

HIH-5030/5031 Series

Table 1. Performance Specifications (At 3.3 Vdc supply and 25 °C [77 °F] unless otherwise noted.)

Parameter	Minimum	Typical	Maximum	Unit	Specific Note
Interchangeability (first order curve)					
0% RH to 10% RH, 90% RH to 100% RH	-7	–	7	% RH	–
11% RH to 89% RH	-3	–	3	% RH	–
Accuracy (best fit straight line) 11% RH to 89% RH	-3	–	+3	% RH	4
Hysteresis	–	2	–	% RH	–
Repeatability	–	±0.5	–	% RH	–
Settling time	–	–	70	ms	–
Response time (1/e in slow moving air)	–	5	–	s	–
Stability (at 50% RH in 5 years)	–	±1.2	–	% RH	1
Voltage supply	2.7	–	5.5	Vdc	2
Current supply	–	200	500	µA	–
Voltage output (1st order curve fit)	$V_{OUT} = (V_{SUPPLY})(0.00636(\text{sensor RH}) + 0.1515)$, typical at 25 °C				
Temperature compensation	True RH = (Sensor RH)/(1.0546 – 0.00216T), T in °C				
Output voltage temp. coefficient at 50% RH, 3.3 V	–	-2	–	mV/°C	–
Operating temperature	-40[-40]	See Figure 2.	85[185]	°C[°F]	–
Operating humidity (HIH-5030)	0	See Figure 2.	100	% RH	3
Operating humidity (HIH-5031)	0	See Figure 2.	100	% RH	–
Storage temperature	-50[-58]	–	125[257]	°C [°F]	–
Storage humidity	See Figure 3.			% RH	3

Specific Notes:

1. Includes stress outside of recommended operating zone.
2. Device is tested at 3.3 Vdc and 25 °C.
3. Non-condensing environment. When liquid water falls on the humidity sensor die, output goes to a low rail condition indicating no humidity.
4. Total accuracy including interchangeability is ±3 %RH.

General Notes:

- Sensor is ratiometric to supply voltage.
- Extended exposure to ≥90 % RH causes a reversible shift of 3 % RH.
- Sensor is light sensitive. For best performance, shield sensor from bright light.



Low Voltage Humidity Sensors

Figure 1. Operating Environment (Non-condensing environment for HIH-5030 catalog listings only.)

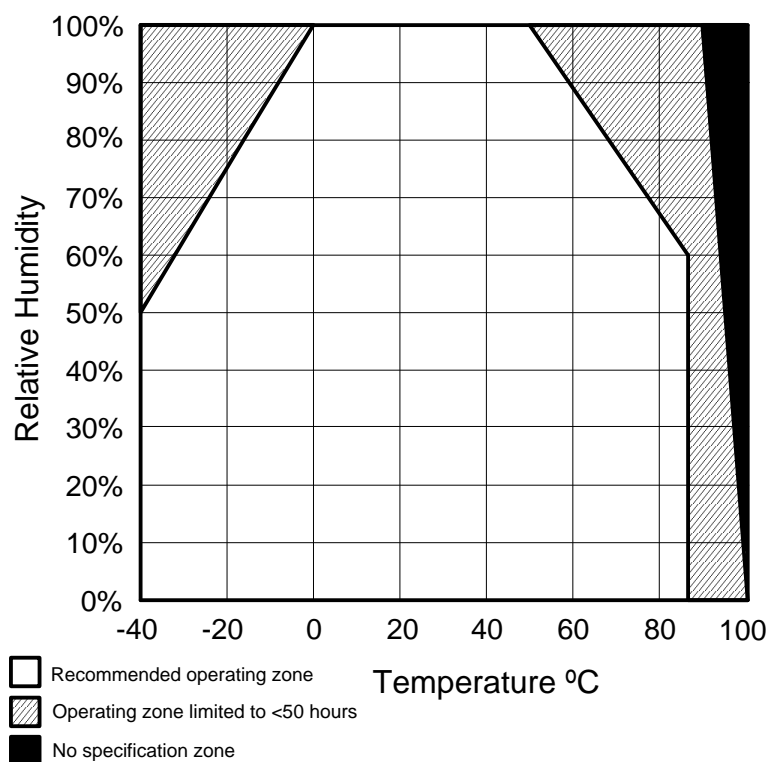
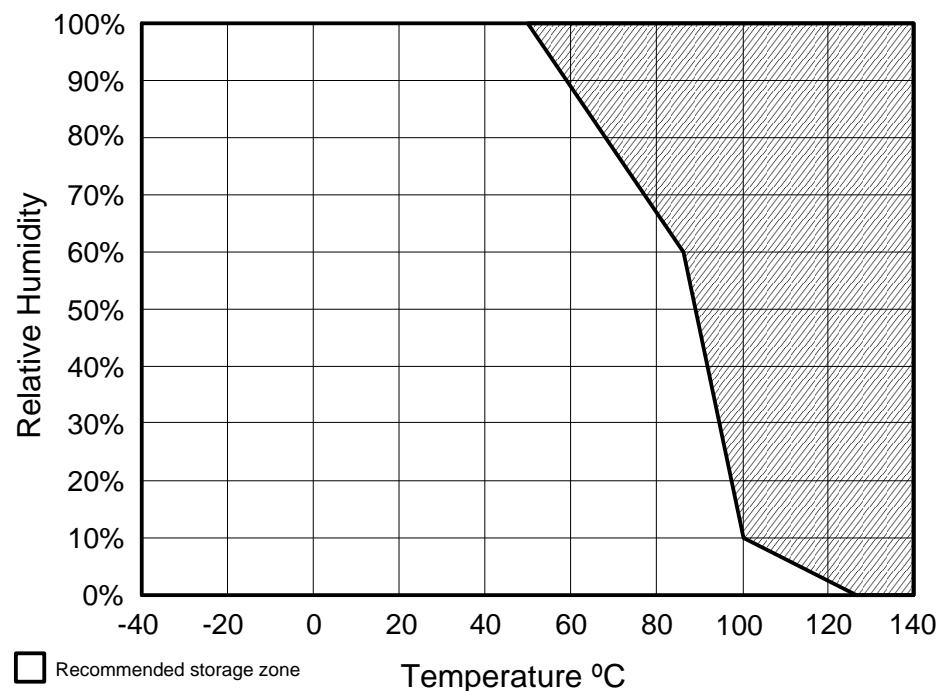


Figure 2. Storage Environment (Non-condensing environment for HIH-5030 catalog listings only.)



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Figure 3. Typical Output Voltage vs Relative Humidity (At 25 °C and 3.3 Vdc.)

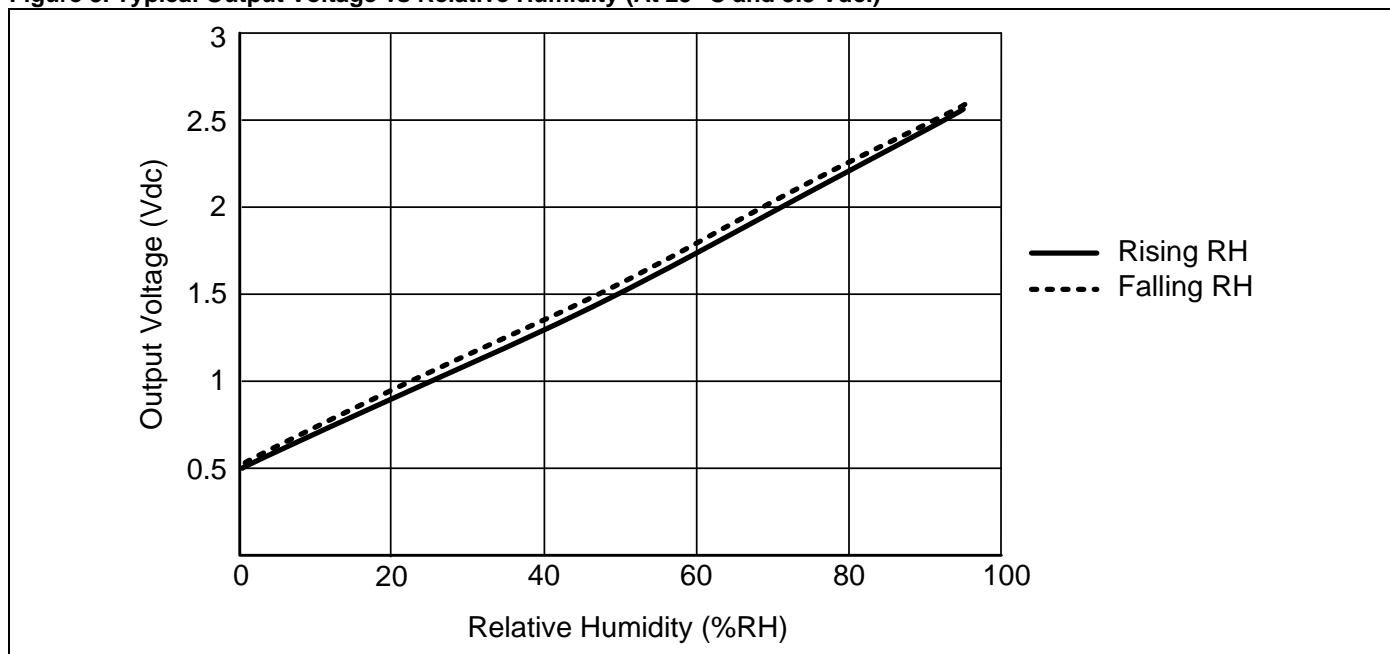
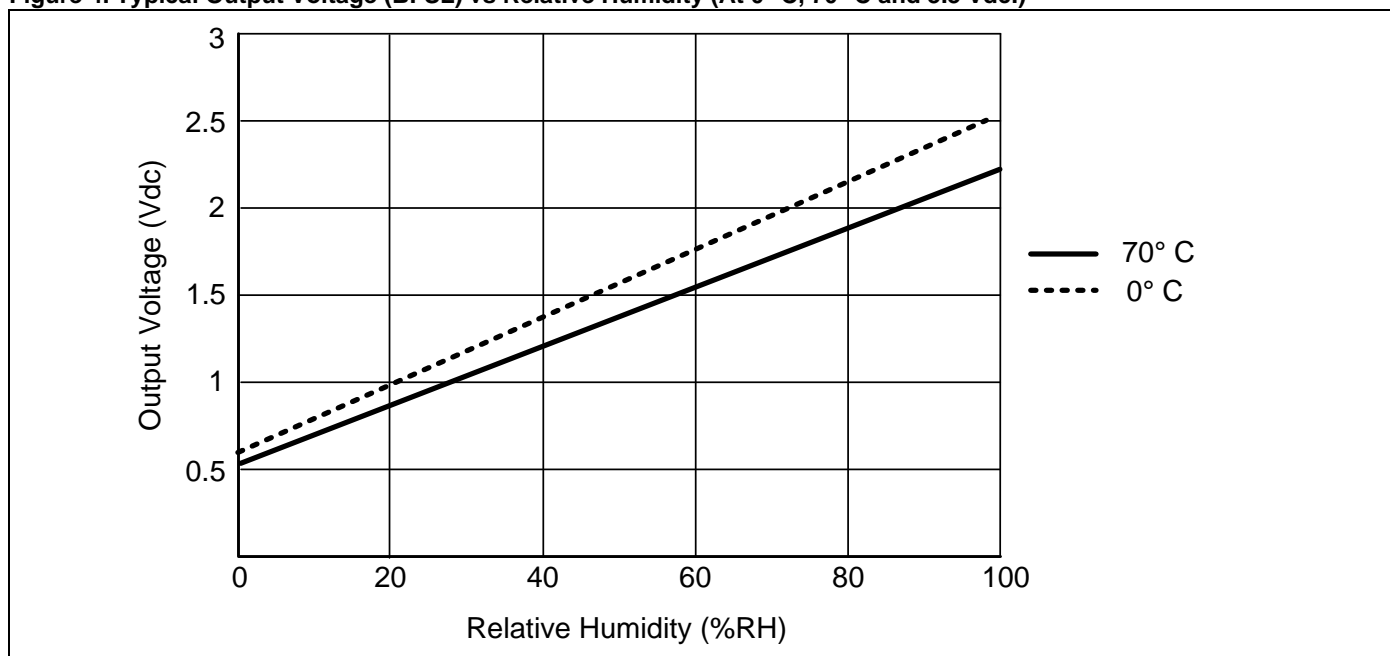


Figure 4. Typical Output Voltage (BFSL) vs Relative Humidity (At 0 °C, 70 °C and 3.3 Vdc.)



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Figure 5. HIH-5030 Mounting Dimensions (For reference only. mm/[in])

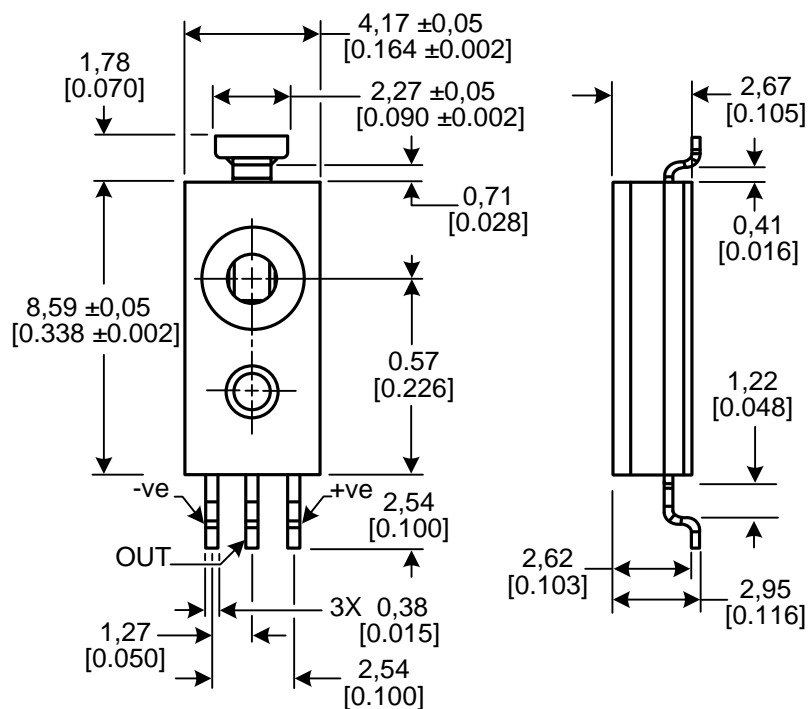
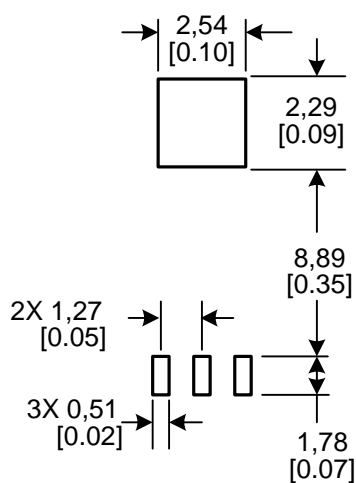


Figure 6. HIH-5030 PCB Landing Pattern (For reference only. mm/[in])



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Figure 7. HIH-5031 Mounting Dimensions (For reference only. mm/[in])

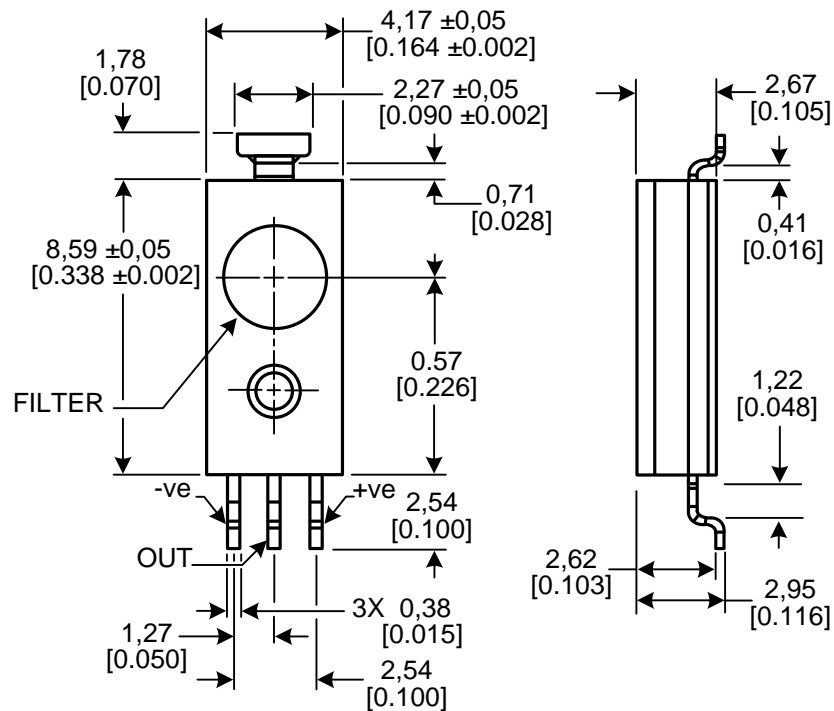
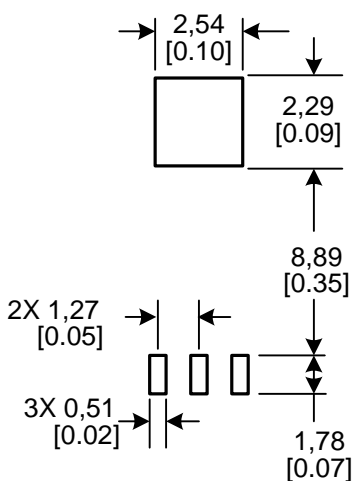


Figure 8. HIH-5031 PCB Landing Pattern (For reference only. mm/[in])



HIH-50XX

+Ve Supply Voltage (3.3 V)

OUT Voltage Out

- Ve

65 kOhm

Minimum Load

0 V

Catalog Listing	Description
HIH-5030-001	Covered integrated circuit humidity sensor, SMD, 1000 units on tape and reel
HIH-5031-001	Covered, filtered integrated circuit humidity sensor, SMD, 1000 units on tape and reel
HIH-5030-001S	Sample pack: covered integrated circuit humidity sensor, SMD, five units on tape
HIH-5031-001S	Sample pack: covered, filtered integrated circuit humidity sensor, SMD, sample pack, five units on tape

- Product installation instructions
- Application sheets:
 - Humidity Sensor Performance Characteristics
 - Humidity Sensor Theory and Behavior
 - Humidity Sensor Moisture and Psychrometrics
 - Thermoset Polymer-based Capacitive Sensors

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WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

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