

# Model TS305-10C50 Thermopile Sensor



- Thermopile IR-Sensor
- For Contactless Temperature Measurement
- Single Element
- 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 NTC Reference Sensor  
5.0 $\mu$ m Long Wave Pass Filter

## APPLICATIONS

Industrial Pyrometers  
Climate Control  
Medical

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typical	Max	Unit	Description
Storage Temperature	$T_s$	-20	+20	+85	$^{\circ}\text{C}$	permanent
Storage Temperature	$T_s$	-20	+20	+100	$^{\circ}\text{C}$	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 <sup>2</sup>	
Thermopile Resistance	$R_{TP}$	70 ± 30	kΩ	$T_{Amb} = +25^{\circ}C$
Temperature Coefficient of Thermopile Resistance	$TCR_{TP}$	-0.06 ± 0.04	%/K	$T_{Amb} = +25^{\circ}C$ to $+75^{\circ}C$
Voltage Response	$V_{TP}$	6.5 ± 1.9	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 ± 0.08	%/K	$T_{Amb} = +25^{\circ}C$ to $+75^{\circ}C$
Noise Equivalent Voltage	NEV	45	nV/Hz <sup>1/2</sup>	$T_{Amb} = +25^{\circ}C$
Rise Time	$\tau_{63}$	12 ± 5	ms	
Ambient Temperature Sensor		NTC		
Ambient Temperature Sensor Resistance	$R_{NTC}$	100 ± 5	kΩ	$T_{Amb} = +25^{\circ}C$
Beta Value of NTC	$\beta$ -Value	3955 ± 0.3%	K	$T_{Amb} = 0^{\circ}C$ to $+50^{\circ}C$

## TYPICAL PERFORMANCE CURVES

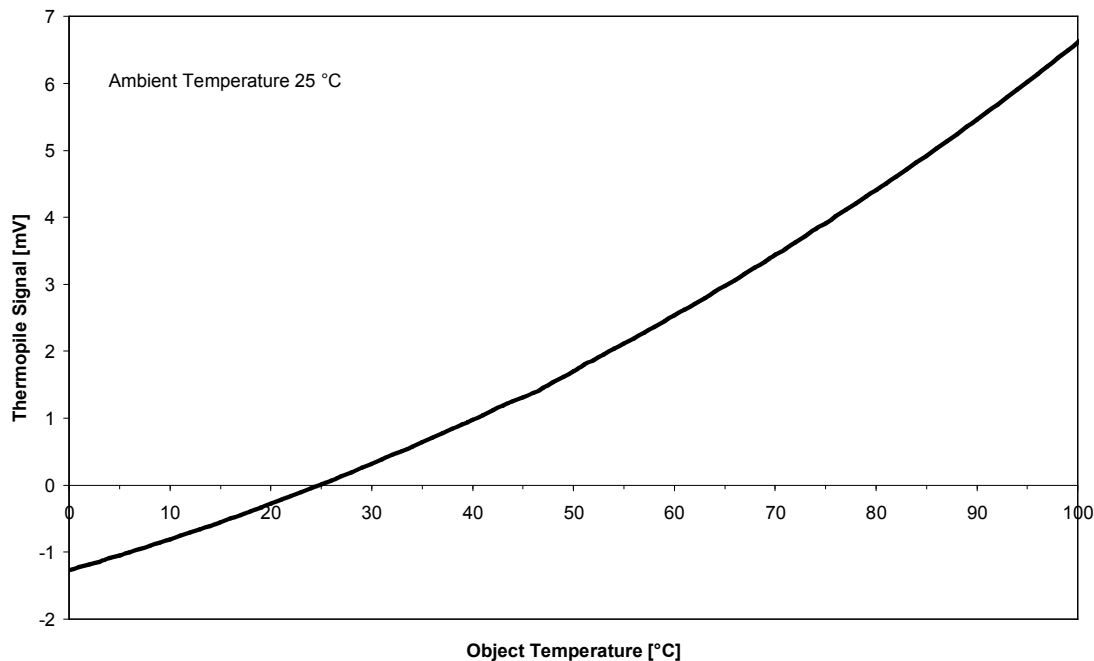


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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## OPTICAL CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	80	deg	at 50% of maximum signal

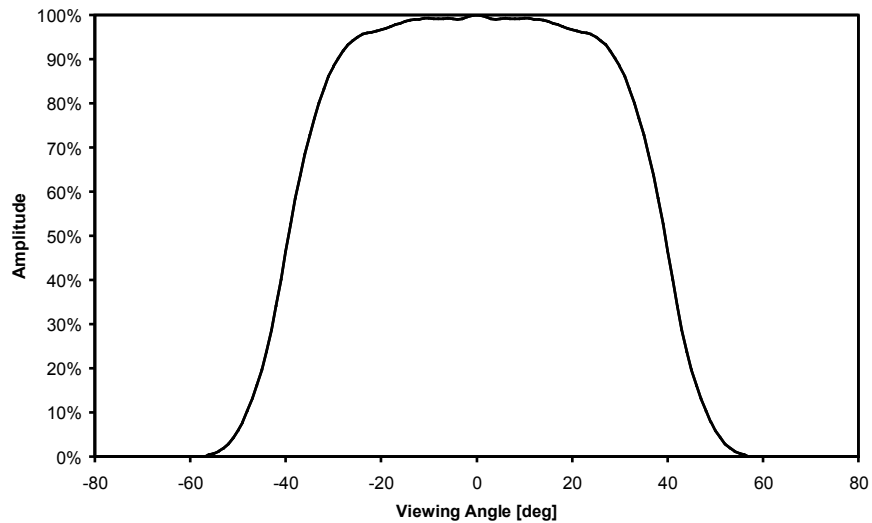


Figure 2: Field of View Curve

## FILTER CHARACTERISTICS

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

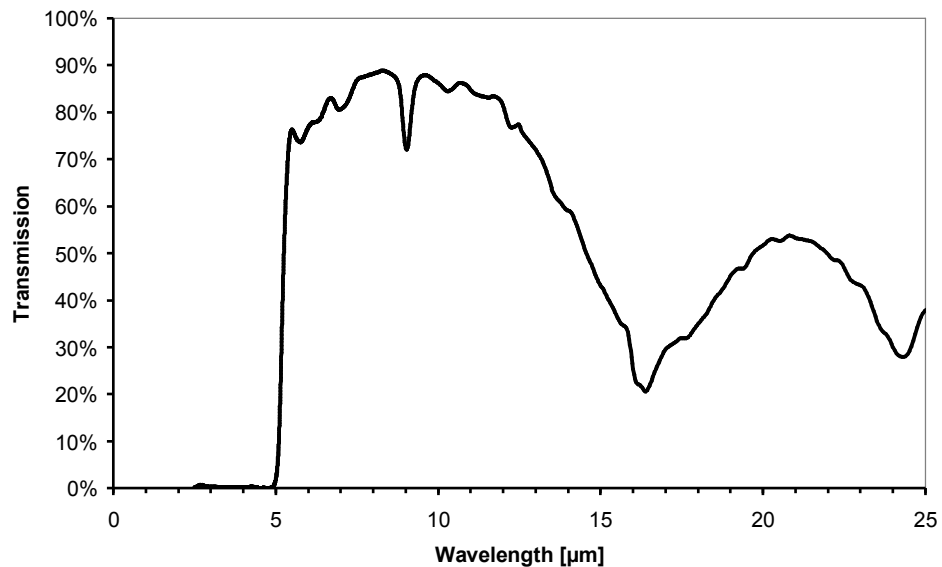


Figure 3: Filter transmission curve

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## ELECTRICAL CONNECTIONS

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

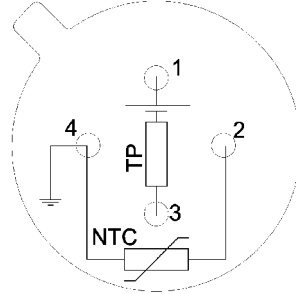


Figure 4: Electrical connections - bottom view of thermopile

## MECHANICAL DIMENSIONS

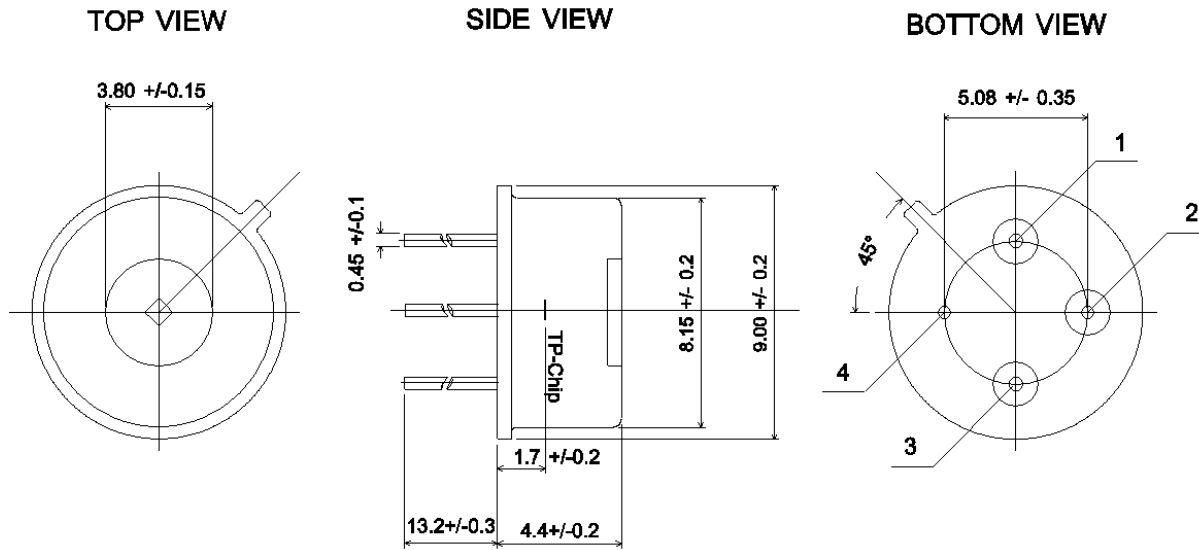


Figure 5: Mechanical dimensions of thermopile

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## ORDERING INFORMATION

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<b>Part Description</b>	TS305-10C50
<b>Part No.</b>	G-TPCO-023

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