



# P14 Thermo

## Capacitive Humidity- and Temperature Sensor



### Product

The P14 Thermo was designed especially for applications in dew point applications and humidity generators. The favourable one chip solution consists of a capacitive humidity sensor, based upon the famous P14 sensor, together with a heating element which is also a valid Pt100- respectively Pt1000-sensor, at the same time. The achieved outstanding accuracy due to optimal thermal coupling makes your application top of the edge in the industry. The intrinsic high chemical resistance of the P14 together with its very high dew point temperature and operating temperature clearly put this sensor clearly to best in class.

### Advantages

- Application in dew point applications and humidity generators
- Heat and measure fast and contamination free
- Heat and measure comfortably even under dewing conditions
- Humidity sensor + Pt100- respectively Pt1000-element on one chip
- Outstanding accuracy due to optimal thermal coupling
- High resistance to various chemicals
  - Dewing resistant – fast recovering time after dewing, also at very high dewpoint temperatures
- High operating temperature
- Linear characteristic curve
- RoHs conform

### Technical Data

|  | Wired   | SMD   |
|--|---|---|
|  |  |  |
| Temperature Sensor:  | Pt100 Ω (2 x DIN EN 60751, cl. B),  | Pt1000 Ω (DIN EN 60751, cl. B), optional Pt100 Ω                                      |
| Humidity Operating Range:  | 0 ... 100% RH<br>(max. dewpoint 85°C)   | 0 ... 100% RH<br>(max. dewpoint 85°C)   |
| Operating Temperature Range:   | -50 ... +150°C  | -50 ... +150°C  |
| Capacitance<br>(at 23°C and 30% RH):   | 150 pF ± 50 pF  | 180 pF ± 50 pF  |
| Sensitivity (15 ... 90% RH):   | 0,25 pF / % RH  | 0,3 pF / % RH   |
| Loss Factor (at 23°C, at 10 kHz, at 90% RH.):                                  | < 0,01  | < 0,01  |
| Nonlinearity (15 ... 90% RH at 23°C, after one point calibration):             | < ± 1,5% RH   | < ± 1,5% RH   |
| Hysteresis: 1h, 20% RH at 23°C<br>→ 1h, 85% RH at 70°C<br>→ 1h, 20% RH at 23°C | < 1,5% RH   | < 1,5% RH   |
| Response Time T <sub>63</sub> :  | < 6 s (50% RH → 0% RH) at 23°C  | < 6 s (50% RH → 0% RH) at 23°C  |



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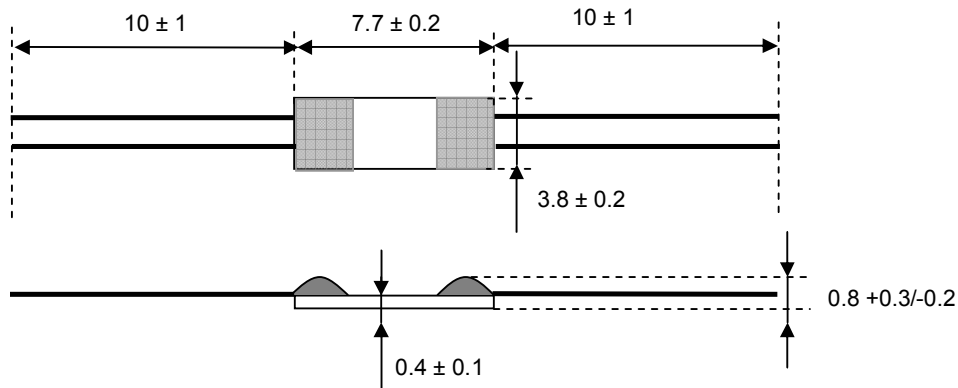
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## Technical Data

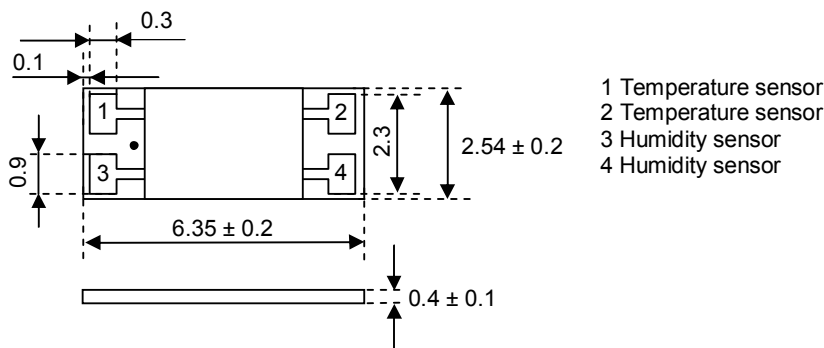
|                            | Wired                              | SMD                                |
|----------------------------|------------------------------------|------------------------------------|
| Frequency Range:           | 1 ... 100 kHz (recommend 10 kHz)   | 1... 100 kHz (recommend 10 kHz)    |
| Maximum Operating Voltage: | < 12 Vpp AC                        | < 12 Vpp AC                        |
| Signal Form:               | alternating signal without DC bias | alternating signal without DC bias |
| Connectors:                | Wires or customer specific         | SMD, reflow compatible             |

## Construction Sizes

Wired (in mm)



SMD (in mm)



All mechanical dimensions are valid at 25°C ambient temperature, if not differently indicated. ■ All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics. ■ Technical changes without previous announcement as well as mistakes reserve. ■ The information on this data sheet was examined carefully and will be accepted as correct. No liability in case of mistakes. ■ Load with extreme values during a longer period can affect the reliability. All rights reserved. The material contained herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner. Typing errors and mistakes reserved. Product specifications are subject to change without notice.



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