





# TS305-11C55

Thermopile Sensor

### **SPECIFICATIONS**

- Thermopile IR-Sensor
- For Contactless Temperature Measurement
- Single Element
- High Signal
- Flat Filter
- Accurate Reference Sensor

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.

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### **FEATURES**

High Signal
Accurate NTC Reference Sensor
5.5 µm Long Wave Pass Filter

## **APPLICATIONS**

Industrial Pyrometers
Climate Control
Medical

### **ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Min	Typical	Max	Unit	Description
Storage Temperature	Ts	-20	+20	+85	°C	permanent
Storage Temperature	Ts	-20	+20	+100	°C	non permanent

## PERFORMANCE SPECS

Parameter	Symbol	Value	Unit	Condition
Operating Ambient Temperature	T <sub>Amb</sub>	-20 to +85	°C	permanent
Operating Ambient Temperature	T <sub>Amb</sub>	-20 to +100	°C	non permanent
Package		TO-5		
Absorber Area	Α	0.8 × 0.8	mm²	
Thermopile Resistance	R <sub>TP</sub>	70 ± 30	kΩ	$T_{Amb} = +25^{\circ}C$
Temperature Coefficient of Thermopile Resistance	TCRTP	-0.06 ± 0.04	%/K	T <sub>Amb</sub> = +25°C to +75°C
Voltage Response	V <sub>TP</sub>	7.0 ± 2.1	mV	T <sub>Amb</sub> = +25°C, T <sub>Obj</sub> = +100°C, DC, totally filled field of view
Temperature Coefficient of Voltage Response	ТСУтр	-0.45 ± 0.08	%/K	T <sub>Amb</sub> = +25°C to +75°C
Noise Equivalent Voltage	NEV	45	nV/Hz <sup>½</sup>	$T_{Amb} = +25$ °C
Rise Time	τ63	12 ± 5	ms	
Ambient Temperature Sensor		NTC		
Ambient Temperature Sensor Resistance	R <sub>NTC</sub>	100 ± 5	kΩ	T <sub>Amb</sub> = +25°C
Beta Value of NTC	β-Value	3955 ±0.3%	K	$T_{Amb} = 0$ °C to +50°C

### TYPICAL PERFORMANCE CURVES

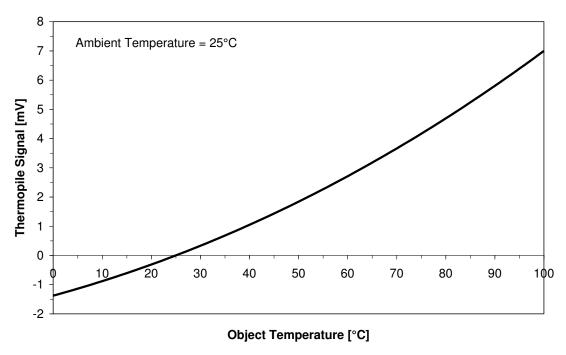


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

## **Optical Characteristics**

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	88	deg	at 50% of maximum signal

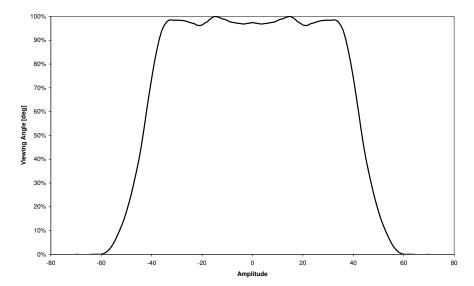


Figure 2: Field of View Curve

### FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Transmission Range	LWP	≥ 5.5	μm	Long Wave Pass

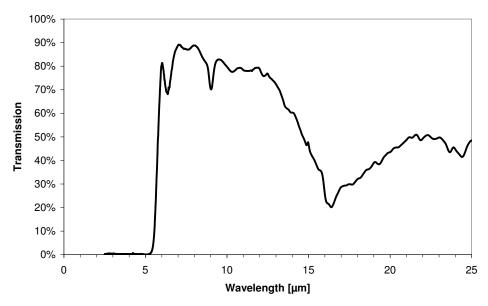


Figure 3: Filter transmission curve

## **ELECTRICAL CONNECTIONS**

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

Figure 4: Electrical connections - bottom view of thermopile

### MECHANICAL DIMENSIONS

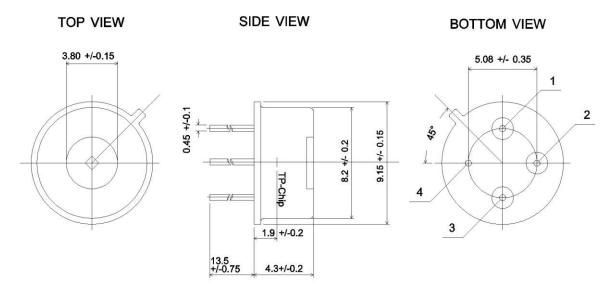


Figure 5: Mechanical dimensions of thermopile

#### ORDERING INFORMATION

Part Descripton TS305-11C55

Part No. G-TPCO-033

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