

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-135H

## Thermopile IR Sensor



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

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# Specifications

## Thermopile Chip

Parameter	Limits			Units	Condition
	Min	Typ	Max		
Chip Size		1.8 x 1.8		mm <sup>2</sup>	
Diaphragm Size		1.4 x 1.4		mm <sup>2</sup>	
Active Area		0.7 x 0.7		mm <sup>2</sup>	
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 <sup>1/2</sup>	500K, 1 Hz
Detectivity		1.27 E08		cmHz <sup>1/2</sup> /W	500K, 1 Hz
Time Constant		25		ms	

## 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

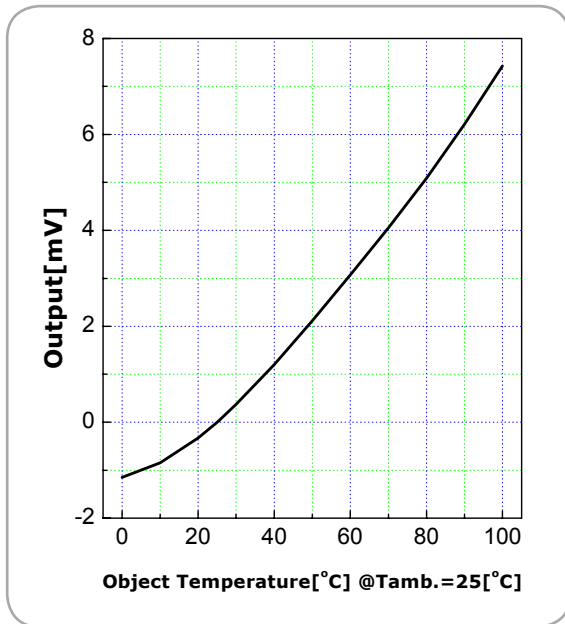
### Storage Temperature

-40°C ~ 120°C

## Thermistor Resistance (R-T Table)

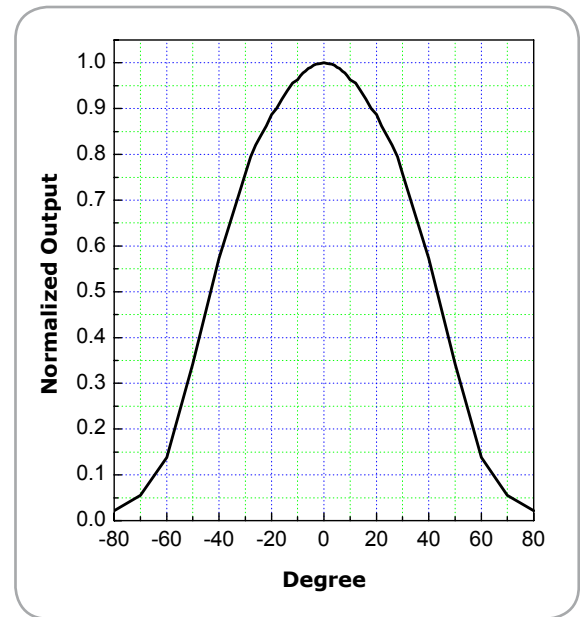
T ambient (° C)	Rmin (kΩ)	Rcent (kΩ)	Rmax (kΩ)
-20	909.1	947.9	987.3
-15	687.7	715.9	744.7
-10	524.5	545.4	566.5
-5	403.3	418.8	434.5
0	312.6	324.1	335.8
5	244.0	252.7	261.5
10	191.8	198.5	205.1
15	151.9	156.9	162.0
20	121.0	124.9	128.8
25	97.00	100.0	103.0
30	78.05	80.55	83.06
35	63.16	65.25	67.36
40	51.39	53.15	54.91
45	42.03	43.51	45.00
50	34.54	35.79	37.05
55	28.52	29.58	30.65
60	23.65	24.55	25.47
65	19.70	20.47	21.25
70	16.48	17.14	17.81
75	13.83	14.40	14.98
80	11.66	12.15	12.65
85	9.867	10.29	10.72
90	8.380	8.745	9.118
95	7.143	7.460	7.785
100	6.111	6.388	6.670

## Sensitivity

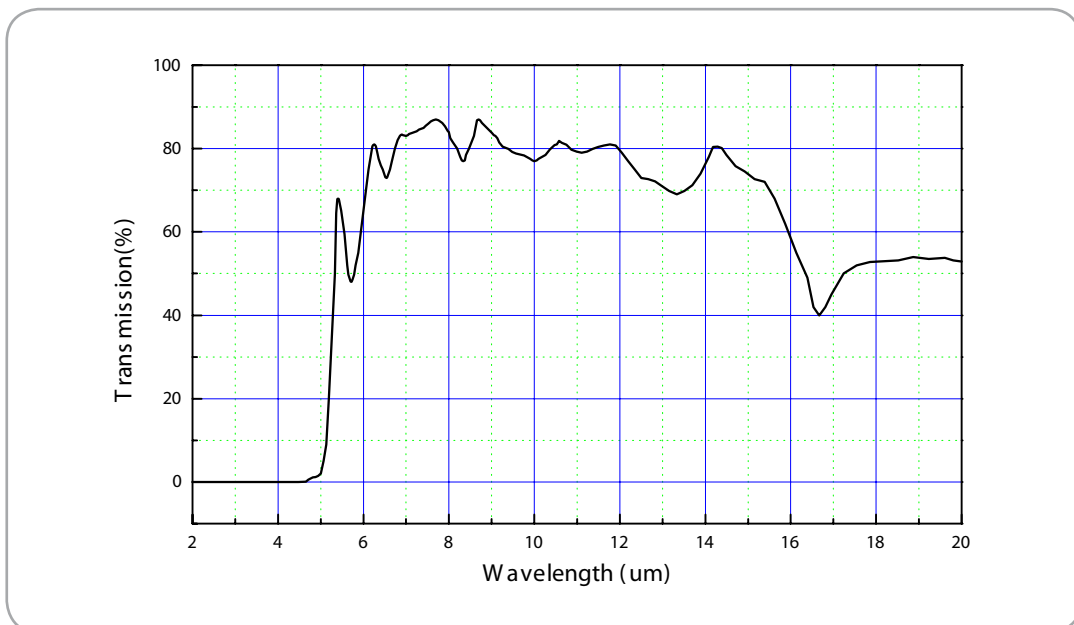


## Field of View

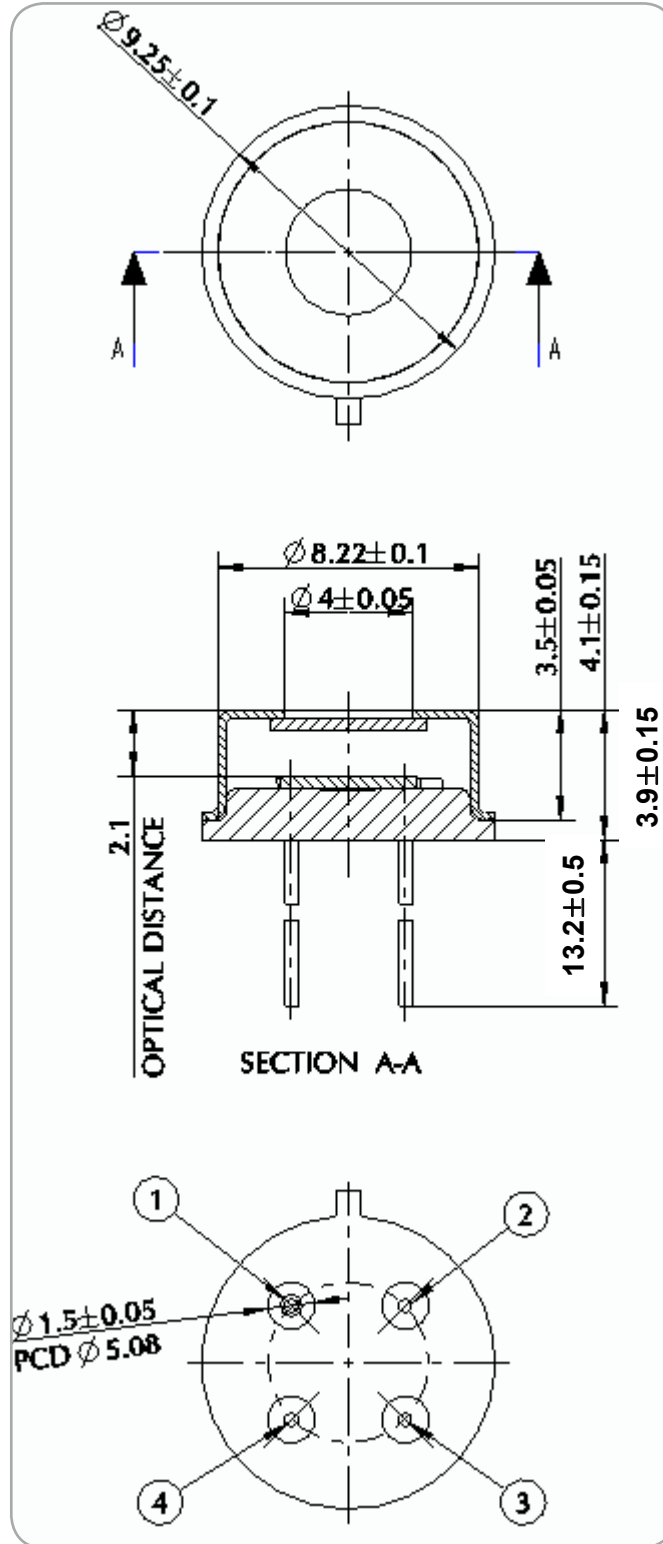
Parameter	Limits		Units	Condition	
	Min	Typ			Max
Field of View	81	86	91	Degree	50% of Maximum Output



## 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

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