

CERAMIC RESONATOR

ZTTCV Series without Built-IN Capacitor SMD type



Approved by:
Checked by:
Issued by:

SPECIFICATION

ZTTCV12.00MX

深圳市晶科鑫实业有限公司
SHENZHEN CRYSTAL TECHNOLOGY INDUSTRIAL CO., LTD.

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1. SCOPE

This specification shall cover the characteristics of the surface mount ceramic resonator with 12.00MHz for the clock oscillation of microprocessor etc.

2. PART NO: ZTTCV12.00M

3. RATING AND ELECTRICAL SPECIFICATIONS

3.1 RATING

Items	Content
Withstanding Voltage (V)	50 (DC, 1min)
Insulation Resistance Ri, (MΩ) min.	100 (100V, 1min)
Operating Temperature Range (°C)	-25~+85
Storage Temperature Range (°C)	-40~+85

3.2 ELECTRICAL SPECIFICATIONS

Oscillation Frequency Fosc (MHz)	12.000
Frequency Accuracy (%)	±0.5
Resonant Impedance Ro (Ω) max.	40
Temperature Coefficient of Oscillation Frequency (%) max.	±0.3 (Oscillation Frequency drift, -25°C~+85°C)
Rating Voltage UR (V) max.	6V DC
	15V p-p
Aging Rate (%) max.	±0.3 (For Ten Years)

4. MEASUREMENT

4.1 Test 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.

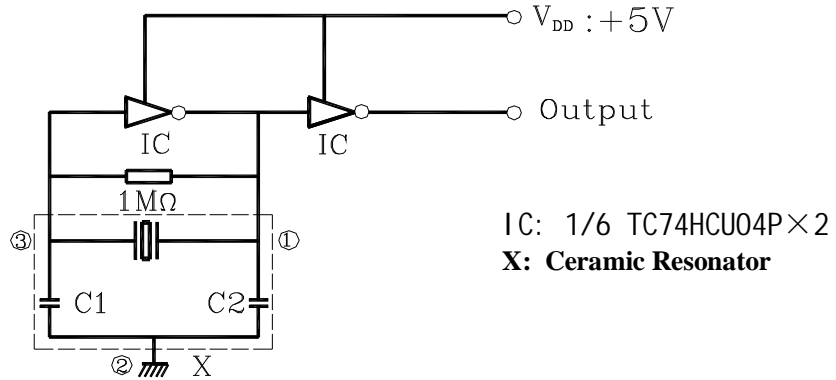
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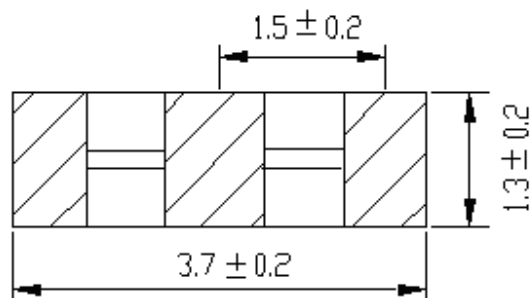
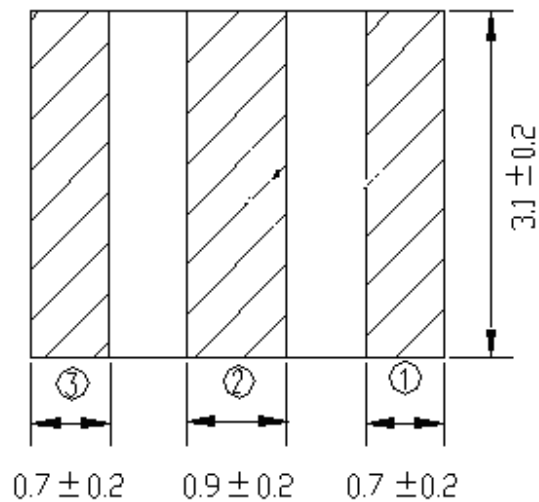
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4.2. TEST CIRCUIT



5. DIMENSIONS



- ① Input
- ② Ground
- ③ Output
- *: EIAJ MONTHLY CODE

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6. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

No.	Item	Condition of Test	Performance Requirements	
6.1	Humidity	Keep the resonator at $40^{\circ}\text{C}\pm 2^{\circ}\text{C}$ and 90%-95% RH for $96\text{h}\pm 4\text{h}$. Then Release the resonator into the room Condition for 1h prior to the Measurement.	It shall fulfill the specifications in Table 1.	
6.2	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 10 Hz—55Hz.	It shall fulfill the specifications in Table 1.	
6.3	Mechanical Shock	Drop the resonator randomly onto a wooden floor from the height of 100cm 3 times.	It shall fulfill the specifications in Table 1.	
6.4	Soldering Test	Passed through the re-flow oven under the following condition and left at room temperature for 1h before measurement.	It shall fulfill the specifications in Table 1.	
		Temperature at the surface of the substrate		Time
		Preheat $150^{\circ}\text{C}\pm 5^{\circ}\text{C}$		$60\text{s}\pm 10\text{ s}$
		Peak $260^{\circ}\text{C}\pm 5^{\circ}\text{C}$		$10\text{s}\pm 3\text{ s}$
6.5	Solder Ability	Dipped in $250^{\circ}\text{C}\pm 5^{\circ}\text{C}$ solder bath for $3\text{s}\pm 0.5\text{ s}$ with rosin flux (25wt% ethanol solution.)	The terminals shall be at least 95% covered by solder.	
6.6	High Temperature Exposure	Subject the resonator to $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 96s, then release the resonator into the room conditions for 1h prior to the measurement.	It shall fulfill the specifications in Table 1.	
6.7	Low Temperature Exposure	Subject the resonator to $-20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 96h, then release the resonator into the room conditions for 1h prior to the measurement.	It shall fulfill the specifications in Table 1.	

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No.	Item	Condition of Test	Performance Requirements
6.8	Temperature Cycling	Subject the resonator to -40°C for 30 min. followed by a high temperature of 85°C for 30 min. Cycling shall be repeated 5 times with a transfer time of 15s. At the room temperature for 1h prior to the measurement.	It shall fulfill the specifications in Table 1.
6.9	Board Bending	<p>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)</p>	Mechanical damage such as breaks shall not occur.

Table 1

Item	Specification after test
Oscillation Frequency Change	$ \Delta F/F_{osc} \leq 0.3\%$
Resonant Impedance (Ω) max	40
The limits in the above table are referenced to the initial measurements.	

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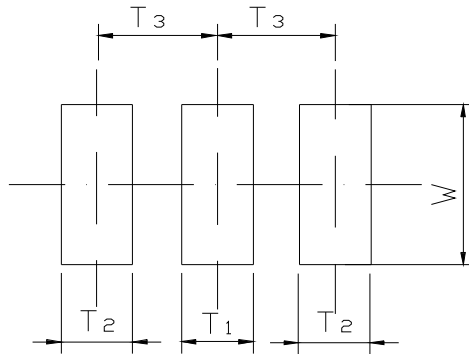
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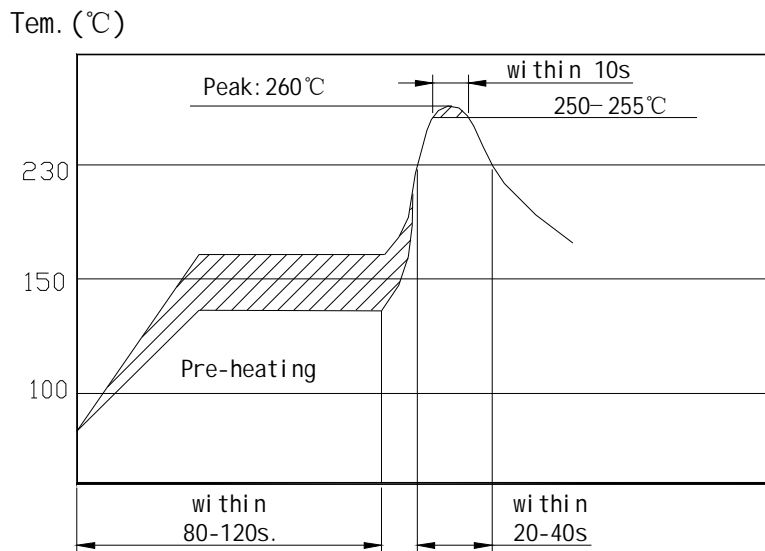
7 RECOMMENDED LAND PATTERN AND REFLOW SOLDERING STANDARD CONDITIONS

7.1 Recommended land pattern



DIMENSIONS (mm)			
T ₁	T ₂	T ₃	W
1.0±0.2	0.7±0.2	1.5±0.2	4.1±0.2

7.2 Recommended reflow soldering standard conditions



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8. PACKAGE

8.1 Section of package

Package is made of corrugated paper with thickness of 0.8cm. Package has 12 inner boxes, each box has 5 reels (each reel for plastic bag).

8.2 Quantity of package

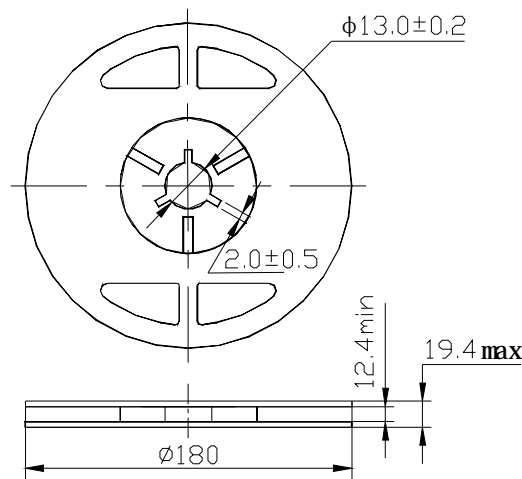
Per plastic reel 1000 pieces of piezoelectric ceramic part

Per inner box 5 reels

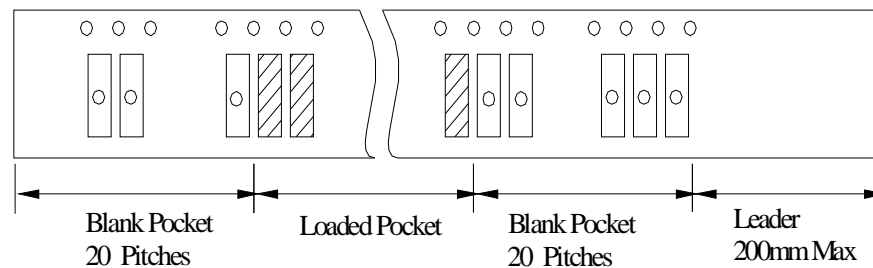
Per package 12 inner boxes

(60000 pieces of piezoelectric ceramic part)

8.3 Reel



8.4 Packing Method Sketch Map



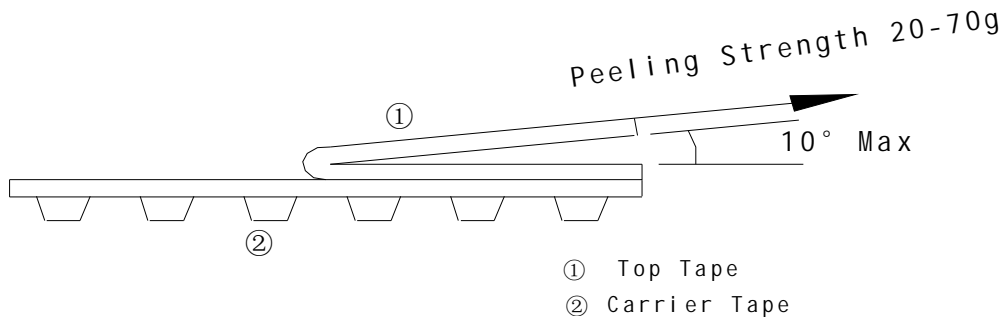
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8.5 Test Condition Of Peeling Strength



9. OTHER

9.1 Caution of use

9.1.1 Do not use this product with bend. Please don't apply excess mechanical stress to the component and terminals at soldering.

9.1.2 The component may be damaged when an excess stress will be applied.

9.1.3 This specification mentions the quality of the component as a single unit. Please insure the component is thoroughly evaluated in your application circuit.

9.2 Notice

9.2.1 Please return one of this specification after your signature of acceptance.

9.2.2 When something gets doubtful with this specifications, we shall jointly work to get an agreement.

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