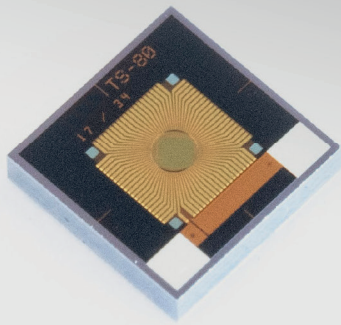


MINIATURIZED THERMAL RADIATION SENSOR TS-80

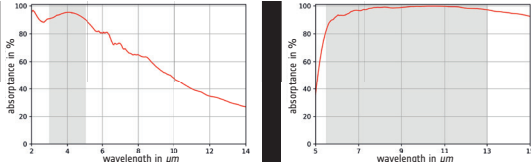
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DESCRIPTION TS-80

The product TS-80 is a MEMS-based multijunction thermopile sensor processed on silicon substrate. The sensor offers excellent detectivity by means of antimony and bismuth thin films. The operational wavelength range is adjustable by an absorption multilayer system. 3 µm to 5 µm and 5.5 µm to 13 µm are standard, while other ranges are also available upon request. This sensor chip has been specifically developed for operating at ambient temperatures of up to 180°C. We offer the bare sensor die as well as a completely packaged TS-80 hermetically sealed in a small TO-package under different inert gas atmosphere. We advise customers for an application optimized sensor package compilation.

Cooling, bias voltage or current are NOT required for operation. The passive sensor can be used for DC and low frequency AC measurements.

TECHNICAL DATA TS-80

Chip Parameters	Values	Units
Active Area	0.2 [0.5]	mm2 [mm Ø]
Number of Thermocouples	80	
Dimension	2.5x2.5	mmxmm
Functional Parameters	Values	Units
Absorbing Layer	3 ... 5 5.5 ... 13	µm
Resistance	12 ... 28	kΩ
Resistance TC	-0.02 ... -0.03	% / K
Noise Voltage (300K)	≤ 20	nV / Hz ^{1/2}
Max. Irradiance	12	mW / mm²
DC Responsivity	240 ... 315	V / W
DC Responsivity TC	-0.5 ... -0.6	% / K
DC Output @ 38 µW / mm² (N ₂ -Filling)	1.8 ... 2.4	mV
Time Constant τ ₁₀₋₉₀ (N ₂ -Filling)	≤ 80	ms
Specific Detectivity D* (500K, DC)	5.5 ... 7.4	10 ⁸ cm Hz ^{1/2} / W
Sensor Parameters		
Filling Gases	Ne, Kr, Xe, Ar, N ₂	
Spectral Response	Standard: 3.0 ... 5.0 µm or 5.5 ... 13.0 µm, respectively	
Window Materials	Standard: 8 ... 14 µm Filter (other materials on request)	
Mounting	TO-39 Package (modified)	
Thermistor	TRS-Si, 10 kΩ ± 0.5 %, 3850±200 ppm / K	
Operating Temperature	- 20 ... + 85 °C	
Weight	< 1 g	
Spectral Absorptance		

All specifications – technical included – are subject to change without notice.

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FEATURES TS-80

- › Operating temperatures up to 180°C
- › High Responsivity
- › Excellent Long-Term Stability
- › Broad Spectral Response in the IR
- › No cooling required
- › No bias voltage required
- › Thermal & mechanical shock resistant

APPLICATIONS TS-80

- › Pyrometry
(non-contact temperature measurements)
- › Radiometry
- › NDIR spectroscopic gas detection



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