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

4.26µm Narrow Band Pass

Small TO-18 package

APPLICATIONS

NDIR CO2 Gas Detection

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	1.4 × 1.4	mm^2	
Thermopile Resistance	R_{TP}	180 ± 60	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}	depends on light source	mV	
Temperature Coefficient of Voltage Response	TCV_{TP}	-0.45 ± 0.08	%/K	T_{Amb} = +25°C to +75°C
Noise Equivalent Voltage	NEV	130	$nV/Hz^{½}$	T_{Amb} = +25°C
Rise Time	τ_{63}	22 ± 5	ms	
Ambient Temperature Sensor		Ni-RTD		
Ambient Temperature Sensor Resistance	$R_{Ni\text{-}RTD}$	1000 ± 4	Ω	T_{Amb} = 0°C
Temperature Coefficient of Ni-RTD	$TC_{Ni\text{-}RTD}$	6178 ±150	ppm/K	T_{Amb} = 0°C to +100°C

TYPICAL PERFORMANCE CURVES

The typical performance of a CO2-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

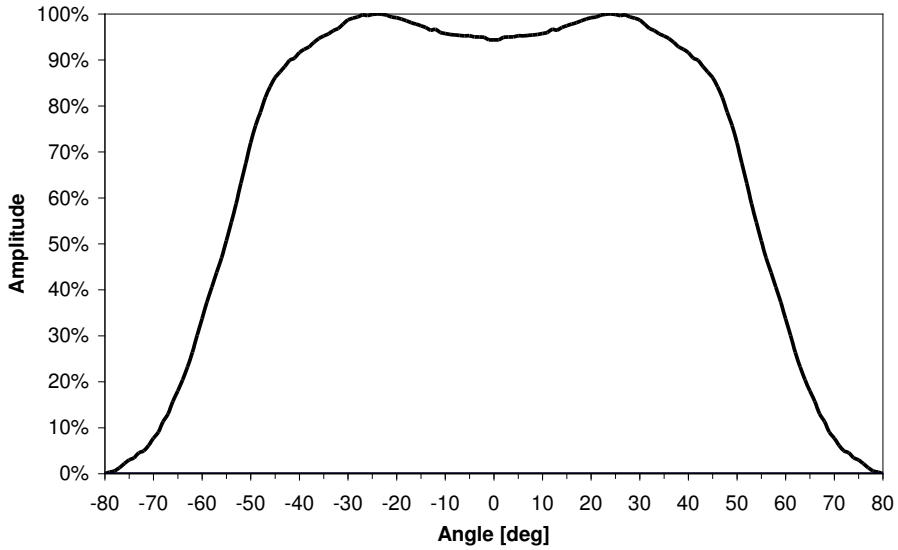

Figure 2: Field of View Curve

FILTER CHARACTERISTICS

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

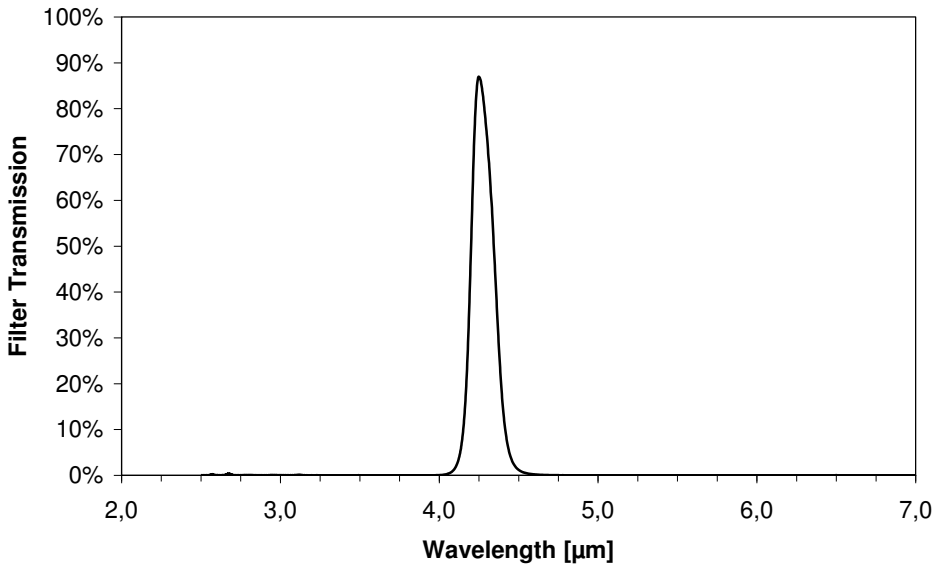

Figure 3: Filter transmission curve

ELECTRICAL CONNECTIONS

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

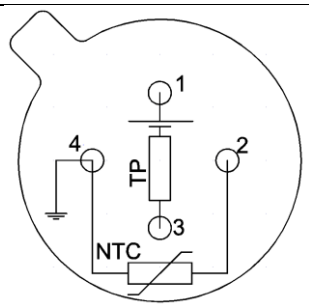

Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

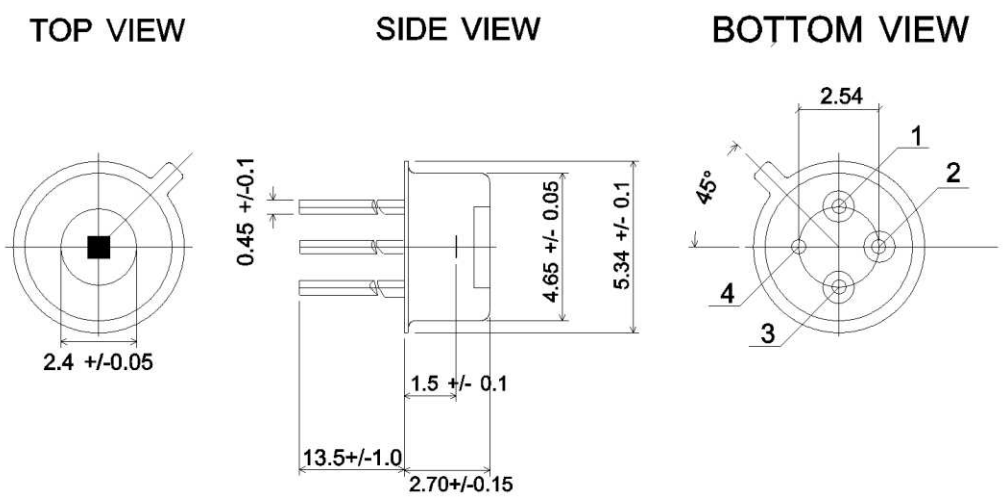

Figure 5: Mechanical dimensions of thermopile

Ordering INFORMATION

Part Descripton	TS418-1N426
Part No.	G-TPCO-035

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