**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 2.0x1.6 50.0MHz

TST Part No.: TZ3208A (for B1484 only)

Customer Part No.: B1484

Customer signature required

Company:

Division:

Approved by :

Date:

Checked by: Chivalry Lin

Approved by: Kelly Huang

Date: 08/06/2018

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.

# TAI-SAW TECHNOLOGY CO., LTD.

**Crystal Unit SMD 2.0x1.6 50.0MHz**

MODEL NO.: TZ3208A REV. NO.: 3

## Revise:

| Rev. | Rev. Page | Rev. Account | Date | Ref. No. | Revised by |
|---|---|---|---|---|---|
| 1 | N/A | Initial release | 12/22/16’ | N/A | Chivalry Lin |
| 2. | 5 | Change Marking Rule | 07/11/17’ | ECN-201700285 | Chivalry Lin |
| 3 | 3 | Change Tolerance to 5+/-20 ppm | 08/06/18’ | ECN-201800344 | Chivalry Lin |

# TAI-SAW TECHNOLOGY CO., LTD.

**Crystal Unit SMD 2.0x1.6 50.0MHz**

MODEL NO.: TZ3208A REV. NO.: 3

## Features:

RoHS Compliant
Lead free
Lead-free soldering

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

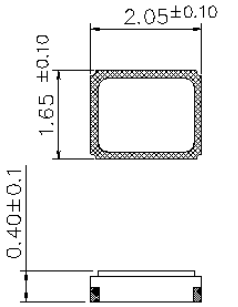
## Description and Applications:

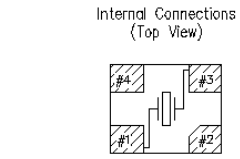
Surface mount 2.0mmx1.6mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

## Electrical Specifications:

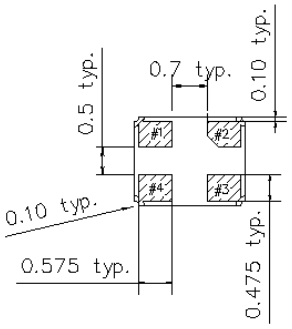
| **TZ3208A** | **Specification** |
|---|---|
| Nominal Frequency | 50.000000 MHz |
| Mode of Oscillation | Fundamental |
| Storage Temperature Range | -55°C to +125°C |
| Operating Temperature Range | -35°C to +85°C |
| Frequency Stability over Operating Temperature Range | +/-20 ppm (referred to the value at 25°C) |
| Frequency Make Tolerance (FL) | 5+/-20 ppm @ 25°C +/- 3°C |
| Equivalent Series Resistance (ESR) | 60 Ω max |
| Nominal Drive Level | 10uW typical and 100uW max |
| ESR Change due to Drive Level: | 5Ω Max,1uW-100uW |
| Frequency Shift due to Drive Level: | 5ppm Max,1uW-100uW |
| Shunt Capacitance (Co) | 1.8 pF max |
| Load Capacitance (CL) | 14 pF |
| Aging | +/-3ppm/year |
| Insulation Resistance | 500 MΩ min./DC 100V |
| Marking | Laser Marking |
| Unit Weight | 5.7mg+/-0.5mg |

# Mechanical Dimensions (mm):
# Base



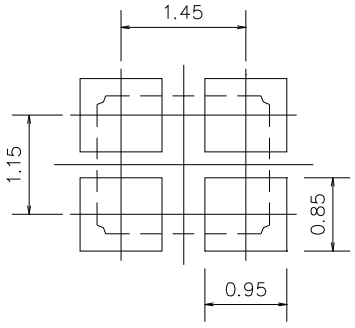




[NOTE] #2 , #4 is connected with a metal cover




| | Pin connection |
|---|---|
| #1 Pin | IN/OUT |
| #2 Pin | GND |
| #3 Pin | IN/OUT |
| #4 Pin | GND |

# Recommended Land Pattern: (unit: mm)

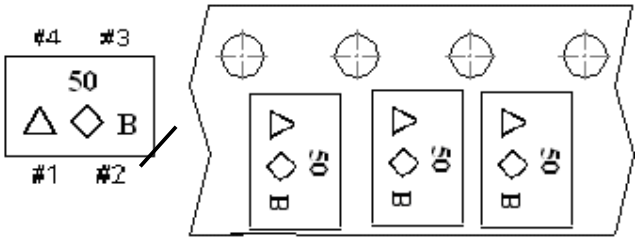



Recommended Land Pattren

# Marking:

Line 1: Frequency (50)

Line 2: Date Code (△) + Year Code(◇)+ Product Code(B)



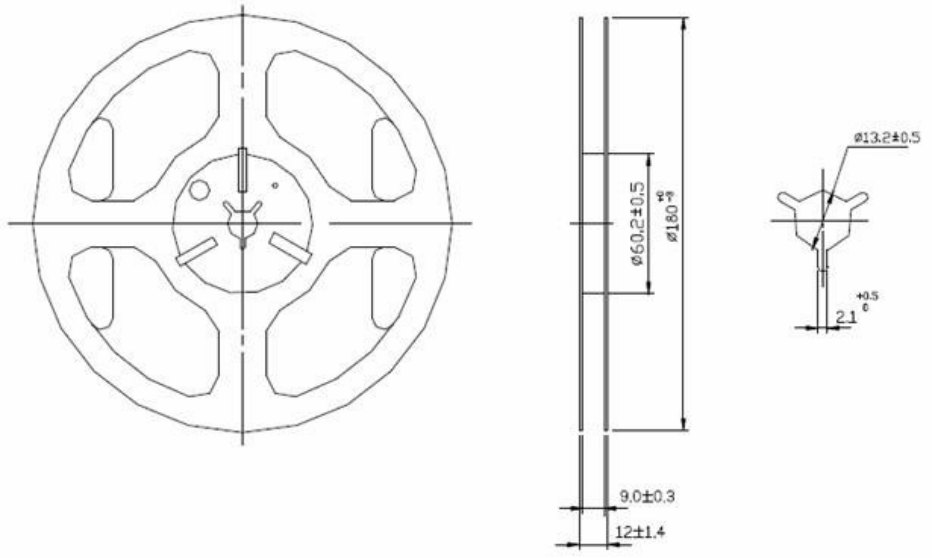

## △ : Date Code Table:

| 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 |

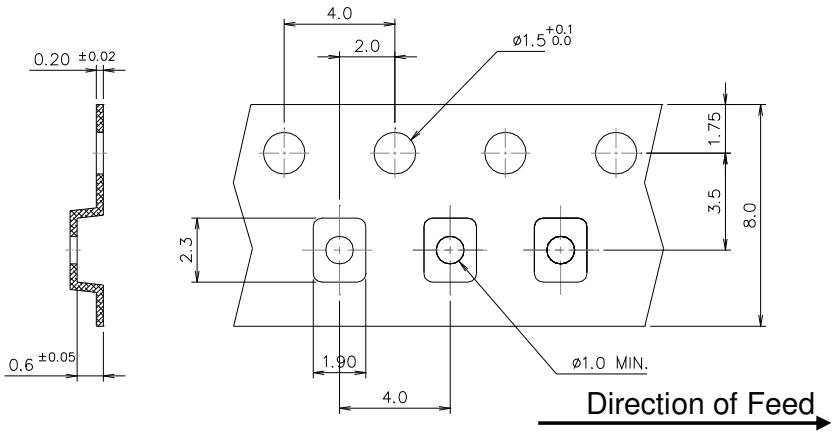
## ◇:Year Code Table :

| Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | A | B | C | D | E | F | G | H | I | J |
| Year | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 |
| Code | K | L | M | N | O | P | Q | R | S | T |
| Year | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | | | | |
| Code | U | V | W | X | Y | Z | | | | |

# Reel Dimensions (mm):




# Tape Dimensions (mm):

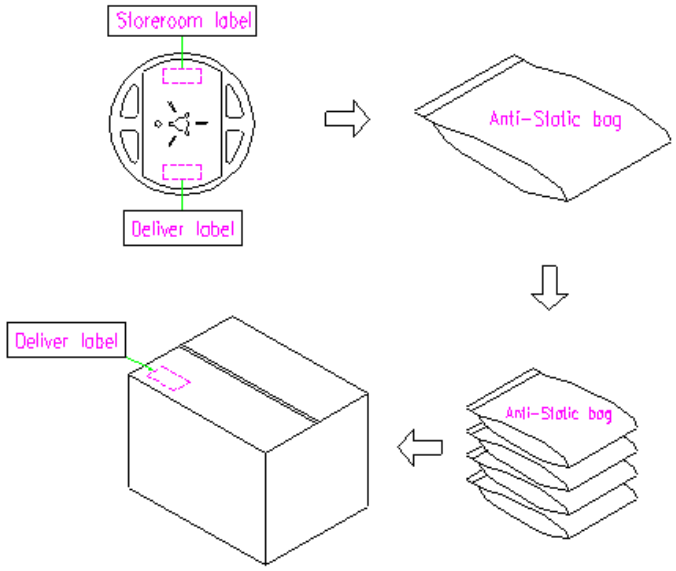



[NOTE]:

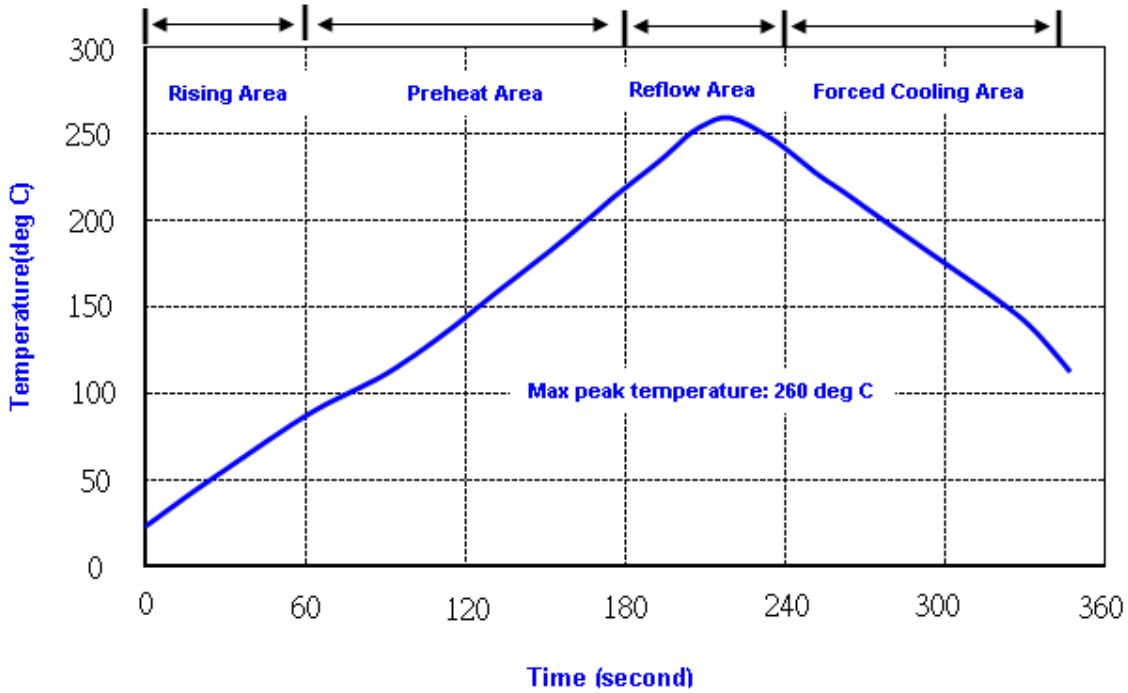
1. Unless otherwise specified tolerance on dimension +/-0.1 mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance +/-0.2 mm.

# Packing Quantity/Packing:

**3K pcs maximum per reel**




## Reflow Profile:




**Note: 1.Max peak temperature: 260+/-5 deg C; Time: 10+/-2 sec**

**2. Temperature: 217+/-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 ×2 times<br>Total time : 4min.(IR-reflow) | EIAJED-4701<br><br>-300(301)M(II) |
| Vibration | Total peak amplitude : 1.5mm<br>Vibration frequency : 10 to 2000 Hz<br>Sweep period : 20 minute<br>Vibration directions : 3 mutually perpendicular<br>Duration : 2 hr / direc. | MIL-STD 202G method 204 |
| Mechanical Shock | directions : 3 impacts per axis<br>Acceleration : 3000g's, +20/-0 %<br>Duration : 0.3 ms (total 18 shocks)<br>Waveform : Half-sine | MIL-STD 202G method 213 |
| Solderability | Solder Temperature:265±5℃<br>Duration time: 5±0.5 seconds. | J-STD-002 |
| **Environmental characteristics** | | |
| Thermal Shock | Heat cycle conditions<br>-40 ℃ (30min) ←→ 85 ℃ (30min)<br>* cycle time : 10 times | MIL-STD 883G method 1010.8 |
| Humidity test | Temperature : 85 ± 2 ℃<br>Relative humidity : 85%<br>Duration : 96 hours | MIL-STD 202G method 103 |
| Dry heat ( Aging test ) | Temperature : 125 ± 2 ℃<br>Duration : 168 hours | MIL-STD 202G method 108A |
| Cold resistance (Low Temp Storage) | Temperature : -40 ± 2 ℃<br>Duration : 96 hours | IEC 60068-2-1 |