



TAI-SAW TECHNOLOGY CO., LTD.

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Product Specifications Approval Sheet

Product Description: Crystal Unit SMD 1.2x1.0 40.0MHz

TST Part No.: TZ3788AA2282

Customer Part No.: _____

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

Checked by: _____ Tom Liu *Tom*

Approved by: _____ Kelly Huang *Kelly Huang*

Date: _____ 10/04/2021

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 1.2x1.0 40.0MHz

MODEL
TZ3788AA2282

NO.:

REV. NO.: 2

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Revised by
1	N/A	Initial release	09/22/20'	N/A	Tom Liu
2	3	Revise Operating Temperature Range & Frequency Stability & Frequency Tolerance	10/04/21	ECN-202100565	Tom Liu



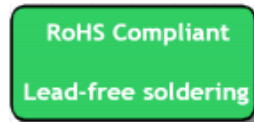
MODEL
TZ3788AA2282

NO.:

REV. NO.: 2

Features:

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



Description and Applications:

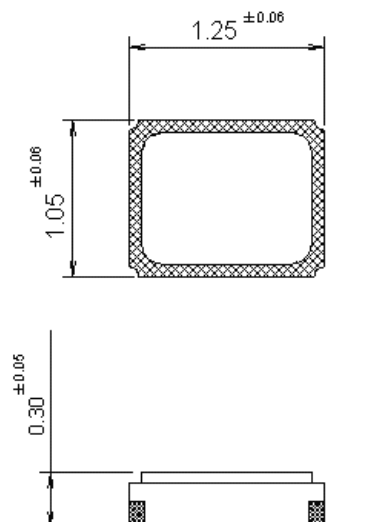
Surface mount 1.2mmx1.0mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

Electrical Specifications:

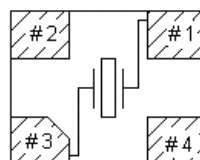
TZ3788AA2282	Specification
Nominal Frequency	40.000000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +125°C
Operating Temperature Range	-20°C to +85°C
Frequency Stability over Operating Temperature Range	+/-12 ppm (referred to the value at 25°C)
Frequency Make Tolerance (FL)	+/-7 ppm @ 25°C +/- 3°C
Equivalent Series Resistance (ESR)	60 Ω max
Nominal Drive Level	300uW max
Shunt Capacitance (Co)	2.0 pF max
Trim sensitivity (TS)	12 ppm/ pF min
Load Capacitance (CL)	6 pF
Aging	+/-2 ppm/ year
Insulation Resistance	500 MΩ min./DC 100V
Marking	Laser Marking

Unit Weight	1.69mg typical
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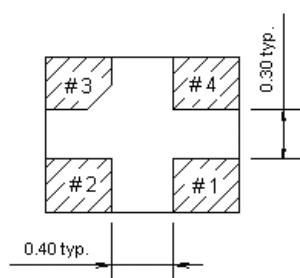
Mechanical Dimensions (mm):



Internal Connections
(Top View)

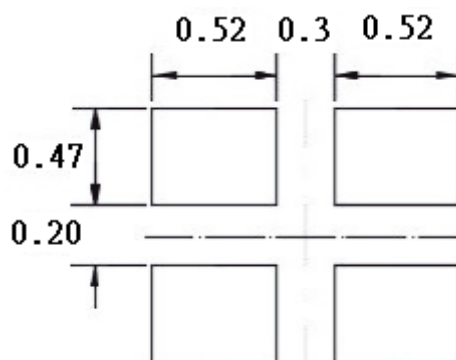


[NOTE] #2 = NC, #4 is connected with a metal cover



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

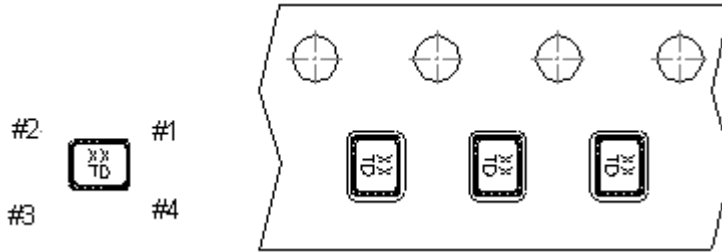
Recommended Land Pattern: (unit: mm)



Marking:

Line 1: XX; Frequency (40)

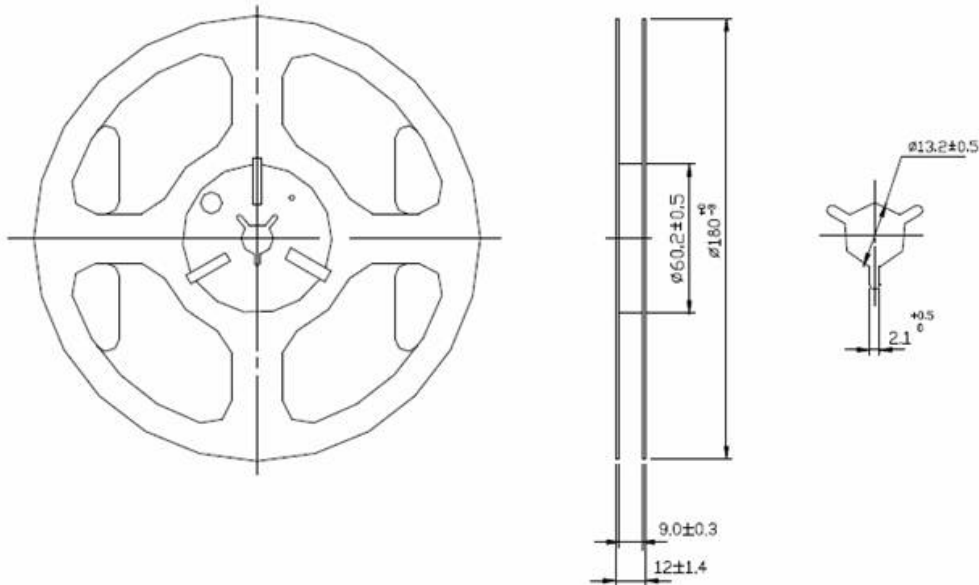
Line 2: T; Traceable Code + D; date Code of Year/Month



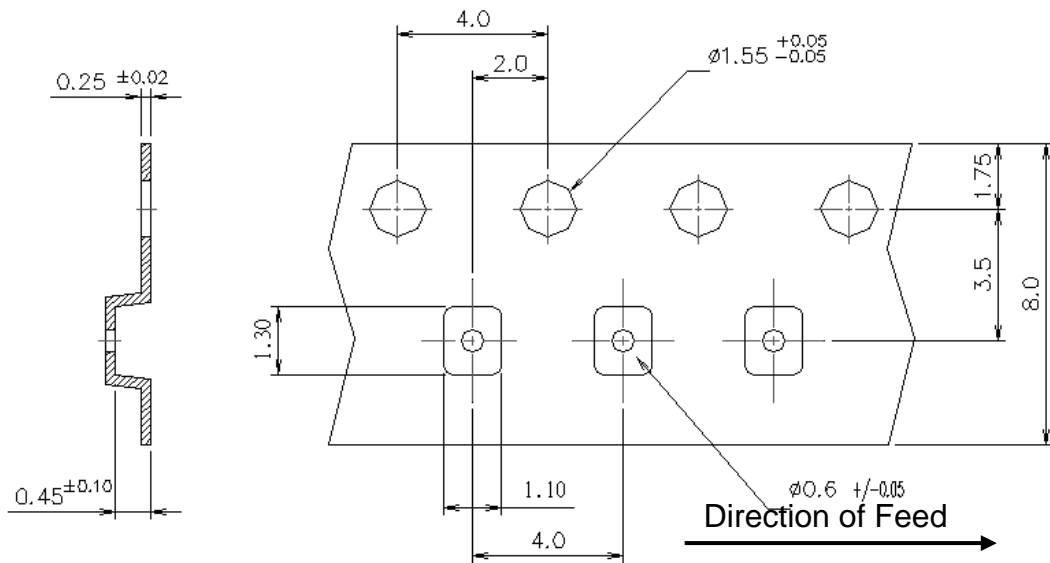
Date Code Table: Year/Month

Year/Month	1	2	3	4	5	6	7	8	9	10	11	12
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
2022	A	B	C	D	E	F	G	H	J	K	L	M
2023	N	P	Q	R	S	T	U	V	W	X	Y	Z
2024	a	b	c	d	e	f	g	h	i	j	k	m
2025	n	p	q	r	s	t	u	v	w	x	y	z

Reel Dimensions (mm):



Tape Dimensions (mm):

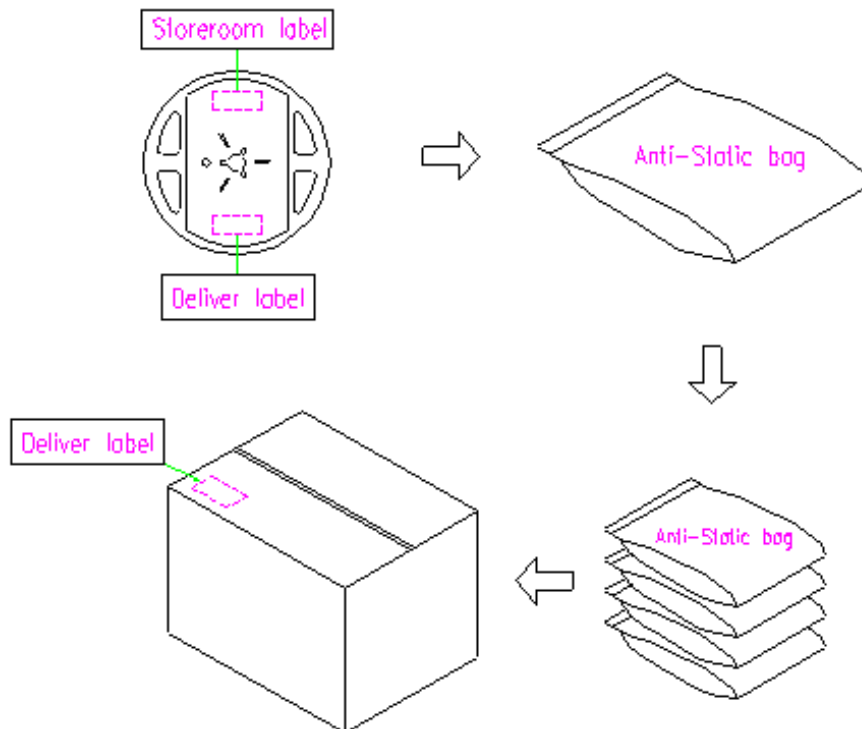


[NOTE]:

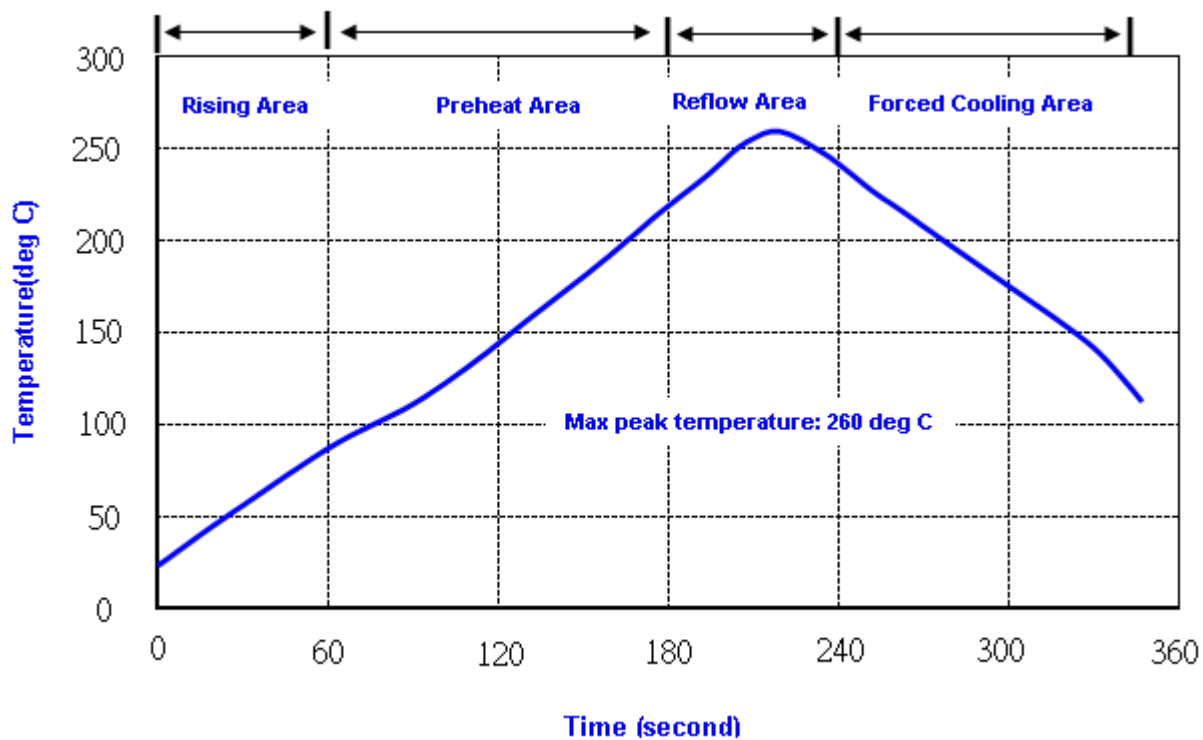
1. Unless otherwise specified tolerance on dimension +/-0.1 mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance +/-0.2 mm.

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 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 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