



## **TS418-1N426**

### THERMOPILE SENSOR

#### SPECIFICATIONS

- **Thermopile IR-Sensor**
- **Filter for NDIR CO2 Gas Detection**
- **Single Element**
- **Very High Signal**
- **Flat Filter**
- **Small Package**
- **Accurate Reference Sensor**

Thermopiles are mainly used for contactless temperature or non-dispersive infrared measurement in many applications. Their function is to transfer the heat radiation emitted from the objects or other infrared sources 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

## 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-18		
Absorber Area	A	1.4 × 1.4	mm <sup>2</sup>	
Thermopile Resistance	R <sub>TP</sub>	180 ± 60	k $\Omega$	T <sub>Amb</sub> = +25°C
Temperature Coefficient of Thermopile Resistance	TCR <sub>TP</sub>	-0.06 ± 0.04	%/K	T <sub>Amb</sub> = +25°C to +75°C
Voltage Response	V <sub>TP</sub>	depends on light source	mV	
Temperature Coefficient of Voltage Response	TCV <sub>TP</sub>	-0.45 ± 0.08	%/K	T <sub>Amb</sub> = +25°C to +75°C
Noise Equivalent Voltage	NEV	130	nV/Hz <sup>1/2</sup>	T <sub>Amb</sub> = +25°C
Rise Time	$\tau_{63}$	22 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	R <sub>Ni-RTD</sub>	1000 ± 4	$\Omega$	T <sub>Amb</sub> = 0°C
Temperature Coefficient of Ni-RTD	TC <sub>Ni-RTD</sub>	6178 ± 150	ppm/K	T <sub>Amb</sub> = 0°C to +100°C

## TYPICAL PERFORMANCE CURVES

The typical performance of a CO<sub>2</sub>-sensor depends on many external parameters.

These can be the for example:

- infrared light source
- optics (lens, mirror waveguide)
- length of the absorbing path

Therefore a typical performance curve cannot be shown.

## OPTICAL CHARACTERISTICS

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

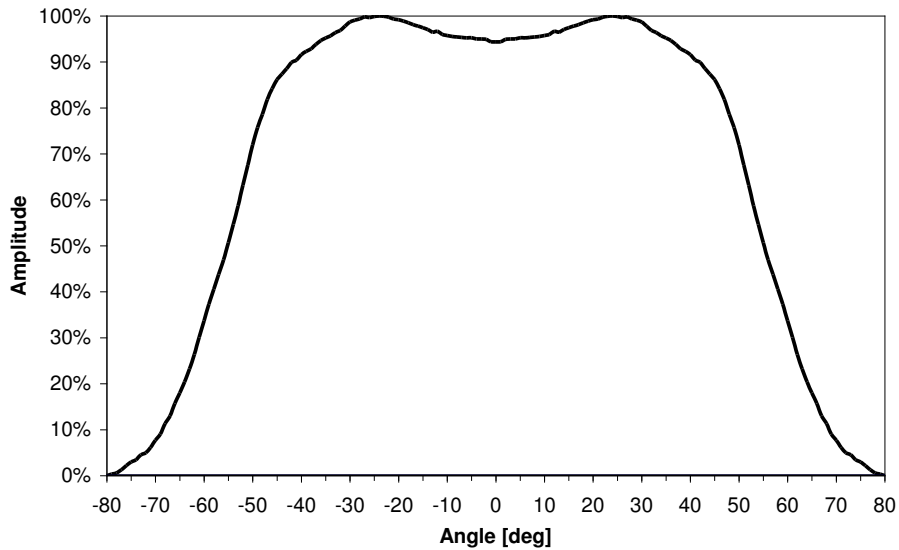


Figure 2: Field of View Curve

## FILTER CHARACTERISTICS

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

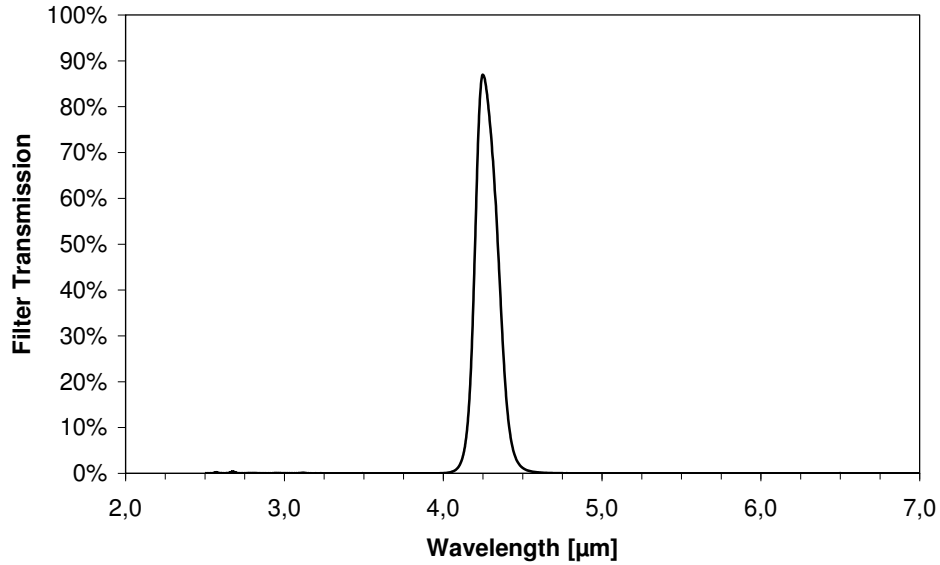


Figure 3: Filter transmission curve

## ELECTRICAL CONNECTIONS

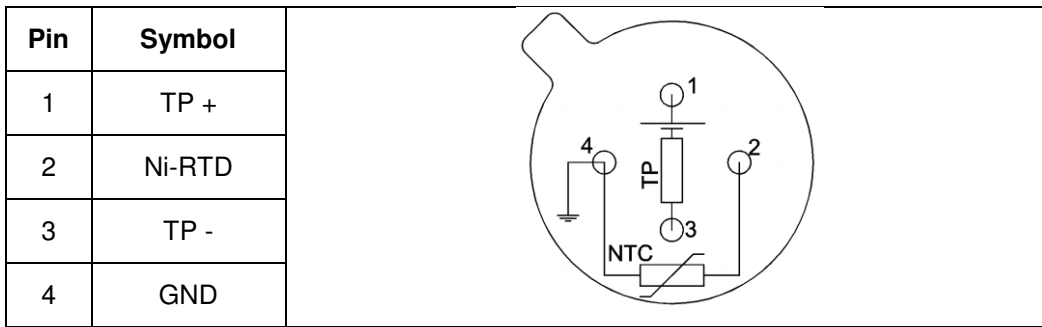


Figure 4: Electrical connections - bottom view of thermopile

## MECHANICAL DIMENSIONS

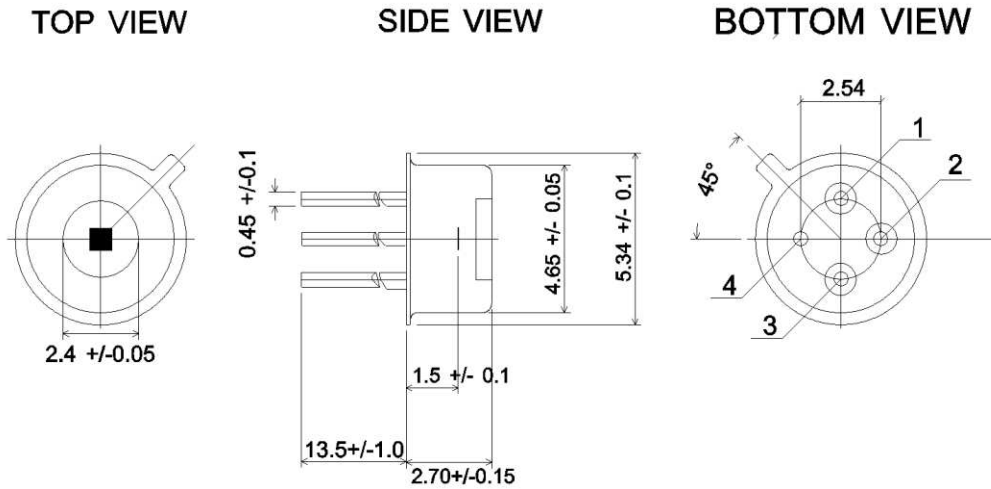


Figure 5: Mechanical dimensions of thermopile

## Ordering INFORMATION

<b>Part Description</b>	TS418-1N426
<b>Part No.</b>	G-TPCO-035

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