

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-148SRC1

## Thermopile Infrared (IR) Sensor



Thermometrics Thermopile Infrared (IR) Sensors are used for non-contact surface, temperature measurement. The ZTP-148SRC1 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-148SRC1 Specifications

## Thermopile Chip

| Parameter           | Limits |           |      | Unit                  | Condition     |
|---------------------|--------|-----------|------|-----------------------|---------------|
|                     | Min    | Typ       | Max  |                       |               |
| Chip Size           |        | 1.8 X 1.8 |      | mm <sup>2</sup>       |               |
| Diaphragm           |        | 1.0 x 1.0 |      | mm                    |               |
| Active Area         |        | 0.7 X 0.7 |      | mm <sup>2</sup>       | Absorber area |
| Internal Resistance | 60     | 85        | 110  | kΩ                    | @25°C         |
| Resistance T.C.     |        |           | 0.12 | %/°C                  |               |
| Responsivity        |        | 54        |      | V/W                   | 500K, 1Hz,    |
| Responsivity T.C.   |        | -0.07     |      | %/°C                  |               |
| Noise Voltage       |        | 37        |      | nW/Hz <sup>1/2</sup>  | R.M.S, 25°C   |
| NEP                 |        | 0.69      |      | nW/Hz <sup>1/2</sup>  |               |
| Detectivity         |        | 1.02      |      | cmHz <sup>1/2/W</sup> |               |
| Time Constant       |        | 32        |      | ms                    |               |

## NTC Thermistor for Temperature Compensation

| Parameter    | Limits |      |     | Unit | Condition            |
|--------------|--------|------|-----|------|----------------------|
|              | Min    | Typ  | Max |      |                      |
| Resistance   |        | 100  |     | kΩ   | Tol.: ±3% @ 25°C     |
| Beta – Value |        | 3950 |     | K    | Tol.: ±% @ 25°C/50°C |

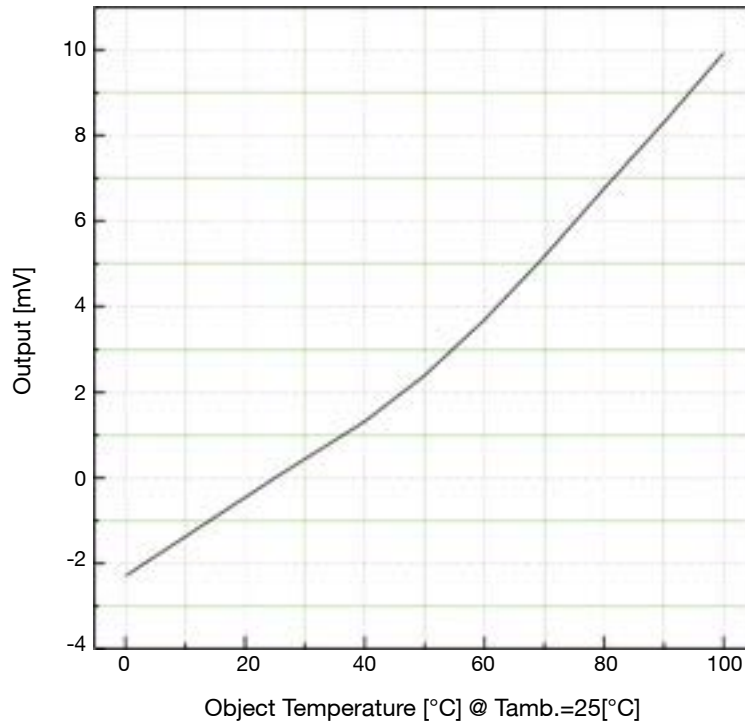
## Absolute Maximum Ratings

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

# ZTP-148SRC1 Specifications (Cont.)

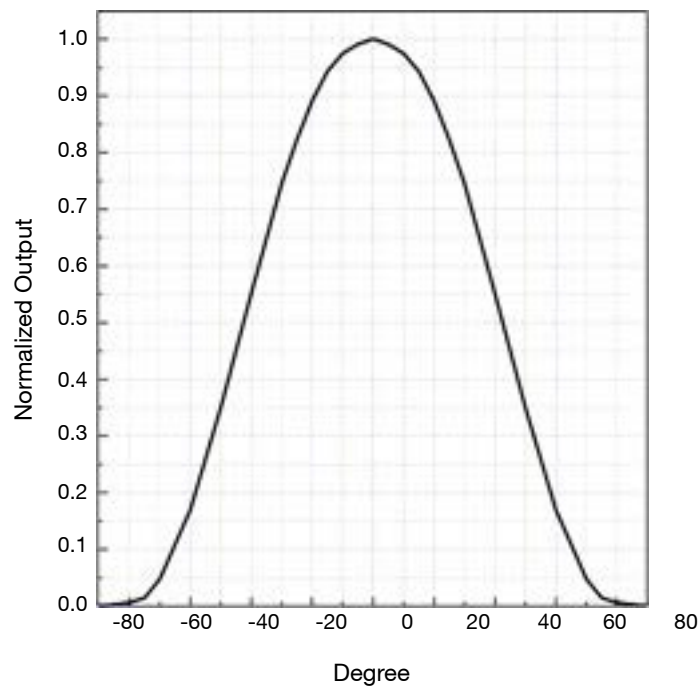
## Typical Characteristic Data

### Sensitivity



### Field of View

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

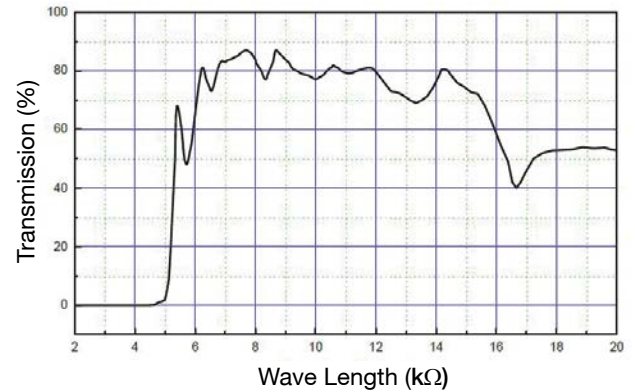


# ZTP-148SRC1 Specifications (Cont.)

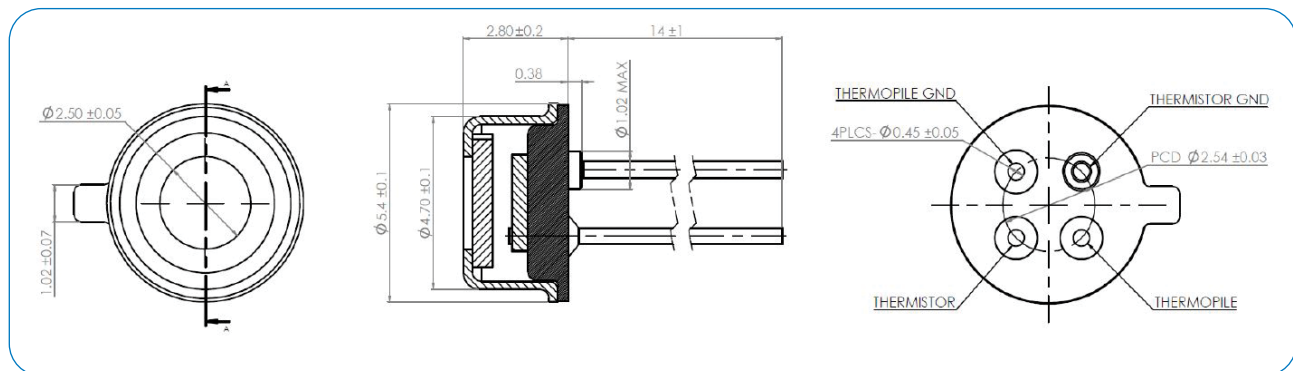
## Thermistor Resistance

| Temperature (°C) | Minimum Resistance (kΩ) | Typical Resistance (kΩ) | Maximum Resistance (kΩ) |
|------------------|-------------------------|-------------------------|-------------------------|
| -20              | 925.2                   | 975.8                   | 1028.2                  |
| -15              | 696.2                   | 732.2                   | 769.3                   |
| -10              | 528.9                   | 554.7                   | 581.2                   |
| -5               | 405.5                   | 424.1                   | 443.2                   |
| 0                | 313.5                   | 327.0                   | 340.8                   |
| 5                | 244.3                   | 254.2                   | 264.3                   |
| 10               | 191.9                   | 199.2                   | 206.6                   |
| 15               | 151.8                   | 157.2                   | 162.7                   |
| 20               | 121.0                   | 125.0                   | 129.0                   |
| 25               | 97.0                    | 100.0                   | 103.0                   |
| 30               | 77.9                    | 80.5                    | 83.1                    |
| 35               | 63.0                    | 65.2                    | 67.5                    |
| 40               | 51.2                    | 53.2                    | 55.1                    |
| 45               | 41.9                    | 43.6                    | 45.2                    |
| 50               | 34.5                    | 35.9                    | 37.3                    |
| 55               | 28.5                    | 29.7                    | 31.0                    |
| 60               | 23.6                    | 24.7                    | 25.8                    |
| 65               | 19.7                    | 20.7                    | 21.6                    |
| 70               | 16.5                    | 17.3                    | 18.2                    |
| 75               | 13.9                    | 14.6                    | 15.4                    |
| 80               | 11.8                    | 12.4                    | 13.0                    |
| 85               | 10.0                    | 10.5                    | 11.1                    |
| 90               | 8.5                     | 9.0                     | 9.5                     |
| 95               | 7.3                     | 7.7                     | 8.1                     |
| 100              | 6.2                     | 6.6                     | 7.0                     |

## Transmission Data of Filter



## Outline of Sensor Package and PIN Arrangement (unit : mm)



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AAS-920-773A - 07/2020

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