

深圳市维拓精电科技有限公司

WTL International Limited

APPROVAL SHEET

| | | | | |
|-------------------------|-------------------------------|------|----------|---------|
| DESCRIPTION : | 3.2*2.5mm 4 Pad SMD Crystal | | | |
| NOMINAL FREQ.: | 40.000 MHz | | | |
| WTL P/N: | WTL3M85455FO | | | |
| VERSION: | 2 | | | |
| DATE: | 2022.11.14 | | | |
| 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> | | | |
| REVISION HISTORY | | | | |
| Revised Page | Revision Content | Date | Ref. No. | Reviser |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



CONTENT CATALOG

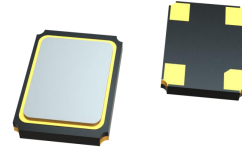
| | |
|----------------------------|------|
| APPROVAL SHEET | P. 1 |
| CONTENT CATALOG | P. 2 |
| ELECTRICAL SPECIFICATIONS | P. 3 |
| DIMENSIONS | P. 4 |
| MARKING | P. 4 |
| STRUCTURE ILLUSTRATION | P. 5 |
| RELIABILITY SPECIFICATIONS | P. 6 |
| SUGGESTED REFLOW PROFILE | P. 7 |
| SUBSTANCES IN PRODUCT | P. 7 |
| PACKING SPECIFICATIONS | P. 8 |
| WTL PART NUMBER SYSTEM | P. 9 |
| | |
| | |
| | |
| | |

Attachment(s):

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

FEATURE

- Size 3.2×2.5 , Ultra thin, thickness 0.7mm
- High precision and high frequency stability
- Excellent heat resistance and environmental characteristics
- Designed for automatic mounting and reflow soldering
- RoHS Compliant / Pb Free

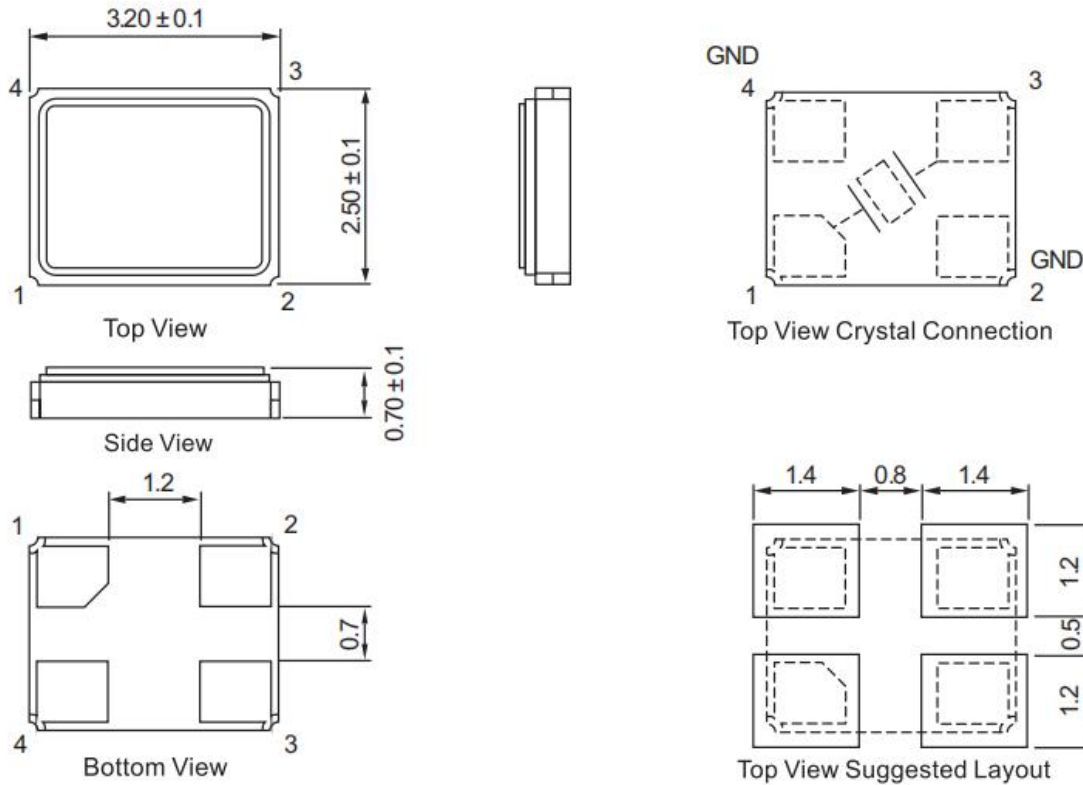


1、 ELECTRICAL SPECIFICATIONS

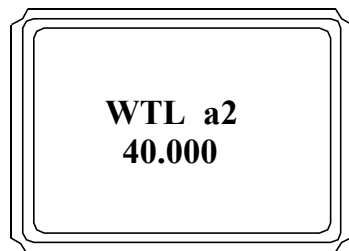
| | |
|--|------------------------------|
| Hold Style | 3225 Seam |
| Nominal Frequency | 40.000 MHz |
| Mode | Fundamental / AT |
| Frequency Tolerance (at 25°C) | ±10ppm |
| Frequency Stability Over Operating Temperature Characteristics | ±20ppm |
| Operating Temperature Range | -25°C ~ +80°C |
| Storage Temperature Range | -55°C ~ +125°C |
| Shunt Capacitance (C ₀) | 5.0pF Max |
| Driver Level (Typical) | 100μW |
| Load Capacitance(C _L) | 15pF |
| 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

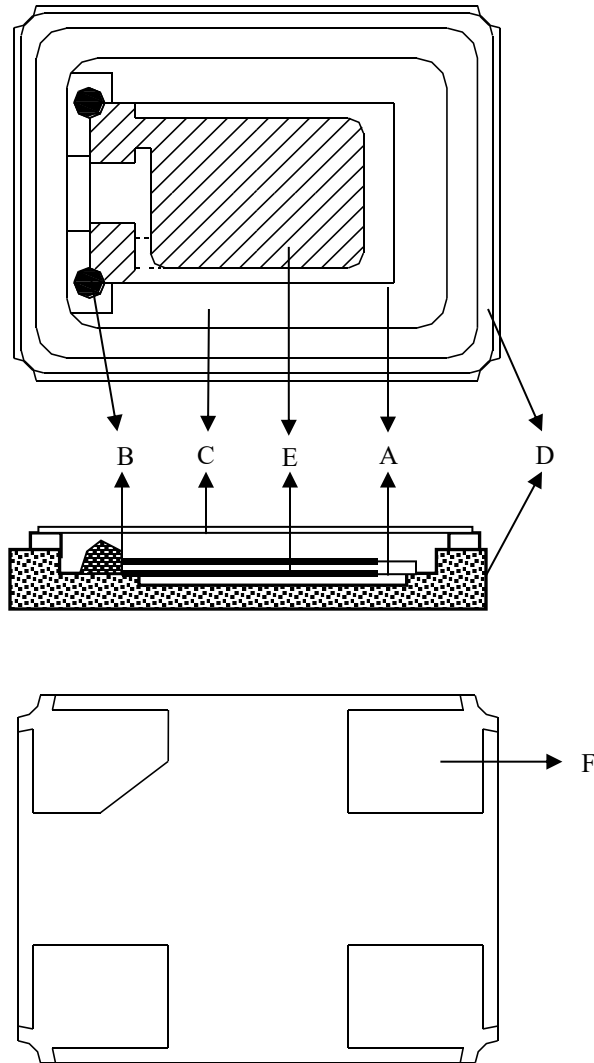


- WTL → Brand Logo
- 40.000 → Frequency (MHz)
- a → Week (a、 b、 c...z、 A、 B、 C...Y、 Z ,from 1 to 52week)
- 2 → YEAR (1=2021year, 2=2022year, 9=2029year....)

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

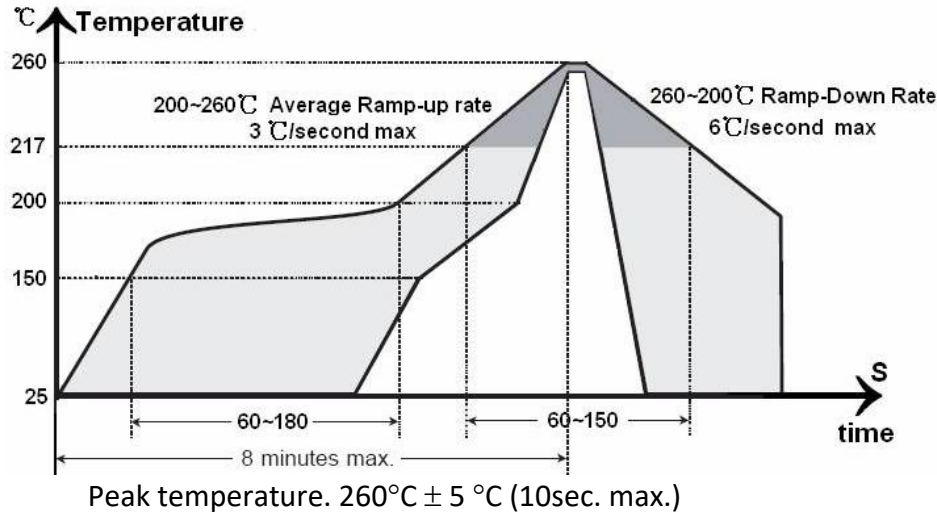


| Parts | | Material | QTY | COLOR |
|-------|------------------|-------------------------------|-----|---------|
| A | Blank | Mostly SiO ₂ | 1 | White |
| B | Conductive paste | Ag:80%, silicone resin 10% | 2 | Greyish |
| C | Lid | Fe:52~56%,Ni:16~18%,Co:28~30% | 1 | Silvery |
| D | Package | Ceramic | 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 $10 \sim 500$ 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



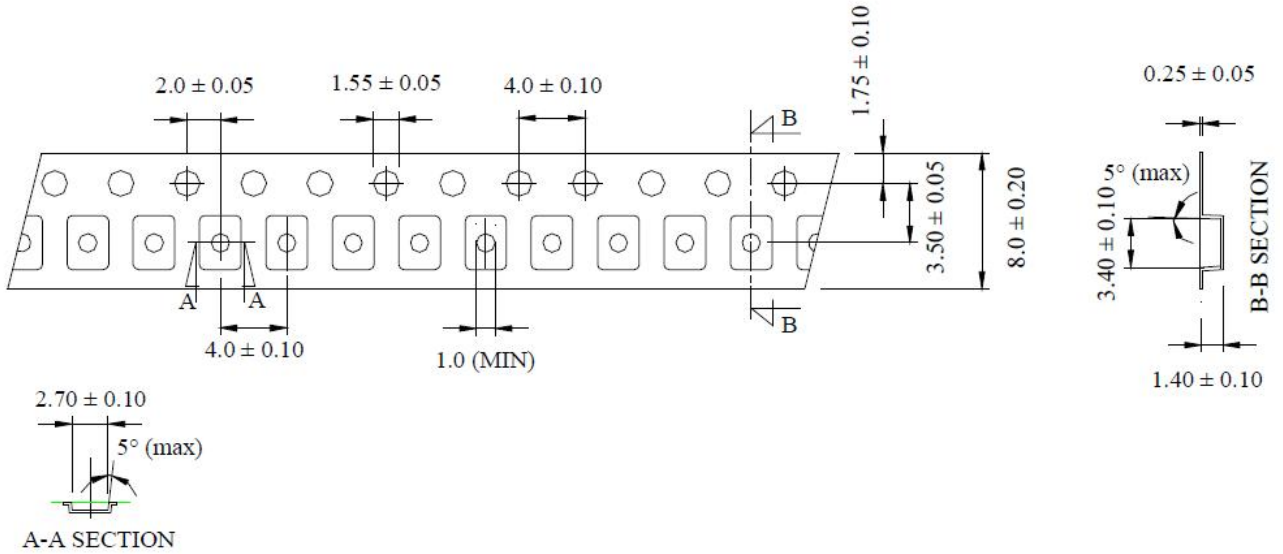
7、SUBSTANCES IN PRODUCT

| Drawing number | Disassembly Unit/component description | Homogeneous Material Name. | Substance Name | CAS No. | Substance Mass. (mg) | Content Rate(%)per |
|---------------------------------|--|----------------------------|--------------------------------|------------|----------------------|--------------------|
| SMD3225 | Crystal blank | Quartz | SiO ₂ | 14808-60-7 | 0.2543 | 100.00% |
| | Electrode | Electrode-Ag | Ag | 7440-22-4 | 0.0585 | 100.00% |
| | Package | Ceramics | Al ₂ O ₃ | 1344-28-1 | 8.1990 | 90.00% |
| | | | Mn ₂ O ₃ | 1317-34-6 | 0.3644 | 4.00% |
| | | | SiO ₂ | 7631-86-9 | 0.3644 | 4.00% |
| | | | MoO ₃ | 1313-27-5 | 0.0911 | 1.00% |
| | | | MgO | 1309-48-4 | 0.0911 | 1.00% |
| | | | Kovar ring | Fe | 7439-89-6 | 0.1061 |
| | | Ni | | 7440-02-0 | 0.0581 | 29.00% |
| | | Co | | 7440-48-4 | 0.0360 | 18.00% |
| | | Plate | | Au | 7440-57-5 | 0.0571 |
| | | | Ni | 7440-02-0 | 0.2433 | 81.00% |
| | Metallizing | Mo | 7439-98-7 | 0.1001 | 100.00% | |
| | | Solder | Ag | 7440-22-4 | 0.2132 | 71.00% |
| | | | Cu | 7440-50-8 | 0.0871 | 29.00% |
| | | Lid | Kovar | Fe | 7439-89-6 | 3.4096 |
| | Ni | | | 7440-02-0 | 2.4605 | 35.00% |
| | Co | | | 7440-48-4 | 1.1248 | 16.00% |
| | Mn | | | 7439-96-5 | 0.0352 | 0.50% |
| | Conduct Adhesive | siliver adhesive | Ag | 7440-22-4 | 0.1540 | 70.00% |
| | | | Pd | 7440-05-3 | 0.0110 | 5.00% |
| C ₁₁ H ₂₄ | | | 1120-21-4 | 0.0220 | 10.00% | |
| C ₁₂ H ₂₆ | | | 112-40-3 | 0.0110 | 5.00% | |
| SiO ₂ | | | 7631-86-9 | 0.0220 | 10.00% | |

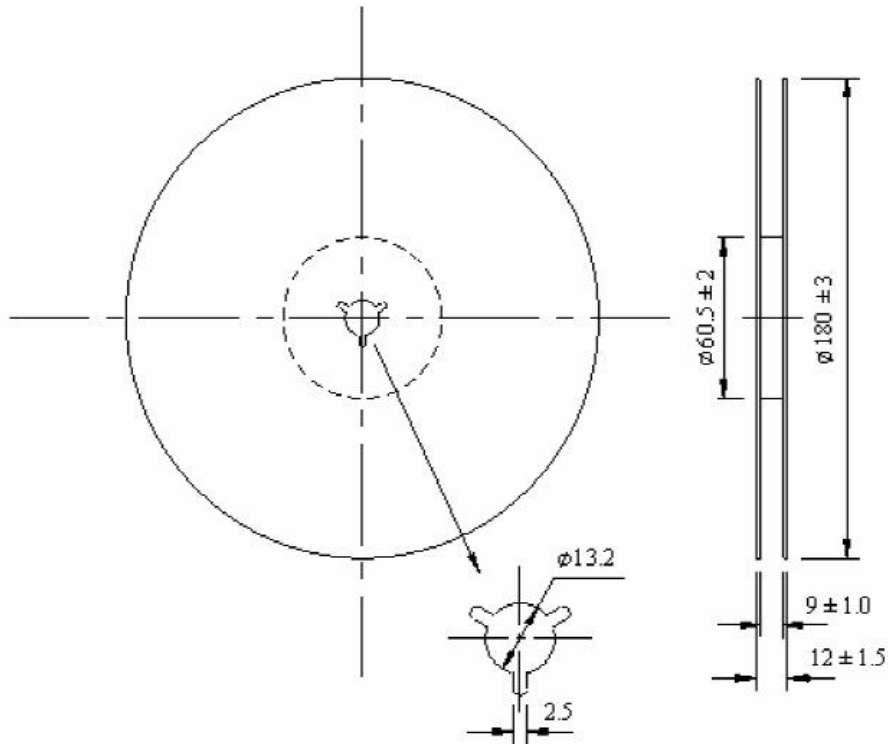
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

8、PACKING SPECIFICATIONS (Unit: mm)

TAPE SPECIFICATION



OUTLINE DIMENSION



Q'ty: 3000pcs/Reel

9、WTL PART NUMBER SYSTEM :

For example: WTL3M85455FO

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

WTL - 3M - 85455 - FO

WTL: Brand

3M : Package Code

85455: Serial number, flow code, without any rules

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