Innovative Sensor Technology

physical. chemical. biological.

MFS02

Thermal Mass Flow Sensor

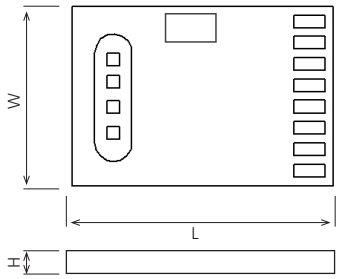
Optimal for ultra fast measuring of gas flow and flow direction

Benefits & characteristics

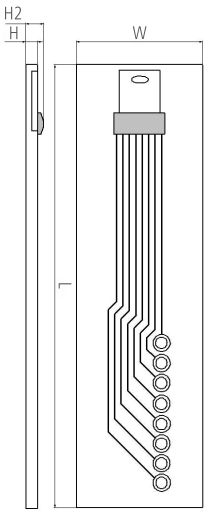
- Excellent solution for applications with high flow rates and fast response time in CTA mode
- Very high measuring dynamic with CTA mode (10'000'000 : 1) without bypass
- Different sensitivities and circuit topologies available
- Detection of flow direction
- Excellent for very low flow rates and leakage detection with bridge mode
- High chemical resistance against aggressive gases and vapors
- Customer-specific sensor layout upon request

Illustration 1)

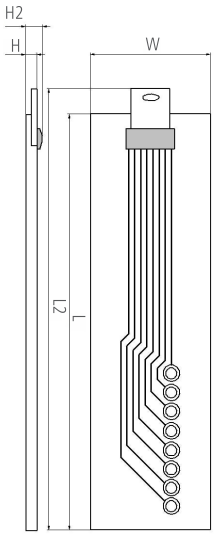
chip



PCB standard



PCB exposed



1) For actual size, see dimensions

Technical data

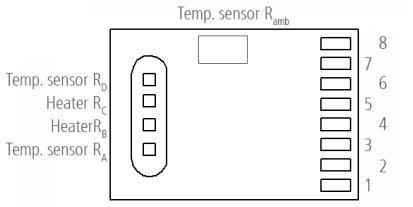
Dimensions (L x W x H mm):	Chip	5.0 ±0.1 x 3.4 ±0.1 x 0.5 ±0.075
(L x W x H / H2 in mm)	PCB standard	38.1 ±0.4 x 10.82 ±0.4 x 0.9 ±0.07 / 1.9 ±0.07
(L/ L2 x W x H / H2 in mm)	PCB exposed	34.1 ±0.4 / 37.4 ±0.4 x 10.82 ±0.4 x 0.9 ±0.1 / 1.9 ±0.1
Dimensions bonding pads in mm	Length	0.38 ±0.05
	Width	0.19 ±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):	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)

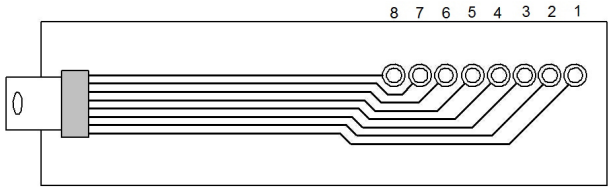
* Customer-specific alternatives available

Pin assignment

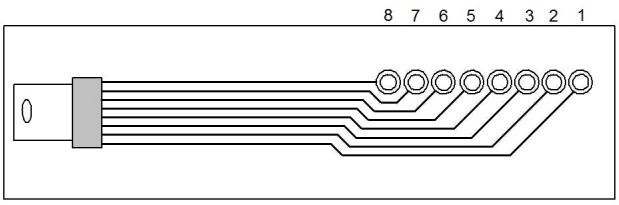
Chip



PCB exposed

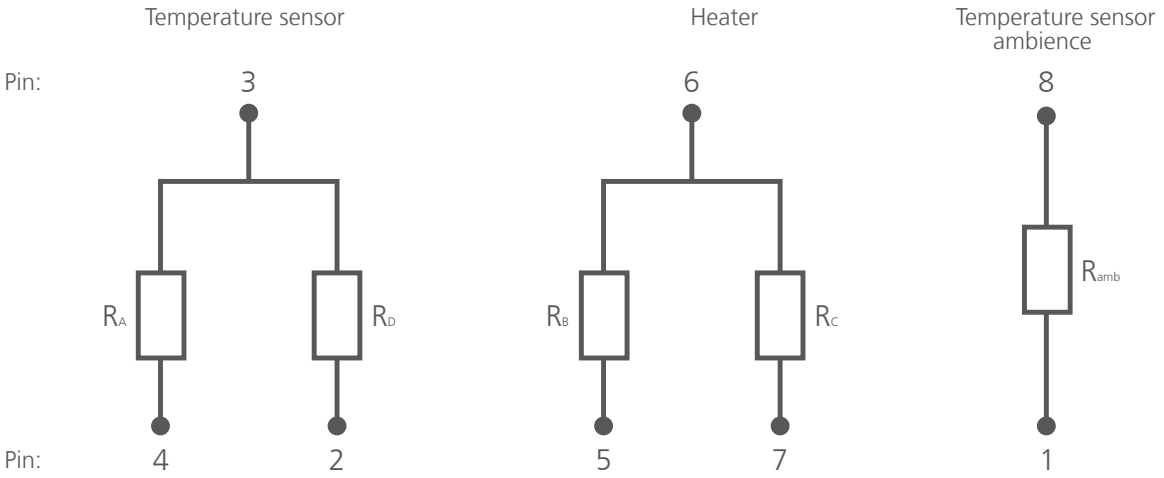


PCB standard

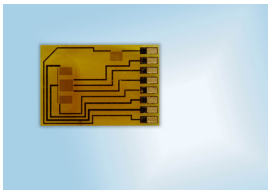
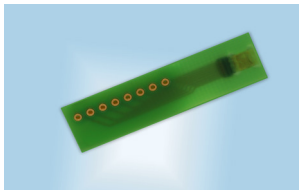
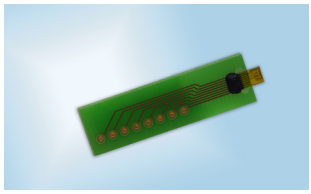


1	2	3	4	5	6	7	8
R_{amb}	R_D	R_A/R_D	R_A	R_B	R_C/R_B	R_C	R_{amb}

Electrical equivalent cirquit



Order information

Sensor element	MFS02	MFS02.PSTD.0	MFS02.PEXP.0
Order code	103743	103745	103746
Former order code	*050.00263*	*050.0266*	*050.00267*

Additional electronics

	Document name:
Amplifier Module:	DFMFS_Amplifier_Module_E

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