

**Resch**

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Temperature Sensor

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STP583F59

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Resch electronic co., LTD.

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## STP583F59 Thermopile sensor

The STP583F59 is a new type CMOS compatible thermopile sensor, featuring good sensitivity, high reproducibility, reliability and small temperature coefficient of sensitivity. A Thermistor chip is also provided inside the TO-39 package for ambient temperature reference.

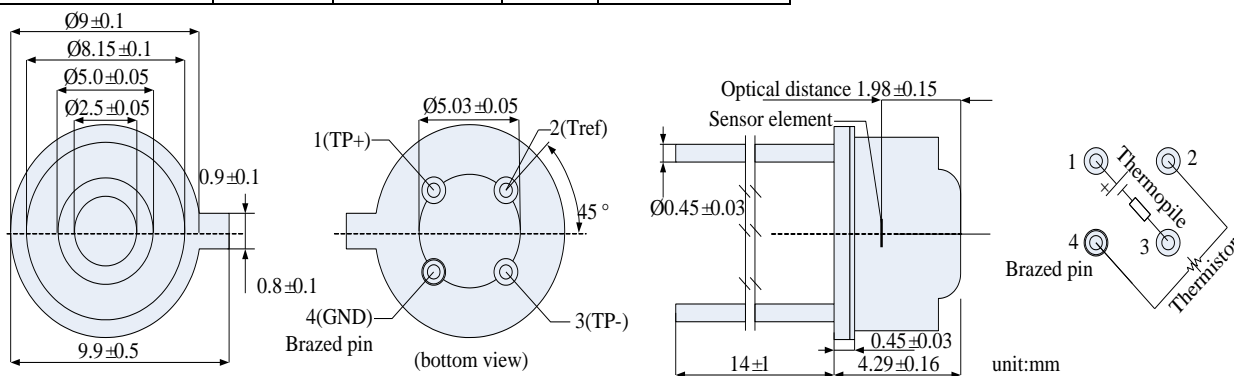
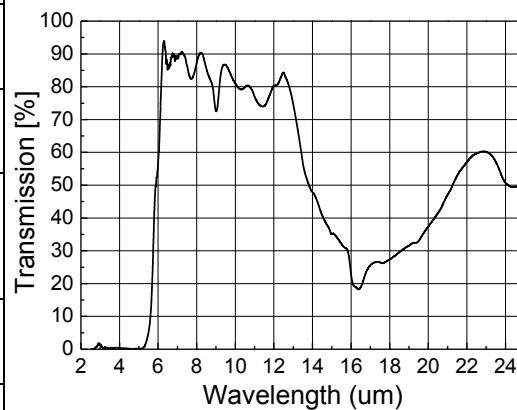
### Features

- TO-39 metal housing
- Thermistor temperature reference included
- High sensitivity

### Applications

- Non-contact temperature measurements
- General purpose thermometry
- IR based gas sensing

| Parameter             | Symbol            | Typ                   | Units                  | Remark                          |
|-----------------------|-------------------|-----------------------|------------------------|---------------------------------|
| Sensitive area        | A                 | 1                     | mm <sup>2</sup>        | Absorber area                   |
| Thermopile resistance | R <sub>TP</sub>   | 75 ± 20               | K Ω                    |                                 |
| Responsivity          | R                 | 210 ± 50              | V/W                    | 500K, with filter cut-on 5.5 um |
| Time constant         | τ                 | 15                    | ms                     |                                 |
| Noise voltage         | V <sub>N</sub>    | 35.2                  | nV/H z <sup>1/2</sup>  | 25° C                           |
| Specific detectivity  | D*                | 2.1 * 10 <sup>8</sup> | cmHz <sup>1/2</sup> /W | 25° C                           |
| TC of resistance      | TC <sub>RTP</sub> | 0.08 ± 0.04           | %/K                    | -40° C ~100° C ambient          |
| Field of view         | Fov               | 90                    | Degrees                | At 50% intensity points         |
| Thermistor resistance |                   | 100 ± 5               | K Ω                    | 25° C                           |
| β-value               |                   | 3950 ± 20             | K                      | Defined at 25° C/50° C          |



| Temp(° C) | R_st (K Ω) | Temp(° C) | R_st (K Ω) | Temp(° C) | R_st (K Ω) |
|-----------|------------|-----------|------------|-----------|------------|
| -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     |