



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 ^{1/2} | T _{Amb} = +25°C |
| Rise Time | τ ₆₃ | 22 ± 5 | ms | |
| Ambient Temperature Sensor | | Ni-RTD | | |
| Ambient Temperature Sensor Resistance | R _{Ni-RTD} | 1000 ± 4 | Ω | T _{Amb} = 0°C |
| Temperature Coefficient of Ni-RTD | TC _{Ni-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 |

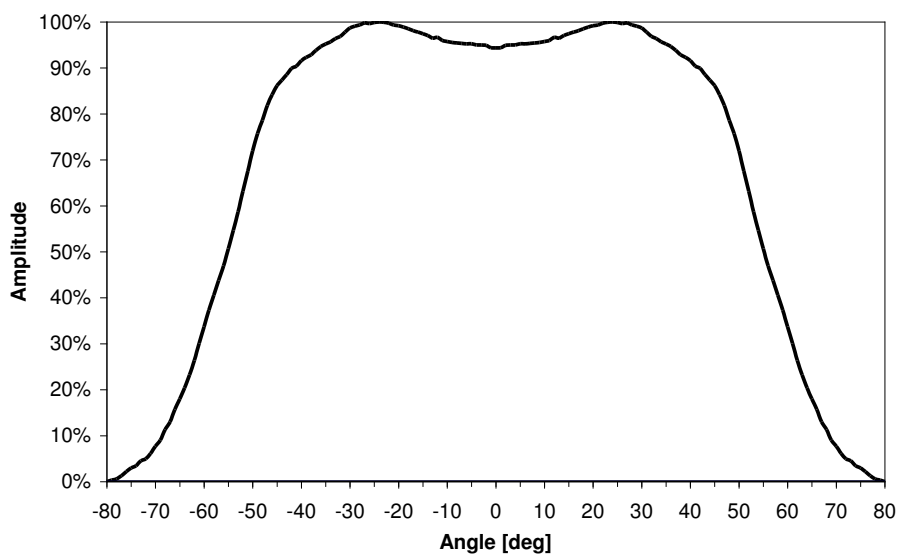


Figure 2: Field of View Curve

FILTER CHARACTERISTICS

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

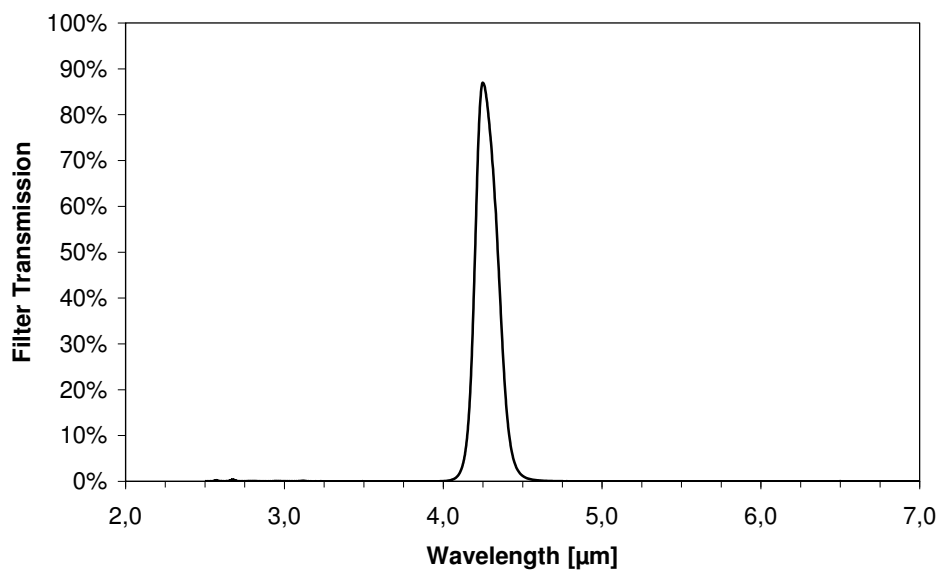


Figure 3: Filter transmission curve

ELECTRICAL CONNECTIONS

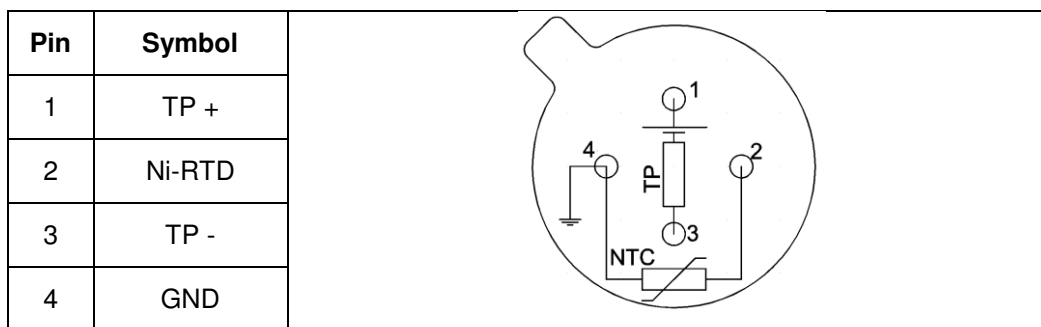


Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

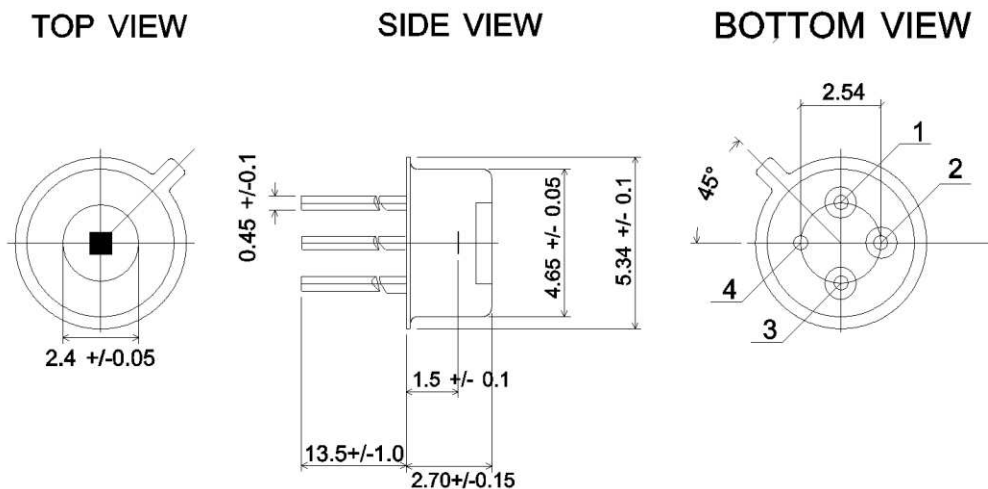


Figure 5: Mechanical dimensions of thermopile

Ordering INFORMATION

| | |
|-------------------------|-------------|
| Part Description | TS418-1N426 |
| Part No. | G-TPCO-035 |

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