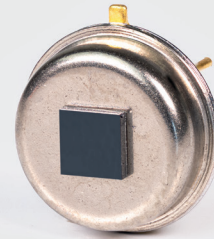# MTS1TEMP and MTS1HIGHTEMP

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.

Online shop for IR components and sensors
Filter products simply by selecting the desired properties and request your quotation.

🛒 **microhybrid.com/shop**

INFRARED COMPONENTS
AND SYSTEMS

Technical data

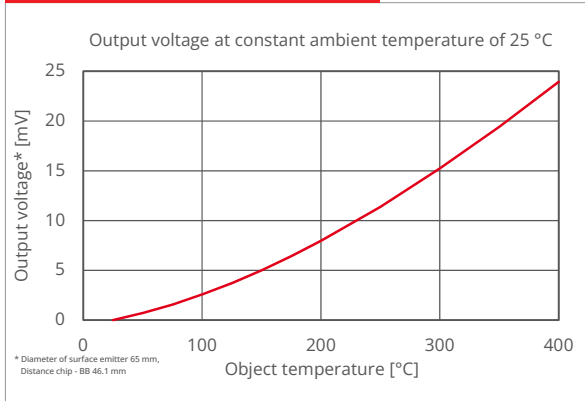| Technical parameter	TEMP80	HIGHTEMP80	TEMP44	Unit
Active area	Ø 0.5	Ø 0.5	1.0 x 1.0	mm^2
Aperture	Ø 0.75	Ø 0.75	Ø 0.75	mm^2
Number of thermocouples	80	80	44	
Time constant $_{0\text{-}63\%}$ [1,2,3]	typ. 51	typ. 51	typ. 13	ms
DC output voltage [1,2,3]	typ. 3.74	typ. 3.74	typ. 1.47	mV
DC sensitivity [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	$k\Omega$
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	

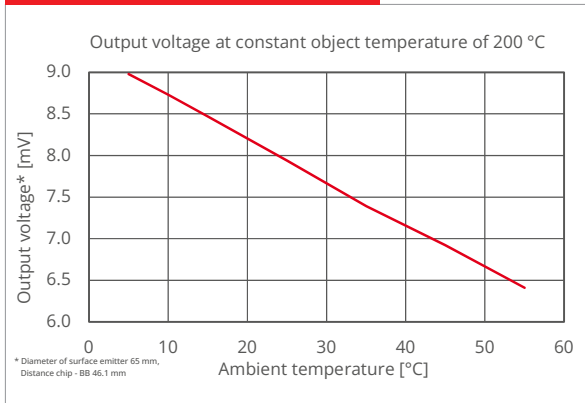[1] T=500 K, E=38 W/m^2, without influence of filter characteristic
[2] At T_{amb} = 25 °C
[3] With Kr-filling, other gases on customer's request
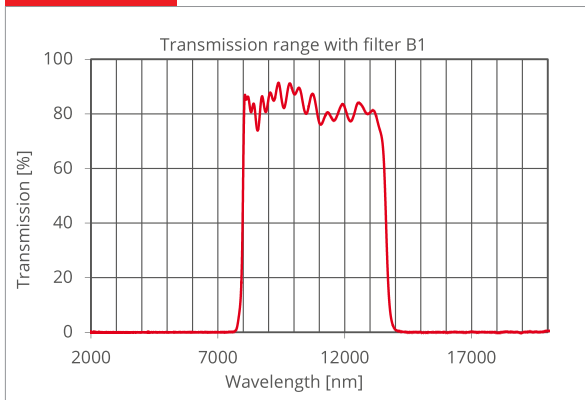
Typical operating characteristics
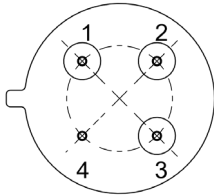
MTS1HIGHTEMP80 with filter B1

Output voltage at constant ambient temperature of 25 °C

* Diameter of surface emitter 65 mm,
Distance chip - BB 46.1 mm

MTS1HIGHTEMP80 with filter B1

Output voltage at constant object temperature of 200 °C

* Diameter of surface emitter 65 mm,
Distance chip - BB 46.1 mm

MTS1 filter B1

Transmission range with filter B1

Electrical schemata

Pin out (bottom view)	Page 4

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

Circuits

Equivalent circuit diagram
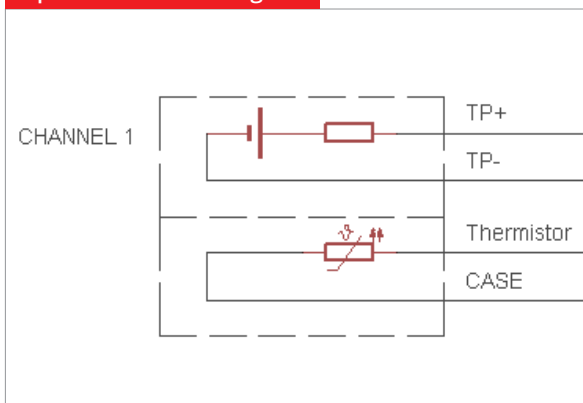
Mechanical drawings

Bottom
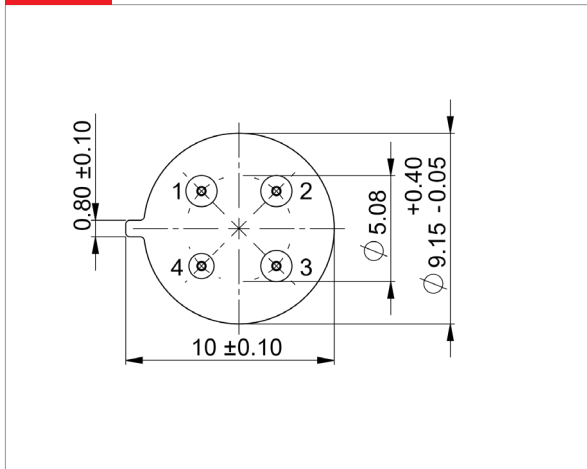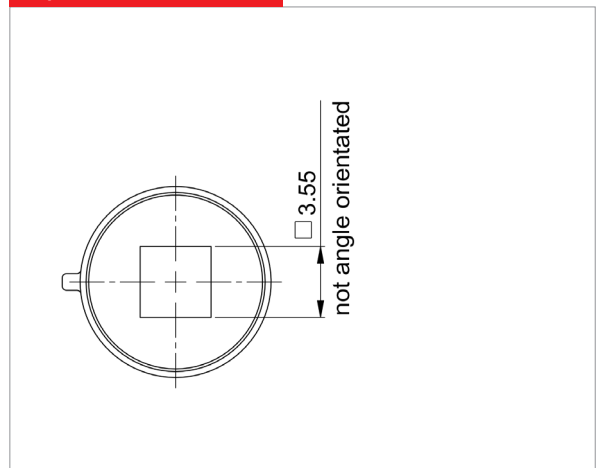
→ All geometrical dimensions in mm

Top MTS1TEMP80/44
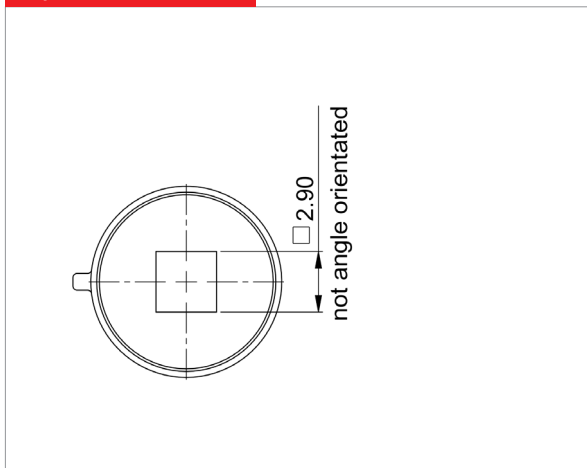
Top MTS1HIGHTEMP80

Sectional MTS1TEMP80/44
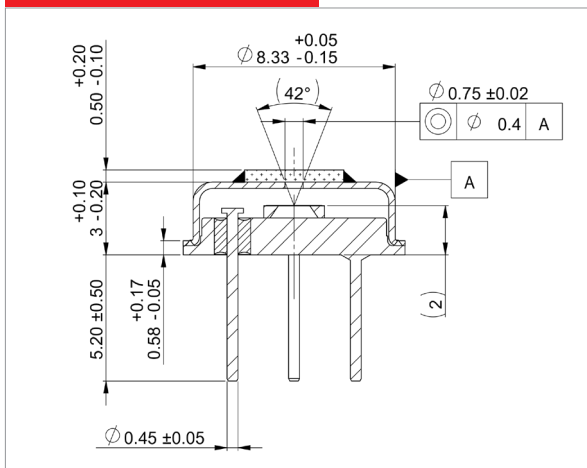
Sectional MTS1HIGHTEMP80
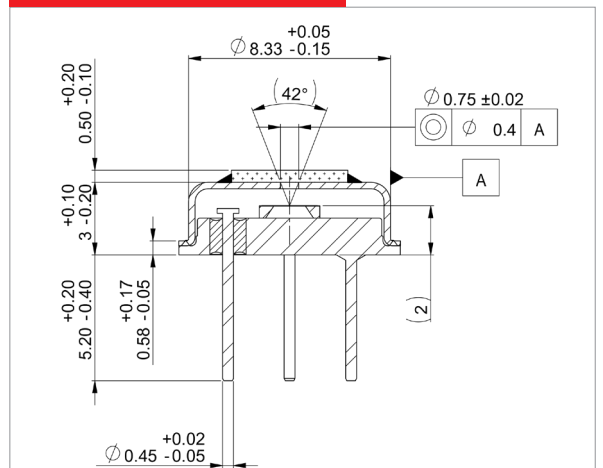
Product overview

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

MICRO-HYBRID