

# HANDLING INSTRUCTIONS

## SMD Humidity Sensor HC109

### STORAGE CONDITIONS

#### Before soldering

Storage temperature: -20 °C...+50 °C (-4...122 °F)

After storage at very low temperatures, before unpacking allow a sufficient amount of time for acclimatization in order to avoid condensation.

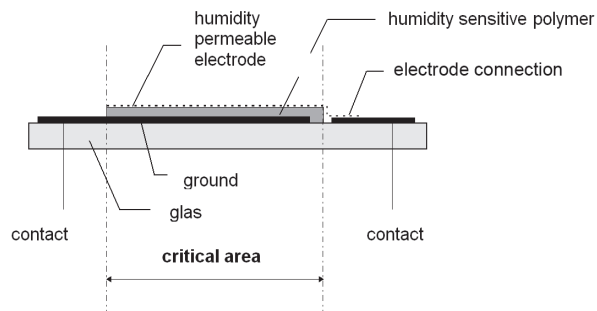
Working temperature: -40 °C...+120 °C (-40...248 °F)

#### After soldering

Humidity sensors are gas sensors and as such sensitive to certain volatile contaminants (e.g. solvents, volatile cleaning agents, ...). Contamination with such substances will be adverse to further processing like calibration. Therefore, after processing the printed circuit boards (PCB) shall be stored in clean air free from contaminants. If contamination is suspected, please inform E+E.

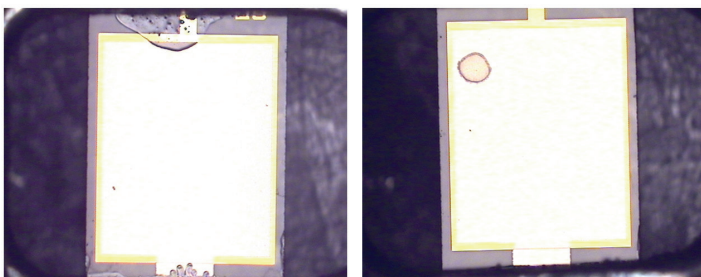
### HANDLING

The criteria for usage and permissible contamination are determined by the functionality principle and the construction of the HC109 sensor:

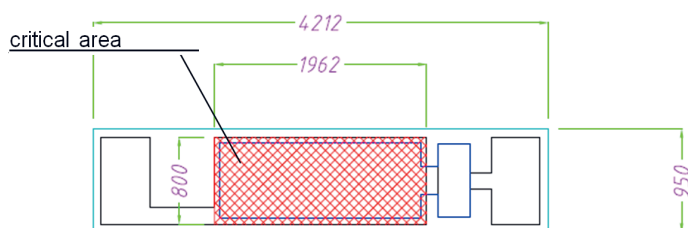


The critical area of the active sensor surface shall be handled with extreme care to avoid contamination and damage such as flux residue, solder splashes, scratches or fingerprints. Contamination and damage outside of the critical area can impair the measurement function only in exceptional cases.

#### Examples of non-permissible contamination



#### Critical area of HC109:



Dimensions in µm

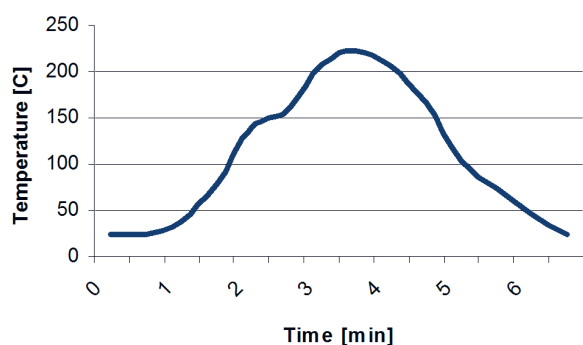
### Please note the following handling guidelines:

- Any damage or contamination of the critical area of the sensor surface should be avoided. Certain contamination like greases, fingerprints or flux is not allowed. This should be considered also when shipping printed circuit boards e.g. no damping foam or boards stacked on top of each other.
- Handling systems may only suction-hold the sensors on the backside, on the contact pads, or on the outside edges.
- Loose sitting dust particles are allowed; these can be blown off using oil-free compressed air.
- Slight discolourations in the active electrode of the sensor are production conditional and uncritical.
- Remaining soldering flux in sensor areas other than the critical one should also be avoided, nevertheless these would not impair the sensor function.
- The sensors shall be stored in the original tapes and shall be always covered with the top foil. This prevents contamination of the sensors.
- It is recommended to fit the sensors so that the contact pad on the side of the feedthrough lies on the same potential (e.g. GND) as the metallization of the PCB opening over which the sensor is placed.

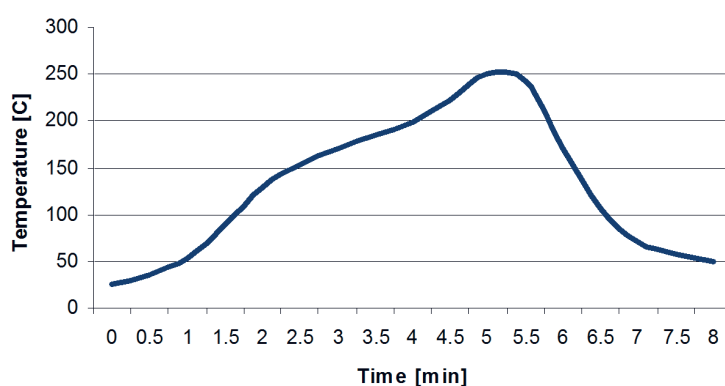
## RECOMMENDED TEMPERATURE PROFILE FOR PROCESSING

The graphs below illustrate a typical reflow temperature soldering profile.

### Leaded



### Lead free



The exact profile shall be optimized for the corresponding SMD soldering system. The maximum temperature of 250 °C (482 °F) shall not be exceeded for more than 3 minutes and the specified time shall be observed. The entire soldering duration may not exceed 10 minutes at temperature higher than 180 °C (356 °F).

## CLEANING

### Permitted cleaning methods:

- Blowing with oil-free, filtered compressed air, hydrocarbon-free air or nitrogen
- 0.5 min ultrasonic rinse in isopropanol at 23 °C (73.4 °F)

### Important

Any contact with the critical area of the sensor is not allowed, scratches will destroy the sensor.

## SENSOR ADHESIVENESS

After HC109 has been mounted on the PCB, the soldered points of the humidity sensor are no longer visible and the adhesiveness cannot be assessed visually. Therefore, a destructive tear-off test on dummy parts is recommended. The tear-off force must be at least 2.5 N for quality adhesion.

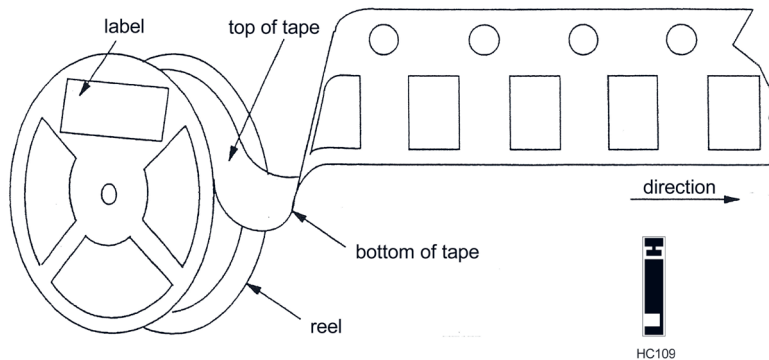
## SUBSEQUENT HANDLING

A humidity sensor unsoldered from the PCB shall not be employed any longer. When soldering a replacement HC109 sensor to the PCB, the same handling guidelines as described above must be followed. Generally, the solder from the previous soldering shall be removed as good as possible and only minimal soldering paste should be applied.

## PACKAGING

### Tape and Reel

The packaging in tape is according to norm IEC 60286-3. The sensors are placed in the tape with the backside up. The packing is designed for automatic pick and place machines. It is not permitted to place back HC109 sensors into the tape. The sensor orientation is shown in the following drawing:



### Traceability

After processing the reels are marked with an ID which is needed together with the sensors position in the tape for traceability.

### Packaging after processing

To avoid a negative impact on the characteristic of HC109, the PCBs shall not be sealed in an airtight package.

Foam plastics shall be avoided in order to prevent damages to the active area of the sensor.

The populated PCBs should be further processed as soon as possible, ideally within one month after soldering the HC109 sensors.

### USA

#### FCC notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### CANADIAN

#### ICES-003 Issue 5:

CAN ICES-3 B / NMB-3 B

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