



# SPECIFICATION FOR APPROVAL

CUSTOMER : \_\_\_\_\_

PRODUCT TYPE : SMD SEAM SEALING X'TAL 2.0 × 1.6

NOMINAL FREQ. : 32.000000MHz

TXC P/N : 8Y32072003

REVISION : A4

CUSTOMER P/N : \_\_\_\_\_

PM / SALES : \_\_\_\_\_

DATE : \_\_\_\_\_

CUSTOMER 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.

Attachment: Product Specification Sheet

- 1
- 2
- 3
- 4
- 5

**RoHS Compliant**



# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD SEAM SEALING X'TAL 2.0 × 1.6

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PE/RD	QA	MFG
<i>Robin Huang</i> Robin Huang	<i>Samson Xiong</i> Samson Xiong	<i>Jake Liu</i> Jake Liu
<i>19-Apr-19</i>	<i>19-Apr-19</i>	<i>19-Apr-19</i>

NOTE:

- (1)The green product standard set by TXC is based upon the international standards. Related information is publicly described on the TXC's Website, and updated regularly. The document is compliant with the latest green product quality system directives at the time.
- (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

**RoHS Compliant**



<u>Rev</u>	<u>Revise page</u>	<u>Revise contents</u>	<u>Date</u>	<u>Ref.No.</u>	<u>Reviser</u>
S1	N/A	Initial released	11-Dec-17	N/A	Xiaoyan Jiang
S2	3	Delete Pulling Sensitivity	20-Dec-18	PNR18121405	Xiaoyan Jiang
A1	N/A	S Turn A	24-Dec-18	N/A	Xiaoyan Jiang
A2	3	FT±10ppm Change To±7ppm ST±10ppm@-30~85°C Change To± 11ppm@-30~85°C & ±16ppm@- 40~85°C CO 2pF max Change To0.3-0.8-1.5pF C1 3fF max Change To1-1.8-2.5fF AGING±1ppm/1st yea Change To± 2ppm/5years DL100uW typ & 200uW max Change To0.01-100-200uW Add L1 10-12-18mH TS10-20-30ppm/Pf SPUR 1100Ω min @±1MHz REFLOW±1ppm after two reflows	9-Jan-19	ECR-19N010202	Xiaoyan Jiang
A3	3	FT±7ppm Change To-6~+8ppm ST-30~85°C±11ppm &-40~85°C ± 16ppm Change To-30~85°C/-10~+9ppm &-40~85°C/ -14~+9ppm Add AGING±4ppm/10years	18-Mar-19	ECR-19N031401	Xiaoyan Jiang
A4	3	Aging±2ppm/5years Change To± 2ppm/6years Operating Temperature-40 ~ +85°C Change To-40 ~ +105°C	19-Apr-19	ECR-19N040803	Xiaoyan Jiang

## Spec Sheet Contents

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## ■ ELECTRICAL SPECIFICATIONS

### Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature :  $25 \pm 10^{\circ}\text{C}$   
 Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature :  $25 \pm 3^{\circ}\text{C}$   
 Relative humidity : 40%~70%

### Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

### Crystal cutting type

The crystal is using AT CUT (thickness shear mode).

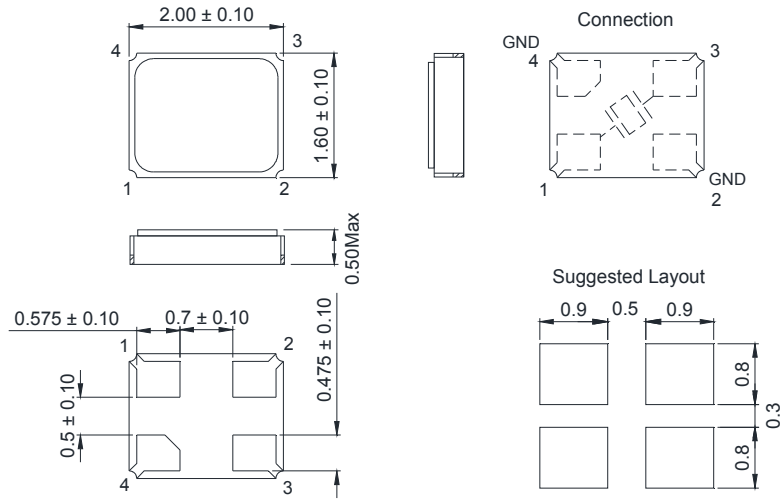
### Unit Weight:

0.005±0.002 g/pcs

	Parameters	Symbol	Electrical Spec.				Notes
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	FL	32.000000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	6			pF	-
4	Frequency Tolerance	-	-6	~	8	ppm	at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
5	Frequency Stability 1(Include Frequency Perturbation)	-	-10	~	9	ppm	$-30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
6	Frequency Stability 2(Include Frequency Perturbation)	-	-14	~	9	ppm	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
7	Frequency drift after reflow		$\pm 1$			ppm	After two reflows
8	Aging	-	$\pm 2$			ppm	6 Years
		-	$\pm 4$			ppm	10 Years
9	Operating Temperature	-	-40	~	105	$^{\circ}\text{C}$	-
10	Drive Level	DL	0.01	100	200	$\mu\text{W}$	-
11	Equivalent Series Resistance	Rr	-	25	50	$\Omega$	-
12	Shunt Capacitance C0	C0	0.3	0.8	1.5	pF	-
13	Motional Capacitance C1	C1	1	1.8	2.5	fF	-
14	Motional Inductance L1	L1	10	12	18	mH	-
15	Pulling Sensitivity	TS	10	20	30	ppm/pF	-
16	Spurious Mode Series Resistance	-	1100	-	-	$\Omega$	$\pm 1\text{MHz}$
17	Insulation Resistance	-	500	-	-	M $\Omega$	at DC 100V
18	Storage Temperature Range	-	-40	~	125	$^{\circ}\text{C}$	-

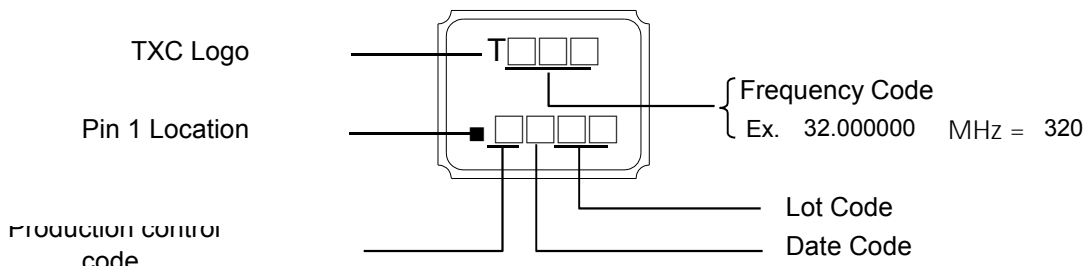
**■ DIMENSIONS**

(Unit:mm)



\*Coplanarity of solderable areas Camber 0.05 mm Max

**■ MARKING**



**Date Code:**

YEAR					MONTH											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2005	2009	2013	2017	2021	A	B	C	D	E	F	G	H	J	K	L	M
2006	2010	2014	2018	2022	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	2011	2015	2019	2023	a	b	c	d	e	f	g	h	j	k	l	m
2008	2012	2016	2020	2024	n	p	q	r	s	t	u	v	w	x	y	z

\*This date code will be cycled every four years

**Production Location: Taiwan, China(Ningbo)**

**■ SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.

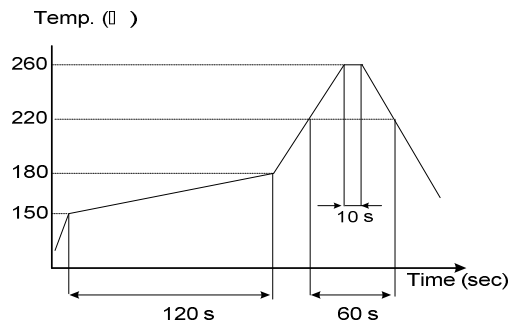
Solder melting point :220 °C

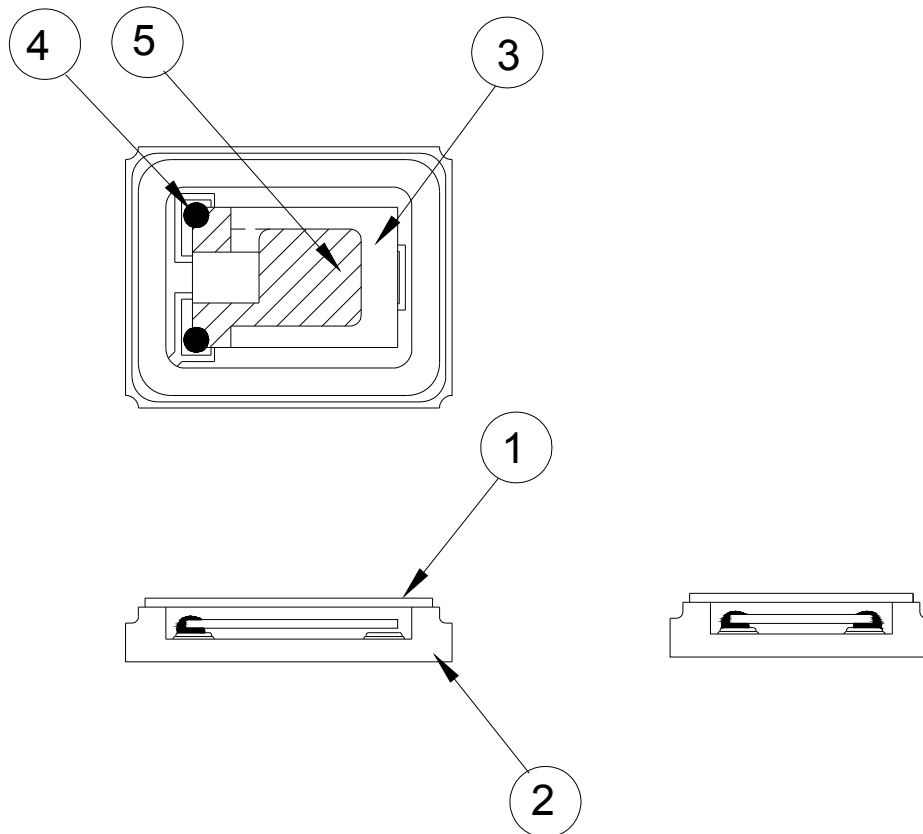
**■ SUGGESTED MANUAL SOLDER CONDITION**

Temperature: 350 ± 10 °C

Time: 3 sec.

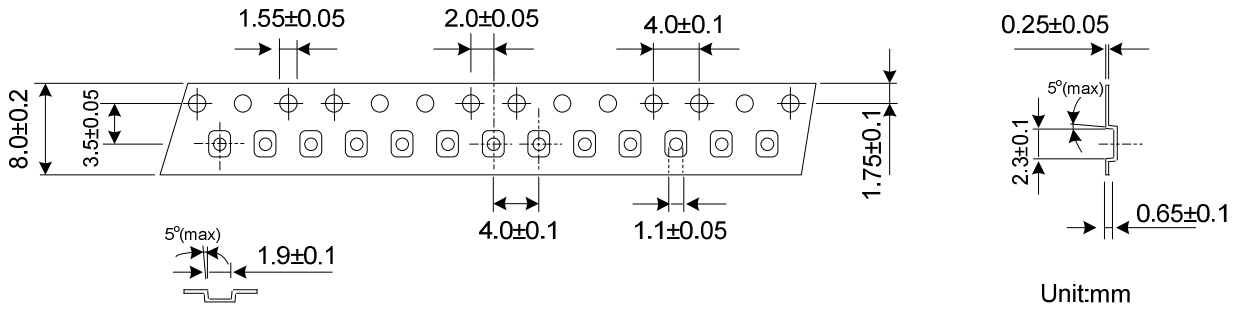
Re-solder times: twice



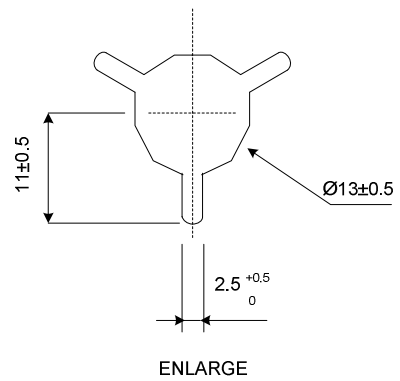
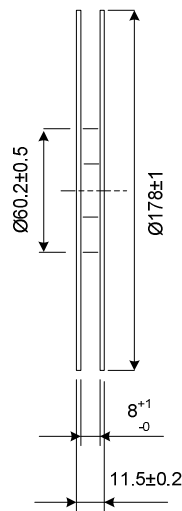
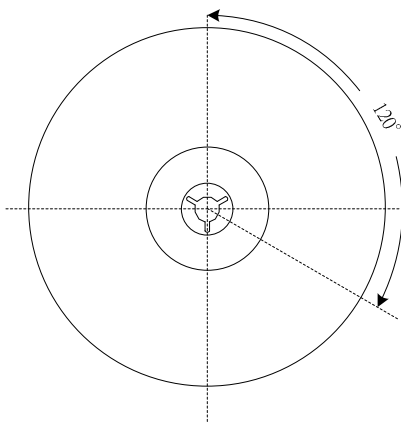
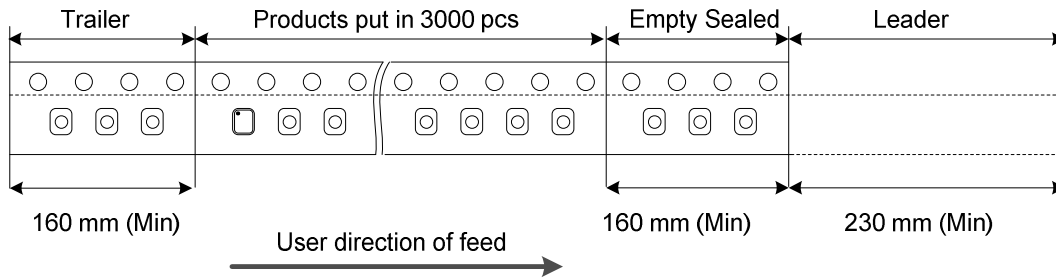
**■ STRUCTURE ILLUSTRATION**


NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	-
2	Base(Package)	Ceramic (Al <sub>2</sub> O <sub>3</sub> ) + Kovar (Fe/Co/Ni)+Pad(Au)	Tungsten metalize + Ni plating + Au plating
3	Crystal blank	SiO <sub>2</sub>	-
4	Conductive adhesive	Resin+Ag	-
5	Electrode	Au	-

■ PACKING



REMARK :



Standard Reel Quantity is 3,000 pcs per reel



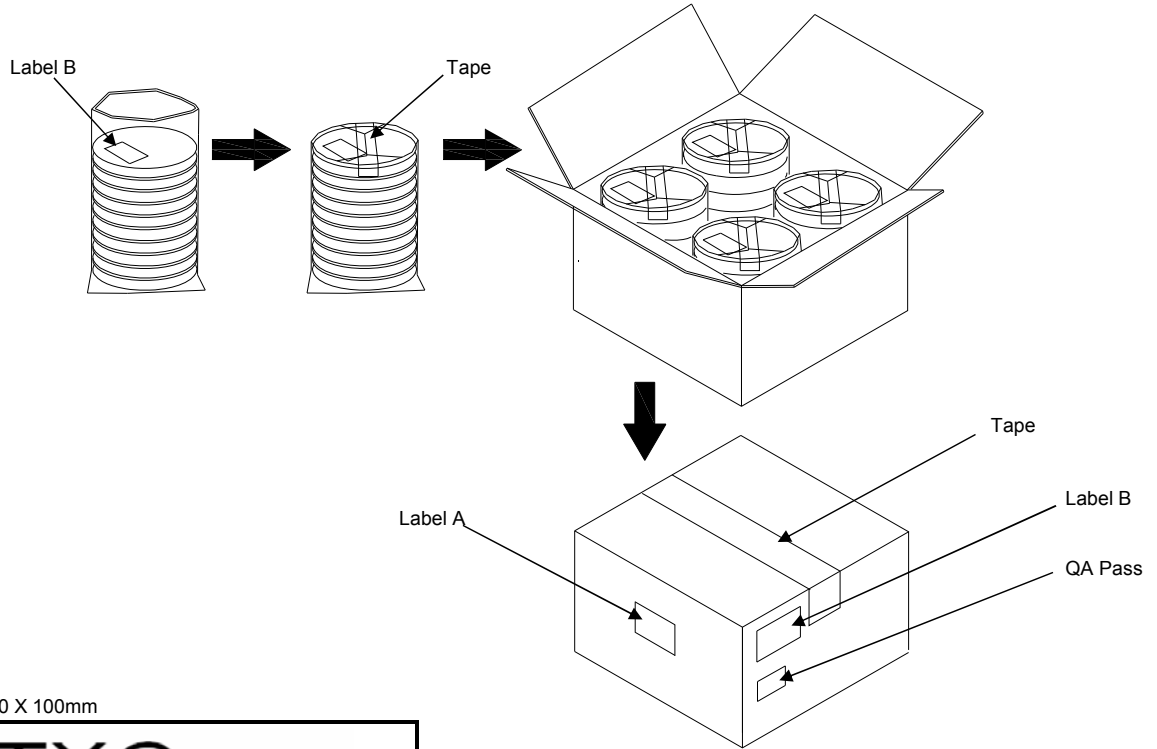
**PACKING**

Reel Quantity :

- 1. Reel X 6 (6 Reels)
- 2. Reel X 12 (12 Reels)
- 3. Reel X 25 (12 Reels + 13 Reels)
- 4. Reel X 50 ( 12 Reelsx2 + 13 Reelsx2 )

Box Size:

- 1. L200 X W200 X H140mm
- 2. L200 X W200 X H250mm
- 3. L400 X W200 X H250mm
- 4. L400 X W400 X H280mm



(Label A) Size:100 X 100mm

<h1 style="margin: 0;">TXC</h1>	
Inv No:	□□□□□□□□ □
Po No:	□□□□□□□□ □
Part No:	□□□□□□□□ □
Qty:	□□□□ PCS
C/No:	□□□□

(Label B) Size:80 X 40mm

TXC CORPORATION		QA PASS
DATE CODE:		QTY:
□□□□□□□□ □□□□		2011/09/02
LOT NO:		
□□□□□□□□		
PART NO:		
□□□□□□□□		
FREQ: □□□□□□□□ □□		

**[STORAGE]**

- 1. Don't be caught in the rain.
- 2. The storage environment shall be 5°C ~40°C temperature and 30% ~ 75%RH humidity and free from the sun shine.
- 3. If customers have special requirements, we can paste labels according to it.

## ■ RELIABILITY SPECIFICATIONS

### 1. Mechanical Endurance

No.	Test Item	Test Methods	Test Criteria
1	Drop Test	150 cm height, 3 times on concrete floor.	A . C
1	Mechanical Shock	Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 0.5m sec. duration time	A . C
1	Vibration	Frequency range                      10 ~ 2000 Hz Amplitude                                      1.52 mm/20G Sweep time                                      20 minutes perpendicular axes each test time      4 Hrs (Total test time 12 Hrs)	A . C
1	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2kg / cm <sup>2</sup>	F
2	Fine Leak	Helium Bombing 4.5 kg/ cm <sup>2</sup> for 2 Hrs	G
2	Solder ability	Temperature                                      240 °C ± 5°C Immersing depth                                      0.5 mm minimum Immersion time                                      5 ± 1 seconds Flux    Rosin resin methyl alcohol solvent ( 1 : 4 )	E

### 2. Environmental Endurance

No.	Test Item	Test Methods	Test Criteria
2	Resistance To Soldering Heat	Pre-heat temperature                      125 °C Pre-heat time                                      60 ~ 120 sec. Test temperature                                      260 ± 5 °C Test time    10 ± 1 sec.	B . C . D
2	High Temp. Storage	+ 125 °C ± 3 °C for 500 ± 12 Hrs	B . C . D
2	Low Temp. Storage	- 40 °C ± 3 °C for 500 ± 12 Hrs	
2	Temperature cycle	Total 100 cycles of the following temperature cycle 	B . C . D
3	High Temp & Humidity	85°C ± 3°C, RH 85% , 500Hrs	B . C . D

**RELIABILITY SPECIFICATIONS**

Specifications	
A	Frequency change: Within $\pm 5$ ppm or in customer's specification.
B	Frequency change: Within $\pm 10$ ppm or in customer's specification.
C	Equivalent series resistance(E.S.R) change: Within $\pm 15\%$ or $10\Omega$ (larger value).
D	After conditioning , quartz crystal units shall be subjected to standard atmospheric conditions for 2 hour, and measured.
E	Minimum 95% of immersed terminal shall be covered with new uniform solder.
F	Leak rate < $1 \times 10^{-5}$ Pa*m <sup>3</sup> /Sec
G	Leak rate < $4 \times 10^{-9}$ Pa*m <sup>3</sup> /Sec

**Measurement condition**

Electrical characteristics measured by S&A250B or equivalent.