



# 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](mailto:tstsales@mail.taisaw.com) Web: [www.taisaw.com](http://www.taisaw.com)

## Product Specifications Approval Sheet

Product Name: TCXO SMD 2.0x1.6 48.0MHz

TST Part No.: TX0859AA5352

Customer Part No.: \_\_\_\_\_

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

Checked by: \_\_\_\_\_ Glen Peng *Glen*

Approved by: \_\_\_\_\_ Kelly Huang *Kelly Huang*

Date: \_\_\_\_\_ 06/08/2023

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.



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TCXO SMD 2.0x1.6 48.0MHz

MODEL NO.: TX0859AA5352

REV. NO.: 2.0

## Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Revised by
1	N/A	Initial release	01/05/21'	N/A	Glen Peng
2	P5	Revise Recommended Circuit	06/08/23'	ECN-202200574	Glen Peng



# TAI-SAW TECHNOLOGY CO., LTD.

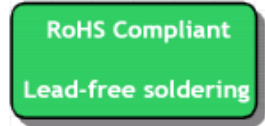
## TCXO SMD 2.0x1.6 48.0MHz

MODEL NO.: TX0859AA5352

REV. NO.: 2.0

### Features:

- Ultra Miniature SMD Package
- Good Frequency Stability
- Good Phase Noise Response
- Moisture Sensitivity Level (MSL) : Level-1



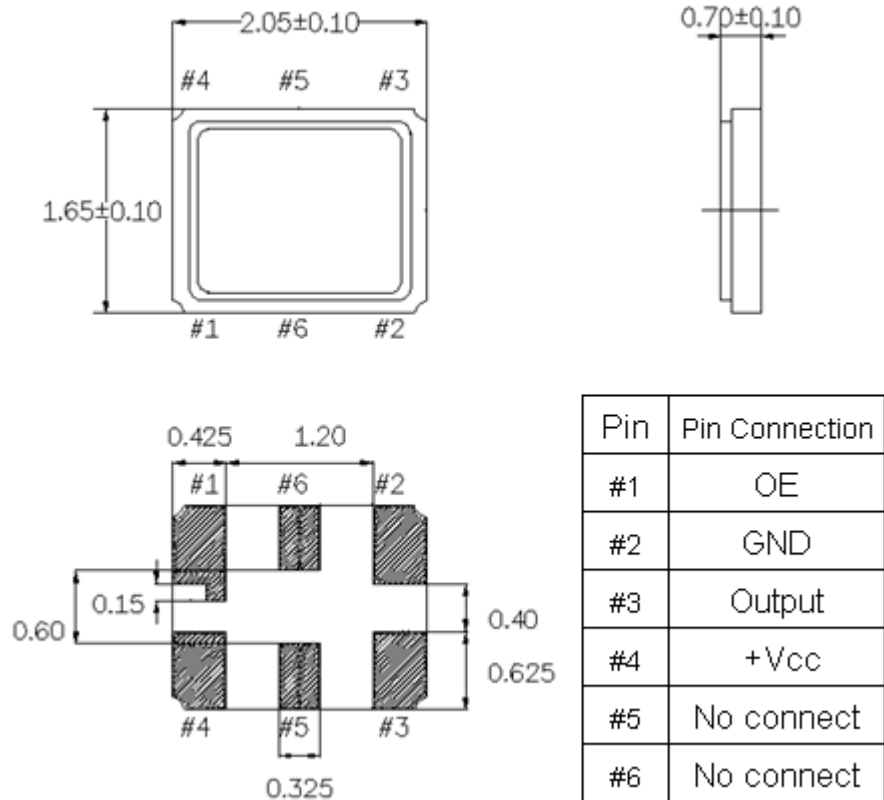
### Description and Applications:

Surface mount 2.0mmx1.6mm TCXO for use in wireless communications devices

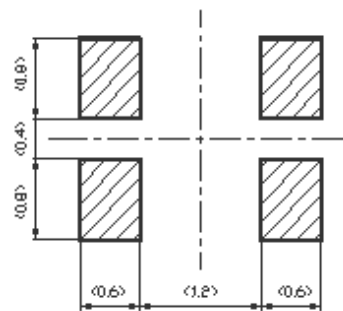
### Electrical Specifications:

TX0859AA5352	Specifications
Nominal Frequency, Fo	48.0 MHz
Storage Temperature Range	-40°C to +105°C
Operating Temperature Range	-40°C to +85°C
Power Supply Voltage, Vcc	3.3V +/-5%
Output Waveform	CMOS
Load	15pF (AC coupled)
“0” Level “1” Level	20% Vcc max 80% Vcc min
Power Supply Current, Icc	6.0 mA max
Frequency Tolerance as received	+/- 1.0 ppm max @ 25°C +/- 3°C
Frequency Tolerance after reflow	+/- 2.0 ppm max @ 25°C +/- 3°C
Frequency Stability a. Vs. Temperature (-40~85°C) b. Vs. Load varied 15pF +/-5% c. Vs. Supply Voltage varied Vcc+/-5%	+/- 2.5 ppm ( reference to 25°C ) +/- 0.3 ppm +/- 0.2 ppm
Duty Cycle	40% ~ 60% Typical
Aging	+/-1.0 ppm/ first year @25°C
Phase Noise	-130 dBc/Hz Typ. at 1kHz offset
Enable/Disable Function (OE function)	PIN 1: 0.8 * Vcc min, PIN 3:Enable PIN 1: 0~0.2 * Vcc, PIN 3:Disable PIN 1: Do not use in open condition
Marking	Laser marking

## Mechanical Dimensions (mm):



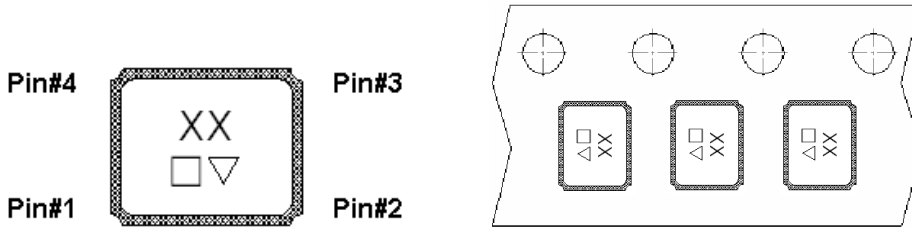
## Recommended Land Pattern: (unit: mm)



# Marking:

Line 1: Frequency (48)

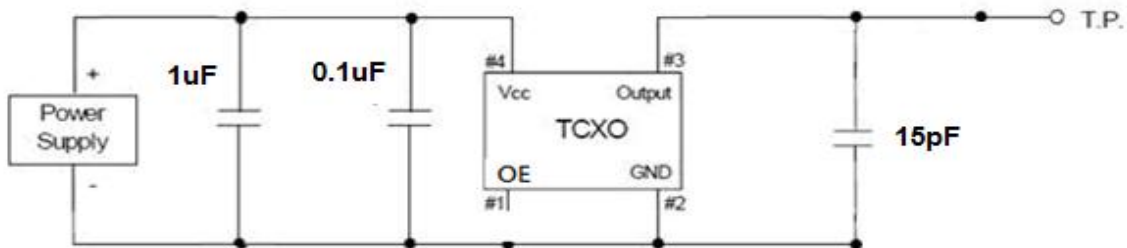
Line 2: Product Code : □ ( □ is TST internal tracking code ) + Date Code of Year/Month : ▽



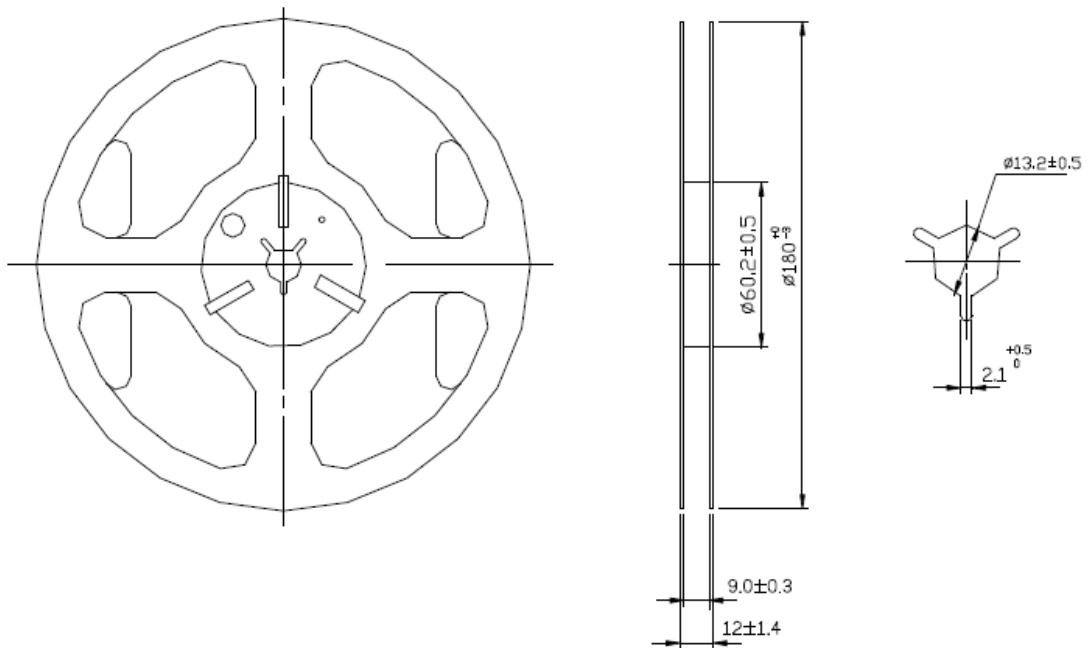
▽ : Date Code Table: Year/Month

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

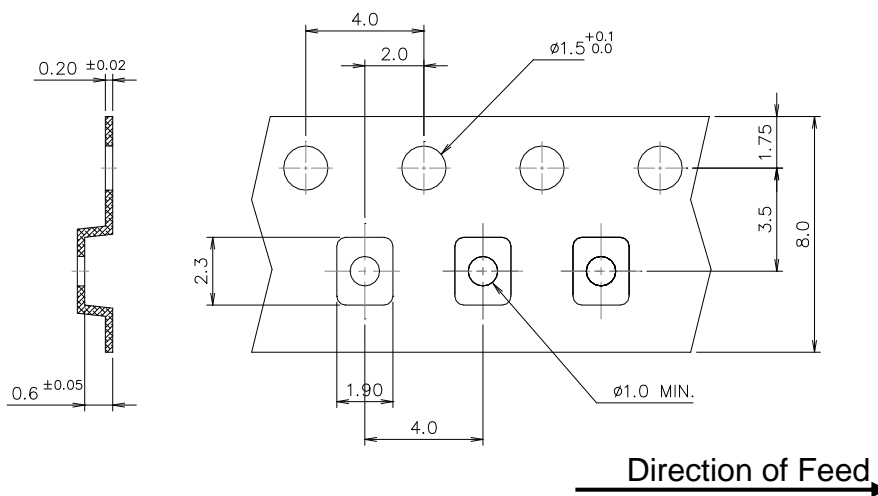
## Recommended Circuit



## Reel Dimension



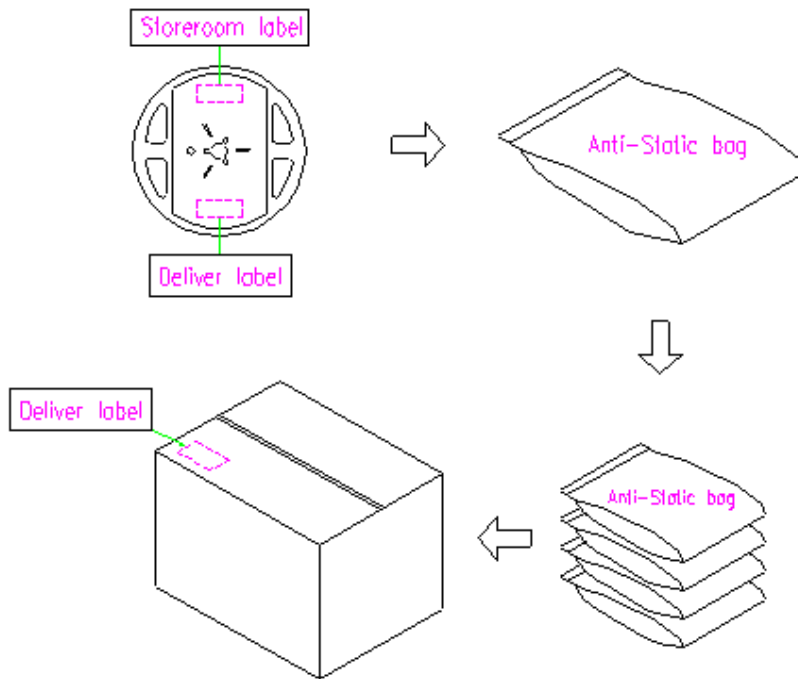
## Tape Dimensions (mm):



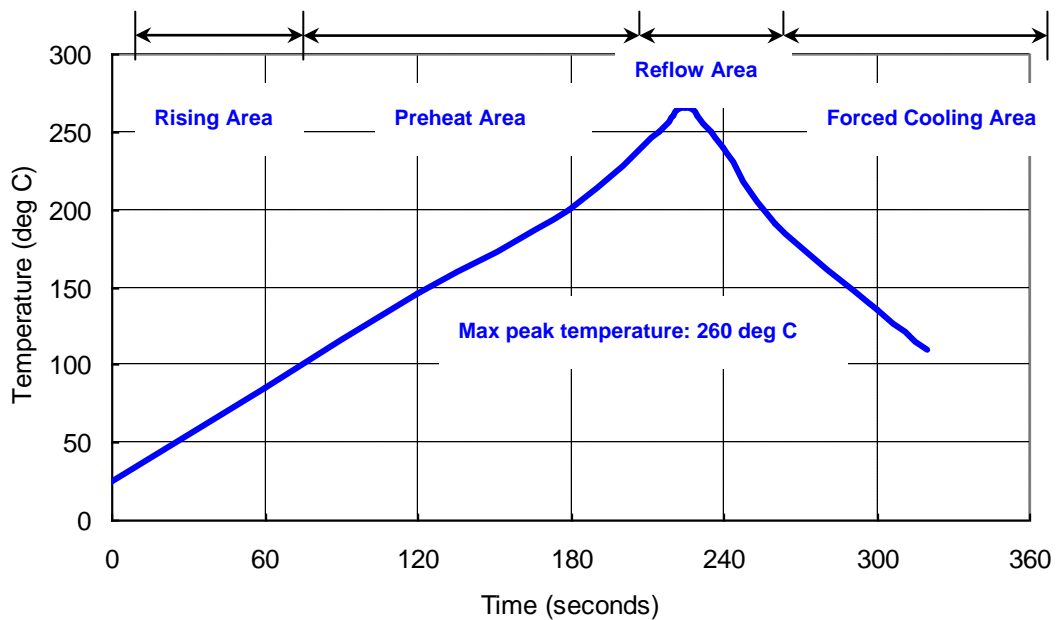
### [NOTE]:

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

## Packing Quantity/Packing: 3K pcs maximum per reel



## Reflow Profile:



## Notes of the Usage:

1. Touch the solder iron at 260+/-5 deg C onto the leads for 10+/-2 sec max or touch the solder at 350+/-5 deg C onto the leads for 3+/-0.5 sec.
2. In the customer's reflow process, if it will remain some mechanical stress at the soldering terminals, also make some cracks on the soldering termination. Some cracks will cause open or short circuit and cause of thermal increasing or smoking. Don't make any excess mechanical stress to soldering points.
3. In case of giving a heavy shock to the products, it may make an open or short circuit and cause of thermal increasing and smoking. To avoid heavy shock impact applying to products is strictly required.
4. Ultrasonic cleaning should be avoided to prevent damage to the TCXO.
5. Do Not Use Ultrasonic-Wave Soldering or Wave Solder with Package Immersed in Solder.

## Notes of the Storage:

1. To keep products under the condition at the room temperature (-5~35 deg C) with normal humidity (45~75%). Absorption of moisture and dewdrop may make inferiority of characteristics and a short circuit.
2. Oxidization of terminals shall make the solderability more inferior. Dusts and corrosive gas will make a cause of the open or short circuit. Keep it in the clean place where is not in dusty and no corrosive gas.
3. Use the anti-static material to the storage package.
4. Don't put any excess weight to the TCXO in the storage process.
5. Don't move the product from the cold place to the hot place in the short time, otherwise it may make some dew-drop, then a short circuit may happen in case.
6. Storage periods should be maximum 6 months under condition of above item 1 after delivery from TST factory.
7. Once open the bag, there is possibility of electrical characteristics deterioration due to absorption of moisture. So, please use parts within 7 days after opening the bag.
8. If you have to keep parts without using after opening the bag, please put the drying agent in the bag, fold the bag and keep it in the place where temperature and humidity are controlled (nitrogen atmosphere box etc.)



## Reliability Specifications

Test name	Test process / method	Reference standard
<b>Mechanical characteristics</b>		
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
<b>Environmental characteristics</b>		
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