



## **TS318-1B0814**

### Thermopile Sensor

#### SPECIFICATIONS

**Thermopile IR-Sensor**  
**For Contactless Temperature Measurement**  
**Single Element**  
**Small Package for Ear Thermometer**  
**High Signal**  
**Flat Filter**  
**Accurate Reference Sensor**

Thermopiles are mainly used for contactless temperature measurement in many applications. Their function is to transfer the heat radiation emitted from the objects into a voltage output.

## FEATURES

High Signal

Ni-RTD Reference Sensor

Small TO-18 Package

8-14 $\mu$ m Band Pass Filter for measurement distances >0.5m

## APPLICATIONS

Pyrometers (general)

Industrial Pyrometers

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typical	Max	Unit	Description
Storage Temperature	T <sub>S</sub>	-20	+20	+85	°C	permanent
Storage Temperature	T <sub>S</sub>	-20	+20	+100	°C	non permanent

## PERFORMANCE SPECS

Parameter	Symbol	Value	Unit	Condition
Operating Ambient Temperature	T <sub>Amb</sub>	-20 to +85	°C	permanent
Operating Ambient Temperature	T <sub>Amb</sub>	-20 to +100	°C	non permanent
Package		TO-18		
Absorber Area	A	0.8 × 0.8	mm <sup>2</sup>	
Thermopile Resistance	R <sub>TP</sub>	70 ± 30	k $\Omega$	T <sub>Amb</sub> = +25°C
Temperature Coefficient of Thermopile Resistance	TCR <sub>TP</sub>	-0.06 ± 0.04	%/K	T <sub>Amb</sub> = +25°C to +75°C
Voltage Response	V <sub>TP</sub>	5.0 ± 1.3	mV	T <sub>Amb</sub> = +25°C, T <sub>Obj</sub> = +100°C, DC, totally filled field of view
Temperature Coefficient of Voltage Response	TCV <sub>TP</sub>	-0.45 ± 0.08	%/K	T <sub>Amb</sub> = +25°C to +75°C
Noise Equivalent Voltage	NEV	34	nV/Hz <sup>1/2</sup>	T <sub>Amb</sub> = +25°C
Rise Time	$\tau_{63}$	12 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	R <sub>Ni-RTD</sub>	1000 ± 4	$\Omega$	T <sub>Amb</sub> = 0°C
Temperature Coefficient of Ni-RTD	TC <sub>Ni-RTD</sub>	6178 ± 150	ppm/K	T <sub>Amb</sub> = 0°C to +100°C

**TYPICAL PERFORMANCE CURVES**

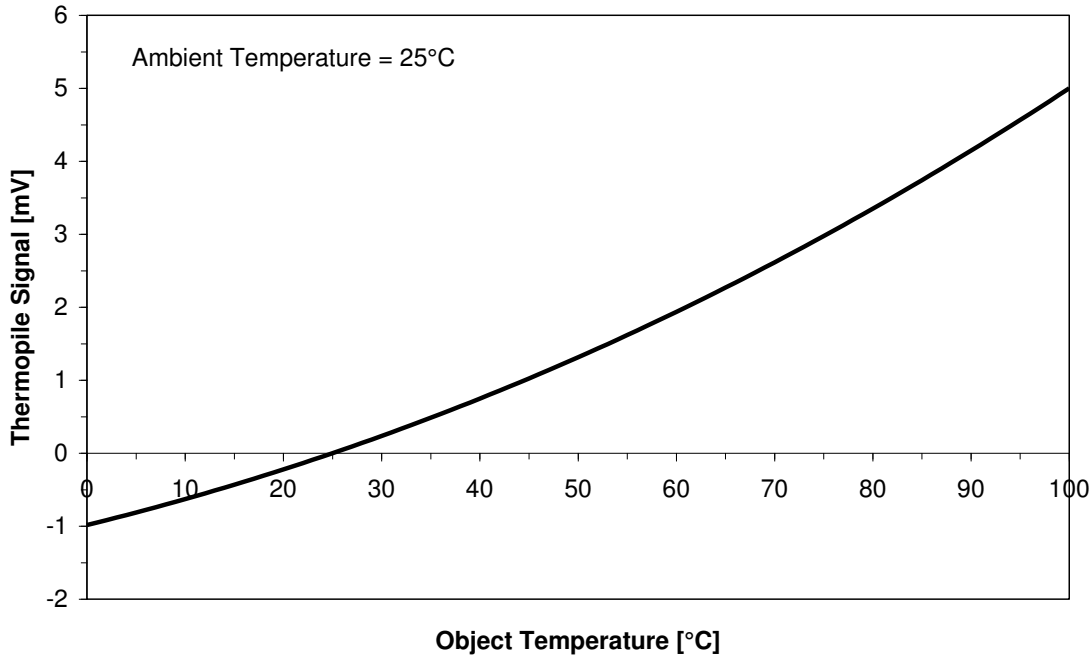


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

**OPTICAL CHARACTERISTICS**

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	110	deg	at 50% of maximum signal

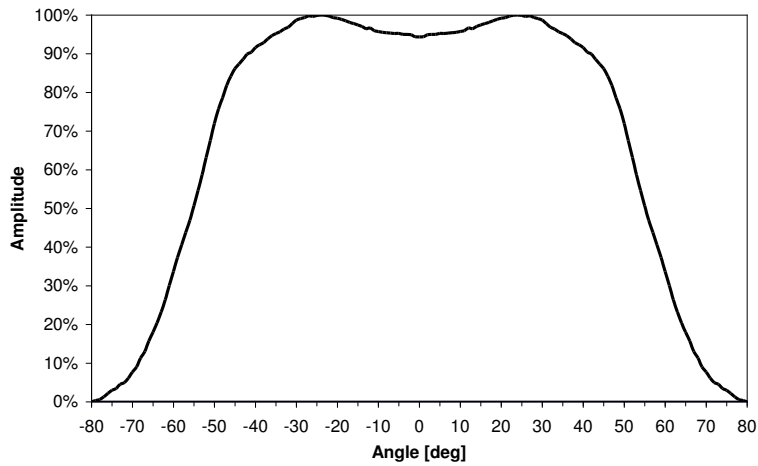


Figure 2: Field of View Curve

**FILTER CHARACTERISTICS**

Parameter	Symbol	Value	Unit	Description
Transmission Range	BBP	8-14	μm	Broad Band Pass
Transmission	T <sub>9 ... 13μm</sub>	≥ 75.0	%	at 9 ... 13μm

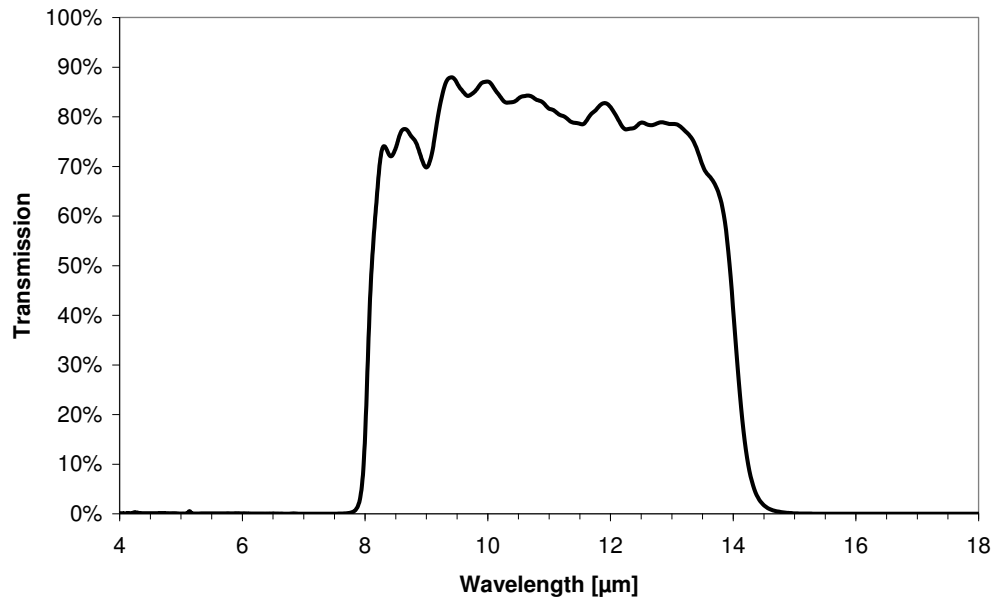


Figure 3: Filter transmission curve

**ELECTRICAL CONNECTIONS**

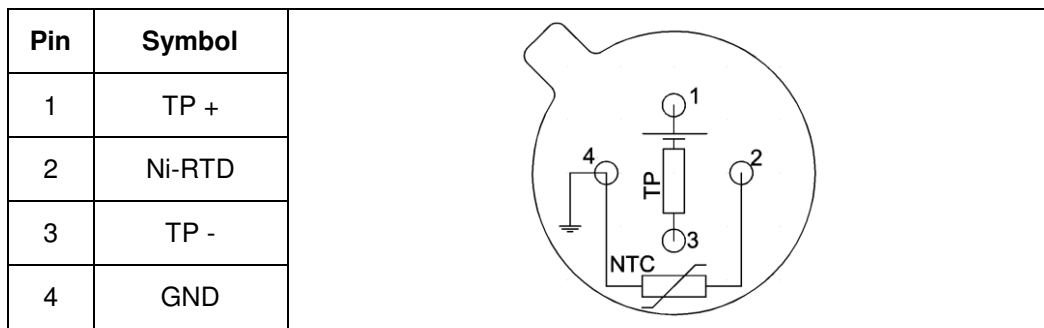


Figure 4: Electrical connections - bottom view of thermopile

**MECHANICAL DIMENSIONS**

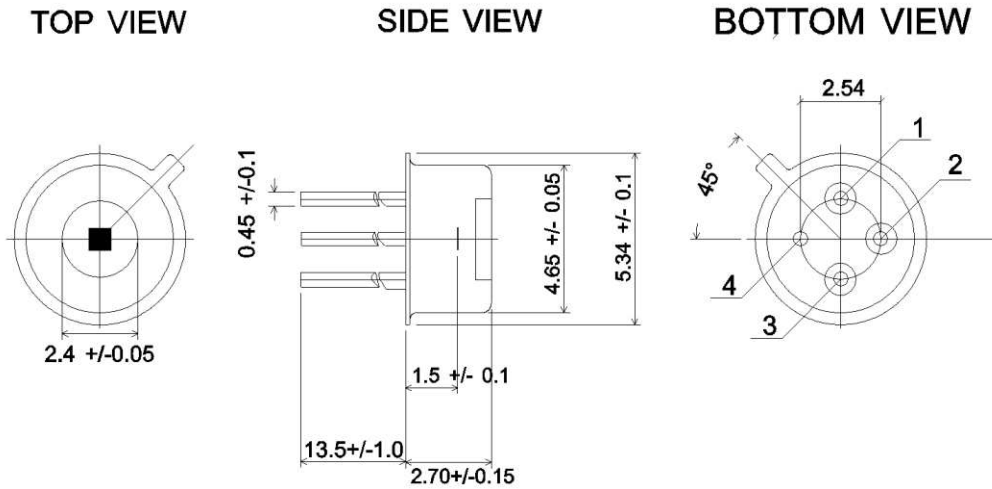


Figure 5: Mechanical dimensions of thermopile

**ORDERING INFORMATION**

<b>Part Description</b>	TS318-1B0814
<b>Part No.</b>	G-TPCO-031

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