



General Description

The STP9CF59H infrared thermopile sensor for non-contact temperature measurement is a thermopile sensor having an output signal voltage directly proportional to the incident infrared (IR) radiation power. Thanks to the anti-electromagnetic interference design, STP9CF59H is robust for all kinds of application environment.

The STP9CF59H comprising a new type CMOS compatible thermopile sensor chip features good sensitivity, small temperature coefficient of sensitivity as well as high reproducibility and reliability. A high-precision thermistor reference chip is also integrated for ambient temperature compensation.

Features and Benefits

- High responsivity, High Signal-Noise ratio
- Small size, high reliability, 4-pin metal housing TO-5
- Operating Temperature Range: -40°C to $+125^{\circ}\text{C}$
- Anti-electromagnetic interference

Applications

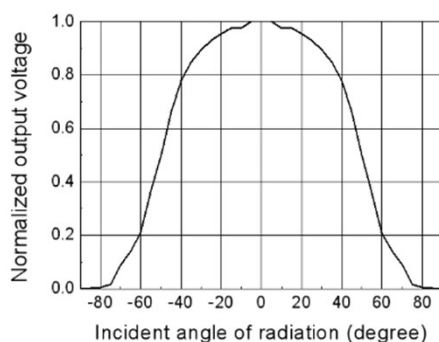
- Non-contact temperature measurement
- Pyrometer, Thermometer

Electrical Characteristics_(TA = +25°C, unless otherwise noted.)

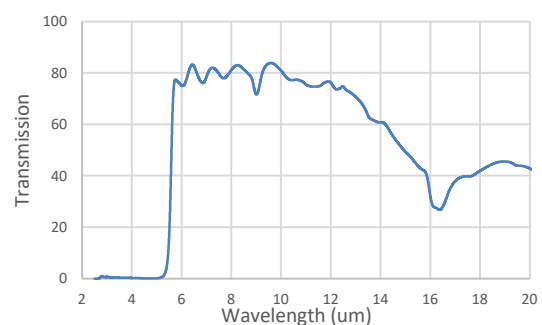
| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-------------------|-----------------------|---|------|-------------------|-------|------------------------|
| R_{TP} | Thermopile resistance | | 55 | 75 | 95 | K Ω |
| R | Responsivity | 500K, with filter cut-on 5.5 μm | 160 | 210 | 260 | V/W |
| τ | Time constant | | | 15 | | ms |
| V_N | Noise voltage | Johnson-noise | | 35.2 | | nV/Hz ^{1/2} |
| D^* | Specific detectivity | | | 2.1×10^8 | | cmHz ^{1/2} /W |
| FOV | Field of View | At 50% intensity points | 85 | 90 | 95 | $^{\circ}$ |
| TC_{RTP} | TC of resistance | -40°C ~ 100°C | 400 | 800 | 1200 | ppm/K |
| <i>Thermistor</i> | | | | | | |
| R_{th} | Thermistor resistance | 25°C | 99.4 | 100 | 100.6 | K Ω |
| β | B-value | | 3930 | 3950 | 3970 | |

Optical Characteristics

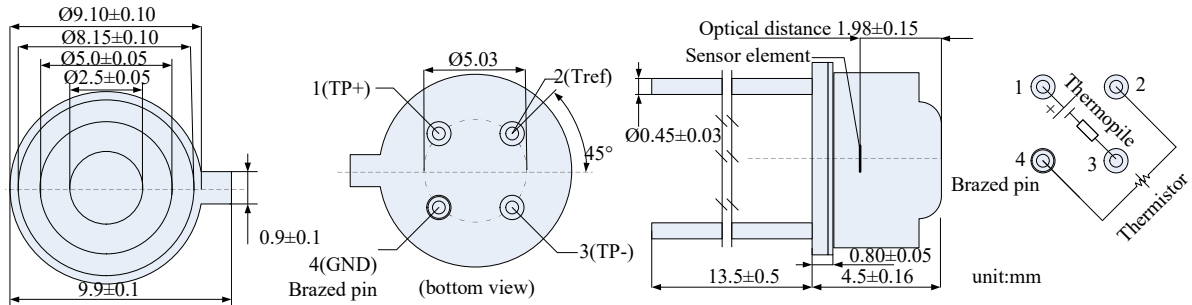
Optical characteristics



Filter parameters



Mechanical Drawings



Revision History

| Revision Number | Release Date | Description |
|-----------------|--------------|-----------------|
| Rev1 | 2021/3/12 | Initial Release |