

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.: | 32.000000MHz | | | |
| WTL P/N: | WTL3M27177CH | | | |
| VERSION: | 1 | | | |
| DATE: | 2018.12.12 | | | |
| Customer | Customer P/N | | | |
| IBS Technology Int'l HK Ltd | / | | | |
| Customer Signature | WTL | | | |
| | Approved by: <i>Xo Xo Lee</i> | | | |
| | Checked by: <i>Susan He</i> | | | |
| | Issued by: <i>Shengbiao</i> | | | |
| REVISION HISTORY | | | | |
| Revised Page | Revision Content | Date | Ref. No. | Reviser |
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CONTENT CATALOG

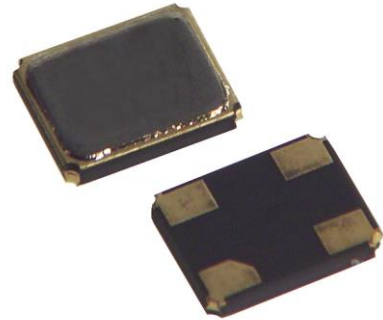
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Attachment(s):

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

FEATURE

- Ultra thin, thickness 0.7mm
- Leadless type
- High precision characteristic covering up to high frequency range
- Designed for automatic mounting and reflow soldering
- Emboss taping specification
- The best choice of Bluetooth wireless communication sets.DSN,PDA and mobile phone.

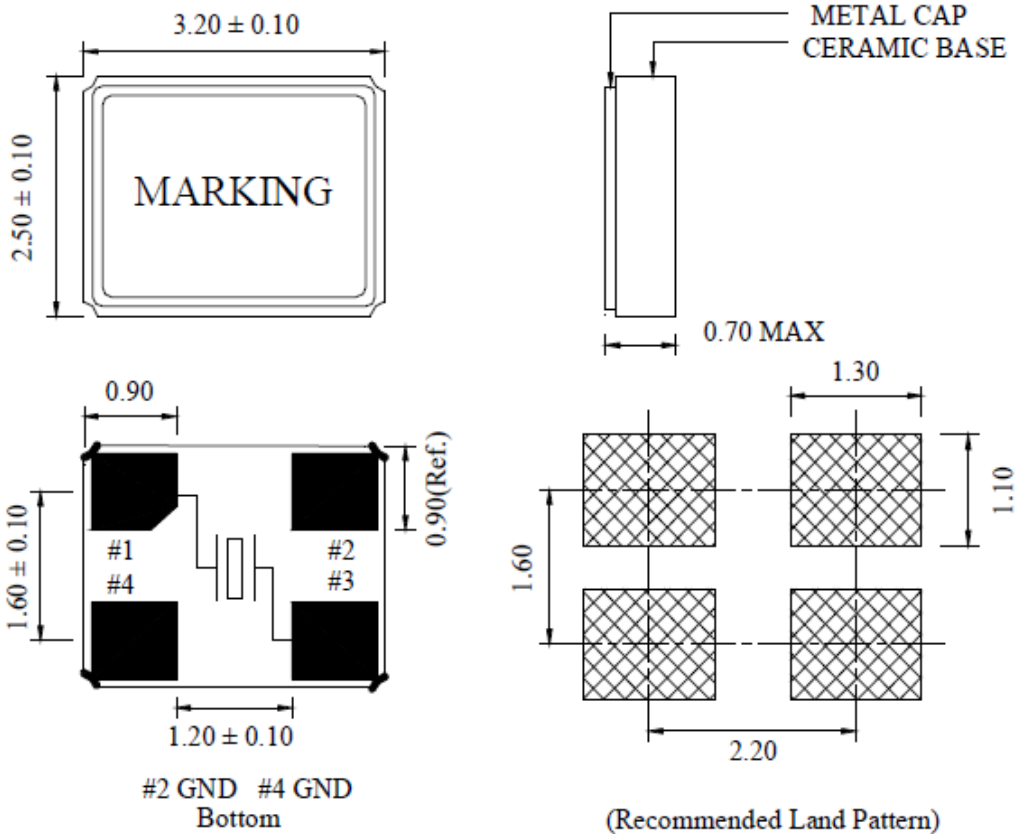


1、ELECTRICAL SPECIFICATIONS

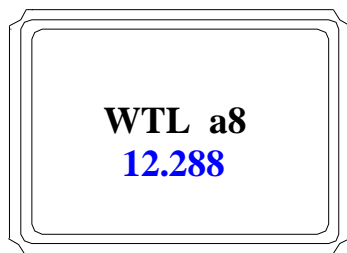
| | |
|--|------------------------------|
| Hold Style | 3225 Seam |
| Nominal Frequency | 32.000000MHz |
| Mode | Fundamental / AT |
| Frequency Tolerance (at 25° C) | ±10ppm |
| Frequency Stability Over Operating Temperature Characteristics | ±50ppm |
| Operating Temperature Range | -40° C+85° C |
| Storage Temperature Range | -55° C~+125° C |
| Shunt Capacitance (C ₀) | 5.0pF Max |
| Driver Level (Typical) | 100μW |
| 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

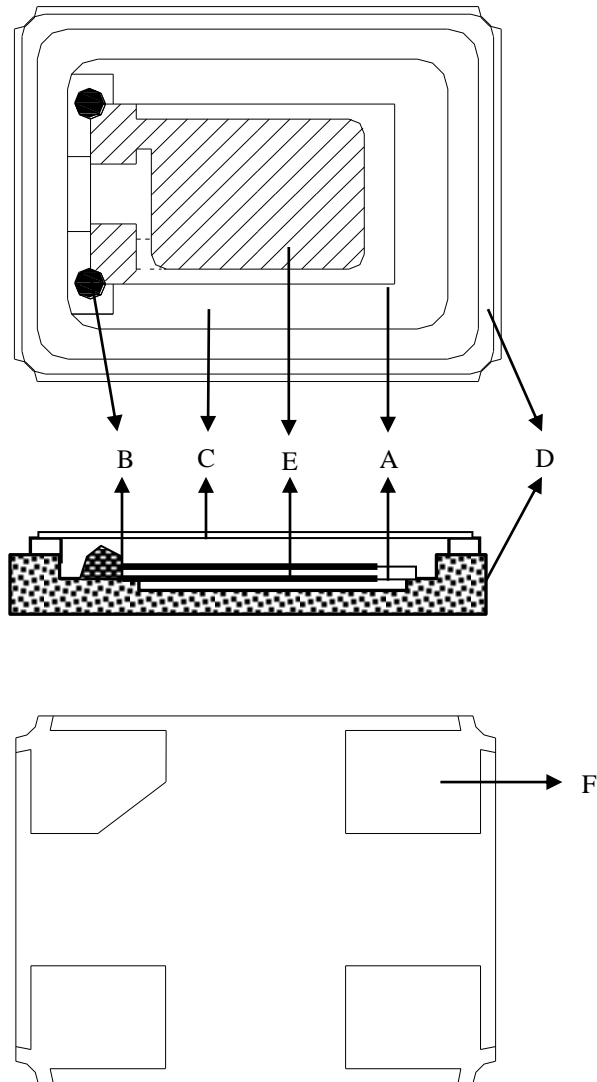


- WTL → Brand Logo
- 12.288 → Frequency (MHz)
- a → Week (a, b, c...z, A, B, C...Y, Z ,from 1 to 52week)
- 8 → YEAR (8=2018year, 9=2019year, 0=2020year....)

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

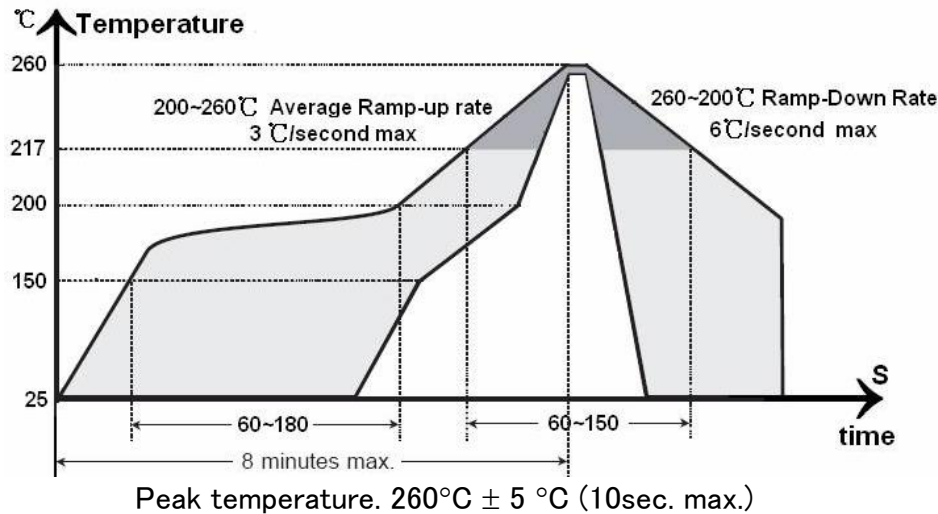


| Parts | | Material | QTY | COLOR | SUPPLIER |
|-------|------------------|-------------------------------|-----|---------|------------------|
| A | Blank | Mostly SiO ₂ | 1 | White | Russia Ural |
| B | Conductive paste | Ag:80%, silicone resin 10% | 2 | Greyish | Japan Three Bond |
| C | Lid | Fe:52~56%,Ni:16~18%,Co:28~30%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

5、RELIABILITY SPECIFICATIONS

| Item | Conditions | Result |
|--|--|--|
| Low Temp. Storage (MIL-STD-883) | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| High Temp. Storage (MIL-STD-883) | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| High Temp & Humidity (JIS C5023) | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| Thermal Shock (MIL-STD-883) | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| Resistance To Soldering Heat (MIL-STD-202) | 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 | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| Drop Test (JIS C6701) | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| Vibration Test (MIL-STD-883) | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| Shock MIL-STD-202F | 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. | $\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 5$ ohms |
| Fine Leak (MIL-STD-883) | Helium Bombing 4.5kgf/cm^2 for 2 hr | Less than $1*10^{-8}\text{atm.c.c./sec}$, Helium |
| Solderability | 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

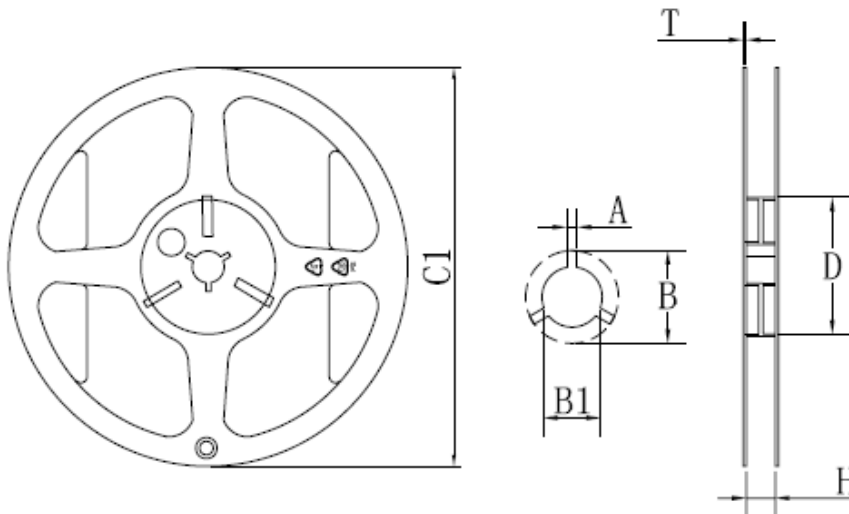
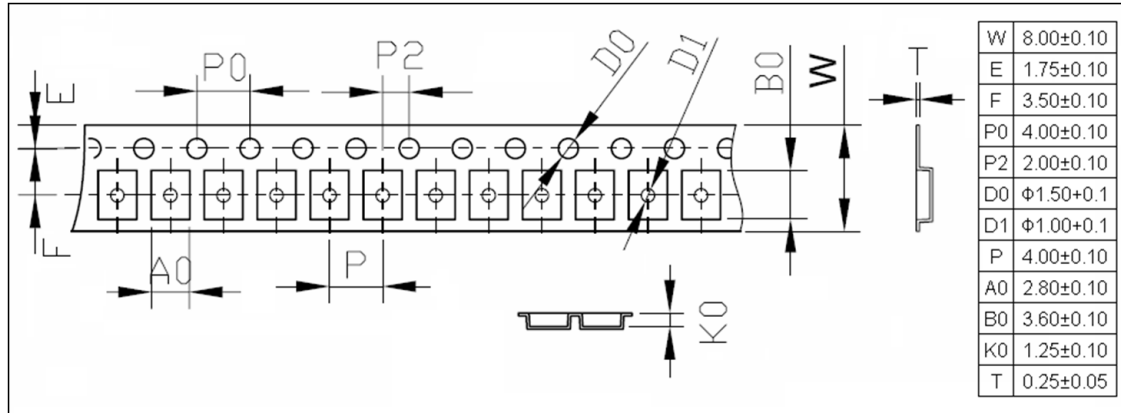


7、 SUBSTANCES IN PRODUCT

| 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 | 53.00% |
| | | | Ni | 7440-02-0 | 0.0581 | 29.00% |
| | | | Co | 7440-48-4 | 0.0360 | 18.00% |
| | | Plate | Au | 7440-57-5 | 0.0571 | 19.00% |
| | | | 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 | 48.50% |
| | | | 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)



| | | | | | | |
|-------------|--------------|--------------|---------------|--------------|--------------|--|
| C1±1 | A±0.3 | B±0.3 | B1±0.3 | T±0.2 | D±0.5 | H_{-0.5}^{+0.5} |
| 178 | 2.5 | 21.0 | 13.2 | 1.0 | 60.5 | 8.5 |

Q' ty: 3000pcs/Reel

9、WTL PART NUMBER SYSTEM :

For example: WTL3M25625CH

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

WTL - 3M - 25625 - CH

WTL: Brand

3M : Package Code , please see Table 1

25625: Serial number , flow code , without any rules

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

Table1

| Type | SMD Seam Crystal | | | | | | | |
|--------------|-------------------|---------|---------|---------|---------|-------------|----------|---------|
| Series | TX1 | TX2 | TX3 | TX4 | TX5 | TX6 | TX7 | TX8 |
| Package Code | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M |
| Size(mm) | 2.0*1.6 | 2.5*2.0 | 3.2*2.5 | 4.0*2.5 | 5.0*3.2 | 6.0*3.5 | 7.0*5.0 | 1.6*1.2 |
| Type | SMD Glass Crystal | | | | | DIP Crystal | | |
| Series | TG3 | TG5 | TG6 | TG8 | TG9 | WX6 | WX7 | WZ7 |
| Package Code | 3G | 5G | 6G | 8G | 5A | 9S | 9M | 9L |
| Size(mm) | 3.2*2.5 | 5.0*3.2 | 6.0*3.5 | 8.0*4.5 | 5.0*3.2 | 10.5*4.7 | 11.4*4.7 | 7.6*4.0 |