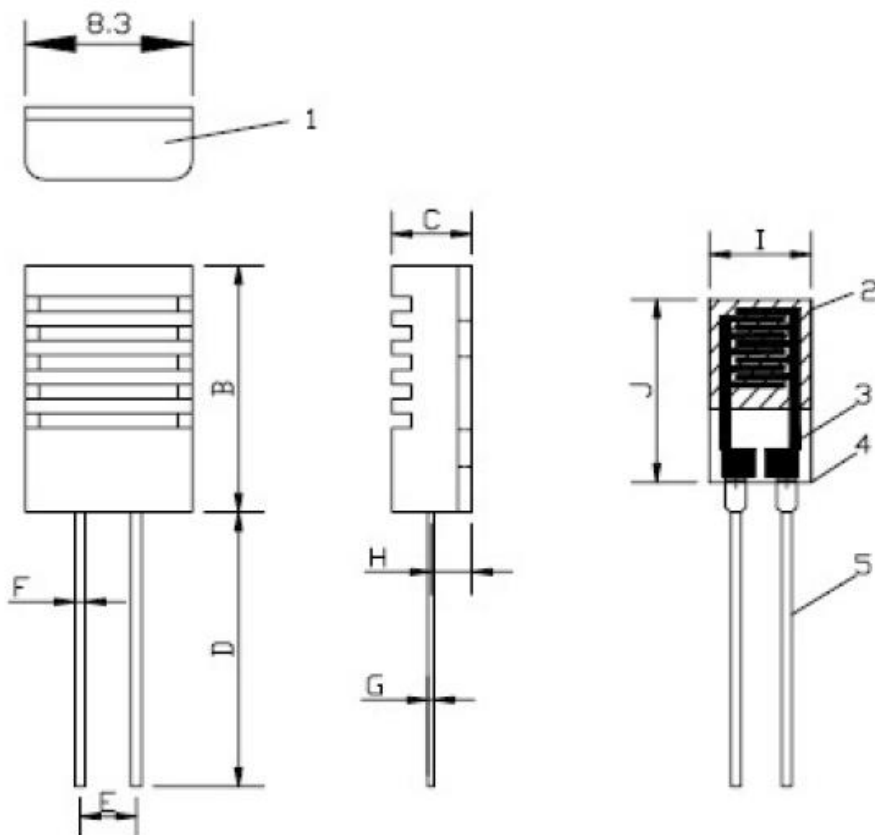


## Data Sheet

### Moisture sensor (L x W x H) 13.5 x 4 x 8.3 mm



Units : mm

## Data Sheet

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

### 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 |

## Data Sheet

### Technical data

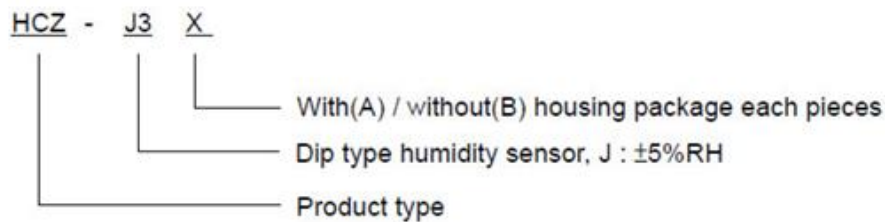
#### Description

This product specification is applied to the Humidity Sensor Type HCZ – J3. 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.

#### 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 no. :



#### Electrical characteristics :

##### 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     | 14.2 | -    | 38.5 |
| Humidity accuracy                    | %RH    | -5   | -    | +5   |
| Hysteresis (40%RH~80%RH)             | %RH    | -    | -    | 2    |
| Temperature dependence(reference)    | %RH/°C | -    | 0.6  | -    |

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

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

| %RH               | 20    | 30  | 40  | 50 | 60 | 70  | 80  | 90  |
|-------------------|-------|-----|-----|----|----|-----|-----|-----|
| Normal value (kΩ) | 5,000 | 920 | 220 | 66 | 23 | 9.0 | 4.2 | 1.9 |

## Data Sheet

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### 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°C | No abnormal appearance & electrical properties |
| 6.4 | Strength of terminations     | 500g@10 seconds in the axial direction of lead terminal                                                | Secured                                        |

### 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 1000 cycles<br>One cycle:<br>30 minutes@25°C, <20%RH<br>30 minutes@25°C, >90%RH | < ±5%RH   |
| 7.5 | Temperature cycle   | Repeat 100 cycles<br>Each cycle:<br>30 minutes@-30°C<br>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 over night under normal temperature and humidity. The test condition is fixed at 25°C, 60%RH by LCR meter at 1KHz, 1 Vrms(sine wave)

## Data Sheet

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### Caution remarks on operation

To avoid direct application of DC voltage on humidity sensor.

To protect sensor from dewfall and drenching.

To avoid any operation of humidity sensors in the following environmental ambient.

Salt

Inorganic gas – Sulfide dioxide, Chlorine, Ammonia etc.

Organic gas – Alcoholic, Glycols, Aldehydes etc.

Recommended storage condition

Temperature range 10~40°C

Humidity range 90%RH or less

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.

### ● Impedance table -- %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 |
|-----|------|------|------|------|------|------|------|------|------|------|
| 20  |      |      |      | 7200 | 5000 | 3600 | 2500 | 1800 | 1300 | 1100 |
| 25  | 9900 | 6900 | 4600 | 3200 | 2300 | 1700 | 1100 | 920  | 600  | 520  |
| 30  | 4400 | 3100 | 2000 | 1500 | 920  | 770  | 530  | 430  | 280  | 250  |
| 35  | 1900 | 1400 | 900  | 670  | 450  | 360  | 250  | 210  | 140  | 114  |
| 40  | 810  | 600  | 430  | 310  | 220  | 170  | 130  | 96   | 74   | 61   |
| 45  | 420  | 300  | 220  | 160  | 120  | 90   | 71   | 55   | 43   | 35   |
| 50  | 211  | 150  | 110  | 83   | 66   | 51   | 40   | 31   | 25   | 20   |
| 55  | 109  | 83   | 62   | 48   | 37   | 29   | 23   | 19   | 15   | 13   |
| 60  | 63   | 48   | 37   | 29   | 23   | 18   | 15   | 12   | 10.3 | 8.7  |
| 65  | 37   | 28   | 22   | 18   | 14   | 12   | 10   | 8.1  | 6.9  | 5.9  |
| 70  | 22   | 17   | 14   | 12   | 9.6  | 8.0  | 6.8  | 5.8  | 4.9  | 4.3  |
| 75  | 14   | 12   | 9.4  | 7.8  | 6.5  | 5.5  | 4.7  | 4.1  | 3.4  | 3.0  |
| 80  | 9.0  | 7.3  | 6.0  | 5.0  | 4.2  | 3.8  | 3.3  | 2.9  | 2.4  | 2.0  |
| 85  | 6.0  | 4.8  | 3.9  | 3.3  | 2.8  | 2.5  | 2.2  | 2.0  | 1.7  | 1.4  |
| 90  | 4.0  | 3.2  | 2.7  | 2.2  | 1.9  | 1.7  | 1.5  | 1.4  | 1.2  | 1.1  |

## Data Sheet

● Impedance – Relative humidity curve

