Innovative Sensor Technology

physical. chemical. biological.

# MFS02 on PCB

## Thermal Mass Flow Sensor

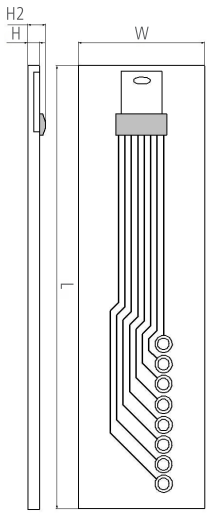
## Optimal for ultra fast measuring of gas flow and direction

### Benefits & Characteristics

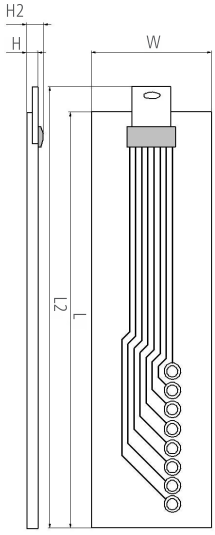
- Excellent solution for applications with high flow rates and fast response time in CTA mode
- Very high measuring dynamic with CTA mode (10'000'000 : 1) without bypass
- Detection of flow direction
- Excellent for very low flow rates and leakage detection with bridge mode
- High chemical resistance against aggressive gases and vapors

### Illustration[1)]

PCB standard




PCB exposed



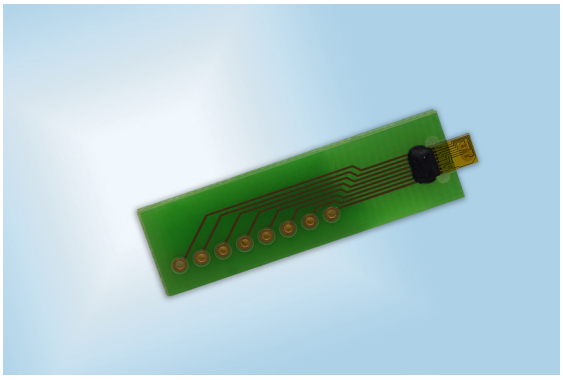

1) For actual size, see dimensions

### Technical Data

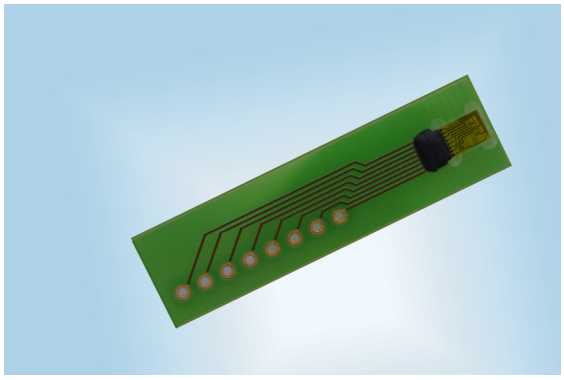
| | | |
|---|---|---|
| Dimensions (L / L2 x W x H / H2 in mm): | PCB standard | 38.2 x 10.8 x 1.0 / 2.0 |
| | PCB exposed | 34.2 / 37.4 x 10.8 x 1.0 / 2.0 |
| Operating measuring range: | 0 m/s to 1.5 m/s (full bridge mode) | |
| | 0 ml/min to 100 ml/min (full bridge mode) | |
| | 0 m/s to 150 m/s (CTA mode) | |
| | 0 l/min to 10 l/min (CTA mode) | |
| Minimum operating range: | 0 ml/min to 1 ml/min | |
| Response sensitivity: | 0.0003 m/s (20 microliter/min) | |

| | |
|---|---|
| Accuracy: | < 2 % of the measured value (dependent on the electronics and calibration) |
| Response time $t_{63}$: | < 10 ms |
| Temperature range (chip): | -40 °C to +160 °C |
| Temperature range (gas): | -40 °C to +80 °C (maximal +80 °C less than chip temperature) |
| Temperature sensitivity: | < 0.1 % / K (dependent on the electronics) |
| Connection: | bonding pads |
| 2 elements: | $R_{high}$ (0 °C) = 710 Ω ±10 % $R_A$, $R_D$ |
| 2 elements: | $R_{low}$ (0 °C) = 530 Ω ±10 % $R_B$, $R_C$ |
| Matching between elements: | < 2 % |
| 1 element: | $R_{amb}$ (0 °C) = 825 Ω ±10 % |
| Voltage range (nominal): | 2 V to 6 V (full bridge mode) |
| Bridge offset (full bridge mode): | Maximal ±50 mV at $V_{CC}$ = 5 V; typical ±10 mV |
| TCR bridge offset (full bridge mode): | Maximal ±50 ppm/K x $V_{CC}$/2 |
| Power consumption (no flow): | 10 mW to 50 mW (resp. chip temperature +50 °C to +160 °C) |

## Product Photo

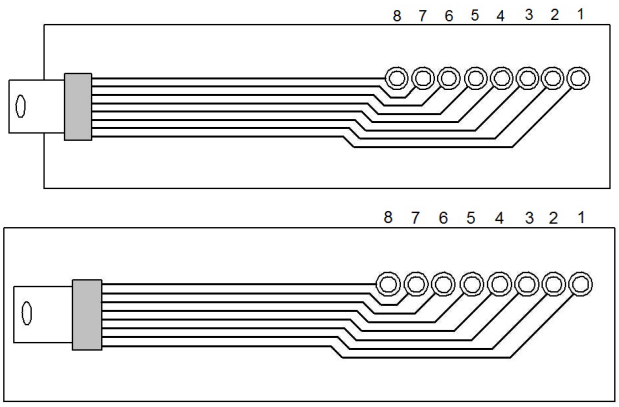


PCB exposed



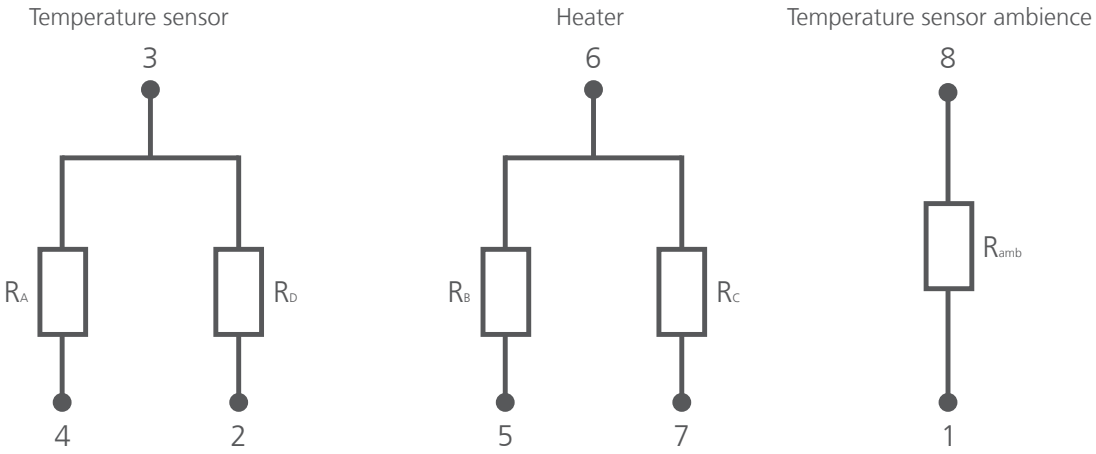
PCB standard

## Pin Assignment




| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| $R_{amb}$ | $R_D$ | $R_A$/$R_D$ | $R_A$ | $R_B$ | $R_C$/$R_B$ | $R_C$ | $R_{amb}$ |

## Electrical Equivalent Circuit




## Order Information

| Description: | Item number: | Former main reference: |
|---|---|---|
| MFS02.PSTD.0 | 103745 | 050.00266 |
| MFS02.PEXP.0 | 103746 | 050.00267 |

## Additional Electronics

| Description: | Item number: | Former main reference: |
|---|---|---|
| MFS02 | 103743 | 050.00263 |
| MicroFlowSens Amplifier Module | 104955 | 350.00097 |

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