



TS318-11C55

Thermopile Sensor

SPECIFICATIONS

Thermopile IR-Sensor
For Contactless Temperature Measurement
Single Element
Small Package for Ear Thermometer
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.

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

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	kΩ	T _{Amb} = +25°C
Temperature Coefficient of Thermopile Resistance	TCR _{TP}	-0.06 ± 0.04	%/K	T _{Amb} = +25°C to +75°C
Voltage Response	V _{TP}	8.4 ± 2.1	mV	T _{Amb} = +25°C, T _{Obj} = +100°C, DC, totally filled field of view
Temperature Coefficient of Voltage Response	TCV _{TP}	-0.45 ± 0.08	%/K	T _{Amb} = +25°C to +75°C
Noise Equivalent Voltage	NEV	34	nV/Hz ^{1/2}	T _{Amb} = +25°C
Rise Time	τ ₆₃	12 ± 5	ms	
Ambient Temperature Sensor		NTC		
Ambient Temperature Sensor Resistance	R _{NTC}	100 ± 5	kΩ	T _{Amb} = +25°C
Beta Value of NTC	β-Value	3955 ± 0.3%	K	T _{Amb} = 0°C to +50°C

TYPICAL PERFORMANCE CURVES

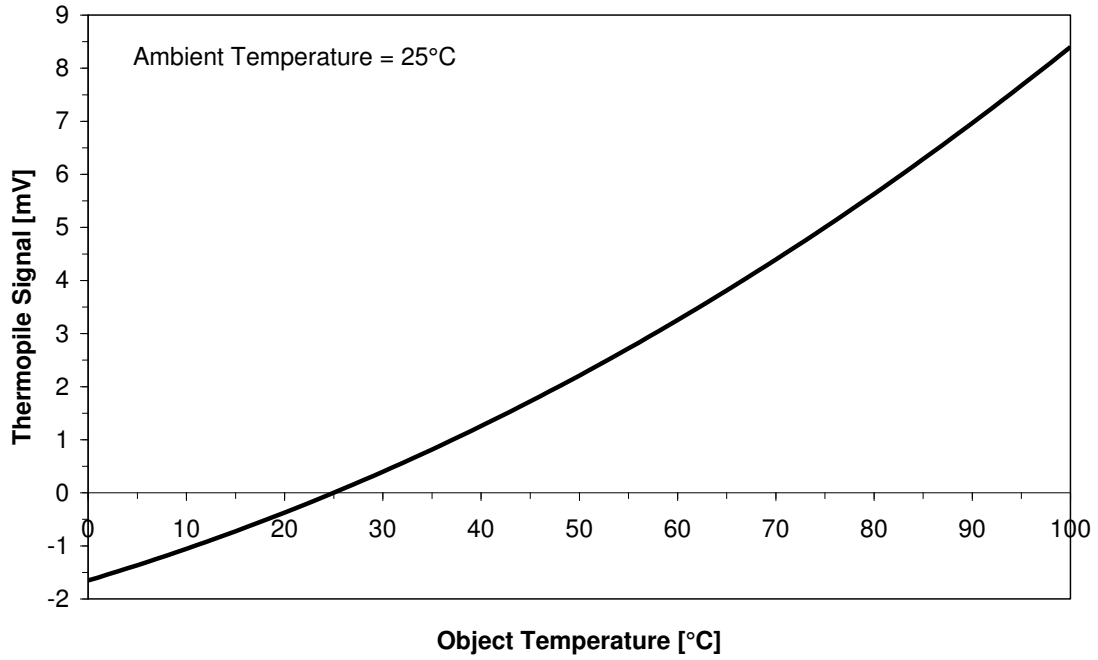


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

OPTICAL CHARACTERISTICS

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

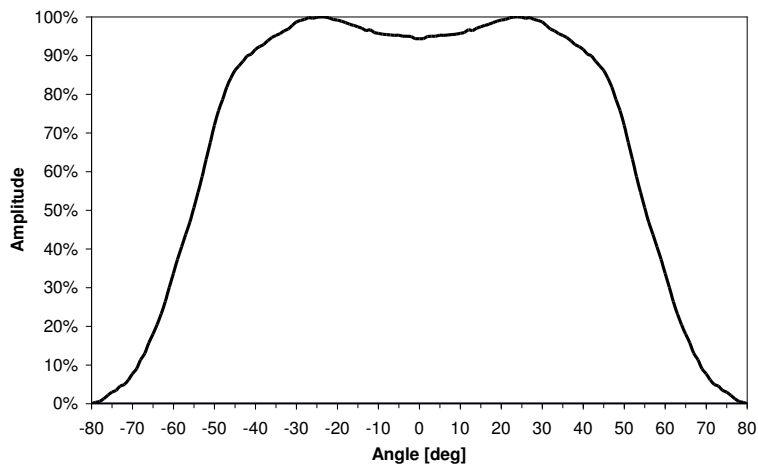


Figure 2: Field of View Curve

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 $\leq 4.0\mu\text{m}$

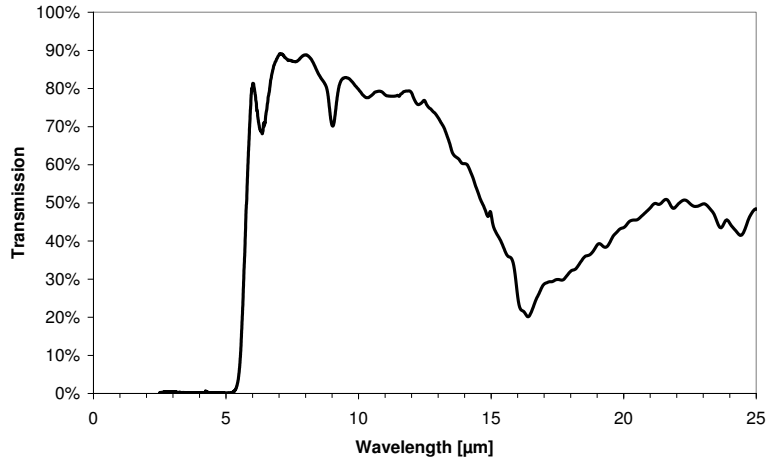


Figure 3: Filter transmission curve

ELECTRICAL CONNECTIONS

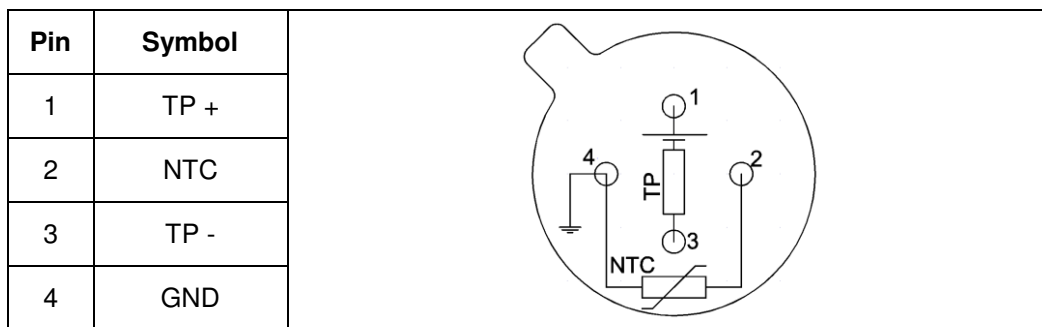


Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

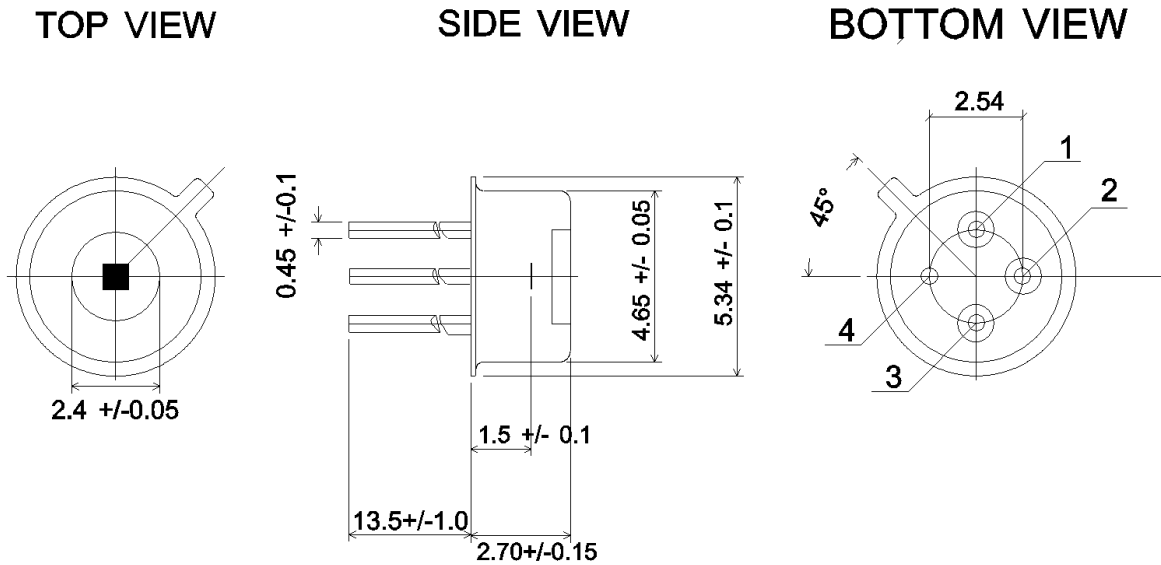


Figure 5: Mechanical dimensions of thermopile

ORDERING INFORMATION

Part Descripton	TS318-11C55
Part No.	G-TPCO-032