

T H E R M O M E T R I C S
A C O M M I T M E N T T O E X C E L L E N C E

ZTP-148SR

Thermopile IR Sensor



Thermometrics Thermopile IR Sensors are used for non-contact surface, or infrared, temperature measurement. The ZTP-148SR Model consists of thermo-elements, flat infrared filter and thermistor for temperature compensation, all in one hermetically-sealed TO-46 (18) sensor package. There are a variety of filters available to maximize performance in specific applications.

Applications

- Ear thermometers
- Forehead thermometers
- Surface temperature measurement of the human body

Features

- Compact design
- High sensitivity
- Fast response time
- Low cost
- Included ambient temperature (thermistor) sensor

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ZTP-148SR Specifications

Thermopile Chip

| Parameter | Limits | | | Unit | Condition |
|---------------------|--------|-----------|------|------------------------|---------------|
| | Min | Typ | Max | | |
| Chip Size | | 1.8 X 1.8 | | mm ² | |
| Active Area | | 0.7x0.7 | | mm ² | Absorber area |
| Internal Resistance | 60 | 85 | 111 | kΩ | @25°C |
| Resistance T.C. | | | 0.12 | %/°C | |
| Responsivity | 43 | 61 | 79 | V/W | 500K, 1Hz, |
| Responsivity T.C. | | -0.07 | | %/°C | |
| Noise Voltage | | 37 | | nV rms | R.M.S, 25°C |
| NEP | | 0.61 | | nW/Hz ^{1/2} | |
| Detectivity | | 1.14 | | cmHz ^{1/2} /W | |
| Time Constant | | 32 | | ms | |

NTC Thermistor for Temperature Compensation

| Parameter | Limits | | | Unit | Condition |
|--------------|--------|------|------|------|-------------------------------|
| | Min | Typ | Max | | |
| Resistance | 97 | 100 | 103 | kΩ | Tol.:3%, @ 25°C |
| Beta – Value | 3920 | 3960 | 4000 | K | Tol.:1%, Defined at 25°C/50°C |

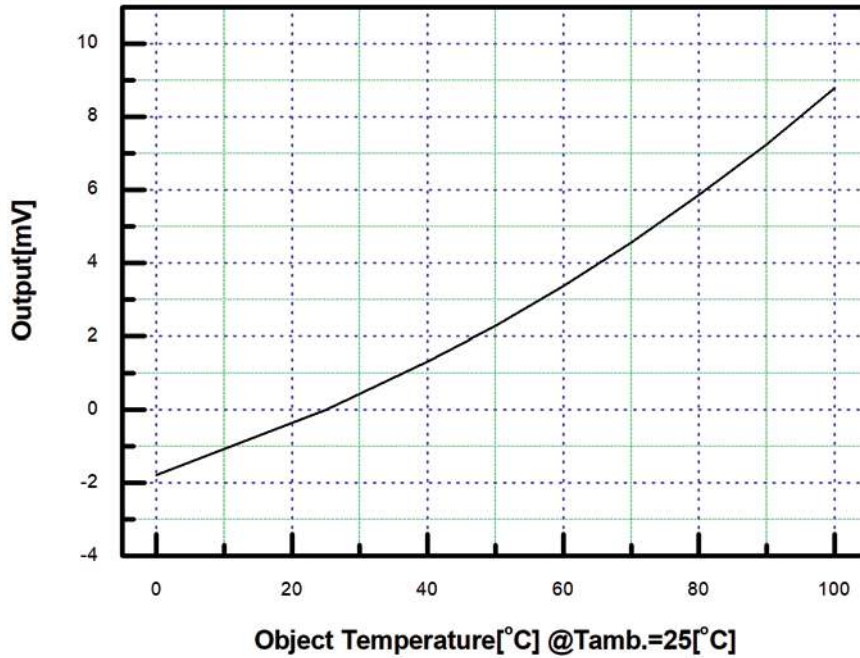
Absolute Maximum Ratings

- Operating temperature : -20°C ~ 100°C
- Storage temperature : -40°C ~ 120°C

ZTP-148SR Specifications

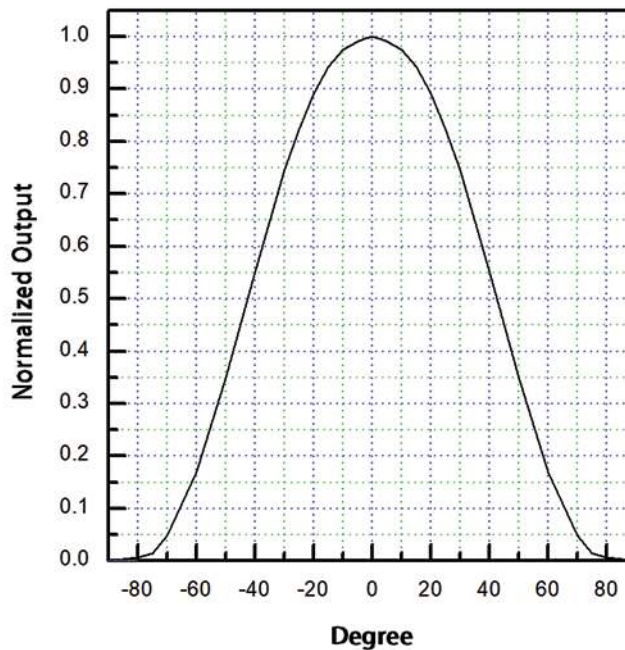
Typical Characteristic Data

Sensitivity



Field of View

| Parameter | Limits | | | Units | Condition |
|---------------|--------|-----|-----|--------|-----------------------|
| | Min | Typ | Max | | |
| Field of View | 80 | 85 | 90 | Degree | 50% of Maximum Output |

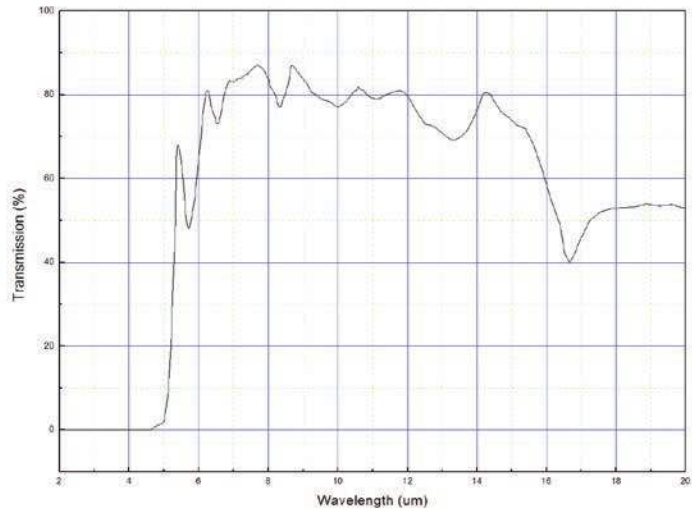


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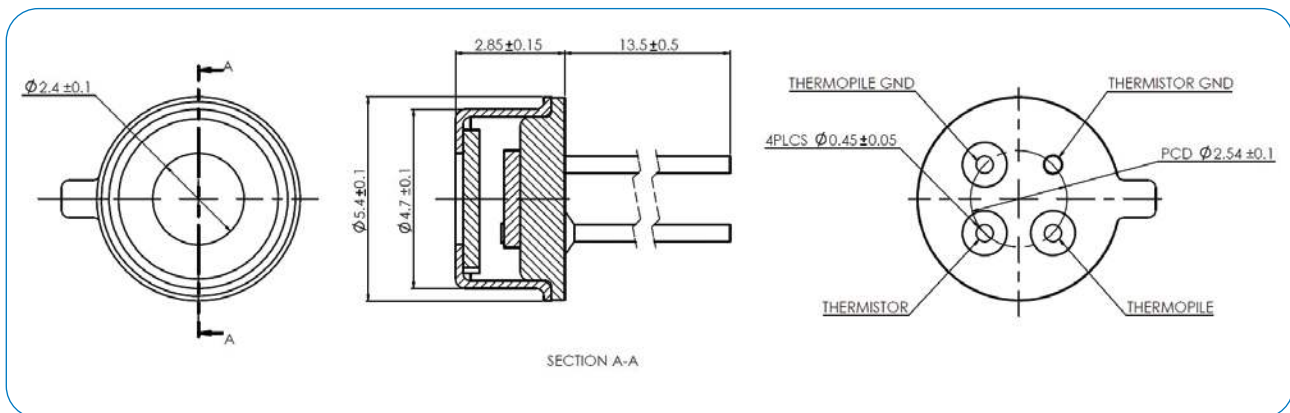
Thermistor Resistance

| Tambient (kΩ) | Rmin (kΩ) | Rcent (kΩ) | Rmax (kΩ) |
|---------------|-----------|------------|-----------|
| -20 | 893.8 | 942.3 | 992.6 |
| -15 | 677.7 | 712.5 | 748.4 |
| -10 | 518.2 | 543.3 | 569.2 |
| -5 | 399.4 | 417.6 | 436.4 |
| 0 | 310.1 | 323.5 | 337.1 |
| 5 | 242.6 | 252.4 | 262.4 |
| 10 | 191.1 | 198.3 | 205.7 |
| 15 | 151.5 | 156.9 | 162.3 |
| 20 | 120.9 | 124.9 | 128.9 |
| 25 | 97.00 | 100.0 | 103.0 |
| 30 | 77.97 | 80.55 | 83.15 |
| 35 | 63.03 | 65.25 | 67.50 |
| 40 | 51.22 | 53.14 | 55.09 |
| 45 | 41.85 | 43.50 | 45.18 |
| 50 | 34.36 | 35.79 | 37.24 |
| 55 | 28.35 | 29.58 | 30.84 |
| 60 | 23.49 | 24.56 | 25.66 |
| 65 | 19.56 | 20.49 | 21.44 |
| 70 | 16.35 | 17.16 | 17.99 |
| 75 | 13.73 | 14.43 | 15.15 |
| 80 | 11.57 | 12.18 | 12.81 |
| 85 | 9.79 | 10.32 | 10.88 |
| 90 | 8.313 | 8.781 | 9.267 |
| 95 | 7.085 | 7.495 | 7.923 |
| 100 | 6.058 | 6.420 | 6.796 |

Transmission Data of Filter



Outline of Sensor Package & PIN Arrangement (unit : mm)



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