

深圳市维拓精电科技有限公司

WTL International Limited

APPROVAL SHEET

DESCRIPTION :	3.2*1.5mm 2 Pads SMD Tuning Fork Crystal			
NOMINAL FREQ.:	32.768KHz			
WTL P/N:	WTL1X80431MC			
VERSION:	1			
DATE:	2021.10.08			
Customer	Customer P/N			
IBS	/			
Customer Signature	WTL			
	Approved by: <i>Kevin Liu</i>			
	Checked by: <i>Shu Ping</i>			
	Issued by: <i>Shengbiao</i>			
REVISION HISTORY				
Revised Page	Revision Content	Date	Ref. No.	Reviser



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Attachment(s):

- 1.Product Specification Sheet
- 2.Electrical Testing Report
- 3.Reliability Report
- 4.ICP Test Report (SGS)

FEATURE

- Wide Frequency range
- Small size
- Tape & Reel
- Reflow available



APPLICATIONS

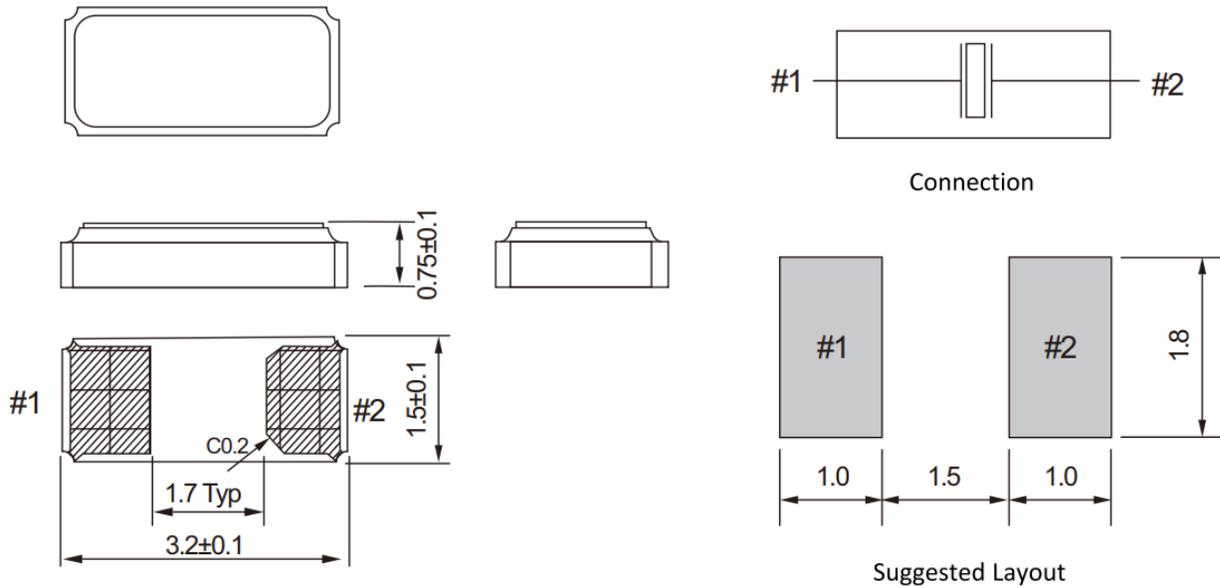
- Microprocessor Systems
- Consumer Electronics

1、 ELECTRICAL SPECIFICATIONS

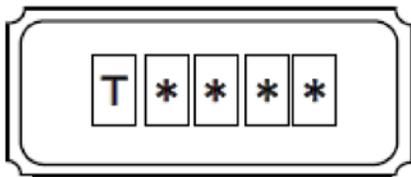
Hold Style	3.2X1.5MM SMD TUNING FORK CRYSTAL
Nominal Frequency	32.768KHz
Frequency Tolerance (at 25°C)	±20ppm
ESR	70Kohm Max
Turnover Temperature	25 ± 5°C
Frequency Temperature Curve	-0.03(±0.01)ppm/°C ²
Operating Temperature Range	-40 °C to + 85 °C
Storage Temperature Range	-55 °C to +125 °C
Shunt Capacitance (C ₀)	1.1pF Typ.
Dynamic Capacitance (C ₁)	4.1fF Typ.
Driver Level (Typical)	0.1μW
Driver Level(Max)	0.5μW
Load Capacitance(C _L)	7pF
Insulation Resistance	More than 500Mohms at DC100V
Aging @25°C 1 st year (Max)	±3ppm/year

REMARK: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE CONFIRM WITH OUR SALES ENGINEER.

2、DIMENSIONS (Unit: mm)



3、MARKING



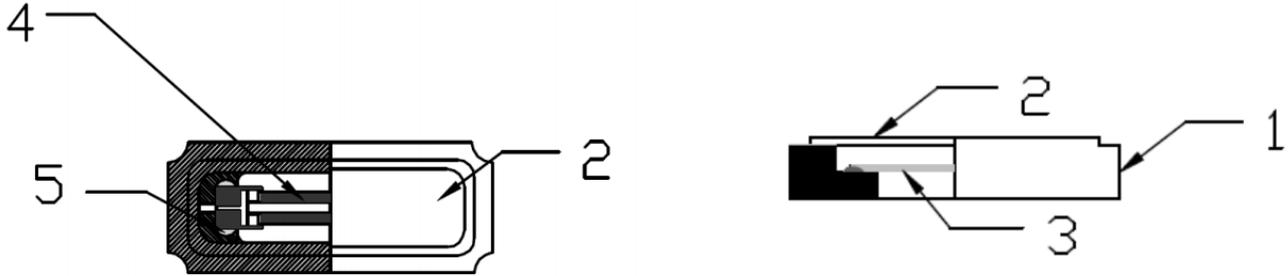
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 *1 *2 *3 *4 *5

- *1 Product name
- *2 Year of Production(Last digit of year)
- *3 ,4 Week of Production(01~ 52)
- *5 CL
- #CL : A :12.5pF B:9pF C:7pF D:6pF

Marking Instruction :

The date code was marked on the crystal body, which will be easily traced back in case of quality issue.

4. STRUCTURE ILLUSTRATION



NO	COMPONENT	MATERIALS	QTY	SURFACE
1	Package	Ceramic(Al ₂ O ₃)	1	Au+Ni plated
2	Lid	KOVAR(Fe/Co/Ni)	1	Ni plated
3	Crystal blank	SiO ₂	1	
4	Electrode	Au+Ag	2	
5	Adhesive	Resin+Ag	2	

5. SUBSTANCES IN PRODUCT

COMPONENT	Harmful substance content statement					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Package	ND	ND	ND	ND	ND	ND
Lid	ND	ND	ND	ND	ND	ND
Crystal blank	ND	ND	ND	ND	ND	ND
Electrode	ND	ND	ND	ND	ND	ND
Adhesive	ND	ND	ND	ND	ND	ND

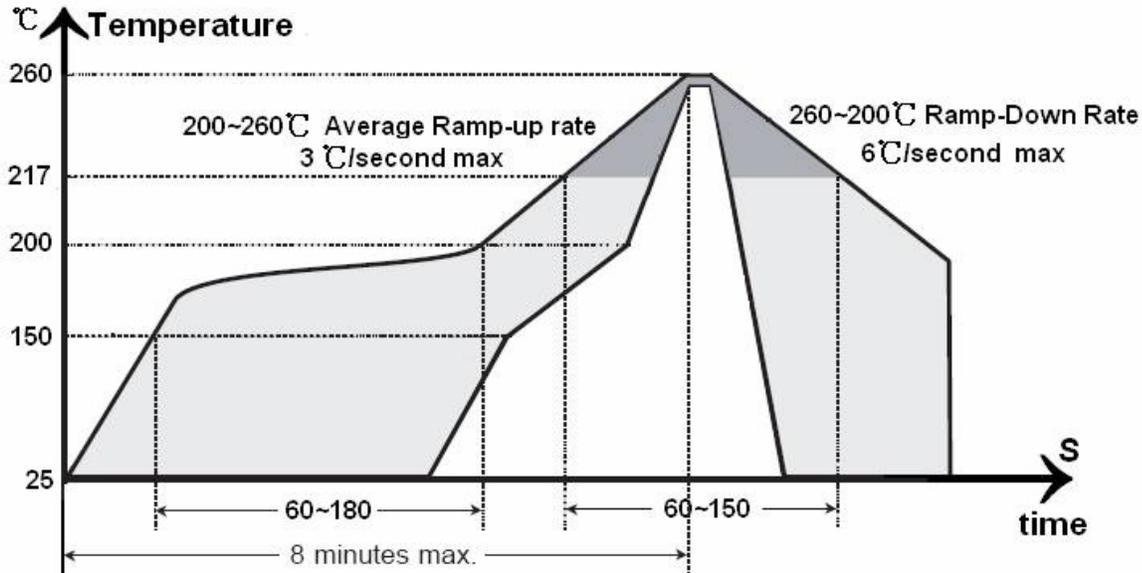
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

6. RELIABILITY SPECIFICATIONS

Item	Conditions	Result
Low Temp. Storage	After storage under -40°C for 1000 hours, measure at room temperature. (*1 *3)	$\Delta f/f_0 = \pm 10\text{ppm}$
High Temp. Storage	After storage under 125°C for 1000 hours, measure at room temperature. (*1 *3)	$\Delta f/f_0 = \pm 20\text{ppm}$
High Temp & Humidity	After storage under $+85\pm 2^{\circ}\text{C}$, 85 % RH for 1000h, measure at room temperature. (*1 *3)	$\Delta f/f_0 = \pm 20\text{ppm}$
Thermal Shock	Measure at room temperature after 100 cycles. $-55^{\circ}\text{C} \Leftrightarrow +125^{\circ}\text{C}$ for 30 minutes. (*1 *3)	$\Delta f/f_0 = \pm 10\text{ppm}$
FREE FALL	Free dropping from 100 cm height 3 times on a hard (*1)	$\Delta f/f_0 = \pm 20\text{ppm}$
FINE LEAK	Helium bombing $5.0\sim 5.5 \text{ Kg} / \text{cm}^2$, FOR 2 hours.	$< 1 \times 10^{-9} \text{ Pa} \cdot \text{m}^3 / \text{sec}$
Solder ability	The lead is immersed in a $260\pm 5^{\circ}\text{C}$ solder bath within 2 ± 0.6 seconds.	$> 95\%$
Vibration Test	Amplitude 1.5mm and $10\sim 60\text{Hz}$ with cycle time $2\sim 3$ minutes in 3 direction (X,Y,and Z axis) each for 2 h. (*2)	$\Delta f/f_0 = \pm 10\text{ppm}$
Shear strength	Pressuring force $10\text{N} \times 10 \pm 1\text{sec}$. according to IEC60068-2-21 (*2)	No peeling-off
Peel strength	Pressuring force $10\text{N} \times 10 \pm 1\text{sec}$. according to IEC60068-2-21 (*2)	No peeling-off
Bending test	Bending: $3\text{mm} \times 5 \pm 1\text{sec}$. Thickness of the testing board: 1mm (*2)	No peeling-off

1. Each test shall be done independently. (not in series tests)
2. *1: Measure after 24 hours left at room temperature.
3. *2: Measure after 2 hours left at room temperature.
4. *3: Pre conditions
 - (1) IR Reflow : 2 times
 - (2) Initial values shall be measured after 24 hours at room temperature.
5. Shift in series resistance after the above tests shall be less than $\pm 20\%$ or less than $\pm 15\text{k}\Omega$. In case of resistance to IR reflow and high temperature storage ($\pm 125^{\circ}\text{C}$ for 1000 hours), shift in series resistance after the above tests shall be less than $\pm 30\%$ or $\pm 20\text{k}\Omega$.

7. SUGGESTED REFLOW PROFILE



Peak temperature. 260°C ± 5 °C (10sec. max.) Reflow is permitted 2 times

8. CAUTION

8.1 Ultrasonic cleaning

General cleaning solutions or ultrasonic cleaning method may be used to clean our products. However, under certain circumstances, ultrasonic cleaning machine could generate resonance at the oscillation frequency of our products and thus deteriorate the electrical characteristics in devices, and even damage the overall structure of devices. Therefore, verification test is recommended before cleaning.

8.2 Ultrasonic welding

Avoid mounting and processing by Ultrasonic welding this method has a possibility of an excessive vibration spreading inside the crystal products and becoming the cause of characteristic deterioration and not oscillating.

8.3 Storage temperature description

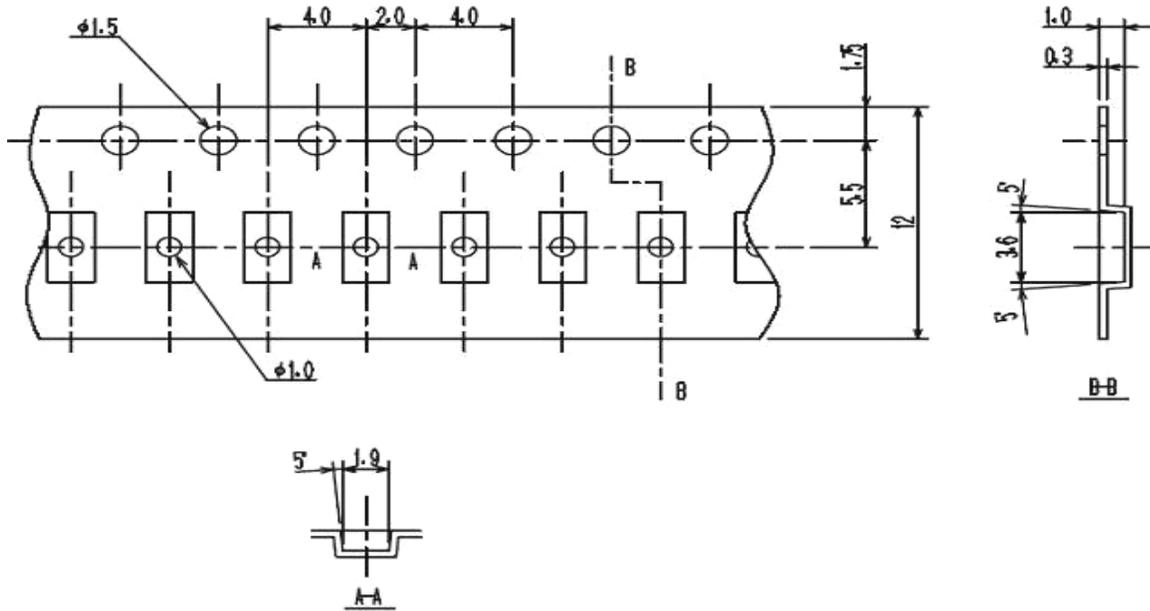
Storage Temperature is only for the product itself, the temperature for the packing material is 5°C ~40°C.

8.4 Recommended conditions for manual welding

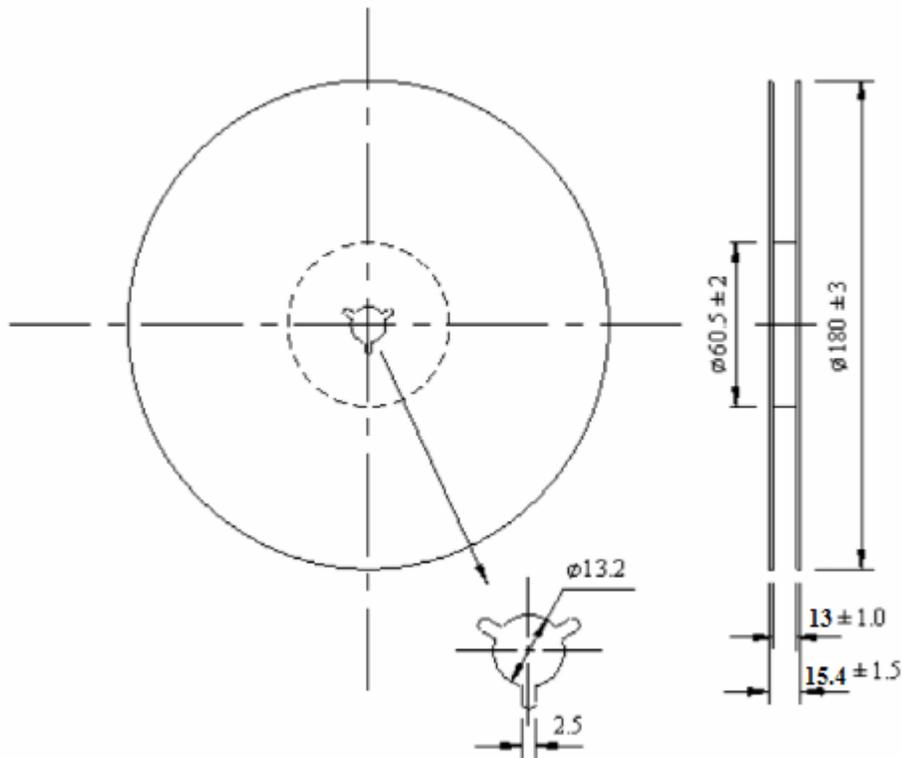
Max .Temperature: 350 ± 10 °C, Time: 3 sec max, Re-solder times: twice max.

9. PACKING SPECIFICATIONS (Unit: mm)

TAPE SPECIFICATION:



OUTLINE DIMENSION:



Q'ty: 3000pcs/Reel

10. WTL PART NUMBER SYSTEM :

For example: WTL1X25212CH

[Instructions: for project management, WTL will trace back the part number to developer wherever it goes]

WTL - 1X - 25212 - CH

WTL: Brand

1X : Package Code

25212: Serial number , flow code , without any rules

CH: WTL Developer Code, for example: VH,CH,PZ,RZ,ML