



**TXC CORPORATION**

4F, NO. 16, Sec. 2 Chung Yang S Rd., Peitou, Taipei, Taiwan.

TEL : 886-2-2894-1202 , 886-2-2895-2201 FAX : 886-2-2894-1206 , 886-2-2895-6207

www.txccorp.com

# SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD SEAM SEALING XTAL 5.0 × 3.2

NOMINAL FREQ. : 13.560000MHz

TXC P/N : 7B13570002

REVISION : A1

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.

**MSL:Level 1  
RoHS Compliant**



# PRODUCT SPECIFICATION SHEET

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PE/RD	QA	MFG
<i>Wu Zhong Lin</i>	<i>Janson</i>	<i>Min-Chuang Chao</i>
<i>11-Oct-11</i>	<i>11-Oct-11</i>	<i>11-Oct-11</i>

**NOTE:**

- (1)Lead Free Products are "Directive 2002/95/EC of The European Parliament of 27 January 2003 on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment" Compliant (Attachment: SGS Test Report).
- (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

**MSL:Level 1  
RoHS Compliant**





## 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±5°C  
 Relative humidity : 40%~70%

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

Ambient temperature : 25±3°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:

0.046±0.010 g/pcs

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYP	MAX	UNITS	
1	Nominal Frequency	FL	13.560000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	18			pF	-
4	Frequency Tolerance	-	±30			ppm	at 25 °C ± 3 °C
5	Frequency Stability	-	±30			ppm	Over Operating Temp. Range (Reference 25°C)
6	Operating Temperature	-	-20	~	70	°C	-
7	Aging	-	±3			ppm	1st Year
8	Drive Level	DL	-	100	-	uW	-
9	Effective Resistance Rr	Rr	-	-	40	Ω	-
10	Shunt Capacitance C0	C0	-	-	-	pF	-
11	Insulation Resistance	-	500	-	-	MΩ	at DC 100V
12	Storage Temperature Range	-	-40	~	85	°C	-

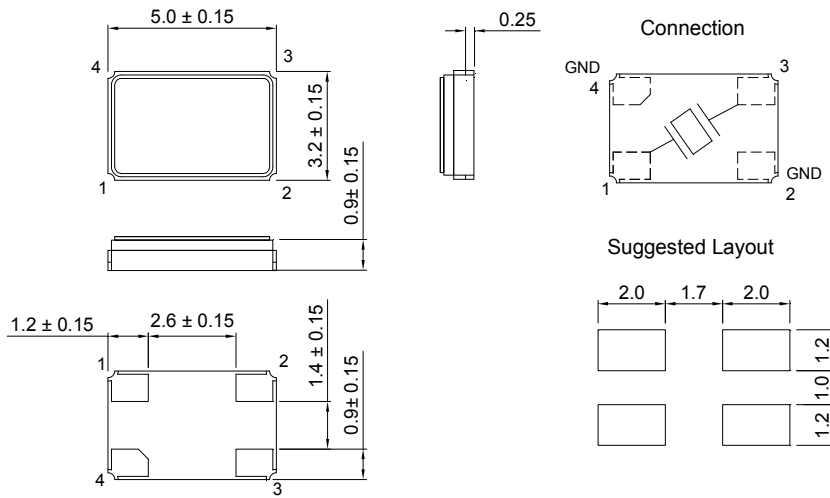
## ■ FACTORY LOCATION

TXC (NINGBO) CORPORATION  
 NO.189 Huang Shan West Rd., Beilun District,  
 Ningbo, Zhejiang, China



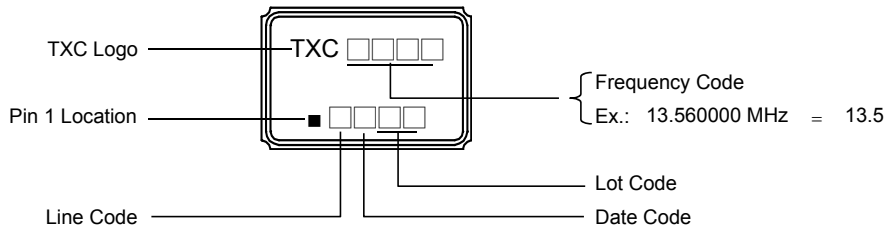
**■ DIMENSIONS**

(Unit:mm)



\*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
2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M
2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	2011	2015	2019	a	b	c	d	e	f	g	h	j	k	l	m
2008	2012	2016	2020	n	p	q	r	s	t	u	v	w	x	y	z

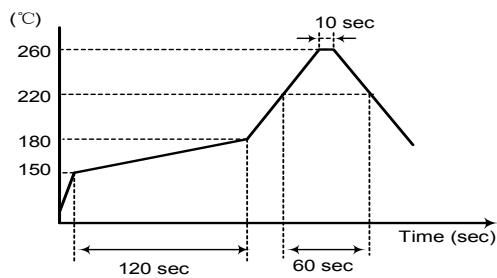
\*This date code will be cycled every four years

**■ SUGGESTED REFLOW PROFILE**

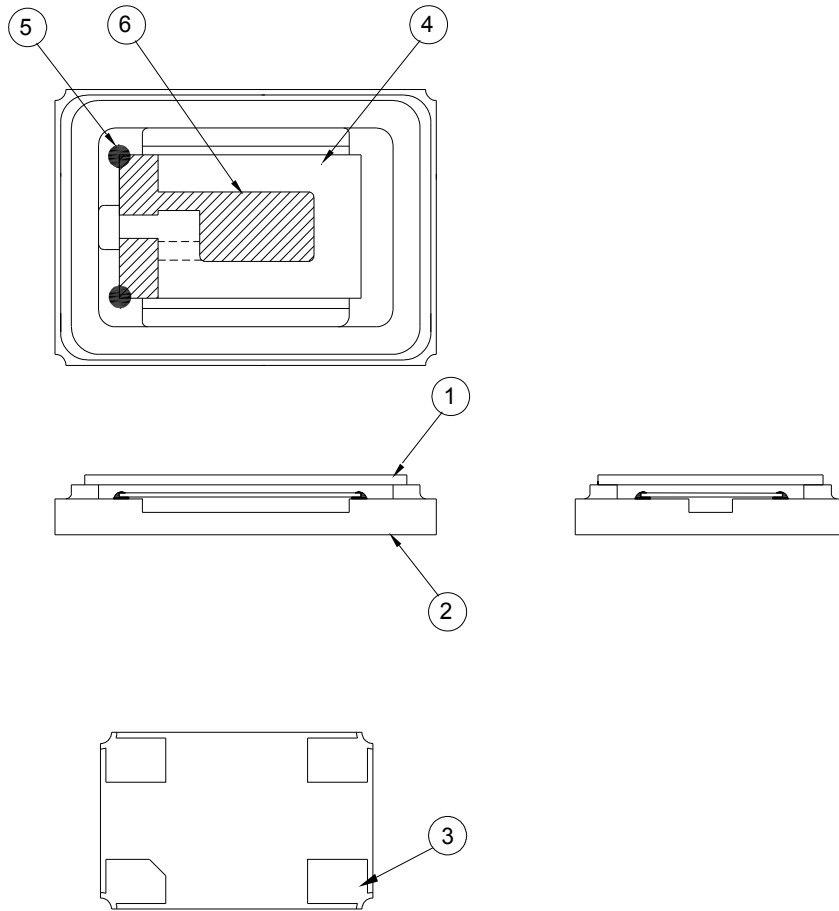
Solder melting point :  $220 \pm 10$  °C , 60 sec. Min.  
 Peak Temperature:  $260 \pm 5$  °C , 10 sec. Max.

**■ SUGGESTED MANUAL SOLDER CONDITION**

Temperature:  $350 \pm 10$  °C  
 Time: 3 sec.  
 Re-solder times: twice



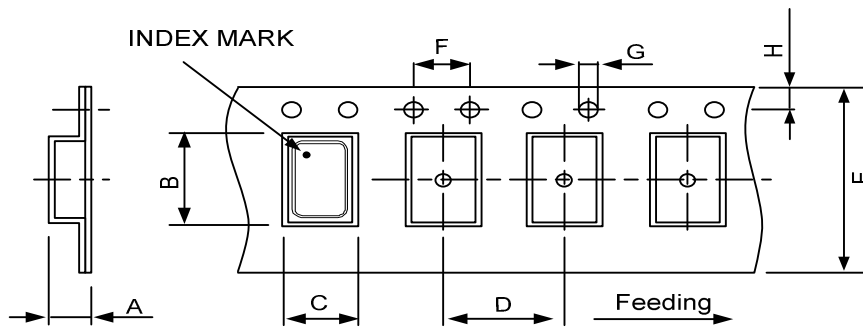
■ STRUCTURE ILLUSTRATION



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

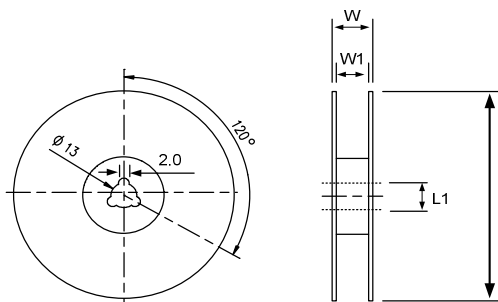
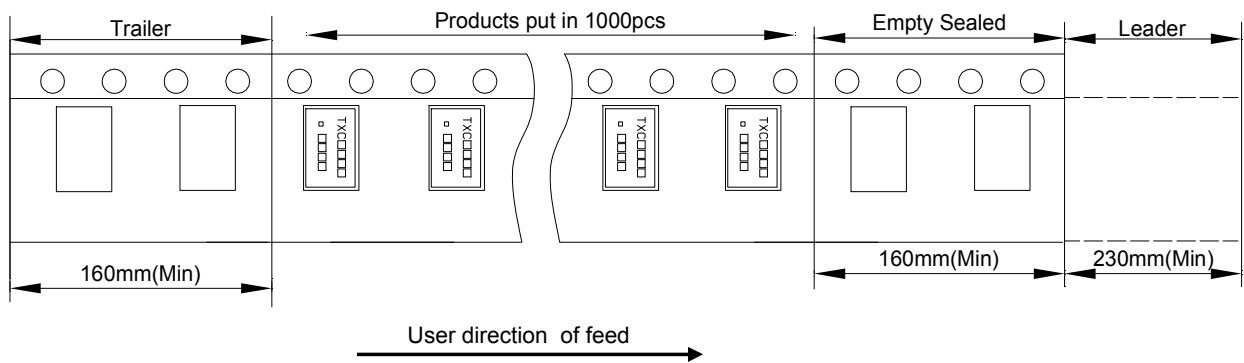


■ **EMBOSS CARRIER TAPE & REEL**



DIMENSIONS	A	B	C	D	E	F	G	H	
	1.65±0.10	5.40±0.10	3.50±0.10	8.00±0.10	12.00±0.30	4.00±0.10	1.55±0.10	1.75±0.10	(UNIT : mm)

REMARK :



DIMENSIONS	L	L1	W	W1	
	180±1.00	13±0.50	16.5±0.20	12±0.10	(UNIT : mm)

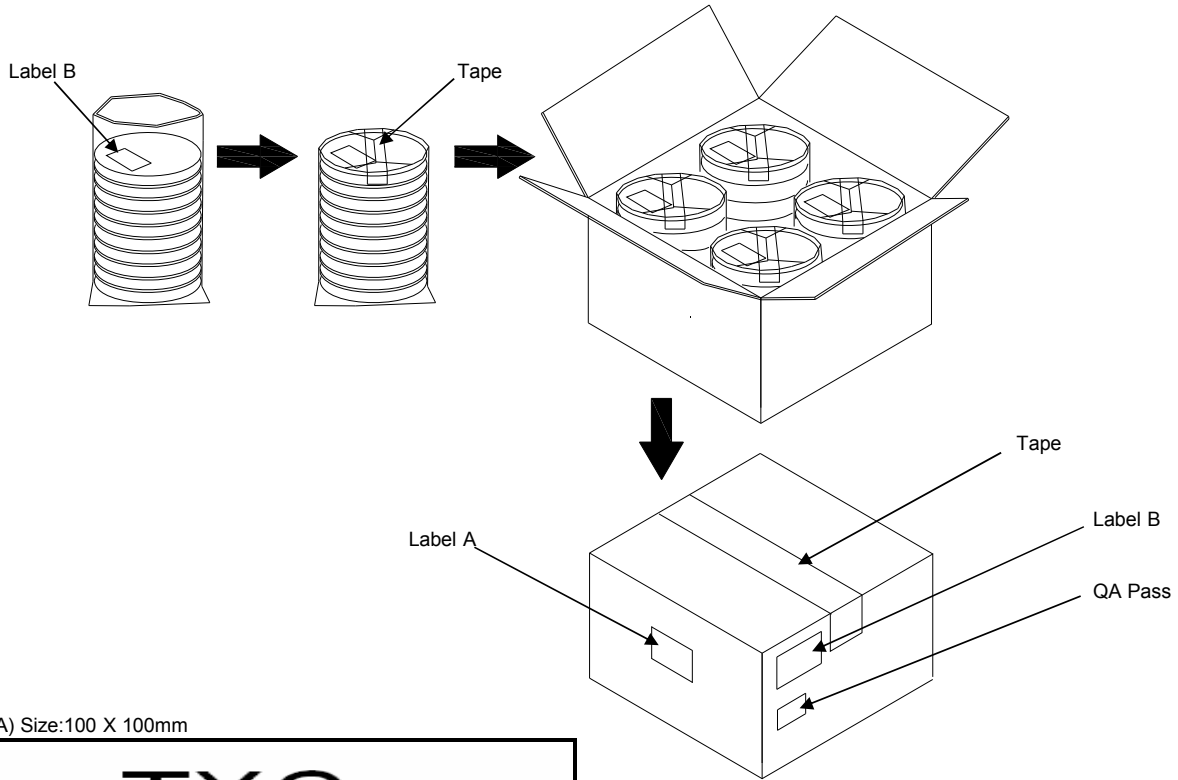
**PACKING**

Reel Quantity :

- 1. Reel X 5 (5 Reels x 1)
- 2. Reel X 10 (10 Reels x 1)
- 3. Reel X 20 (10 Reels x 2)
- 4. Reel X 40 (10 Reels x 4)

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:	00096815
Po No:	21106326- 24- 1
Part No:	□□□□□□□□
Qty:	40000 PCS
C/No:	157- 44

(Label B) Size:80 X 40mm

TXC CORPORATION		QA PASS
DATE CODE:	 □□□□□□□□	QTY: 1000
LOT NO:	 □□□□□□	 RoHS HF
PART NO:	 □□□□□□	
FREQ:	□□□□□□□□□□	

**[STORAGE]**

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

**RELIABILITY SPECIFICATIONS**

1. Mechanical Endurance

No.	Test Item	Test Methods	Test Criteria
1.1	Drop Test	75 cm height, 3 times on concrete floor .	A · C
1.2	Mechanical Shock	Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 0.5 ms duration time	A · C
1.3	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
1.4	Solderability	Temperature                 245 °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
2.1	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
2.2	High Temp. Storage	+ 125 °C ± 3 °C for 500 ± 12 Hrs	B · C · D
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 500 ± 12 Hrs	B · C · D
2.4	Thermal Shock	Total 100 cycles of the following temperature cycle 	B · C · D
2.5	High Temp & Humidity	85°C ± 3°C , RH 85% , 500 Hrs	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.

**Measurement condition**

Electrical characteristics measured by S&A250B or equivalent.