Model TS318-1B0814 Thermopile Sensor

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

DESCRIPTION

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	℃	permanent
Storage Temperature	T_S	-20	+20	+100	℃	non permanent

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PERFORMANCE SPECS

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

TYPICAL PERFORMANCE CURVES

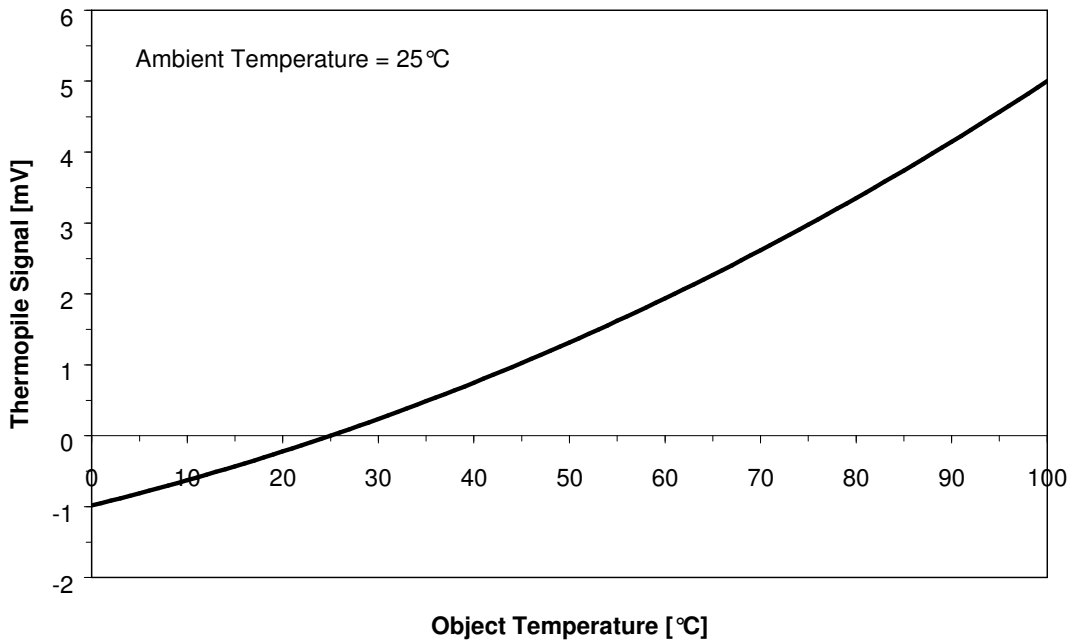

Figure 1: Thermopile signal versus object temperature at 25℃ ambient temperature

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OPTICAL CHARACTERISTICS

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

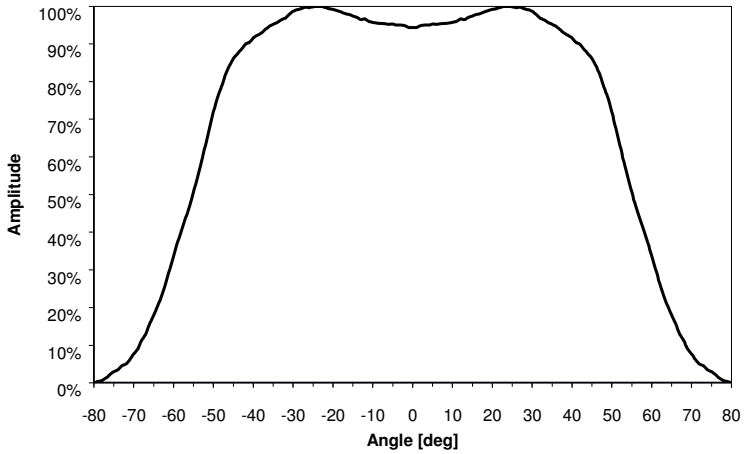

Figure 2: Field of View Curve

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

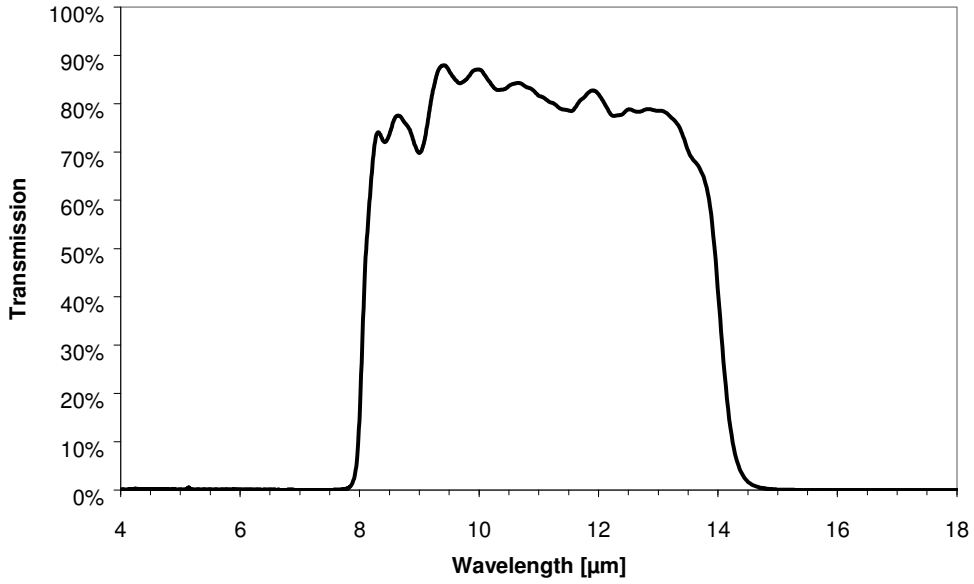

Figure 3: Filter transmission curve

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ELECTRICAL CONNECTIONS

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

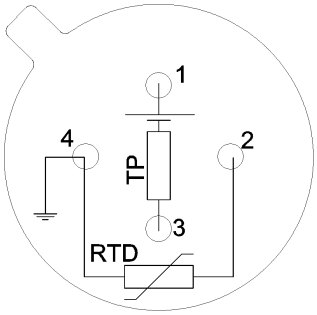

Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

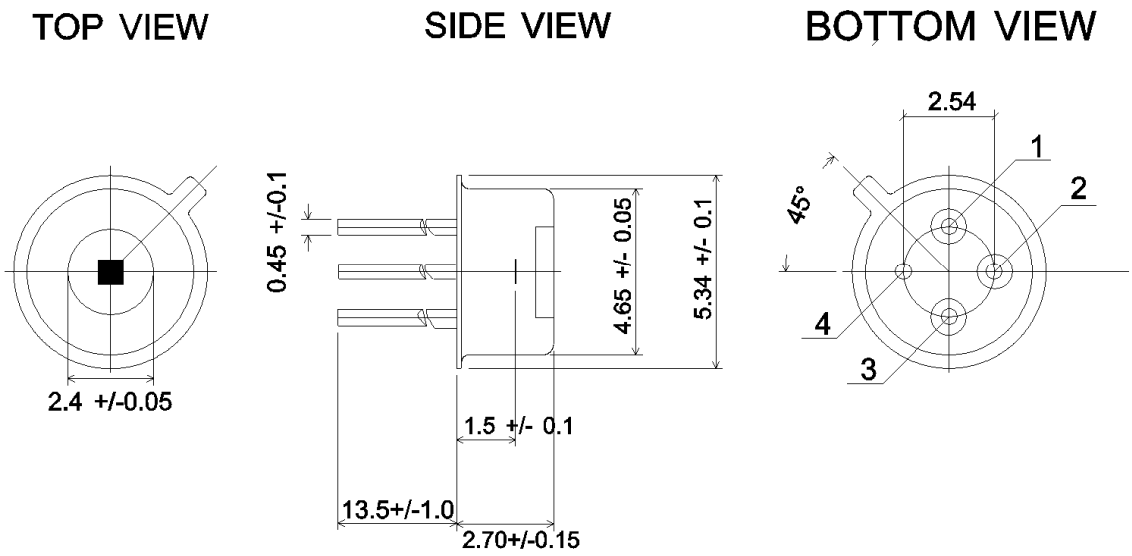

Figure 5: Mechanical dimensions of thermopile

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ORDERING INFORMATION

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