

# Model TS418-3N426 Thermopile Sensor



**Thermopile IR-Sensor**  
**Filter for NDIR CO<sub>2</sub> Gas Detection**  
**Single Element**  
**Very High Signal**  
**Flat Filter**  
**Small Package**  
**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

- Very High Signal
- Accurate Reference Sensor
- 4.26 $\mu$ m Narrow Band Pass
- Small TO-18 package

## APPLICATIONS

- NDIR CO<sub>2</sub> Gas Detection

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typical	Max	Unit	Description
Storage Temperature	T <sub>s</sub>	-20	+20	+85	°C	permanent
Storage Temperature	T <sub>s</sub>	-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	1.4 × 1.4	mm <sup>2</sup>	
Thermopile Resistance	$R_{TP}$	180 ± 60	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	$V_{TP}$	depends on light source	mV	
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	130	nV/Hz <sup>1/2</sup>	$T_{Amb} = +25^{\circ}C$
Rise Time	$\tau_{63}$	22 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	$R_{Ni-RTD}$	1000 ± 4	Ω	$T_{Amb} = 0^{\circ}C$
Temperature Coefficient of Ni-RTD	$TC_{Ni-RTD}$	6178 ± 150	ppm/K	$T_{Amb} = 0^{\circ}C$ to $+100^{\circ}C$

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## OPTICAL CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	120	deg	at 50% of maximum signal

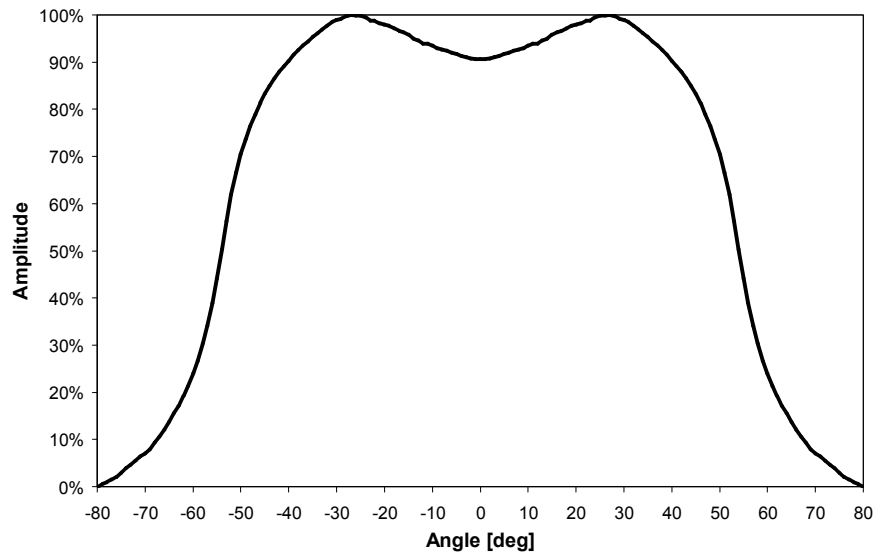


Figure 2: Field of View Curve

## FILTER CHARACTERISTICS

Parameter	Symbol	Value	Unit	Description
Filter Type	NBP	4.26 ±0.18	μm	Narrow Band Pass

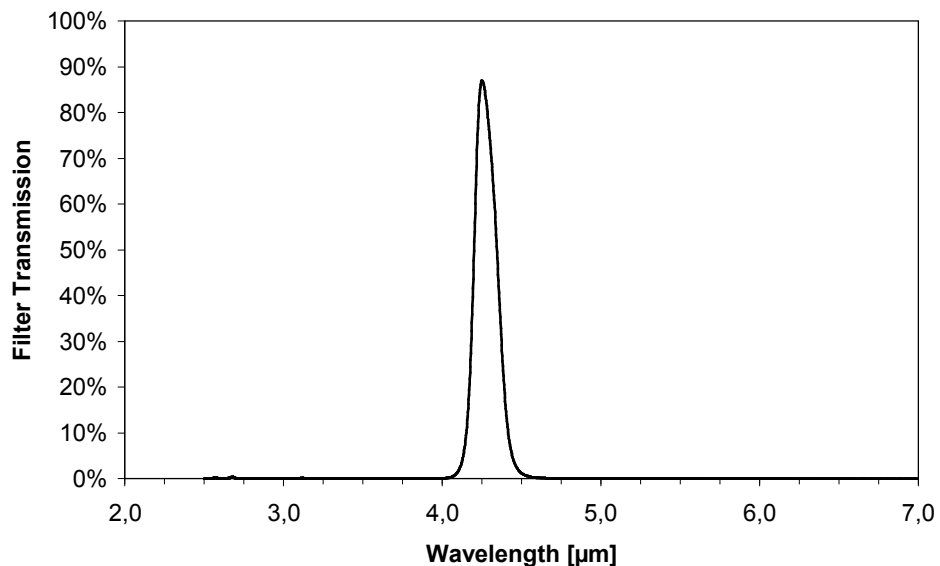


Figure 3: Filter transmission curve

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## ELECTRICAL CONNECTIONS

Pin	Symbol
1	TP +
2	Ni-RTD
3	TP -
4	GND

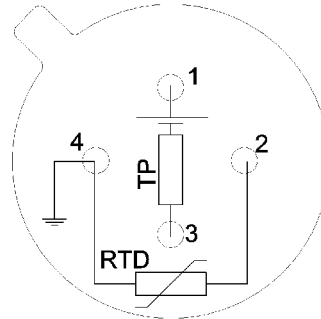


Figure 4: Electrical connections - bottom view of thermopile

## MECHANICAL DIMENSIONS

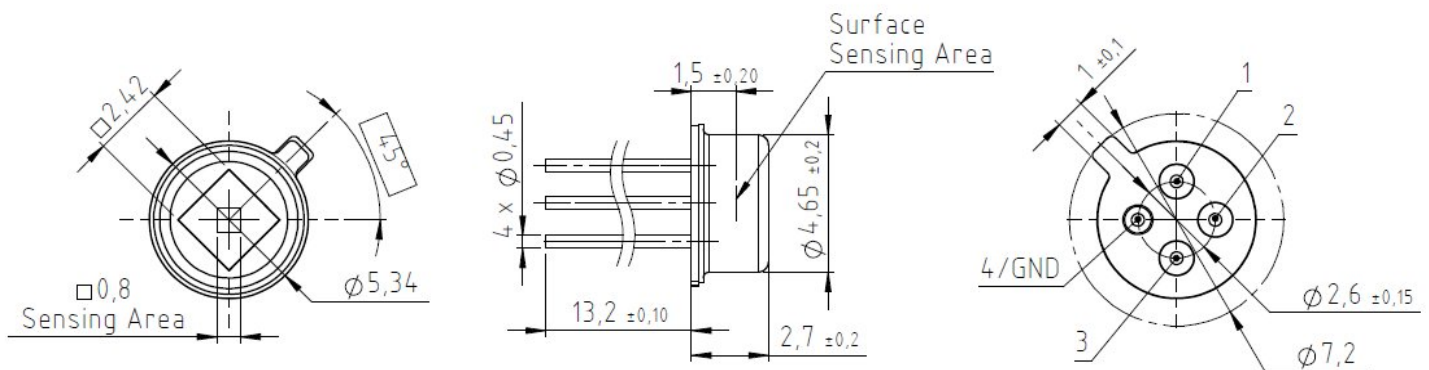


Figure 5: Mechanical dimensions of thermopile

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## ORDERING INFORMATION

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**Part Description**      TS418-3N426

**Part No.**                G-TPCO-024

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