

深圳市维拓精电科技有限公司
WTL International Limited

APPROVAL SHEET

| DESCRIPTION : | 2.5*2.0mm 4 Pads SMD Quartz Crystal | | | |
|-------------------------|-------------------------------------|------|----------|---------|
| NOMINAL FREQ.: | 32.000000MHz | | | |
| WTL P/N: | WTL2M51004SH | | | |
| VERSION: | 1 | | | |
| DATE: | 2024.06.26 | | | |
| Customer | Customer P/N | | | |
| | / | | | |
| Customer Signature | WTL | | | |
| | Approved by: <i>Kavin Liu</i> | | | |
| | Checked by: <i>Shu Ping</i> | | | |
| | Issued by: <i>colin zhan</i> | | | |
| REVISION HISTORY | | | | |
| Revised Page | Revision Content | Date | Ref. No. | Reviser |
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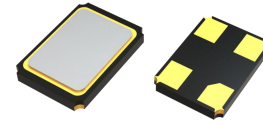
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Attachment(s):

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

FEATURE

- Size 2.5×2.0 , Ultra thin , thickness 0.55mm
- High precision and high frequency stability
- Excellent heat resistance and environmental characteristics
- Designed for automatic mounting and reflow soldering
- RoHS Compliant / Pb Free

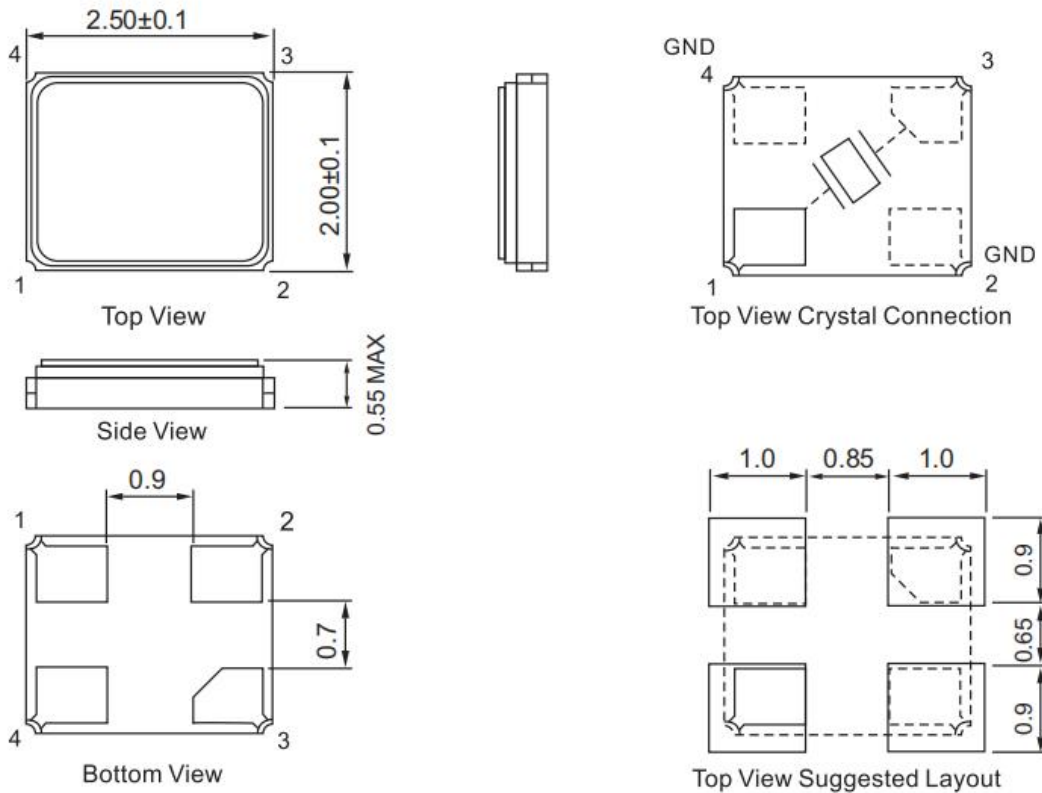


1、 ELECTRICAL SPECIFICATIONS

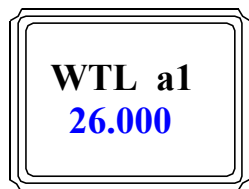
| | |
|--|------------------------------|
| Hold Style | 2520 Seam |
| Nominal Frequency | 32.000000MHz |
| Mode | Fundamental / AT |
| Frequency Tolerance (at 25°C) | ±10ppm |
| Frequency Stability Over Operating Temperature Characteristics | ±10ppm |
| Operating Temperature Range | -20°C ~ +70°C |
| Storage Temperature Range | -55°C ~ +125°C |
| Shunt Capacitance (C ₀) | 5.0pF Max |
| Driver Level (Typical) | 100μW Max |
| Load Capacitance(C _L) | 8pF |
| ESR | 60Ω Max |
| 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

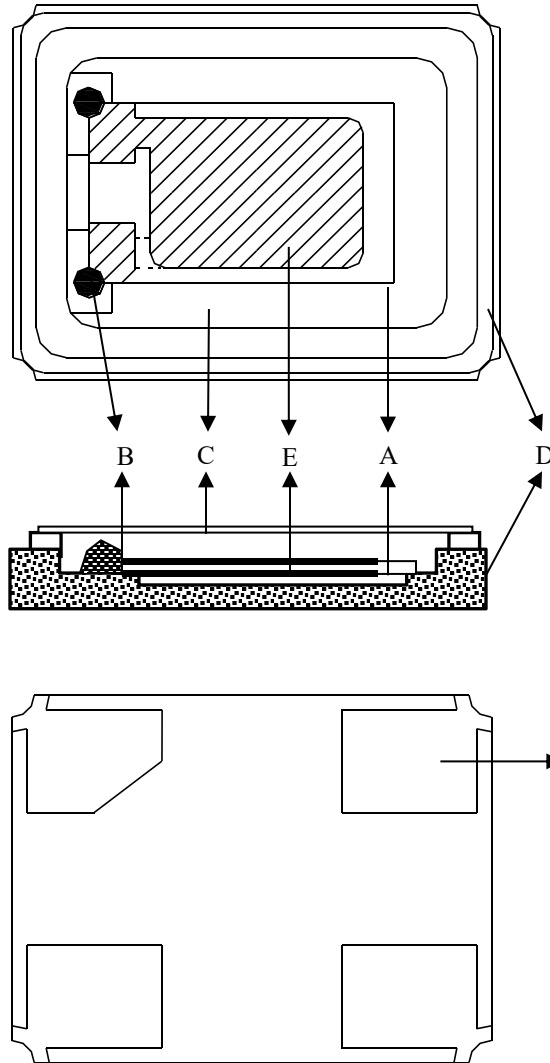


- WTL ———> Brand Logo
- 26.000 ———> Frequency (MHz)
- a ———> Week (a、 b、 c...z、 A、 B、 C...Y、 Z ,from 1 to 52week)
- 1 ———> YEAR (1=2021year, 2=2022year, 9=2029year....)

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

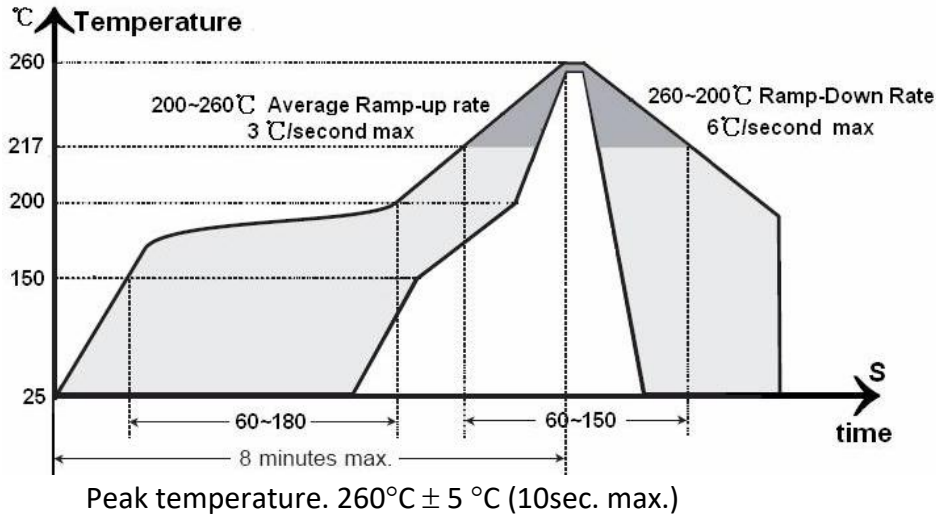


| Parts | | Material | QTY | COLOR |
|-------|------------------|-------------------------------|-----|---------|
| A | Blank | Mostly SiO ₂ | 1 | White |
| B | Conductive paste | Ag:80%, silicone resin 10% | 2 | Greyish |
| C | Lid | Fe:52~56%,Ni:16~18%,Co:28~30% | 1 | Silvery |
| D | Package | Ceramic | 1 | Brown |
| E | Plating(blank) | Ag:99.99% | 2 | Silvery |
| F | Pad | Cu:6.6%,Au:0.2%,Fe:56%,Ni:18% | 4 | Golden |

5、RELIABILITY SPECIFICATIONS

| Item | Conditions | Result |
|------------------------------|--|--|
| Low Temp. Storage | Put the crystal into the $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ constant temperature box for 500 ± 2 H , Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| High Temp. Storage | Put the crystal into the $+100^{\circ}\text{C} \pm 2^{\circ}\text{C}$ constant temperature box for 500 ± 2 H, Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| High Temp & Humidity | Put the crystal into the constant temperature & humid with the temperatures $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and the humidity 98% for 500 ± 2 H. Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| Thermal Shock | Put the crystal into the constant temperature $-55^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 30 ± 1 M, then change the temperature to $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 30 ± 1 M, the total is 100times. Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| Resistance To Soldering Heat | Passed through the re-flow oven under the following condition. Preheat to $150^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 60 to 120sec, and peak $265^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for $10 \text{s} \pm 3 \text{sec}$. Measurement taken after DUT being left at room temperature for at 24 ± 2 hours | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| Drop Test | The crystal fall off the cement floor with the height $100 \text{cm} \pm 5 \text{cm}$ for 3 times. Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| Vibration Test | Apply 0.75mm vibration at sweep frequency 10 ~ 500 Hz, for 2h. 10 cycles in each direction of 3 axis. Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| Shock | Peak 1000m/s^2 , normal width 6ms half sine wave form, 3.7m/s, 3 perpendicular axis of samples, 3 cycles / direction, total 18 cycles. Measurement taken after 2 hour. | $\Delta F \cong \pm 5$ PPM $\Delta RR \cong \pm 15\%$ |
| Fine Leak | Helium Bombing 4.5kgf/cm^2 for 2 hr | Less than $1 * 10^{-8} \text{atm.c.c./sec}$, Helium |
| Solder ability | In $245 \pm 5^{\circ}\text{C}$ solder bath for 2 ± 0.5 seconds. 8-12X magnifier. | Terminals shall be covered more then 95% with solder. |

6、 SUGGESTED REFLOW PROFILE



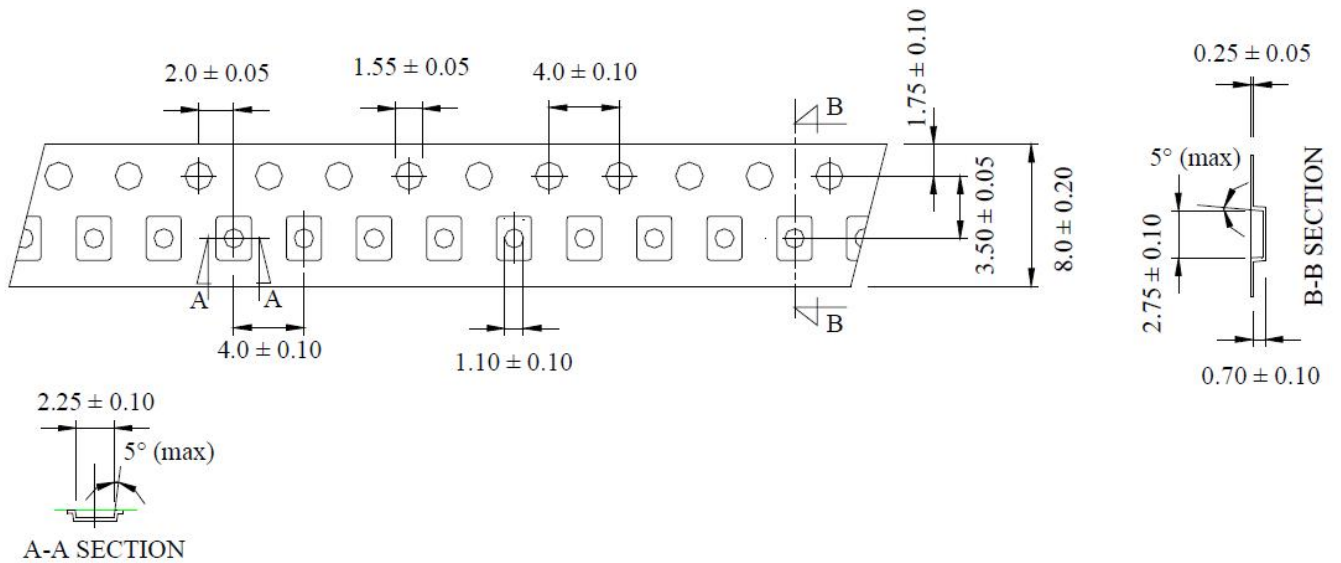
7、 SUBSTANCES IN PRODUCT

| Drawing number | Disassembly Unit/component description | Homogeneous Material Name. | Substance Name | CAS No. | Substance Mass. (mg) | Content Rate(%)per |
|---------------------------------|--|----------------------------|--------------------------------|------------|----------------------|--------------------|
| SMD2520 | Crystal blank | Quartz | SiO ₂ | 14808-60-7 | 0.1852 | 100.00% |
| | Electrode | Electrode-Ag | Ag | 7440-22-4 | 0.0426 | 100.00% |
| | Package | Ceramics | Al ₂ O ₃ | 1344-28-1 | 5.9718 | 90.00% |
| | | | Mn ₂ O ₃ | 1317-34-6 | 0.2654 | 4.00% |
| | | | SiO ₂ | 7631-86-9 | 0.2654 | 4.00% |
| | | | MoO ₃ | 1313-27-5 | 0.0664 | 1.00% |
| | | | MgO | 1309-48-4 | 0.0664 | 1.00% |
| | | Kovar ring | Fe | 7439-89-6 | 0.0773 | 53.00% |
| | | | Ni | 7440-02-0 | 0.0423 | 29.00% |
| | | | Co | 7440-48-4 | 0.0262 | 18.00% |
| | | Plate | Au | 7440-57-5 | 0.0416 | 19.00% |
| | | | Ni | 7440-02-0 | 0.1772 | 81.00% |
| | Metallizing | Mo | 7439-98-7 | 0.0729 | 100.00% | |
| | Solder | Ag | 7440-22-4 | 0.1553 | 71.00% | |
| | | Cu | 7440-50-8 | 0.0634 | 29.00% | |
| | Lid | Kovar | Fe | 7439-89-6 | 2.4834 | 48.50% |
| | | | Ni | 7440-02-0 | 1.7921 | 35.00% |
| | | | Co | 7440-48-4 | 0.8193 | 16.00% |
| | | | Mn | 7439-96-5 | 0.0256 | 0.50% |
| | Conduct Adhesive | siliver adhesive | Ag | 7440-22-4 | 0.1122 | 70.00% |
| Pd | | | 7440-05-3 | 0.0080 | 5.00% | |
| C ₁₁ H ₂₄ | | | 1120-21-4 | 0.0160 | 10.00% | |
| C ₁₂ H ₂₆ | | | 112-40-3 | 0.0080 | 5.00% | |
| SiO ₂ | | | 7631-86-9 | 0.0160 | 10.00% | |

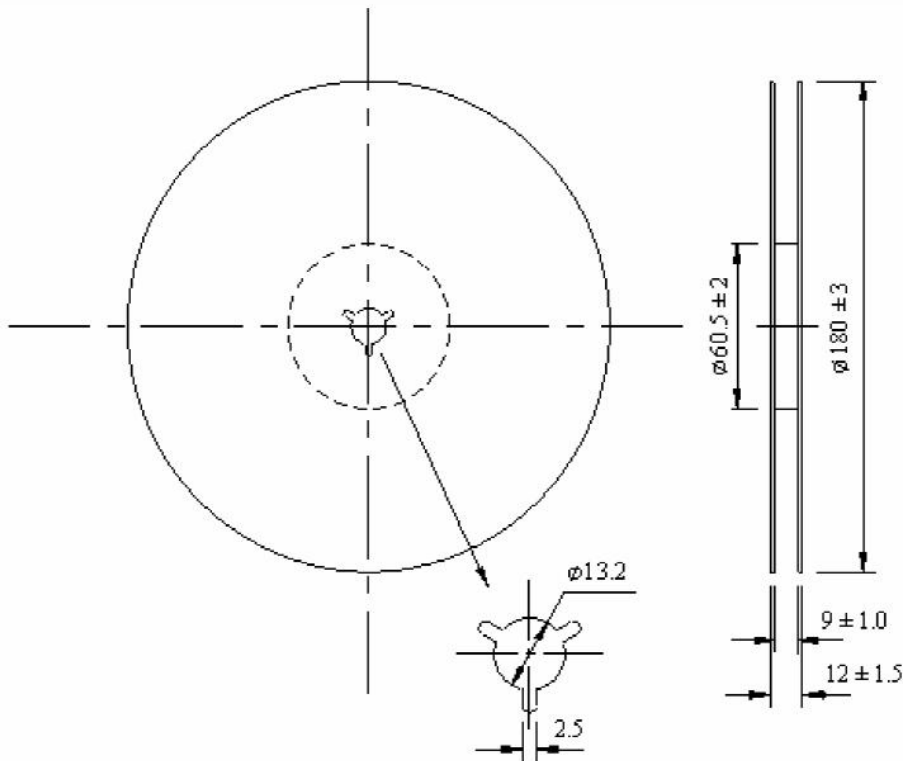
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

8、PACKING SPECIFICATIONS (Unit: mm)

TAPE SPECIFICATION:



OUTLINE DIMENSION:



Q'ty: 3000pcs/Reel

9、WTL PART NUMBER SYSTEM :

For example: WTL2M26106CH

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

WTL - 2M - 26106 - CH

WTL: Brand

2M : Package Code

26106: Serial number, flow code, without any rules

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