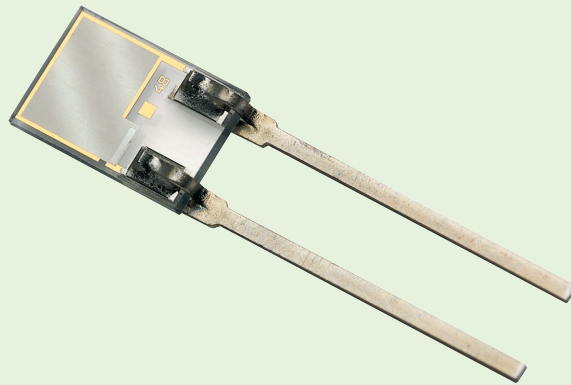




—
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technology.

+ Datasheet HC201

Leaded Humidity Sensor



HC201

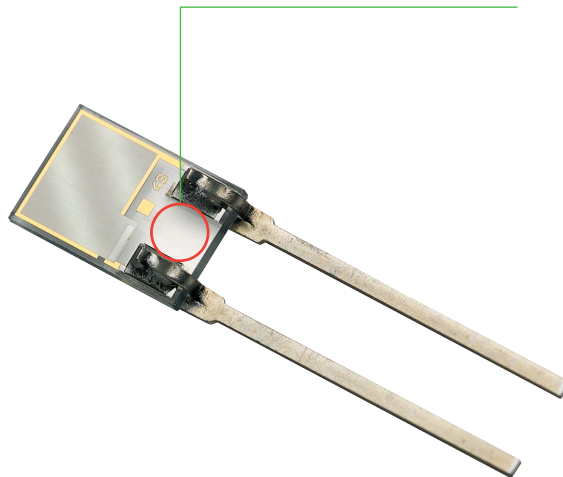
Leaded Humidity Sensor

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

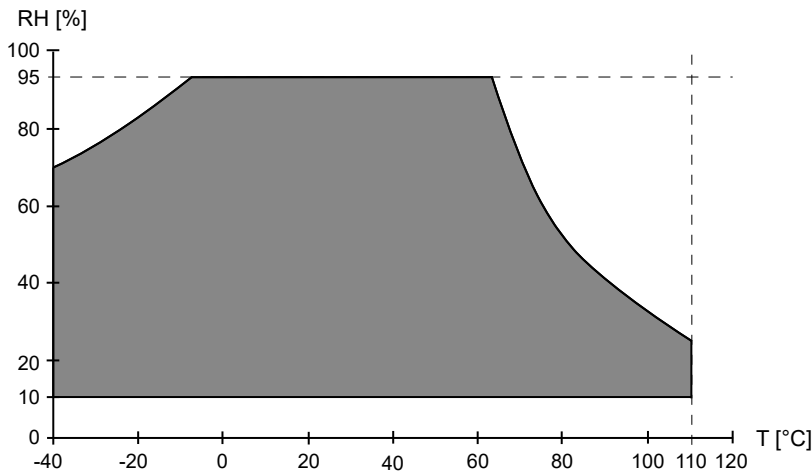


Typical Applications

- 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.

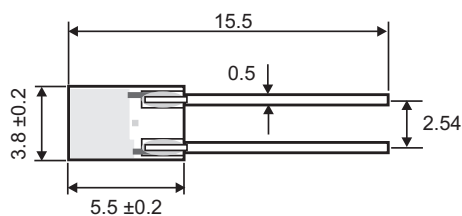


Dimensions

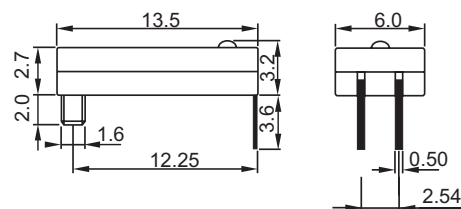
Values in mm

1 mm = 0.03937" / 1" = 25.4 mm

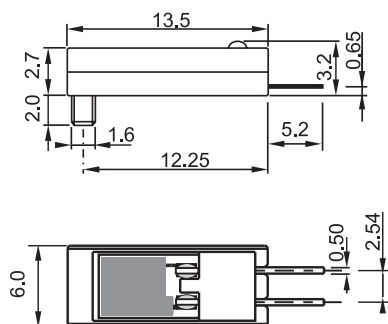
HC201-HT0x



HC201-HT10PK8



HC201-HT10PK5



Technical Data

Measuring range	Humidity Temperature	10...95 %RH -40...+110 °C
Nominal capacitance C₀ @ 20 °C		200 ± 30 pF
Linearity error (20...90 %RH)		< ±2 %RH
Response time t₉₀		< 15 s
Sensitivity		0.6 pF / %RH
Temperature dependency [%RH / °C]		$\Delta RH = g * RH * (T - 20)$ $g = -0.004 \pm 10 \%$
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 % r.h. can be represented by the following linear curve:

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

with $HC_0 = 2700 \pm 120 \text{ ppm} / \%RH$

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:

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

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

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

$$HC_0 = 3300 \text{ ppm} / \%RH \quad C_0 = 149.8 \text{ pF}$$

Valid for $U_w = 10...95 \%RH$

Ordering Guide

Feature	Description	Code	
		HC201-	
Enclosure type	No enclosure	HT0	
	Polycarbonate sleeve		HT10
Packaging	Tape & Reel ¹⁾	PK5	PK5
	Tube ²⁾		PK8

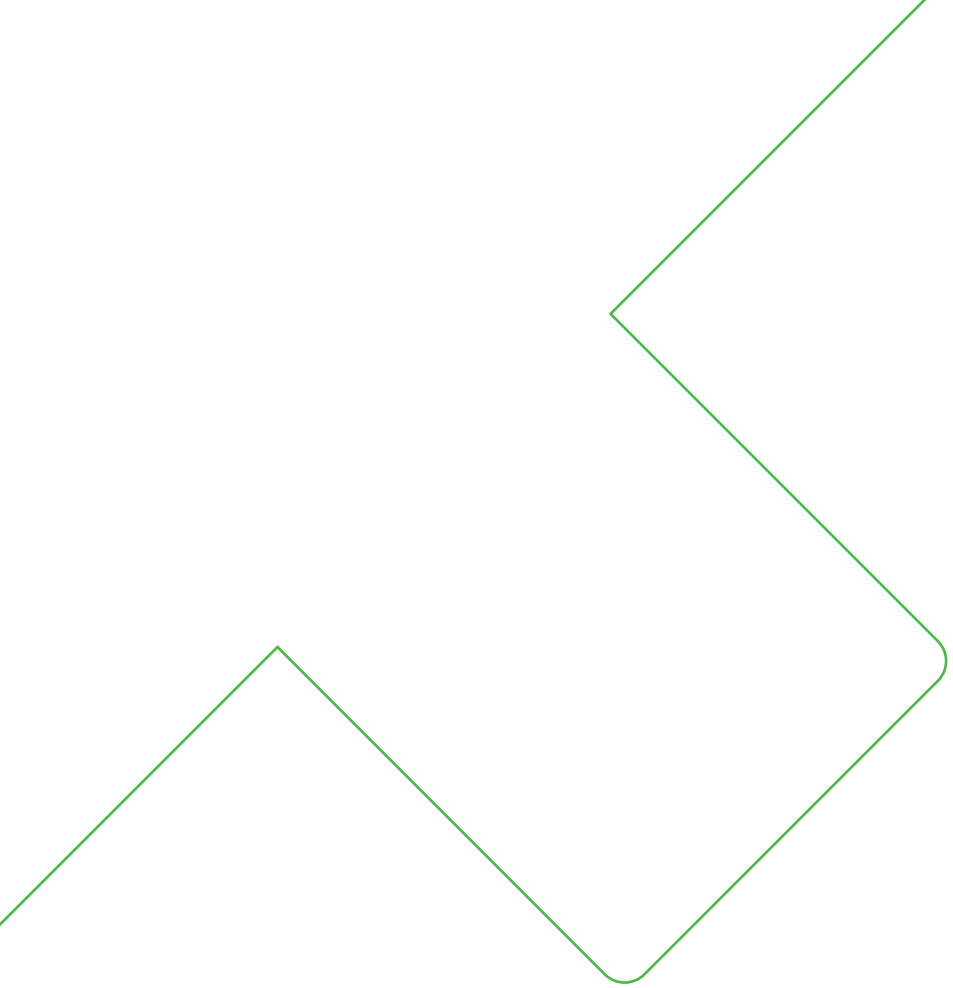
1) T&R packaging only available with straight leads

2) Tube packaging only available with bended leads (MOQ 80 pcs.)

Order Examples

HC201-HT10PK8

Feature	Code	Description
Enclosure type	HT10	Polycarbonate sleeve
Packaging	PK8	Tube



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