Model TS318-5C50 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
- NTC Reference Sensor
- Small TO-18 Package
- 5.0µm Long Wave Pass Filter

APPLICATIONS

- Medical
- Ear Thermometer

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-5		
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}	9.2 ± 2.2	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		NTC		
Ambient Temperature Sensor Resistance	R_{NTC}	100 ± 5	kΩ	T_{Amb} = +25°C
Beta Value of NTC	β-Value	3955 ±0.5%	K	T_{Amb} = 0°C to +50°C

TYPICAL PERFORMANCE CURVES

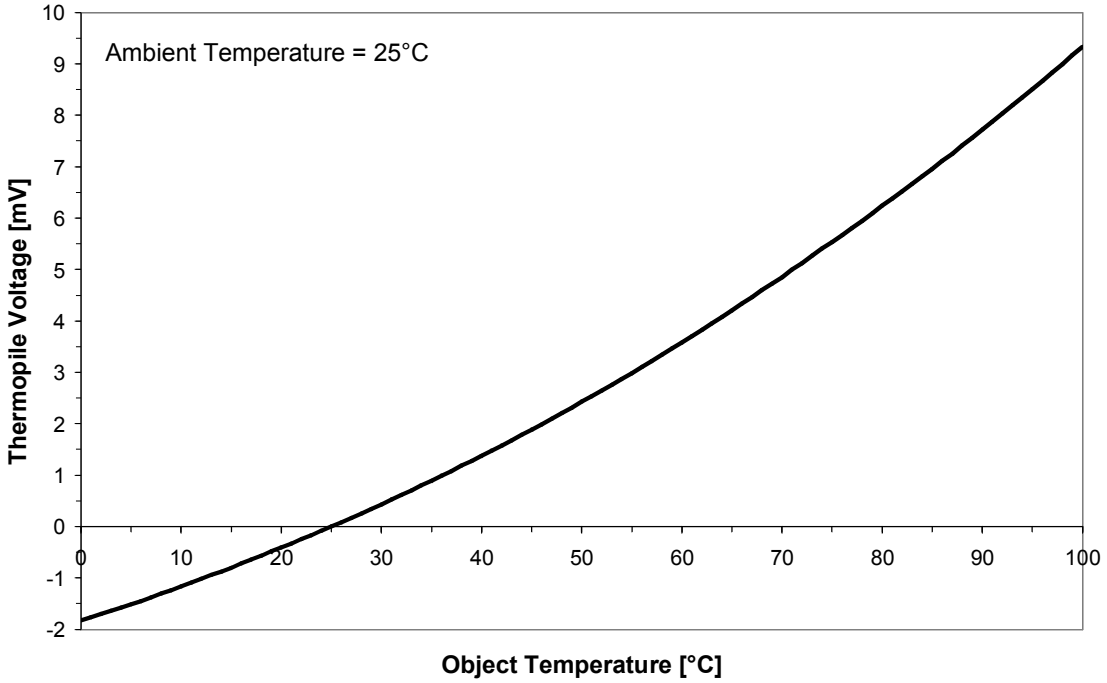

Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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OPTICAL CHARACTERISTICS

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

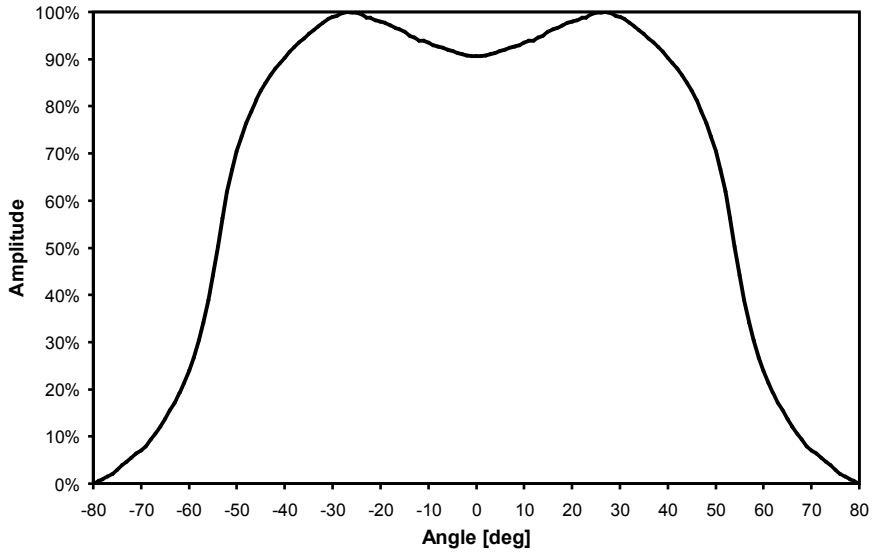

Figure 2: Field of View Curve

FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Transmission Range	LWP	≥ 5.0	µm	Long Wave Pass

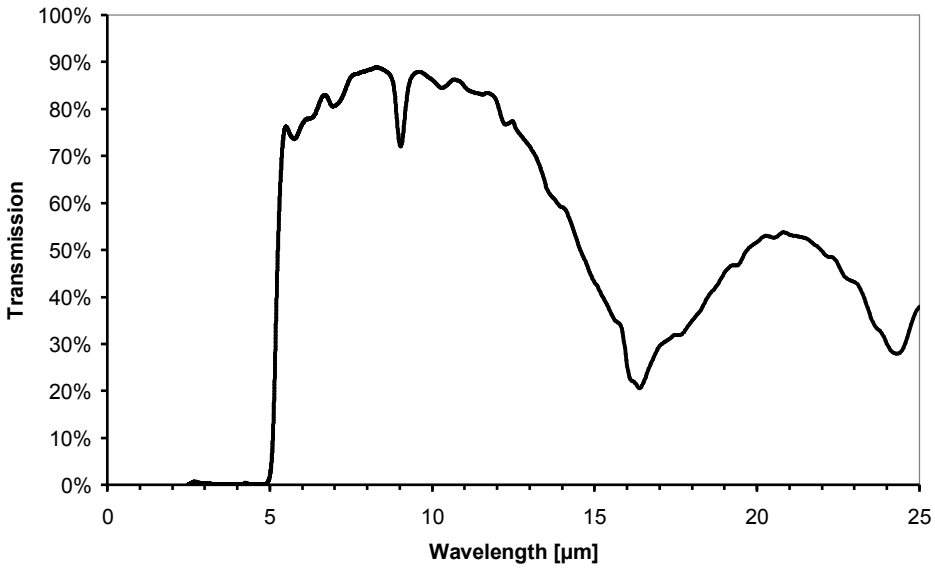

Figure 3: Filter transmission curve

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ELECTRICAL CONNECTIONS

Pin	Symbol
1	TP +
2	NTC
3	TP -
4	GND

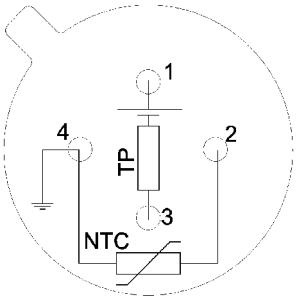

Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

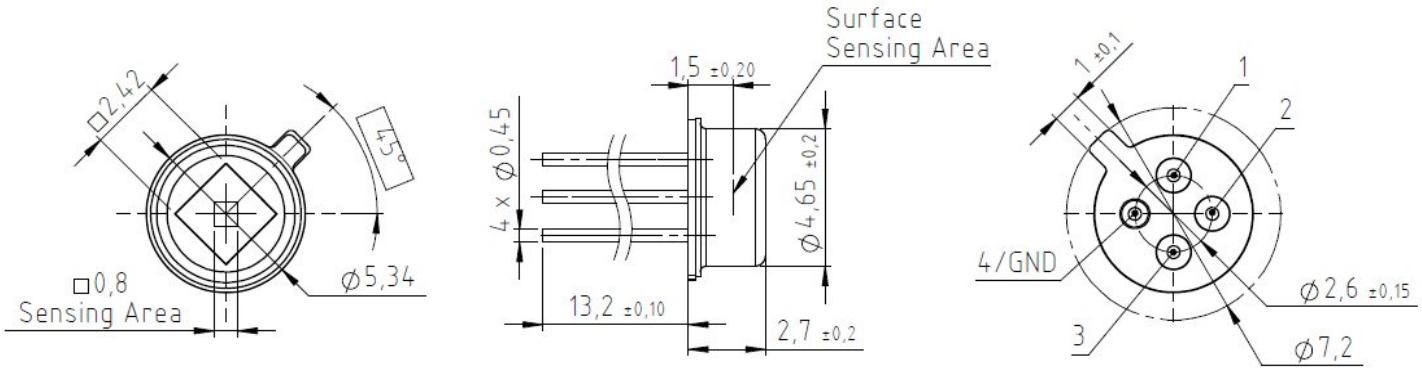

Figure 5: Mechanical dimensions of thermopile

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ORDERING INFORMATION

Part Description	TS318-5C50
Part No.	G-TPCO-030

TECHNICAL CONTACT INFORMATION