



# MFS02

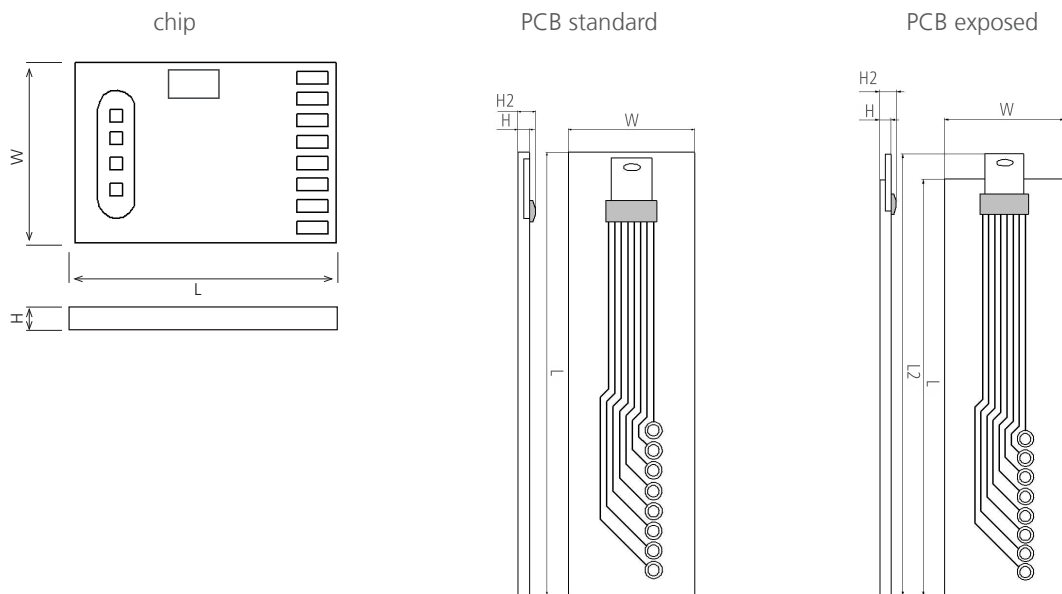
## Thermal Mass Flow Sensor

### 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
- 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<sup>1)</sup>



1) For actual size, see dimensions

#### Technical Data

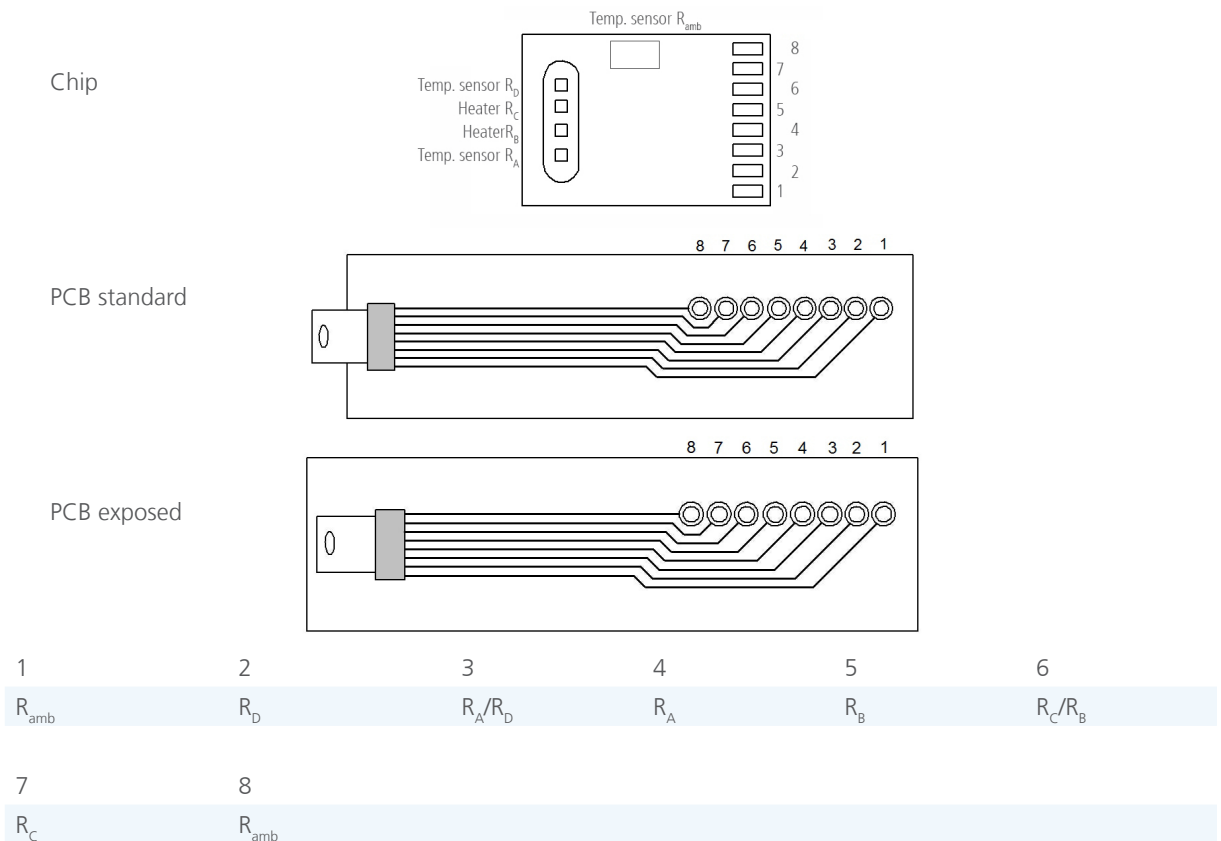
Dimensions (L / L2 x W x H / H2 in mm):	Chip	5.0 x 3.4 x 0.5
	PCB standard	38.2 x 10.8 x 1.0 / 2.0
	PCB exposed	34.2 / 37.4 x 10.8 x 1.0 / 2.0
Operating measuring range:	0 m/s to 1.5 m/s (full bridge mode)	
	0 ml/min to 100 ml/min (full bridge mode)	
	0 m/s to 150 m/s (CTA mode)	
	0 l/min to 10 l/min (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:	$R_{high}(0\text{ °C}) = 710\ \Omega \pm 10\ %\ R_A, R_D$
2 elements:	$R_{low}(0\text{ °C}) = 530\ \Omega \pm 10\ %\ R_B, R_C$
Matching between elements:	< 2 %
1 element:	$R_{amb}(0\text{ °C}) = 825\ \Omega \pm 10\ %$
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)

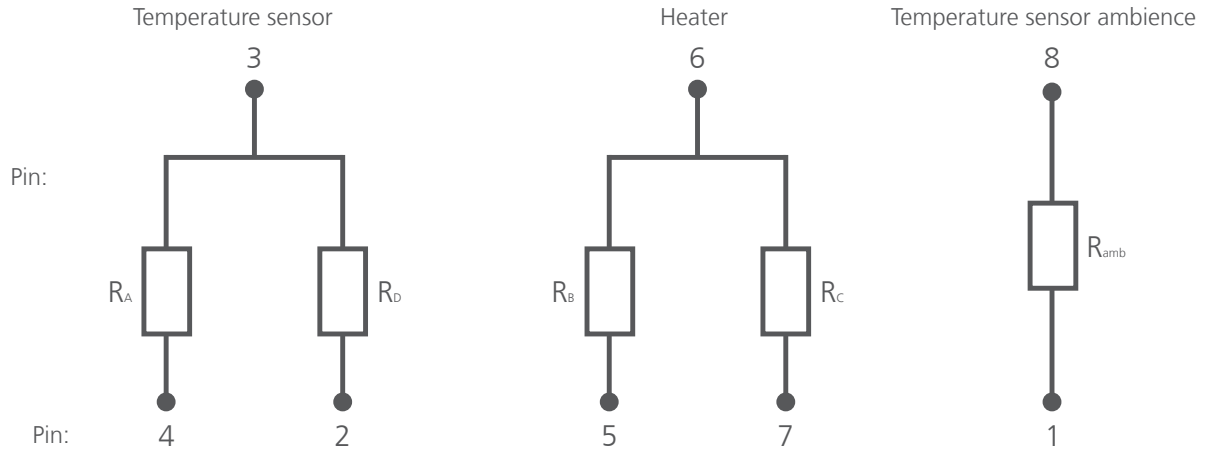
\* Customer-specific alternatives available

## Pin Assignment





## Electrical Equivalent Circuit



## Order Information

Sensor element	MFS02
Order code	050.00263
Sensor element on PCB (standard)	MFS02.PSTD.0
Order code	050.00266
Sensor element on PCB (exposed)	MFS02.PEXP.0
Order code	050.00267

## Additional Electronics

	Document name:
EvaKit:	MFS02_EvaKit_E
Amplifier Module:	DFMFS_Amplifier_Module_E

