



# TAI-SAW TECHNOLOGY CO., LTD.

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## Approval Sheet For Product Specification

Issued Date: 8/25/2008 (REV. NO: 2)

Product Name: SMD 2.5x2.0 32.0MHz Crystal Unit

TST Parts No.: TZ1213B

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

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

Checked by: Kelly Huang *Kelly Huang*

Approval by: Robert Chang *Robert Chang*

Date: 8/25/2008



# TAI-SAW TECHNOLOGY CO., LTD.

## SMD 2.5x2.0 32.0MHz Crystal Unit

MODEL NO.: TZ1213B

REV. NO.: 2

### Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
2	4	Changed marking Rule	8/25/08'	ECN2008118	Kelly Huang



# TAI-SAW TECHNOLOGY CO., LTD.

## SMD 2.5x2.0 32.0MHz Crystal Unit

MODEL NO.: TZ1213B

REV. NO.: 2

### Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package

RoHS Compliant  
Lead free  
Lead-free soldering

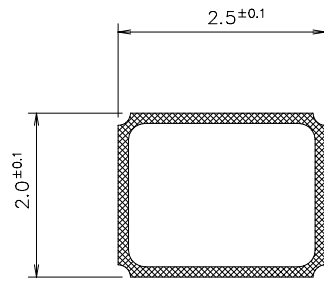
### Description and Applications:

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

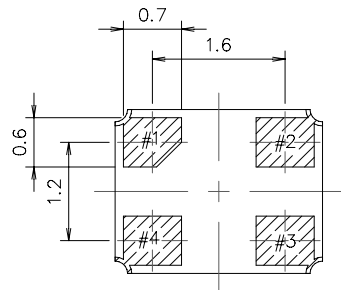
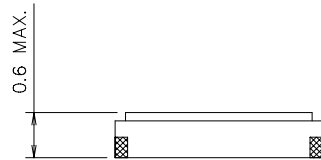
### Electrical Specifications:

<b>TZ1213B</b>	<b>Specification</b>
Nominal Frequency	32.000000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +85°C
Operating Temperature Range	-40°C to +85°C
Frequency Stability over Operating Temperature Range	+/-20 ppm (referred to the value at 25°C)
Frequency Make Tolerance (FL)	+/-10 ppm @ 25°C +/- 3°C
Equivalent Series Resistance (ESR)	60 Ω max
Nominal Drive Level	10 uW max.
Shunt Capacitance (Co)	5.0 pF max
Load Capacitance (CL)	12 pF
Insulation Resistance	500 MΩ min./DC 100V
Marking	Laser Marking
Unit Weight	9.5 +/-0.5mg

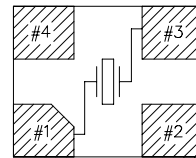
### Mechanical Dimensions (mm):



	Pin Connection
#1 pin	IN/OUT
#2 pin	GND
#3 pin	IN/OUT
#4 pin	GND

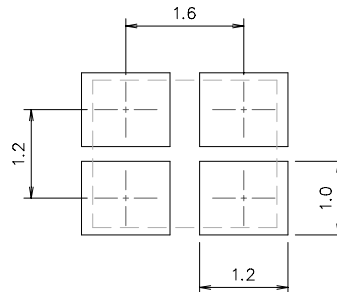


Internal Connections (Top View)



[NOTE] #2, #4 is connected with a cover  
(Please connect with a GND ora power supply)

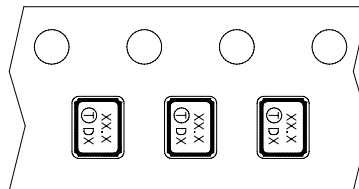
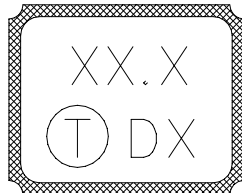
### Recommended Land Pattern: (unit: mm)



### Marking:

Line 1: Frequency (32.0)

Line 2: TST Logo + Date Code + Product Code



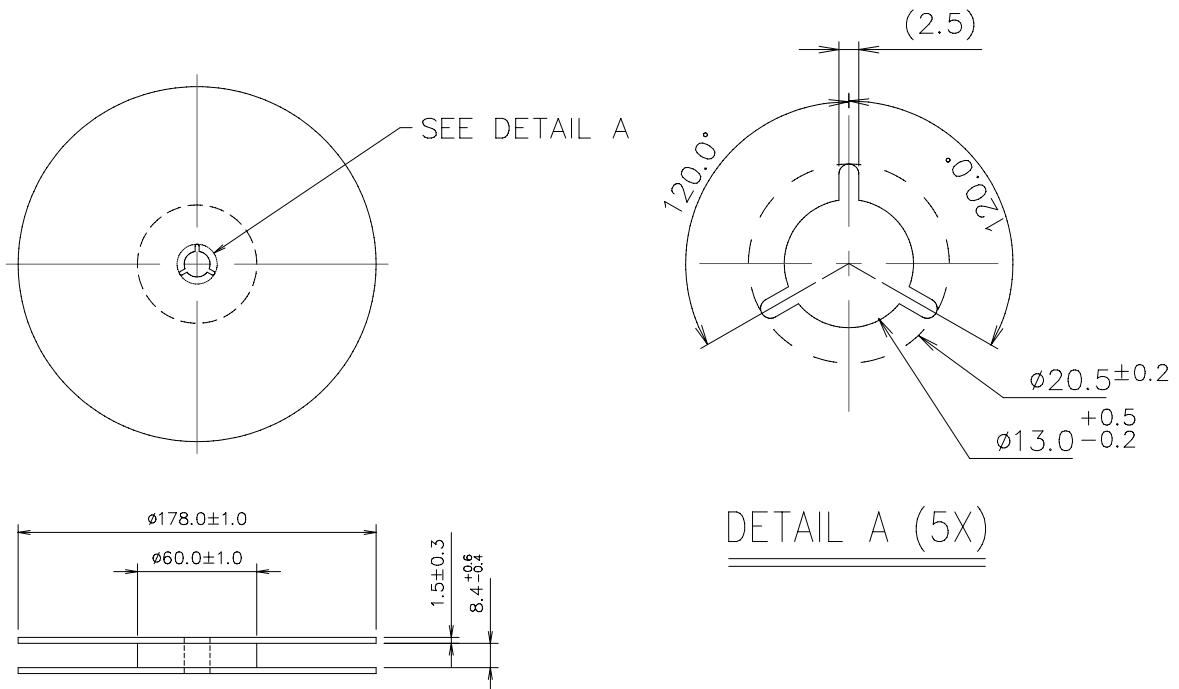
### Date Code Table

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

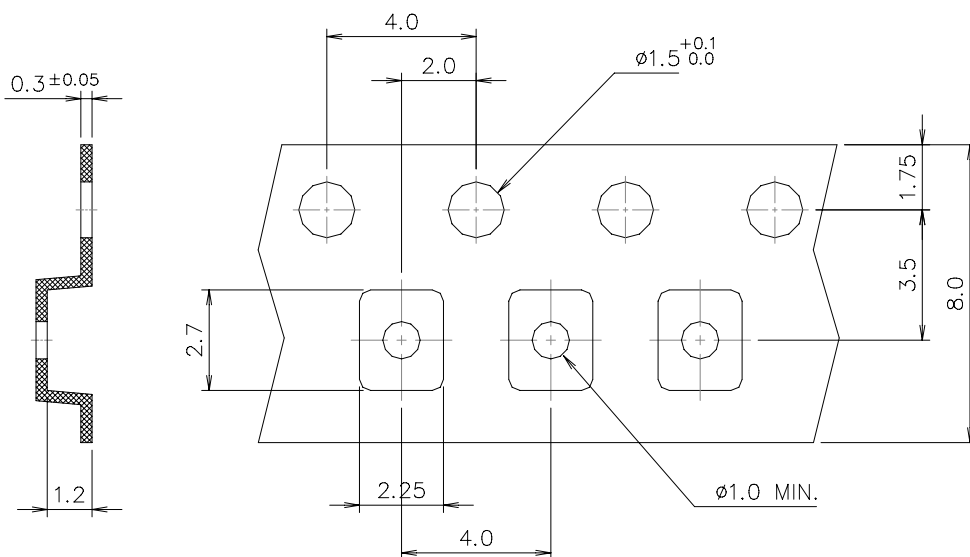
**Product Code Table:**

Year	2007	2008
	2009	2010
	2011	2012
	2013	2014
Product code	X	X

**Reel Dimensions (mm):**



**Tape Dimensions (mm):**

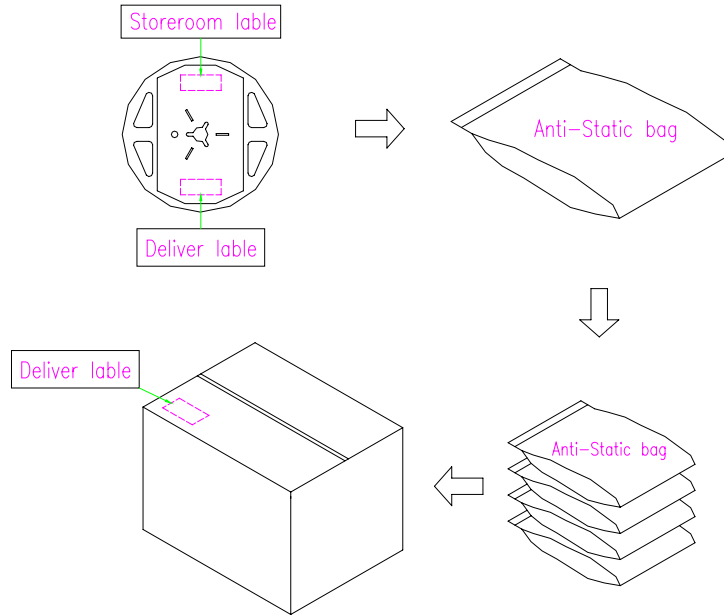


**[NOTE]:**

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.

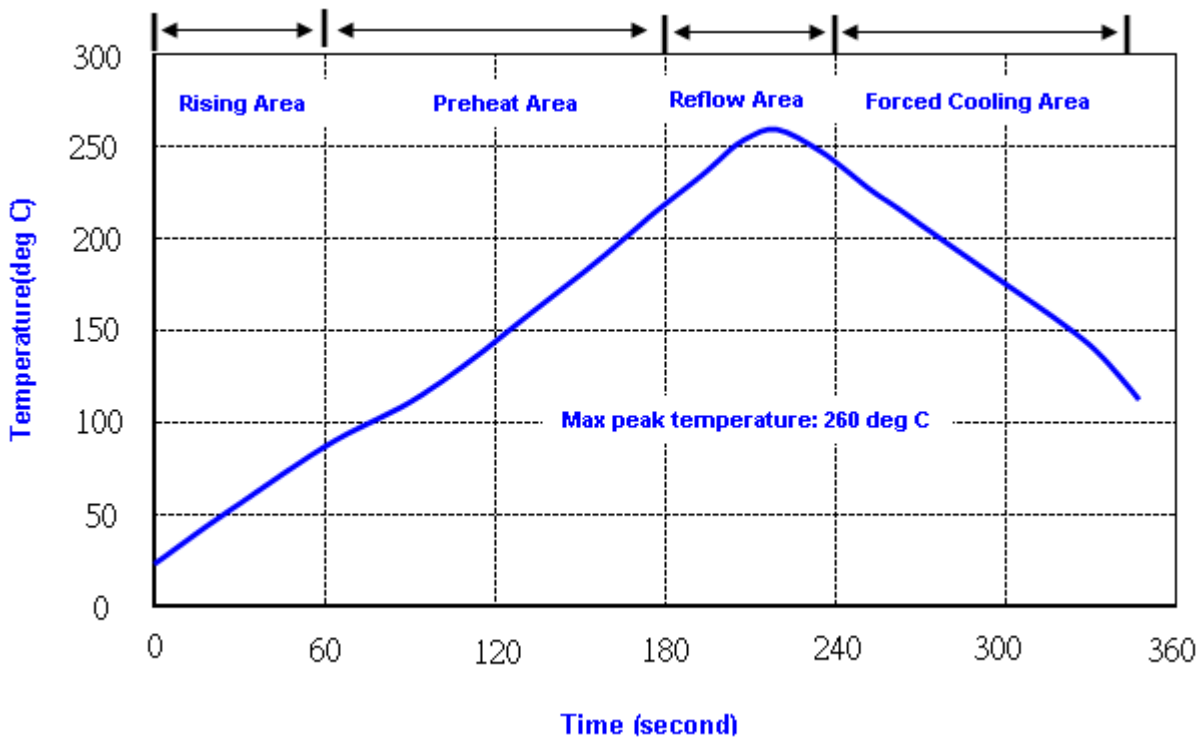
# Packing Quantity/Packing:

3K pcs maximum per reel



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

## 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
<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