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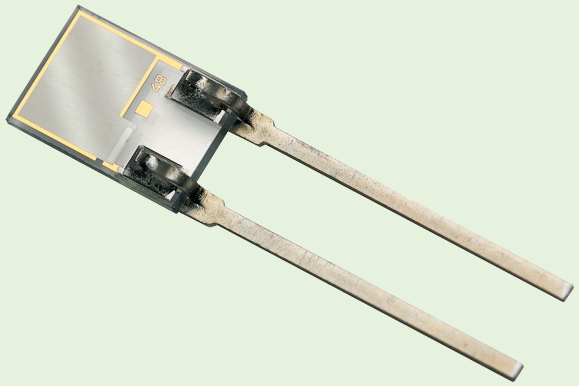
Datasheet HC201

Leaded Humidity Sensor



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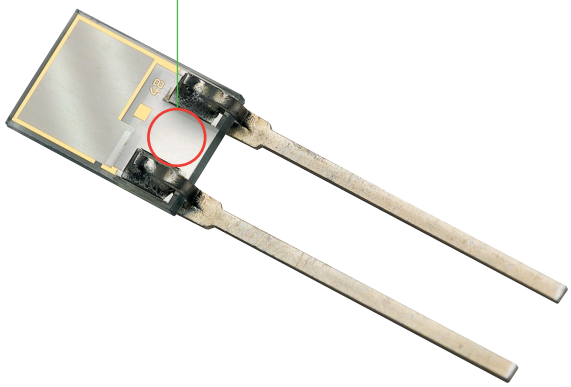
HC201

Leaded Humidity Sensor

The HC201 is the ideal solution for low cost applications. In the measuring range of 20...90 %RH a linear approximation results in an accuracy of better than ±2 %RH.
By providing two different packages, the implementation is suitable for PCBs as well as for e.g. sensing probes. In addition, due to the leaded design, the sensor can be mounted with an offset to avoid being affected by other heat sources or affecting other components in immediate vicinity. Furthermore, the sensor allows wettable conditions without causing incorrect measurements

Features

- High repeatability
- High sensitivity
- Wettable
- Very good long term stability
- Good resistance to pollutants
- Small size construction

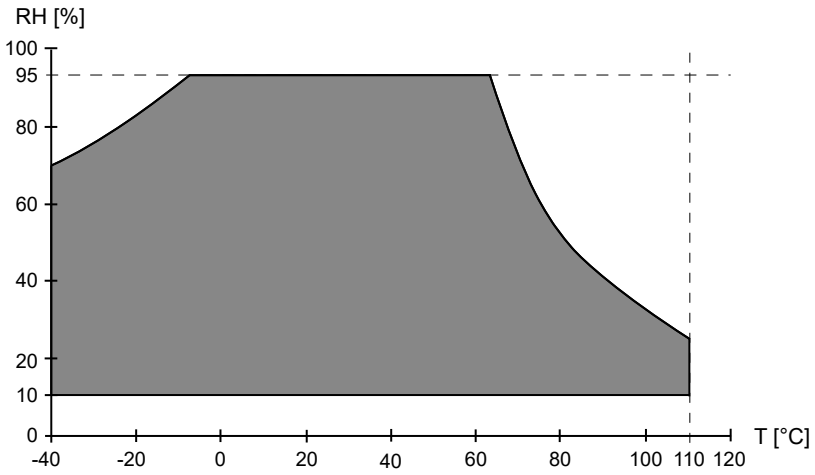


Typical Applications

- HVAC
- Handhelds
- Humidifiers
- Dehumidifiers

Working Range

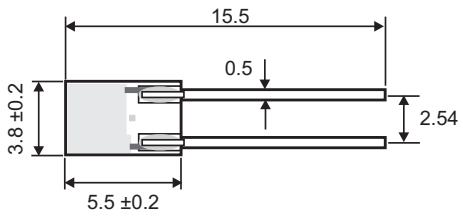
The working range for the humidity sensor HC201 is shown with regard to the humidity / temperature limits.
Although the sensors would not fail beyond the limits, the specification is guaranteed only within the working range.
In applications with high humidity at high temperature the time factor shall be considered.



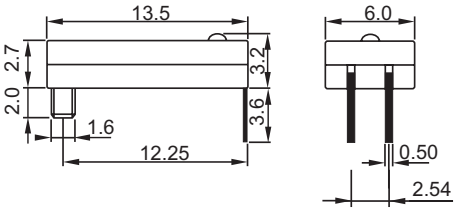
Dimensions

Values in mm
1 mm = 0.03937" / 1" = 25.4 mm

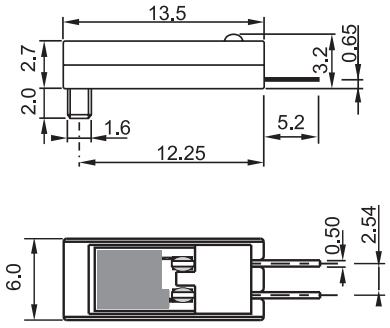
HC201



HC201/H



HC201/G



Technical Data

Measuring range **Humidity** **Temperature**	 10...95 %RH -40...+110 °C
Nominal capacitance C_0 @ 20 °C	200 ± 30 pF
Linearity error (20...90 %RH)	< ±2 %RH
Response time t_{90}	< 15 s
Sensitivity	0.6 pF / %RH
Temperature dependency [%RH /°C]	ΔRH = g * RH * (T - 20) g = -0.004 ± 10 %
Hysteresis	2.0 ± 0.3 %RH
Long-term stability @ 20...30 °C / 20...80 %RH	Drift < 1.5 % / year
Maximum supply voltage	5 V (V_{PP})
Maximum DC voltage	< 5 mV
Loss tangent, typ.	< 0.1
Operating frequency	10...100 kHz, recommended 20 kHz
Material connection	Phosphor bronze with tin coating

Humidity Element Characteristic

The sensor capacitance increases linearly with a capacitance swing of about 48 pF (HC201) over the measuring range 10...95 %RH. In this humidity range, the behaviour of the sensors with a linearity deviation of < ±2.0 %RH can be represented by the following linear curve:

$C(U_w) = C_{76} * [1 + HC_0 * (U_w - 76)]$

with HC_0 = 2700 ± 120 ppm / %RH

For high accuracy requirements, the sensitivity is determined by the following polynomial:

$$C(U_w) = C_0 * [1 + HC_0 * U_w + k(U_w)]$$

whereby:

$$k(U_w) = A_1*U_w^{1/3}+A_2*U_w+A_3*U_w^{3/2}+A_4*U_w^2$$

$A_1 = 1.9311E^{-3}$ $A_2 = 2.8880E^{-4}$

$A_3 = -4.5169E^{-4}$ $A_4 = 1.2400E^{-6}$

HC_0 = 3300 ppm / %RH C_0=149,8 pF

Valid for U_w= 10…95 %RH

Ordering Guide

Feature	Description	Code
		HC201
Type	Capacitive humidity sensor 200 pF, T&R[1)]	No code
	Capacitive humidity sensor 200 pF in polycarbonate sleeve, T&R[1)]	/G
	Capacitive humidity sensor 200 pF in polycarbonate sleeve for mounting on the printed ciruit board, in tube (80 pcs packing unit)[2)]	/H

1) Tape & Reel packaging only available with straight leads
2) Tube packaging only available with bended leads

Order Example

HC201/H

Feature	Code	Description
Type	/H	Capacitive humidity sensor 200 pF in polycarbonate sleeve for mounting on the printed ciruit board, in tube (80 pcs packing unit)

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