

# 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	$0.7 \times 0.7$	mm <sup>2</sup>	
Thermopile Resistance	$R_{TP}$	$43 \pm 8$	k $\Omega$	$T_{Amb} = +25^{\circ}C$
Temperature Coefficient of Thermopile Resistance	$TCR_{TP}$	$-0.06 \pm 0.04$	%/K	$T_{Amb} = +25^{\circ}C$ to $+75^{\circ}C$
Voltage Response	$V_{TP}$	$0.9 \pm 0.25$	mV	$T_{Amb} = +25^{\circ}C$ , $T_{Obj} = +100^{\circ}C$ , DC, totally filled field of view
Temperature Coefficient of Voltage Response	$TCV_{TP}$	$-0.45 \pm 0.08$	%/K	$T_{Amb} = +25^{\circ}C$ to $+75^{\circ}C$
Noise Equivalent Voltage	NEV	30	nV/Hz <sup>1/2</sup>	$T_{Amb} = +25^{\circ}C$
Rise Time	$\tau_{63}$	$20 \pm 5$	ms	
Ambient Temperature Sensor		NTC		
Ambient Temperature Sensor Resistance	$R_{NTC}$	$100 \pm 5$	k $\Omega$	$T_{Amb} = +25^{\circ}C$
Beta Value of NTC	$\beta$ -Value	$3955 \pm 0.3\%$	K	$T_{Amb} = 0^{\circ}C$ to $+50^{\circ}C$

## TYPICAL PERFORMANCE CURVES

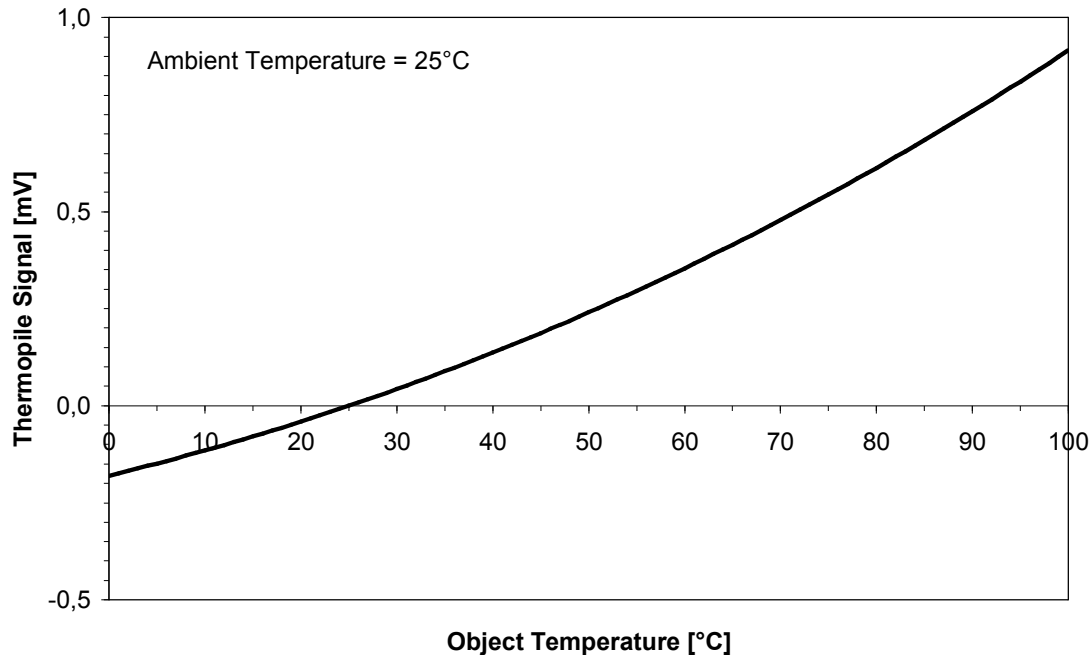


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature



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## OPTICAL CHARACTERISTICS

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

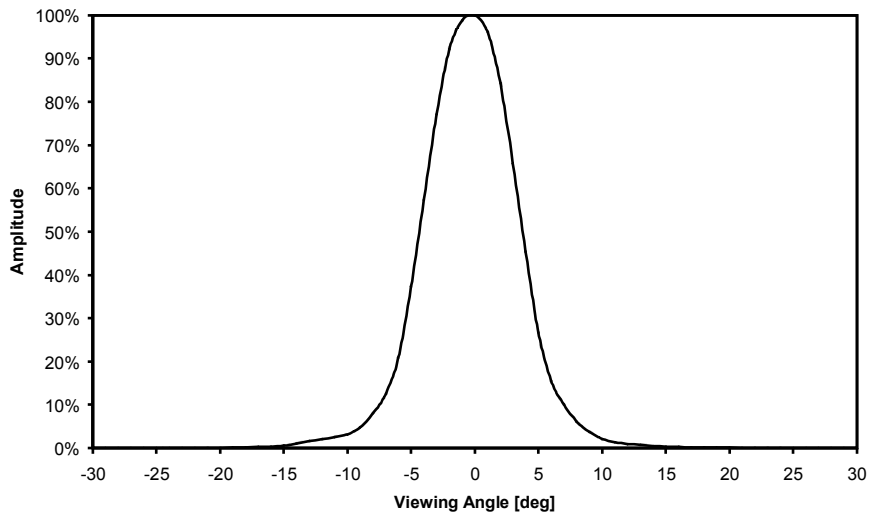


Figure 2: Field of View Curve

## FILTER CHARACTERISTICS

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

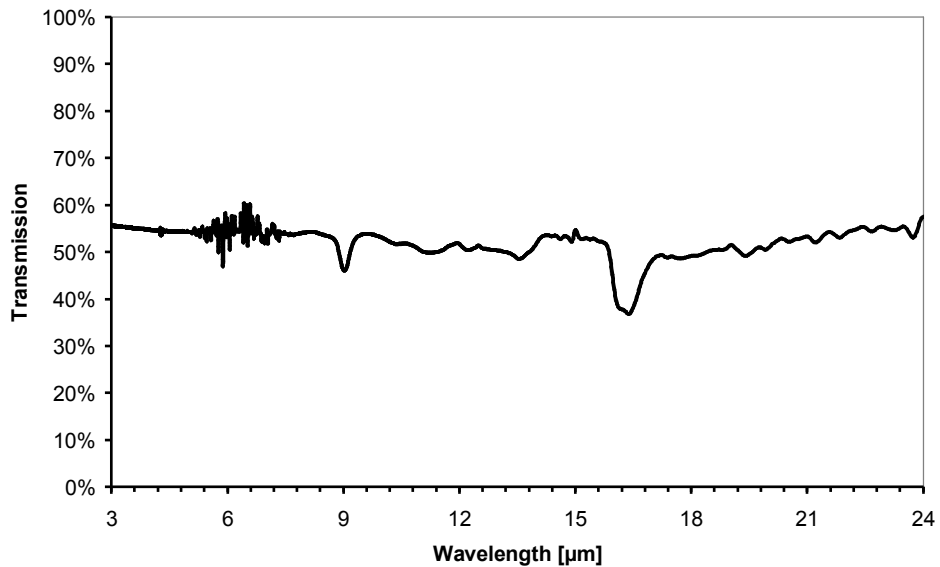


Figure 3: Lens transmission curve



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## ELECTRICAL CONNECTIONS

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

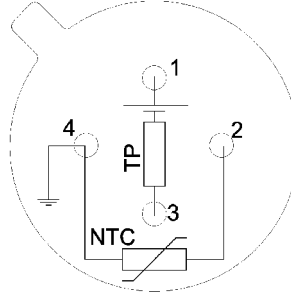


Figure 4: Electrical connections - bottom view of thermopile

## MECHANICAL DIMENSIONS

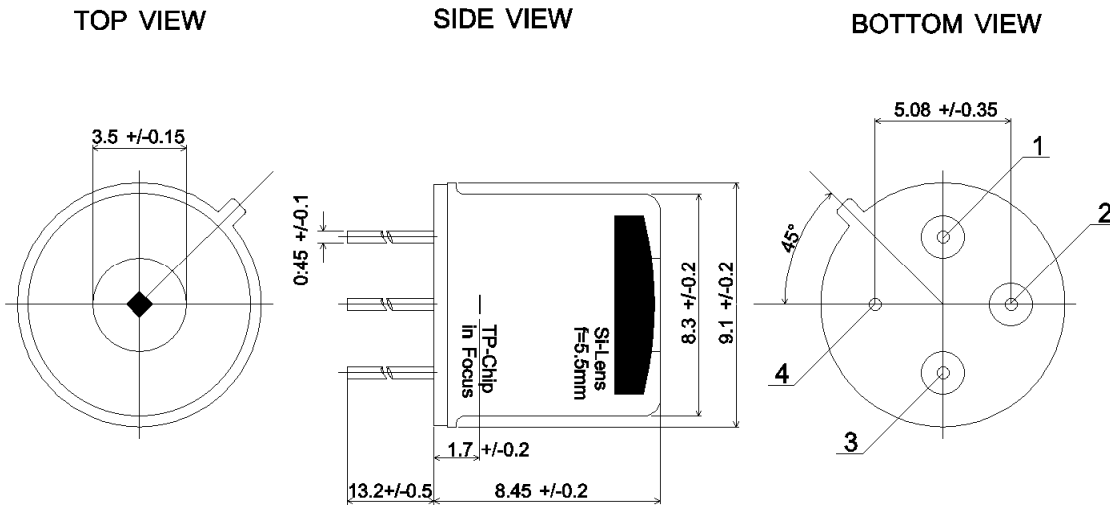


Figure 5: Mechanical dimensions of thermopile

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## ORDERING INFORMATION

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**Part Description**      TS105-10 L5.5 NTC 100K BETA

**Part No.**                G-TPCO-019

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## TECHNICAL CONTACT INFORMATION

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