

SPECIFICATION FOR APPROVAL

CN: 20240813008

CUSTOMER : _____
PRODUCT TYPE : SMD SEAM SEALING X'TAL 2.0×1.6
NOMINAL FREQ. : 24.576000MHz
TXC P/N : AY24500303
REVISION : S1
CUSTOMER P/N : _____
PM / SALES : _____
DATE : _____
CUSTOMER CONFIRMATION : _____
(Signature) _____
(Date) _____

- (1) TXC requires one copy returned with signature and title of authorized individual that signifies acceptance of the attached specifications.
- (2) Orders received and accepted by TXC after return of signed copy of specification will be produced per these specifications.
- (3) Any changes to these specifications must be agreed upon by both parties and new revision of the Product Specification Sheet will be issued.
- (4) Any issuance of purchase order prior to consigning back the Approval page of "Specification Sheets" from customers will be regarded as the agreement on the contents of these specifications.

**MSL:Level 1
RoHS Compliant**



PRODUCT SPECIFICATION SHEET

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NOMINAL FREQ. : 24.576000MHz

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REVISION : S1

PE/RD	QA	MFG
<i>Martin Jin</i>		
Martin Jin		
<i>16-Aug-24</i>		

NOTE:

- (1) TXC green product standard is based on the international standards. Relevant information is posted on the TXC website and updated regularly. The documentation is subject to the latest green product quality system.
- (2) Revision "Sx" is for engineering samples only. PE/RD's approval required.
- (3) Revision "Ax" is production ready. PE, QA and MFG's approval required.

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Spec Sheet Contents

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ELECTRICAL SPECIFICATIONS

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYP	MAX	UNITS	
1	Nominal Frequency	FL	24.576000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	8			pF	-
4	Frequency Tolerance	-	±10			ppm	at 25 °C ± 3 °C
5	Frequency Stability 1	-	±30			ppm	Over Operating Temp. Range 1 (Reference 25°C)
6	Operating Temperature 1	-	-40	~	105	°C	-
7	Frequency Stability 2	-	±50			ppm	Over Operating Temp. Range 2 (Reference 25°C)
8	Operating Temperature 2	-	-40	~	125	°C	-
9	Aging	-	±3			ppm	1st Year at 25 °C ± 3 °C
		-	±10			ppm	10 Years at 25 °C ± 3 °C
		-	±15			ppm	15 Years at 25 °C ± 3 °C
10	Drive Level	DL	-	10	200	μW	-
11	Effective Resistance Rr	Rr	-	-	100	Ω	-
12	Shunt Capacitance C0	C0	0.39	-	0.47	pF	-
13	C0/C1	C0/C1	254	363	472	-	
14	Insulation Resistance	-	500	-	-	MΩ	at DC 100V
15	Storage Temperature Range	-	-55	~	125	°C	-

Measure equipment

Electrical characteristics measured by S&A 250B or equivalent.

Unit Weight:

0.0065±0.001 g/pcs Reference

Attention (注意事項) :

1. If you intend to use product on controls relating to medical equipment, aeronautical equipment, aerospace, military science, space equipment, etc.) please do not fail to advise us of your intention beforehand.

請勿將本產品使用在醫療,航空,宇航,軍事或與生命安全性相關的設備中, 若需使用在上述應用請事前與TXC聯繫。

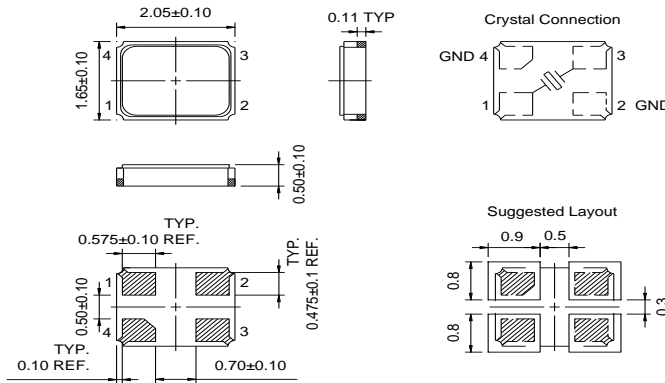
2. Crystal units will be damaged by ultrasonic welding process due to resonance of crystal wafer itself.

If ultrasonic welding used, TXC strongly recommend verifying damage by ultrasonic weld.

本產品在超音波封合的過程中晶片可能會因共振受損, 若有超音波封合需求, TXC強烈建議應給予適當的驗證。

■ DIMENSIONS

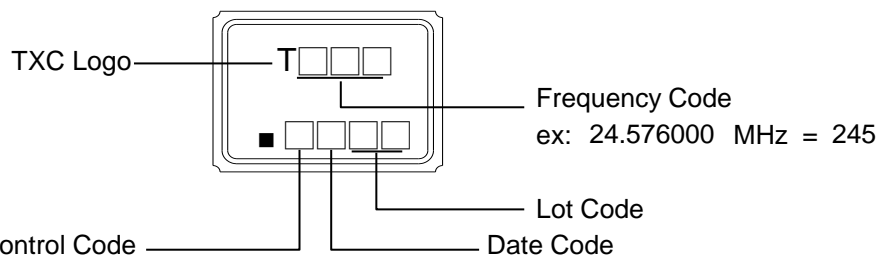
(Unit:mm)



*The drawing just for reference only

*Coplanarity of solderable areas Camber 0.10 mm Max

■ MARKING



Date Code

Year					Month											
					Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2021	2025	2029	2033	2037	A	B	C	D	E	F	G	H	J	K	L	M
2022	2026	2030	2034	2038	N	P	Q	R	S	T	U	V	W	X	Y	Z
2023	2027	2031	2035	2039	a	b	c	d	e	f	g	h	j	k	l	m
2024	2028	2032	2036	2040	n	p	q	r	s	t	u	v	w	x	y	z

*This month code will be cycled every four years

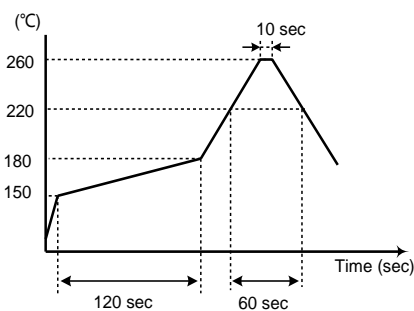
■ Production location: Taiwan or China(Ningbo)

■ SUGGESTED REFLOW PROFILE

Peak Temperature : $260 \pm 5^\circ\text{C}$, 10 sec. Max.

Solder melting point : $220 \pm 10^\circ\text{C}$, 60 sec. Min.

Reflow passage time : twice

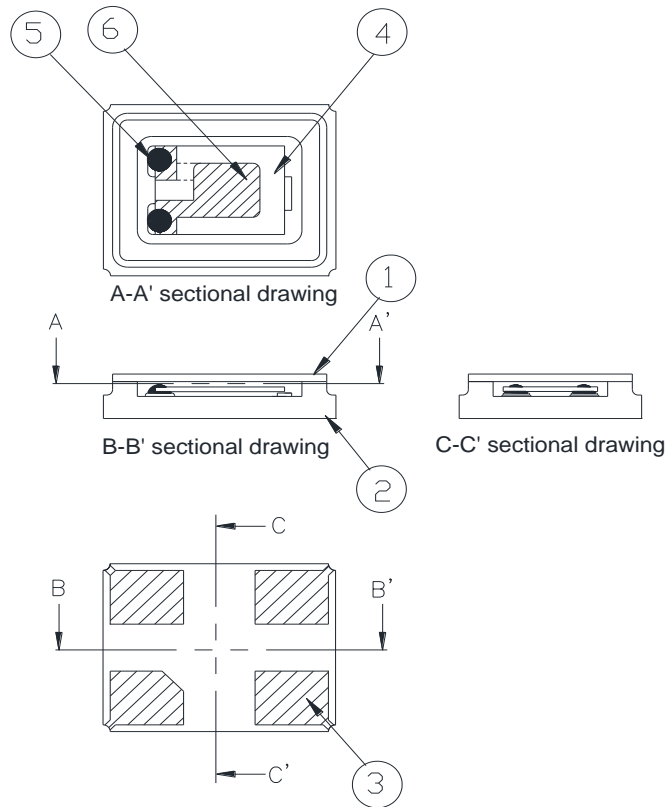


■ SUGGESTED MANUAL SOLDER CONDITION

Pressing a soliding iron of 350°C on the terminal electrode for 4 seconds (twice).

NOTE: After manual welding, the product should be placed at least 2 hours

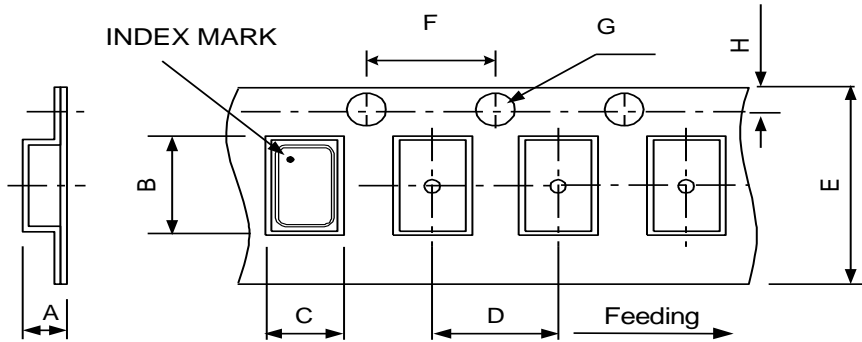
■ STRUCTURE ILLUSTRATION



*The drawing just for reference only

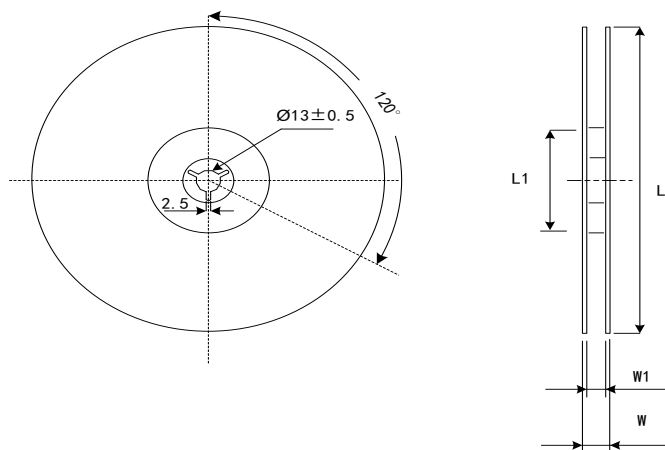
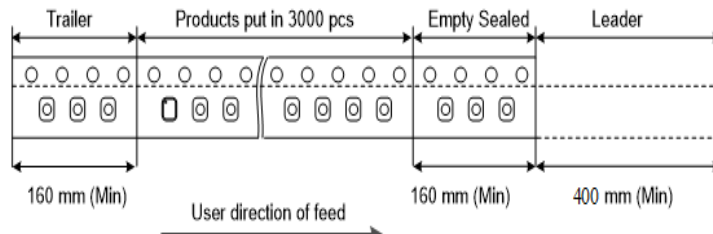
NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	-
2	Base(Package)	Ceramic (Al ₂ O ₃) + Kovar (Fe/Co/Ni)+ Ag/Cu	Color black
3	PAD	Au	Tungsten metalize + Ni plating + Au plating
4	Crystal blank	SiO ₂	-
5	Conductive adhesive	Ag	Silicon resin
6	Electrode	Noble Metal	-

■ EMOSS CARRIER TAPE & REEL



DIMENSIONS	A	B	C	D	E	F	G	H	
	0.65	2.30	1.90	4.00	8.00	4.00	1.55	1.75	UNIT : mm
	± 0.10	± 0.10	± 0.10	± 0.10	± 0.20	± 0.10	± 0.05	± 0.10	

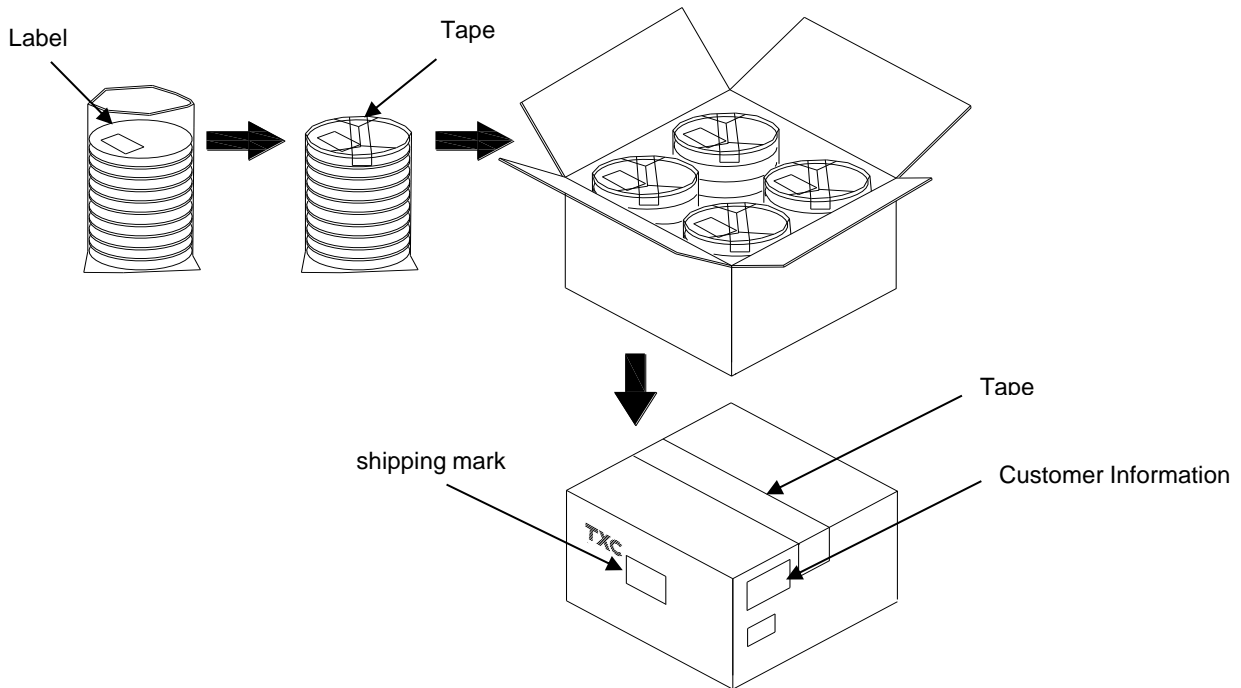
REMARK:



DIMENSIONS	L	L1	W	W1	Standard Reel Quantity is 3,000 pcs per reel
	178 ± 1	13 ± 1	11.5 ± 1	8 ± 1	UNIT : mm

Standard Reel Quantity is 3,000 pcs per reel

■ PACKING



Label :

TXC CORPORATION		QA PASS
DATE CODE:	Q' TY:	<input type="text"/>
LOT NO:		
PART NO:	RoHS	
FREQ: <input type="text"/>	HF	

[STORAGE]

1. Do not get wet by the rain.
2. The storage environment shall be 5°C ~40°C and 30% ~ 75%RH humidity and avoid exposure to sunlight.
3. If customers have special requirements, we can coordinate.

■ Reliability Specifications (AEC-Q200 Compliant)

1. Mechanical Endurance

No.	Test Item	Test Condition	Criteria
1.1	Mechanical Shock	2000 G , 0.3 m Sec. ,3 times for all 3 directions.	B C
1.2	Vibration	Frequency range 10 ~ 2000 Hz Acceleration 20G Amplitude 1.52mm Sweep time 20 minute Pendicular axes each test time 4 hours (Total test time 12 hours)	B C
1.3	Terminal Strength	Applied Force: 17.7N(1.8Kg) , Duration Time: 60(+1)sec.	F
1.4	Board Flex	Duration time:60(+5) sec. Minimum,Deviation:3mm	B C
1.5	Solderability	1.Pb-free, 245 ±5°C, immersion time: 5 +0/-0.5 sec. (155°C, 4 hours ± 15min. preheated) 2.Pb-free, 260 ±5°C, immersion time: 30 +5/-0 sec. (155°C, 4 hours ± 15min. preheated) 3.SnPb, 260 ±5°C, immersion time: 30 +5/-0 sec. (155°C, 4 hours ± 15min. preheated)	E

2. Environmental Endurance

No.	Test Item	Test Condition	Criteria
2.1	Resistance To Soldering Heat	Time above 217°C, 60s~150s	BCD
2.2	High Temp. Storage	+ 125°C ± 3 °C for 1000 (+12) Hrs	BCD
2.3	Low Temp. Storage	- 55 °C ± 3 °C for 1000 (+12) Hrs	BCD
2.4	Temperature Cycle	-55°C ~125°C ,for 1000 cycles. 	BCD
2.5	High Temperature Operating Life	125°C ±3°C, 1000 hours, Rated VDD applied with 1 MΩ and inverter in parallel, 2X crystal CL capacitors between each crystal leg and GND.	BCD
2.6	Humidity Bias	85°C ±3°C, RH 85% ±1%, 1000 hours, Rated VDD applied with 1 MΩ and inverter in parallel, 2X crystal CL capacitors between each crystal leg and GND.	BCD

■ RELIABILITY SPECIFICATIONS

Specifications	
A	Frequency change: Within ± 5 ppm or in customer's specification.
B	Frequency change: Within ± 10 ppm or in customer's specification.
C	Equivalent series resistance(E.S.R) change: Within $\pm 15\%$ or 10Ω (larger value).
D	After conditioning , quartz crystal units shall be subjected to standard atmospheric conditions for 24 hour, and measured.
E	Minimum 95% of immersed terminal shall be covered with new uniform solder.
F	No damage on specimen

Measurement condition

Electrical characteristics measured by S&A250B or equivalent.