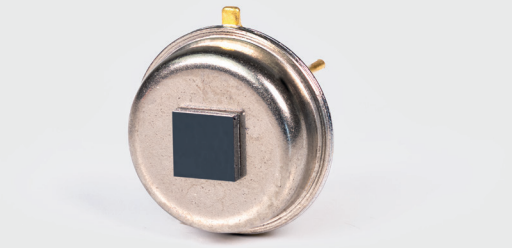
MICRO-HYBRID

MTS1TEMP and MTS1HIGHTEMP

The thermo-electric IR detectors of the MTS series (Micro-Hybrid thermopile sensors) are characterized by a particularly high detectivity and durability.



Features

- Environmental temperatures up to 180 °C
- Soldered filter (optional) for harsh environments
- High sensitivity
- Resistent against humidity and other environmental influences

Product benefits

- Excellent performance due to best materials like BiSb / Sb for thermoelectrical effect (MTS80)
- Best detectivity
- High sensitivity

Applications

- Glas, polymers: temperature monitoring of melting processes
- Automotive and other moving parts: temperature monitoring of engines, brakes
- Life science medicals: contactless temperature measurement of laboratory parameters
- Metal, paper: monitoring of thermal indicated process parameters
- Solar semiconductors: maintenance

Additional product information

The base of each thermopile detector is formed by the so-called thermocouple. Due to thermal diffusion currents of two different metals (Seebeck effect), it generates an electrical voltage – the measurement signal. These serially connected thermocouples, called thermopiles, achieve a higher output voltage.

The sensitive component of Micro-Hybrid thermopile detectors is a MEMS-based thin-layer system on a silicon substrate. We offer thermopile detectors with either 80 or 44 thermocouples for remote temperature measurement.

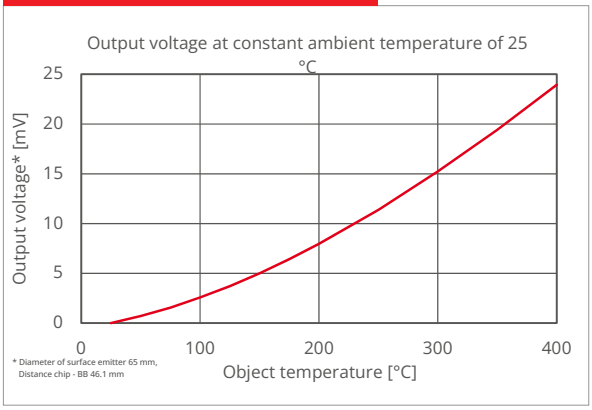
Technical data

Technical parameter	TEMP80	HIGHTEMP80	TEMP44	Unit
Active area	Ø 0.5	Ø 0.5	1.0 x 1.0	mm^2
Aperture	Ø 0.75	Ø 0.75	Ø 0.75	mm^2
Number of thermocouples	80	80	44	
Time constant $_{0\text{-}63\ \%}$ [1,2,3]	typ. 51	typ. 51	typ. 13	ms
DC output voltage [1,2,3]	typ. 3.74	typ. 3.74	typ. 1.47	mV
DC sensitivity [1,2,3]	typ. 501	typ. 501	typ. 39	V/W
Noise voltage [2]	typ. 18	typ. 18	typ. 24	$nV/Hz^{1/2}$
Noise equivalent power NEP [1,2,3]	typ. 0.04	typ. 0.04	typ. 0.62	$nW/Hz^{1/2}$
Specific dectivity D* [1,2,3]	typ. $12.2*10^8$	typ. $12.2*10^8$	typ. $1.61*10^8$	$cmHz^{1/2}/W$
Resistance of thermopile [2]	typ. 20	typ. 20	typ. 35	kΩ
Thermistor	PTC Ni1000, other on request: Technical specifications see document „Thermistors".			
Filling gas [3]	Kr	Kr	Kr	
Filters	Si, 8 -14 µm (B1)	Si, 8 -14 µm (B1)	Si, 8 -14 µm (B1)	
Operating temperature	-20 ... +85	-20 ... +180	-20 ... +85	°C
Housing	TO39	TO39	TO39	

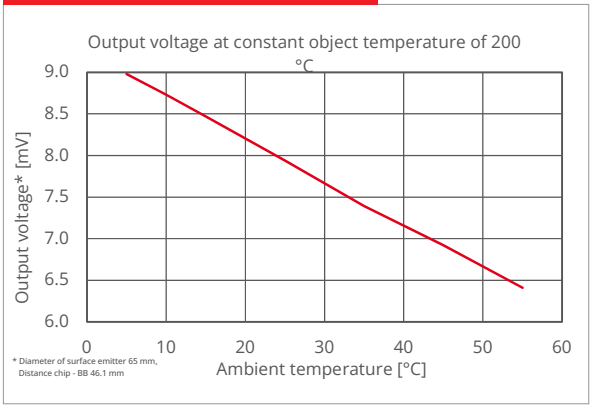
[1] T=500 K, E=38 W/m^2, without influence of filter characteristic
[2] At T_{amb} = 25 °C
[3] With Kr-filling, other gases on customer's request

Typical operating characteristics

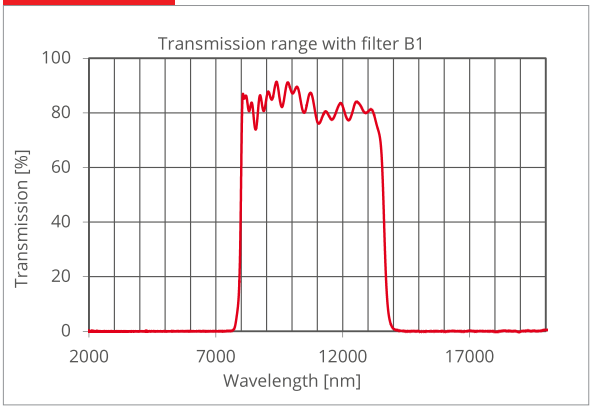
MTS1HIGHTEMP80 with filter B1



MTS1HIGHTEMP80 with filter B1

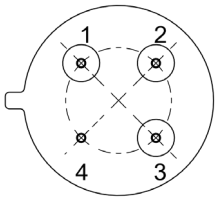


MTS1 filter B1



Electrical schemata

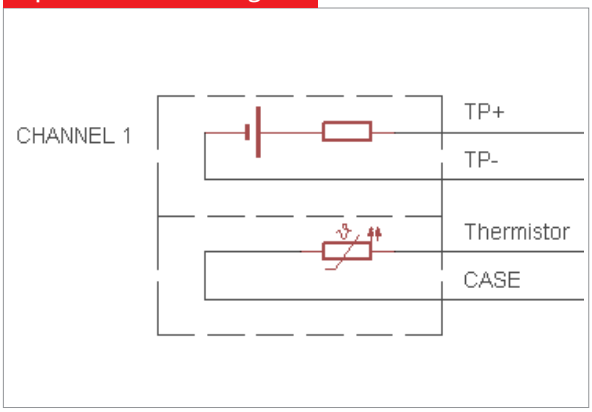
Pin out (bottom view)



- Pin 1 – TP +
- Pin 2 – TP -
- Pin 3 – Thermistor
- Pin 4 – GND/Case

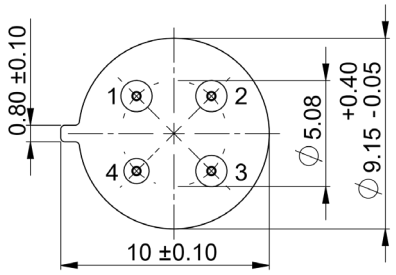
Circuits

Equivalent circuit diagram



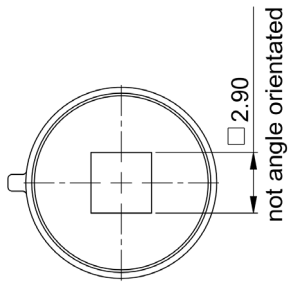
Mechanical drawings

Bottom

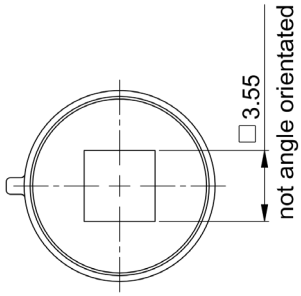


→ All geometrical dimensions in mm

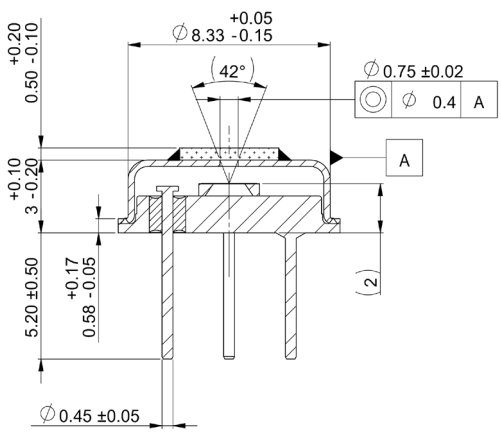
Top MTS1TEMP80/44



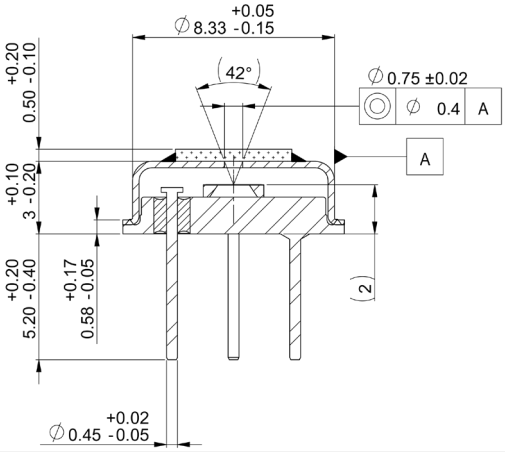
Top MTS1HIGHTEMP80



Sectional MTS1TEMP80/44



Sectional MTS1HIGHTEMP80



Product overview

Article	Type	Filling gas	Temp. min	Temp. max	Aperture	
TS1x80B-A-D0.75-1-Kr-B1-180	TO39 with cap	Kr	-20 °C	180 °C	0.75 mm	High temp
TS1x80B-A-D0.75-1-Kr-B1	TO39 with cap	Kr	-20 °C	85 °C	0.75 mm	
TS1x44S-A-D0.75-1-Kr-B1	TO39 with cap	Kr	-20 °C	85 °C	0.75 mm	

Disclaimer