

MFS02

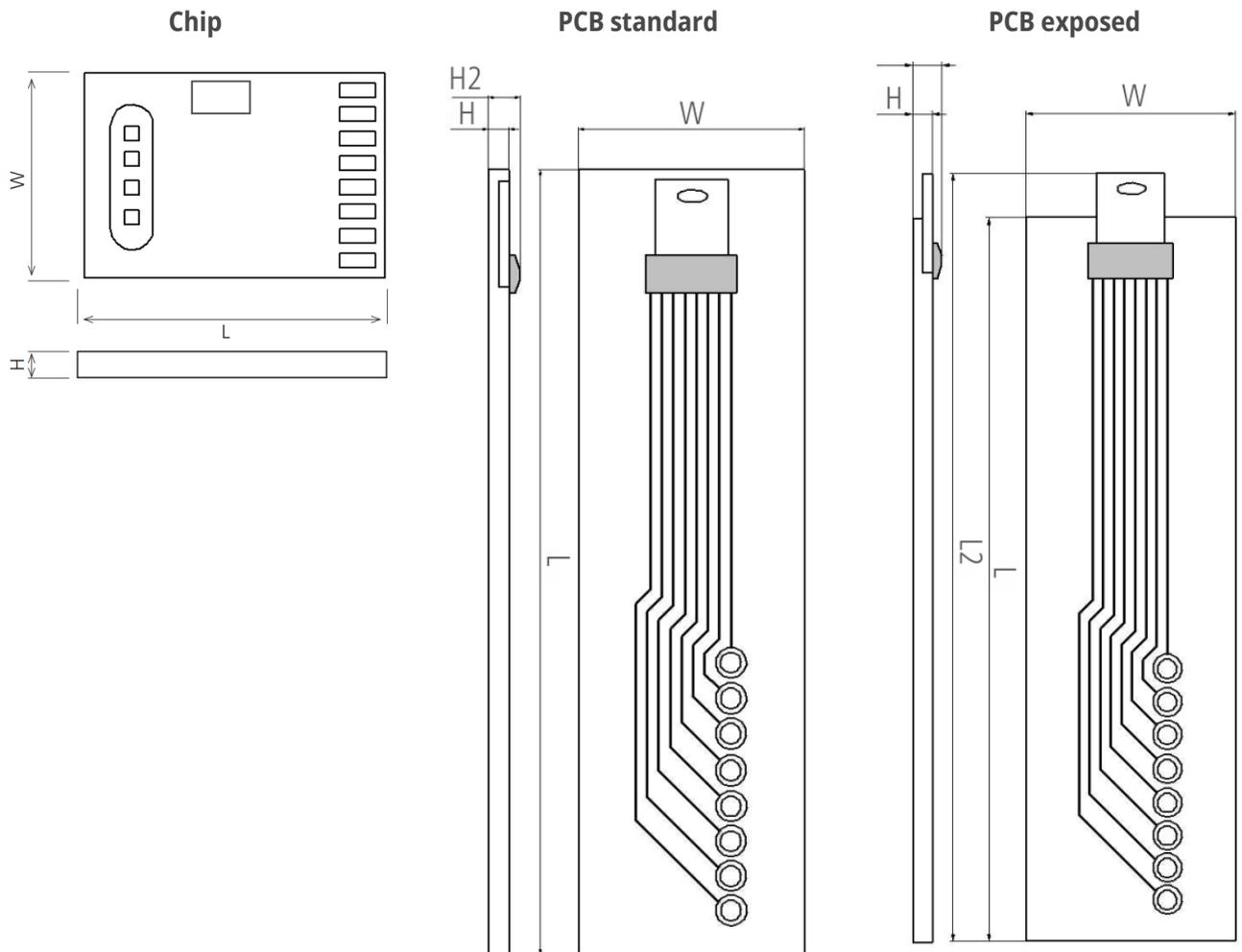
Thermal mass flow sensor

Optimal for ultra-fast measuring of gas flow & 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
- Customer-specific sensor layout upon request
- Different sensitivities and circuit topologies available
- Excellent for very low flow rates and leakage detection with bridge mode
- High chemical resistance against aggressive gases and vapors

Illustration¹



¹ For actual size, see dimensions



Technical sensor data



Dimensions (L x W x H mm)	Chip	5.0 ^{±0.1} x 3.4 ^{±0.1} x 0.5 ^{±0.075}
(L x W x H/H2 in mm)	PCB standard	38.1 ^{±0.4} x 10.82 ^{±0.4} x 0.9 ^{±0.07} / 1.9 ^{±0.07}
(L/L2 x W x H2 in mm)	PCB exposed	34.1 ^{±0.4} / 37.4 ^{±0.4} x 10.82 ^{±0.4} x 0.9 ^{±0.1} / 1.9 ^{±0.1}
Dimensions bonding pads in mm		Length 0.38 ^{±0.05}
		Width 0.19 ^{±0.05}
		Pitch 0.21 ^{±0.05}
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)		Maximum ±50 mV at V _{CC} = 5 V; typical ±10 mV
TCR bridge offset (full bridge mode):		Maximum ±50 ppm/K x V _{CC} /2
Power consumption (no flow)		10 mW to 50 mW (resp. chip temperature +50 °C to +160 °C)

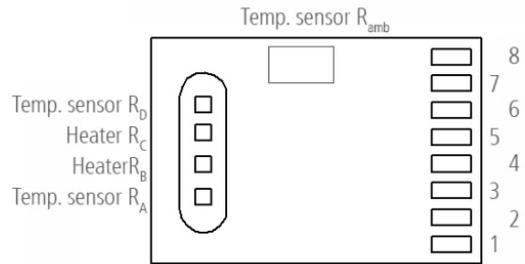
*Customer-specific alternatives available



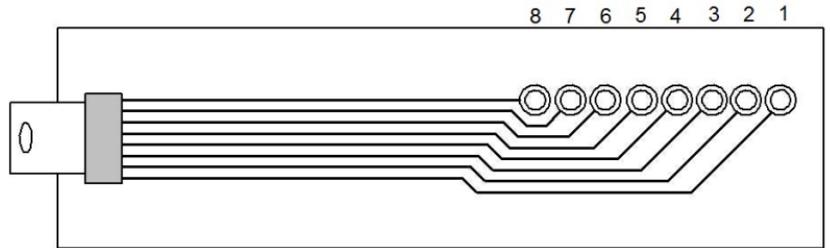
Pin assignment



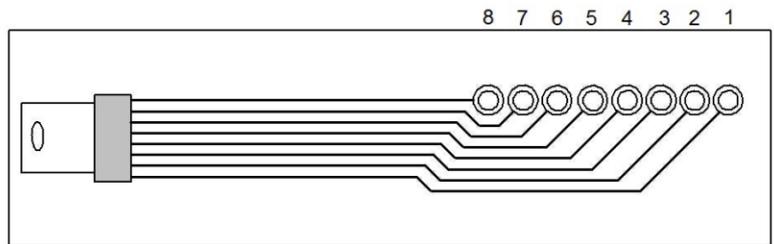
Chip



PCB exposed

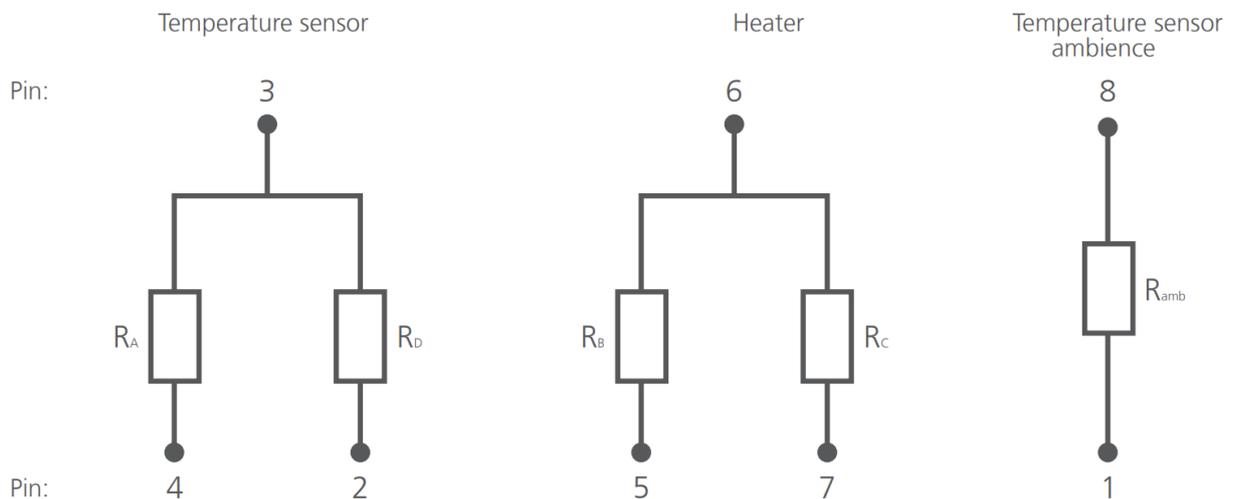


PCB standard



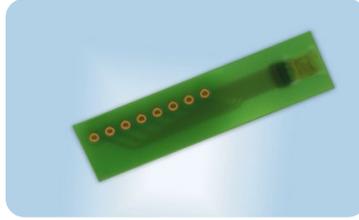
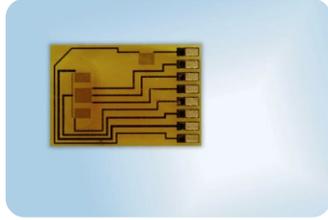
1	2	3	4	5	6	7	8
R_{amb}	R_D	R_A/R_D	R_A	R_B	R_C/R_B	R_C	R_{amb}

Electrical equivalent circuit





Order information



Product name	MFS02	MFS02.PSTD.0	MFS02.PEXP.0
Order code	103743	103745	103746

Additional Electronics

Document name:

Amplifier Module

DFMFS_Amplifier_Module_E



Innovative Sensor Technology IST AG • Stegrütistrasse 14 • 9642 Ebnat-Kappel • Switzerland
+41 71 992 01 00 • info@ist-ag.com • www.ist-ag.com

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