



# 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 Description: Crystal Oscillator SMD 3.2x2.5 32.768MHz

TST Part No.: TW0597A

Customer Part No.: \_\_\_\_\_

Customer signature required
Company: _____
Division: _____
Approved by : _____
Date: _____

Checked by: \_\_\_\_\_ Glen Peng *Glen*

Approved by: \_\_\_\_\_ Kelly Huang *Kelly Huang*

Date: \_\_\_\_\_ 11/05/2019

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 3.2x2.5 32.768MHz Crystal Oscillator**

MODEL NO.: TW0597A

REV. NO.: 1

**Revise:**

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	11/05/19'	N/A	Glen Peng



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3/8

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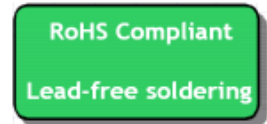
## SMD 3.2x2.5 32.768MHz Crystal Oscillator

MODEL NO.: TW0597A

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
- AEC-Q200 compliance



### Application:

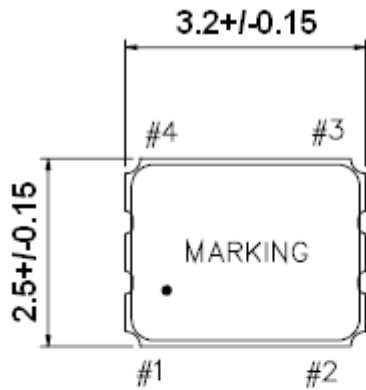
- For customer requirement.
- Supply Voltage Operation / Complementary CMOS Output
- Option-able stand-by functions for output.

### Electrical Characteristics:

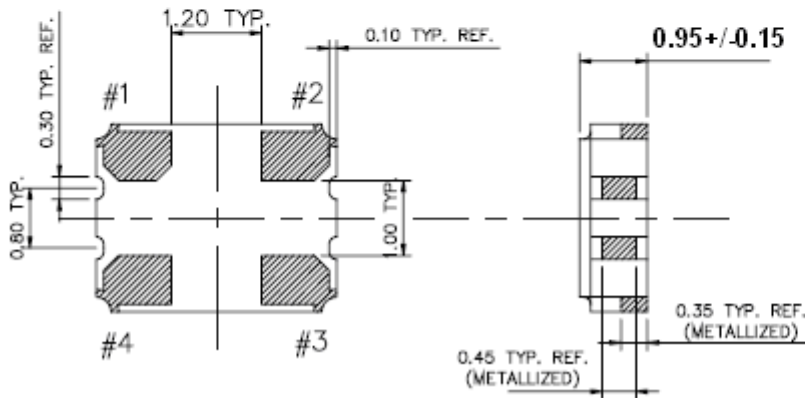
TW0597A	Specifications
Nominal Frequency, Fo	32.768000 MHz
Storage Temperature Range	-40°C to +125°C
Operating Temperature Range	-30°C to +95°C
Power Supply Voltage, Vcc	3.3V +/- 5%
Load	15pF
“0” Level “1” Level	Vol: 10%Vcc max Voh:90%Vcc min
Power Supply Current, Icc	30 mA max
Frequency Accuracy <sup>1</sup>	+/-20 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 )	10 nsec (max.)
Enable/Disable Function	PIN 1: Vih:70%Vcc min or Open, PIN 3: Output Enable PIN 1: Vil:30%Vcc max, PIN 3:Output Disable

#Note 1: Frequency accuracy includes 25C tolerance, operating temperature range -30 to 95 deg C, aging and voltage or load change

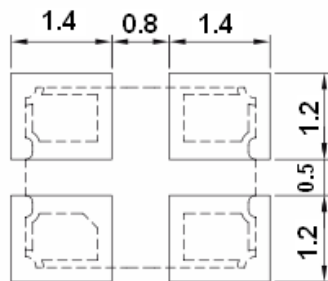
### Mechanical Dimensions: (Unit: mm)



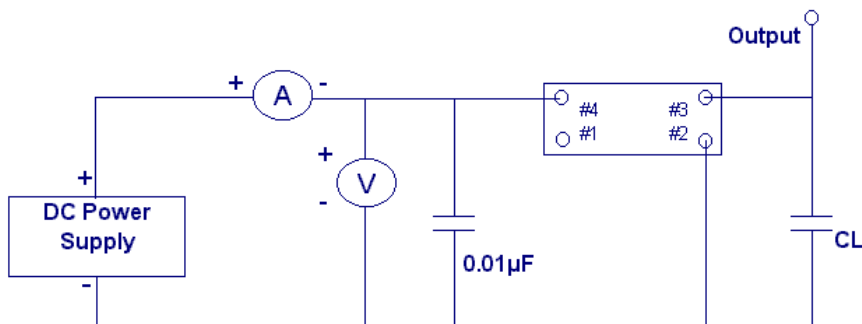
Unit :mm  
 Pin Function  
 1 : Output Enable  
 2 : CIRCUIT AND COVER GROUND  
 3 : OUTPUT  
 4 : VDD



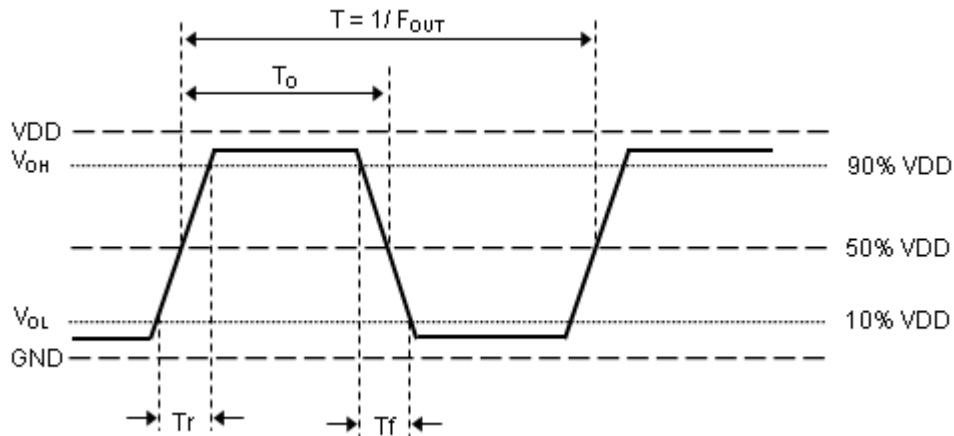
### Recommend Land pattern



### Test Circuit:



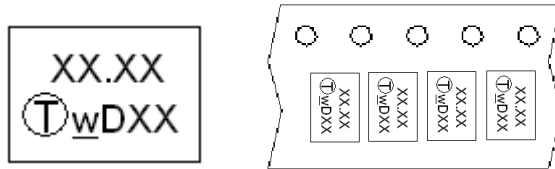
# Output Waveform :



## Marking:

Line 1: 32.76(Frequency)

Line 2: TST logo + Product Code + Data Code + Traceability Code (1 or 2 letters)



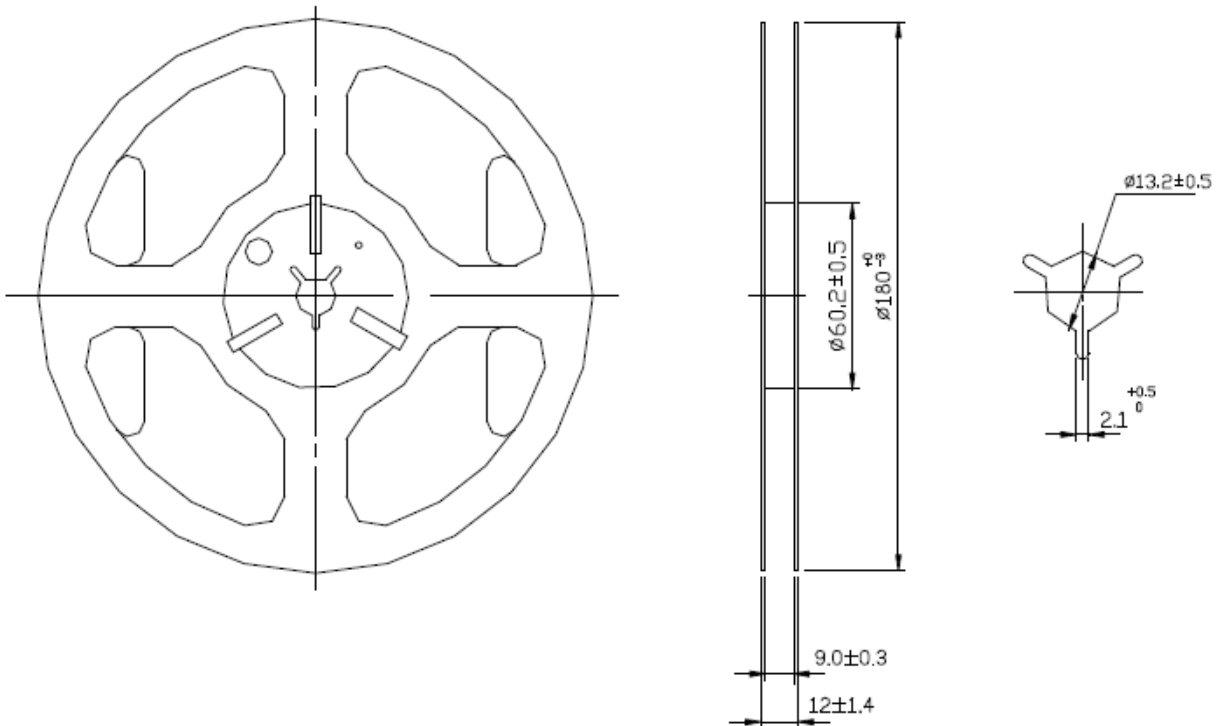
## Product Code Table

Year	2017	2018	2019	2020
	2021	2022	2023	2024
	2025	2026	2027	2028
Product Code	W	w	<u>W</u>	<u>w</u>

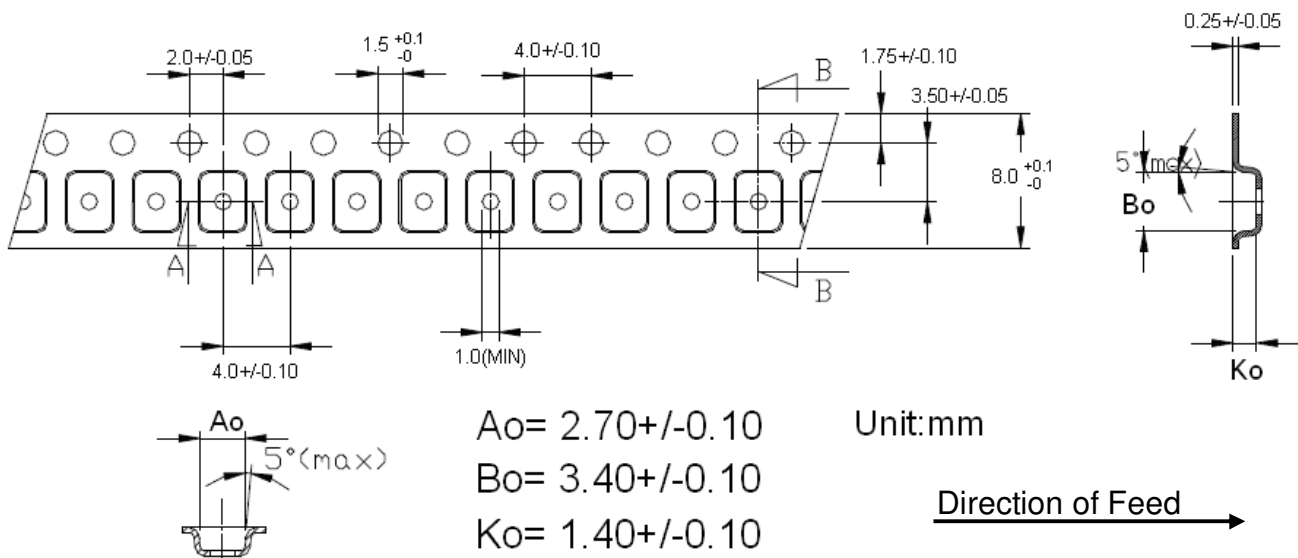
## Date Code Table

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

### Reel Dimensions (mm):



### Tape Dimensions (mm):

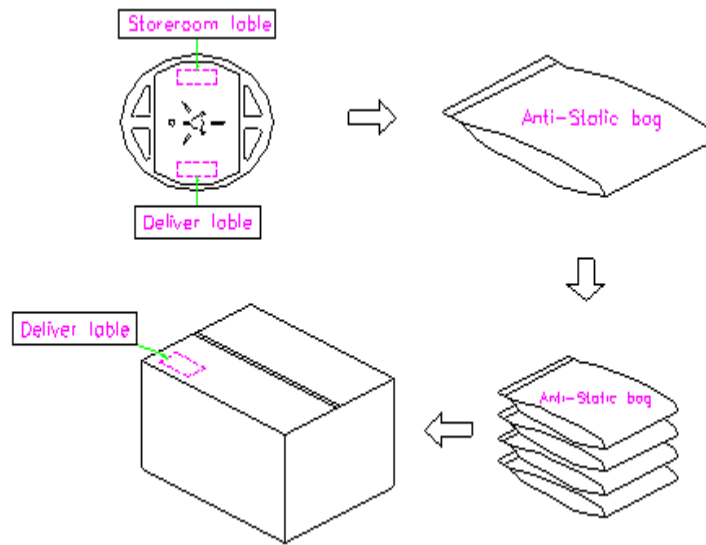


[NOTE]:

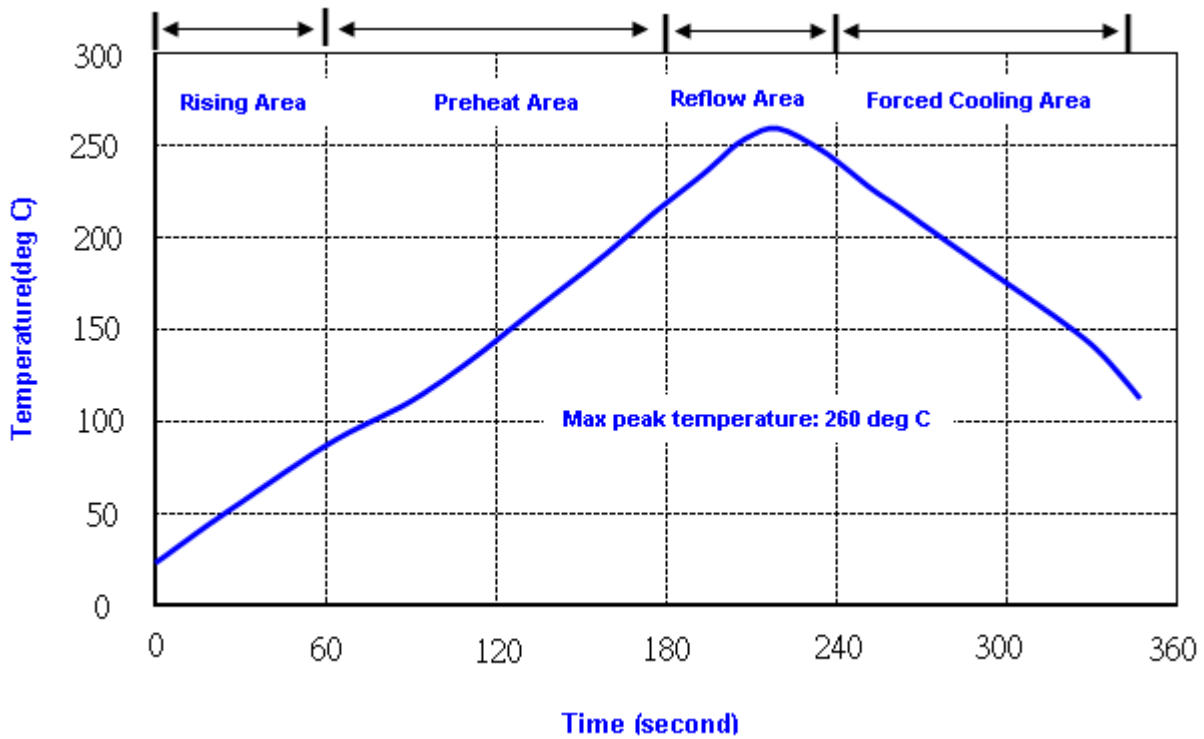
1. Unless otherwise specified tolerance on dimension  $\pm 0.1$  mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance  $\pm 0.2$  mm.

# 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 (AEC-Q200)

Test name	Test process / method	Reference standard
<b>Mechanical characteristics</b>		
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	MIL-STD 202G method 204
Mechanical Shock	directions : 3 impacts per axis Acceleration : 6000g'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
<b>Environmental characteristics</b>		
Thermal Shock	Heat cycle conditions -55 °C (30min) ↔ 125 °C (30min) * cycle time : 1000 times	MIL-STD 883G method 1010.8
Humidity test	Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 1000 hours	MIL-STD 202G method 103
Dry heat ( Aging test )	Temperature : 125 ± 2 °C Duration : 1000 hours	MIL-STD 202G method 108A
Cold resistance (Low Temp Storage)	Temperature : -40 ± 3 °C Duration : 1000 hours	IEC 60068-2-1