Innovative Sensor Technology
physical. chemical. biological.

P14 FemtoCap

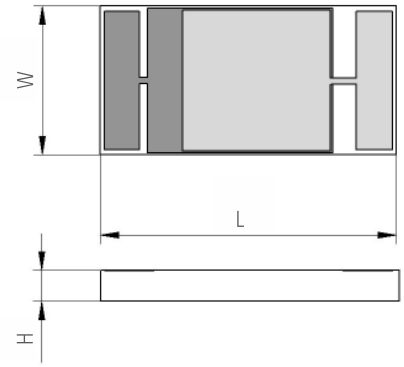
Capacitive Humidity Sensor

Optimal for automotive and white good applications

Benefits & Characteristics

- High chemical resistance
- Wide temperature range
- Resistance to condensation
- Fast recovery time
- Very low drift
- Excellent price-performance ratio
- Solderable and bondable (fully automated assembly)

Illustration[1)]



1) For actual size, see dimensions

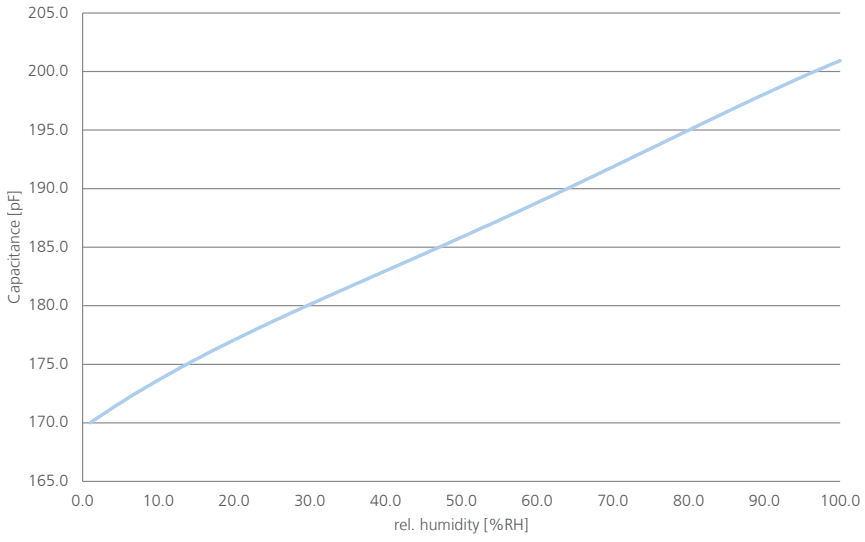
Technical Data

Dimensions (L x W x H in mm):	4 x 2 x 0.4
Operating humidity range:	0 % RH to 100 % RH (maximal dew point +85 °C)
Operating temperature range:	-50 °C to +150 °C
Capacitance (C_{30}):	180 pF ±50 pF (at 30 % RH and +23 °C)
Sensitivity (at C_{30} = 180 pF):	0.3 pF/% RH (15 % RH to 90 % RH)
Loss factor:	< 0.01 (at 23 °C, at 10 kHz, at 90 % RH)
Linearity error:	< 1.5 % RH (15 % RH to 90 % RH at +23 °C after one point calibration)
Hysteresis:	< 1.5 % RH
Response time t_{63}:	< 3 s (50 % RH to 0 % RH at +23 °C)
Temperature dependence (typical):	Δ % RH = (B1 x % RH + B2) x T [°C] + (B3 x % RH + B4)
	B1 = 0.0014 [1/ °C] B2 = 0.1325 [% RH/ °C]
	B3 = -0.0317 B4 = -3.0876 [% RH]
Measurement frequency:	1 kHz to 100 kHz (recommended 10 kHz)
Maximal supply voltage:	< 12 V_{pp} AC
Signal form:	alternating signal without DC bias
Connections:	SMD, automatic assembly compatible

The calibration of the sensor must be done 5 days after soldering at the earliest.

Product Photo

Characteristic Curve



Order Information

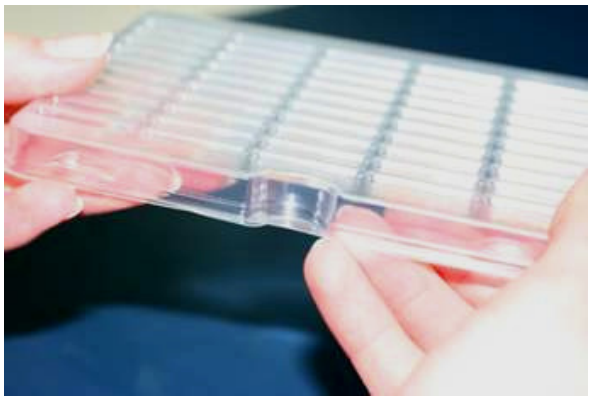
Description:	Item number:	Former main reference:
P14 FemtoCap-G (180pF ±50pF)	103563	040.00111

Handling

Packaging

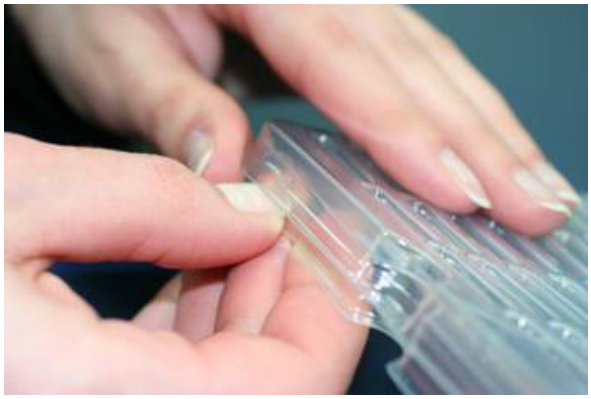
The wired humidity sensors are packaged in blisters. Please be careful when opening the blisters to avoid any damages to the sensors.

To avoid damages handle as follows:



1. Side with curve has to face you.

2. Push your thumb beneath cover and press carefully lock system until cover removes smoothly.



3. Press lock system on second side on the same way.

4. Remove cover slowly.

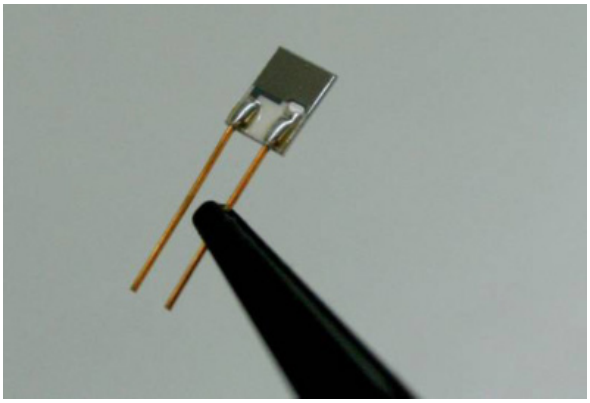
Storage

Sensors have to be stored only in the original blisters.

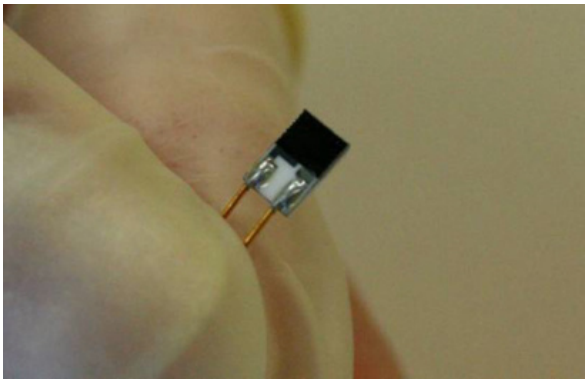
Storage environment :	-20°C...+50°C /-4...122°F (temperature range of blister)

Sensor handling

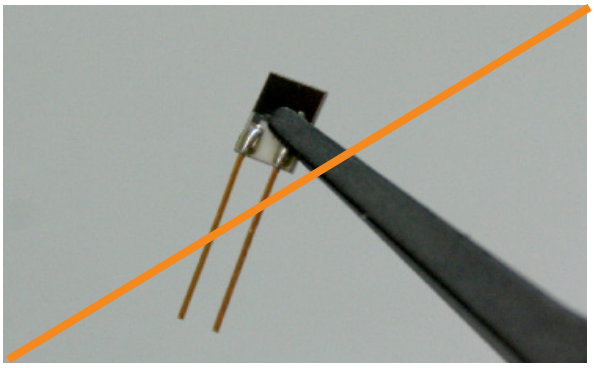
Hold the sensor with plastic tweezers or with gloves on the wires only.



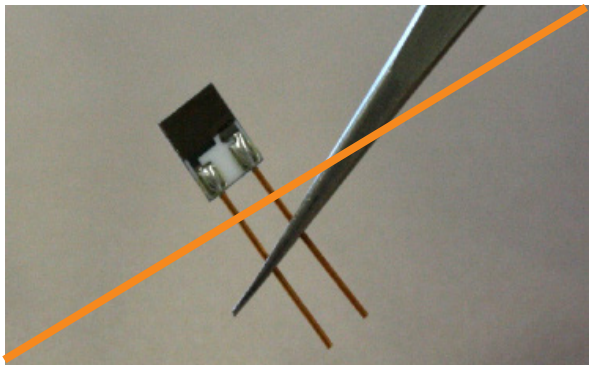
Picture 1: Sensor held on wires with plastic tweezers



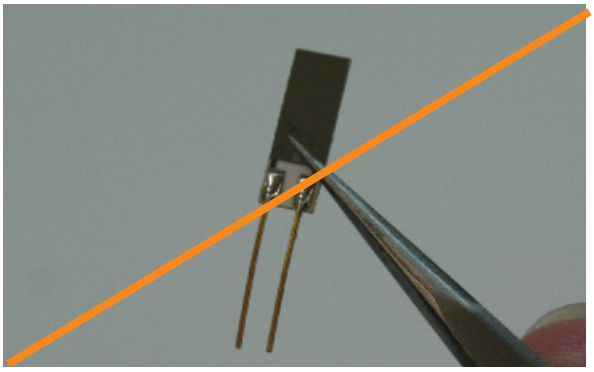
Picture 2: Sensor held with gloves



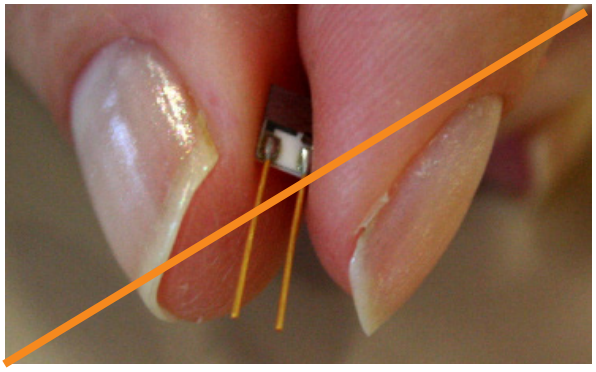
Picture 3: Sensor picked on the active area



Picture 4: Sensor picked on wires with metal tweezers



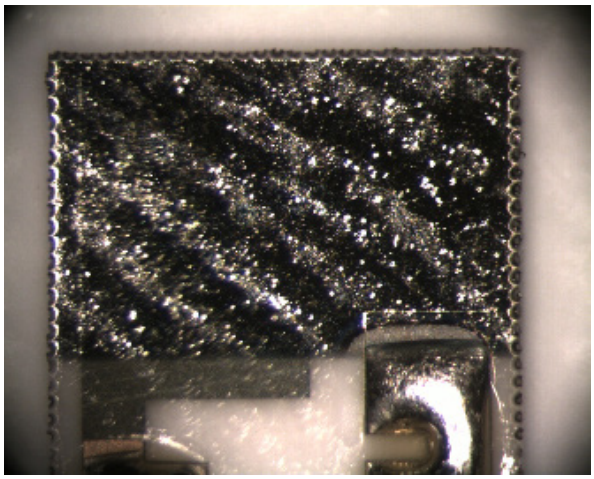
Picture 5: Sensor picked on the active area with metal tweezers



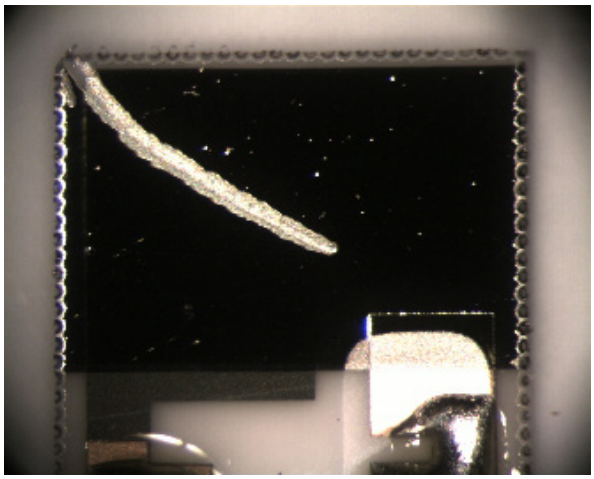
Picture 6: Sensor held with fingers without gloves on the active area

- Do not touch the active area of the sensor.
- Do not use metal tweezers to handle the sensors.
- Never handle the sensor by hand without gloves.

Do not touch or scratch the active area of the sensors. Scratches and contaminations can degrade the sensor characteristic (see bad samples in pictures 7 and 8 below).



Picture 7: Sensor with contaminations



Picture 8: Sensor with a scratch

- Avoid mechanical stress to the sensors, e.g. bending or touching with sharp objects.
- Hold the sensors with plastic tweezers on the side edges only.

Soldering of the sensor

- The maximum temperature of the soldering iron of 320 °C may not be exceeded. Maximum heat apply with the iron must be below 10 seconds at the very end of the connecting wires.
- The calibration of the sensors has to been done 5 days after soldering at earliest. This time is needed to provide a relaxation after the heat induces during the soldering process.
- Avoid soldering flux residues, caused by the soldering process, or any other contaminations inside the active area of the sensor.
- Soldering flux residues on the outside of the sensor's active area are not critical. If the sensor is mounted with glue we recommend baking the sensor at 80 °C for 1 hour after the gluing process.

Cleaning of the sensor

- Any residues can be easily removed with isopropanol at room temperature. Apply of low ultrasonic energy might improve the cleaning process. The sensor has to be dried after the cleaning process.
- The sensor cannot be cleaned mechanically with cotton swabs for instance.
- It is possible to clean the sensor with oil free and filtered clean air, e.g. for removing dust particles.

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