



TAI-SAW TECHNOLOGY CO., LTD.

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Product Specifications Approval Sheet

Product Description: Crystal Unit SMD 2.0x1.6 32MHz

TST Part No.: TZ3375D

Customer Part No.: _____

Customer signature required

Company: _____

Division: _____

Approved by : _____

Date: _____

Checked by: _____ Chia Haur Rau *CH*

Approved by: _____ Kelly Huang *Kelly Huang*

Date: _____ 05/24/2019

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.
Crystal Unit SMD 2.0x1.6 32MHz

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MODEL NO.: TZ3375D

REV. NO.: 4

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Revised by
1	N/A	Initial release	10/08/18'	N/A	Chia Haur Rau
2	3~4	Revise electrical specifications	02/22/19'	ECN-201900096	Chia Haur Rau
3	3	Aging change to 6years	03/13/19'	ECN-201900111	Chia Haur Rau
4	3~4	Operating Temperature Range to 105°C and aging to 10years, Add Motional Inductance.	05/24/19'	ECN-201900247	Chia Haur Rau



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MODEL NO.: TZ3375D

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Features:

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

RoHS Compliant
Lead free
Lead-free soldering

Description and Applications:

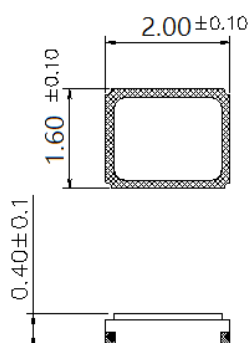
Surface mount 2.0mmx1.6mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

Electrical Specifications:

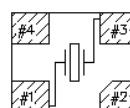
TZ3375D	Specification			
Characteristic	Min	Nom	Max	Unit
Nominal Frequency		32.000000		MHz
Mode of Oscillation		Fundamental		°C
Storage Temperature Range	-40		105	°C
Operating Temperature Range	-40		105	°C
Initial frequency tolerance(25°C ± 3°C)	-4		8	ppm
Frequency drift after reflow(After two reflows)	-1		1	ppm
Tolerance over temperature(-30°C to 85°C)	-12		10	ppm
Aging(6 years)	-2		0	ppm
Frequency perturbations	-1		1	ppm
Total Budget(ppm)	-20		20	ppm
Initial frequency tolerance(25°C ± 3°C)	-4		8	ppm
Frequency drift after reflow(After two reflows)	-1		1	ppm
Tolerance over temperature(-40°C to 85°C)	-17		15	ppm
Aging(10 years)	-2		0	ppm

Frequency perturbations	-1		1	ppm
Total Budget(ppm)	-25		25	ppm
Equivalent Series Resistance (ESR)		25	50	Ω
Spurious mode series resistance (+/-1MHz)	1100			Ω
Motional inductance		12	23	mH
Pullability / Sensitivity			30	ppm/pF
Motional capacitance		1.8		fF
Shunt capacitance		0.8	1.5	pF
Load Capacitance (CL)		6		pF
Nominal Drive Level	0.01	100	200	μ W
Insulation Resistance(DC 100V)	500			MR
Package size		2.0x1.6	2.1x1.7	mm ²
Package height			0.50	mm

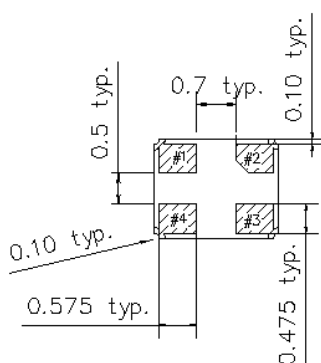
Mechanical Dimensions (mm): Base



Internal Connections
(Top View)

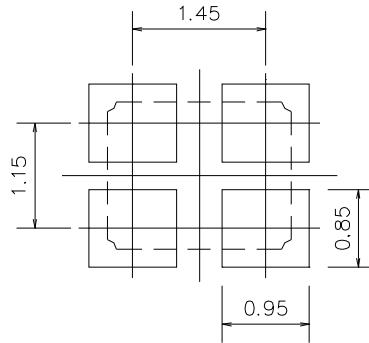


[NOTE] #2, #4 is connected with a metal cover



	Pin connection
#1 Pin	IN/OUT
#2 Pin	GND
#3 Pin	IN/OUT
#4 Pin	GND

Recommended Land Pattern: (unit: mm)

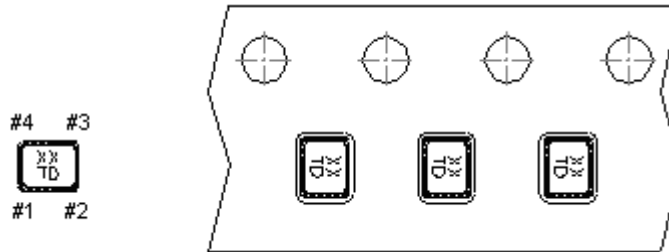


Recommended Land Pattern

Marking:

Line 1: XX; Frequency (32)

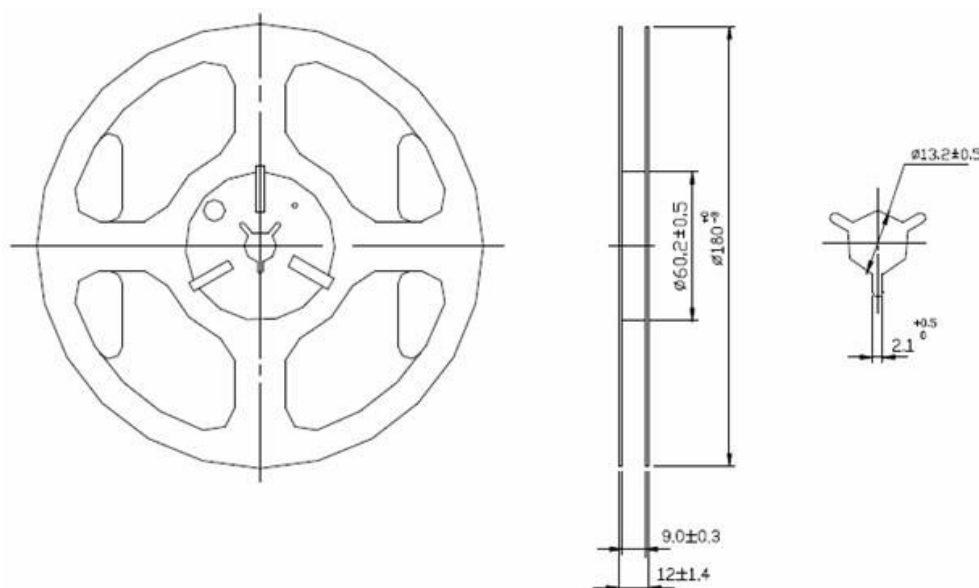
Line 2: T; Traceable Code + D; date Code of Year/Month



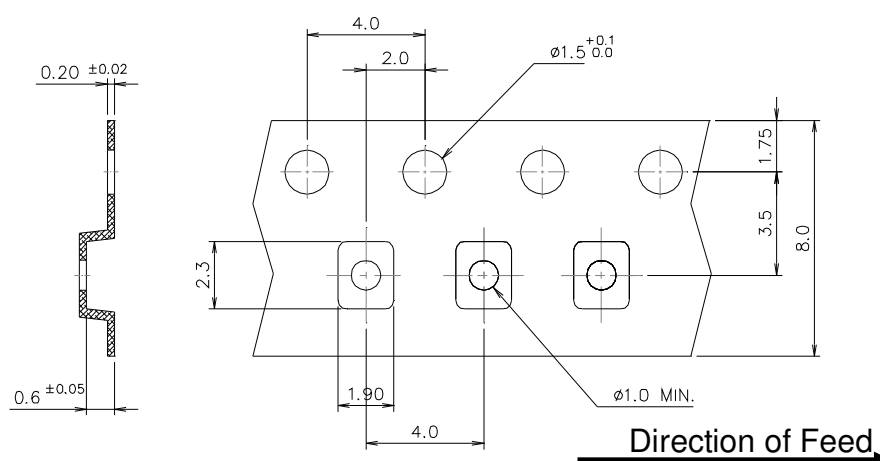
Date Code Table: Year/Month

Year/Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	n	p	q	r	s	t	u	v	w	x	y	z
2010	A	B	C	D	E	F	G	H	J	K	L	M
2011	N	P	Q	R	S	T	U	V	W	X	Y	Z
2012	a	b	c	d	e	f	g	h	i	j	k	m
2013	n	p	q	r	s	t	u	v	w	x	y	z
2014	A	B	C	D	E	F	G	H	J	K	L	M
2015	N	P	Q	R	S	T	U	V	W	X	Y	Z
2016	a	b	c	d	e	f	g	h	i	j	k	m
2017	n	p	q	r	s	t	u	v	w	x	y	z
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

Reel Dimensions (mm):



Tape Dimensions (mm):

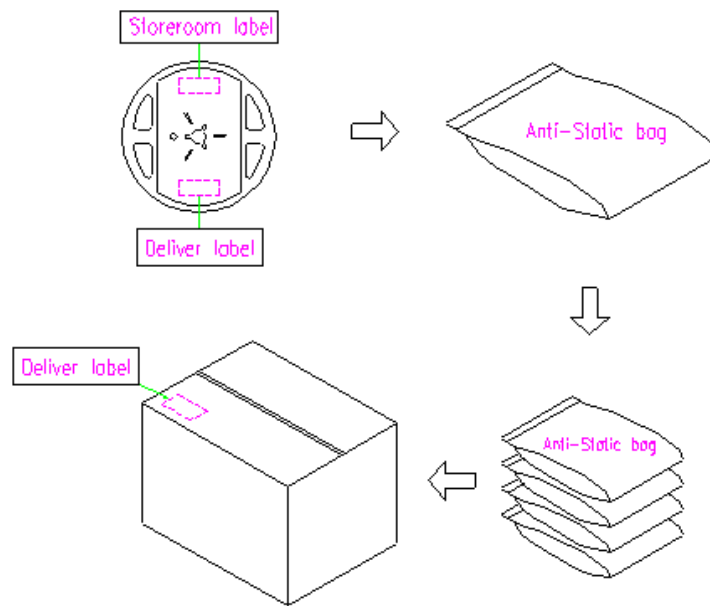


[NOTE]:

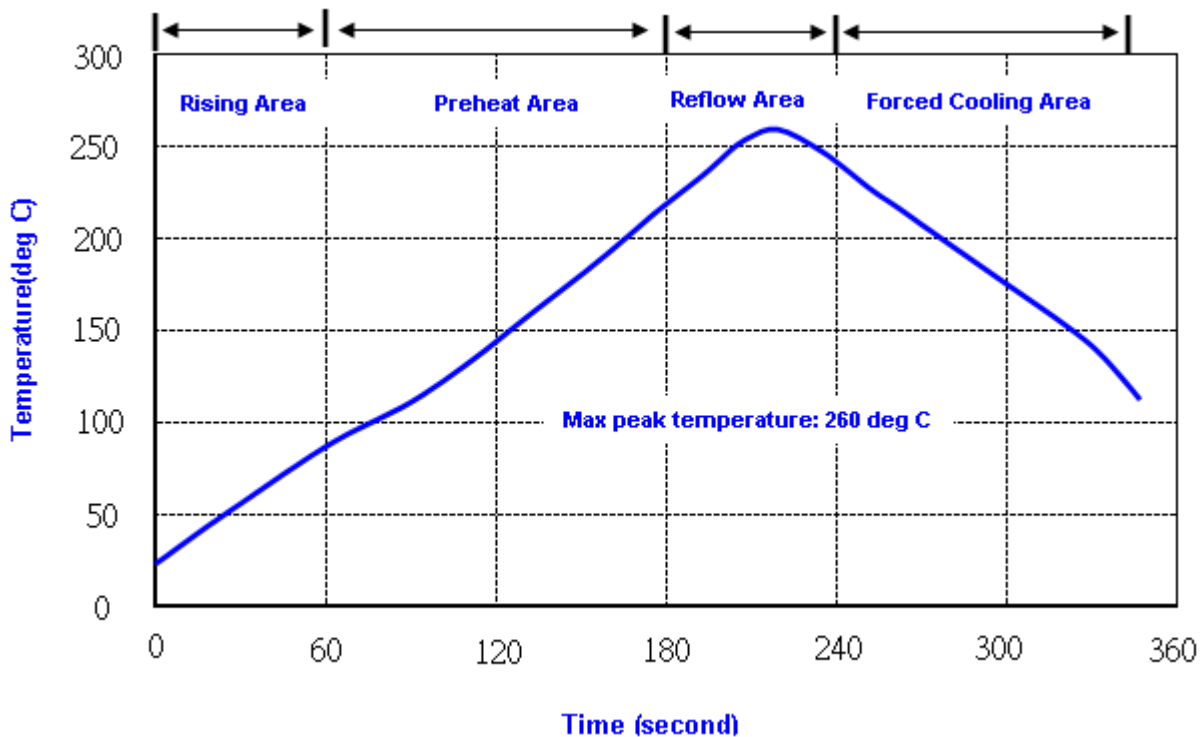
1. Unless otherwise specified tolerance on dimension ± 0.1 mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance ± 0.2 mm.

Packing Quantity/Packing:

3K pcs maximum per reel



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