



FLOW



TEMPERATURE



HUMIDITY



CONDUCTIVITY

MFS02

Thermal Mass Flow Sensor

Optimal for ultra fast measuring of gas flow and direction

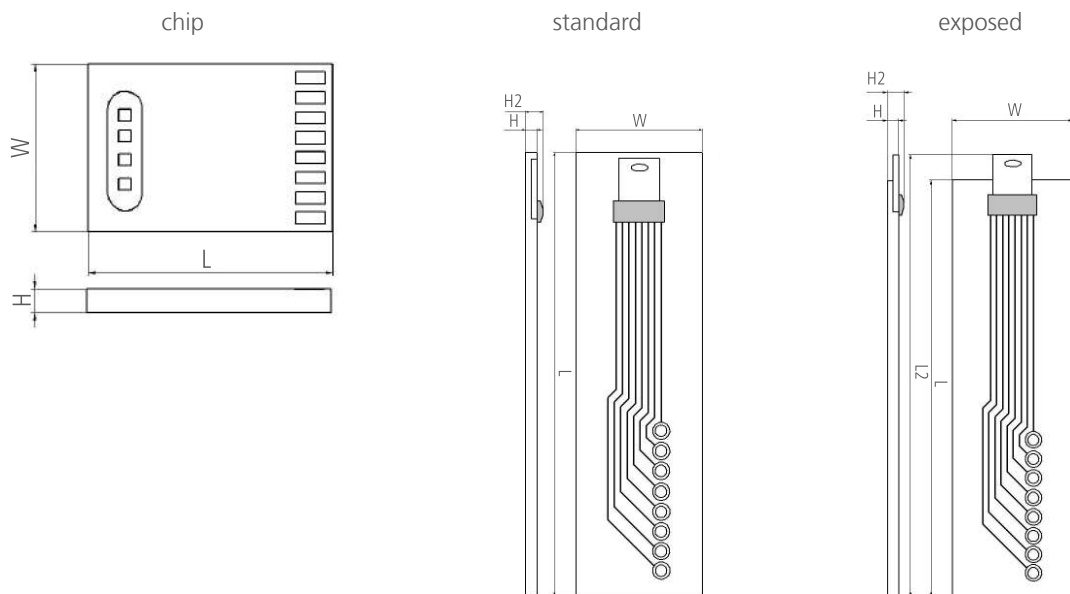


INNOVATIVE SENSOR TECHNOLOGY

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

Illustration¹⁾



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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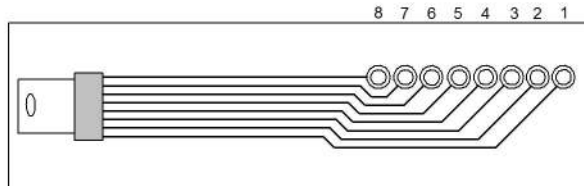
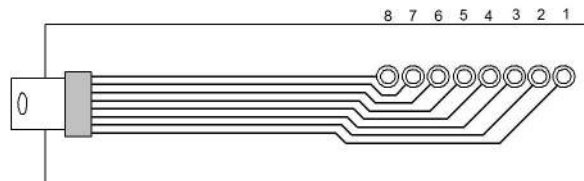
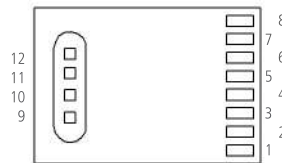
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Temperature range (chip):	-40 °C to +160 °C
Temperature range (gas):	-40 °C to +80 °C (maximal +80 °C less than chip temperature)
Temperature sensitivity:	< 0.1 % / K (dependent on the electronics)
Connection:	bonding pads
2 elements:	$R_{high}(0\text{ °C}) = 710\ \Omega \pm 10\ %\ R_A, R_D$
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



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Order Information - Bonding Pads

Sensor element	MFS 02
Order code	050.00213
Sensor element on PCB (standard)	MFS02.PSTD.0
Order code	050.00205
Sensor element on PCB (exposed)	MFS02.PEXP.0
Order code	050.00206

Additional Electronics

	Document name:
Evakit:	MFS02 EvaKit_E
Amplifier module:	DFMFS_Amplifier_Module_E

Additional Documents

	Document name:
Application note:	AFMFS02_E



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