

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:	WTL1X85264FO			
VERSION:	2			
DATE:	2022.04.21			
Customer	Customer P/N			
Promelectronica				
Customer Signature	WTL			
	Approved by:	<i>Kavin Liu</i>		
	Checked by:	<i>Shu Ping</i>		
	Issued by:	<i>colin zhan</i>		
<b>REVISION HISTORY</b>				
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

**FEATURES:**

- Ultra small size 3.2×1.5×0.8 mm
- High reliability environmental performance
- High frequency stability and high precision
- Designed for automatic mounting and reflow soldering
- RoHS Compliant

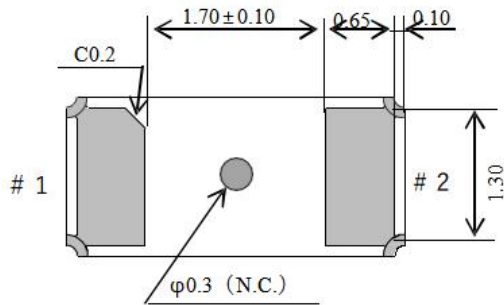
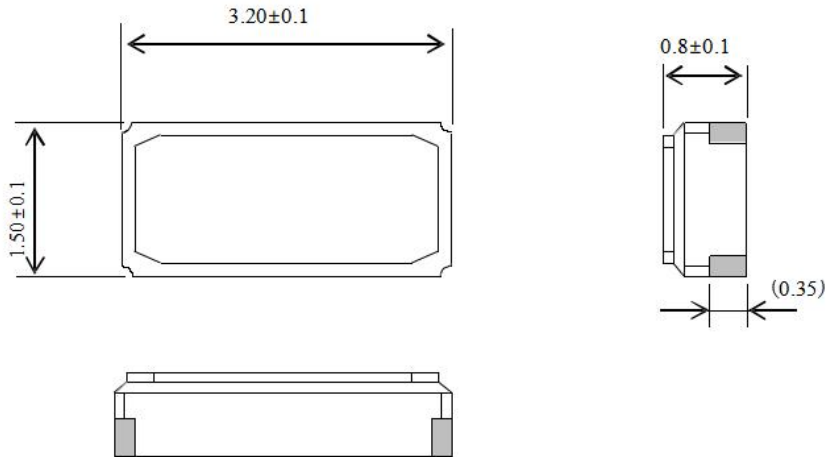


**1. ELECTRICAL SPECIFICATIONS**

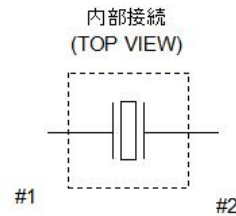
Hold Style	3.2X1.5MM SMD TUNING FORK CRYSTAL
Nominal Frequency	32.768KHz
Frequency Tolerance (at 25°C)	±20ppm
ESR	70 kΩ Max
Turnover Temperature	25 ± 5°C
Frequency Temperature Curve	-0.04 Max ppm/°C <sup>2</sup>
Operating Temperature Range	-40 °C to + 85 °C
Storage Temperature Range	-55 °C to +125 °C
Shunt Capacitance (C <sub>0</sub> )	1.2pF Typ.
Dynamic Capacitance (C <sub>1</sub> )	3.4fF Typ.
Driver Level (Typical)	0.1μW
Driver Level(Max)	0.5μW
Load Capacitance(C <sub>L</sub> )	12.5pF
Insulation Resistance	More than 500Mohms at DC100V
Aging @25°C 1 <sup>st</sup> year (Max)	±3ppm/year

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

## 2. DIMENSIONS (Unit: mm)

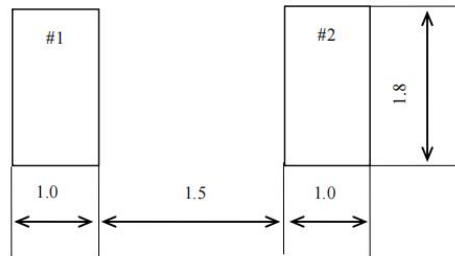


Internal connection

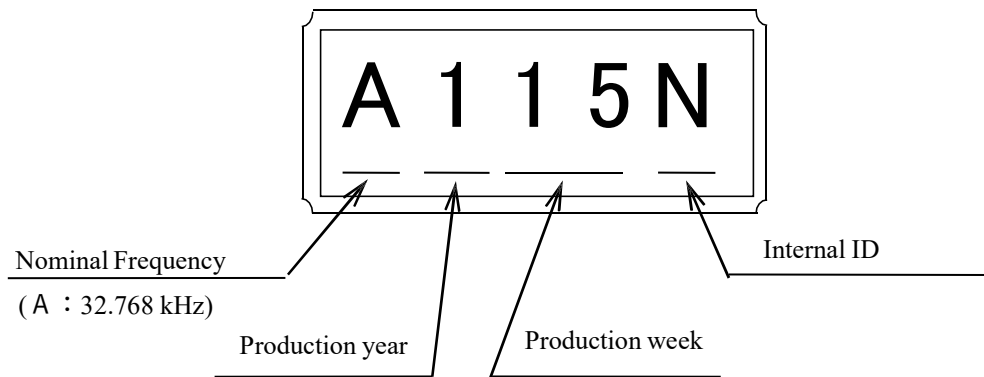


Terminal : Au plating

### Suggested Layout



### 3. MARKING



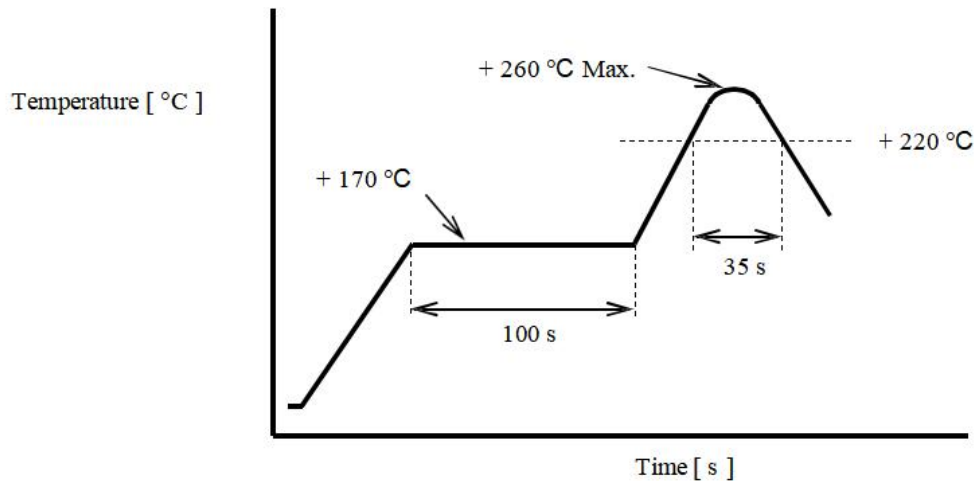
#### Marking Instruction:

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

### 4. SUGGESTED REFLOW PROFILE

Pre heating temperature : + 170 °C  
Heating temperature : + 220 °C

Pre heating time : 100 s  
Heating time : 35 s



## 5. RELIABILITY SPECIFICATIONS

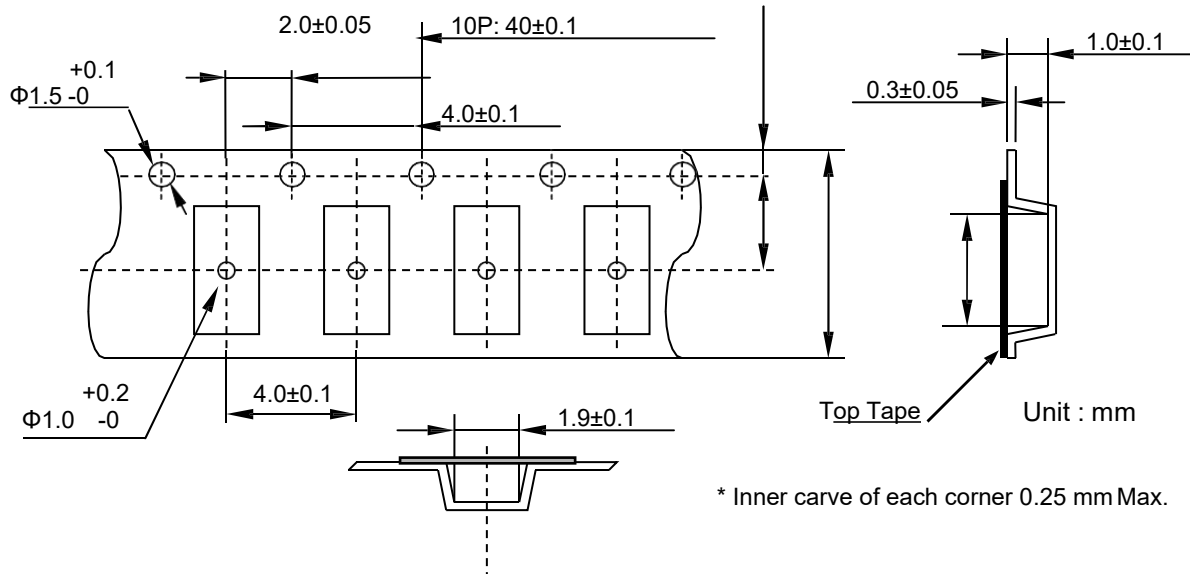
No.	Items	Value	Conditions
1	Shock resistance	*3 $\Delta$ f/f : $\pm 8 \times 10^{-6}$	100 g dummy, Natural drop from 1 500 mm height on to the concrete. 3 directions $\times$ 10 times *2
2	Vibration resistance	*3 $\Delta$ f/f : $\pm 3 \times 10^{-6}$	10 Hz to 55 Hz amplitude 0.75 mm 55 Hz to 500 Hz acceleration 98 m/s <sup>2</sup> 10 Hz $\rightarrow$ 500 Hz $\rightarrow$ 10 Hz 15 min./cycle 6 h (2 hours , 3 directions) *2
3	Soldering heat resistance	$\Delta$ f/f : $\pm 5 \times 10^{-6}$	For convention reflow soldering furnace (2 times)
4	High temperature storage	*3 $\Delta$ f/f : $\pm 10 \times 10^{-6}$	+ 125 °C $\times$ 1 000 h *1
		*3 $\Delta$ f/f : $\pm 7 \times 10^{-6}$	+ 85 °C $\times$ 1 000 h *1
5	Low temperature storage	*3 $\Delta$ f/f : $\pm 10 \times 10^{-6}$	- 55 °C $\times$ 1 000 h *1
6	High temperature and humidity	*3 $\Delta$ f/f : $\pm 10 \times 10^{-6}$	+ 85 °C $\times$ 85 %RH $\times$ 1000 h *1
7	Temperature cycle	*3 $\Delta$ f/f : $\pm 10 \times 10^{-6}$	- 55 °C $\leftrightarrow$ + 125 °C 30 minutes at each temperature $\times$ 100 cycles *1
8	Sealing	*3 1 $\times$ 10 <sup>-8</sup> hPa $\cdot$ 1 / s Max.	For He leak detector
9	Shear	No peeling-off at a soldered part	20 N press for 10 $\pm$ 1 s. Ref. IEC 60068-2-21
10	Pull - off	No peeling-off at a soldered part	20 N press for 10 $\pm$ 1 s. Ref. IEC 60068-2-21
11	Substrate bending	No peeling-off at a soldered part	Bend width reaches 3 mm and hold for 5 s $\pm$ 1 s $\times$ 1 time Ref. IEC 60068-2-21
12	Solvent resistance	The marking shall be legible	Ref. JIS C 0052 or IEC 60068-2-45

< Notes >

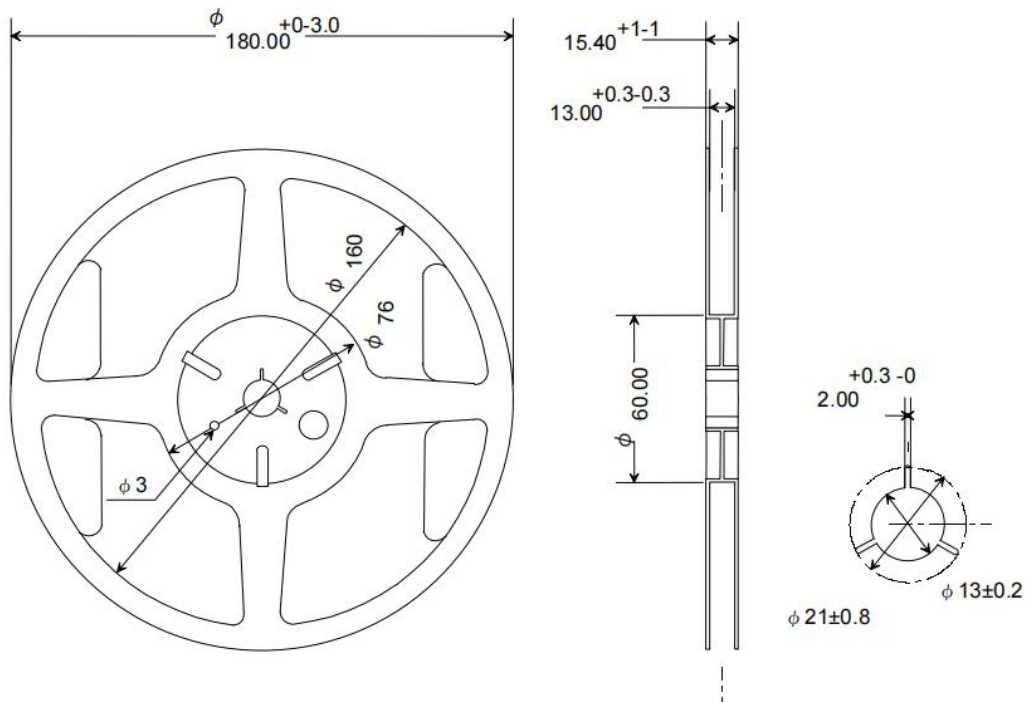
- 1.\*1 Each test done independently.
  - 2.\*2 Measuring 2 h to 24 h later leaving in room temperature after each test. Drive level : 0.5 W
  - 3.\*3 Pre conditionings( Treat the Reflow 2 times with the following profile) Initial value shall be after 24 h at room temperature. Shift of series resistance at before and after the test should be less than 20 % or less than 15k .
- In case high temperature storage(+ 125 C 1 000 h), Soldering heat resistance, shift of series resistance at before and after the test should be less than 30 % or 20 k .

**6.PACKING SPECIFICATIONS (Unit: mm)**

TAPE SPECIFICATION:



OUTLINE DIMENSION:



Q'ty: 3000pcs/Reel

**7.WTL PART NUMBER SYSTEM :**

For example: WTL1X25264FO

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

WTL - 1X - 25264 - FO

WTL: Brand

1X : Package Code

25264: Serial number , flow code , without any rules

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