



## Specification of Thermopile Sensor EOC-GDC-TP-1C-CH<sub>4</sub>



### Specification:

- MEMS Thermopile Element
- TO-46 Package (Single Channel)
- High Sensitivity
- 3.40  $\mu\text{m}$  NBP Filter
- High Accuracy NTC

### Application:

- NDIR CH<sub>4</sub> Gas Detection
- Downhole Safety Monitoring
- Industrial Process Control



## Absolute Maximum Rating

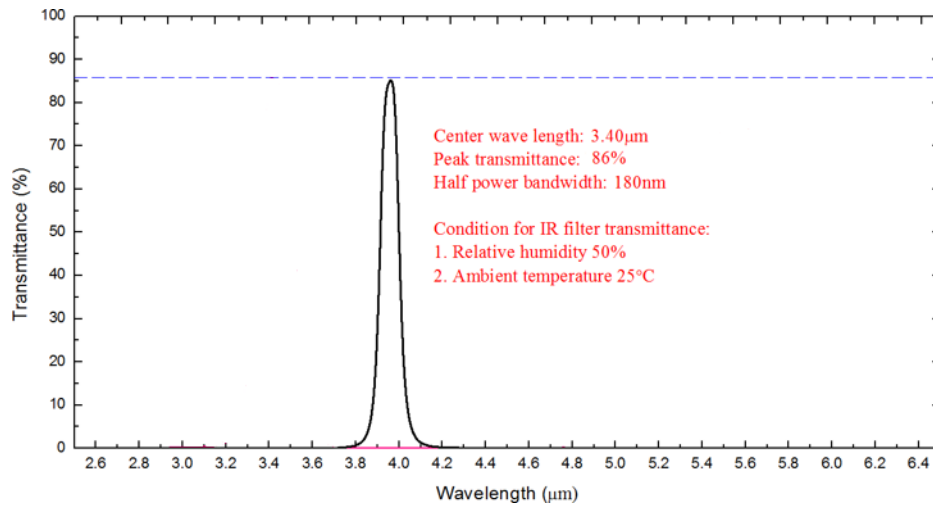
Parameter	Value	Unit
Operating Temperature	-30 to +100	°C
Storage Temperature	-40 to +125	°C

## Performance specifications

Parameter	Value	Unit	Conditions
Chip Size	$1.8 \times 1.8$	mm <sup>2</sup>	
Sensitive Area	$1.35 \times 1.35$	mm <sup>2</sup>	
Thermopile Resistance	$43 \pm 10\%$	k $\Omega$	Temp = 25 °C
Noise Voltage	$27 \pm 2$	nV/Hz <sup>1/2</sup>	Temp = 25 °C
NEP	0.62	nW/Hz <sup>1/2</sup>	500 K, 1 Hz
Responsivity	43	V/W	500 K, 5.5 $\mu$ m (Long Pass)
Temp Coefficient of Resistance	0.1	%/°C	Temp = 25~50 °C
Time Constant	32	ms	
Specific Detectivity	$6.8e+07$	cmHz <sup>1/2</sup> /W	500 K, 1 Hz
Thermistor Resistance	$100 \pm 3\%$	k $\Omega$	Temp =25 °C
Thermistor BETA-Value	$3950 \pm 1\%$	K	25/50 °C

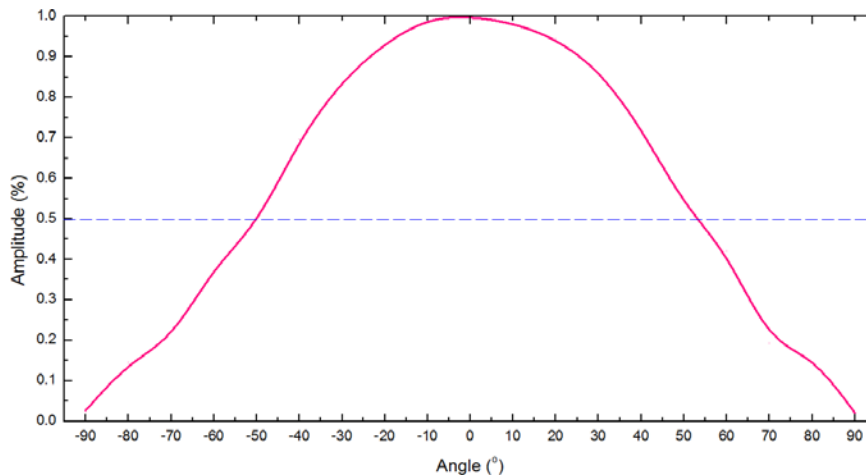
# Filter Specification

Parameter	Value	Unit	Description
Center Wavelength	3.40	$\mu\text{m}$	Narrow Band Pass
Half Power Bandwidth	180	nm	
Peak Transmission	>80	%	



# Optical Characteristic

Parameter	Value	Unit	Description
Field of View	108	$^{\circ}$	50% Maximum Signal



## Temperature VS. Resistance of NTC

T (°C)	R (kΩ)	T (°C)	R (kΩ)	T (°C)	R (kΩ)
-20	953.19	20	124.91	60	24.701
-19	900.37	21	119.41	61	23.821
-18	850.79	22	114.19	62	22.976
-17	804.21	23	109.22	63	22.166
-16	760.45	24	104.50	64	21.388
-15	719.32	25	100.00	65	20.641
-14	680.64	26	95.72	66	19.923
-13	644.27	27	91.65	67	19.234
-12	610.04	28	87.77	68	18.572
-11	577.82	29	84.07	69	17.936
-10	547.48	30	80.55	70	17.325
-9	518.90	31	77.20	71	16.738
-8	491.98	32	74.00	72	16.173
-7	466.60	33	70.95	73	15.630
-6	442.67	34	68.04	74	15.108
-5	420.11	35	65.265	75	14.605
-4	398.81	36	62.618	76	14.122
-3	378.72	37	60.092	77	13.657
-2	359.74	38	57.681	78	13.209
-1	341.83	39	55.379	79	12.779
0	324.90	40	53.180	80	12.364
1	308.90	41	51.080	81	11.965
2	293.78	42	49.073	82	11.580
3	279.48	43	47.155	83	11.210
4	265.96	44	45.321	84	10.853
5	253.16	45	43.569	85	10.509
6	241.05	46	41.892	86	10.177
7	229.58	47	40.289	87	9.858
8	218.72	48	38.755	88	9.550
9	208.44	49	37.286	89	9.253
10	198.69	50	35.881	90	8.967
11	189.45	51	34.536	91	8.691
12	180.69	52	33.248	92	8.424
13	172.38	53	32.014	93	8.167
14	164.50	54	30.832	94	7.919
15	157.02	55	29.699	95	7.680
16	149.91	56	28.614	96	7.449
17	143.17	57	27.573	97	7.226
18	136.77	58	26.576	98	7.010
19	130.69	59	25.619	99	6.802
				100	6.601

# Electrical Connection

Pin	1	2	3	4
Define	Thermopile +	NTC	Thermopile -	GND

# Mechanical Dimension

