Model TS318-3B0814 Thermopile Sensor

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

RoHS

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
- Accurate 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

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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}	5.2 ± 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	45	$nV/Hz^{½}$	T_{Amb} = +25°C
Rise Time	τ_{63}	12 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	R_{Ni-RTD}	1000 ± 4	Ω	T_{Amb} = 0°C
Temperature Coefficient of Ni-RTD	TC_{Ni-RTD}	6178 ±150	ppm/K	T_{Amb} = 0°C to +100°C

TYPICAL PERFORMANCE CURVES

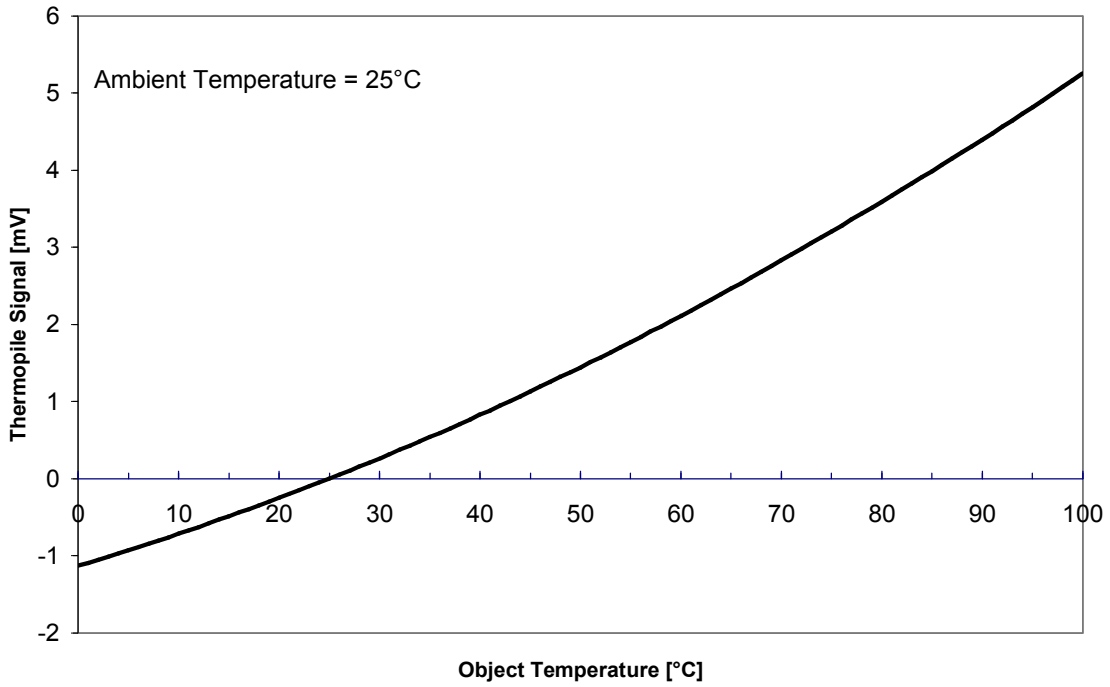

Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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OPTICAL CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	120	deg	at 50% of maximum signal

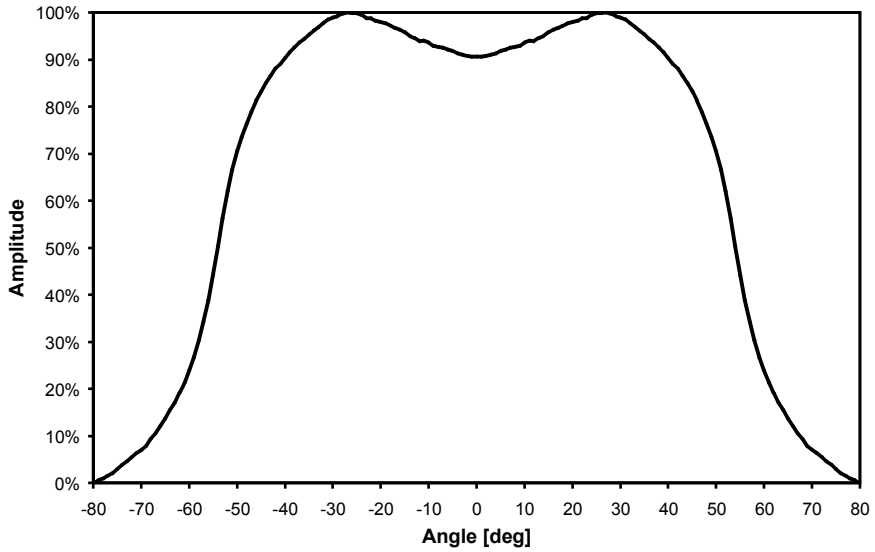

Figure 2: Field of View Curve

FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Transmission Range	BBP	8-14	µm	Broad Band Pass

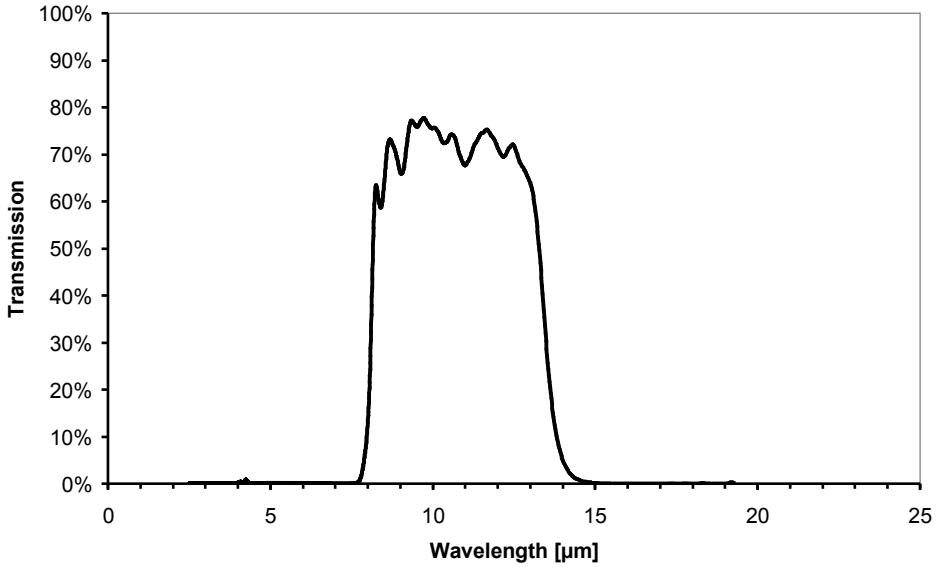

Figure 3: Filter transmission curve

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ELECTRICAL CONNECTIONS

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

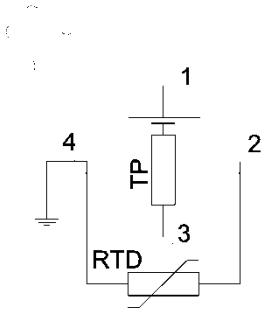

Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

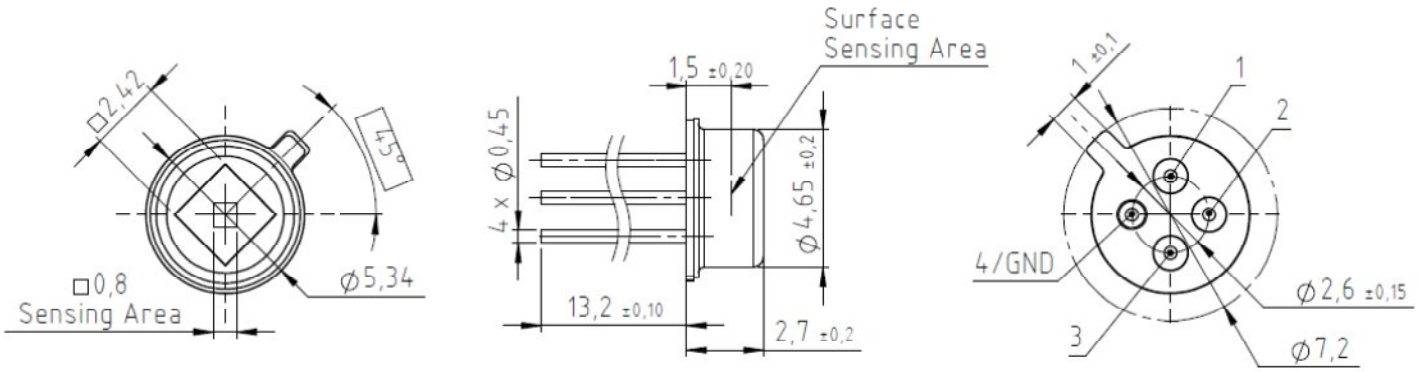

Figure 5: Mechanical dimensions of thermopile

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ORDERING INFORMATION

Part Description	TS318-3B0814
Part No.	G-TPCO-027

TECHNICAL CONTACT INFORMATION