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

8-14µm 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_S	-20	+20	+85	°C	permanent
Storage Temperature	T_S	-20	+20	+100	°C	non permanent

PERFORMANCE SPECS

Parameter	Symbol	Value	Unit	Condition
Operating Ambient Temperature	T_{Amb}	-20 to +85	°C	permanent
Operating Ambient Temperature	T_{Amb}	-20 to +100	°C	non permanent
Package		TO-18		
Absorber Area	A	0.8 × 0.8	mm^2	
Thermopile Resistance	R_{TP}	70 ± 30	kΩ	T_{Amb} = +25°C
Temperature Coefficient of Thermopile Resistance	TCR_{TP}	-0.06 ± 0.04	%/K	T_{Amb} = +25°C to +75°C
Voltage Response	V_{TP}	5.0 ± 1.3	mV	T_{Amb} = +25°C, T_{Obj} = +100°C, DC, totally filled field of view
Temperature Coefficient of Voltage Response	TCV_{TP}	-0.45 ± 0.08	%/K	T_{Amb} = +25°C to +75°C
Noise Equivalent Voltage	NEV	34	$nV/Hz^{½}$	T_{Amb} = +25°C
Rise Time	τ_{63}	12 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	$R_{Ni\text{-}RTD}$	1000 ± 4	Ω	T_{Amb} = 0°C
Temperature Coefficient of Ni-RTD	$TC_{Ni\text{-}RTD}$	6178 ±150	ppm/K	T_{Amb} = 0°C to +100°C

TYPICAL PERFORMANCE CURVES

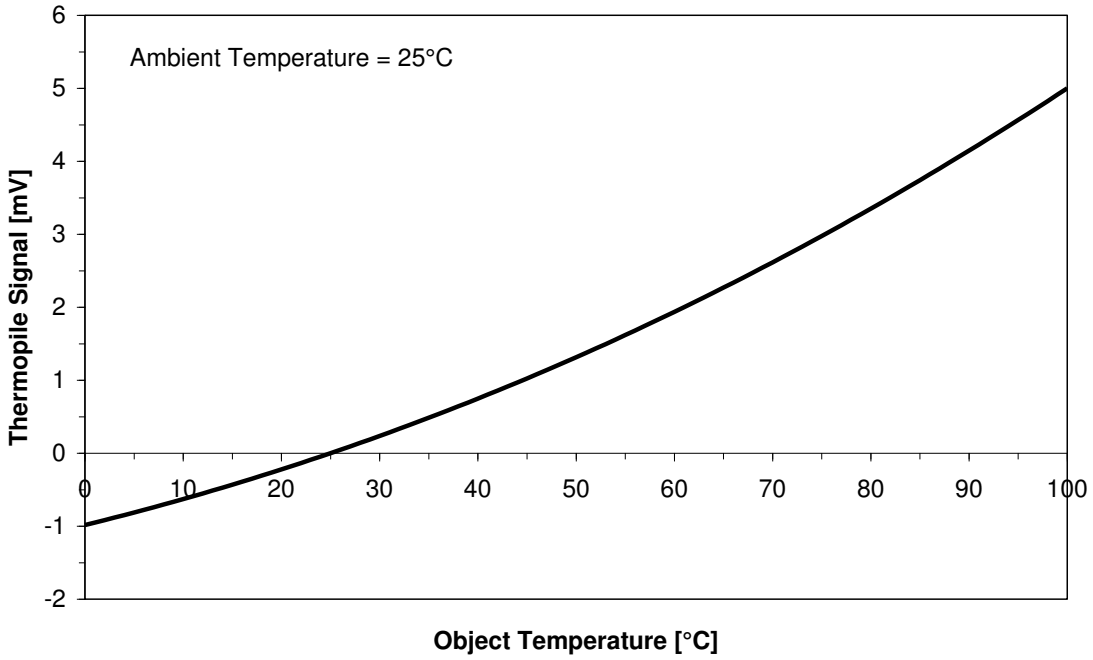

Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

OPTICAL CHARACTERISTICS

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

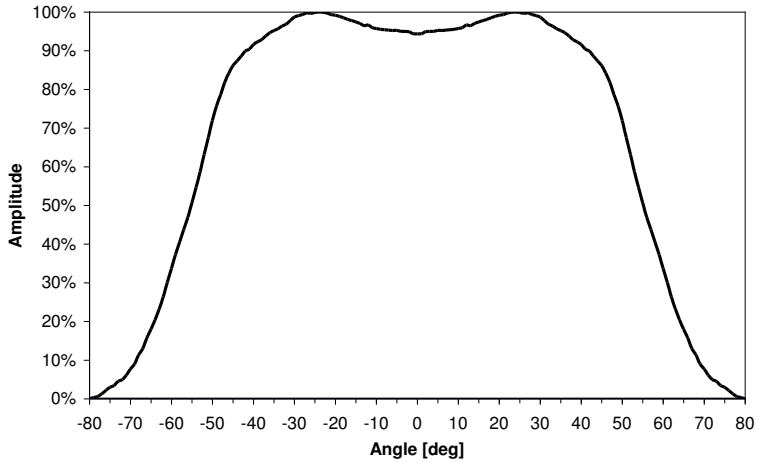

Figure 2: Field of View Curve

FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Transmission Range	BBP	8-14	µm	Broad Band Pass
Transmission	$T_{9 \ldots 13\mu m}$	≥ 75.0	%	at 9 ... 13µm

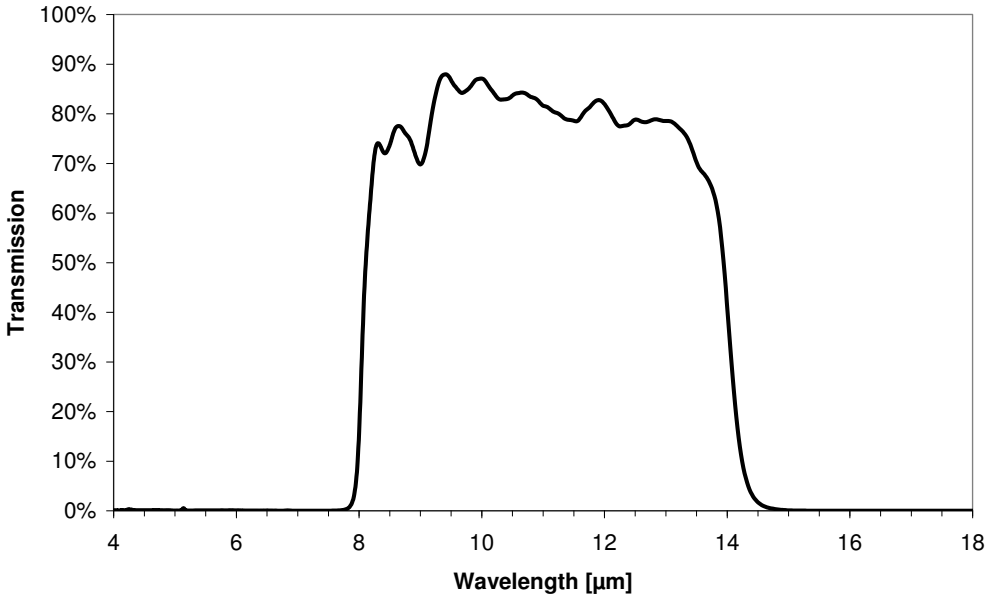

Figure 3: Filter transmission curve

ELECTRICAL CONNECTIONS

Pin	Symbol
1	TP +
2	Ni-RTD
3	TP -
4	GND

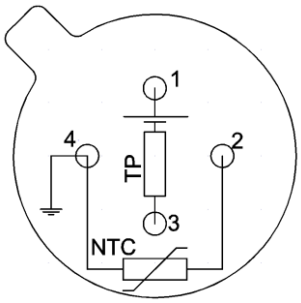

Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

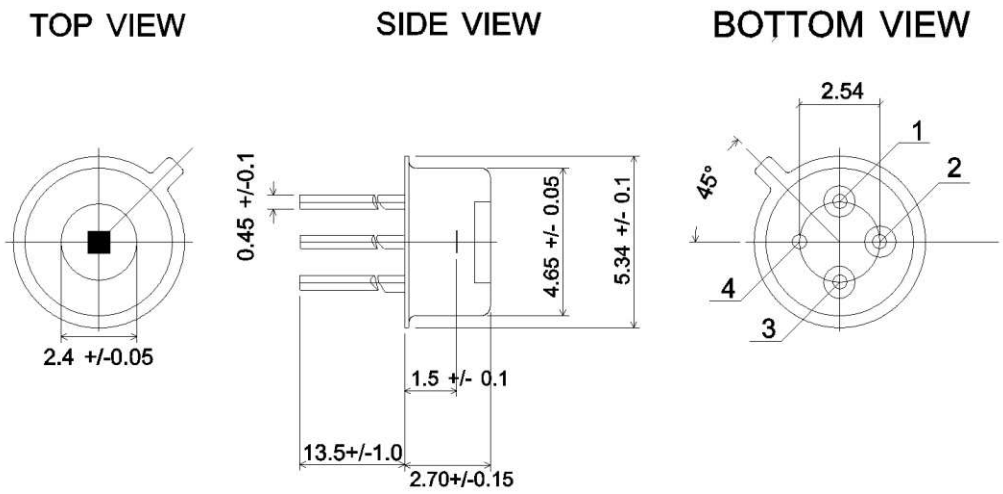

Figure 5: Mechanical dimensions of thermopile

ORDERING INFORMATION

Part Descripton	TS318-1B0814
Part No.	G-TPCO-031

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