



FLOW



TEMPERATURE



HUMIDITY



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# MFS 02

## Thermal Mass Flow Sensor

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

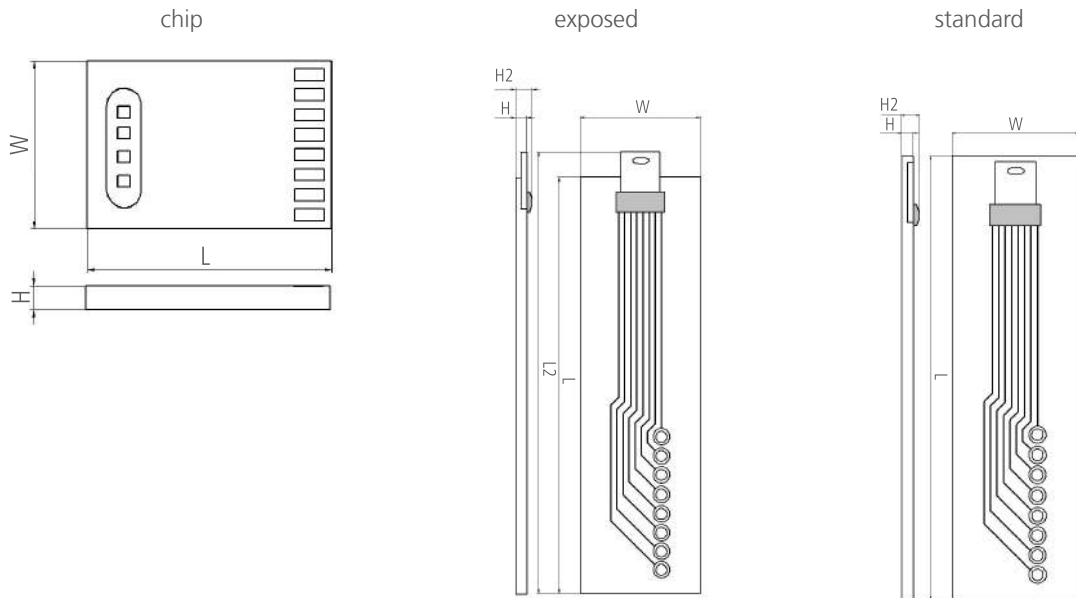


INNOVATIVE SENSOR TECHNOLOGY

### Benefits & Characteristics

- Detection of flow direction
- Ultra fast response time
- Excellent for low mass flow
- Low power consumption
- Small thermal mass
- Robust construction
- Excellent long term stability
- Bare sensor element resists short-term up to +275 °C
- Customer specific sensor available upon request

### Illustration<sup>1)</sup>



1) For actual size, see dimensions

### Technical Data

Dimensions (L / L2 x W x H / H2 in mm):	chip	3.5 x 5.1 x 0.5
	standard	38.2 x 10.8 x 1.0 / 2.0
	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	



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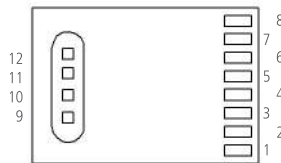
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Temperature range (chip):	-40 °C to +160 °C
Temperature range (gas):	-40 °C to +80 °C (maximal +80 °C less than chip temperature)
Temperature sensitivity:	< 0.1 % / K (dependent on the electronics)
Connection:	bonding pads
2 elements:	$R_{high}(0\text{ °C}) = 710\ \Omega \pm 10\ %\ R_A, R_D$
2 elements:	$R_{low}(0\text{ °C}) = 530\ \Omega \pm 10\ %\ R_B, R_C$
Matching between elements:	< 2 %
1 element:	Pt RTD similar to Pt1000
Voltage range (nominal):*	2 V to 6 V (full bridge mode)
Bridge offset (full bridge mode):	Maximal $\pm 50\text{ mV}$ at $V_{CC} = 5\text{ V}$ ; typical $\pm 10\text{ mV}$
TCR bridge offset (full bridge mode):	Maximal $\pm 50\text{ ppm/K} \times V_{CC}/2$
Power consumption (no flow):	10 mW to 50 mW (resp. chip temperature +50 °C to +160 °C)

\* Customer specific alternatives available

### Pin Assignment



1	2	3	4	5	6
Pt1000	$R_D$	$R_A/R_D$	$R_A$	$R_B$	$R_C/R_B$
7	8	9	10	11	12
$R_C$	Pt1000	$R_A$	$R_B$	$R_C$	$R_D$

RB, RC - heater / RA, RD - temperature sensor

### Order Information - Bonding Pads

Sensor element	MFS 02
Order code	350.00069
Sensor element on PCB	MFS 02 auf PCB_Standardversion
Order code	350.00093
Sensor element on PCB	MFS 02 auf PCB_Exposedversion
Order code	350.00095



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#### Additional Electronics

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	Document name:
Evakit:	MFS02 EvaKit_E
Amplifier module:	DFMFS_Amplifier_Module_E



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