



# MFS02

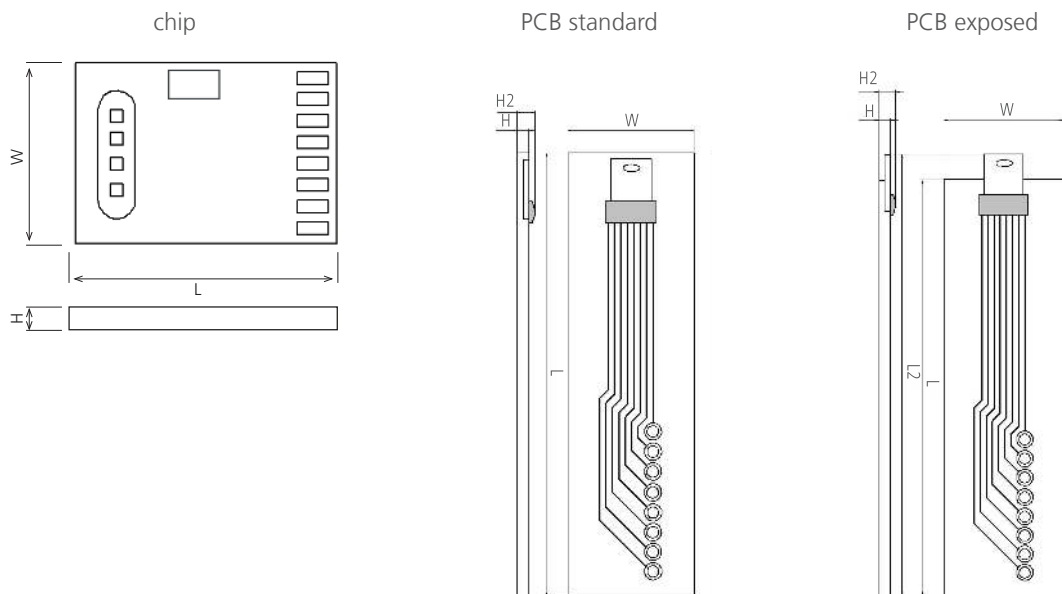
## Thermal Mass Flow Sensor

### 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

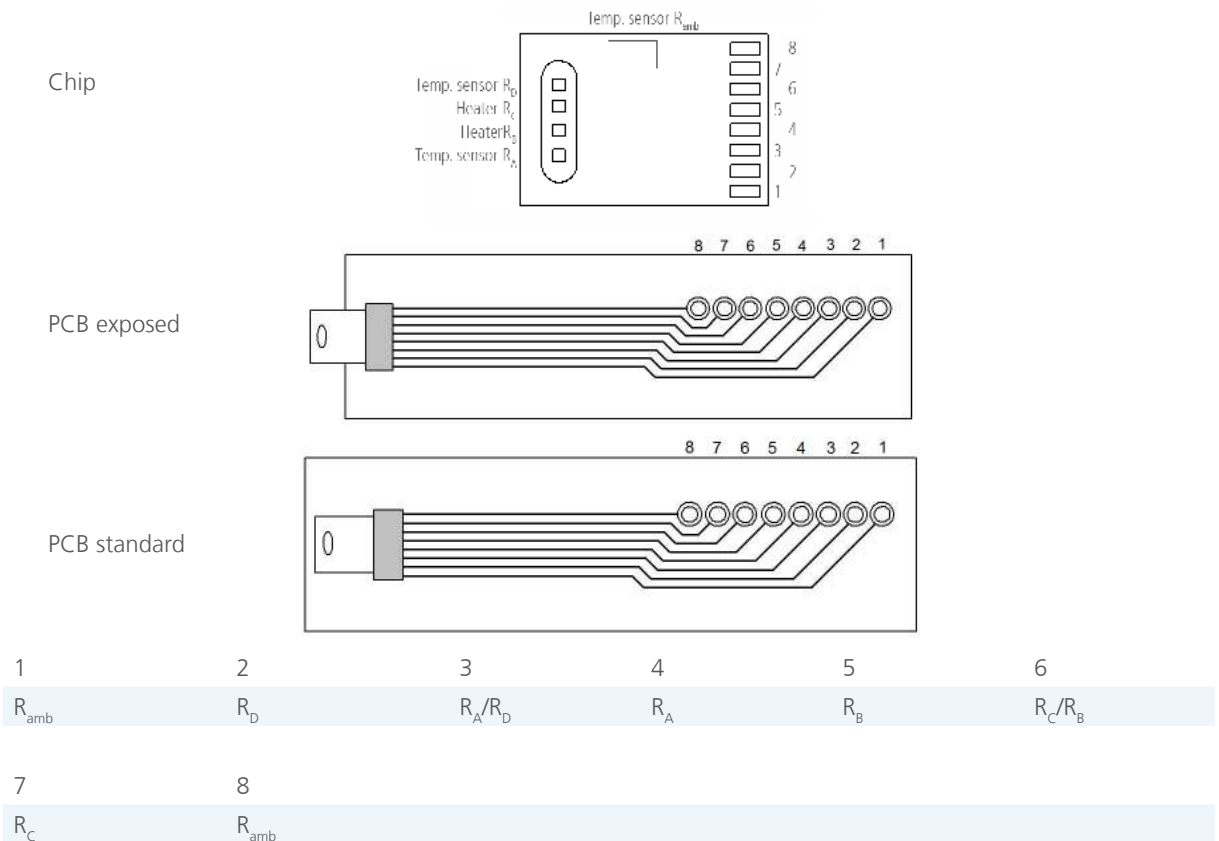
Dimensions (L / L2 x W x H / H2 in mm):	Chip	5.0 x 3.4 x 0.5
	PCB standard	38.2 x 10.8 x 1.0 / 2.0
	PCB exposed	34.2 / 37.4 x 10.8 x 1.0 / 2.0
Operating measuring range:	0 m/s to 1.5 m/s (full bridge mode)	
	0 ml/min to 100 ml/min (full bridge mode)	
	0 m/s to 150 m/s (CTA mode)	
	0 l/min to 10 l/min (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)

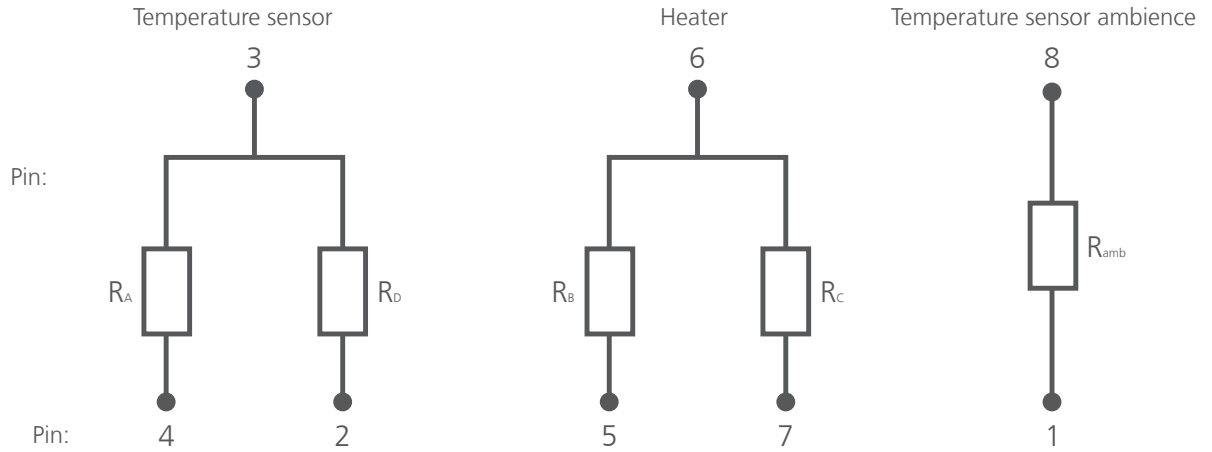
\* Customer-specific alternatives available

## Pin Assignment





## Electrical Equivalent Circuit



## Order Information

Sensor element	MFS02
Order code	103743
Former order code	050.00263
Sensor element on PCB (standard)	MFS02.PSTD.0
Order code	103745
Former order code	050.00266
Sensor element on PCB (exposed)	MFS02.PEXP.0
Order code	103746
Former order code	050.00267

## Additional Electronics

Amplifier Module:	DFMFS_Amplifier_Module_E
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Document name:



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