



# 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 Unit 2.0x1.2 32.768KHz

TST Part No.: TZ2528A

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

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

Checked by: \_\_\_\_\_ Ginger Huang *Ginger Huang*

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

Date: \_\_\_\_\_ 12/16/2013

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.**  
**2.0x1.2 32.768KHz Crystal Unit**

MODEL NO.: TZ2528A

REV. NO.: 4.0

**Revise:**

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	03/05/12'	N/A	Ginger Huang
2	P4	Change Marking	05/20/13'	ECN-201300191	Ginger Huang
3	P4	Change Marking	06/20/13'	ECN-201300208	Ginger Huang
4	P3	Change C1&Co spec , Mechanical Dimensions	12/16/13'	ECN-201400010	Ginger Huang



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## SMD 2.0x1.2 32.768KHz Crystal Unit

MODEL NO.: TZ2528A

REV. NO.: 4.0

### Features:

- Ceramic Seam Weld Package
- Excellent Reliability Performance
- Ultra Miniature Package
- Available to Surface Mount Technology and IR Reflow Process

RoHS Compliant  
Lead free  
Lead-free soldering

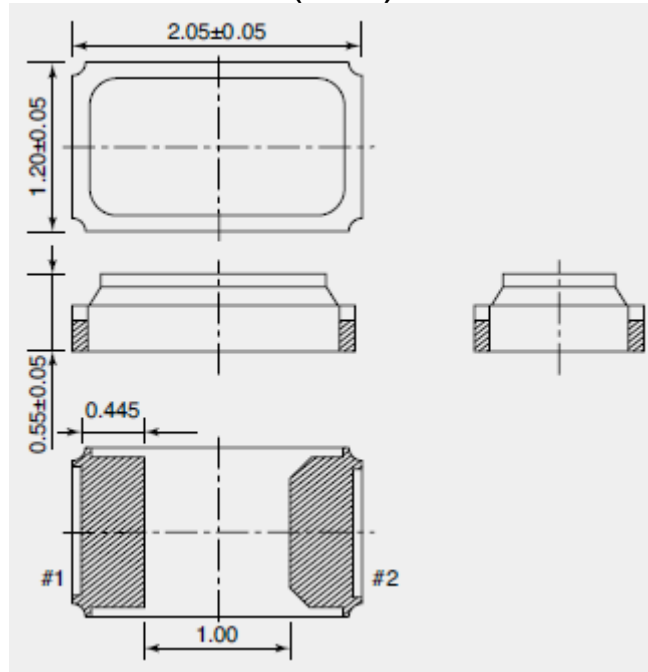
### Description and Applications:

Surface mount 2.0mmx1.2mm crystal unit for use in communications devices,.

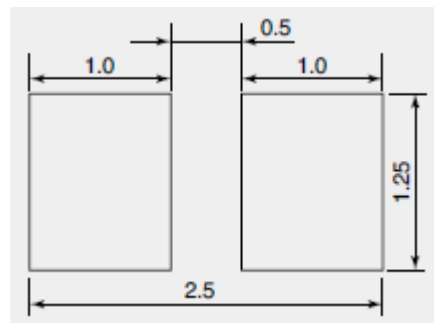
### Electrical Specifications:

TZ2528A	Specification
Nominal Frequency	32.768000 KHz
Storage Temperature Range	-55°C to +125°C
Operating Temperature Range	-40°C to +85°C
Turnover Temperature	25 +/- 5 °C
Parabolic Curvature Constant	-0.04 x 10 <sup>-6</sup> / °C <sup>2</sup> max.
Frequency Make Tolerance (FL)	+/-20 ppm @ 25°C +/- 3°C
Equivalent Series Resistor (ESR)	90 kΩ max.
Motional Capacitance (C1)	6.4 fF typ.
Shunt Capacitance (Co)	1.2 pF typ.
Drive Level	0.5 uW max.
Load Capacitance (CL)	12.5 pF
Aging	+/-3.0 ppm / year @25°C
Insulation Resistance	500M Ω min at DC 100V
Marking	Laser marking

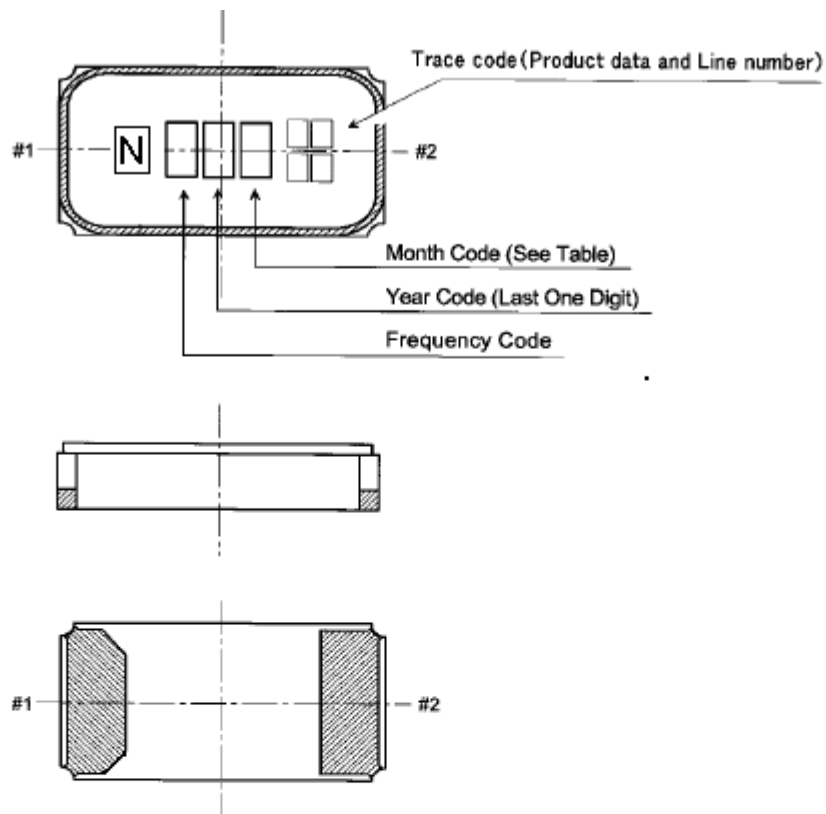
## Mechanical Dimensions (mm):



## Recommended Land Pattern: (unit: mm)



# Marking:



**NOTE**

1. Month Code

Month	1 Jan.	2 Feb.	3 Mar.	4 Apr.	5 May	6 June	7 July	8 Aug.	9 Sep.	10 Oct.	11 Nov.	12 Dec.
Month Code	1	2	3	4	5	6	7	8	9	X	Y	Z

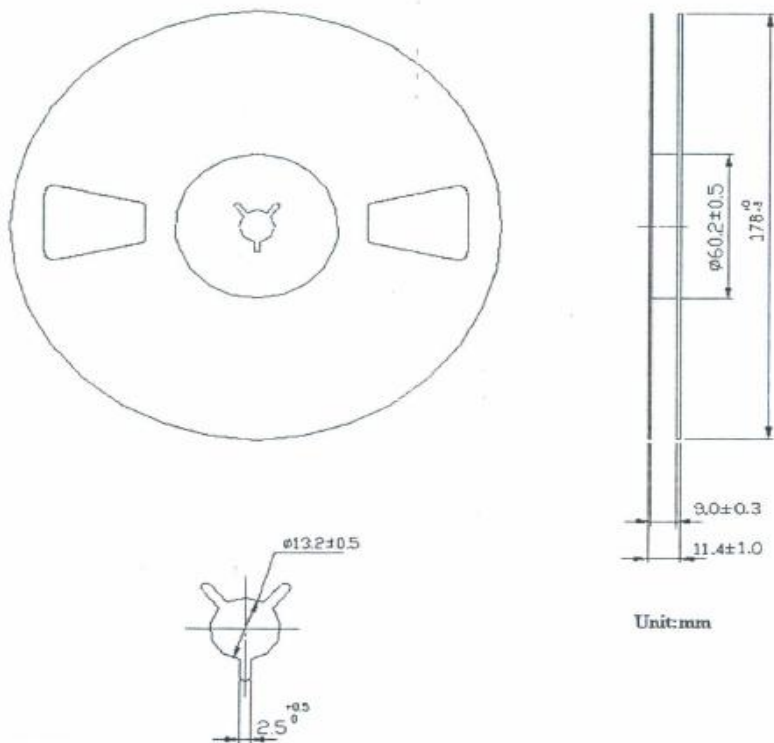
2. Frequency Code

A : 32.768kHz

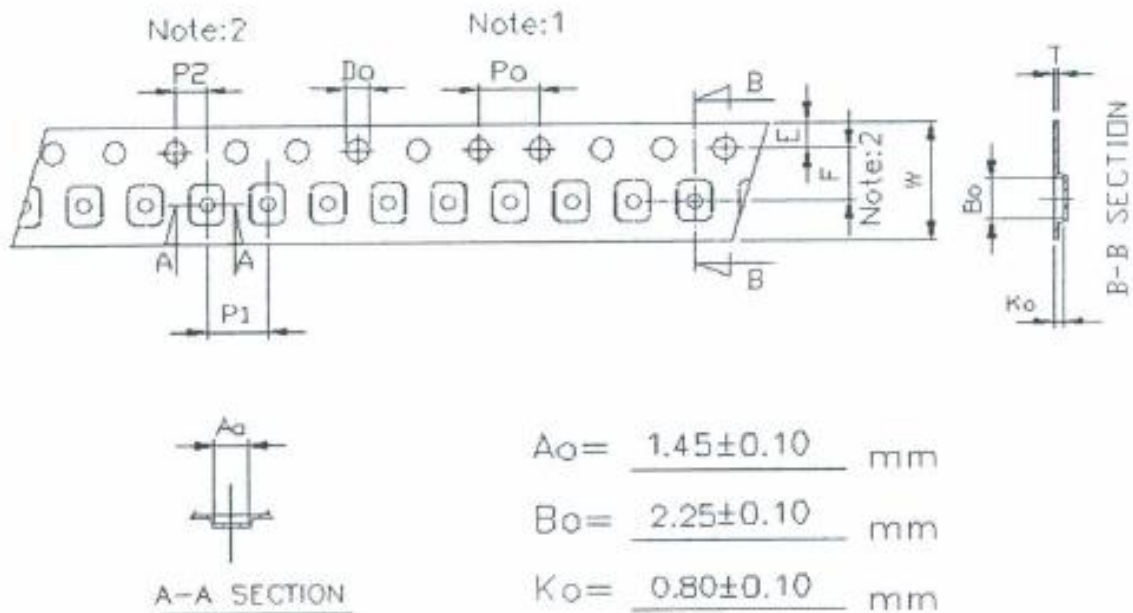
3. Marking Method

Marking Method is Laser Trimming.

## Reel Dimensions (mm):



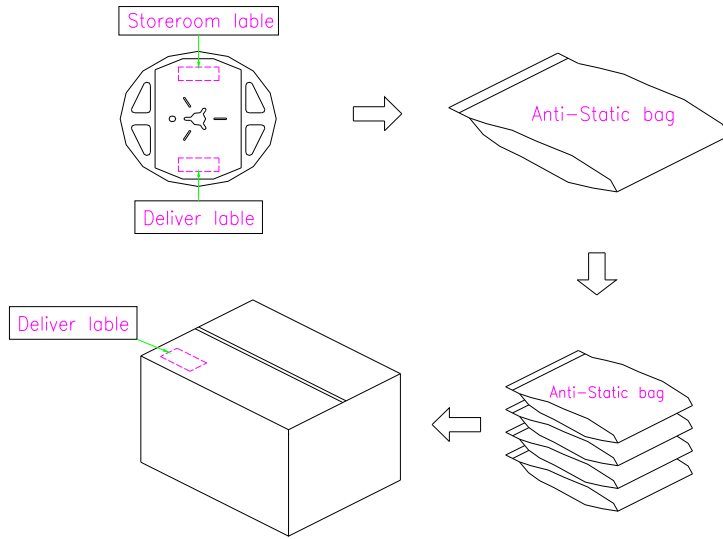
## Tape Dimensions (mm):



Unit: mm	W	F	E	Po	P1	P2	Do	10Po	T
Dimension	8.00	3.50	1.75	4.00	4.00	2.00	1.50	40.00	0.25
Tolerance	$\pm 0.2$	$\pm 0.05$	$\pm 0.1$	$\pm 0.1$	$\pm 0.1$	$\pm 0.05$	+0.1-0	$\pm 0.2$	$\pm 0.05$

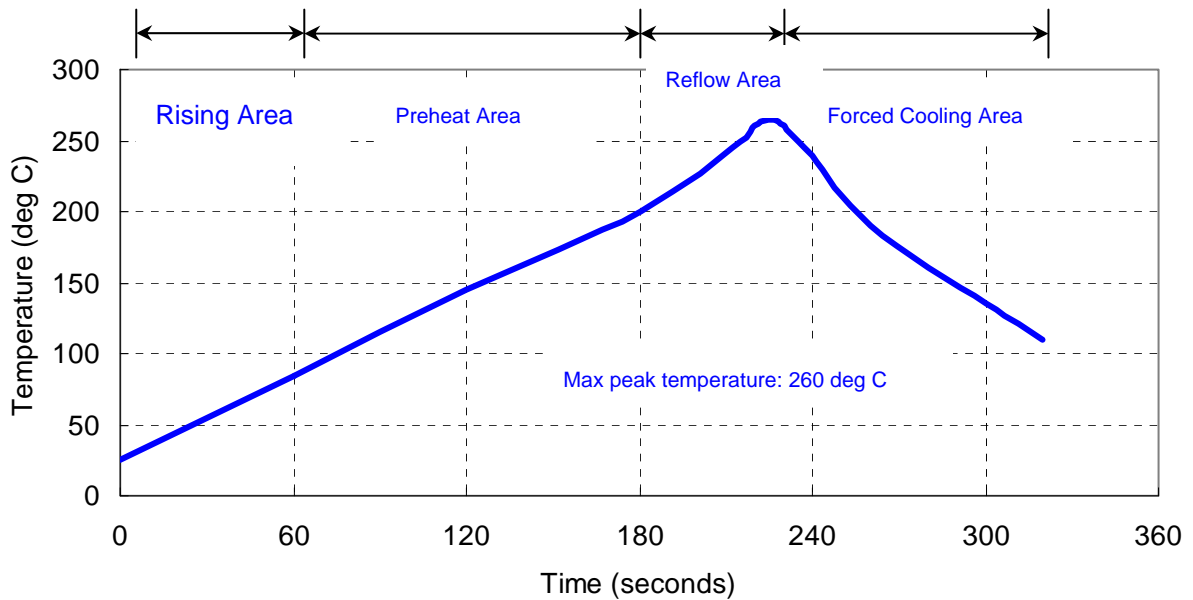
# Packing Quantity/Packing:

3K pcs maximum per reel



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

# Reflow Profile:



## Reliability Specifications

Test name	Test process / method	Reference standard
<b>Mechanical characteristics</b>		
resistance to Soldering heat (IR reflow)	Temp./ Duration : 260°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 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