



TAI-SAW TECHNOLOGY CO., LTD.

No. 3, Industrial 2nd Rd., Ping-Chen Industrial District,

Taoyuan, 324, Taiwan, R.O.C.

TEL: 886-3-4690038 FAX: 886-3-4697532

E-mail: tstsales@mail.taisaw.com Web: www.taisaw.com

Product Specifications Approval Sheet

Product Description: Crystal Oscillator SMD 5.0x3.2 156.25MHz

TST Part No.: TWLP0001A

Customer Part No.: _____

Customer signature required

Company: _____

Division: _____

Approved by : _____

Date: _____

Checked by: _____ Tom Liu *Tom*

Approved by: _____ Yifan Chen *Yifan*

Date: _____ 03/07/2024

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 5.0x3.2 156.25MHz Crystal Oscillator

MODEL NO.: TWLP0001A

REV. NO.: 1.0

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	03/07/24'	N/A	Tom Liu



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SMD 5.0x3.2 156.25MHz Crystal Oscillator

MODEL NO.: TWLP0001A

REV. NO.:1.0

Features:

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

RoHS Compliant
Lead free
Lead-free soldering

Application:

- 3.3 V Supply Voltage LVPECL Output
- Option-able stand-by function for output .

➤ FREQUENCY

	Parameter	Min.	Typ.	Max.	Units	Test Condition
1-1	Nominal Frequency	156.250000			MHz	
1-2	Frequency stability (Overall)	-50.0		+50.0	ppm	Frequency stability includes frequency tolerance@25°C and frequency stability vs. operating temperature range and voltage variance and first year aging.
1-3	Aging	-3.0		+3.0	ppm	Frequency drift in first year
1-4	Operating Temperature range	-40		+105	°C	The operating temperature range over which the frequency stability is measured.
1-5	Storage Temperature range	-55		+125	°C	

➤ POWER SUPPLY

	Parameter	Min.	Typ.	Max.	Units	Test Condition
2-1	Supply voltage	3.135	3.3	3.465	V	
2-2	Current			50	mA	At maximum supply voltage

➤ **OUTPUT**

	Parameter		Min.	Typ.	Max.	Units	Test Condition
3-1	Output waveform		LVPECL				
3-2	Duty Cycle		45	50	55	%	
3-3	Start Time				3	mSec	
3-4	Transition Time : Rise/Fall Time				0.5	nSec	
3-5	Output Level	Output High (Logic "1")	2.275			V	
3-6		Output Low (Logic "0")			1.68	V	
3-7	Output Load		50Ω VDD-2V				
3-8	Tri-State	Output Active	2.31 or Floating			V	Pin 1 Tri-State Enable High
3-9		Output in High-Impedance state			0.99	V	

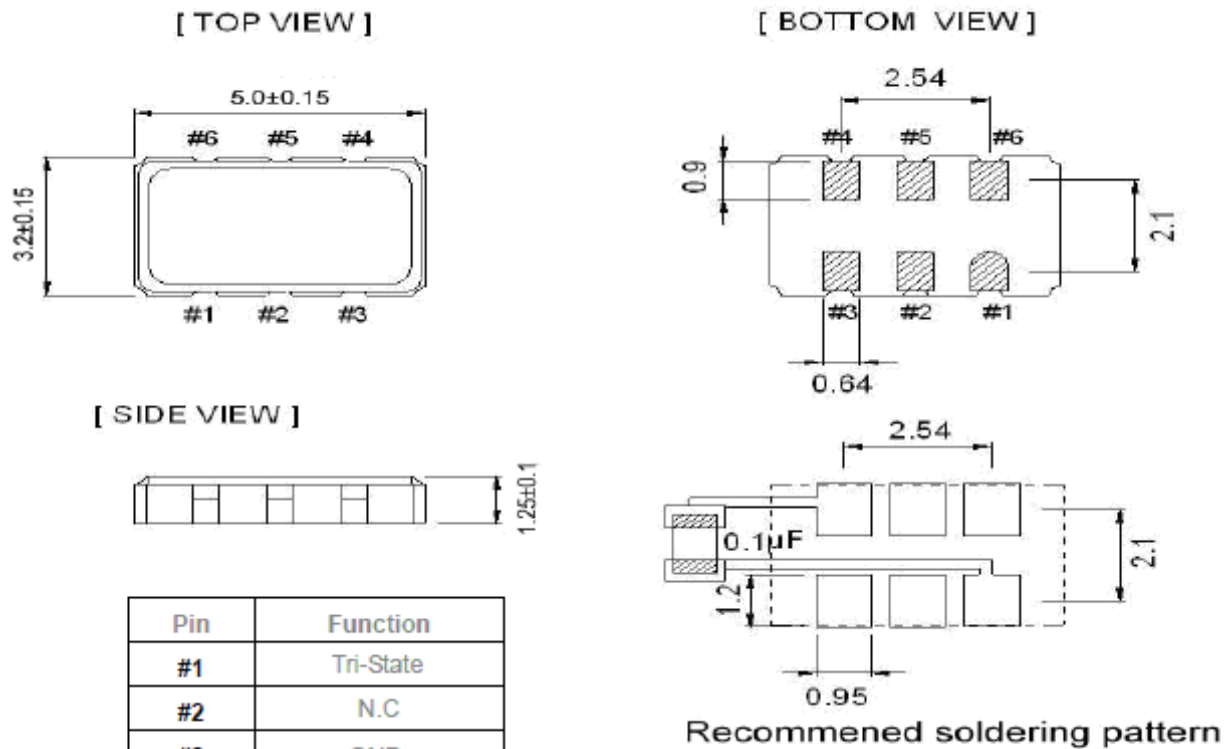
➤ **JITTER**

	Parameter	Min.	Typ.	Max.	Units	Test Condition
4-1	RMS Phase Jitter			0.1	pSec	(12KHz~20MHz)

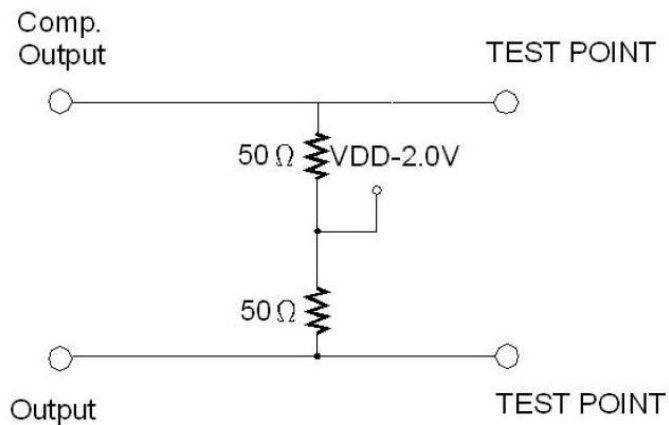
➤ **PHASE NOISE**

	Parameter	Min.	Typ.	Max.	Units	Test Condition
5-1	100 Hz offset		-90		dBc/Hz	
5-2	1K Hz offset		-120		dBc/Hz	
5-3	10K Hz offset		-140		dBc/Hz	
5-4	100K Hz offset		-150		dBc/Hz	

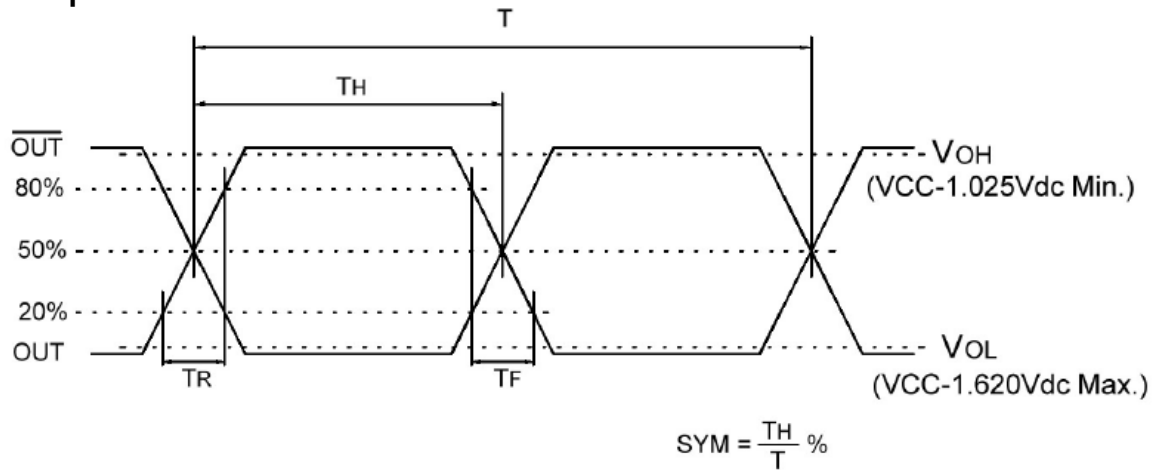
Mechanical Dimensions (mm):



Test Circuit:



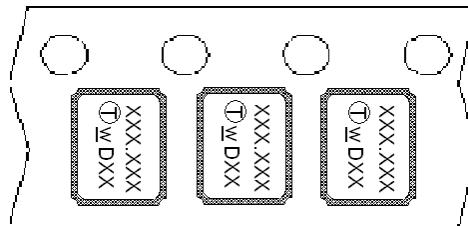
Output Waveform :



Marking:

Line 1 : Frequency (156.250)

Line 2 : TST Logo + Product Code + Date Code + Internal Traceability Code (XX) : Can be 1 or 2 letters)



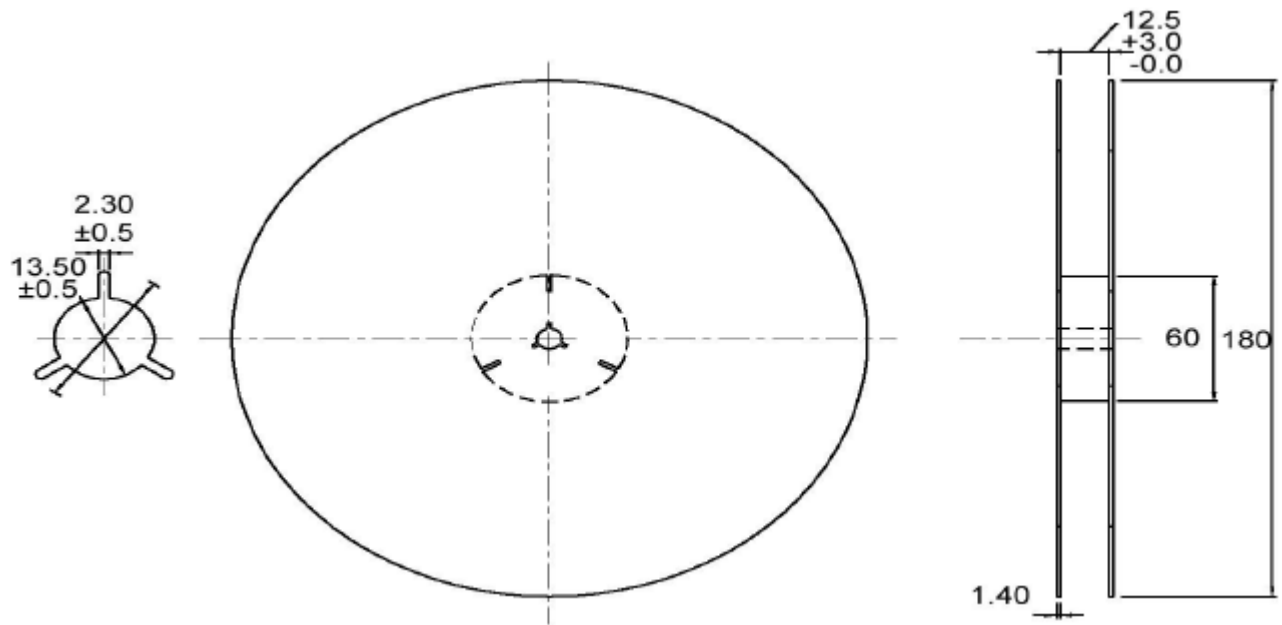
Product Code Table

Year	2021	2022	2023	2024
	2025	2026	2027	2028
	2029	2030	2031	2032
Product code	W	w	<u>W</u>	<u>w</u>

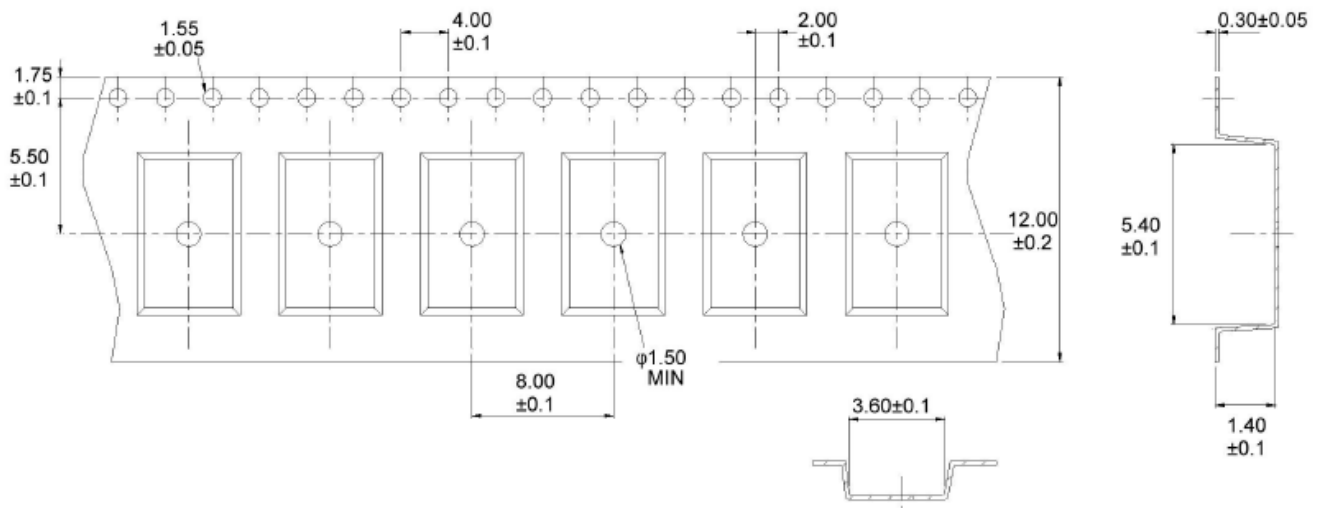
Date Code Table

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

Reel Dimensions (mm):



Tape Dimensions (mm):

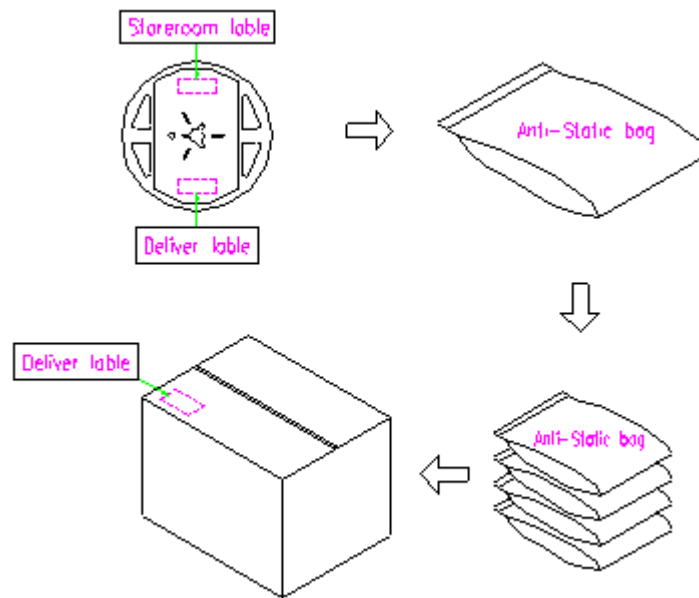


[NOTE]:

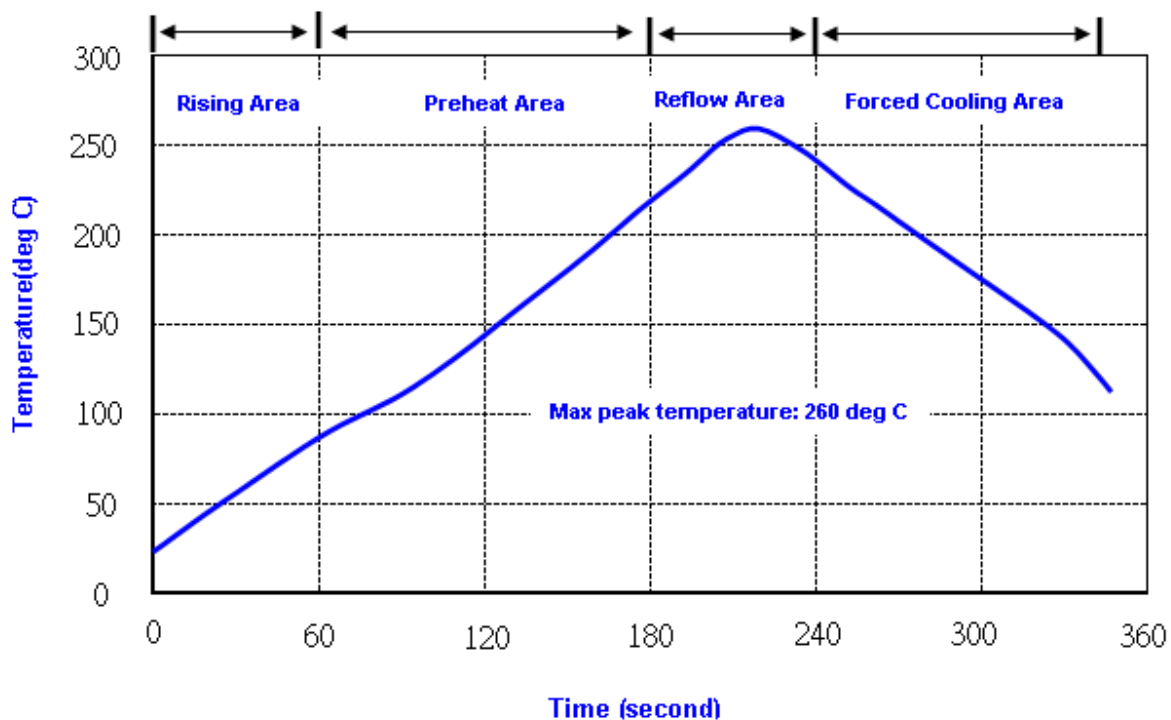
1. Unless otherwise specified tolerance on dimension +/-0.1 mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance +/-0.2 mm.

Packing Quantity/Packing:

1K 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