technology. Designed to operate in pressure environments ranging from one bar to several thousand bars, it is extremely sensitive and can measure differences in altitude to within a centimeter. It is the only device of its kind on the market with a self-test function that guarantees the reliability of its measurements.

External pressure is calculated by measuring the deformation of a membrane that seals a vacuum chamber. A mechanical safeguard protects the membrane from rupturing due to excessive pressure. The sensor can operate at temperatures up to  $150 \text{ }^\circ\text{C}$ .

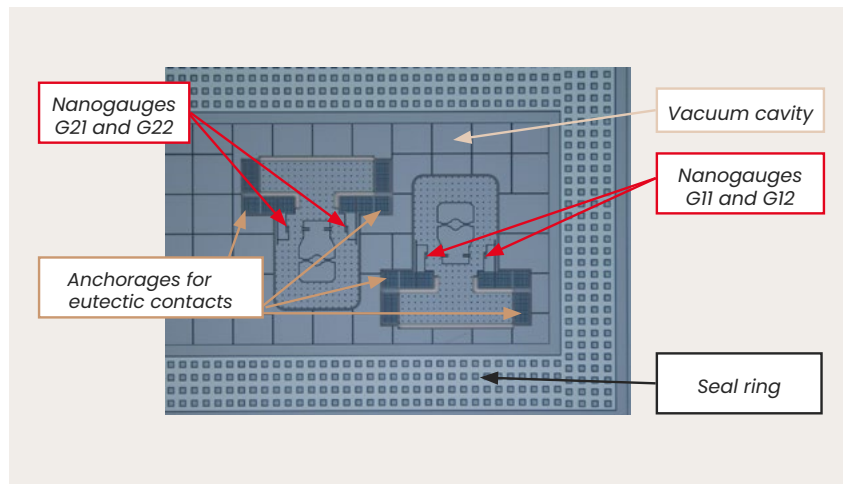
## Applications

The applications for this sensor span a wide range of industries:

- **Automobile:** tire pressure control, airbag, engine control
- **Aeronautics:** tire pressure control, engine combustion regulation in relation to altitude
- **Medical:** fall detector
- **Consumer markets:** 3D indoor navigation, altimeter, onboard barometer
- **Oil exploration and extraction:** production, storage and distribution of **industrial gases**
- **Monitoring of all types of industrial processes** that require precise pressure measurements

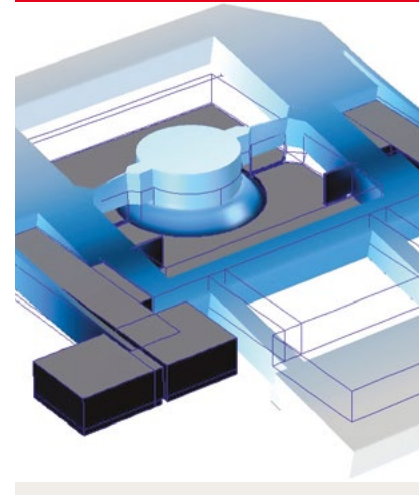
## What's new?

- Very high performance in terms of accuracy and resolution: altitude changes can be detected to within a centimeter, opening the door to human fall detection using a very-low-frequency, ultra-low-power method.
- It is the only barometric sensor on the market with a self-test function (a decoupled capacitor system) to guarantee accuracy.
- An extended pressure range, from one bar to several thousand bars, that is easily adaptable to a variety of use cases.
- Can withstand high temperatures.
- Co-integration is possible with several accelerometers on a single silicon component.



## Key figures

- Miniaturized ( $< 2 \text{ mm}^2$ ) low-power barometric sensor
- Very high performance in terms of resolution (0,3 Pascal) accurate to within a centimeter
- Embedded self-test function



## What's next?

- Customization for a specific pressure range and co-integration with an accelerometer currently in progress for our R&D partners
- Proof of concept of custom developments and integrations (with production and yield estimates) can be completed in CEA-Leti clean rooms
- This technology can be re-used to develop high performance differential sensors (e.g. for flow rate measurement)
- New developments can be completed in 12 to 18 months

## Interested in this technology?

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