



## TS105-10L5.5MM

### Thermopile Sensor

#### SPECIFICATIONS

- Thermopile IR-Sensor
- For Contactless Temperature Measurement
- Single Element
- For Industrial Pyrometers
- Silicon Lens
- 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

Small Field of View

Accurate NTC Reference Sensor

## APPLICATIONS

Industrial Pyrometers

## 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-5         |                      |   |
| Absorber Area                                    | A                 | 0.7 × 0.7    | mm <sup>2</sup>      |   |
| Thermopile Resistance                            | R <sub>TP</sub>   | 43 ± 8       | kΩ                   | 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>   | 0.9 ± 0.25   | mV                   | T <sub>Amb</sub> = +25°C, T <sub>Obj</sub> = +100°C, DC, totally filled field of view |
| 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               | 30           | nV/Hz <sup>1/2</sup> | T <sub>Amb</sub> = +25°C  |
| Rise Time  | τ <sub>63</sub>   | 20 ± 5       | ms                   |   |
| Ambient Temperature Sensor                       |                   | NTC          |                      |   |
| Ambient Temperature Sensor Resistance            | R <sub>NTC</sub>  | 100 ± 5      | kΩ                   | T <sub>Amb</sub> = +25°C  |
| Beta Value of NTC                                | β-Value           | 3955 ± 0.3%  | K                    | T <sub>Amb</sub> = 0°C to +50°C   |

**TYPICAL PERFORMANCE CURVES**

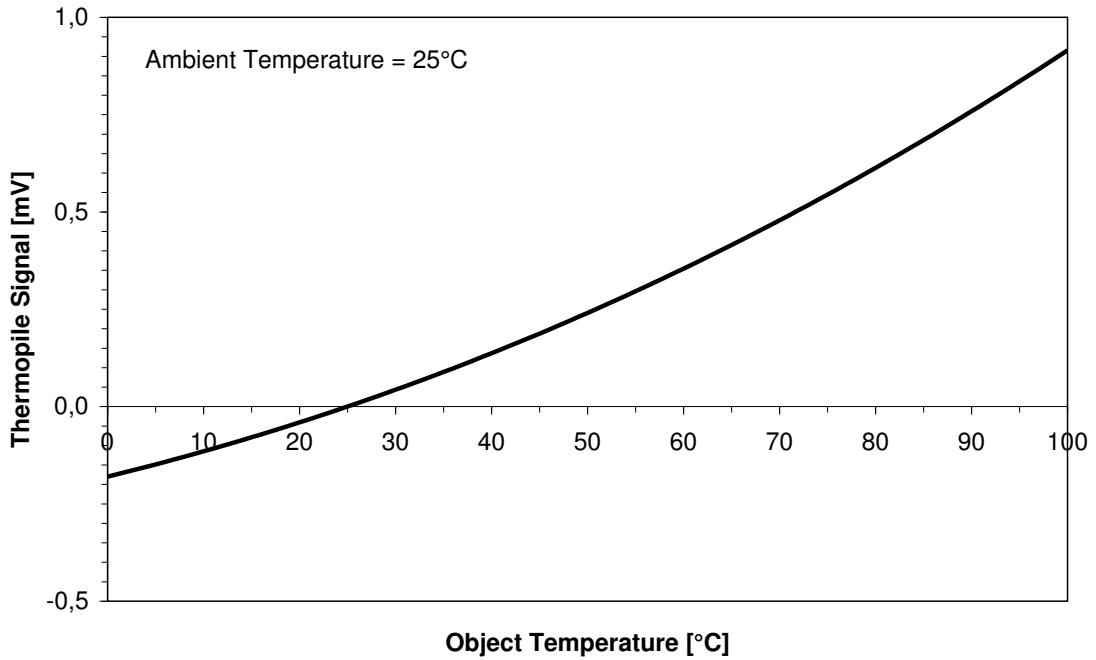


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

**OPTICAL CHARACTERISTICS**

| Parameter     | Symbol | Value | Unit | Description              |
|---------------|--------|-------|------|--------------------------|
| Field of View | FOV    | 10    | deg  | at 50% of maximum signal |

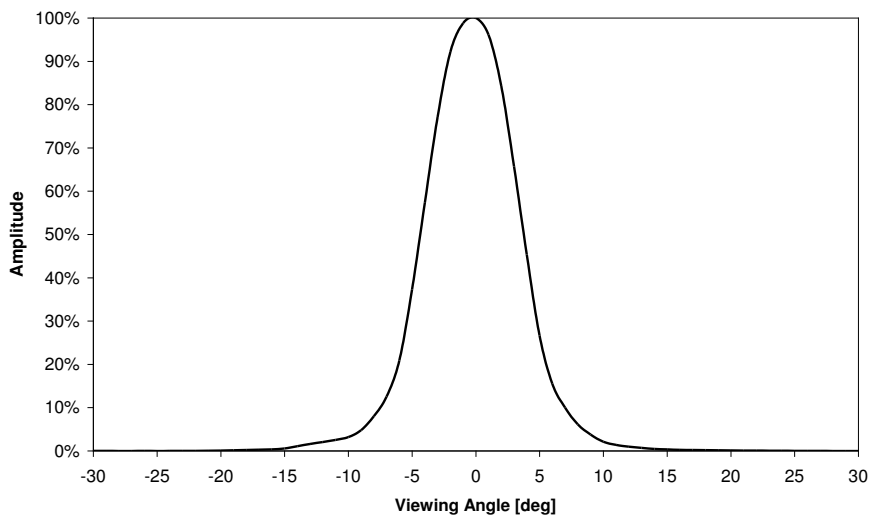


Figure 2: Field of View Curve

**FILTER CHARACTERISTICS**

| Parameter          | Symbol | Value | Unit | Description |
|--------------------|--------|-------|------|-------------|
| Transmission Range | Si     | ≥ 1.1 | μm   | Silicon     |

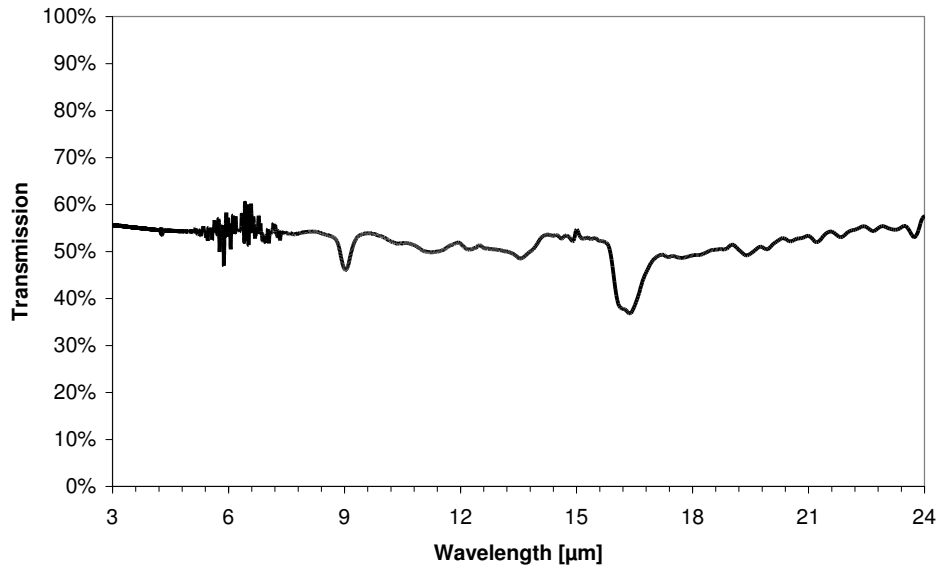


Figure 3: Lens transmission curve

**ELECTRICAL CONNECTIONS**

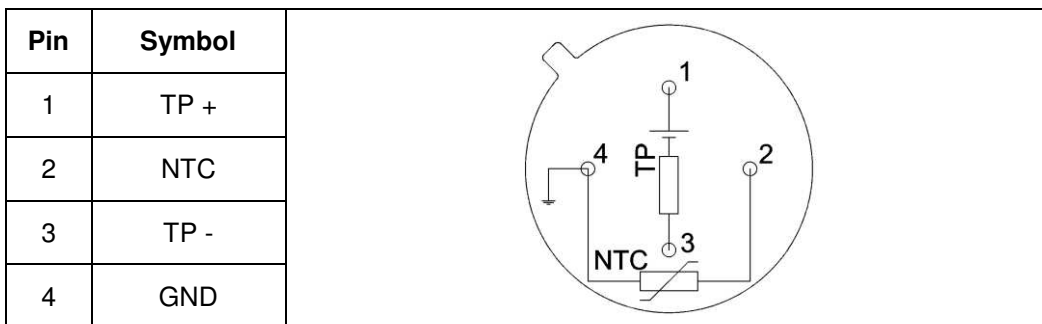


Figure 4: Electrical connections - bottom view of thermopile

**MECHANICAL DIMENSIONS**

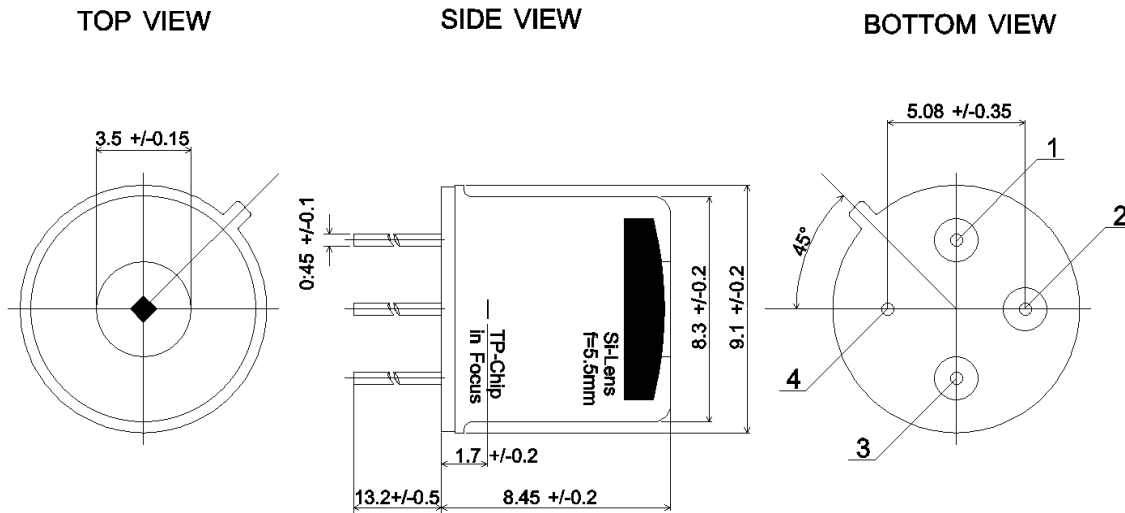


Figure 5: Mechanical dimensions of thermopile

**ORDERING INFORMATION**

|                         |                             |
|-------------------------|-----------------------------|
| <b>Part Description</b> | TS105-10 L5.5 NTC 100K BETA |
| <b>Part No.</b>         | G-TPCO-019                  |

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