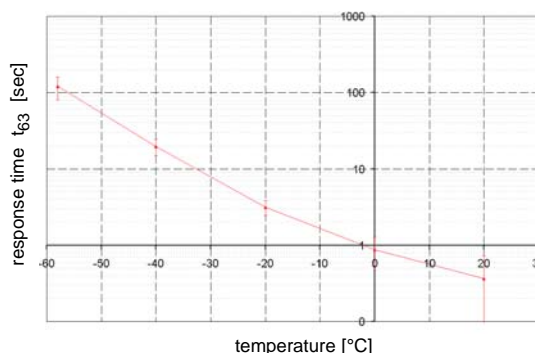


HC103M2

Fast High End Humidity Sensors for Radiosondes / Registering Balloons

Technical Data

| | |
|--|----------------------------|
| Nominal capacitance C_0 (at 30°C / 86°F) | 160 ± 40 pF |
| Sensitivity | 0.55pF /% RH |
| Working range humidity | 0...100% RH |
| temperature | -80...120°C (-112...248°F) |
| Linearity error (0...98% RH) | < ± 2% RH |
| Hysteresis | 1.9 ± 0.25% RH |
| Response time RH t_{63} | |



| | |
|--------------------------------------|---|
| Temperature dependence ¹⁾ | $dC = -0.0019 \cdot RH \cdot (T - 30^\circ C) \text{ [pF]}$ |
| Loss tangent | < 0.05 |
| Maximum supply voltage | 5V max (UPP) |
| Maximum DC voltage | < 5mV |
| Operating frequency | 10...100 kHz, recommended 20kHz |
| Packaging tray 101.6x101.6 mm (4x4") | 240 sensors |
| tape and reel | refer to ordering guide |

1) more details for $t < -20^\circ C$ on request

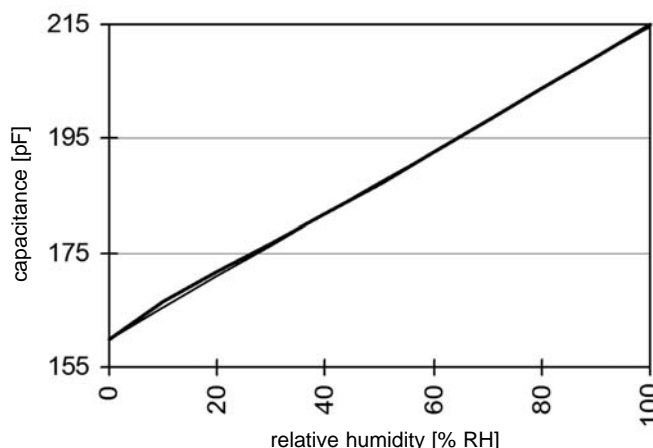
Characteristics

The average increase of capacitance over the working range is 55pF. For the range of 0–98% RH linear approximation is possible, errors will be lower than < ± 2% RH.

The sensor characteristic is determined by the following linear formula:

$$C(RH) = C_0 \cdot [1 + HC_0 \cdot RH]$$

with $HC_0 = 3420 \pm 250 \text{ ppm /\% RH}$



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

$$C(RH) = C_0 \cdot [1 + HC_0 \cdot RH + K(RH)]$$

whereby:

$$K(RH) = A_1 \cdot RH + A_2 \cdot RH^{1.5} + A_3 \cdot RH^2 + A_4 \cdot RH^{2.5}$$

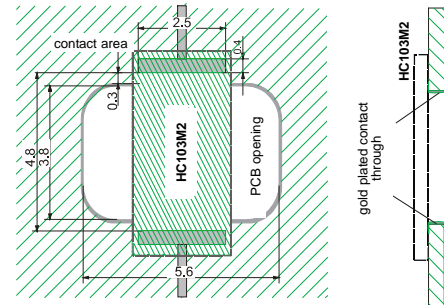
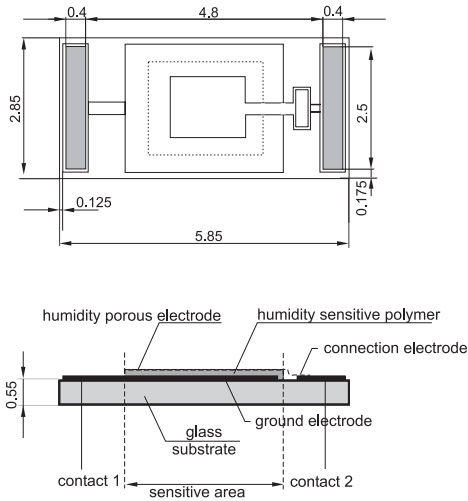
$$A_1 = 2.6657E^{-3} \quad A_2 = -9.6134E^{-4}$$

$$A_3 = 1.1272E^{-4} \quad A_4 = -4.3E^{-6}$$

Dimensions (mm)

1 mm = 0.03937" / 1" = 25.4 mm

Mounting Instructions



To allow full access of the air, the humidity sensor should be positioned over an opening in the printed circuit board (PCB).

False readings because of humidity assimilation at the front side of the PCB should be avoided as much as possible by using gold-plated-through holes.

Assembling and Soldering

HC103M2 sensor series are designed for SMD automatic assembling with subsequent reflow-soldering. For more details please refer to mounting instructions.

Recommended SMD equipment:

- Automatic tooling machine with suction pipette
- Optical control for sensor identification

Ordering Guide

Order Example

| TYPE | PACKAGING |
|-----------------|---|
| HC103M2 (103M2) | tray (240 sensors) (no code) 500 sensors per reel (TR0,5) 1000 sensors per reel (TR1) 2500 sensors per reel (TR2,5) 10000 sensors per reel (TR10) |
| HC | |

HC103M2TR1

Type: HC103M2
Packaging: 1000 sensors per reel