

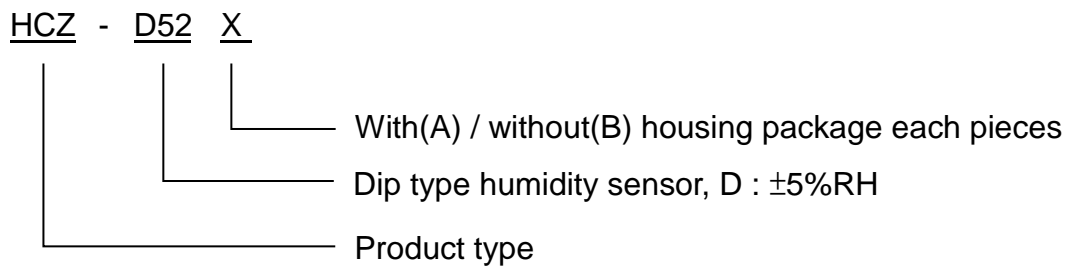
1 Description

This product specification is applied to the Humidity Sensor Type HCZ –D52. The terminal electrode material uses Lead free solder (Sn/Ag/Cu). This product is conformity with RoHS directive which means that lead, cadmium, mercury, hexavalent chromium and specific bromine-based flame retardants have not been used.

2 Applications

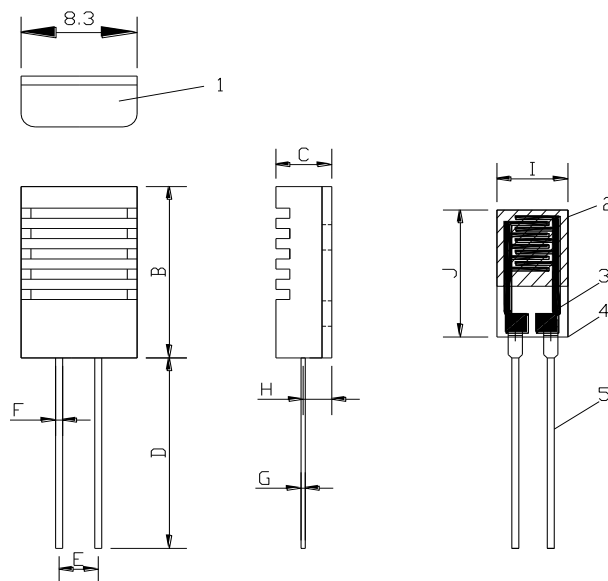
The applications of the component are used in relative humidity measurement, control and display. There are many end products can be used. For example air conditioner, humidifier, dehumidifier, hygrometer, recorder, transmitter...etc.

3 Model no.



4 Configuration & main parts

4.1 Configuration



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	App.No.	EC#085007

Units : mm

Symbol	Specifications	Symbol	Specifications
A	8.3±0.2	F	0.5±0.1
B	13.5±0.2	G	0.2±0.1
C	4.0±0.5	H	2.0±0.5
D	15±2	I	5.08±0.3
E	2.54±0.2	J	10±0.3

4.2 Main parts :

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

5 Electrical characteristics :

5.1 General Characteristics :

	Units	Min.	Typ.	Max.
Rated voltage	Vrms	-	-	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	19.3	-	52
Humidity accuracy	%RH	-5	-	+5
Hysteresis (40%RH~80%RH)	%RH	-	-	2

** Measurement by LCR meter at 1KHz, 1 Vrms(sine wave)

5.2 Relative humidity - Impedance – 25°C, 1kHz, 1 Vrms(sine wave)

%RH	20	30	40	50	60	70	80	90
Normal value (kΩ)	9210	1480	330	92.8	31.0	11.7	4.85	2.21

5.3 Relative humidity - Impedance curve is shown in page 5

6 Mechanical characteristics :

No.	Item	Description	Criteria*
6.1	Shock resistance	Drop down 3 times@75cm	No abnormal appearance & electrical properties
6.2	Vibration resistance	2 hours each in the directions of X-Y-Z, at the frequency of 10-55Hz, and amplitude of 1.5mm	No abnormal appearance & electrical properties
6.3	Resistance to soldering heat	The lead terminal shall be Immersed by 3 mm from the substrate for 3 seconds in solder bath of 260±5°C	No abnormal appearance & electrical properties
6.4	Strength of terminations	500g@10 seconds in the axial direction of lead terminal	Secured

7 Reliability :

No.	Item	Description	Criteria*
7.1	Heat resistance	1000 hours@70°C	< ±5%RH
7.2	Cool resistance	1000 hours@-30°C	< ±5%RH
7.3	Humidity resistance	1000 hours@60°C, 90%RH	< ±5%RH
7.4	Humidity cycle	Repeat 500 cycles One cycle: 30 minutes@25°C, <30%RH 30 minutes@25°C, >90%RH	< ±5%RH
7.5	Temperature cycle	Repeat 100 cycles Each cycle: 30 minutes@-30°C 30 minutes@85°C	< ±5%RH
7.6	Voltage resistance	3000 hours@1KHz, 1Vrms	< ±5%RH

* 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 1KHz, 1 Vrms(sine wave)

8 Packaging :**8.1 HCZ-D52A**

- 8.1.1 100 pieces of sensor to be packed in a bag.
- 8.1.2 In case of fractional package, the above bag and carton box may not be used.

8.2 HCZ-D52B

- 8.2.1 245 pieces were layed in tray, and 5 trays envelope in a bag.
- 8.2.2 10,000 pieces packed in a shipping carton box (430*360*390mm).
- 8.2.3 In case of fractional package, the above tray and carton box may not be used.

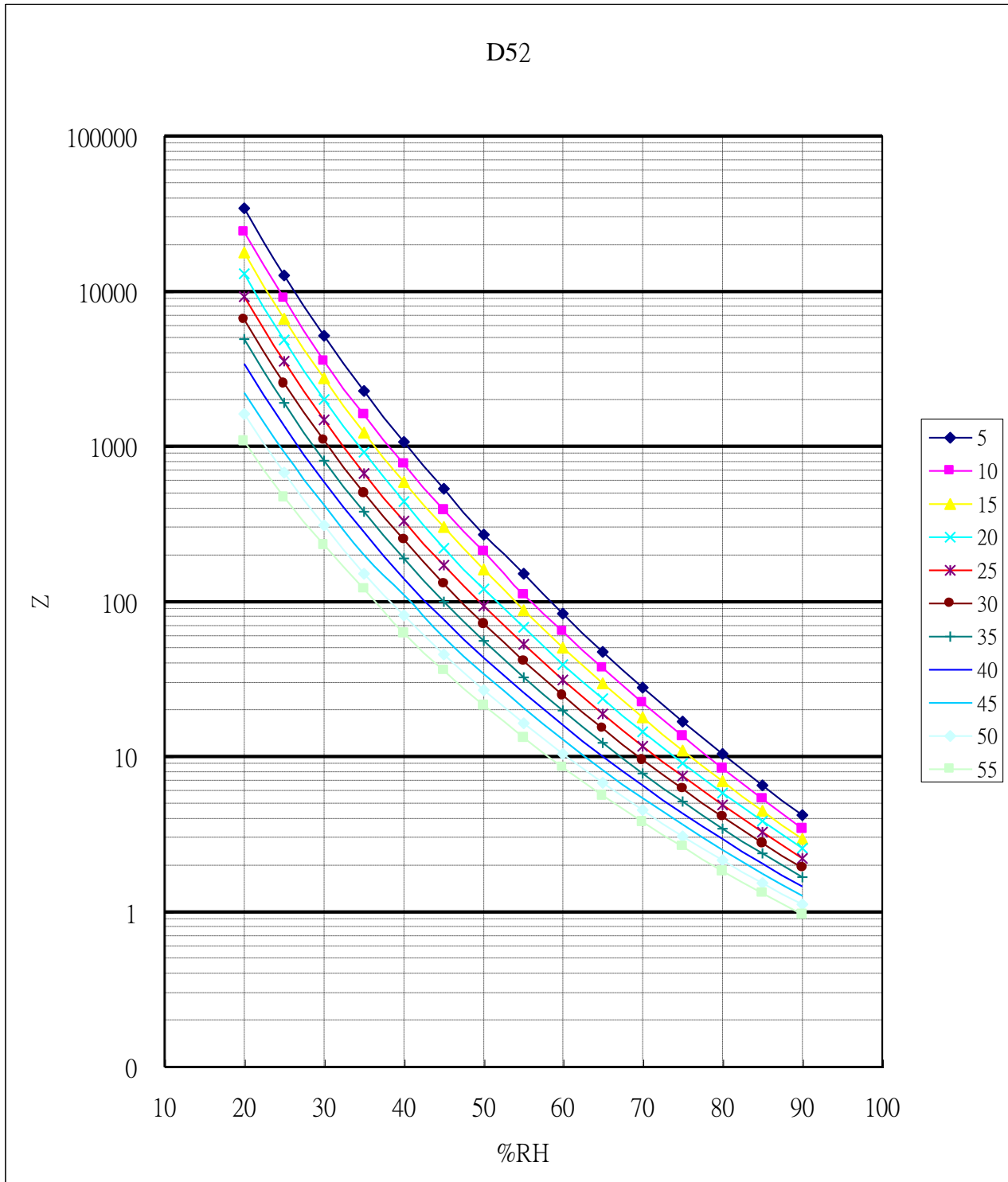
8.3 Caution remarks on operation :

- 8.3.1 To avoid direct application of DC voltage on humidity sensor.
- 8.3.2 To protect sensor from dewfall and drenching.
- 8.3.3 To avoid any operation of humidity sensors in the following environmental ambient.
 - 8.3.3.1 Salt
 - 8.3.3.2 Inorganic gas – Sulfide dioxide, Chlorine, Ammonia etc.
 - 8.3.3.3 Organic gas – Alcoholic, Glycols, Aldehydes etc.
- 8.3.4 Recommended storage condition
 - Temperature range 10~40°C
 - Humidity range 90%RH or less
- 8.3.5 Do not store humidity sensors long period of time in an over 60°C ambient due to some occasion of degradation on sensor housing case.

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REFERENCES

- Relative humidity - Impedance curve – measured at 1kHz, 1 Vrms(sine wave)



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
20	34100	24000	17800	13000	9210	6570	4910	3400	2220	1620	1080
25	12600	9000	6670	4870	3150	2550	1900	1350	920	680	470
30	5160	3530	2750	2010	1480	1090	810	590	420	310	230
35	2270	1600	1230	910	670	500	380	280	200	150	120
40	1060	770	590	440	330	250	190	140	110	81.4	62.3
45	530	390	300	220	170	130	100	76.3	58.8	45.5	35.6
50	270	210	160	120	92.8	71.8	55.6	43.3	34.0	26.7	21.3
55	150	110	87.5	67.7	52.7	41.3	32.4	25.6	20.5	16.4	13.3
60	82.9	64.2	50.0	39.3	31.0	24.7	19.7	15.9	12.8	10.4	8.48
65	47.4	37.2	29.4	23.5	18.8	15.1	12.2	10.0	8.18	6.74	5.60
70	27.9	22.2	17.8	14.4	11.7	9.53	7.81	6.48	5.38	4.50	3.78
75	16.8	13.5	11.0	9.06	7.45	6.16	5.13	4.32	3.63	3.07	2.61
80	10.4	8.37	6.91	5.82	4.85	4.08	3.44	2.94	2.50	2.14	1.83
85	6.51	5.31	4.45	3.82	3.24	2.76	2.36	2.05	1.76	1.52	1.31
90	4.17	3.44	2.93	2.57	2.21	1.92	1.66	1.46	1.26	1.11	0.96

Measured at 100Hz、1KHz、10KHz - Impedance curve

