

**TAI-SAW TECHNOLOGY CO., LTD.**

No. 3, Industrial 2nd Rd., Ping-Chen Industrial District,
Taoyuan, 324, Taiwan, R.O.C.

TEL: 886-3-4690038 FAX: 886-3-4697532

E-mail: tstsales@mail.taisaw.com Web: www.taisaw.com

Product Specifications Approval Sheet

Product Description: Crystal Unit SMD 2.5x2.0 40.00MHz

TST Part No.: TZ1181EAAA32

Customer Part No.: _____

Customer signature required

Company: _____

Division: _____

Approved by : _____

Date: _____

Checked by: _____ Yifan Chen *Yifan*

Approved by: _____ Kelly Huang *Kelly Huang*

Date: _____ 06/02/2022

1. Customer signed back is required before TST can proceed with sample build and receive orders.
2. Orders received without customer signed back will be regarded as agreement on the specifications.
3. Any specifications changes must be approved upon by both parties and a new revision of specifications shall be released to reflect the changes.



MODEL NO.: TZ1181EAAA32

REV. NO.: 1

Revise:

| Rev. | Rev. Page | Rev. Account | Date | Ref. No. | Revised by |
|------|-----------|-----------------|-----------|----------|------------|
| 1 | N/A | Initial release | 06/02/22' | N/A | Yifan Chen |



MODEL NO.: TZ1181EAAA32

REV. NO.: 1

Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package
- Moisture Sensitivity Level (MSL) : Level-1

RoHS Compliant
Lead free
Lead-free soldering

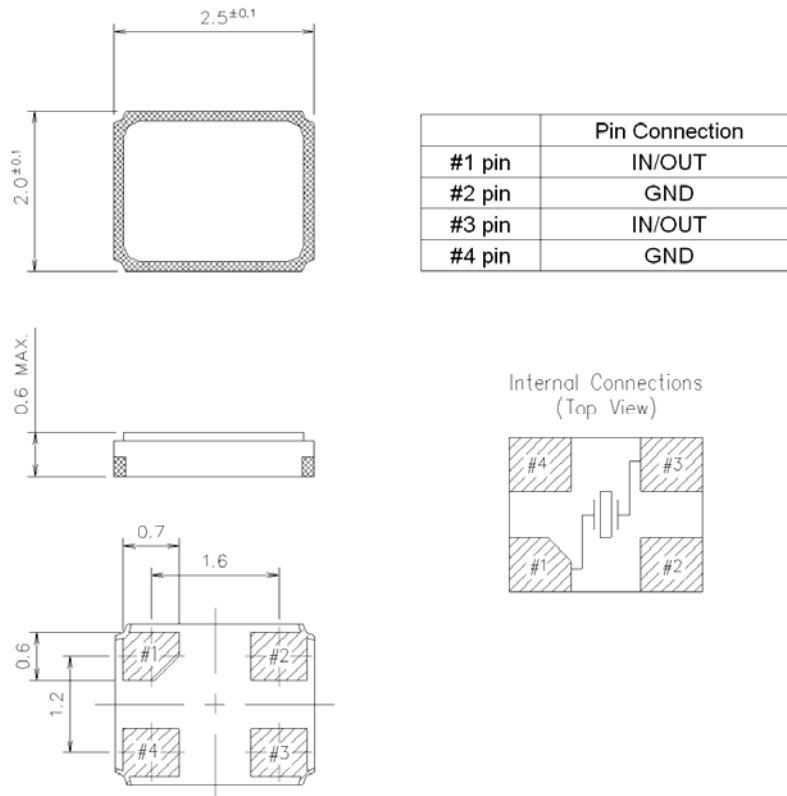
Description and Applications:

Surface mount 2.5mmx2.0mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

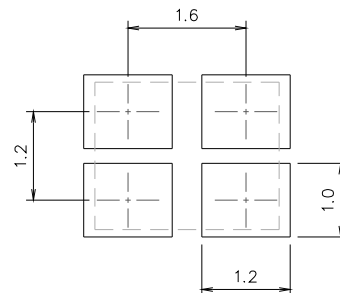
Electrical Specifications:

| TZ1181EAAA32 | Specification |
|--|--|
| Nominal Frequency | 40.000000 MHz |
| Mode of Oscillation | Fundamental |
| Storage Temperature Range | -40°C to +105°C |
| Operating Temperature Range | -40°C to +105°C |
| Frequency Stability over Operating Temperature Range | +/-10 ppm (referred to the value at 25°C) -30°C to +85°C |
| Frequency Make Tolerance (FL) | +/-7 ppm @ 25°C +/- 3°C |
| Equivalent Series Resistance (ESR) | 20 Ω max |
| Nominal Drive Level | 10uW typical and 350uW max |
| Shunt Capacitance (Co) | 2.0 pF max |
| Load Capacitance (CL) | 7 pF |
| Trim Sensitivity (TS) | 19.2 ppm/pF typical (+/-10%) |
| Aging | +/-2ppm/year |
| Insulation Resistance | 500 MΩ min./DC 100V |
| Marking | Laser Marking |
| Unit Weight | 9.5 +/-0.5mg |

Mechanical Dimensions (mm): Base



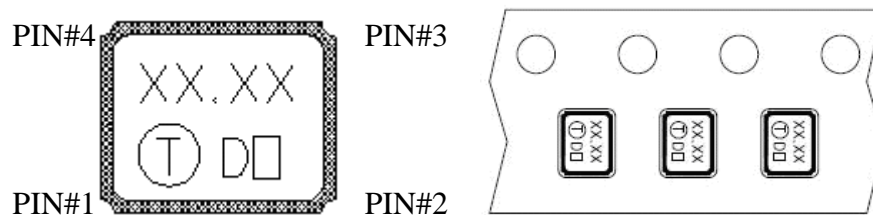
Recommended Land Pattern: (unit: mm)



Marking:

Line 1: Frequency (40.00)

Line 2: TST Logo + Date Code + Product Code (☐ is TST internal tracking code, could be a~z and A~Z, 1 or 2 letters, underline or no underline)



The inner vision of PIN#1,PIN#4 side is XTAL blank mounting pad.

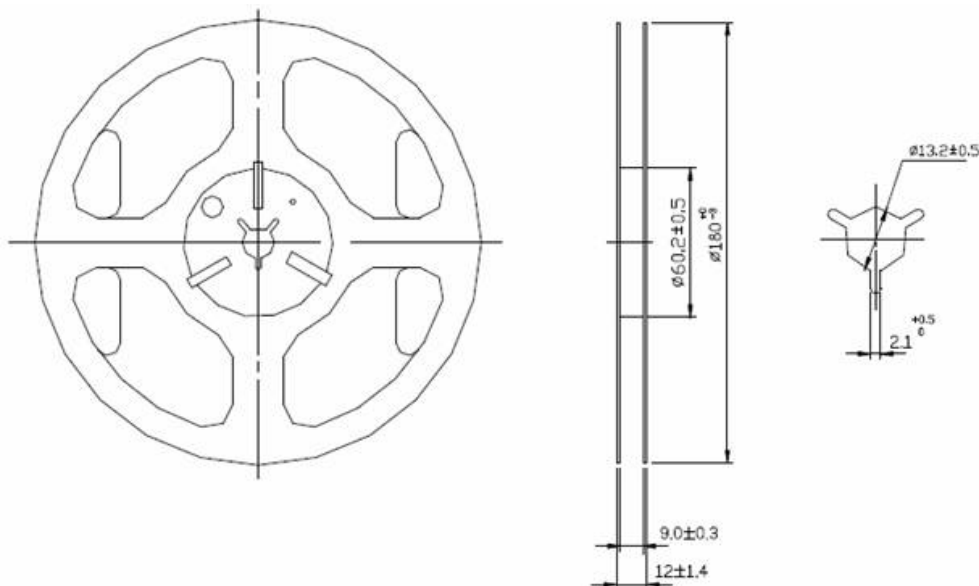
Date Code Table

| | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| WK01 | WK02 | WK03 | WK04 | WK05 | WK06 | WK07 | WK08 | WK09 | WK10 | WK11 | WK12 | WK13 |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| WK14 | WK15 | WK16 | WK17 | WK18 | WK19 | WK20 | WK21 | WK22 | WK23 | WK24 | WK25 | WK26 |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| WK27 | WK28 | WK29 | WK30 | WK31 | WK32 | WK33 | WK34 | WK35 | WK36 | WK37 | WK38 | WK39 |
| a | b | c | d | e | f | g | h | i | j | k | l | m |
| WK40 | WK41 | WK42 | WK43 | WK44 | WK45 | WK46 | WK47 | WK48 | WK49 | WK50 | WK51 | WK52 |
| n | o | p | q | r | s | t | u | v | w | x | y | z |

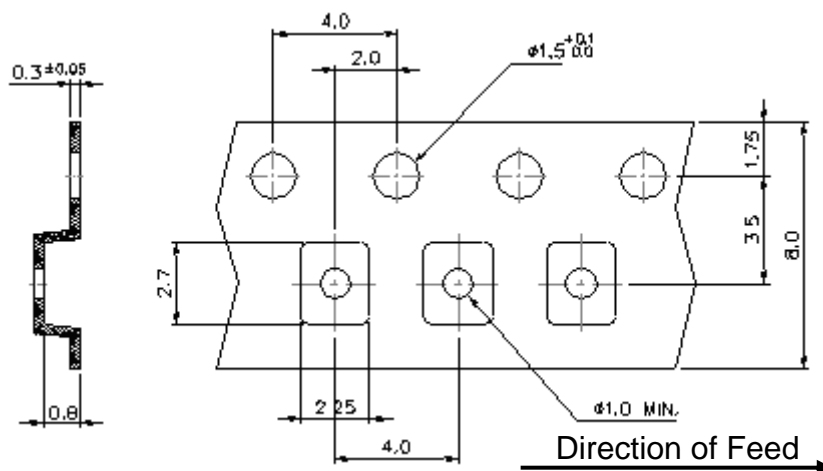
Product Code Table: (Under line With Even Year and Odd Year for Nothing)

| Year | | | | | | Product Code |
|------|------|------|------|------|------|--------------------------|
| 2013 | 2015 | 2017 | 2019 | 2021 | 2023 | <input type="checkbox"/> |
| 2014 | 2016 | 2018 | 2020 | 2022 | 2024 | <input type="checkbox"/> |

Reel Dimensions (mm):



Tape Dimensions (mm):

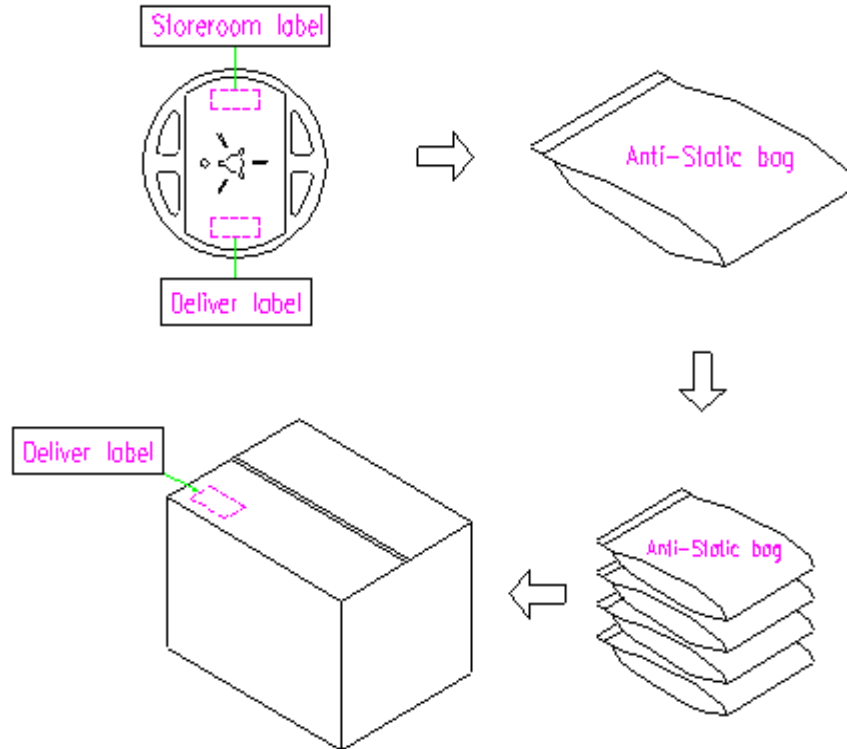


[NOTE]:

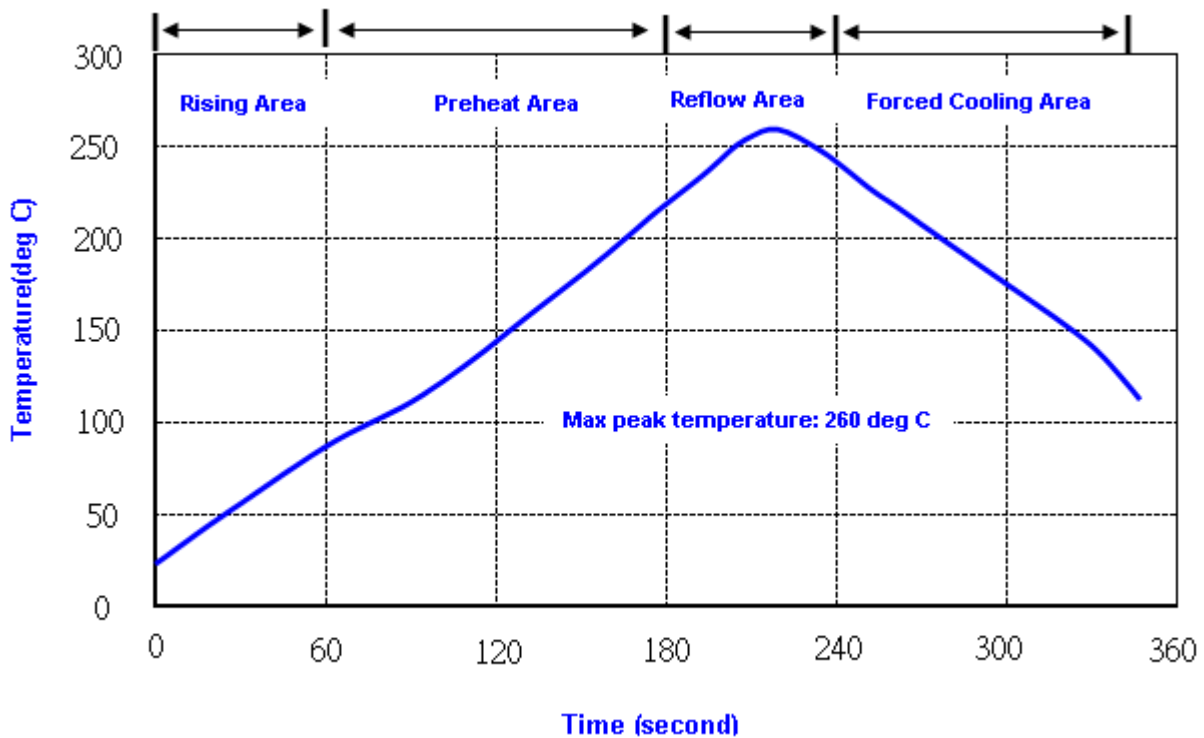
1. Unless otherwise specified tolerance on dimension ± 0.1 mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance ± 0.2 mm.

Packing Quantity/Packing:

3K pcs maximum per reel



Reflow Profile:



Note: 1. Max peak temperature: 260 \pm 5 deg C; Time: 10 \pm 2 sec
 2. Temperature: 217 \pm 5 deg C; Time: 90~100 sec

Reliability Specifications

| Test name | Test process / method | Reference standard |
|--|--|-----------------------------------|
| Mechanical characteristics | | |
| resistance to Soldering heat (IR reflow) | Temp/ Duration : 265°C /10sec x2 times Total time : 4min.(IR-reflow) | EIAJED-4701 -300(301)M(II) |
| Vibration | Total peak amplitude : 1.5mm Vibration frequency : 10 to 2000 Hz Sweep period : 20 minute Vibration directions : 3 mutually perpendicular Duration : 2 hr / direc. | MIL-STD 202G method 204 |
| Mechanical Shock | directions : 3 impacts per axis Acceleration : 3000g's, +20/-0 % Duration : 0.3 ms (total 18 shocks) Waveform : Half-sine | MIL-STD 202G method 213 |
| Solderability | Solder Temperature:265±5°C Duration time: 5±0.5 seconds. | J-STD-002 |
| Environmental characteristics | | |
| Thermal Shock | Heat cycle conditions -40 °C (30min) ↔ 85 °C (30min) * cycle time : 10 times | MIL-STD 883G method 1010.8 |
| Humidity test | Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 96 hours | MIL-STD 202G method 103 |
| Dry heat (Aging test) | Temperature : 125 ± 2 °C Duration : 168 hours | MIL-STD 202G method 108A |
| Cold resistance (Low Temp Storage) | Temperature : -40 ± 2 °C Duration : 96 hours | IEC 60068-2-1 |