

|                                 |                         |   |
|---------------------------------|-------------------------|---|
| <b>HEIMANN Sensor GmbH</b>      |                         | Product Specification:<br><b>Thermopile Sensor HMS J11 F5.5</b> |
| Author(s): M. Schulze, M. Simon | Rev.: R 01 / 10.08.2005 | Page 1 of 5   |

# Specification Thermopile Sensor HMS J11 F5.5

*Part No. 1001*

**R 01**

## Revision History

| Version | Date       | Remarks                         |
|---------|------------|---------------------------------|
| R 01    | 10.08.2005 | 1. Draft of HEIMANN Sensor GmbH |
|         |            |                                 |
|         |            |                                 |
|         |            |                                 |

|                                 |                         |   |  |
|---------------------------------|-------------------------|---|--|
| <b>HEIMANN Sensor GmbH</b>      |                         | Product Specification:<br><b>Thermopile Sensor HMS J11 F5.5</b> |  |
| Author(s): M. Schulze, M. Simon | Rev.: R 01 / 10.08.2005 | Page 2 of 5   |  |

## 1. Purpose, Scope

The thermopile infrared sensors from Heimann Sensor, comprising a new type CMOS compatible sensor chip plus a thermistor reference chip, featuring good sensitivity, small temperature coefficient of sensitivity as well as high reproducibility and reliability.

The sensors will be available in standard transistor outline packages in different sizes, equipped with an IR transmitting filter window (transmission curve as shown below).

## 2. Absolute Maximum Ratings

| Parameter             | Symbol | Limits |      |     | Units | Conditions |
|-----------------------|--------|--------|------|-----|-------|------------|
|                       |        | Min    | Typ. | Max |       |            |
| storage temperature   |        | -40    |      | 100 | °C    |            |
| operating temperature |        | -20    |      | 100 | °C    |            |

## 3. General and Electrical Parameter Thermopile

| Parameter           | Symbol                | Limits |                     |     | Units           | Conditions              |
|---------------------|-----------------------|--------|---------------------|-----|-----------------|-------------------------|
|                     |                       | Min    | Typ                 | Max |                 |                         |
| element size        |                       |        | 0.6*0.6             |     | mm <sup>2</sup> | absorbing area          |
| resistance          | R <sub>TS</sub>       | 56     | 86                  | 116 | kΩ              | -40°C to 100°C          |
| voltage sensitivity | S <sub>V</sub>        |        | 56                  |     | V/W             | without filter          |
| voltage sensitivity | S <sub>V</sub> (F5.5) | 20     | 35                  | 50  | V/W             | filter F5.5, 100°C, 1Hz |
| time constant       | τ                     |        | 5                   | 10  | ms              |                         |
| noise voltage       | V <sub>RMS</sub>      |        | 36                  |     | nV/√Hz          | r.m.s., 25°C            |
| detectivity         | D*                    |        | 9.3*10 <sup>7</sup> |     | cm√Hz/W         | without filter          |
| detectivity         | D* (F5.5)             |        | 5.8*10 <sup>7</sup> |     | cm√Hz/W         | filter F5.5, 100°C, 1Hz |

## 4. General and Electrical Parameter Thermistor

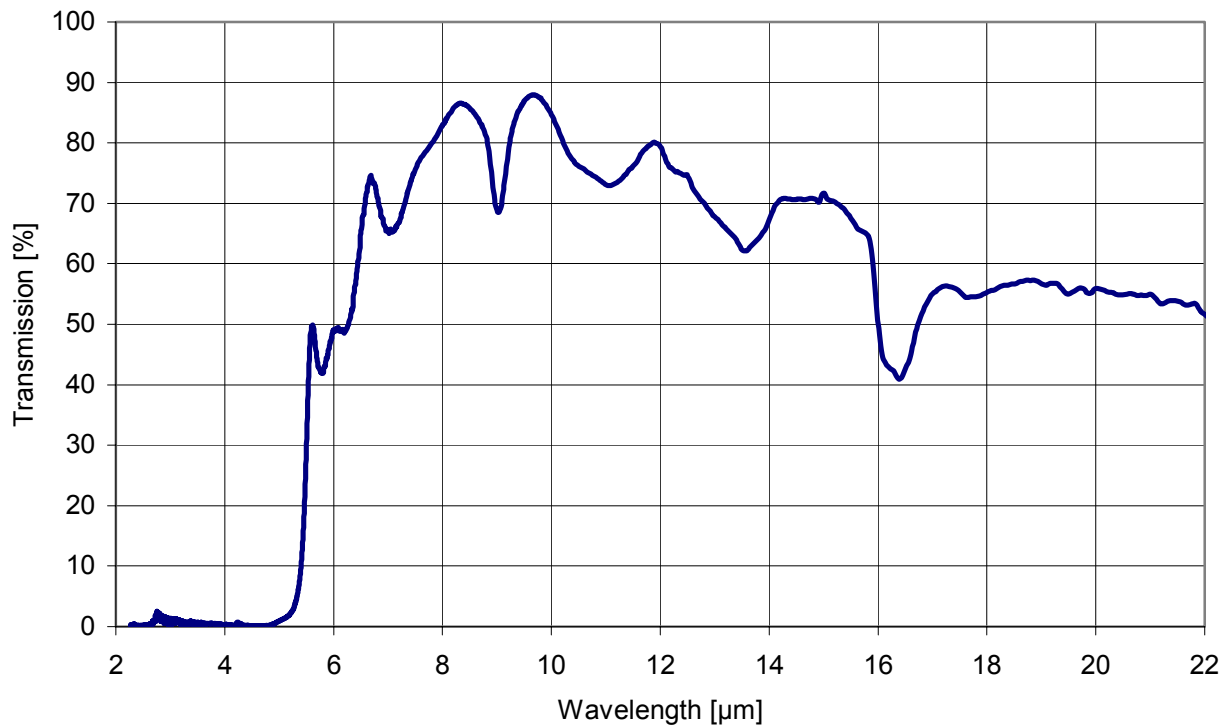
| Type       | Thermistor 100kΩ |        |      |      |       |            |
|------------|------------------|--------|------|------|-------|------------|
| Parameter  | Symbol           | Limits |      |      | Units | Conditions |
|            |                  | Min    | Typ  | Max  |       |            |
| resistance | R <sub>TH</sub>  | 95     | 100  | 105  | kΩ    | 25°C       |
| BETA-value | β                | 3900   | 3940 | 3980 | K     | 25°C/50°C  |

|        |                           |                           |                           |
|--------|---------------------------|---------------------------|---------------------------|
| T / °C | R <sub>th_min</sub> / Ohm | R <sub>th_nom</sub> / Ohm | R <sub>th_max</sub> / Ohm |
|--------|---------------------------|---------------------------|---------------------------|

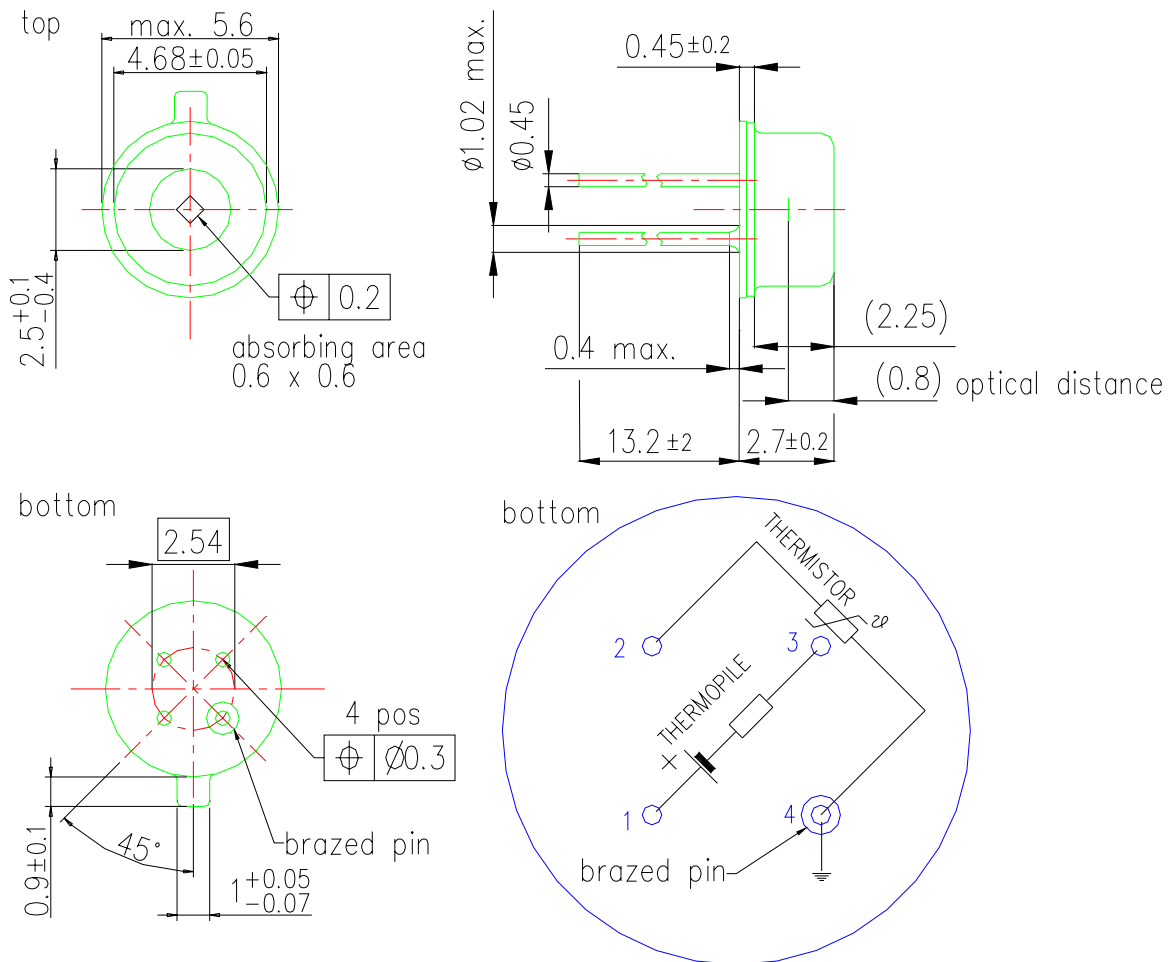
|     |         |         |         |
|-----|---------|---------|---------|
| -30 | 1557900 | 1655000 | 1753100 |
| -25 | 1163320 | 1234000 | 1306680 |
| -20 | 875826  | 928700  | 981974  |
| -15 | 665010  | 704500  | 744190  |
| -10 | 508730  | 538500  | 568370  |
| -5  | 392108  | 414600  | 437292  |
| 0   | 304466  | 321700  | 338934  |
| 5   | 238072  | 251400  | 264728  |
| 10  | 187444  | 197800  | 208056  |
| 15  | 148568  | 156600  | 164632  |
| 20  | 118404  | 124800  | 131096  |
| 25  | 95000   | 100000  | 105000  |
| 30  | 76537   | 80630   | 84713   |
| 35  | 62032   | 65380   | 68738   |
| 40  | 50543   | 53310   | 56077   |
| 45  | 41386   | 43680   | 45984   |
| 50  | 34070   | 35980   | 37890   |
| 55  | 28174   | 29770   | 31366   |
| 60  | 23405   | 24750   | 26095   |
| 65  | 19536   | 20670   | 21804   |
| 70  | 16383   | 17340   | 18297   |
| 75  | 13788   | 14600   | 15422   |
| 80  | 11653   | 12350   | 13047   |
| 85  | 9890    | 10480   | 11080   |
| 90  | 8421    | 8930    | 9444    |
| 95  | 7197    | 7635    | 8076    |
| 100 | 6172    | 6551    | 6935    |

**5. Filter Characteristics**

| Filter F5.5          |                |       |     |         |                             |
|----------------------|----------------|-------|-----|---------|-----------------------------|
| Parameter            | Limits         |       |     | Units   | Conditions                  |
|                      | Min            | Typ   | Max |         |                             |
| average transmission | 70             |       |     | %       | 7.5 $\mu$ m to 13.5 $\mu$ m |
| average transmission |                |       | 1   | %       | visual to 5 $\mu$ m         |
| cut on               | 5.2            | 5.5   | 5.8 | $\mu$ m | 25°C                        |
| filter thickness     |                | 0.525 |     |         |                             |
| filter material      | silicon coated |       |     |         |                             |



**6. Drawing and Pin Assignment**



**6. Liability**

Changes or modifications at the product which haven't influence to the performance and/or quality of the device haven't to be announced to the customers in advance. Customers are requested to consult with Heimann Sensor representatives before the use of Heimann Sensor products in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage. The company or their representatives will not be responsible for damage arising from such use without prior approval.