



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 Oscillator SMD 2.0x1.6 48MHz

TST Part No.: TW0543CA1150

Customer Part No.: _____

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

Checked by: _____ Yifan Chen *Yifan*

Approved by: _____ Kelly Huang *Kelly Huang*

Date: _____ 12/15/2022

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 2.0x1.6 48MHz Crystal Oscillator

MODEL NO.: TW0543CA1150

REV. NO.: 1.0

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	12/15/22'	N/A	Yifan Chen



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SMD 2.0x1.6 48MHz Crystal Oscillator

MODEL NO.: TW0543CA1150

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:

- Supply Voltage CMOS Output
- Option-able stand-by function for output .

Electrical Specifications:

➤ FREQUENCY

	Parameter	Min.	Typ.	Max.	Units	Test Condition
1-1	Nominal Frequency	48.000000			MHz	
1-2	Frequency stability (Overall)	-50		+50	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		+3	ppm	Frequency drift in first year
1-4	Operating Temperature range	-40		+85	°C	The operating temperature range over which the frequency stability is measured.
1-5	Storage Temperature range	-55		+125	°C	

➤ POWER SUPPLY

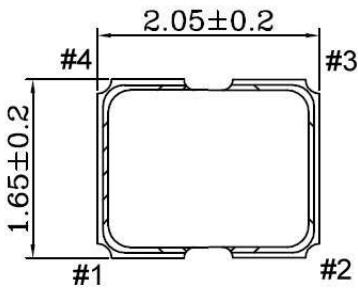
	Parameter	Min.	Typ.	Max.	Units	Test Condition
2-1	Supply voltage	1.62	1.8	1.98	V	
2-2	Current			15	mA	At maximum supply voltage

➤ **OUTPUT**

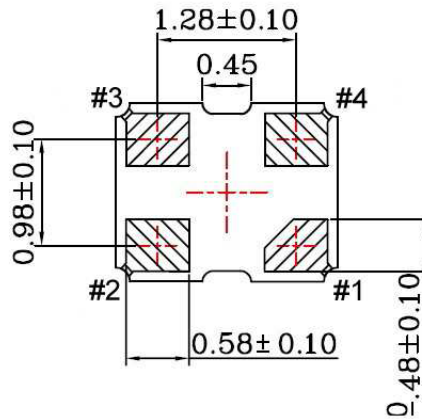
	Parameter	Min.	Typ.	Max.	Units	Test Condition
3-1	Output waveform	CMOS				
3-2	Duty Cycle	45	50	55	%	
3-3	Start Time			2	mSec	
3-4	Transition Time : Rise/Fall Time			3	nSec	
3-5	Output Level	Output High (Logic "1")	1.62		V	
3-6		Output Low (Logic "0")		0.18	V	
3-7	Output Load			15	pF	
3-8	Tri-State	Output Active	1.26 or Floating		V	Pin 1 Tri-State
3-9		Output in High-Impedance state			0.54	V

Mechanical Dimensions (mm):

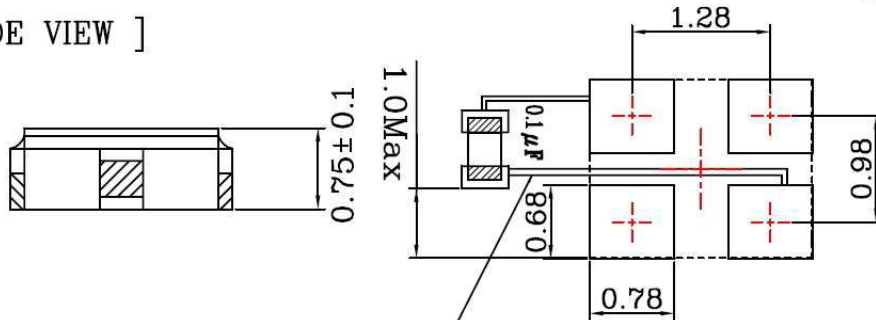
[TOP VIEW]



[BOTTOM VIEW]



[SIDE VIEW]



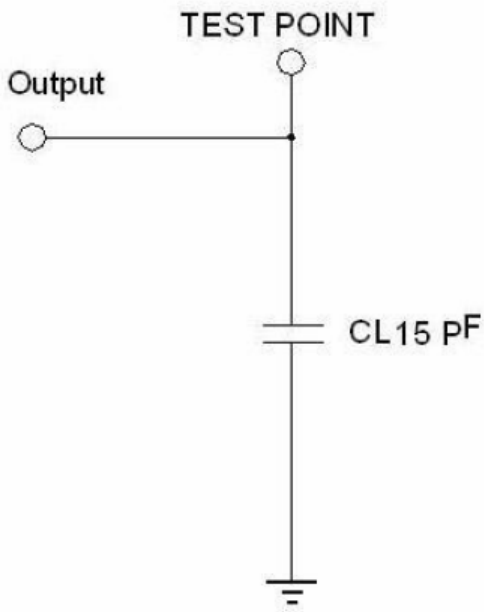
※ **Might cause malfunction if do not follow the recommendation.**

Recommended soldering pattern

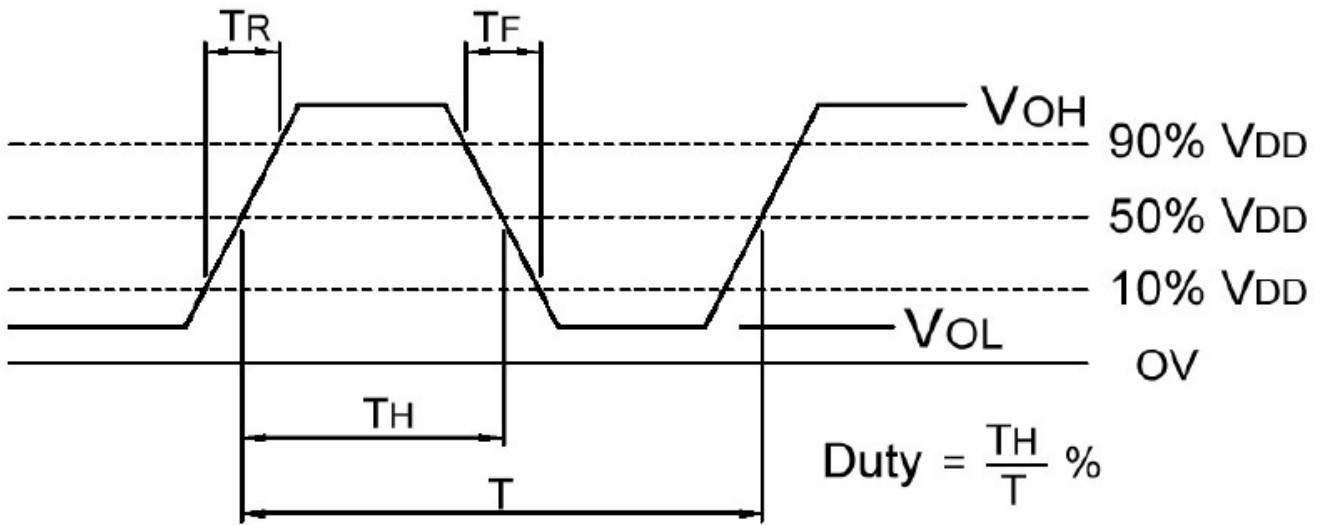
PIN FUNCTIONS

Pin	Function
#1	Tri-State
#2	GND
#3	Output
#4	V _{DD}

Test Circuit:



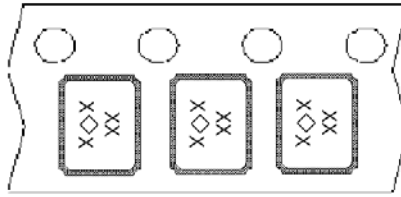
Output Waveform :



Marking:

Line 1: **XX** : 48 (Frequency)

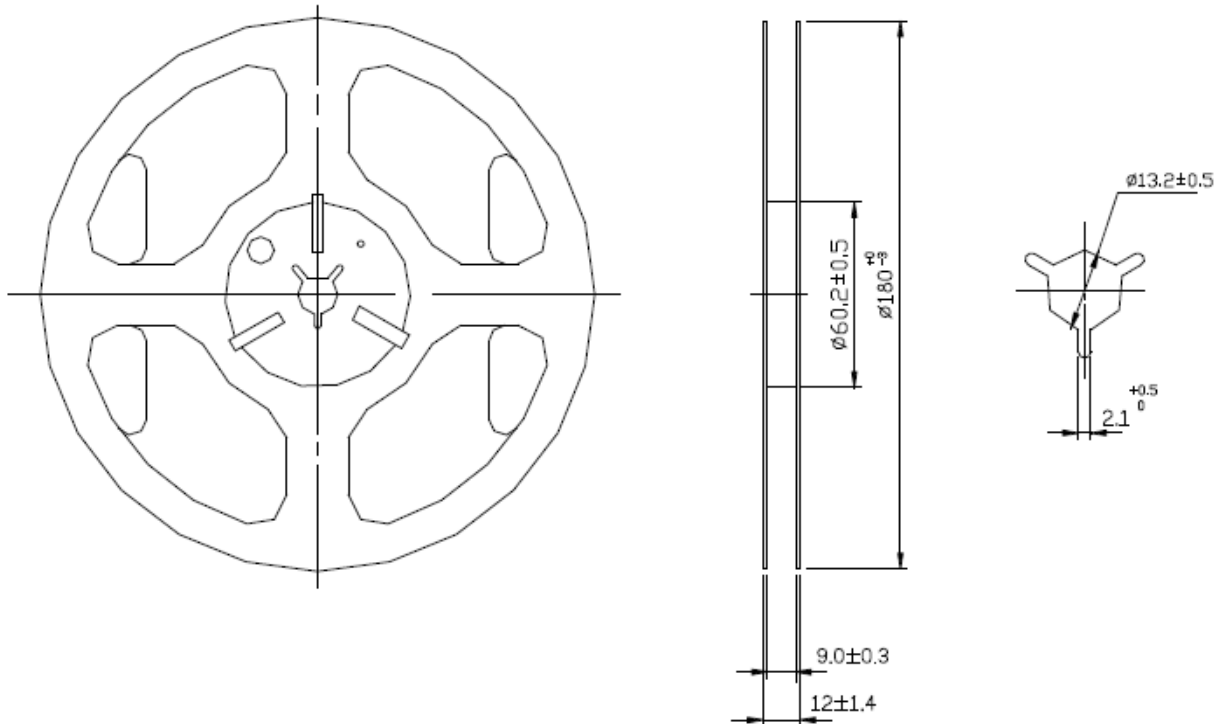
Line 2: **X◇X** : TST Traceability code + ◇ : Date Code + Traceability code(1 or no letter)



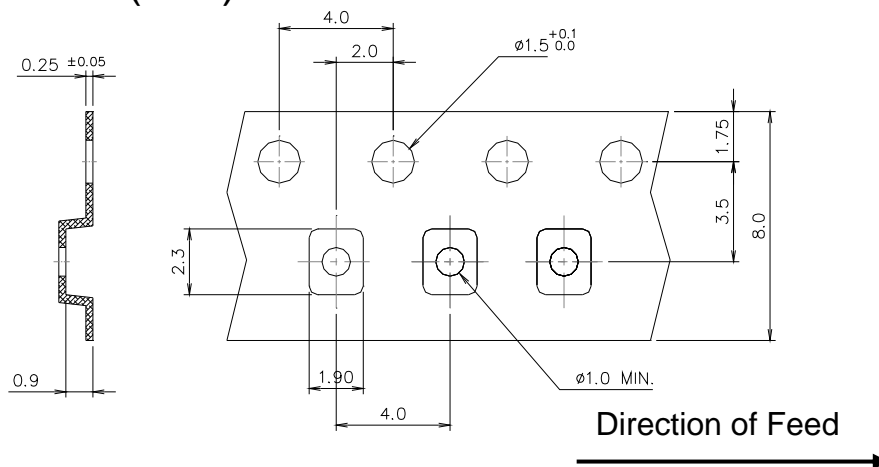
◇ : Date Code Table: Year/Month

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
2030	A	B	C	D	E	F	G	H	J	K	L	M
2031	N	P	Q	R	S	T	U	V	W	X	Y	Z
2032	a	b	c	d	e	f	g	h	i	j	k	m
2033	n	p	q	r	s	t	u	v	w	x	y	z
2034	A	B	C	D	E	F	G	H	J	K	L	M
2035	N	P	Q	R	S	T	U	V	W	X	Y	Z

Reel Dimensions (mm):



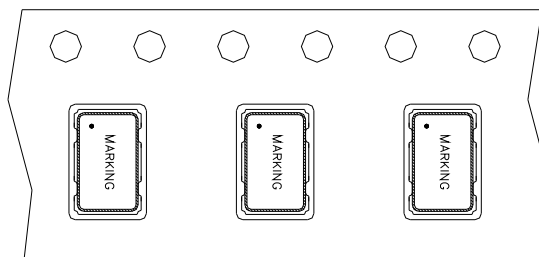
Tape Dimensions (mm):



[NOTE]:

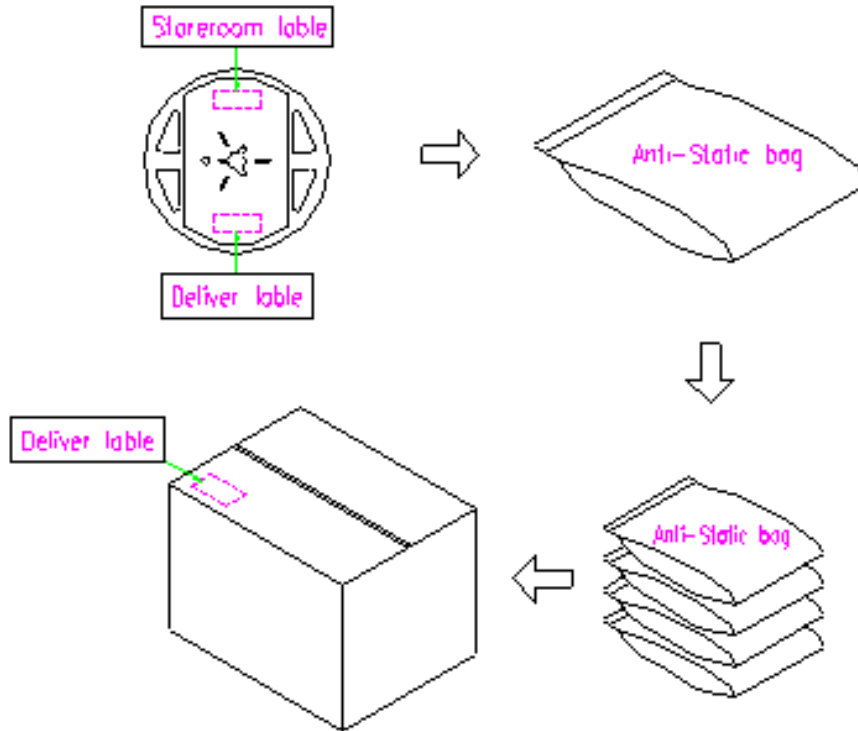
1. Unless otherwise specified tolerance on dimension ± 0.1 mm.
2. Material: conductive polystyrene with color black
3. 10 pitch cumulative tolerance ± 0.2 mm.
4. Packing Direction: dot or the logo of marking should be close to the hole of tape.

Packing direction

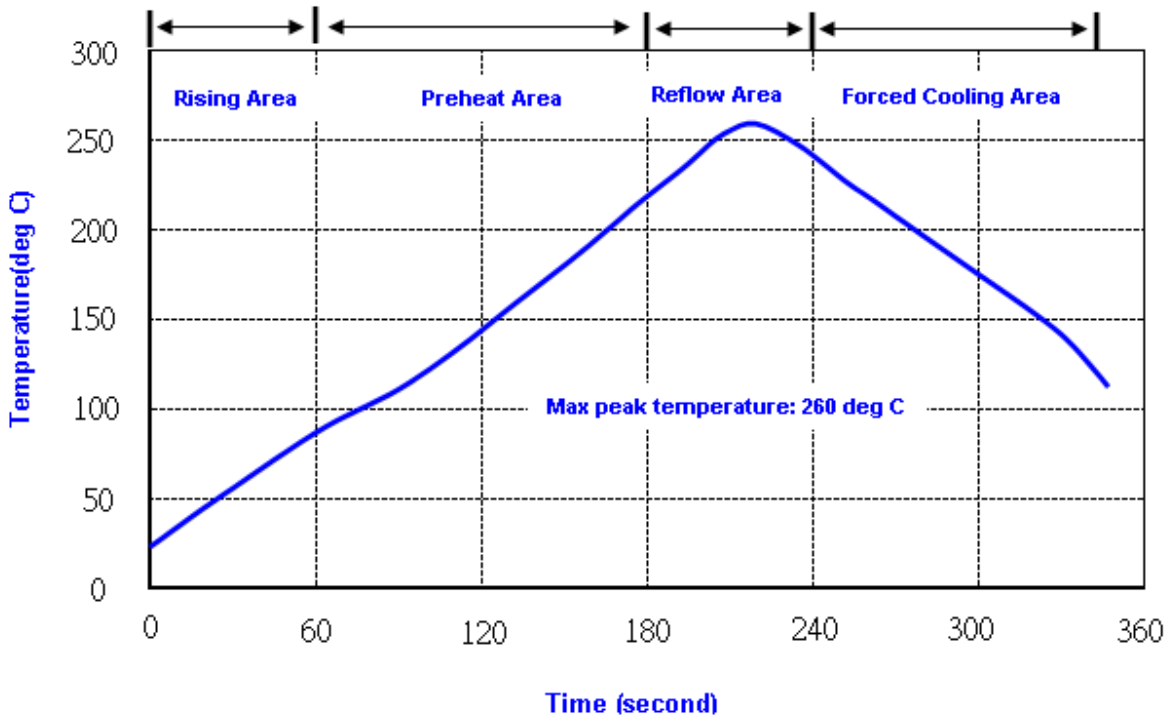


Packing Quantity/Packing:

3K pcs maximum per reel



Reflow Profile:



- Note: 1. Max peak temperature: 260+/-5 deg C; Time: 10+/-2 sec
- 2. Temperature: 217+/-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