

# 产品规格书



## Product Specification

|                   |         |  |
|-------------------|---------|--|
| CUSTOMER          | 客户:     | _____                                      |
| CUSTOMER PN       | 客户 PN:  | _____                                      |
| HANG CRYSTAL P/N  | 杭晶物料编码: | <u>HCTT1-4.000-ZTTCRL</u>                  |
| MODEL             | 产品型号:   | <u>Ceramic Resonator ZTTCR 4.5x2.0x1.2</u> |
| NOMINAL FREQUENCY | 频率:     | <u>4.000MHZ</u>                            |
| ISSUE DATE        | 日期:     | <u>2017 / 11 / 18</u>                      |

CUSTOMER'S APPROVAL

客户确认

(PLEASE RETURN A COPY WITH APPROVAL)  
(请将确认的复印件返回我司)

| APPROVED   | QA  |
|--|---|
|  |  |

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| Revision | Description / ECN | Prepared | Approved    | Date       |
|----------|-------------------|----------|-------------|------------|
| 1        | Initial release   | MB       | James Jiang | 2017-11-18 |
| 2        | Not issued        |          |             |            |
| 3        | Not issued        |          |             |            |

**1. NOMINAL AND MAXIMUM RATINGS, OPERATING AND STORAGE CONDITIONS**

|   | PARAMETER                   | MIN          | TYP | MAX | Unit | Conditions / Remarks |
|---|-----------------------------|--------------|-----|-----|------|----------------------|
| 1 | Nominal frequency           | <b>4.000</b> |     |     | MHz  |                      |
| 2 | Withstanding Voltage        |              |     | 50  | V    | DC, 1min             |
| 3 | Insulation Resistance       |              |     | 500 | MΩ   | 10V, 1min            |
| 4 | Rating Voltage UR (V) max   |              |     | 6   | V    | DC                   |
|   |                             |              |     | 15  | V    | p-p                  |
| 5 | Operating temperature range | -20          | +25 | +85 | °C   |                      |
| 6 | Storage Temperature Range   | -40          |     | +85 | °C   |                      |

**2. ELECTRICAL PARAMETER LIMITS**

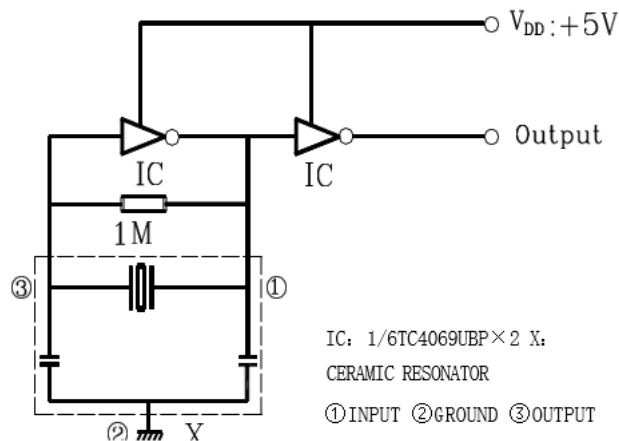
|   | PARAMETER  | MIN  | MAX  | Unit | Remarks                                  |
|---|--|------|------|------|--|
| 1 | Frequency Accuracy                               | -0.5 | +0.5 | %    |  |
| 2 | Temperature Coefficient of Oscillation Frequency | -0.3 | +0.3 | %    | Oscillation Frequency drift, -25°C~+85°C |
| 3 | Oscillation Frequency Aging Rate (10years)       | -0.2 | +0.2 | %    |  |
| 4 | Resonant Impedance                               |      | 60   | Ω    |  |

**3. MEASUREMENTS**

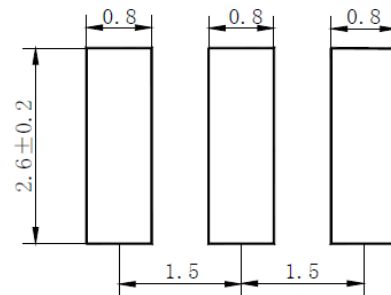
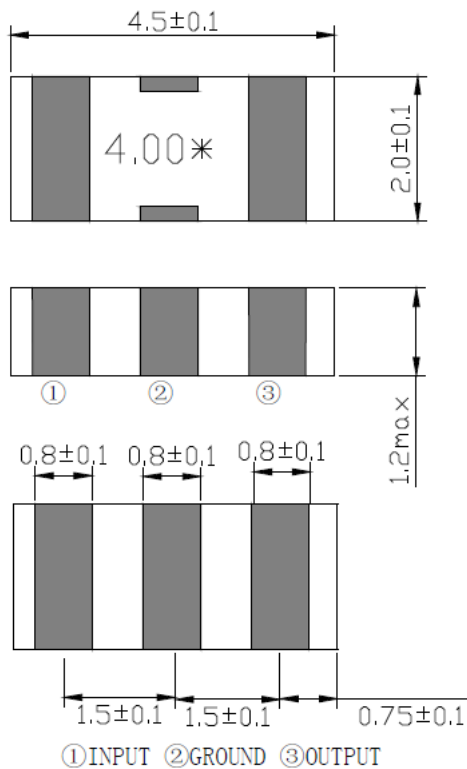
Measurement Conditions:

Parts shall be measured under a condition (Temp.: 20°C±15°C, Humidity: 65%±20% R.H.)

unless the standard condition (Temp.: 25°C±3°C, Humidity: 65%±5% R.H.) is regulated to measure.



#### 4. OUTLINE DRAWING(mm)



Recommended land patter

#### 5. RELIABILITY TEST INFORMATION

| No. | Item                      | Condition of Test   |                | Performance Requirement   |
|-----|---------------------------|---|----------------|---------------------------|
| 5.1 | Humidity                  | Subject the resonator at $40 \pm 2^\circ\text{C}$ and 90%-95% R.H. for 96h, resonators shall be measured after being placed in natural conditions for 1h.   |                | It shall fulfill Table 1. |
| 5.2 | High Temperature Exposure | Subject the resonator to $85 \pm 2^\circ\text{C}$ for 96h, resonator shall be measured after being placed in natural conditions for 1h.   |                | It shall fulfill Table 1. |
| 5.3 | Low Temperature Exposure  | Subject the resonator to $-40 \pm 2^\circ\text{C}$ for 96h, resonator shall be measured after being placed in natural conditions for 1h.  |                | It shall fulfill Table 1. |
| 5.4 | Temperature Cycling       | After temperature cycling of blow table was performed 5 times, Filter shall be measured after being placed in natural conditions for 1h.  |                | It shall fulfill Table 1. |
|     |                           | Temperature   | Time           |                           |
|     |                           | $-25 \pm 3^\circ\text{C}$   | $30 \pm 3$ min |                           |
|     |                           | $85 \pm 3^\circ\text{C}$  | $30 \pm 3$ min |                           |
| 5.5 | Vibration                 | Subject the resonator to vibration for 2h. Each in x y and z axis with the amplitude of 1.5mm, The frequency shall be varied uniformly between the limits of 10Hz-55Hz-10Hz and then resonator shall be measured. |                | It shall fulfill Table 1. |

| No. | Item                         | Condition of Test   | Performance Requirement   |
|-----|------------------------------|---|---|
| 5.6 | Mechanical Shock             | Resonator shall be measured after 3 times random dropping from the height of 70cm on concrete floor.  | No visible damage and it shall fulfill Table 1.   |
| 5.7 | Resistance to Soldering Heat | Lead terminals are immersed up to 2 mm from filter's body in soldering bath of 260°C±5°C for 10s ± 1s and then resonator shall be measured after being placed in natural conditions for 1h. | It shall fulfill Table 1.   |
| 5.8 | Solderability                | Lead terminals are immersed up to 2mm from filter's body in soldering bath of 250°C±5°C for 3s±0.5s.  | More than 95% of the terminal surface of the filter shall be covered with fresh solder. |

Table 1

| Item  | Specification after test |
|---|--------------------------|
| Oscillation Frequency Change<br>$\Delta f/f$ (%) max                      | ±0.3                     |
| The limits in the above table are referenced to the initial measurements. |                          |

## 6. CAUTION OF USE

- 6.1 Do not clean or wash the component for it is not hermetically sealed.
- 6.2 Don't be close to fire
- 6.3 Don't apply excess mechanical stress to the component.
- 6.4 Don't bend terminals of the component
- 6.5 This specification mentions the quality of the component as a single unit. Please insure the component is thoroughly evaluated in your application circuit.
- 6.6 Do not pass through the re-flow. Handwork jointing or wave crest jointing is allowed.