

Model TS105-10L5.5mm Thermopile Sensor



- Thermopile IR-Sensor
- For Contactless Temperature Measurement
- Single Element
- For Industrial Pyrometers
- Silicon Lens
- 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

Small Field of View
Accurate NTC Reference Sensor

APPLICATIONS

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-5		
Absorber Area	A	0.7×0.7	mm ²	
Thermopile Resistance	R_{TP}	43 ± 8	k Ω	$T_{Amb} = +25^{\circ}\text{C}$
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}	0.9 ± 0.25	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	30	nV/Hz ^{1/2}	$T_{Amb} = +25^{\circ}\text{C}$
Rise Time	τ_{63}	20 ± 5	ms	
Ambient Temperature Sensor		NTC		
Ambient Temperature Sensor Resistance	R_{NTC}	100 ± 5	k Ω	$T_{Amb} = +25^{\circ}\text{C}$
Beta Value of NTC	β -Value	$3955 \pm 0.3\%$	K	$T_{Amb} = 0^{\circ}\text{C}$ to $+50^{\circ}\text{C}$

TYPICAL PERFORMANCE CURVES

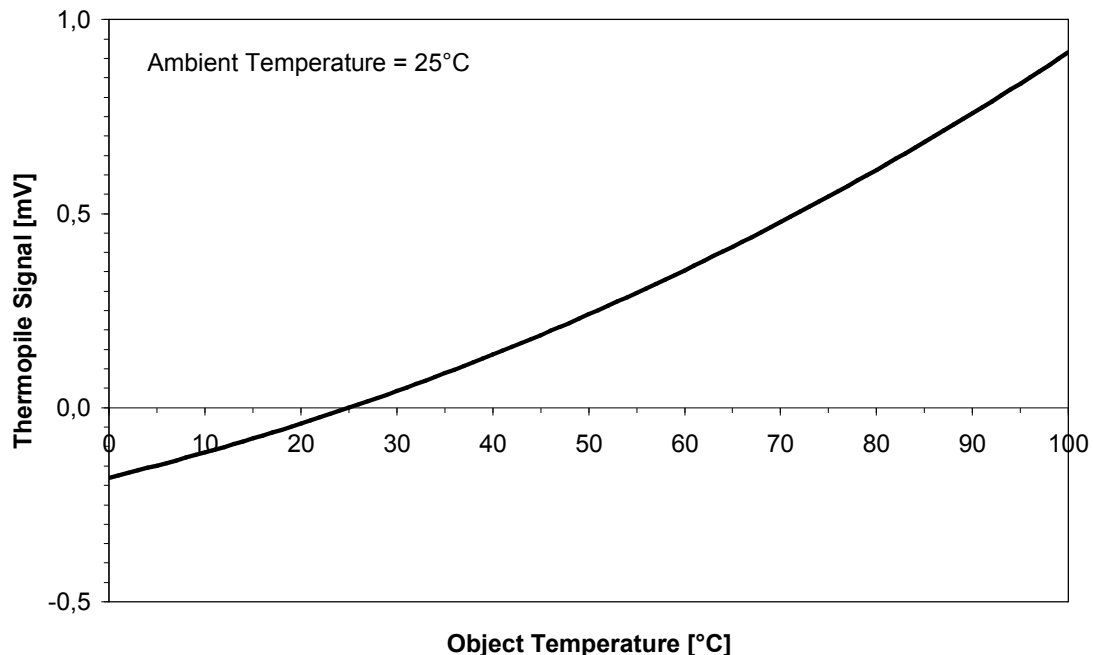


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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OPTICAL CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	10	deg	at 50% of maximum signal

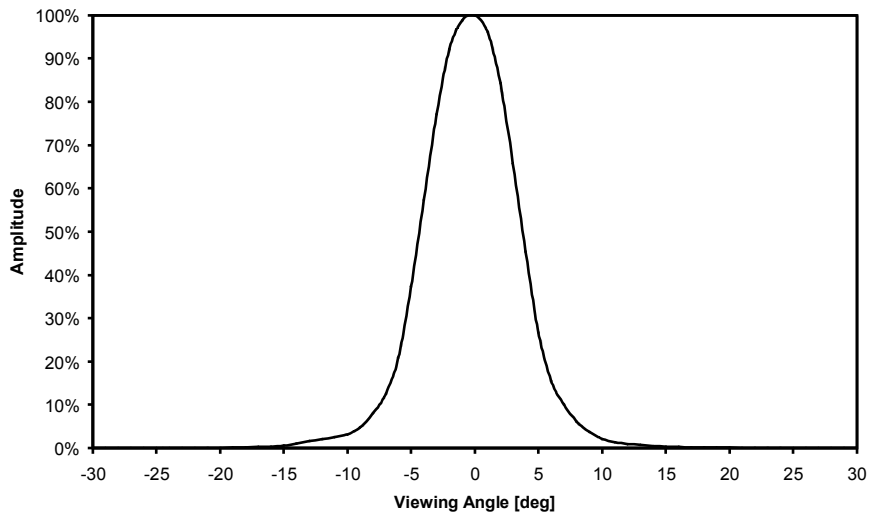


Figure 2: Field of View Curve

FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Transmission Range	Si	≥ 1.1	μm	Silicon

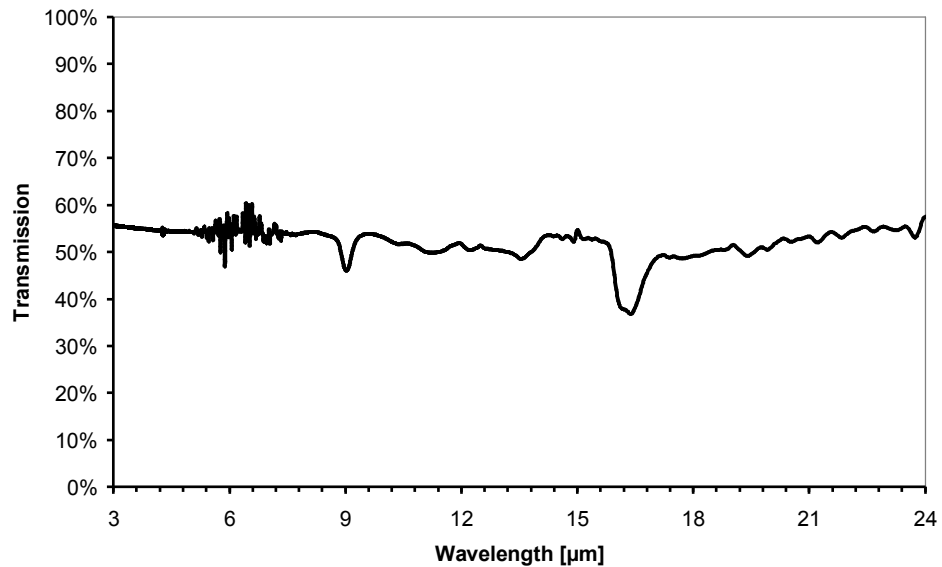


Figure 3: Lens transmission curve

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ELECTRICAL CONNECTIONS

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

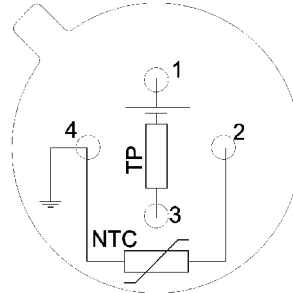


Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

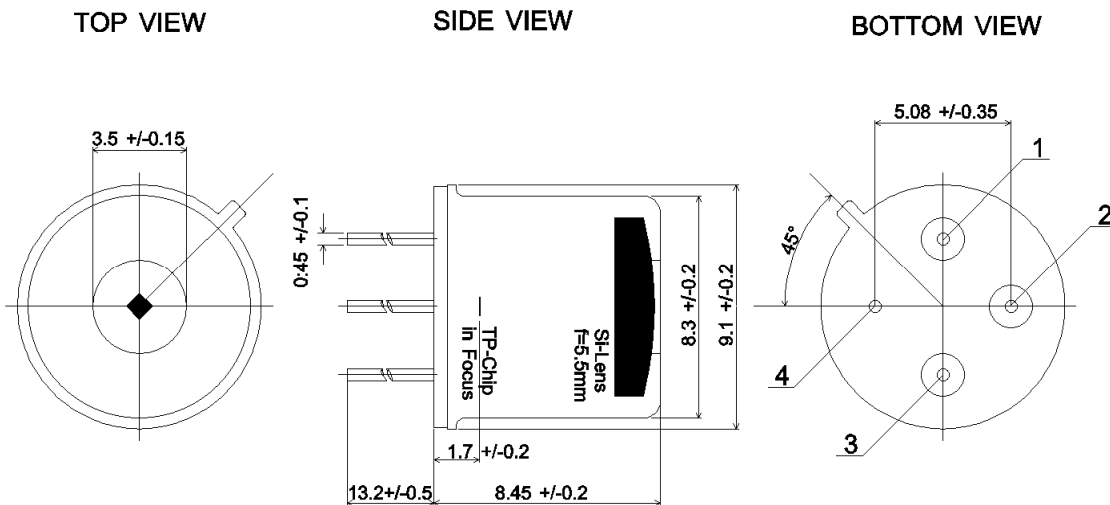


Figure 5: Mechanical dimensions of thermopile

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ORDERING INFORMATION

Part Descripton TS105-10 L5.5 NTC 100K BETA

Part No. G-TPCO-019
