深圳市炬烜科技有限公司

CHIP SUN TECHNOLOGY CO., LTD

APPROVAL SHEET

RoHS Compliant

CUSTOMER: _____

DESCRIPTION: ZTTCE 12.00MHz SMD CERAMIC RESONATOR

MANUFACTURER PART NO.: ZTTCE12.00MG

CUSTOMER PART NO: _____

USED IN MODEL: _____

承　　认　　APPROVAL		
工程部 TECHNOLOGY DEPT.	品质部 QUALITY DEPT.	采购部 PURCHASING DEPT.

Date: March 15, 2023

深圳市炬烜科技有限公司

CHIP SUN TECHNOLOGY CO., LTD

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1. Scope: The specification shall cover of SMD ceramic resonator with 12.00MHz used for oscillation circuit	
2. Spec. No.:	
3. Part No.: ZTTCE12.00MG	
4. Electrical Characteristics	
4.1 Nominal Frequency	12.000MHz
4.2 Frequency Tolerance	±0.5% max.
4.3 Resonant Resistance	40Ω max.
4.4 Build-in Capacitance	33pF±10%
4.5 Temperature Stability (-20℃~+80℃)	±0.2% max.
4.6 Insulation Resistance	500MΩ min
4.7 Aging for 1st year	±0.1% max.
4.8 Aging for 10 years	±0.3% max.
4.9 Withstanding Voltage	D.C.100V 5 sec
4.10 Max Voltage	
DC	D.C.6V
AC	15V P-P
4.10 Operating Temperature	-20℃~ +80℃
4.11 Storage Temperature	-55℃~ +85℃
5 Measurement 5.1 Measurement Condition Measurement shall be carried out at the standard temperature of 25±2℃,and humidity 55±5% under normal air pressure. If no specific requirements, Test can be carried out under 5-35℃,and humidity 45-65%. 5.2 Measuring Circuit and Equipment Nominal frequency shall be measured by the standard test circuit as shown in Fig.1, Resonant Resistance shall be measured by network analyzer.	

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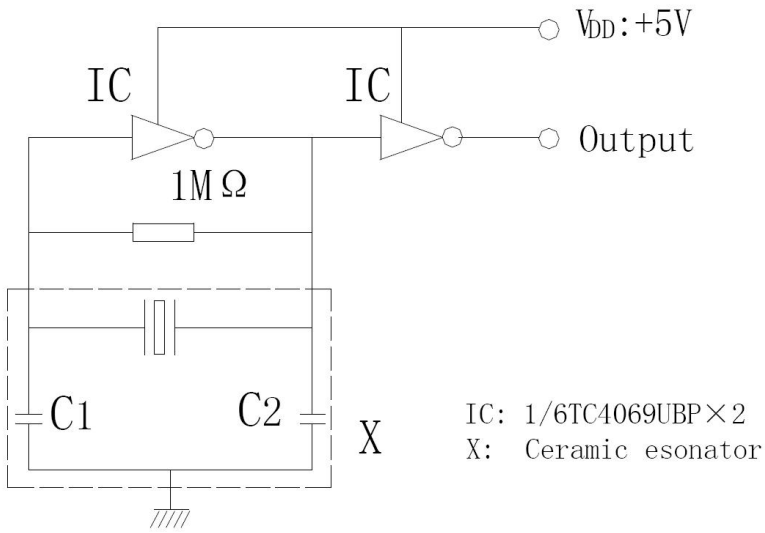
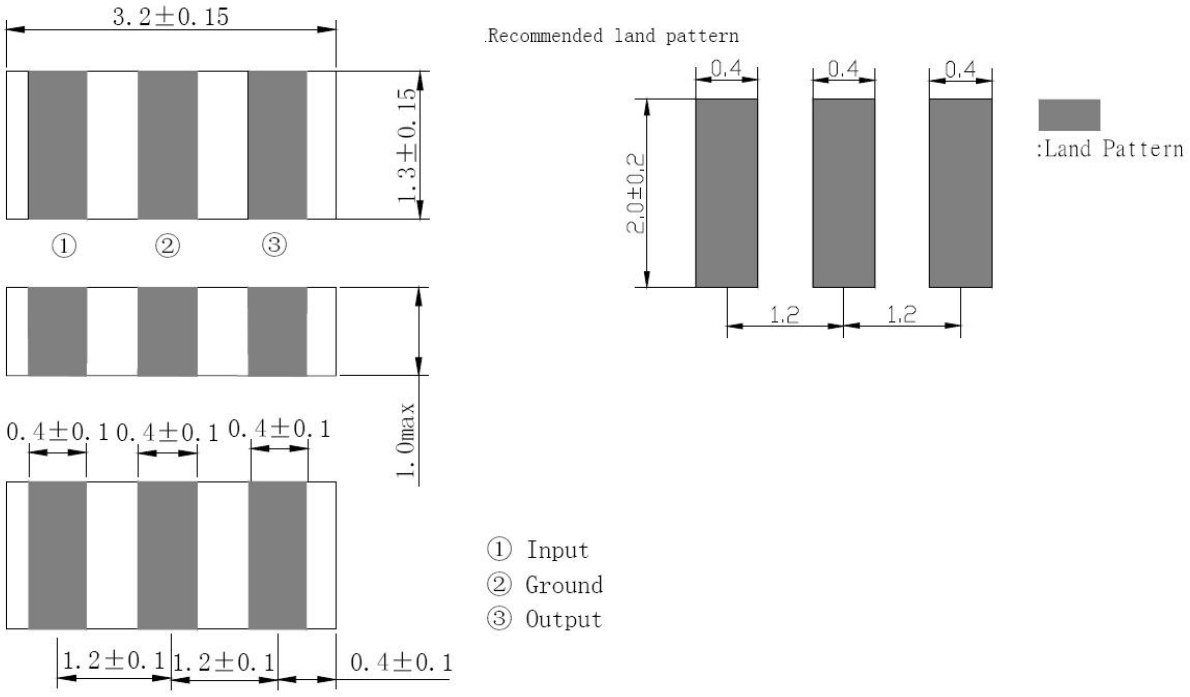
Fig.1 Test Circuit



6. Outline

6.1 Appearance: Mark shall be clear; appearance shall be smooth and no damage.

6.2 Dimensions:



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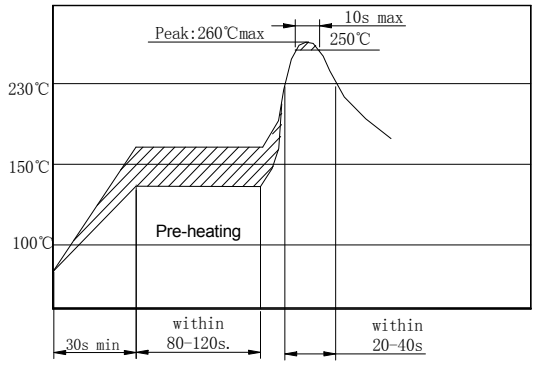
7. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

<table>
<tr><th>No</th><th>Item</th><th>Condition of Test</th><th>Performance Requirements</th></tr>
<tr><td>7.1</td><td>Humidity</td><td>Keep the resonator at 40℃±2℃ and 90%-95% RH for 96h. Then Release the resonator into the room Condition for 1h prior to the Measurement.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>7.2</td><td>High Temperature Exposure</td><td>Subject the resonator to 85℃±2℃ for 96h, then release the resonator into the room conditions for 1h prior to the measurement.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>7.3</td><td>Low Temperature Exposure</td><td>Subject the resonator to -55℃±2℃ for 96h, then release the resonator into the room conditions for 1h prior to the measurement.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>7.4</td><td>Temperature Cycling</td><td>After temperature cycling of blow table was performed 5 times, resonator shall be measured after being placed in natural conditions for 1h.<table><tr><th>Temperature</th><th>Time</th></tr><tr><td>-25±3℃</td><td>30±3 min</td></tr><tr><td>85±3℃</td><td>30±3 min</td></tr></table></td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>7.5</td><td>Vibration</td><td>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 10 Hz—55Hz.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>7.6</td><td>Mechanical Shock</td><td>Drop the resonator randomly onto a wooden floor from the height of 100cm 3 times.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>7.7</td><td>Soldering Test</td><td>Passed through the re-flow oven under the following condition and left at room temperature for 1h before measurement.
 
</td><td>It shall fulfill the specifications in Table 1.</td></tr>
</table>

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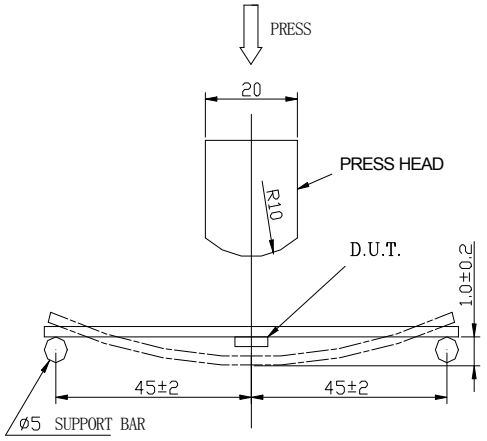
No	Item	Condition of Test	Performance Requirements
7.8	Solder Ability	Dipped in 245℃±5℃ solder bath for 3s±0.5 s with rosin flux (25wt% ethanol solution.)	The terminals shall be at least 95% covered by solder.
7.9	Board Bending	Mount a glass-epoxy board (Width=40mm, thickness=1.6mm),then bend it to 1mm displacement and keep it for 5s. (See the following figure) 	Mechanical damage such as breaks shall not occur.

Table 1

Item	Specification after test
Oscillation Frequency Change △Fosc/Fosc (%) max	±0.3
Resonant Impedance (Ω) max	40
The limits in the above table are referenced to the initial measurements.	

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