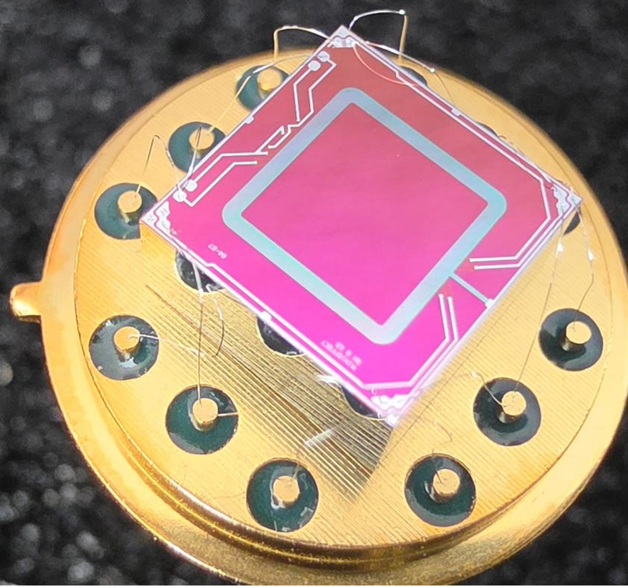


Technology Platform with Minimal Zero Offset (miniOffset)

Application

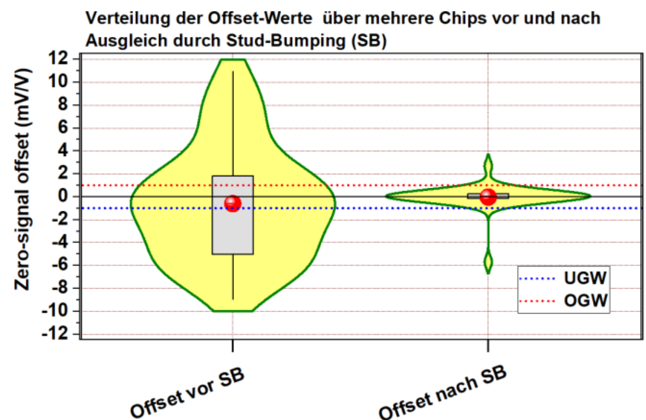
The development involves a piezoresistive, micro-mechanically fabricated MEMS technology platform with a minimizable zero-signal offset. The platform is highly scalable and well suited for applications such as micro-force measurement or high-precision differential-pressure determination.

By optimizing the technology and employing a robust chip design in combination with on-chip compensation structures, the offset and its sensitivity to temperature (TCO) and mechanical stress can be reduced already at the wafer and chip levels.

DEMONSTRATOR: DIFFERENTIAL PRESSURE SENSOR FOR LOW PRESSURE RANGES (< 30 mbar)

PARAMETER	Value
Chip size	7 x 7 mm^2
Null-Signal-Offset	< 1mV/V
TCO	Max. 6µV/V/°C

One way to make use of the compensation structures is to selectively turn on or off small resistors in a variety of configurations via a stud-bumping process.



Moreover, the platform is scalable in terms of on-chip compensation and self-testing thanks to additional integrated components—such as micromachined fuses and micro-heaters.

When deployed as a differential-pressure transducer in the low-to-mid-pressure range (demonstrator), the platform achieves sensitivities exceeding 2 mV / V / kPa.

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