

Model TS318-11C55 Thermopile Sensor



Thermopile IR-Sensor
For Contactless Temperature Measurement
Single Element
Small Package for Ear Thermometer
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
- NTC Reference Sensor
- Small TO-18 Package
- 5.5µm 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-18		
Absorber Area	A	0.8×0.8	mm ²	
Thermopile Resistance	R_{TP}	70 ± 30	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}	8.4 ± 2.1	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	34	nV/Hz ^{1/2}	$T_{Amb} = +25^{\circ}\text{C}$
Rise Time	τ_{63}	12 ± 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

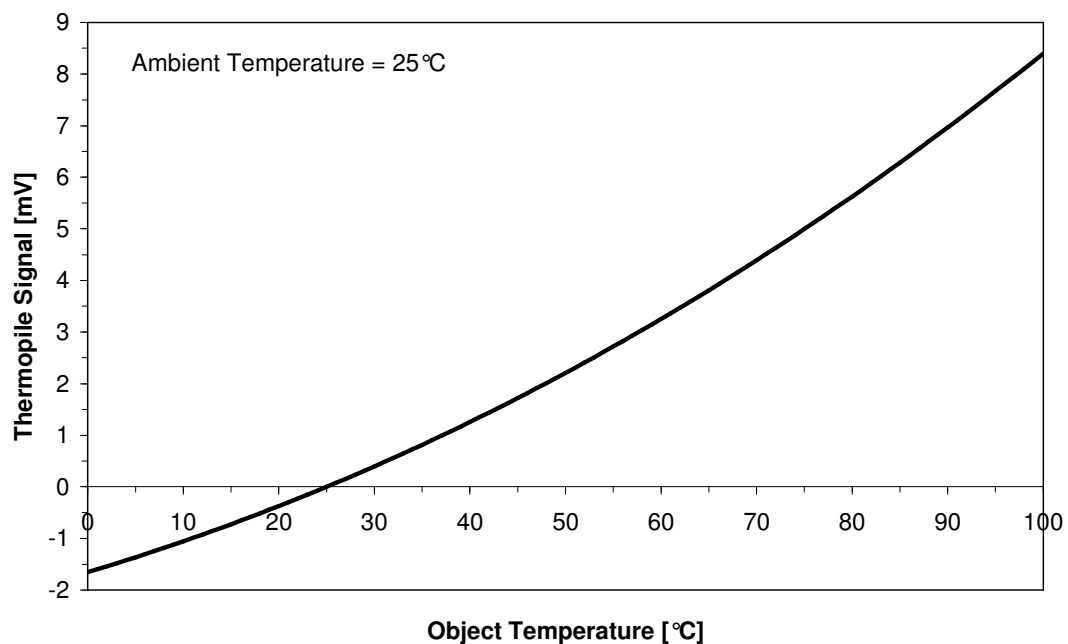


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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OPTICAL CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	110	deg	at 50% of maximum signal

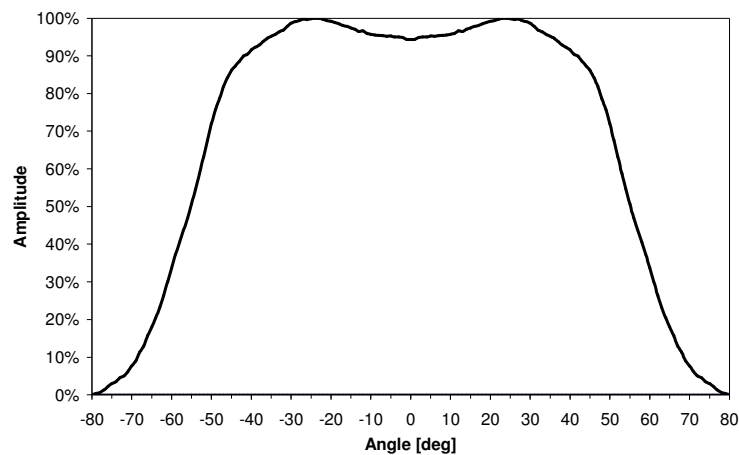


Figure 2: Field of View Curve

FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Transmission Range	LWP	≥ 5.5	μm	Long Wave Pass
Transmission	$T_{7.5 \dots 13.5\mu\text{m}}$	≥ 77.0	%	at 7.5 ... 13.5 μm
Transmission Blocking Average	$T_{\text{AVG}} \leq 4.0\mu\text{m}$	<0.1	%	Average $\leq 4.0\mu\text{m}$
	$T_{\text{AVG}} 4.0 \dots 5.0\mu\text{m}$	<0.5	%	Average 4.0 ... 5.0 μm
Transmission Blocking Absolute	$T_{\text{ABS}} \leq 4.0\mu\text{m}$	<1.0	%	Absolute $\leq 4.0\mu\text{m}$

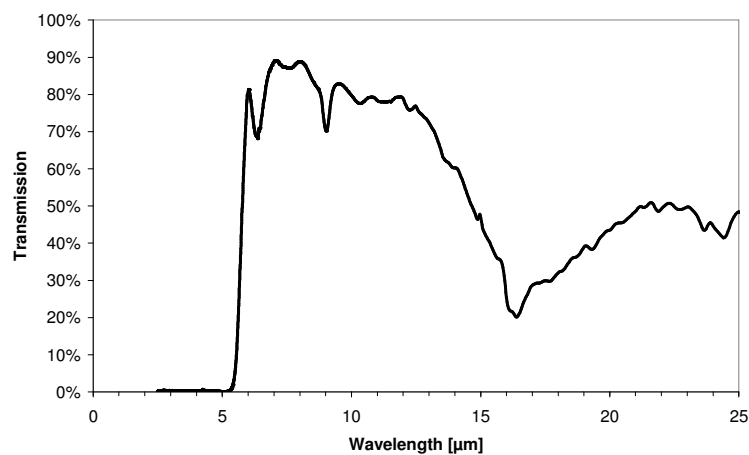


Figure 3: Filter transmission curve

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ELECTRICAL CONNECTIONS

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

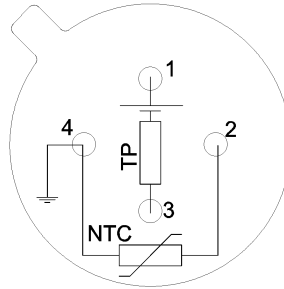
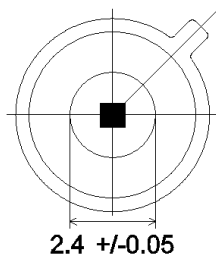


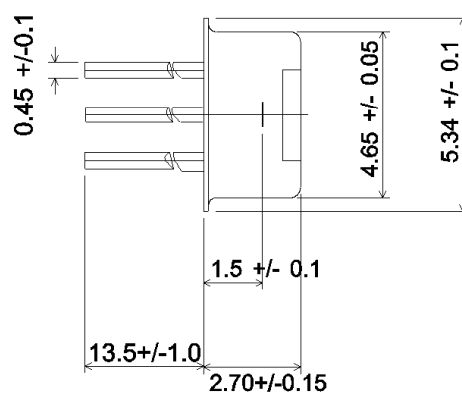
Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

TOP VIEW



SIDE VIEW



BOTTOM VIEW

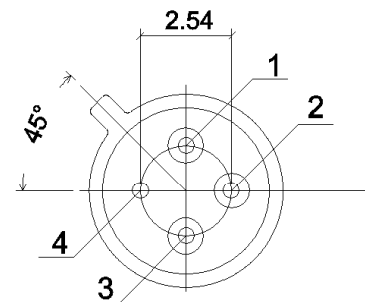


Figure 5: Mechanical dimensions of thermopile

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ORDERING INFORMATION

Part Description TS318-11C55

Part No. G-TPCO-032

TECHNICAL CONTACT INFORMATION

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