

DATA SHEET

2322 691 90001
Humidity sensor

Product specification
Supersedes data of November 1996
File under BCcomponents, BC02

1999 May 17

Humidity sensor

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APPLICATIONS

- Humidity measurements in electronic hygrometers for domestic use
- Self-regulating air humidifiers, etc.

DESCRIPTION

This capacitive atmospheric humidity sensor consists of a non-conductive foil, which is covered on both sides with a layer of gold. The dielectric constant of the foil changes as a function of the relative humidity of the ambient atmosphere and, accordingly, the capacitance value of the sensor is a measure for relative humidity. The foil is clamped between contact springs and assembled in a plastic housing. It is provided with two connecting pins which fit printed-circuit boards with a grid pitch of 2.54 mm, provision is also made for fastening with 3 mm bolts. The characteristics are not affected by incidental water condensation on the sensor foil. It should not be exposed to either acetone or chlorine vapours.

QUICK REFERENCE DATA

| PARAMETER | VALUE | UNIT |
|--|------------|--------|
| Humidity range (RH) | 10 to 90 | % |
| Capacitance at +25 °C; 43% RH; 100 kHz | 122 ±15% | pF |
| Sensitivity between 12 and 75% RH | 0.4 ±0.05 | pF/%RH |
| Frequency | 1 to 1000 | kHz |
| Maximum AC or DC voltage | 15 | V |
| Storage humidity range (RH) | 0 to 100 | % |
| Ambient temperature range: | | |
| operating | 0 to +85 | °C |
| storage | -25 to +85 | °C |
| Drop test: | | |
| height of free fall | 1 | m |
| Mass | ≈1.3 | g |

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MECHANICAL DATA

Marking

No marking.

Mounting

The device can be soldered directly on to a printed-circuit board or fastened with 3 mm bolts.

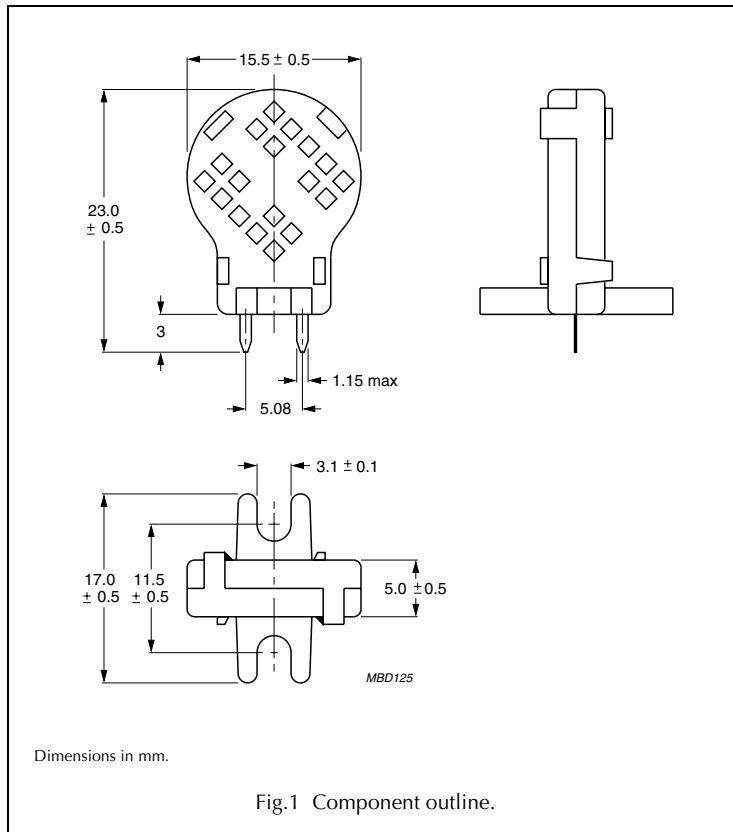
Soldering

Solderability: $\leq 240\text{ }^{\circ}\text{C}$; $\leq 4\text{ s}$.

Resistance to heat: $\leq 240\text{ }^{\circ}\text{C}$; $\leq 4\text{ s}$.

Robustness of terminations

Tensile strength: 10 N.



Humidity sensor**2322 691 90001****ELECTRICAL CHARACTERISTICS**

Unless otherwise stated, measurements are in accordance with "IEC publication 60539".
Stability is in accordance with "CECC 43 000" and "IEC 60068-2".

| PARAMETER | VALUE | UNIT |
|--|------------|--------|
| Humidity range (RH) | 10 to 90 | % |
| Capacitance at +25 °C; 43% RH; 100 kHz | 122 ±15% | pF |
| Tan δ at +25 °C; 100 kHz; 43% RH | ≤0.035 | |
| Sensitivity between 12 and 75% RH | 0.4 ±0.05 | pF/%RH |
| Frequency range | 1 to 1000 | kHz |
| Temperature dependence | 0.1 | %RH/K |
| Response time in minutes (to 90% of indicated RH change at +25 °C, in circulating air): | | |
| between 10 and 43% RH | <3 | |
| between 43 and 90% RH | <5 | |
| Hysteresis (for RH excursion of 10 to 90 to 10%) | ≈3 | % |
| Maximum AC or DC voltage | 15 | V |
| Storage humidity range (RH) | 0 to 100 | % |
| Ambient temperature range: | | |
| operating | 0 to +85 | °C |
| storage | -25 to +85 | °C |
| Mass | ≈1.3 | g |

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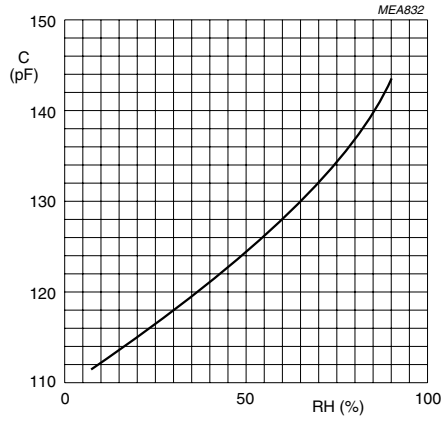


Fig.2 Typical capacitance as a function of relative humidity.