



TAI-SAW TECHNOLOGY CO., LTD.

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

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Product Specifications Approval Sheet

Product Name: Crystal Oscillator SMD 2.0x1.6 24.0MHz

TST Parts No.: TW0523D

Customer Parts No. : _____

| |
|--------------------|
| Company: _____ |
| Division: _____ |
| Approved by: _____ |
| Date: _____ |

Checked by: _____ Glen Peng

Approval by: _____ Kelly Huang

Date: _____ 06/04/2020

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.
SMD 2.0x1.6 24.0MHz Crystal Oscillator

MODEL NO.: TW0523D

REV. NO.:1.0

Revise:

| Rev. | Rev. Page | Rev. Account | Date | Ref. No. | Reviser |
|------|-----------|-----------------|-----------|----------|-----------|
| 1 | N/A | Initial release | 06/04/20' | N/A | Glen Peng |



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SMD 2.0x1.6 24.0MHz Crystal Oscillator

MODEL NO.: TW0523D

REV. NO: 1

Features:

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



Application:

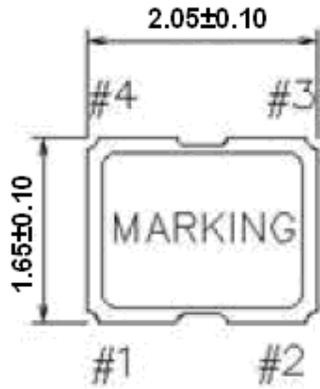
- Supply Voltage CMOS Output
- Option-able stand-by functions for output (Tri-state output).

Electrical Characteristics:

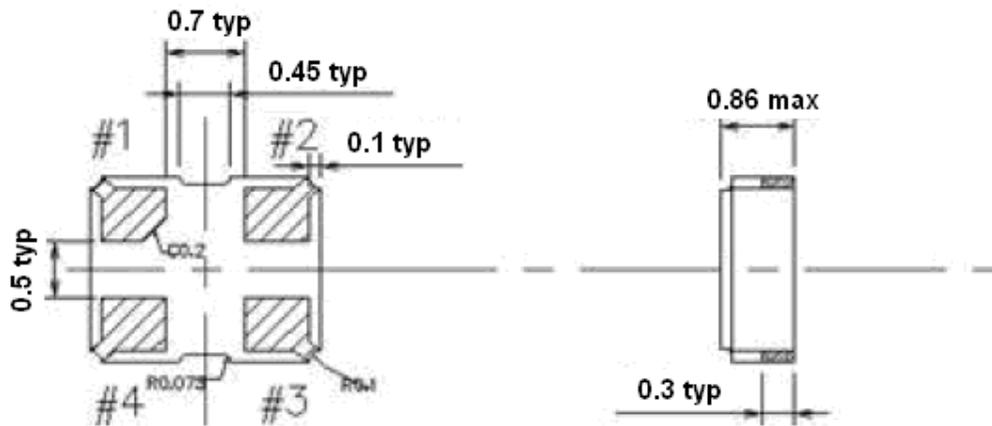
| TW0523D | Specifications |
|--|--|
| Nominal Frequency, Fo | 24.000000 MHz |
| Storage Temperature Range | -40°C to +125°C |
| Operating Temperature Range | -40°C to +85°C |
| Power Supply Voltage, Vcc | 1.8V +/- 5% |
| Load | 15pF |
| Voltage Levels "0" Level "1" Level | 10% Vcc max 90% Vcc min |
| Power Supply Current, Icc | 2 mA max |
| Stand-by Current | 10 μ A max |
| Frequency Accuracy ¹ | +/-50 ppm max |
| Duty Cycle | 45% ~ 55% |
| Rise Time (10% -> 90% of final RF level in Vp-p) Fall Time (90% -> 10% of final RF level in Vp-p) | 3.0 nsec max. 3.0 nsec max. |
| Enable/Disable Function(Voltage Level) | PIN 1: Vih:70%Vcc min or Open, PIN 3: Output Enable PIN 1: Vil:30%Vcc max, PIN 3:Output Disable |
| Disable Time | 50 nsec max |
| Enable Time | 50 usec max |

#Note 1: Frequency accuracy includes 25C tolerance, operating temperature range -40 to 85 deg C, aging and voltage or load change

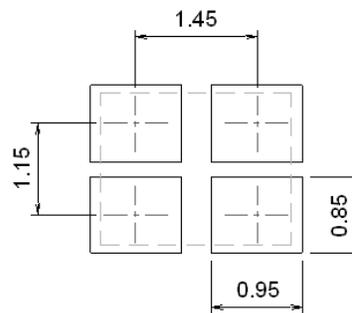
Mechanical Dimensions: (Unit: mm)



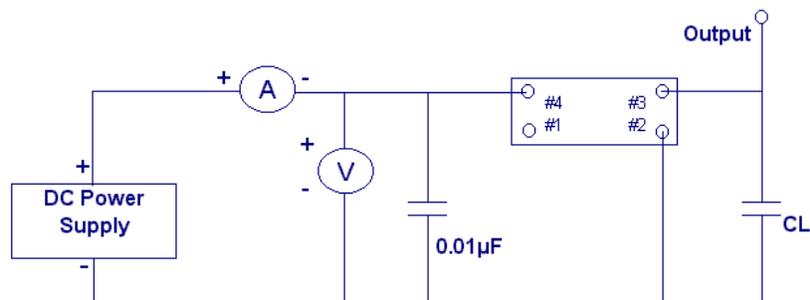
| Pad | Connection |
|-----|------------|
| #1 | OE |
| #2 | GND |
| #3 | Output |
| #4 | Vdd |



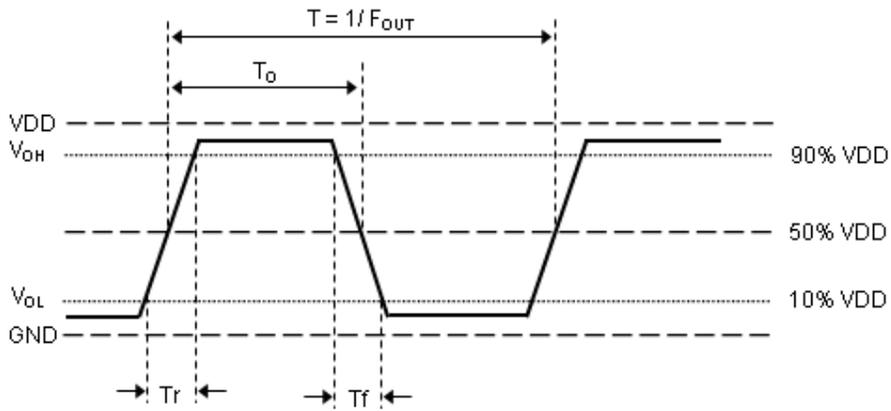
Recommended Land Pattern: (unit: mm)



Test Circuit:



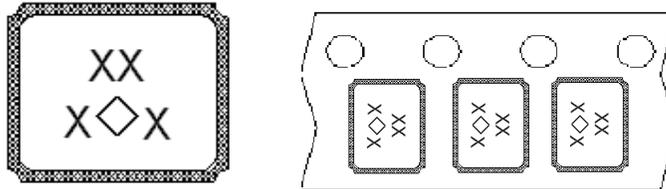
Output Waveform :



Marking:

Line 1: **XX** : **24** (Frequency)

Line 2: **X◇X** : TST Traceability code + ◇ : Date Code + Traceability code

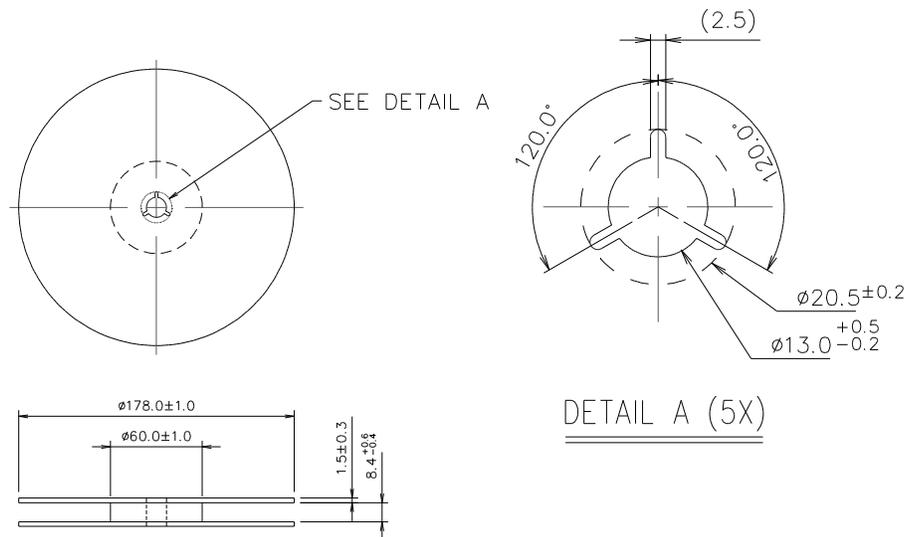


◇ : Date Code Table: Year/Month

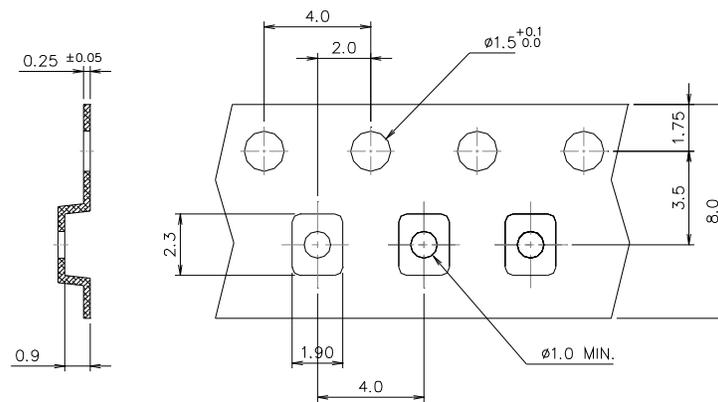
| Year/Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|
| 2018 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2019 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2020 | a | b | c | d | e | f | g | h | i | j | k | m |
| 2021 | n | p | q | r | s | t | u | v | w | x | y | z |
| 2022 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2023 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2024 | a | b | c | d | e | f | g | h | i | j | k | m |
| 2025 | n | p | q | r | s | t | u | v | w | x | y | z |

Packing:

- Packing Quantity : 3K Pcs / Reel
- Reel Dimension (Unit: mm)



- Tape Dimension (Unit: mm)

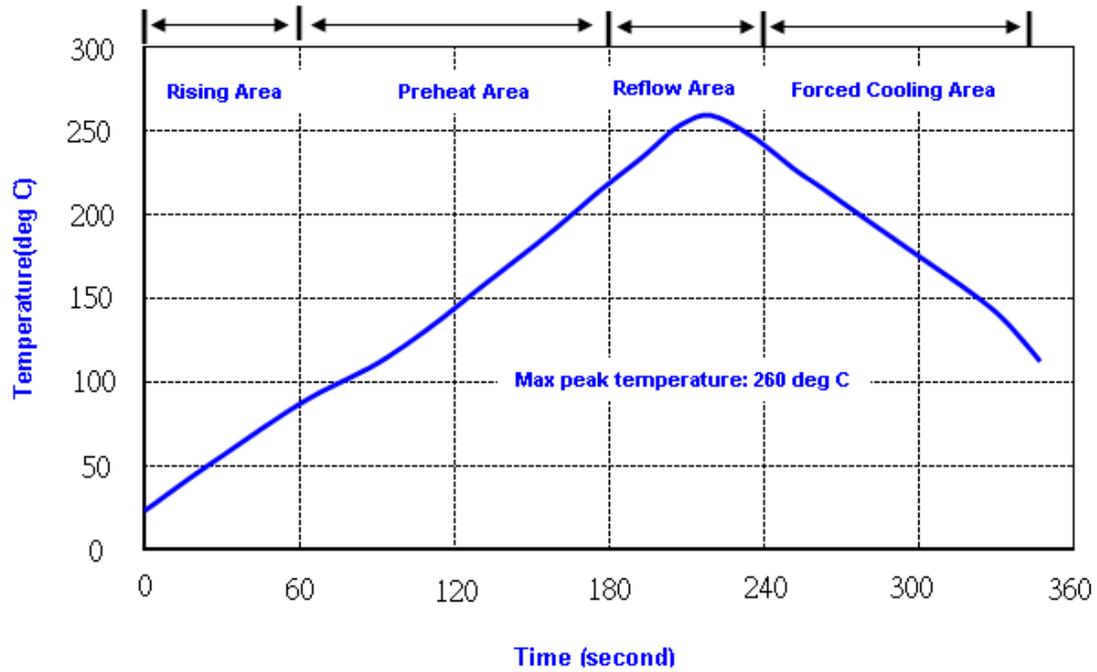


[NOTE]:

Direction of Feed

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.
4. Packing Direction: dot or the logo of marking should be close to the hole of tape.

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 × 2 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 |