Humidity Sensor

Type HCZ-H8

RoHS Compliant

Description

This product specification is applied to the Humidity Sensor Type HCZ-H8. The terminal electrode material uses lead free solder (Sn / Ag / Cu). This product is conformity with RoHS directive which means that lead, cadmium, mercury, hexavelent chromium and specific bromine-based flame retardants have not been used.

Applications

The applications of the component are used in relative humidity measurement, control and display. There are many end products can be used. For example air conditioner, humidifier, dehumidifier, hygrometer, recorder, transmitter etc.

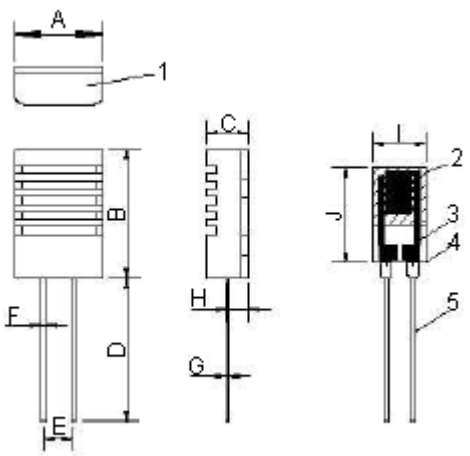
Model Number

HCZ - **H8** - **A**

- HCZ: Product Type
- H8: Dip Type Humidity Sensor, H : ±3% RH
- A: With (A) / Without (B) Housing Package Each Pieces

Configuration and Main Parts

Configuration : (Units : mm)



Symbol	Dimensions (mm)
A	8.3 ±0.2
B	13.5 ±0.2
C	4 ±0.5
D	15 ±2
E	2.54 ±0.2
F	0.5 ±0.1
G	0.2 ±0.1
H	2 ±0.5
I	5.08 ±0.3
J	10 ±0.3

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Main Parts

No.	Parts	Reference
1	Sensor case	PBT
2	Substrate	Alumina
3	Sensing material	Polymer
4	Electrode	Ag / Carbon
5	Lead frame	Phosphor bronze

Electrical Characteristics

General Characteristics:

	Units	Min.	Typ.	Max.
Rated voltage	V_{rms}	-	-	1
Rated power	mW	-	-	0.2
Operating frequency range	KHz	0.5	1	2
Operating temperature range	°C	0	-	60
Operating humidity range	% RH	-	-	90
Impedance range at 60% RH and 25°C**	KΩ	22.9	-	41.9
Humidity accuracy	% RH	-3	-	+3
Hysteresis (40% RH to 80% RH)		-		2
Temperature dependence (Reference)	% RH / °C	-	0.3	-

**Measurement by LCR meter at 1 KHz, 1 V_{rms} (sine wave)

Relative Humidity - Impedance - 25°C, 1 KHz, 1 V_{rms} (Sine wave)

% RH	20	30	40	50	60	70	80	90
Normal Value (KΩ)	6,300	1,400	310	87	31	11.8	4.8	2

Relative humidity - Impedance curve is shown in page 3

Mechanical Characteristics

No.	Item	Description	Criteria*
6.1	Shock resistance	Drop down 3 times at 80 cm.	No abnormal appearance and electrical properties.
6.2	Vibration resistance	2 hours each in the directions of X-Y-Z, at the frequency of 10-55 Hz, and amplitude of 1.5 mm.	
6.3	Resistance to soldering heat	The lead terminal shall be immersed by 3 mm from the substrate for 3 s in solder bath of 330 ±5°C.	
6.4	Strength of terminations	500 g at 10 s in the axial direction of lead terminal.	Secured

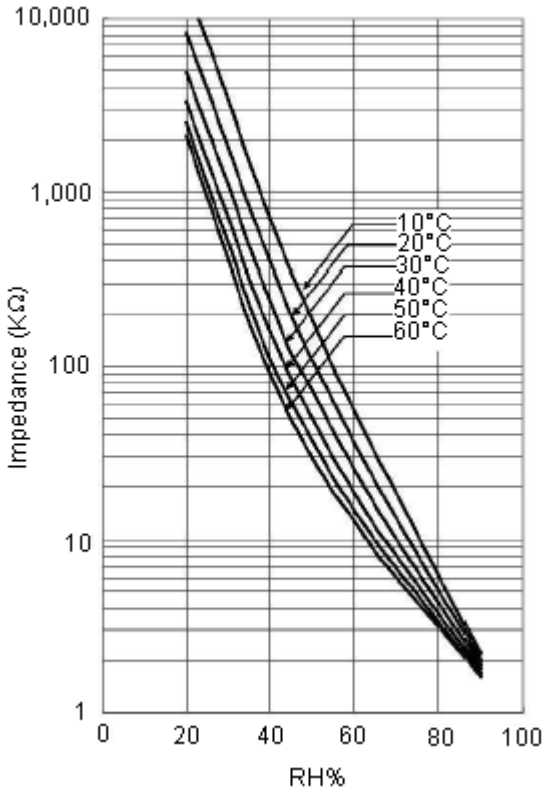
Reliability

No.	Item	Description	Criteria*
7.1	Heat resistance	1,000 hrs at 70°C	< ±3% RH
7.2	Cool resistance	1,000 hrs at -30°C	
7.3	Humidity resistance	1,000 hrs at 60°C, 90% RH	
7.4	Humidity cycle	Repeat 1,000 cycles One cycle: 30 mins at 25°C, < 20% RH 30 mins at 25°C, > 90% RH	
7.5	Temperature cycle	Repeat 100 cycles Each cycle: 30 mins at -30°C 30 mins at 85°C	
7.6	Voltage resistance	3,000 hrs at 1 KHz, 1 V_{rms}	

* The criteria test that the sensors finish the description process after 2 hours under normal temperature and humidity, The test condition is fixed at 25°C, 60% RH by LCR meter at 1 KHz, 1 V_{rms} (sine wave).

References

Relative Humidity-Impedance Curve-Measured at 1 KHz, 1 V_{rms} (sine wave)



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Impedance - % RH vs. Temperature

Unit: KΩ

RH%	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
20	-	15,000	11,000	8,200	6,300	4,900	4,000	3,300	2,800	2,500	2,200	2,100
25	10,000	7,400	5,300	3,900	3,000	2,300	1,800	1,500	1,300	1,100	1,000	920
30	4,800	3,400	2,400	1,800	1,400	1,100	870	710	600	510	450	410
35	2,100	1,500	1,100	820	630	490	390	320	270	230	200	180
40	980	700	520	400	310	240	190	160	130	110	100	91
45	480	350	260	200	160	120	100	86	73	63	55	50
50	250	190	140	110	87	74	61	51	44	38	34	30
55	130	100	80	64	49	43	36	30	26	23	21	19
60	73	57	46	37	31	26	22	19	17	15	14	13
65	41	32	27	22	19	16	14	12	11	10	9.2	8.6
70	23	19	16	14	11.8	10.2	9.1	8.2	7.5	6.9	6.5	6.1
75	13	11	9.5	8.4	7.5	6.7	6.1	5.6	5.2	4.9	4.6	4.4
80	7.2	6.4	5.8	5.2	4.8	4.4	4.1	3.8	3.6	3.4	3.3	3.2
85	4	3.7	3.5	3.3	3	2.9	2.8	2.6	2.5	2.4	2.4	2.3
90	2.2	2.2	2.1	2	2	1.9	1.8	1.8	1.7	1.7	1.7	1.6

Part Number Table

Description	Part Number
Humidity Sensor	HCZ-H8-B
	HCZ-H8-A