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
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Product Specifications Approval Sheet

Product Description: SMD 3.2x2.5 32.768KHz TCXO

TST Part No.: TX1165AA6390

Customer Part No.:_____

Customer signature required

Company:_____

Division:_____

Approved by :_____

Date:_____

Checked by: Hao Yu Liao

Approved by: Yifan Chen

Date: 10/09/2024

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.

MODEL NO.: TX1165AA6390 REV. NO.: 1

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	10/09/24’	N/A	Hao Yu Liao

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SMD 3.2x2.5 32.768KHz TCXO

MODEL NO.: TX1165AA6390 REV. NO.: 1

Features:

RoHS Compliant
Lead free
Lead-free soldering

- Miniature SMD Package
- Moisture Sensitive Level (MSL): Level 2

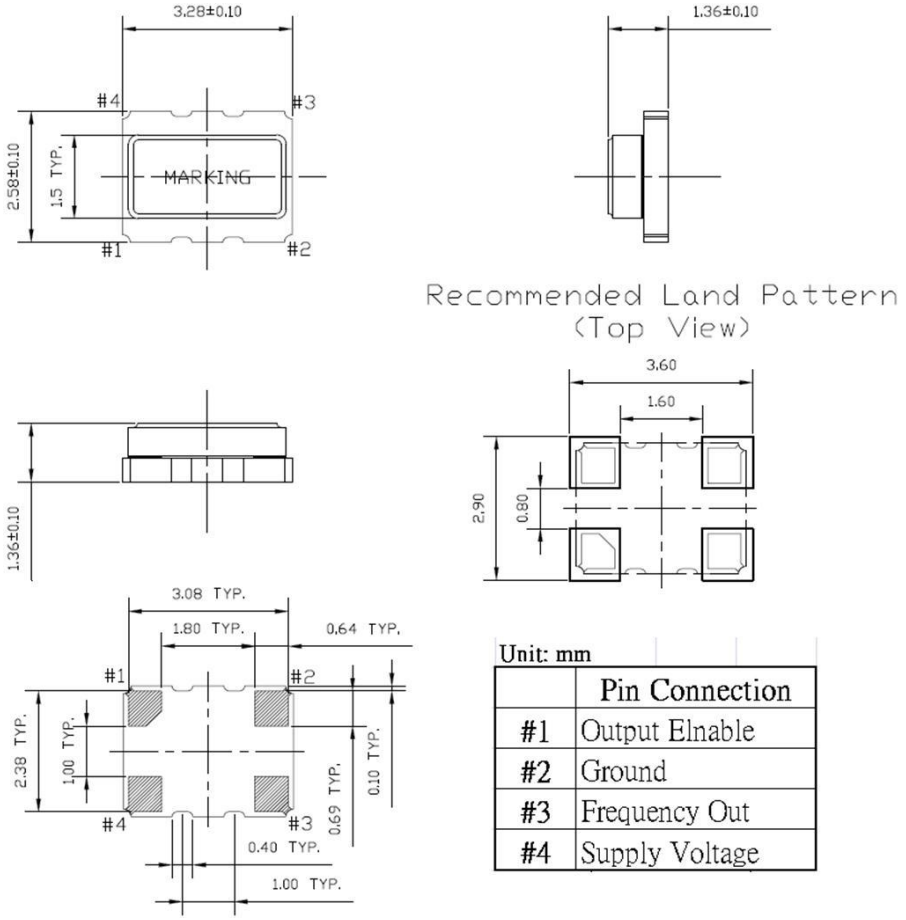
Description and Applications:

Surface mount 3.2mmx2.5mmm TCXO

Electrical Specifications:

TX1165AA6390	**Specifications**
Nominal Frequency, Fo	32.768 KHz
Storage Temperature Range	-40°C to +85°C
Operating Temperature Range	-40°C to +85°C
Power Supply Voltage, Vdd	3.3V +/- 5%
Output Waveform	CMOS Square Wave
Output Load	15pF
“0” Level “1” Level	0.4V max I_{OL}=0.1mA Vdd-0.4V min I_{OH}=-0.1mA
Power Supply Current, Icc	1uA typical 2uA max without load
Initial Frequency Tolerance	+/- 2.5 ppm max @ 25°C +/- 3°C
Duty Cycle	40% ~ 60% Typical
Rise Time (20% -> 80% of final RF level in Vp-p) Fall Time (80% -> 20% of final RF level in Vp-p)	100 nsec max. 100 nsec max.
Frequency Stability a. Vs. Temperature (-40~85°C) b. Vs. Supply Voltage Delta Freq/V	 +/- 5.0 ppm reference to 25°C +/- 1 ppm/V
Start –Up Time	1 s max @ 25°C, 3 s max over-40°C to +85°C
Aging	+/-3 ppm per years
Tri-State Enable Voltage (High) Disable Voltage (Low) output Tri-state	 80% Vdd min or open 20% Vdd max

Mechanical Dimensions (mm):

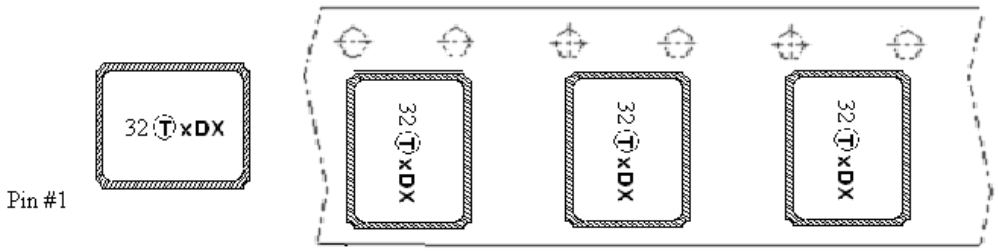


Unit: mm

	Pin Connection
#1	Output Elnable
#2	Ground
#3	Frequency Out
#4	Supply Voltage

Marking:

Line 1: 32 + TST Logo + Product Code + Date Code + Traceability code (1 or 2 letters)



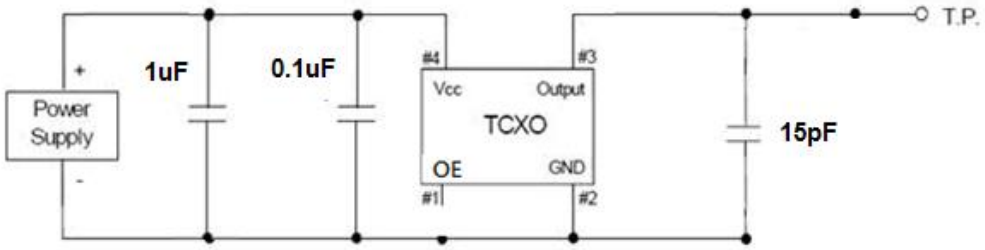
Product Code Table

Year	2021 2025 2029	2022 2026 2030	2023 2027 2031	2024 2028 2032
Product Code	X	x	X	x

Date Code Table

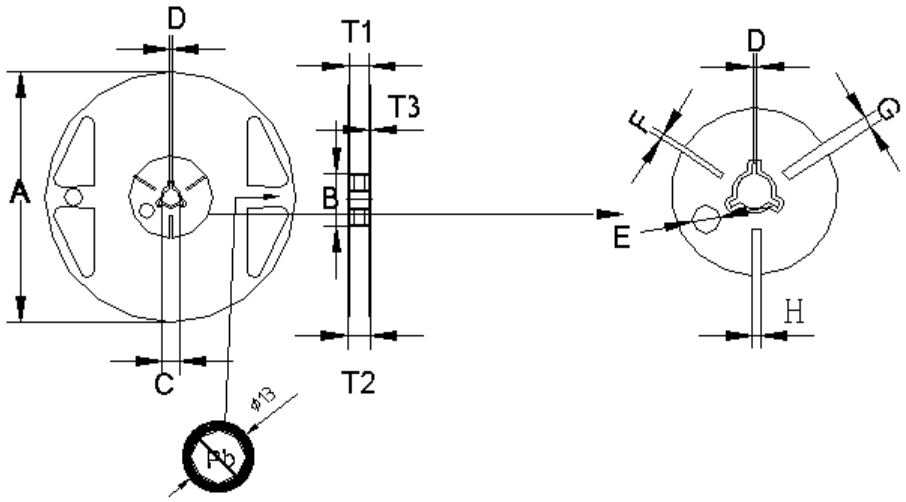
WK01	WK02	WK03	WK04	WK05	WK06	WK07	WK08	WK09	WK10	WK11	WK12	WK13
A	B	C	D	E	F	G	H	I	J	K	L	M
WK14	**WK15**	**WK16**	**WK17**	**WK18**	**WK19**	**WK20**	**WK21**	**WK22**	**WK23**	**WK24**	**WK25**	**WK26**
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
WK27	**WK28**	**WK29**	**WK30**	**WK31**	**WK32**	**WK33**	**WK34**	**WK35**	**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

Recommended Circuit



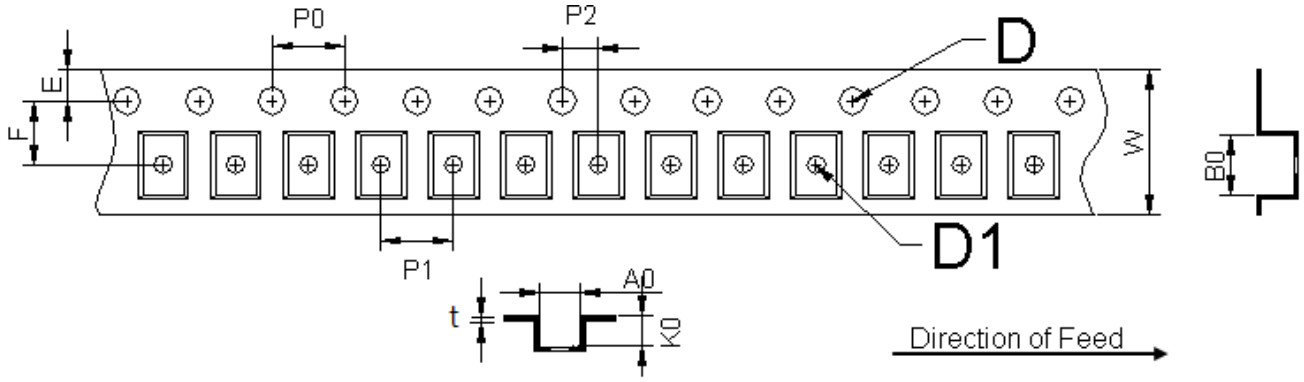
Packing (mm):

1. Reel Dimension



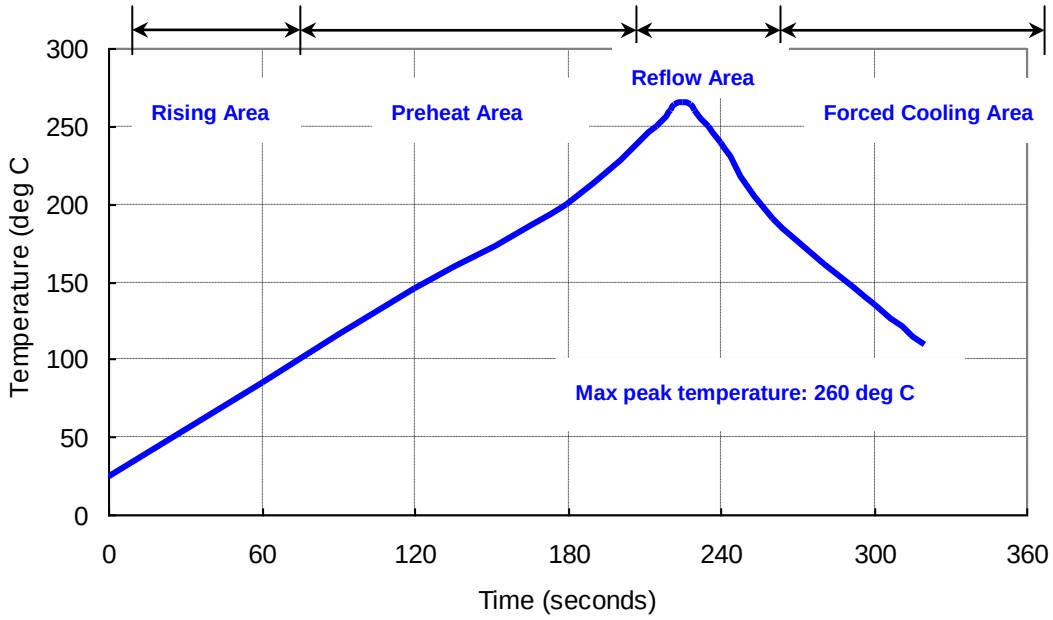
	A	B	C	D	E	F	H	G	T2	T1	T3
Dimensions	180	60	13.0	2.0	9.1	2.9	3.9	4.9	11.4	9.0	1.2
Tolerance	±1.0	+1.0	±0.2	±0.5	±0.5	±0.5	±0.5	±0.5	±1.0	±0.3	±0.1

2. Tape Dimension



Unit: mm	A0	B0	W	F	E	P0	P1	P2	D1	D	K0	t
Dimension	2.80	3.71	8.00	3.5	1.75	4.00	4.00	2	1.50	1.0	1.75	0.25
Tolerance	±0.1	±0.1	+0.3/-0.1	±0.05	±0.1	±0.1	±0.1	±0.05	+0.1/-0.00	+0.25/-0.00	±0.1	±0.02

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
Mechanical characteristics		
resistance to Soldering heat (IR reflow)	Temp./ Duration : 260°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 55 Hz Sweep period : 1.0 minute Vibration directions : 3 mutually perpendicular Duration : 2 hr / direc.	MIL-STD 202F method 201A
Mechanical Shock	directions : 3 impacts per axis Acceleration : 3000g's, +20/-0 % Duration : 0.3 ms (total 18 shocks) Waveform : Half-sine	MIL-STD 202F method 213C
Solderability	Solder Temperature:265±5°C Duration time: 5±0.5 seconds.	MIL-STD 883G method 2003
Environmental characteristics		
Thermal Shock	Heat cycle conditions -55 ℃ (30min) ⟷ 125 ℃ (30min) * cycle time : 10 times	MIL-STD 883G method 1010.7
Humidity test	Temperature : 70 ± 2 °C Relative humidity : 90~95% Duration : 96 hours	MIL-STD 202F method 103B
Dry heat (Aging test)	Temperature : 125 ± 2 °C Duration : 168 hours	MIL-STD 883G method 1008.2 condition C
PCT test	Pressure: 2.06kg/cm^2 (2.03*10^5 pa) Temperature : 121 ± 2 °C Relative humidity : 100% Duration : 24 hours	EIAJED-4701-3 B-123A