

**TAI-SAW TECHNOLOGY CO., LTD.**

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Product Specifications Approval Sheet

Product Description: SMD TSX 2.0x1.6 55.2MHz

(Temperature Sensing Crystal)

TST Part No.: TM0022AA4444

Customer Part No.: _____

Customer signature required

Company: _____

Division: _____

Approved by : _____

Date: _____

Checked by: _____ Tom Liu

Approved by: _____ Kelly Huang

Date: _____ 08/03/2023

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.
SMD TSX 2.0x1.6 55.2MHz

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MODEL NO.: TM0022AA4444

REV. NO.: 2

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Revised by
1	N/A	Initial release	03/03/22'	N/A	Tom Liu
2	7	Type error Reflow :Max peak temperature: 260+/-5 deg C	08/03/23'	ECN-202300346	Tom Liu



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SMD TSX 2.0x1.6 55.2MHz

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MODEL NO.: TM0022AA4444

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Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package
- AEC-Q200 compliance
- 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.

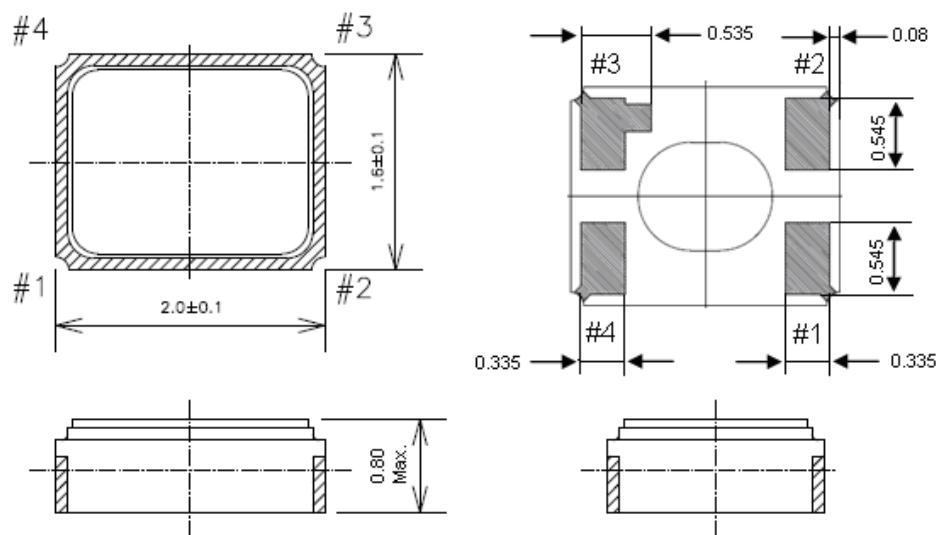
Electrical Specifications:

TM0022AA4444	Specification
Nominal Frequency	55.200000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +125°C
Operating Temperature Range	-40°C to +125°C
¹ Frequency Stability over Operating Temperature Range	+/-30 ppm (referred to the value at 25°C)
Frequency Make Tolerance (FL)	+/-10 ppm @ 25°C +/- 2°C
Equivalent Series Resistance (ESR)	50 Ω max
Nominal Drive Level	10uW min and 200 uW max
Shunt Capacitance (C0)	1.1 pF ± 20%
Motional Capacitance (C1)	3.6 fF ± 20%
Load Capacitance (CL)	8 pF
Spurious modes resistance within +/- 1MHz	1100 Ohm min
Insulation Resistance at DC 100V	500 MΩ min
Frequency Drift After Reflow	+/- 2.0 ppm after 3 reflows

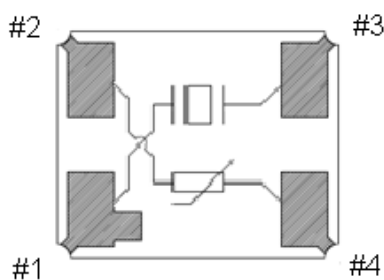
Aging: First year After 2 year After 10 years	+/- 1.0 ppm max +/- 2.0 ppm max +/- 5.0 ppm max
Resistance (25°C)	100K +/- 1% Ω
B-constant	4250 +/- 1% k (Evaluated from 25°C to 50°C, 1% tolerance)
Marking	Laser Marking

Mechanical Dimensions (unit: mm):

Base 1 :

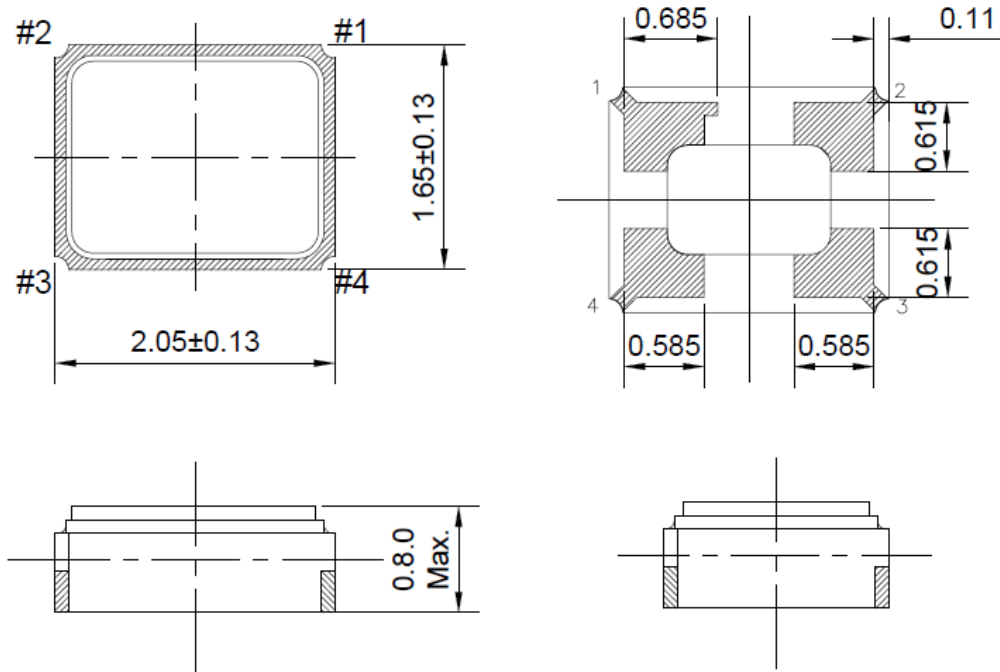


Terminal land connection (TOP VIEW)

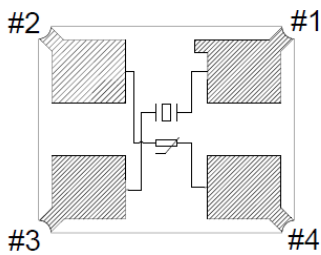


#1	XTAL IN
#2	THERMISTOR OUT, GND
#3	XTAL OUT
#4	THERMISTOR IN

Base 2 :

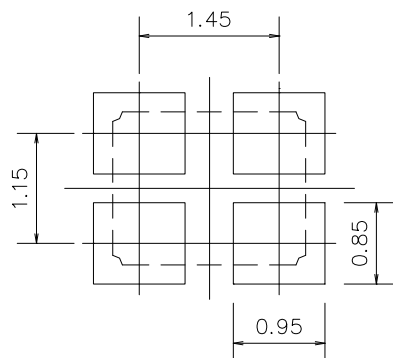


Terminal land connection (TOP VIEW)



#1	XTAL IN/OUT
#2	THERMISTOR IN
#3	XTAL IN/OUT
#4	THERMISTOR OUT, GND

Recommended Land Pattern: (unit: mm)

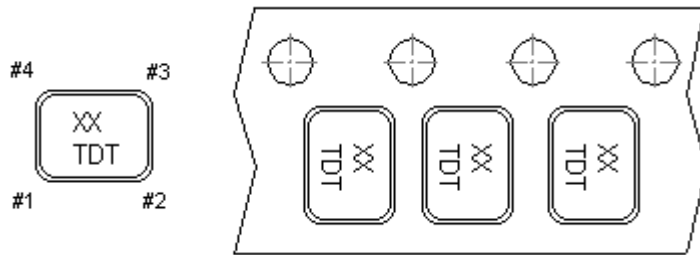


Recommended Land Pattern

Marking:

Line 1: XX; Frequency (55)

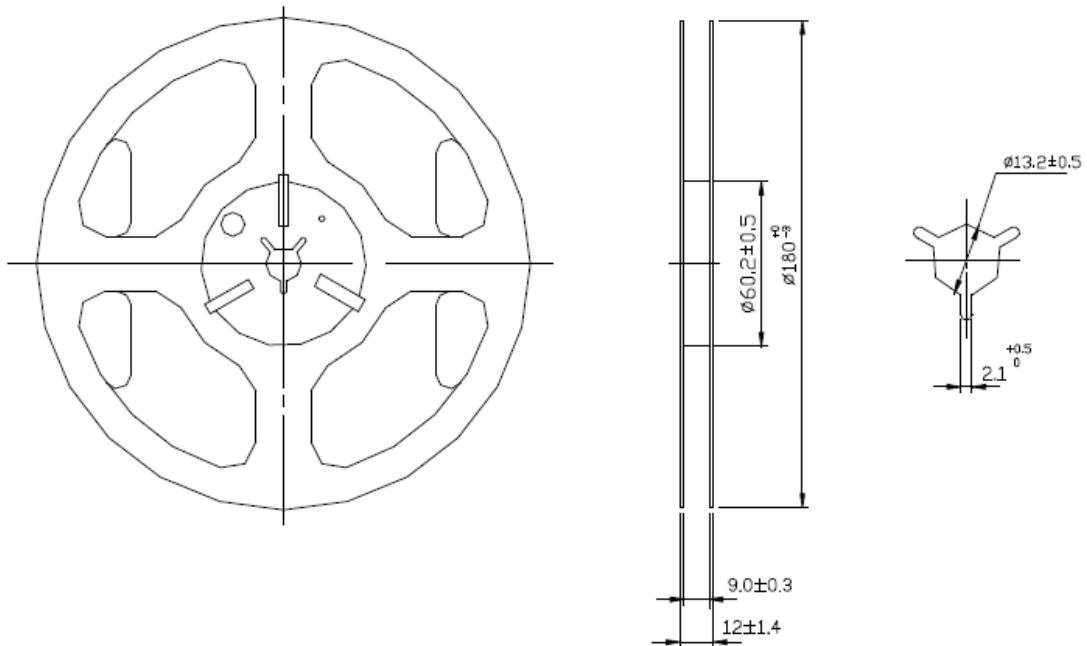
Line 2: T; Traceable Code + D; date Code of Year/Month+ T ; Traceability code (1 or no letter)



Date Code Table: Year/Month

Year/Month	1	2	3	4	5	6	7	8	9	10	11	12
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
2026	A	B	C	D	E	F	G	H	J	K	L	M
2027	N	P	Q	R	S	T	U	V	W	X	Y	Z
2028	a	b	c	d	e	f	g	h	i	j	k	m
2029	n	p	q	r	s	t	u	v	w	x	y	z

Reel Dimension



Reliability Specifications (AEC-Q200)

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	MIL-STD 202G method 204
Mechanical Shock	directions : 3 impacts per axis Acceleration : 6000g'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 -55 °C (30min) ↔ 125 °C (30min) * cycle time : 1000 times	MIL-STD 883G method 1010.8
Humidity test	Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 1000 hours	MIL-STD 202G method 103
Dry heat (Aging test)	Temperature : 125 ± 2 °C Duration : 1000 hours	MIL-STD 202G method 108A
Cold resistance (Low Temp Storage)	Temperature : -40 ± 3 °C Duration : 1000 hours	IEC 60068-2-1