



CHEQUERS ELECTRONIC (CHINA) LIMITED

捷嘉電子(中國)有限公司

CERAMIC RESONATOR SPECIFICATION

PART NO.: ZTTWS4.00MG

<This Product is RoHS and REACH Compliant>

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|------------|---------------|
| Part no. | : ZTTWS4.00MG |
| Printed on | : 18-Mar-13 |
| Prepared | : FRANKIE |
| Ver. Ctrl. | : JX290512/F |
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1. Scope

This specification shall cover the characteristics of the ceramic resonator with ZTTWS4.00MG for clock oscillation circuit such as microprocessors.

2. Part no.: ZTTWS4.00MG

3. Electrical specification

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|-----|--|---|
| 3-1 | Nominal oscillating frequency | 4.00MHz |
| 3-2 | Initial tolerance | ±0.50% max. |
| 3-3 | Resonant resistance | 30Ω max. |
| 3-4 | Insulation resistance | 5x10 ⁸ Ω min. (at 10V DC) |
| 3-5 | Withstanding voltage | DC 100V (5 seconds) max. |
| 3-6 | Rating voltage - DC voltage - AC voltage | 6V DC 15V p-p |
| 3-7 | Temperature stability (-20°C to +80°C) Operating temperature Storage temperature | ±0.3% max. (from initial value) -25°C to +85°C -55°C to +85°C |
| 3-8 | Aging (for 10 years) | ±0.3% max. (from initial value) |

4. Physical characteristics

| | Test item | Condition of test | Performance requirement |
|-----|------------------------------|---|---|
| 4-1 | Random drop | Resonator shall be measured after 3 times of random drops from the height of 1 meter on concrete floor. | No visible damage and the measured values shall meet Table 1. |
| 4-2 | Vibration | Resonator shall be measured after being applied with vibration (amplitude: 1.5mm, frequency: 10Hz to 55Hz) to each of the 3 perpendicular directions (X, Y, and Z) for 2 hours. | The measured values shall meet Table 1. |
| 4-3 | Resistance to soldering heat | Lead terminals are immersed up to 2mm from the resonator's body in solder bath (260°C±5°C for 10 seconds±1 second). Then the resonator shall be measured after being placed in room temperature for 1 hour. | The measured values shall meet Table 1. |
| 4-4 | Solderability | Lead terminals are immersed in solder bath (250°C±5°C) for 2 seconds ± 0.5 second. | Min. 95% of lead terminals' surface shall be covered with solder. |
| 4-5 | Terminal strength | After a weight of 0.5kg is applied to each terminal in axial direction for 10 seconds±1 second, the resonator shall be measured. After lead terminals are fixed at 2mm from the resonator's body. They shall be folded up to 90° from their axial direction and folded back to -90°, then folded back to their axial direction. The speed of folding shall be 3 seconds. | No visible damage and the measured values shall meet Table 1. No cutting off shall be visible. |

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5. Environmental characteristics

| | Test item | Condition of test | Performance requirement |
|------------|------------------|--|---|
| 5-1 | High temperature | After being placed in a chamber (+85°C±2°C) for 500 hours, the resonator is measured after being placed in room temperature for 1 hour. | The measured values shall meet Table 1. |
| 5-2 | Low temperature | After being placed in a chamber (-55°C±2°C) for 500 hours, the resonator is measured after being placed in room temperature for 1 hour. | The measured values shall meet Table 1. |
| 5-3 | Humidity | After being placed in a chamber with a humidity of 90% to 95% RH and a temperature of +40°C±2°C for 500 hours, the resonator is measured after being placed in room temperature for 1 hour. | The measured values shall meet Table 1. |
| 5-4 | Heat shock | After being kept at room temperature, resonator shall be placed at a temperature of -25°C±3°C. After 30 minutes at this temperature, the resonator is immediately placed at a temperature of 85°C±3°C. After another 30 minutes at this temperature, the resonator is placed under -25°C±3°C again. The above processes are counted as 1 cycle. After 5 cycles (with a transfer time of 15 seconds between each cycle), the resonator shall be measured after being placed in room temperature for 1 hour. | The measured values shall meet Table 1. |

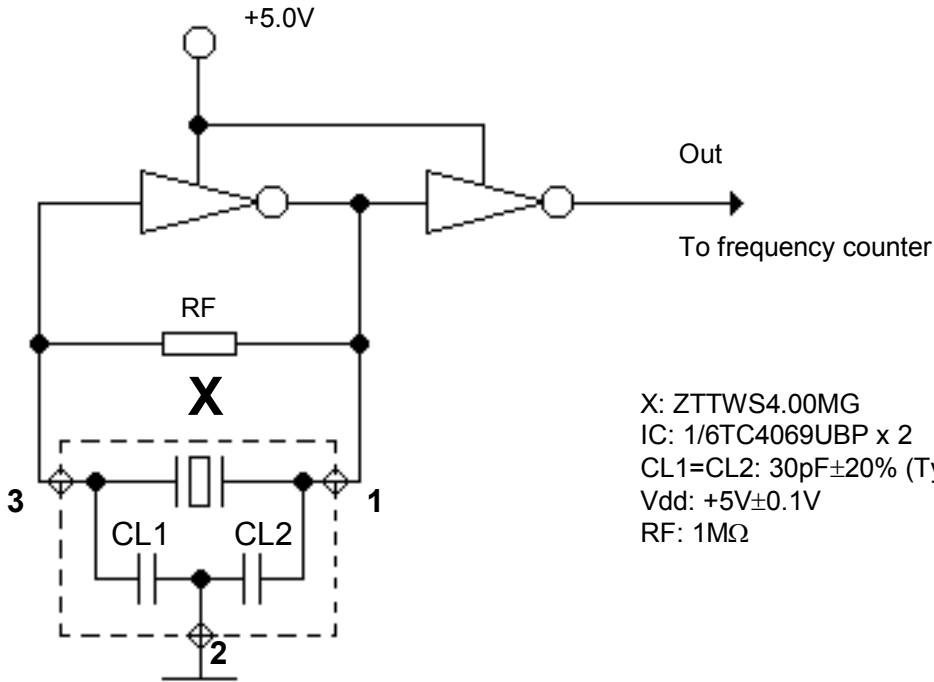
Table 1

| Measurements | Requirements |
|------------------------------|--------------------------------|
| Oscillating frequency change | 0.3% max. (from initial value) |
| Resonant impedance | 30Ω max. |

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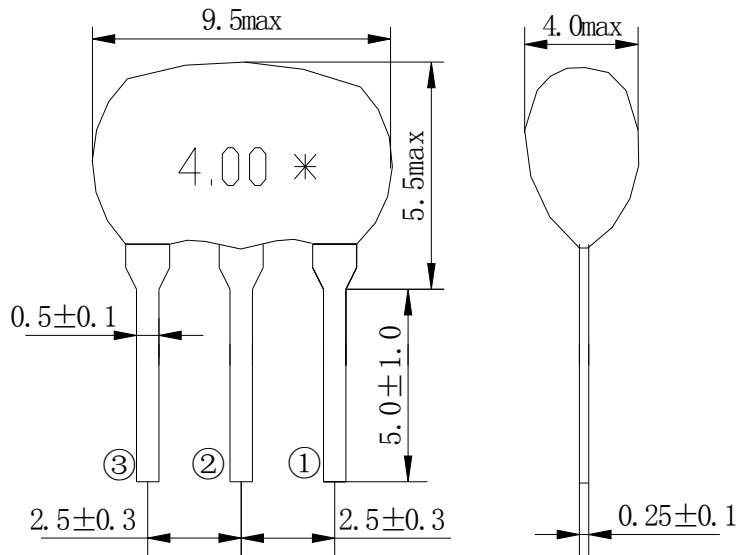
6. Test circuit

- 6-1 Oscillating frequency : See Figure 2.
 - 6-2 Equivalent circuit constants : Network Analyzer HP87510A or equivalent
 - 6-3 Measuring condition : Temperature: +5°C to +35°C
Humidity: 45% to 85% RH
- If require : Temperature: +25°C ± 3°C
Humidity: 60% ± 10% RH



X: ZTTWS4.00MG
 IC: 1/6TC4069UBP x 2
 CL1=CL2: 30pF±20% (Typical)
 Vdd: +5V±0.1V
 RF: 1MΩ

7. Dimension of ZTTWS4.00MG



①INPUT ②GROUND ③OUTPUT
 *:EIAJ MONTHLY CODE

Unit: mm

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