



Model TS318-1B0814 Thermopile Sensor



- Thermopile IR-Sensor
- For Contactless Temperature Measurement
- Single Element
- Small Package for Ear Thermometer
- High Signal
- Flat Filter
- 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

- High Signal
- Ni-RTD Reference Sensor
- Small TO-18 Package
- 8-14 μ m Band Pass Filter for measurement distances >0.5m

APPLICATIONS

- Pyrometers (general)
- Industrial Pyrometers

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 |

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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 | 0.8×0.8 | mm ² | |
| Thermopile Resistance | R_{TP} | 70 ± 30 | k Ω | $T_{Amb} = +25\text{ }^{\circ}\text{C}$ |
| Temperature Coefficient of Thermopile Resistance | TCR_{TP} | -0.06 ± 0.04 | %/K | $T_{Amb} = +25\text{ }^{\circ}\text{C}$ to $+75\text{ }^{\circ}\text{C}$ |
| Voltage Response | V_{TP} | 5.0 ± 1.3 | mV | $T_{Amb} = +25\text{ }^{\circ}\text{C}$, $T_{Obj} = +100\text{ }^{\circ}\text{C}$, DC, totally filled field of view |
| Temperature Coefficient of Voltage Response | TCV_{TP} | -0.45 ± 0.08 | %/K | $T_{Amb} = +25\text{ }^{\circ}\text{C}$ to $+75\text{ }^{\circ}\text{C}$ |
| Noise Equivalent Voltage | NEV | 34 | nV/Hz ^{1/2} | $T_{Amb} = +25\text{ }^{\circ}\text{C}$ |
| Rise Time | τ_{63} | 12 ± 5 | ms | |
| Ambient Temperature Sensor | | Ni-RTD | | |
| Ambient Temperature Sensor Resistance | R_{Ni-RTD} | 1000 ± 4 | Ω | $T_{Amb} = 0\text{ }^{\circ}\text{C}$ |
| Temperature Coefficient of Ni-RTD | TC_{Ni-RTD} | 6178 ± 150 | ppm/K | $T_{Amb} = 0\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ |

TYPICAL PERFORMANCE CURVES

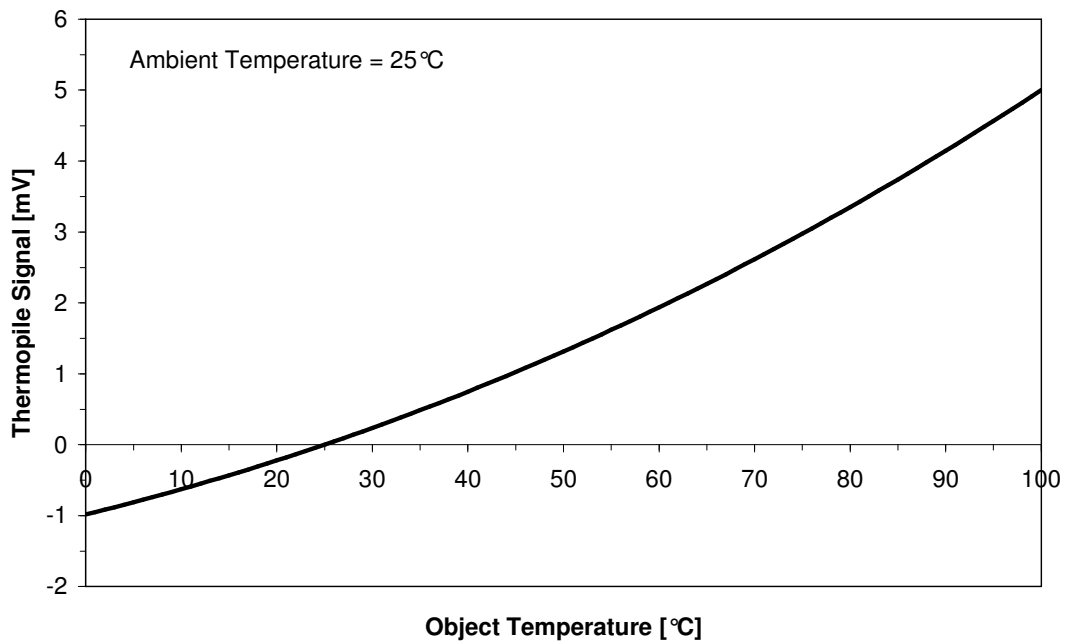


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

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OPTICAL CHARACTERISTICS

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

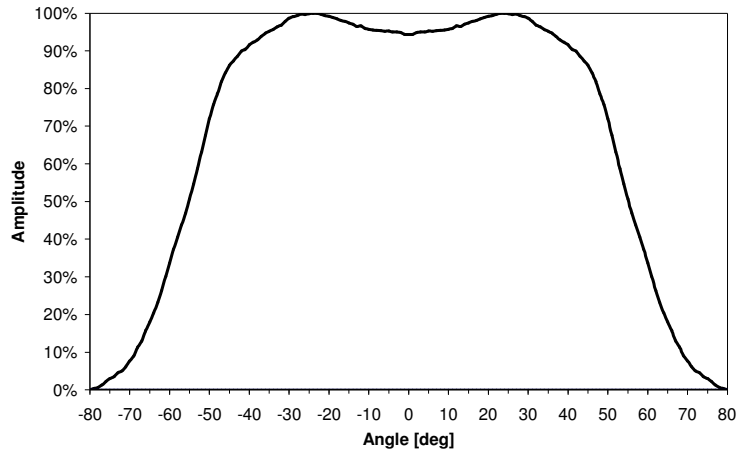


Figure 2: Field of View Curve

FILTER CHARACTERISTICS

| Parameter | Symbol | Value | Unit | Description |
|--------------------|-----------------------------|-------------|---------------|---------------------------|
| Transmission Range | BBP | 8-14 | μm | Broad Band Pass |
| Transmission | $T_{9 \dots 13\mu\text{m}}$ | ≥ 75.0 | % | at 9 ... 13 μm |

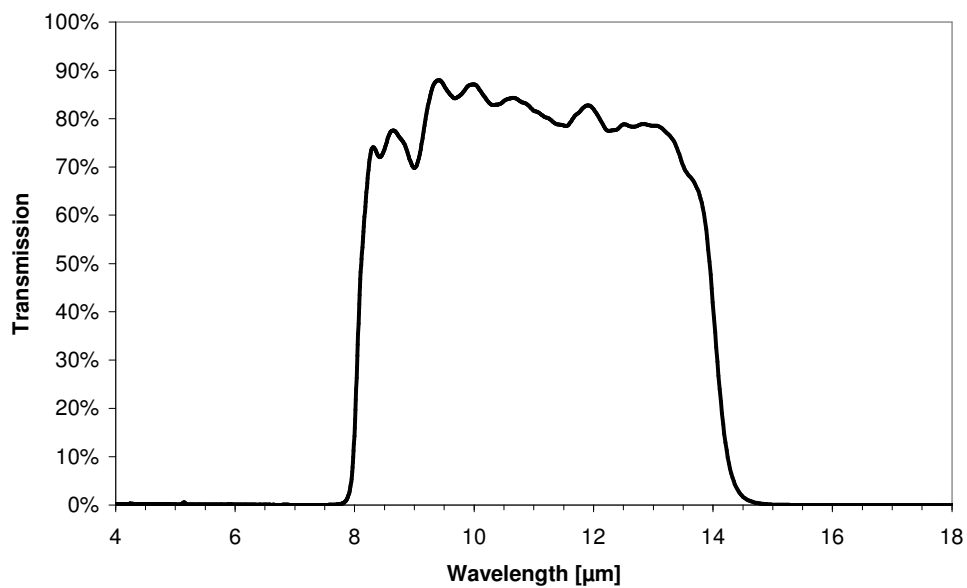


Figure 3: Filter transmission curve

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ELECTRICAL CONNECTIONS

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

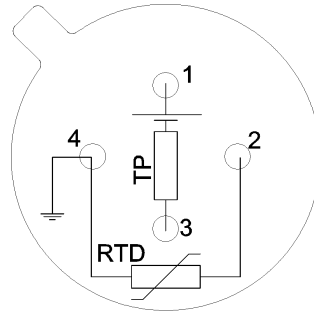
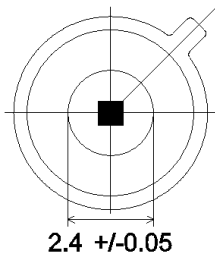


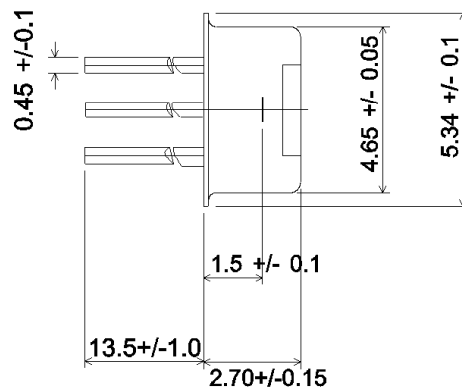
Figure 4: Electrical connections - bottom view of thermopile

MECHANICAL DIMENSIONS

TOP VIEW



SIDE VIEW



BOTTOM VIEW

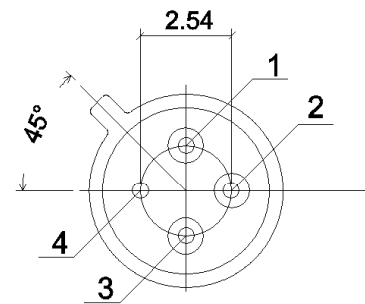


Figure 5: Mechanical dimensions of thermopile

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ORDERING INFORMATION

Part Description TS318-1B0814

Part No. G-TPCO-031

TECHNICAL CONTACT INFORMATION

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