

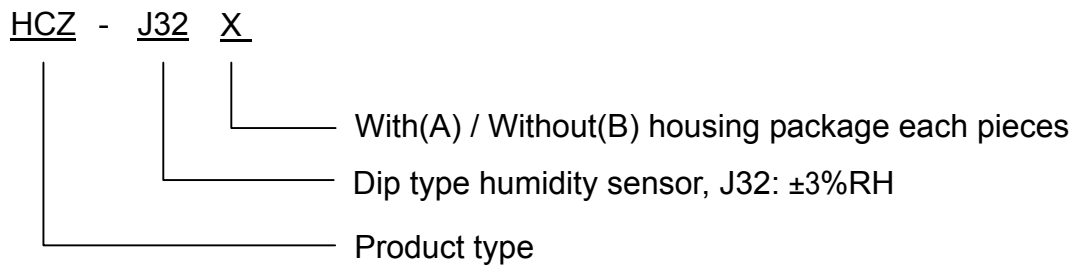
## 1 Description

This product specification is applied to the Humidity Sensor Type HCZ –J32. 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

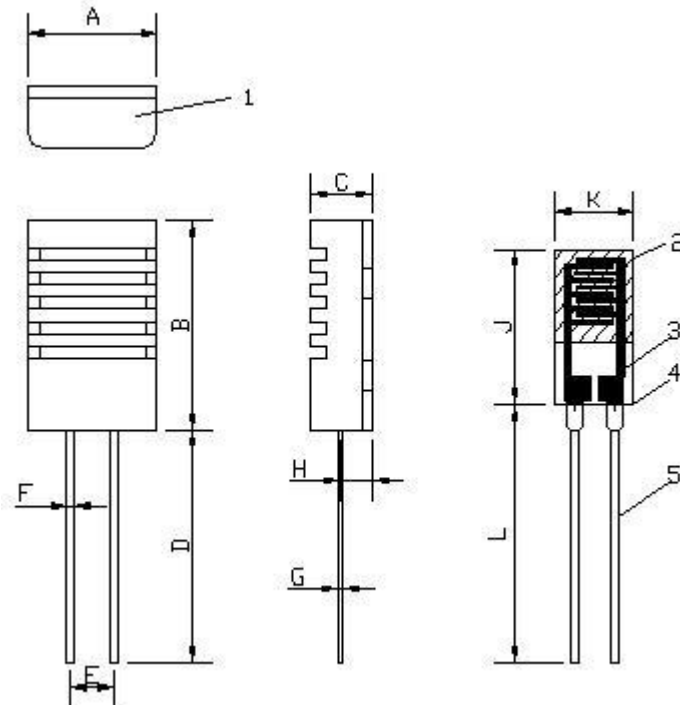
The applications of the component are used in relative humidity measurement, control and display. There are many end products can be used. For example air conditioner, humidifier, dehumidifier, hygrometer, recorder, transmitter...etc.

## 3 Model no.



## 4 Configuration & main parts

### 4.1 Configuration



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	Rev.	EC#085006
	App.No.	
Material Part No.		

Units : mm

Symbol	Specifications	Symbol	Specifications
A	8.3±0.2	G	0.2±0.1
B	13.5±0.2	H	2.0±0.5
C	4.0±0.5	K	5.08±0.3
D	15±2	J	10±0.3
E	2.54±0.2	L	Min 12
F	0.5±0.1		

#### 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		0	-	60
Operating humidity range	%RH	-	-	99
Impedance range at 60%RH and 25 **	kΩ	16.9	-	30.5
Humidity accuracy	%RH	-3	-	+3
Hysteresis (40%RH~80%RH)	%RH	-	-	2

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

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

%RH	20	30	40	50	60	70	80	90
Normal value (kΩ)	6420	1010	230	66.9	23.0	8.92	3.81	1.82

#### 5.3 Relative humidity - Impedance curve is shown in page 5

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## 6 Mechanical characteristics :

No.	Item	Description	Criteria*
6.1	Shock resistance	Drop down 3 times@80cm	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 330±5	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	< ±5%RH
7.2	Cool resistance	1000 hours@-30	< ±5%RH
7.3	Humidity resistance	1000 hours@60 , 90%RH	< ±5%RH
7.4	Humidity cycle	Repeat 500 cycles One cycle: 30 minutes@25 , <30%RH 30 minutes@25 , >90%RH	< ±5%RH
7.5	Temperature cycle	Repeat 100 cycles Each cycle: 30 minutes@-30 30 minutes@85	< ±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 , 60%RH by LCR meter at 1KHz, 1 Vrms(sine wave)

## 8 Packaging :

### 8.1 HCZ-J32A

8.1.1 1000 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-J32B

8.2.1 245 pieces were laid 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

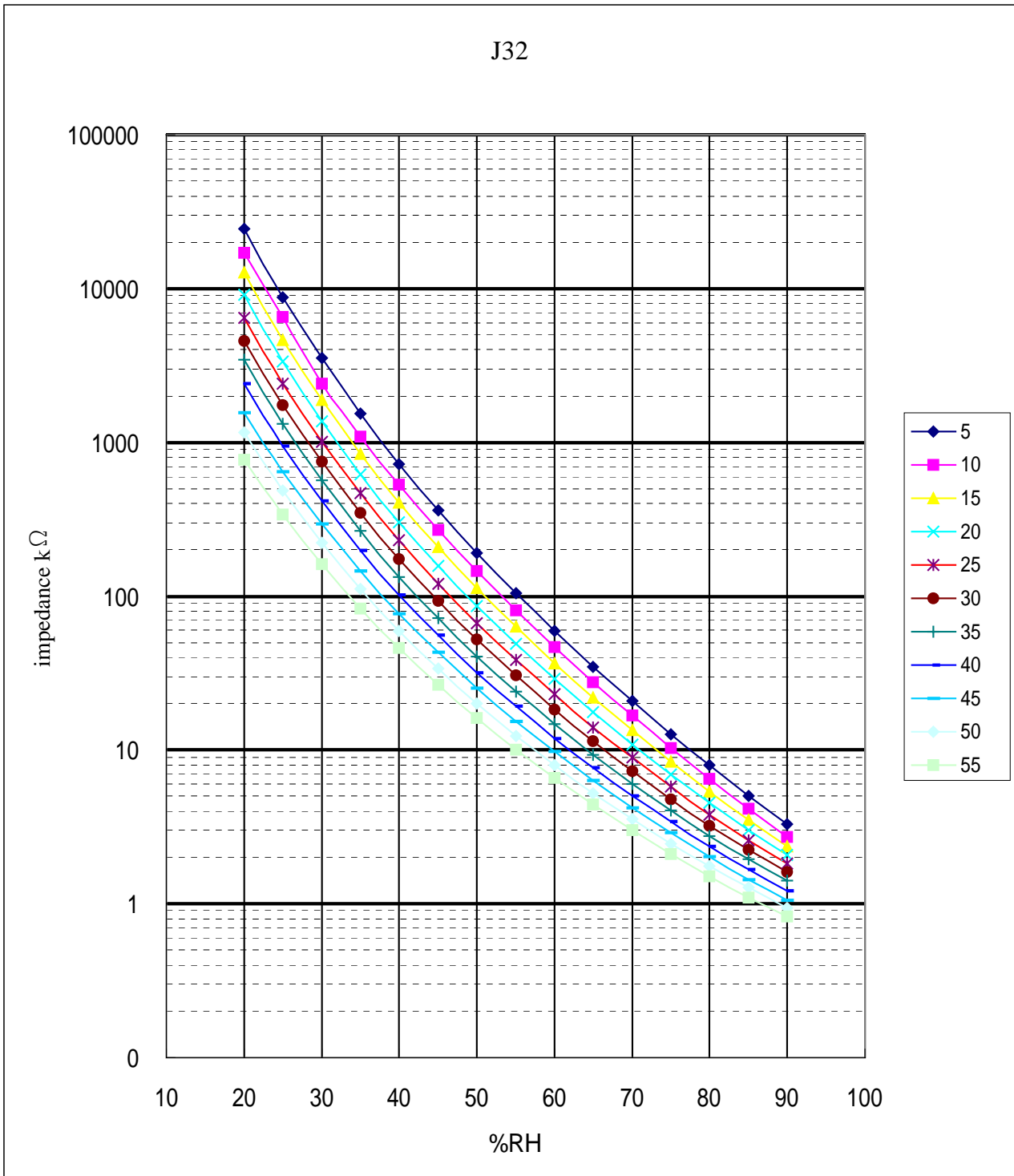
Humidity range 90%RH or less

8.3.5 Do not store humidity sensors long period of time in an over 70 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	10	15	20	25	30	35	40	45	50	55
20	24580	17000	12660	9160	6420	4560	3440	2400	1560	1160	771
25	8810	6500	4600	3360	2420	1760	1320	948	646	484	338
30	3530	2410	1880	1380	1010	749	567	415	294	223	161
35	1540	1090	841	623	465	349	266	198	145	111	83.3
40	727	529	406	304	230	175	134	102	76.9	59.5	45.8
45	364	271	209	158	121	93.1	72.0	55.5	43.0	33.7	26.5
50	192	146	113	86.4	66.9	52.1	40.8	31.9	25.2	20.1	16.1
55	105	81.2	63.3	49.2	38.6	30.4	24.1	19.2	15.4	12.4	10.1
60	59.7	46.7	36.7	29.0	23.0	18.4	14.7	11.9	9.75	7.97	6.59
65	34.9	27.6	21.9	17.6	14.0	11.4	9.31	7.67	6.34	5.26	4.40
70	20.8	16.7	13.4	10.9	8.92	7.31	6.04	5.06	4.23	3.56	3.01
75	12.7	10.3	8.37	6.95	5.76	4.80	4.03	3.42	2.89	2.47	2.11
80	7.94	6.46	5.35	4.53	3.81	3.23	2.76	2.36	2.02	1.75	1.51
85	5.05	4.15	3.50	3.03	2.60	2.24	1.94	1.67	1.44	1.27	1.10
90	3.28	2.73	2.36	2.09	1.82	1.61	1.41	1.21	1.06	0.94	0.83

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

