

T H E R M O M E T R I C S  
A COMMITMENT TO EXCELLENCE

# 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

# Amphenol

Advanced Sensors

# ZTP-148SR Specifications

## Thermopile Chip

| Parameter           | Limits |           |      | Unit                   | Condition     |
|---------------------|--------|-----------|------|------------------------|---------------|
|                     | Min    | Typ       | Max  |                        |               |
| Chip Size           |        | 1.8 X 1.8 |      | mm <sup>2</sup>        |               |
| Active Area         |        | 0.7x0.7   |      | mm <sup>2</sup>        | 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 <sup>1/2</sup>   |               |
| Detectivity         |        | 1.14      |      | cmHz <sup>1/2</sup> /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 |

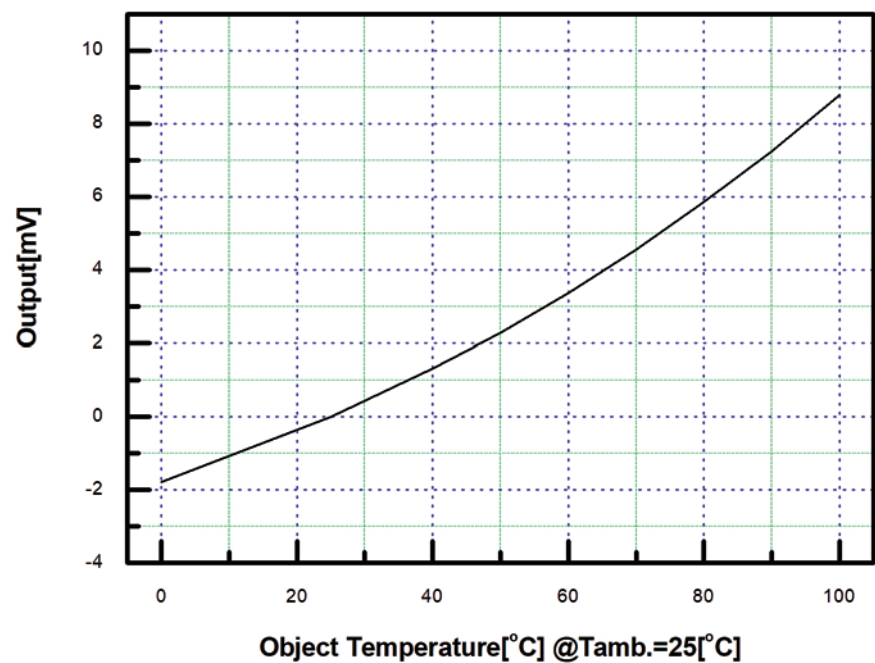
## Absolute Maximum Ratings

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

# ZTP-148SR Specifications

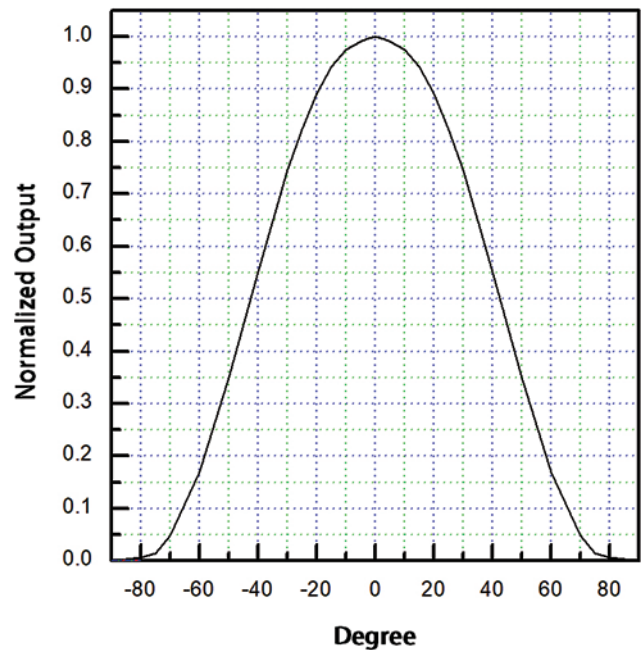
## Typical Characteristic Data

### Sensitivity



### Field of View

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

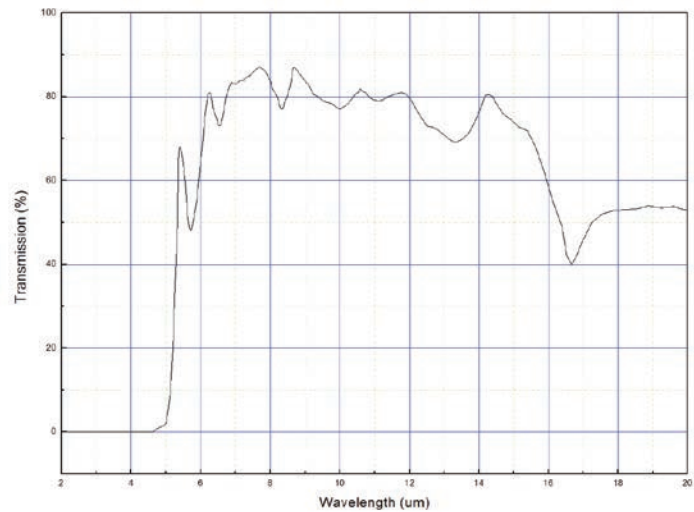


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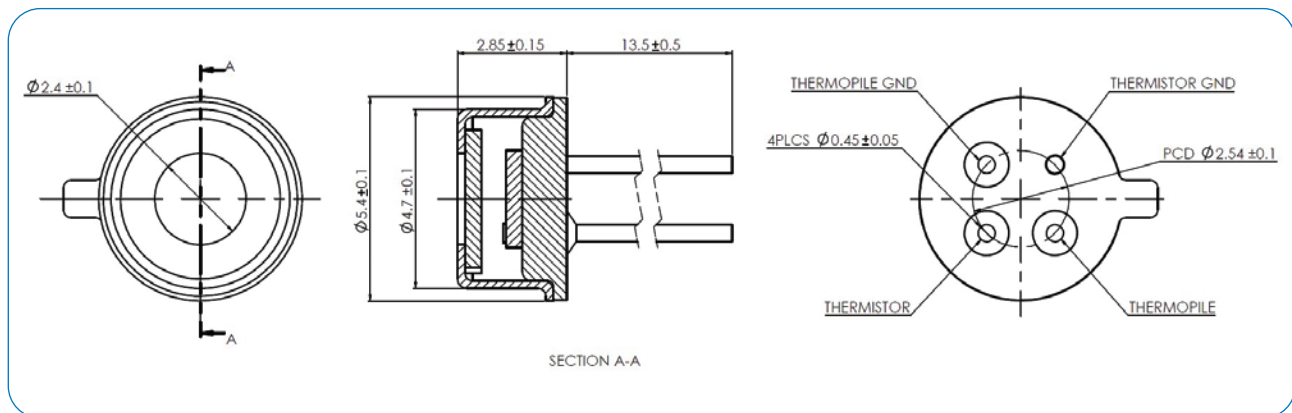
## Thermistor Resistance

| Tambient<br>(kΩ) | Rmin<br>(kΩ) | Rcent<br>(kΩ) | Rmax<br>(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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