



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-135L

Thermopile IR Sensor



This thermopile sensor is used for non-contact surface temperature measuring. The ZTP-135L 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

Amphenol
Advanced Sensors

Specifications

Thermopile Chip

| Parameter | Limits | | | Units | Condition |
|---------------------|--------|-----------|------|------------------------|--------------|
| | Min | Typ | Max | | |
| Chip Size | | 1.8 x 1.8 | | mm ² | |
| Diaphragm Size | | 1.4 x 1.4 | | mm ² | |
| Active Area | | 0.7 x 0.7 | | mm ² | |
| Internal Resistance | 42 | 60 | 78 | kΩ | 25°C |
| Resistance T.C | | | 0.12 | %/°C | |
| Responsivity | 42 | 58 | 78 | V/W | 500K, 1 Hz |
| Responsivity T.C | | -0.10 | | %/°C | |
| Noise Voltage | | 32 | | nV rms | R.M.S., 25°C |
| NEP | | 0.55 | | nW/Hz ^{1/2} | 500K, 1 Hz |
| Detectivity | | 1.27 E08 | | cmHz ^{1/2} /W | 500K, 1 Hz |
| Time Constant | | 25 | | ms | |

Thermistor Resistance (R-T Table)

| T ambient (° C) | Rmin (kΩ) | Rcent (kΩ) | Rmax (kΩ) |
|-----------------|-----------|------------|-----------|
| -20 | 840.0 | 875.5 | 911.6 |
| -15 | 657.2 | 684.0 | 711.4 |
| -10 | 512.6 | 532.9 | 553.5 |
| -5 | 399.8 | 415.1 | 430.6 |
| 0 | 312.2 | 323.8 | 335.5 |
| 5 | 244.7 | 253.4 | 262.2 |
| 10 | 192.6 | 199.2 | 205.9 |
| 15 | 152.3 | 157.4 | 162.5 |
| 20 | 121.2 | 125.1 | 129.0 |
| 25 | 97.00 | 100.0 | 103.0 |
| 30 | 77.95 | 80.44 | 82.95 |
| 35 | 63.03 | 65.12 | 67.21 |
| 40 | 51.27 | 53.03 | 54.79 |
| 45 | 41.96 | 43.44 | 44.93 |
| 50 | 34.54 | 35.79 | 37.05 |
| 55 | 28.58 | 29.64 | 30.72 |
| 60 | 23.77 | 24.68 | 25.60 |
| 65 | 19.87 | 20.64 | 21.43 |
| 70 | 16.68 | 17.35 | 18.02 |
| 75 | 14.06 | 14.64 | 15.22 |
| 80 | 11.90 | 12.40 | 12.90 |
| 85 | 10.11 | 10.54 | 10.98 |
| 90 | 8.619 | 8.994 | 9.376 |
| 95 | 7.373 | 7.699 | 8.032 |
| 100 | 6.327 | 6.611 | 6.903 |

Thermistor for Temperature Compensation

| Parameter | Limits | | | Units | 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

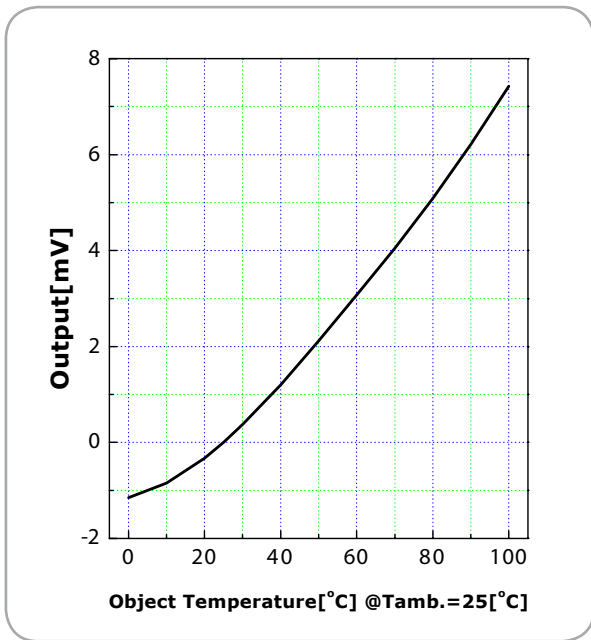
Operating Temperature

-20°C ~ 100°C

Storage Temperature

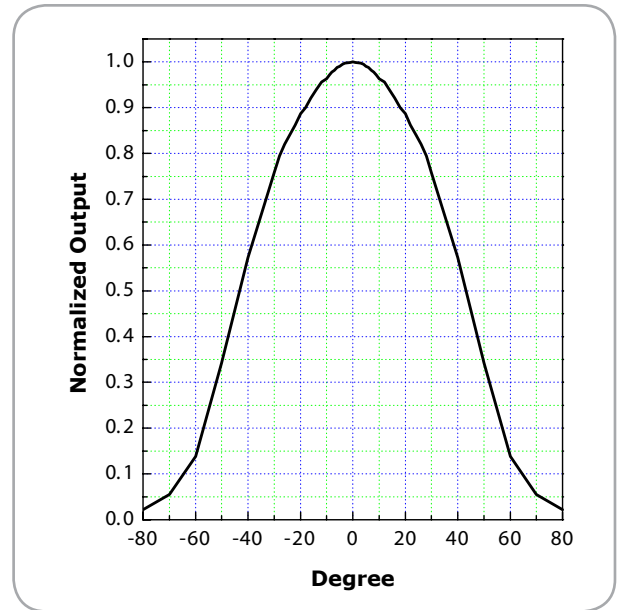
-40°C ~ 120°C

Sensitivity

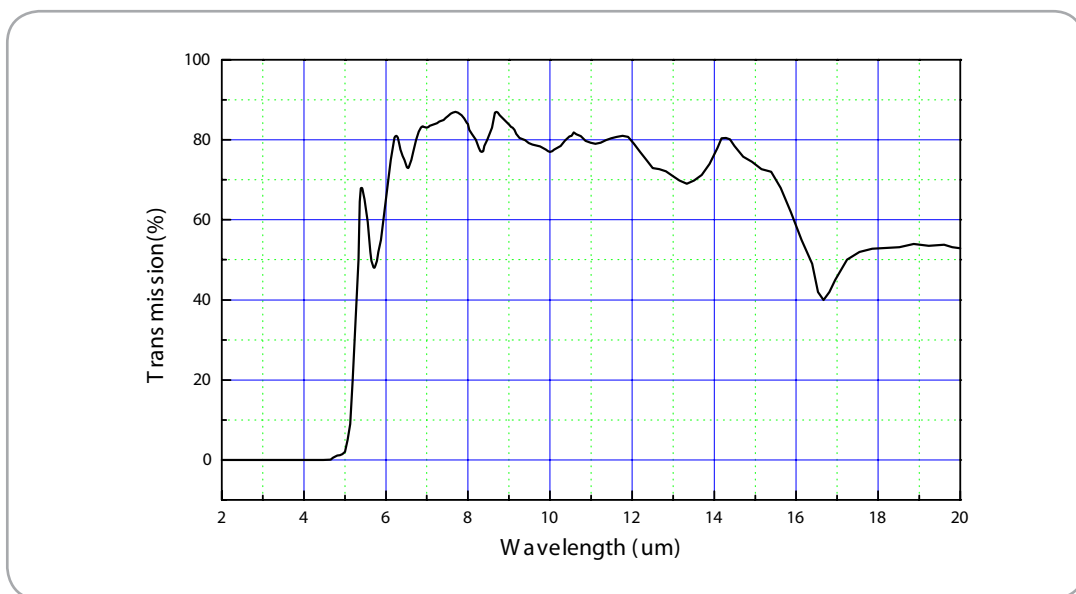


Field of View

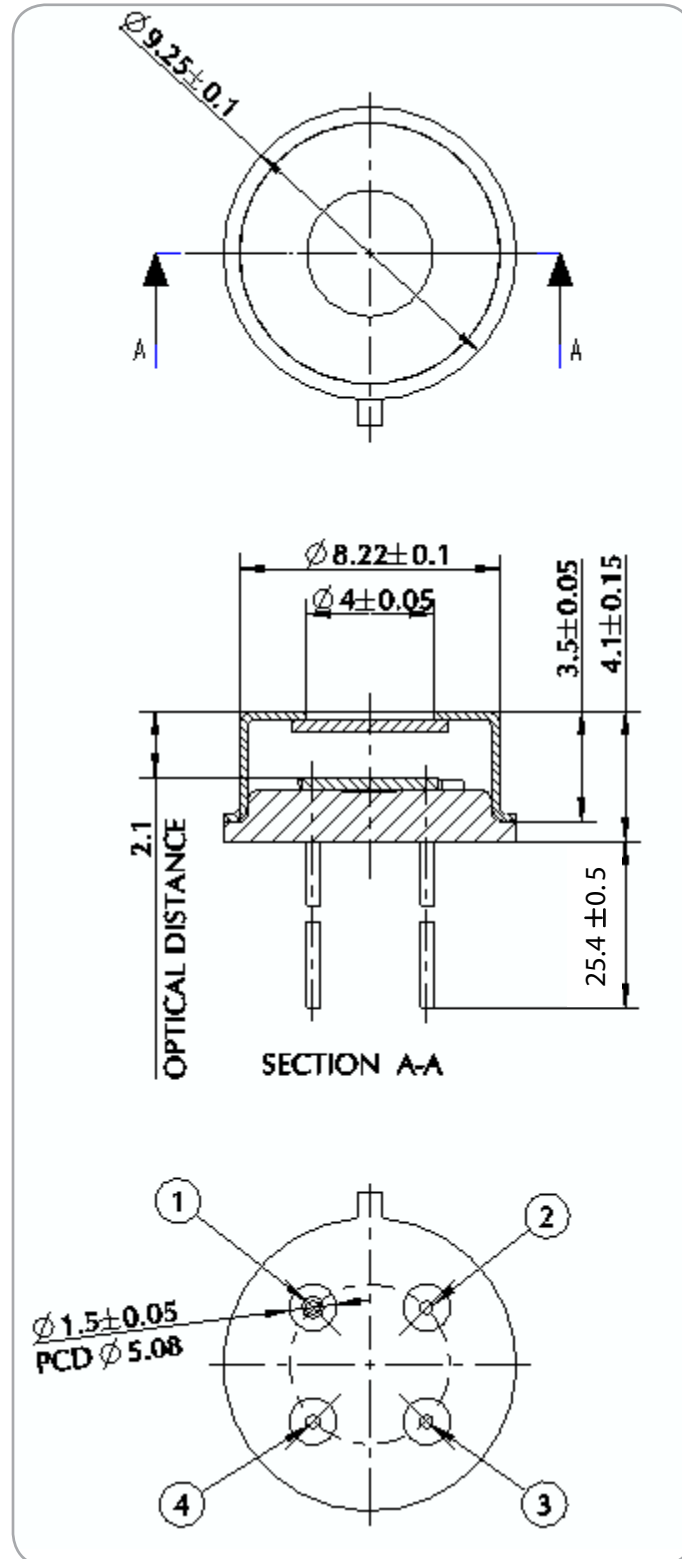
| Parameter | Limits | | | Units | Condition |
|---------------|--------|-----|-----|--------|-----------------------|
| | Min | Typ | Max | | |
| Field of View | 81 | 86 | 91 | Degree | 50% of Maximum Output |



Filter Transmission Data



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



Unit: mm

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

Mouser Electronics

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