



P14 Rapid



Capacitive Humidity Sensor



Optimal for weather balloons and radio sondes

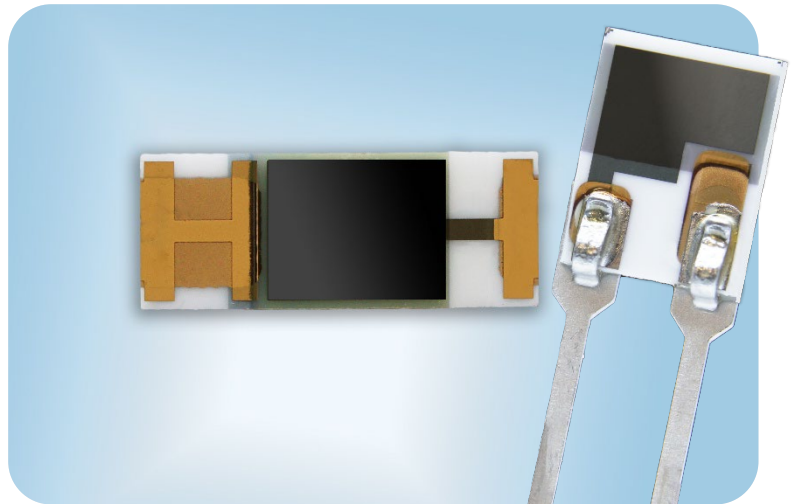


Benefits & characteristics

- Ultra fast response time
- Wide temperature range
- Condensation resistant
- Fast recovery time
- High humidity stability
- Temperature shock resistant



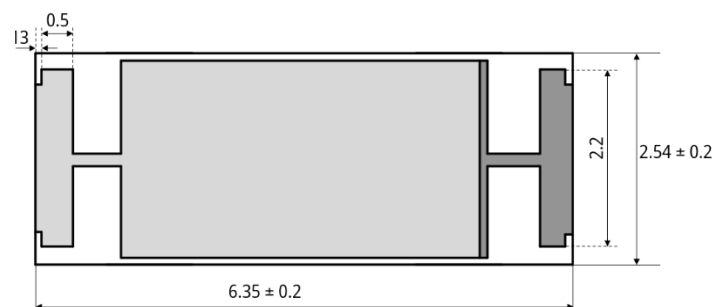
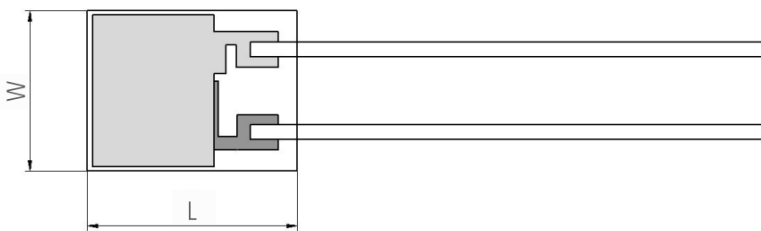
Customer-specific sensor available upon request



Illustration

Wired

SMD



For actual size see dimensions

L = length

W= width

H2= total height

H= substrate height



Technical data



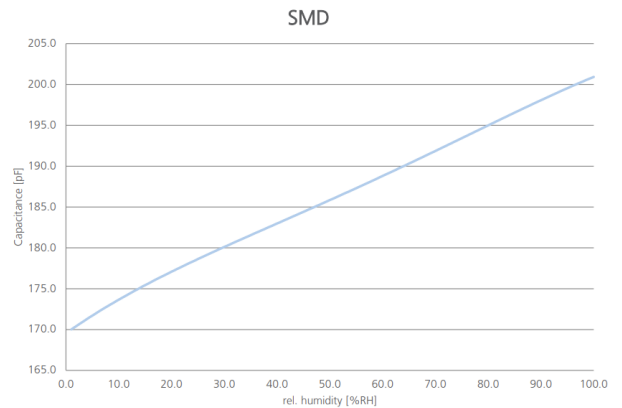
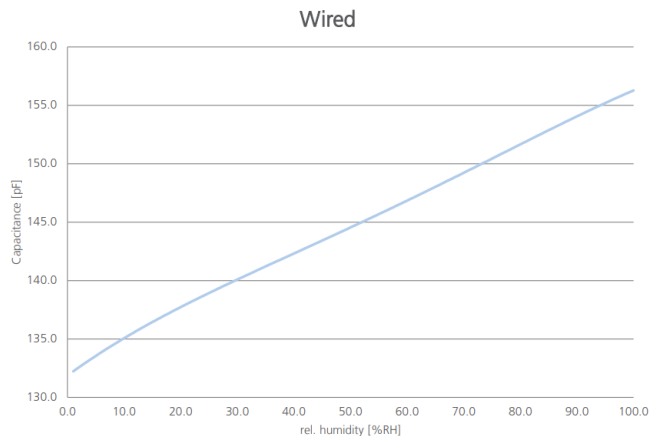
	Wired	SMD
Dimensions (L x W x H/H2 in mm):	5.0 x 3.81 x 0.4 / 1.2	6.35 x 2.54 x 0.4
Capacitance at 30 % RH and +23 °C (C ₃₀):*	140 pF ±40 pF	180 pF ±50 pF
Typical sensitivity at C ₃₀ = 150 pF/ 180 pF (15 % RH to 90 % RH):	0.25 pF/% RH	0.3 pF/% RH
Operating humidity range	0 % RH to 100 % RH (maximal dew point +85 °C)	
Operating temperature range:	-80 °C to +150 °C	
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 :	< 1.5 s (50 % RH to 0 % RH at +23 °C)	
The response time is often measured for increasing humidity steps, whereas physics predicts that decreasing humidity leads to generally far longer response times for capacitive humidity sensors. iST thus measures response times always for decreasing humidity values, since this is the worst case.		
Temperature dependence (nominal):	$\Delta \% RH = (B1 \times \% RH + B2) \times T [^{\circ}C] + (B3 \times \% RH + B4)$ B1 = 0.0014 [1/ °C] B2 = 0.1325 [% RH/ °C] B3 = -0.0317 B4 = -3.0876 [% RH]	
Measurement frequency range:	1 kHz to 100 kHz (recommended 10 kHz)	
Maximal supply voltage:	< 12 V _{pp} AC	
Signal form:	alternating signal without DC bias	
Connection: *	CuP-SiL-wire post-plated with Sn, 10 mm or Au/Cu-wire, Ø 0.4 mm	SMD automatic assembly compatible

*Customer-specific alternatives available

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



Characteristic Curve



Order information

Order code	Product name (secondary reference)
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103564	P14 Rapid (140 ±40pF)	SIL CuP-SIL-wire post-plated with Sn, 10 mm
103573	P14 Rapid-W (140 ±40pF)	Au/Cu-wire, Ø 0.4 mm
103571	P14 SMD Rapid-G (180 ±50pF)	SMD

Related documents

Document	File name
Application note Humidity sensors	AH_E Available in Download-Section on www.ist-ag.com



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