

ZTP-101T

Thermopile IR Sensor



This thermopile sensor is used for non-contact surface temperature measuring. The ZTP -101T model consists of thermo-elements, flat IR filter, a thermistor for temperature compensation and a hermetically-sealed small-size package. There is also a variety of filters available to maximize performance in specific applications

Applications

- Patient monitoring
- Ear & Tympanic thermometers
- Occupancy detection
- HVAC
- Appliance

Features

- Non-contact measurement
- Wider surface area measurement
- Small-size sensor package
- Included ambient temperature - (thermistor) sensor for compensation
- High sensitivity
- Fast response time
- Low cost



Specifications

Thermopile Chip

| Parameter | Limits | | | Units | Condition |
|---------------------|--------|-------------|------|------------------------|--------------|
| | Min | Typ | Max | | |
| Chip Size | | 3.0 X 3.0 | | mm ² | |
| Diaphragm Size | | 1.5 x 1.5 | | mm ² | |
| Active Area | | 0.51 x 0.51 | | mm ² | |
| Internal Resistance | 140 | 200 | 260 | kΩ | 25°C |
| Resistance T.C | | | 0.10 | %/°C | |
| Responsivity | 77 | 110 | 143 | V/W | 500K, 1 Hz |
| Responsivity T.C | | -0.11 | | %/°C | |
| Noise Voltage | | 62 | | nV rms | R.M.S., 25°C |
| NEP | | 0.60 | | nW/Hz ^{1/2} | 500K, 1 Hz |
| Detectivity | | 9.00 E07 | | cmHz ^{1/2} /W | 500K, 1 Hz |
| Time Constant | | 22 | | ms | |

Thermistor for Temperature Compensation

| Parameter | Limits | | | Units | Condition |
|--------------|--------|------|------|-------|-------------------------------|
| | Min | Typ | Max | | |
| Resistance | 29.1 | 30 | 30.9 | kΩ | Tol. :3%, @25°C |
| Beta - Value | 3773 | 3811 | 3849 | K | Tol. :1%, Defined at 0°C/50°C |

Absolute Maximum Ratings

Operating Temperature

-20°C ~ 100°C

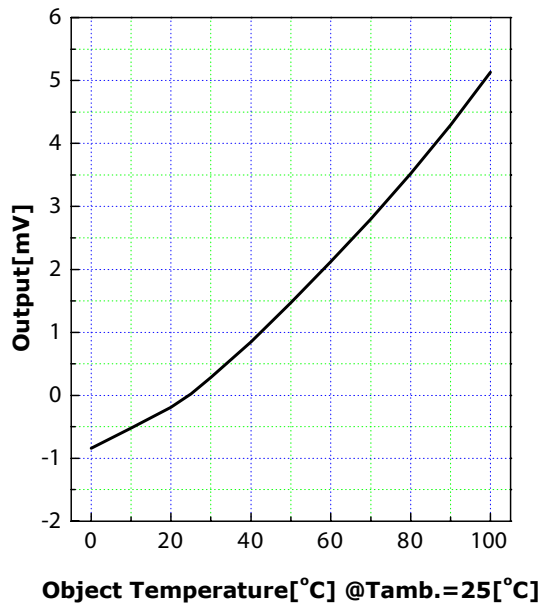
Storage Temperature

-40°C ~ 120°C

Thermistor Resistance (R-T Table)

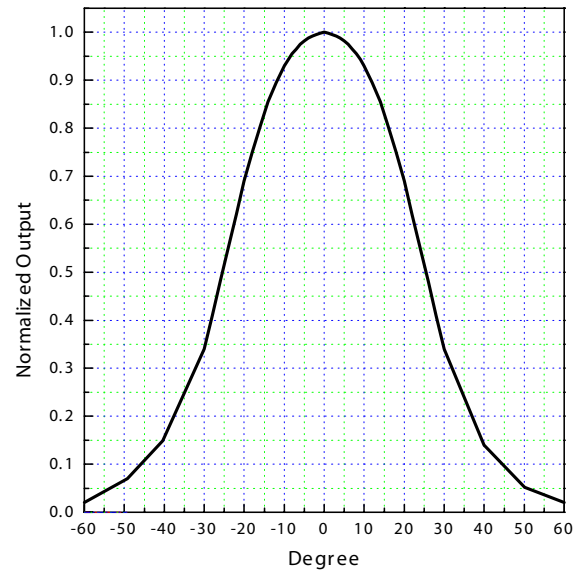
| T ambient (° C) | Rmin (kΩ) | Rcent (kΩ) | Rmax (kΩ) |
|-----------------|-----------|------------|-----------|
| -40 | 267 | 284.7 | 303.2 |
| -35 | 197.2 | 209.6 | 222.5 |
| -30 | 147.1 | 155.9 | 165 |
| -25 | 110.8 | 117.1 | 123.6 |
| -20 | 84.16 | 88.68 | 93.35 |
| -15 | 64.46 | 67.73 | 71.11 |
| -10 | 49.74 | 52.13 | 54.59 |
| -5 | 38.65 | 40.41 | 42.21 |
| 0 | 30.24 | 31.54 | 32.86 |
| 5 | 23.81 | 24.77 | 25.75 |
| 10 | 18.86 | 19.58 | 20.3 |
| 15 | 15.03 | 15.56 | 16.1 |
| 20 | 12.04 | 12.44 | 12.84 |
| 25 | 9.7 | 10 | 10.3 |
| 30 | 7.823 | 8.082 | 8.342 |
| 35 | 6.342 | 6.566 | 6.791 |
| 40 | 5.168 | 5.361 | 5.557 |
| 45 | 4.233 | 4.4 | 4.569 |
| 50 | 3.484 | 3.629 | 3.776 |
| 55 | 2.882 | 3.007 | 3.135 |
| 60 | 2.396 | 2.504 | 2.615 |
| 65 | 2.0009 | 2.095 | 2.192 |
| 70 | 1.679 | 1.7612 | 1.8458 |
| 75 | 1.4153 | 1.4871 | 1.5612 |
| 80 | 1.1984 | 1.261 | 1.3264 |
| 85 | 1.0193 | 1.0745 | 1.1317 |
| 90 | 0.8707 | 0.9193 | 0.9697 |
| 95 | 0.7469 | 0.7898 | 0.8344 |
| 100 | 0.6433 | 0.6812 | 0.7208 |
| 105 | 0.5562 | 0.5899 | 0.625 |

Sensitivity

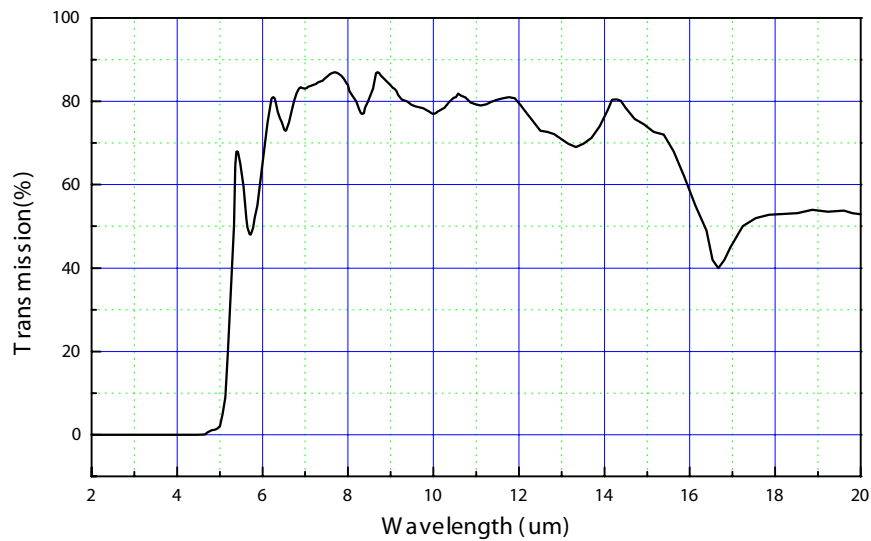


Field of View

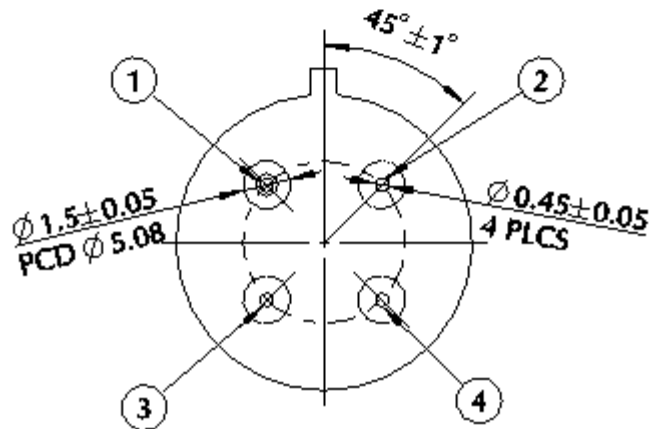
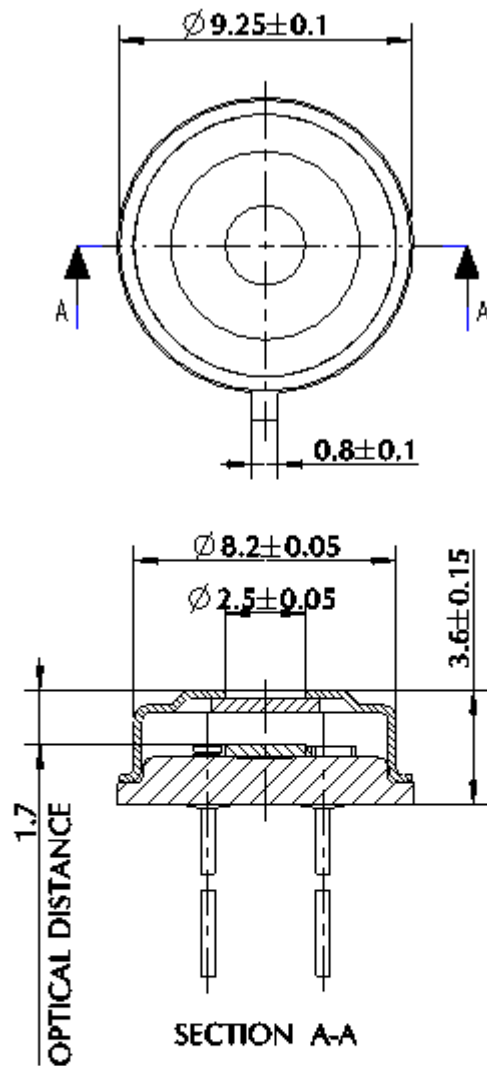
| Parameter | Limits | | | Units | Condition |
|---------------|--------|-----|-----|--------|-----------------------|
| | Min | Typ | Max | | |
| Field of View | 45 | 50 | 55 | Degree | 50% of Maximum Output |



Transmission Data of Filter



Outline of Sensor Packaging and Pin Arrangement (unit = mm)



Unit: mm

Pin arrangement:
 1. GND Thermistor
 2. Thermopile
 3. GND Thermopile
 4. Thermistor



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920-548A