

Flow Sens MFS02

Fast Flow Measurement

Product

Especially for fast flow measurements, the Flow Sens **MFS02** was developed. Due to a membrane system the thermal mass is reduced to the minimum. Very fast response time and low power consumption are resulting from this little thermal mass. The membrane is just a few microns thick and is carried by a glass substrate. Therefore the system robust and the device can be handled easily.

Advantages

- Fast response time
- Small mass flows
- Detection of flow direction
- Low power consumption
- Small thermal mass
- Robust
- Best price-performance ratio

Applications

- Medical devices
- Differential pressure sensors
- Mikrofluidic (gas)

Technical Data

Measuring principle	Thermal
Measuring range	0.001 ... 2 m/s (simple Wheatstone bridge mode; (50m/s) with CTA
Response time	< 10 ms
Temperature range chip	-40...+150°C
Temperature range gas	-40 ... +80 °C (max. 30°C less than chip temperature)
Electrical connection	Bonding on PCB or other carrier
2 Elements	$R_{\text{high}}(0^{\circ}\text{C}) = 650 \Omega \pm 10\%$ R_A, R_D
2 Elements	$R_{\text{low}}(0^{\circ}\text{C}) = 500 \Omega \pm 10\%$ R_B, R_C
Matching between elements	Less than 2%
1 Element	Temperature sensor Pt – element, similar Pt 1000
Required voltages	Typical 3 - 7 V dc
Bridge offset	Max +- 50mV (@ 5V U_b ; Typ. +- 10mV
TCR Bridge offset	Max +- 50ppm/K x $U_b/2$
Power consumption still air	10...50mW (resp. Chip temperature 50...150°C)
Substrate	glass substrate
Sensor membrane	Organic polymer membrane; thickness less than 10 microns
In general	All data are temporary and valid in air. Other media and higher requirements upon request. No responsibility accepted.

All mechanical dimensions are valid at 25°C ambient temperature, if not differently indicated. ■ All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics. ■ Technical changes without previous announcement as well as mistakes reserve. ■ The information on this data sheet was examined carefully and will be accepted as correct; No liability in case of mistakes. ■ Load with extreme values during a longer period can affect the reliability.



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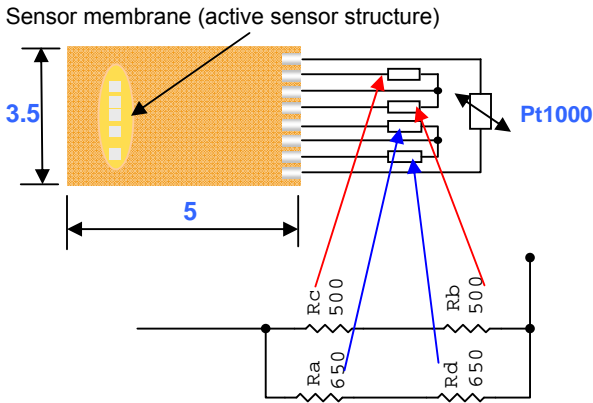


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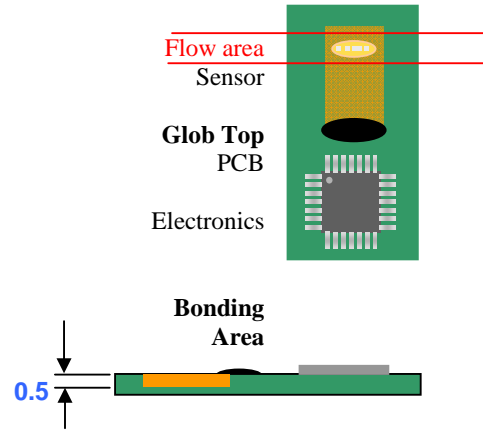
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Pinning of microflow sensor

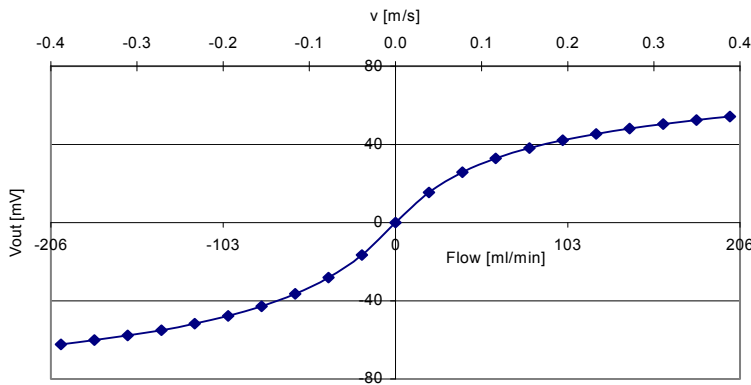


Application recommendation

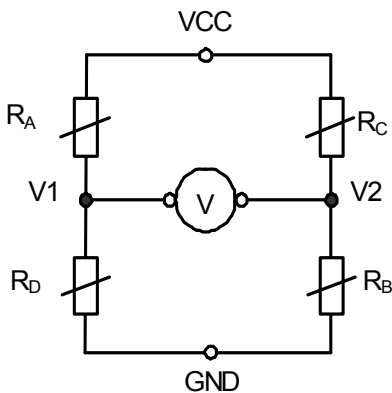


Electronic circuit recommendation

The 4 Elements are connected to a Wheatstone bridge circuit.
The bridge is operated with a constant bridge supply voltage.
The bridge voltage $V_{Br} = V1-V2$ is dependent on the flow.



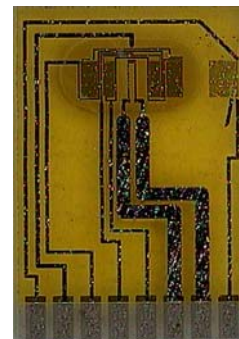
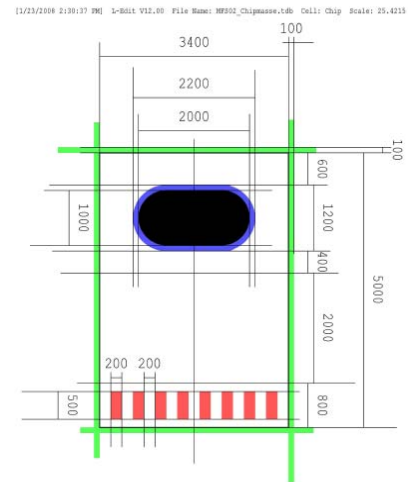
Typical signal – curve between 0 0.4 m/s (example)



Signal processing:

- Simple bridge like left mentioned
- CTA (constant temperature anemometer)
- Both circuits in combination

Construction size



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