

## Humidity sensor

**2322 691 90001**

### 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

Humidity sensor

2322 691 90001

**MECHANICAL DATA**

**Marking**

PHILIPS H1.

**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.

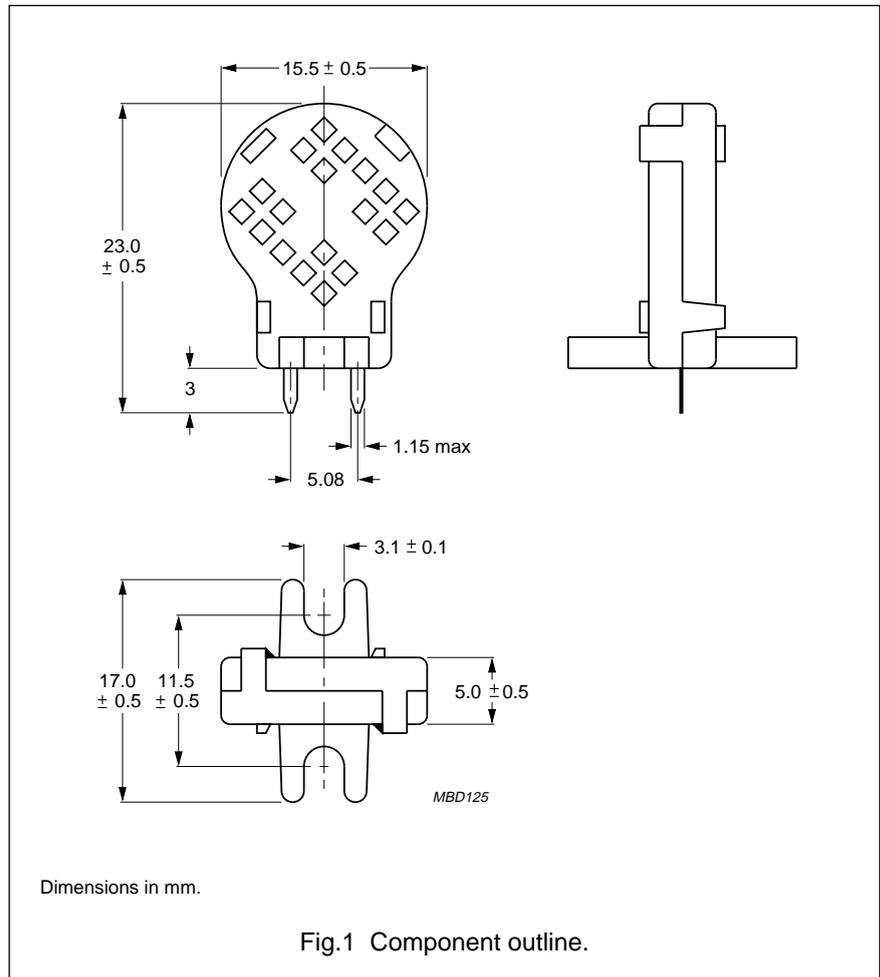


Fig.1 Component outline.

Humidity sensor

2322 691 90001

**ELECTRICAL CHARACTERISTICS**

Unless otherwise stated, measurements are in accordance with "IEC publication 539". Stability is in accordance with "CECC 43000" and "IEC 68-2".

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

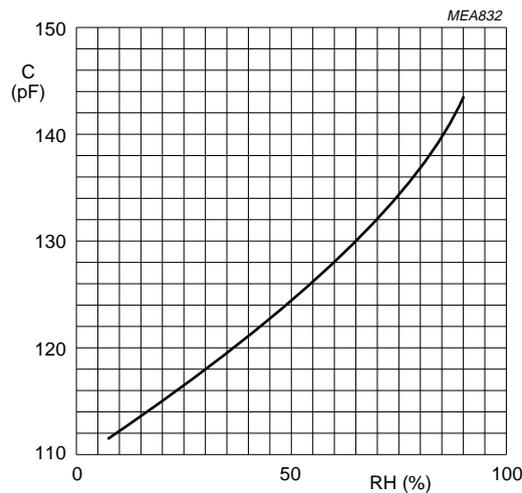


Fig.2 Typical capacitance as a function of relative humidity.