



# TAI-SAW TECHNOLOGY CO., LTD.

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## Approval Sheet For Product Specification

Issued Date: 1/13/2009 (REV. NO: 1)

Product Name: SMD 3.2x2.5 2.048MHz Crystal Oscillator

TST Parts No.: TW0309A

Customer Parts No. : \_\_\_\_\_

Company: _____
Division: _____
Approved by: _____
Date: _____

Checked by: Quinton Lo *Quinton Lo*

Approval by: Robert Chang *Robert Chang*

Date: 1/13/2009



**TAI-SAW TECHNOLOGY CO., LTD.**  
**SMD 3.2x2.5 2.048MHz Crystal Oscillator**

MODEL NO.: TW0309A

REV. NO.: 1

**Revise:**

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	1/13/09'	N/A	Quinton Lo



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## SMD 3.2x2.5 2.048MHz Crystal Oscillator

MODEL NO.: TW0309A

REV. NO: 1

### Features:

- Surface Mount Seam Weld Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature

RoHS Compliant  
Lead free  
Lead-free soldering

### Application:

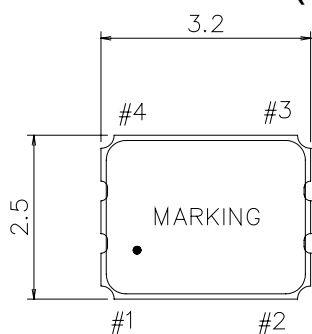
- 3.3 V Supply Voltage CMOS Output
- Option-able stand-by function for output.

### Electrical Characteristics:

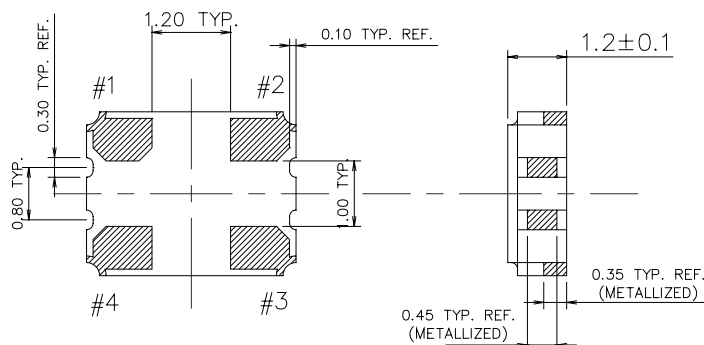
TW0309A	Specifications
Nominal Frequency, Fo	2.048000 MHz
Storage Temperature Range	-40°C to +85°C
Operating Temperature Range	-20°C to +70°C
Power Supply Voltage, Vcc	3.3 V +/- 5%
Load	15pF
“0” Level “1” Level	0.33 V max 2.97 V min
Power Supply Current, Icc	5 mA max
Frequency Accuracy <sup>1</sup>	+/-30 ppm max
Duty Cycle	40% ~ 60%
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. 10 nsec max.
Aging	+/-1ppm/year
Unit Weight	0.0232+/-0.005 g
Enable/Disable Function	PIN 1: High or Open, PIN 3:Output Enable PIN 1: Low, PIN 3:Output Disable

#Note 1: Frequency accuracy includes 25C tolerance, operating temperature range -20 to 70 deg C, aging and voltage or load change

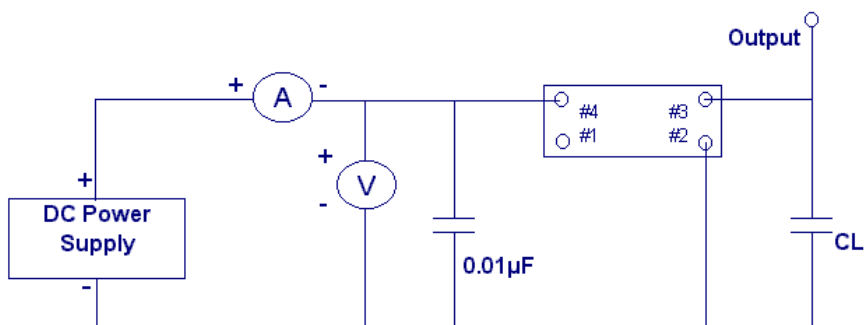
# Mechanical Dimensions: (Unit: mm)



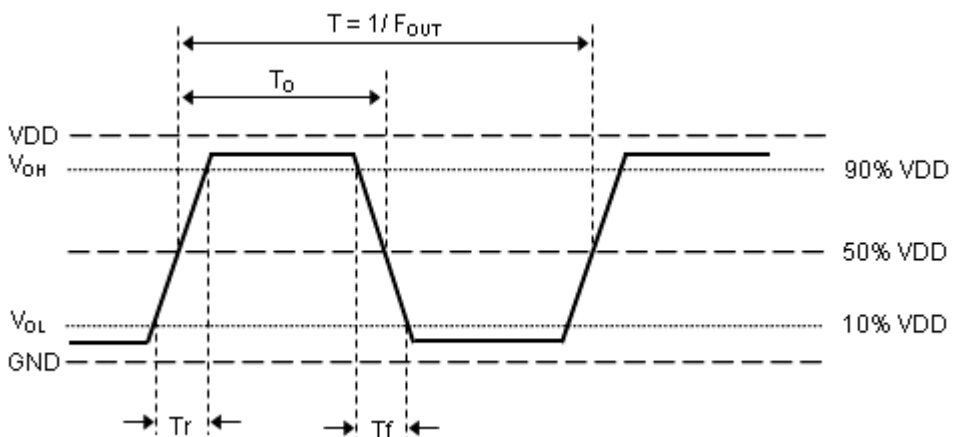
Unit :mm  
 Pin Function  
 1 : Output Enable  
 2 : CIRCUIT AND COVER GROUND  
 3 : OUTPUT  
 4 : VDD



## Test Circuit:



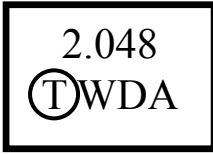
## Output Waveform :



### Marking:

Line 1: 2.048(Frequency)

Line 2:  $\text{\textcircled{T}}$ WDA (TST logo + Product Code + Data Code + TST Internal Code)



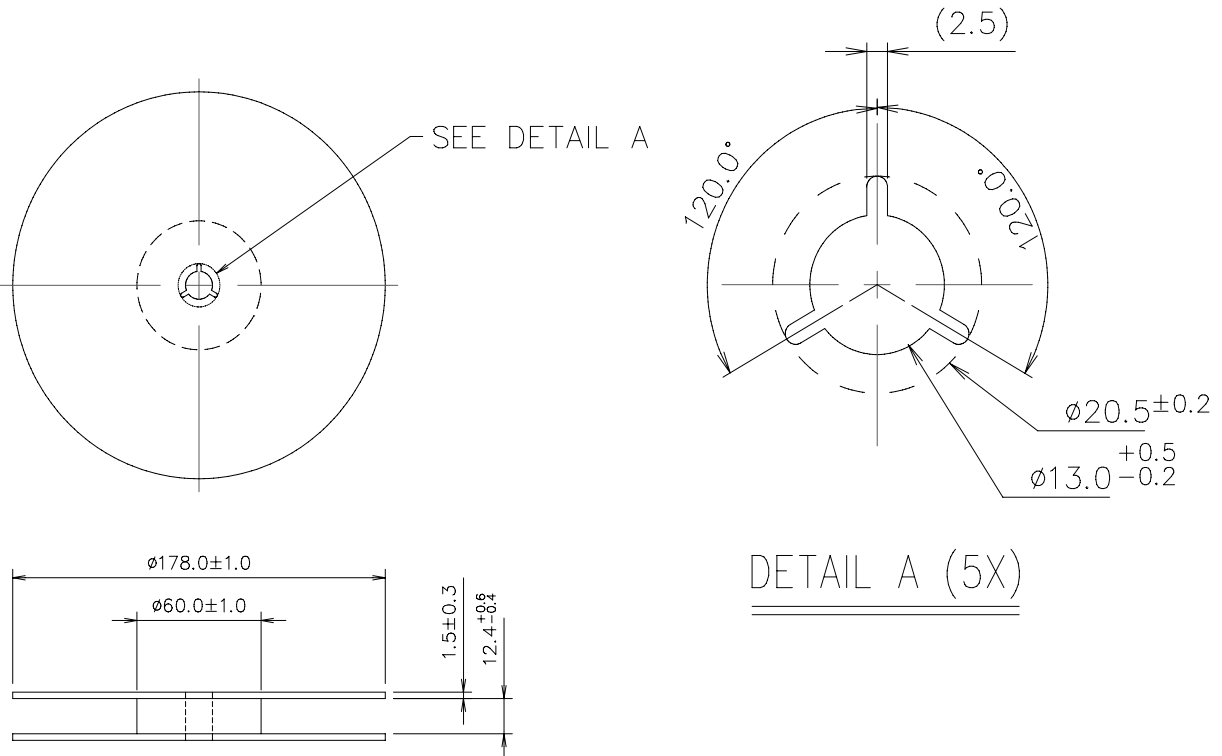
### Product Code Table

Year	2008	2009	2010	2011
	2012	2013	2014	2015
Product code	<u>w</u>	<b>W</b>	<b>w</b>	<u>W</u>

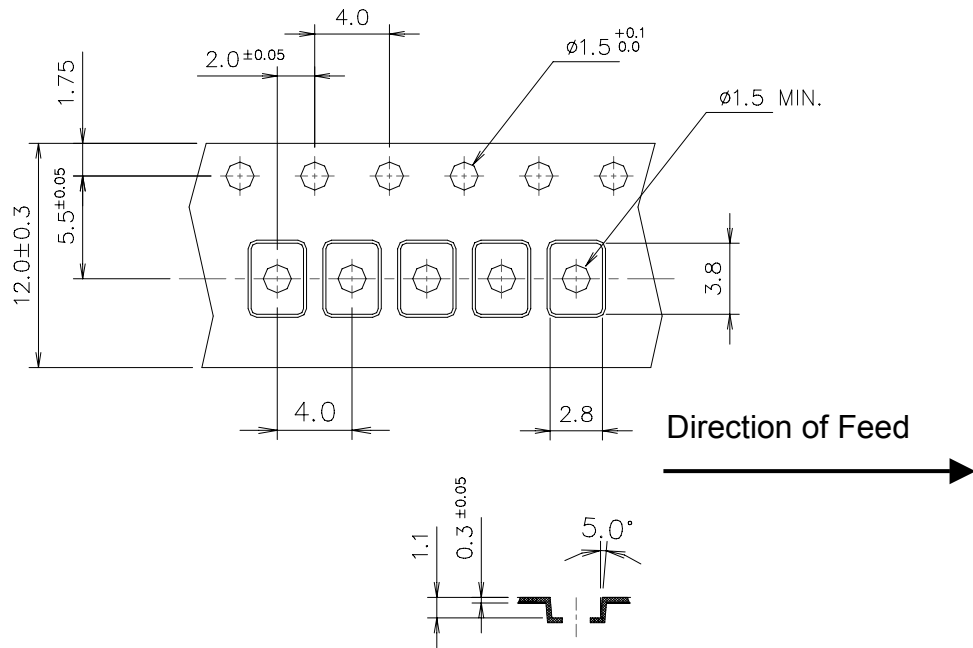
### Date Code Table

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):

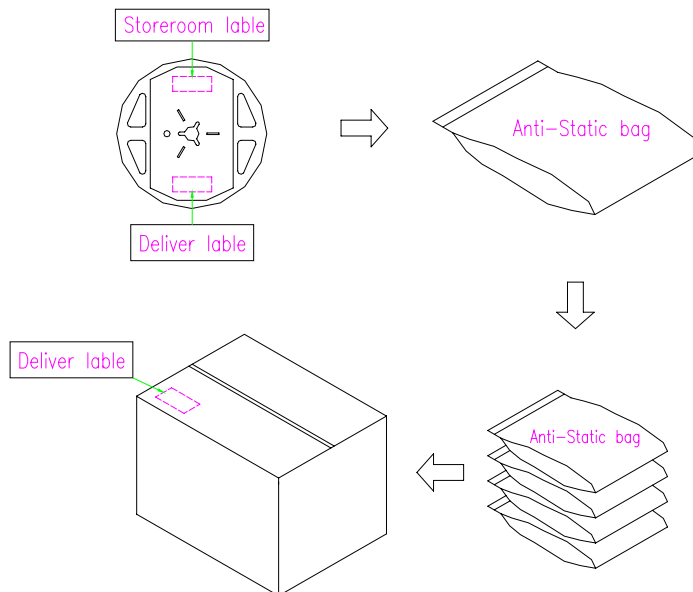


[NOTE]:

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.

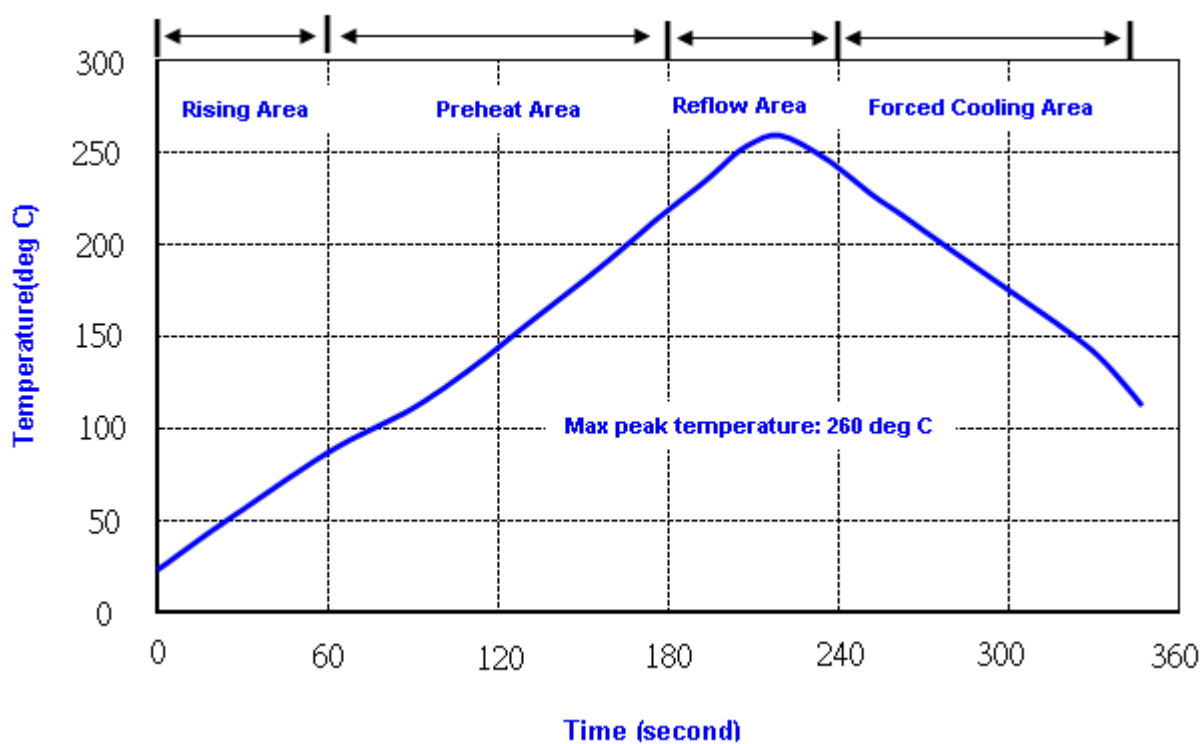
### Packing Quantity/Packing:

1K pcs maximum per reel



- Deliver package carton
1. L36xW35xH21cm-10 reel max.
  2. L38xW36xH32cm-15 reel max.

## 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
<b>Mechanical characteristics</b>		
resistance to Soldering heat (IR reflow)	Temp./ Duration : 260°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 55 Hz Sweep period : 1.0 minute Vibration directions : 3 mutually perpendicular Duration : 2 hr / direc.	MIL-STD 202F method 201A
Mechanical Shock	directions : 3 impacts per axis Acceleration : 3000g's, +20/-0 % Duration : 0.3 ms (total 18 shocks) Waveform : Half-sine	MIL-STD 202F method 213C
Solderability	Solder Temperature:265±5°C Duration time: 5±0.5 seconds.	MIL-STD 883G method 2003
<b>Environmental characteristics</b>		
Thermal Shock	Heat cycle conditions -55 °C (30min) ↔ 125 °C (30min) * cycle time : 10 times	MIL-STD 883G method 1010.7
Humidity test	Temperature : 70 ± 2 °C Relative humidity : 90~95% Duration : 96 hours	MIL-STD 202F method 103B
Dry heat ( Aging test )	Temperature : 125 ± 2 °C Duration : 168 hours	MIL-STD 883G method 1008.2 condition C
PCT test	Pressure: 2.06kg/cm <sup>2</sup> (2.03*10 <sup>5</sup> pa) Temperature : 121 ± 2 °C Relative humidity : 100% Duration : 24 hours	EIAJED-4701-3 B-123A