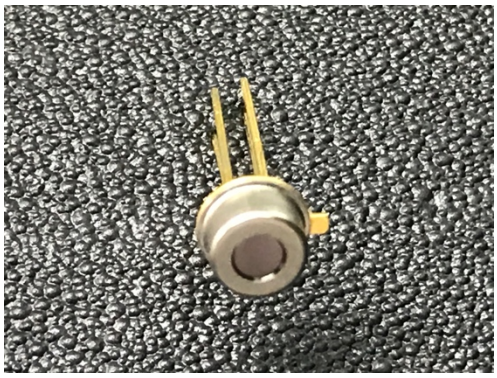
飞格光电 FIBER GRID
Jiangsu Fiber Grid CO., LTD
No.21 Building,36 Nan Wei Si Lu
Zhenjiang High-Tech New City, Zhenjiang Jiangsu China
Tel: (86) 511-8869-8558; Fax: (86) 511-8869-8557
E-mail:Sales@fiber-grid.com

Non-contact (IR) temperature sensor THERMOPILE

FG-M5514F01-00

1. Description:

- MEMS Thermopile element
- TO-46 Package
- High sensitivity
- 5.5μm LWP Filter
- High accuracy NTC



2. Applications:

- Non-contact temperature measurements
- Ear thermometers、Forehead thermometer
- Continuous temperature control of manufacturing
- Consumer applications
- Home appliance temperature measurement

3. Specification:

3.1 Absolute Maximum Ratings:

Parameter	Value	Unit
Operating temperature	-20 to +100 °C	Operating temperature
Storage Temperature	-40 to +125 °C	Storage Temperature

3.2 Performance specifications:

Parameter	Value	Unit	Conditions
Output voltage	200±30%	uV	Blackbody furnace: 500k Sensor to blackbody distance: 100mm Sensor temperature: 298k
Output voltage	1.0±30%	mV	Blackbody furnace: 310k Sensor temperature: 298k
Thermopile resistance	54±10 %	kΩ	temp=25℃
Time constant	15	ms	
Thermistor resistance	100±1%	kΩ	25℃
Thermistor BETA-value	3950±1%	K	25℃/50℃

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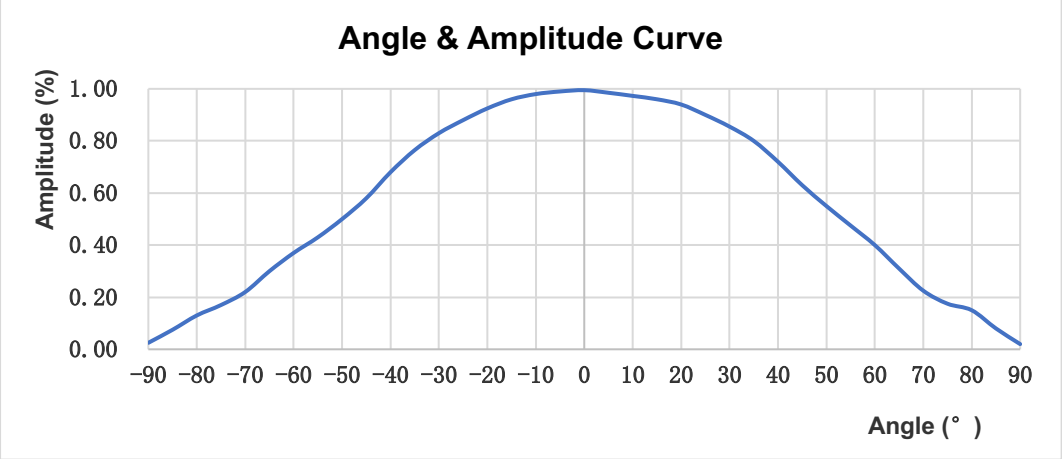
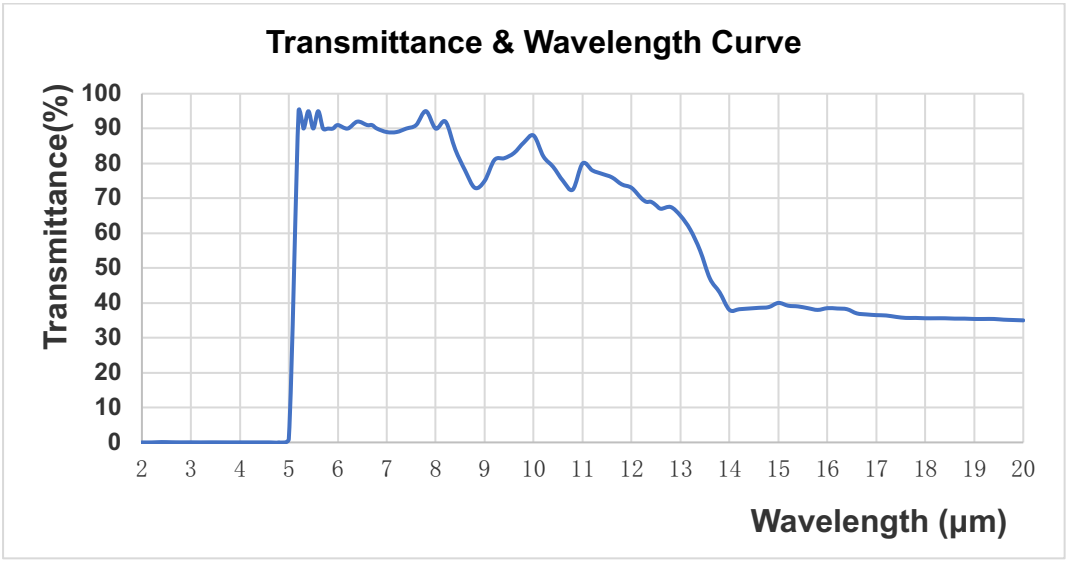
3.3 Angle & Amplitude curve:



3.4 Filter specification:

Parameter	Value	Unit	Description
Transmission Range	5.5	μm	Long wave pass
Transmission	≥ 80	%	Average 5.5-14μm
Transmission blocking average	1	%	< 5μm



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4. Reliability Data:

Item	Test conditions	Criteria
Dry heat	5000 hours at 85℃	Thermopile: ΔV ± 2% Thermistor: ΔR ± 0.5% Thermistor: ΔB ± 0.2%
Damp heat	2000 hours at 85℃ and 85% humidity	Thermopile: ΔV ± 2% Thermistor: ΔR ± 0.3% Thermistor: ΔB ± 0.2%
Temperature cycle (thermal shock)	10. cycles as below: 1. -20℃ for 30 minutes 2. Room temperature for 3 minutes 3. 100℃ for 30 minutes 4. Room temperature for 3 minutes	
Resistance to soldering heat	10s at 260℃	
Free fall	Three times natural fall to a concrete floor from 1m height	

5. Data table: (V.T Data Unit: mV)

		Sensor temperature (℃)								
		-20	-10	0	10	25	40	60	80	100
Temperature of measured object (℃)	-20	0.000	-0.510	-1.081	-1.718	-2.809	-4.078	-6.078	-8.473	-11.310
	-10	0.510	0.000	-0.571	-1.208	-2.300	-3.568	-5.568	-7.963	-10.800
	0	1.081	0.571	0.000	-0.637	-1.728	-2.997	-4.997	-7.392	-10.230
	10	1.718	1.208	0.637	0.000	-1.091	-2.360	-4.360	-6.755	-9.593
	30	3.211	2.702	2.131	1.493	0.402	-0.867	-2.867	-5.261	-8.099
	37	3.809	3.300	2.728	2.091	1.000	-0.269	-2.269	-4.664	-7.501
	40	4.078	3.568	2.997	2.360	1.269	0.000	-2.000	-4.395	-7.233
	60	6.078	5.568	4.997	4.360	3.269	2.000	0.000	-2.395	-5.233
	80	8.473	7.963	7.392	6.755	5.664	4.395	2.395	0.000	-2.838
	100	11.310	10.800	10.230	9.593	8.501	7.233	5.233	2.838	0.000
	120	14.640	14.130	13.560	12.930	11.830	10.570	8.565	6.171	3.333
	140	18.530	18.020	17.450	16.810	15.720	14.450	12.450	10.050	7.215
	160	23.010	22.510	21.930	21.300	20.210	18.940	16.940	14.540	11.700
	180	28.170	27.660	27.090	26.450	25.360	24.090	22.090	19.700	16.860
	200	34.060	33.550	32.980	32.340	31.250	29.980	27.960	25.580	22.750

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6. Temperature with Resistance of NTC (R.T Data):

Temp (℃)	R_st (KΩ)	Temp (℃)	R_st (KΩ)	Temp (℃)	R_st (KΩ)
-20	965.8195	21	119.4230	62	22.9660
-19	911.5533	22	114.1960	63	22.1542
-18	860.6741	23	109.2256	64	21.3749
-17	812.9499	24	104.4979	65	20.6267
-16	768.1666	25	100.0000	66	19.9081
-15	726.1259	26	95.7194	67	19.2179
-14	686.6434	27	91.6446	68	18.5547
-13	649.5486	28	87.7646	69	17.9175
-12	614.6833	29	84.0692	70	17.3052
-11	581.9004	30	80.5486	71	16.7165
-10	551.0637	31	77.1937	72	16.1505
-9	522.0463	32	73.9959	73	15.6063
-8	494.7305	33	70.9470	74	15.0829
-7	469.0067	34	68.0395	75	14.5794
-6	444.7733	35	65.2660	76	14.0950
-5	421.9353	36	62.6197	77	13.6288
-4	400.4045	37	60.0941	78	13.1802
-3	380.0988	38	57.6832	79	12.7483
-2	360.9416	39	55.3812	80	12.3325
-1	342.8615	40	53.1827	81	11.9321
0	325.7920	41	51.0825	82	11.5465
1	309.6710	42	49.0757	83	11.1750
2	294.4406	43	47.1578	84	10.8171
3	280.0466	44	45.3244	85	10.4723
4	266.4385	45	43.5713	86	10.1399
5	253.5692	46	41.8947	87	9.8196
6	241.3946	47	40.2908	88	9.5108
7	229.8733	48	38.7563	89	9.2130
8	218.9668	49	37.2876	90	8.9258
9	208.6389	50	35.8818	91	8.6488
10	198.8560	51	34.5358	92	8.3817
11	189.5862	52	33.2469	93	8.1239
12	180.8000	53	32.0122	94	7.8751
13	172.4696	54	30.8294	95	7.6350
14	164.5689	55	29.6959	96	7.4033
15	157.0735	56	28.6095	97	7.1796
16	149.9605	57	27.5681	98	6.9636
17	143.2084	58	26.5695	99	6.7550
18	136.7970	59	25.6118	100	6.5535
19	130.7073	60	24.6931	101	6.3589
20	124.9216	61	23.8118	102	6.1709

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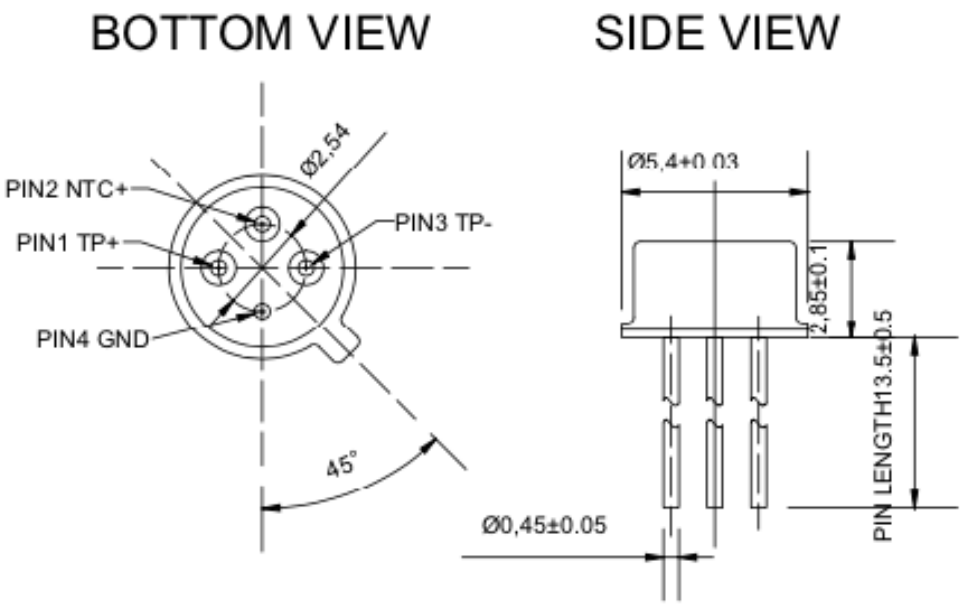
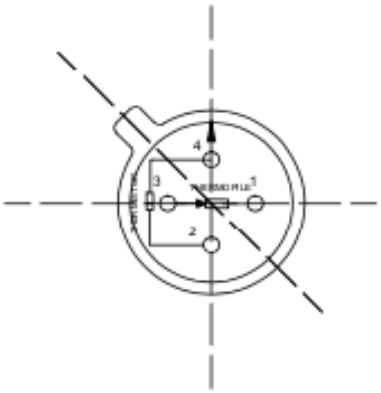
7. Electrical connections and Mechanical dimensions:



CONNECTED TO HOUSING



PIN	DEFINE
1	Thermopile+
2	NTC
3	Thermopile-
4	GND

8. Contact us:

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