

THERMOPILE

OTP-538U

Thermopile Sensor

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The OTP-538U is a thermopile sensor in classic TO-46 housing. The sensor is composed of 116 elements of thermocouple in series on a floating micro-membrane having an active diameter of 545 μm . The thermopile sensor provides nearly Johnson-noise-limited performance, which can be calculated by its ohmic series resistance. A thermistor element, with a lead connected to ground, is also provided inside the TO package for ambient temperature reference.

- TO-46 metal housing
- Thermistor temperature reference included
- Low temperature coefficient of sensitivity
- Ideally suited for ear thermometers, miniature pyrometer.

Parameter	Typ	Unit	Conditions
Sensitivity	85	V/W	500K, 5-14 μm
TC of sensitivity	0.11	%/K	Typical
Sensitivity area in diameter	545	μm	
Resistance of thermopile	65	K Ω	25 $^{\circ}\text{C}$
TC of resistance	0.09	%/K	Typical
Time constant	16	ms	
Noise voltage	32	nV/Hz ^{1/2}	r.m.s 300K
NEP	0.36	nW/Hz ^{1/2}	500K, 5-14 μm
Normalized detectivity (D*)	1.3×10^8	$\text{cm}^2 \cdot \text{Hz}^{1/2} / \text{W}$	500K, 5-14 μm
Thermistor resistance	100.0	K Ω	25 $^{\circ}\text{C}$
β value	3964	K	25 $^{\circ}\text{C}/100^{\circ}\text{C}$
Field of view	66	$^{\circ}$	At 50% target signal
Cut on wavelength	5.0	μm	At 25 $^{\circ}\text{C}$, 50% transmittance

