

# 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

## 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
- 8-14 $\mu$ 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

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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 <sup>2</sup>	
Thermopile Resistance	$R_{TP}$	70 ± 30	kΩ	$T_{Amb} = +25^{\circ}\text{C}$
Temperature Coefficient of Thermopile Resistance	$TCR_{TP}$	-0.06 ± 0.04	%/K	$T_{Amb} = +25^{\circ}\text{C}$ to $+75^{\circ}\text{C}$
Voltage Response	$V_{TP}$	5.2 ± 1.3	mV	$T_{Amb} = +25^{\circ}\text{C}$ , $T_{Obj} = +100^{\circ}\text{C}$ , DC, totally filled field of view
Temperature Coefficient of Voltage Response	$TCV_{TP}$	-0.45 ± 0.08	%/K	$T_{Amb} = +25^{\circ}\text{C}$ to $+75^{\circ}\text{C}$
Noise Equivalent Voltage	NEV	45	nV/Hz <sup>1/2</sup>	$T_{Amb} = +25^{\circ}\text{C}$
Rise Time	$\tau_{63}$	12 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	$R_{Ni-RTD}$	1000 ± 4	Ω	$T_{Amb} = 0^{\circ}\text{C}$
Temperature Coefficient of Ni-RTD	$TC_{Ni-RTD}$	6178 ± 150	ppm/K	$T_{Amb} = 0^{\circ}\text{C}$ to $+100^{\circ}\text{C}$

## TYPICAL PERFORMANCE CURVES

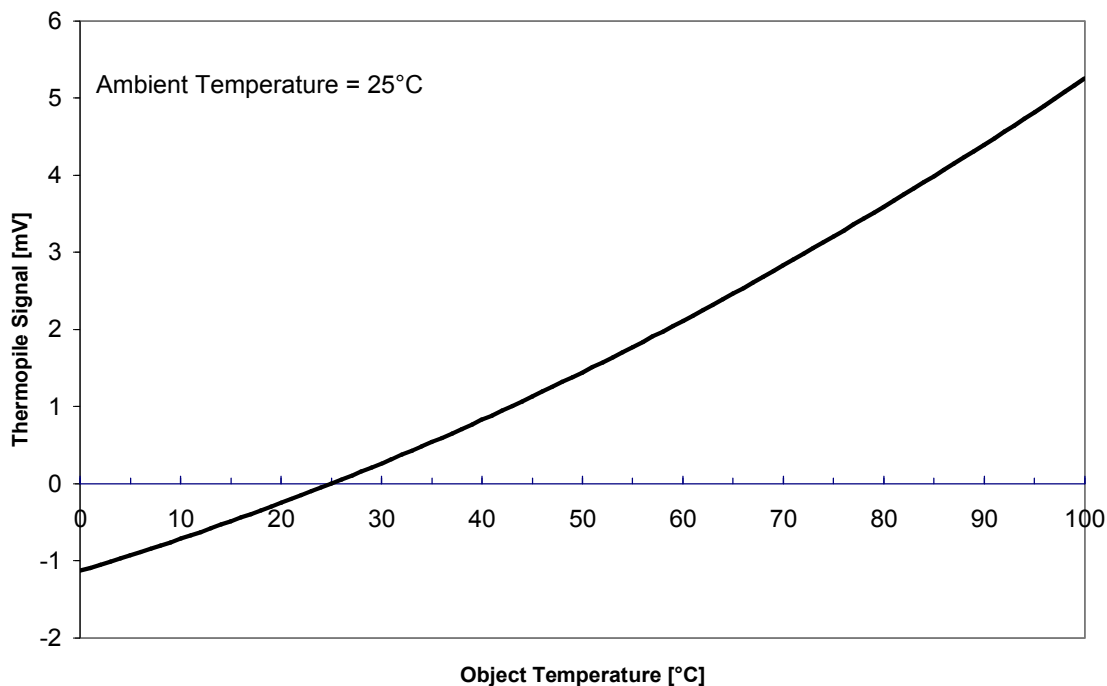


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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## OPTICAL CHARACTERISTICS

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

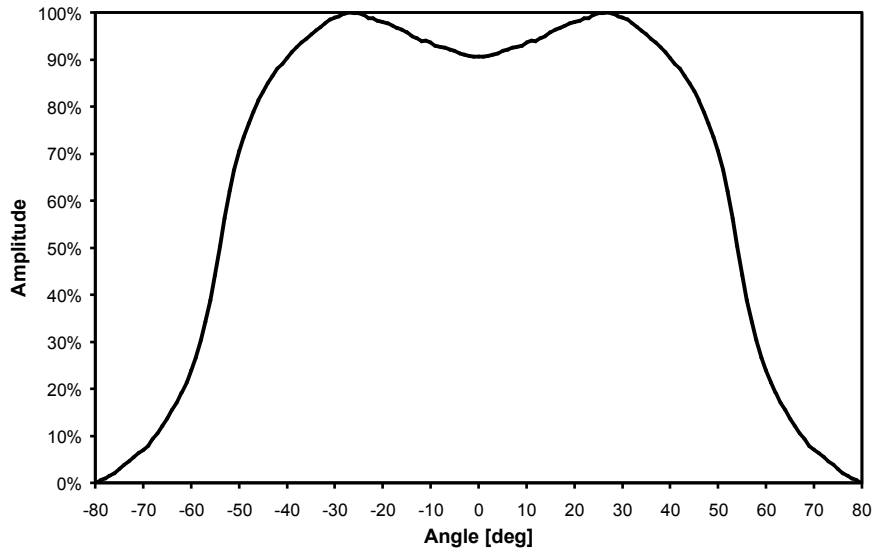


Figure 2: Field of View Curve

## FILTER CHARACTERISTICS

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

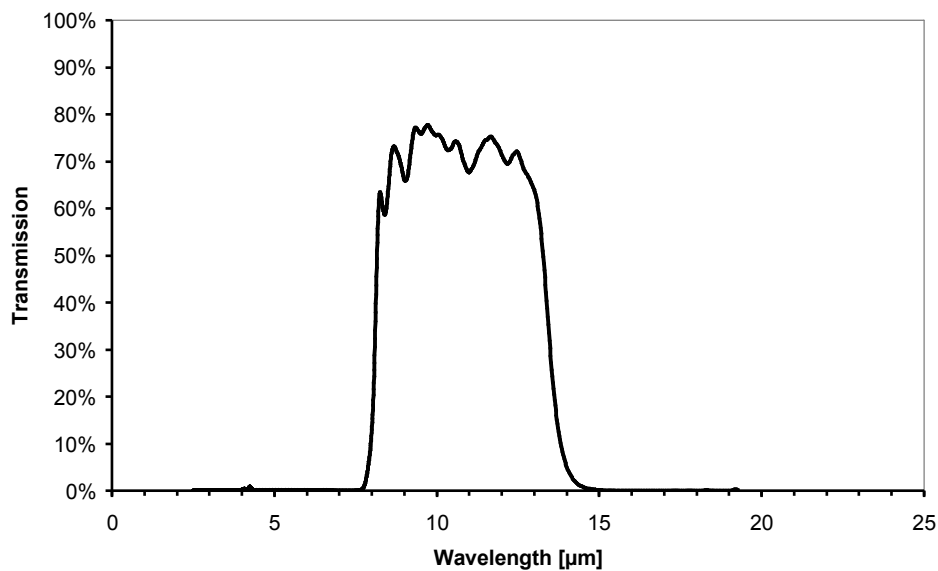


Figure 3: Filter transmission curve

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## ELECTRICAL CONNECTIONS

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

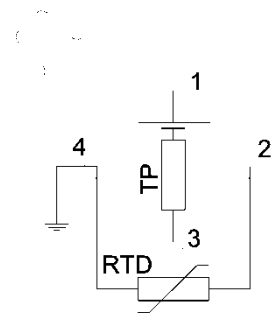


Figure 4: Electrical connections - bottom view of thermopile

## MECHANICAL DIMENSIONS

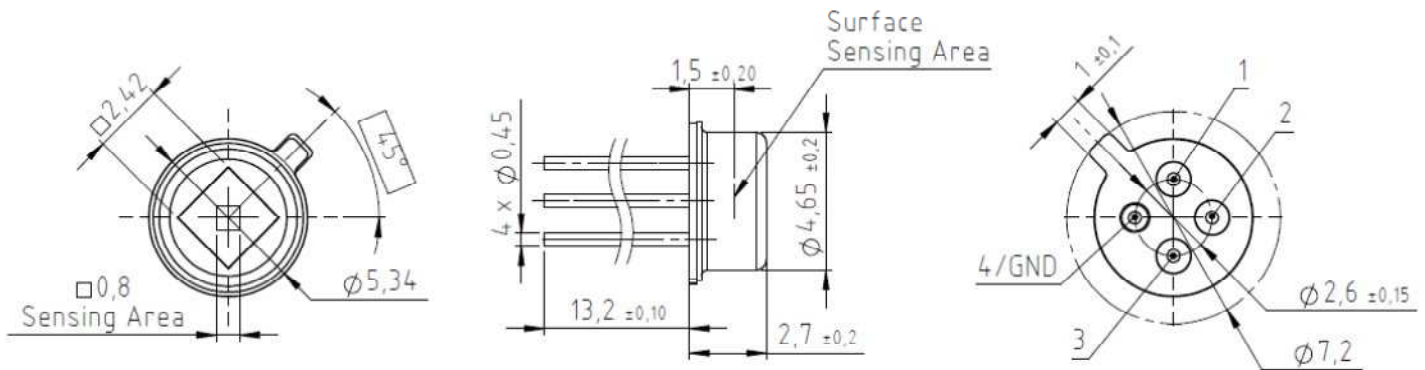


Figure 5: Mechanical dimensions of thermopile

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## ORDERING INFORMATION

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

## TECHNICAL CONTACT INFORMATION

North America	Europe	Asia
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