

HANDLING INSTRUCTIONS

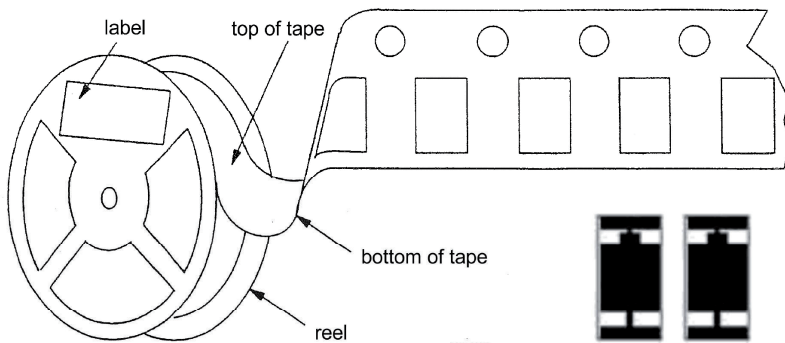
for HC103M2 Humidity Sensor

HC103M2 is a capacitive humidity sensor optimized for meteorological radiosondes. It is manufactured in state of the art thin film technology and features very fast response time even at low temperature.

PACKAGE AND STORAGE

Tape and Reel

The tape and reel packaging of HC103M2 complies with the IEC 60286-3 standard and is designed for automatic pick and place machines. The sensors are placed in the tape with the back side up, which can be used for suction hold.

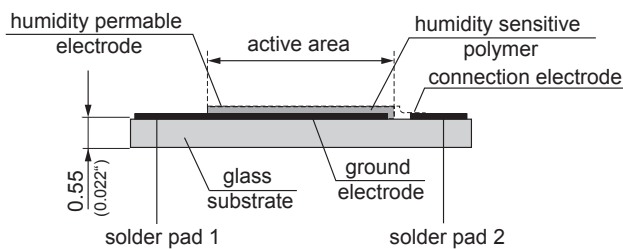
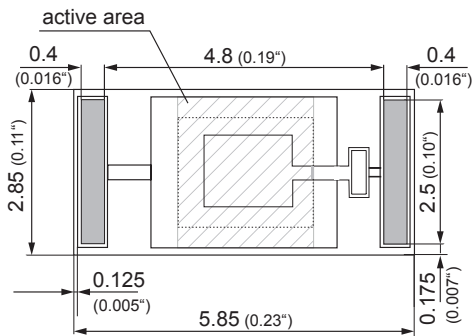


Store the HC103M2 in the original tape and reel only, which optimally protect the sensors against environment influences such as chemical pollution or accumulations of dust and dirt. In order to avoid condensation, allow sufficient acclimatization time before unpacking after storage at low temperature.

A sensor removed from the tape may not be placed back into the tape.

SENSOR CONSTRUCTION

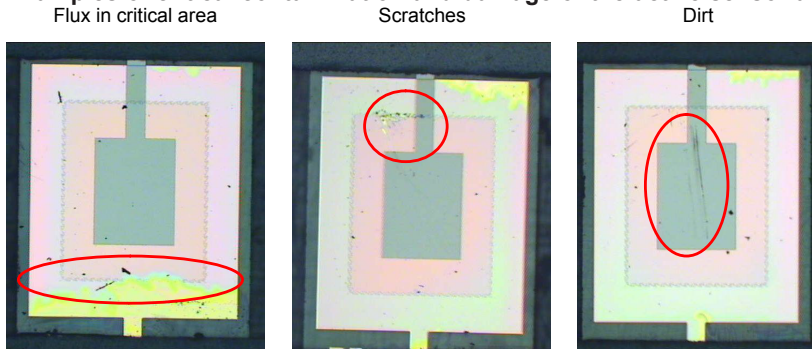
Dimensions in μm



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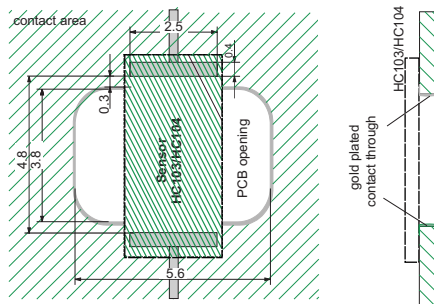
The HC103M2 sensor must be handled with utmost care in order to avoid contamination (solder flux residues, solder splashes, fingerprints) and damage (scratches) of the active area.

Examples of critical contamination and damage of the active sensor area



- Slight discolorations of the active area of the sensor are production conditional and uncritical.
- Do not touch the active area during handling and operation. This must be strictly observed also for sensors installed into the final measurement device.
- Pick-and-place SMD machinery may only hold (suction) the sensor on the back side, on the contact pads, or on the outside edges, but never on the active surface.
- Loose sitting dust particles even on the active area do not impact on the performance of the sensor.
- Remains of soldering flux or light scratches beyond the active area do not impact on the performance of the sensor.
- Certain foams and plastics outgaze chemicals which might aggress the humidity sensors. Packaging materials used for the device built with HC103M2 must be carefully tested with respect to their influence on the sensor.

MOUNTING ONTO A PRINTED CIRCUIT BOARD



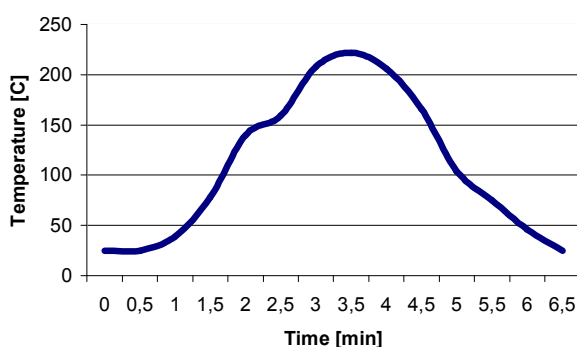
For shortest response time, HC103M2 shall be positioned over an opening to allow enough air circulation around the sensor. For best accuracy it is important to avoid moisture accumulation such as at the edge of the PCB by selecting appropriate board material or gold-plating the edge of the opening.

It is recommended to contact the solder pad 2 to the same potential (e.g. GND) as the plating of the PCB opening.

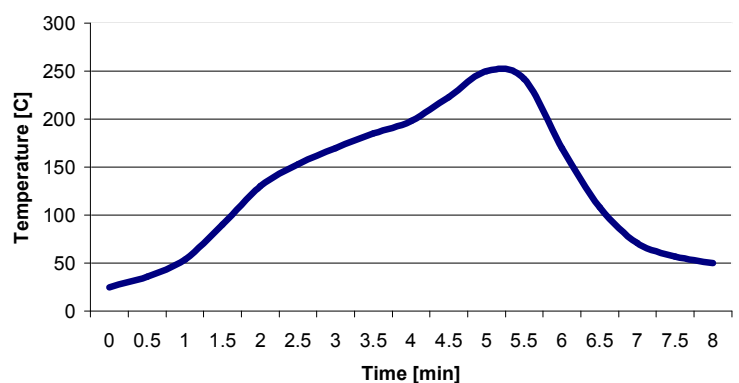
REFLOW SOLDERING PROCESS

- Typical reflow temperature soldering profiles:

Leaded



Lead free



- The exact temperature profile shall be optimized for the specific reflow soldering machine.
- During the reflow soldering process the temperature may exceed 180 °C (356 °F) for maximum 10 minutes.
- The maximum temperature of 250 °C (482 °F) may be not be applied longer than 3 minutes.
- Use the minimal quantity of solder paste.
- After the sensor has been soldered onto the printed circuit board, the solder pads of the HC103M2 are no longer visible and the soldering quality cannot be visually assessed. Perform a destructive tear-off test on dummy parts in order to qualify the soldering process. For quality adhesion the tear-off force must be at least 10 N.
- Do not reuse HC103M2 sensors after unsoldering them.

SENSOR CLEANING

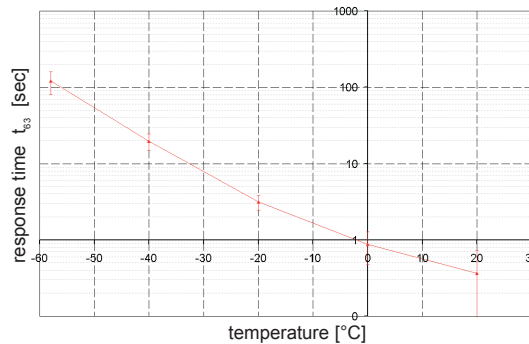
- Loose particles can be blown off the sensor with oil-free, filtered compressed air or nitrogen
- For removing sticky dirt or dust deposits wash the sensors for 30 seconds in an ultrasound cleaner with isopropanol at 23 °C (73.4 °F), then rinse with clean tap water and let them dry free. See also "Cleaning Instructions" on www.epluse.com.

Important

Never touch the active area of the sensor.

TECHNICAL DATA

Nominal capacitance C0 (at 30 °C / 86°F)	160 ± 40 pF
Sensitivity	0.55 pF / % RH
Working range humidity	0...100 % RH
Working range temperature	-80...60 °C (-112...140 °F)
Linearity error (0...98 % RH)	< ± 2 % RH
Hysteresis	1.9 ± 0.25 % RH
Response time RH t ₆	



Temperature dependence ¹⁾	dC = -0.0019 * RH * (T - 30 °C) [pF]
Loss tangent	< 0.05
Maximum supply voltage	5 V max (UPP)
Maximum DC voltage	< 5 mV
Operating frequency	10...100 kHz, recommended 20 kHz

1) more details for t < -20 °C (68 °F) on request

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