



microflow Sens™ - Technology

Fast Flow Measurement in Gases

Product

The microflowSens™ – Technology was developed especially for fast flow measurements. Due to a membrane system, the thermal mass is reduced to the minimum, resulting in a very fast response time and low power consumption.

The membrane, just a few microns thick, is carried by a glass substrate, very ruggedized and thus easy to handle. The measuring resistors are wired in a Wheatstone type bridge on chip level. This minimizes the amount of external electronic devices, reduces error sources, and guarantees optimal correlation of individual bridge resistors. Arrangement of resistors in a row results in a temperature gradient caused by the flow, because the resistors are cooled down differently. The direction of the gradient gives information about flow direction.

Advantages

- Very fast response time
- Detects ultra small mass flow
- Detection of flow direction
- Reduced power consumption
- Minimal thermal mass
- Mechanically robust and no moved components
- Simple electronical analysis
- Easy mounting
- Best price-performance ratio

Applications

- Medical devices
- Differential pressure sensors
- HVAC and building control solutions

Technical Data

Measuring principle	thermal
Measuring range	0... 1 m/s
Response sensitivity	0.0001 m/s
Response time $t_{63\%}$	< 10 ms
Temperature range	-20 ... +150 °C
2 Elements	$R_{high}(0^{\circ}C) = 650 \Omega \pm 10\%$ R_A, R_D
2 Elements	$R_{low}(0^{\circ}C) = 500 \Omega \pm 10\%$ R_B, R_C
Required supply voltage	Typically 3 - 6 V
Substrate	Organic membrane on glass substrate



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Mechanical Dimensions Dimensions [mm]

Application Circuit Diagram (recommendation)

The 4 Elements are connected internally into Wheatstone type bridge circuit. Between contacts AC and BD a constant supply voltage (VCC) shall be applied. The other two contacts AD and BC carry the bridge differential output signal. The bridge voltage $V_{Br} = V1-V2$ is dependent on mass flow (amplitude) as well as on the flow direction (polarity).

Typical signal – curve between 0 0.4 m/s

Optional:
The chip design, the electrical connection and the sensor packaging we are able to develop and to produce customized