



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-101T

## Thermopile Infrared (IR) Sensor



Thermometrics Thermopile Sensors are used for non-contact surface temperature measurement. The ZTP -101T model consists of thermo-elements, flat Infrared (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 and tympanic thermometers
- Occupancy detection
- HVAC
- Appliances

### 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	Min	Limits Typ	Max	Units	Condition
Chip Size		3.0 X 3.0		mm <sup>2</sup>	
Diaphragm Size		1.5 x 1.5		mm <sup>2</sup>	
Active Area		0.51 x 0.51		mm <sup>2</sup>	
Internal Resistance	140	200	260	kΩ	25°C
Resistance T.C			0.10	%/°C	
Responsivity	77	110	143	V/W	500K, 1 Hz
Responsivity T.C		-0.11		%/°C	
Noise Voltage		62		nV rms	R.M.S., 25°C
NEP		0.60		nW/Hz <sup>1/2</sup>	500K, 1 Hz
Detectivity		9.00 E07		cmHz <sup>1/2</sup> /W	500K, 1 Hz
Time Constant		22		ms	

## Thermistor for Temperature Compensation

Parameter	Limits			Units	Condition
	Min	Typ	Max		
Resistance	29.1	30	30.9	kΩ	Tol. :3%, @25°C
Beta - Value	3773	3811	3849	K	Tol. :1%, Defined at 0°C/50°C

## Absolute Maximum Ratings

### Operating Temperature

-20°C ~ 100°C

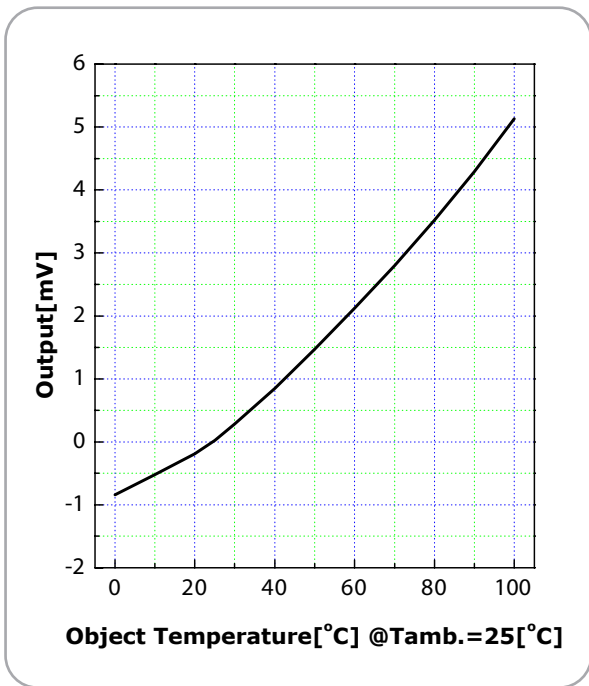
### Storage Temperature

-40°C ~ 120°C

## Thermistor Resistance (R-T Table)

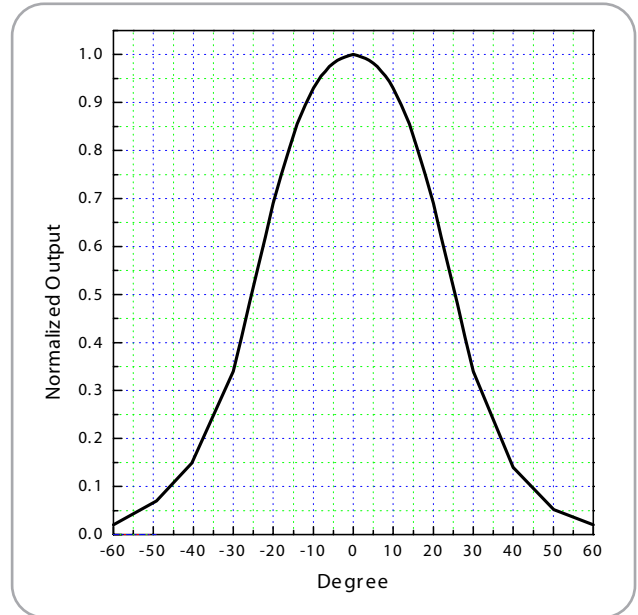
T ambient (°C)	Rmin (kΩ)	Rcent (kΩ)	Rmax (kΩ)
-20.0	255.42	269.16	283.38
-15.0	194.73	204.64	214.87
-10.0	149.73	156.94	164.34
-5.0	116.06	121.33	126.73
0.0	90.644	94.526	98.486
5.0	71.299	74.173	77.093
10.0	56.463	58.600	60.763
15.0	45.000	46.596	48.206
20.0	36.083	37.280	38.481
25.0	29.100	30.000	30.900
30.0	23.498	24.276	25.058
35.0	19.077	19.749	20.427
40.0	15.567	16.148	16.736
45.0	12.765	13.268	13.778
50.0	10.517	10.952	11.395
55.0	8.704	9.081	9.466
60.0	7.234	7.562	7.897
65.0	6.038	6.323	6.614
70.0	5.060	5.308	5.562
75.0	4.257	4.473	4.695
80.0	3.594	3.783	3.978
85.0	3.046	3.211	3.382
90.0	2.590	2.735	2.885
95.0	2.210	2.337	2.469
100.0	1.891	2.003	2.120

# Sensitivity

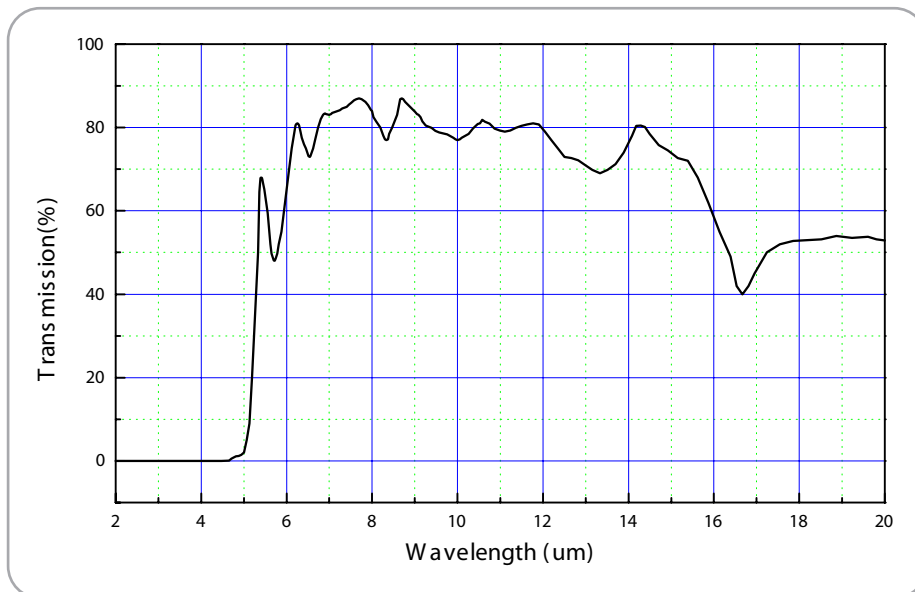


# Field of View

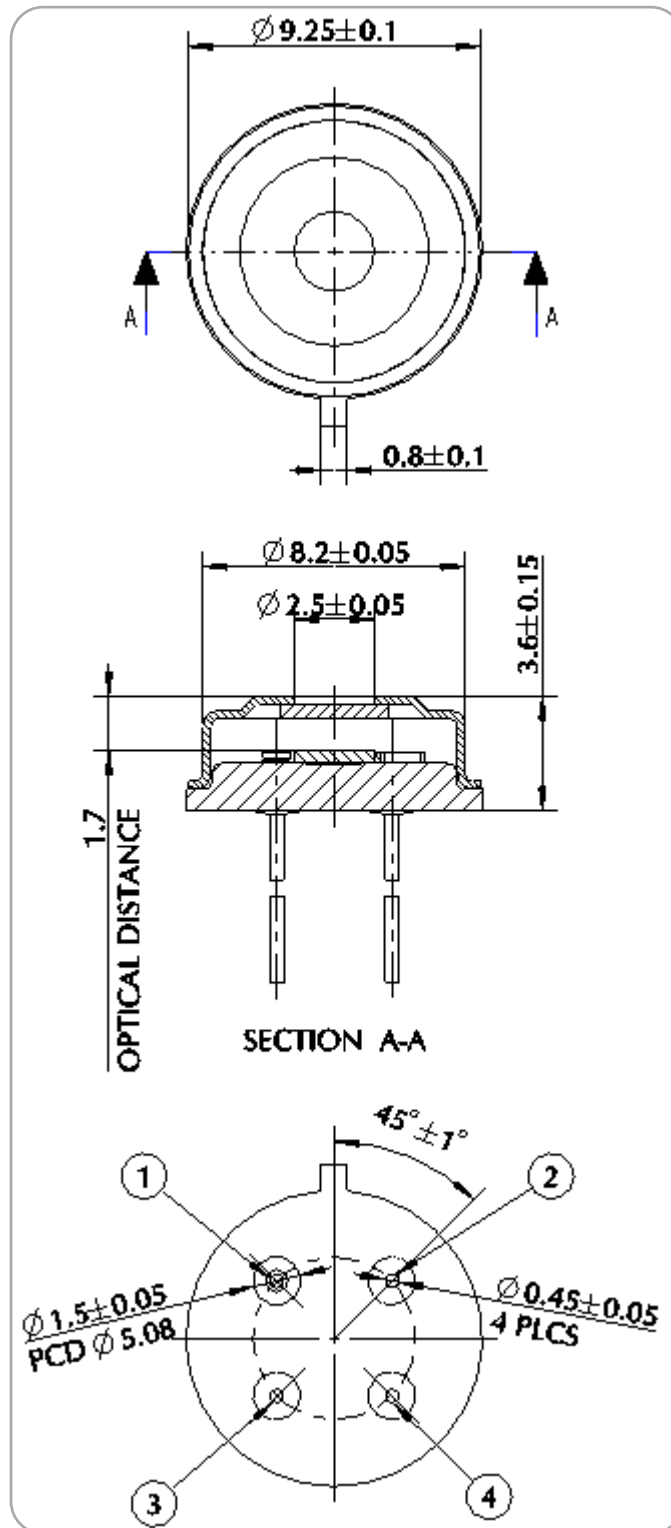
Parameter	Limits		Units	Condition	
	Min	Typ			Max
Field of View	45	50	55	Degree	50% of Maximum Output



# Transmission Data of Filter



# Outline of Sensor Packaging and Pin Arrangement (unit = mm)



Unit: mm

Pin arrangement:

1. GND Thermistor
2. Thermopile
3. GND Thermopile
4. Thermistor

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