

# 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

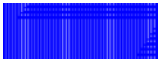
CUSTOMER	:	_____
PRODUCT TYPE	:	SMD SEAM SEALING X'TAL 3.2x2.5
NOMINAL FREQ.	:	13.000000MHz
TXC P/N	:	AM13000001
REVISION	:	A1
CUSTOMER P/N	:	_____
PM / SALES	:	_____
DATE	:	_____
CUSTOMER SIGNATURE & Date	:	_____
		_____

- (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.

Attachment: Product Specification Sheet

- 1
- 2
- 3
- 4
- 5

### RoHS Compliant



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## PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD SEAM SEALING X'TAL 3.2x2.5

NOMINAL FREQ. : 13.000000MHz

TXC P/N : AM13000001

REVISION : A1

PE/RD	QA	MFG
<i>EPK8 Fu</i>	<i>Chen</i>	<i>Chen</i>
<i>5/25/2011</i>	<i>6/10/11</i>	<i>6/17/2011</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

### RoHS Compliant



## ■ 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 HP E5100A or equivalent.

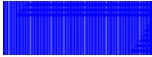
### Crystal cutting type

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

### Unit Weight:

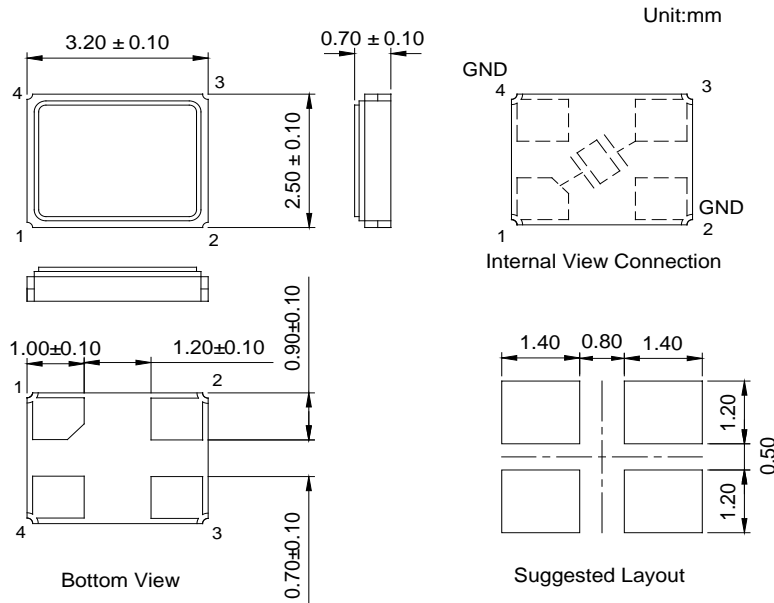
0.018±0.001 g/pcs

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL	13.000000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	10			pF	-
4	Frequency Tolerance	-	±10			ppm	at 25 °C ± 3 °C
5	Frequency Stability	-	±30			ppm	Over Operating Temp. Range (Reference 25°C)
6	Operating Temperature	-	-40	~	85	°C	-
7	Aging	-	±3			ppm	1st Year
8	Drive Level	DL	-	50	-	μW	-
9	Effective Resistance R <sub>r</sub>	R <sub>r</sub>	-	-	50	Ω	-
10	Insulation Resistance	-	500	-	-	MΩ	at DC 100V
11	Storage Temperature Range	-	-40	~	125	°C	-

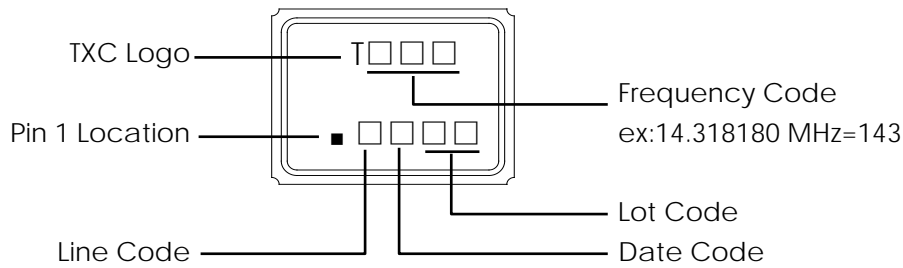


■ DIMENSIONS

(Unit:mm)



■ MARKING



Date Code:

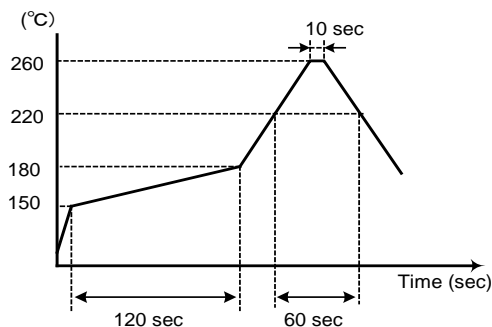
YEAR		MONTH													
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M
2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	2011	2015	2019	a	b	c	d	e	f	g	h	j	k	l	m
2008	2012	2016	2020	n	p	q	r	s	t	u	v	w	x	y	z

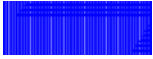
\*This date code will be cycled every four years

Production location:Taiwan

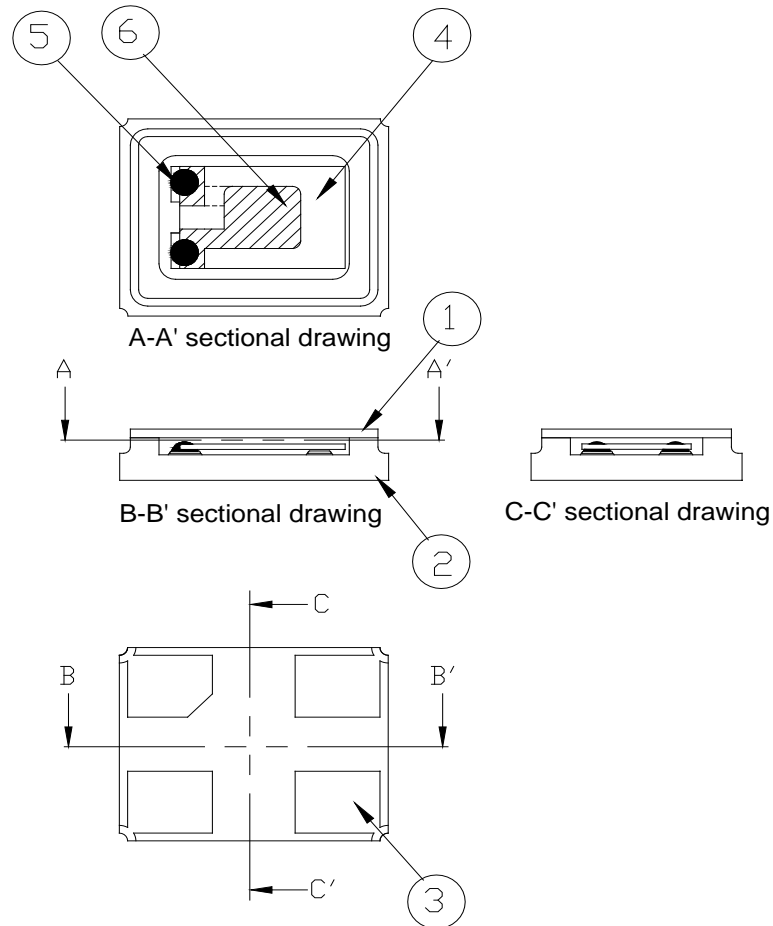
■ SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.  
Solder melting point :220 °C

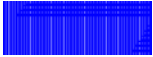




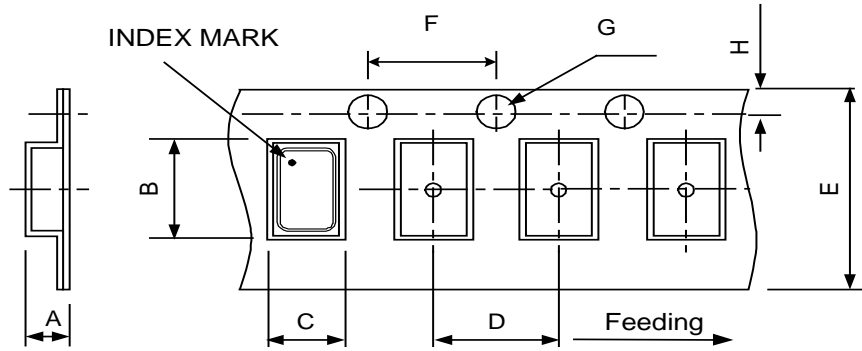
## ■ STRUCTURE ILLUSTRATION



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)+ Ag/Cu	Color black
3	PAD	Au	Tungsten metalize + Ni plating + Au plating
4	Crystal blank	SiO <sub>2</sub>	-
5	Conductive adhesive	Ag	Silicon resin
6	Electrode	Noble Metal	-

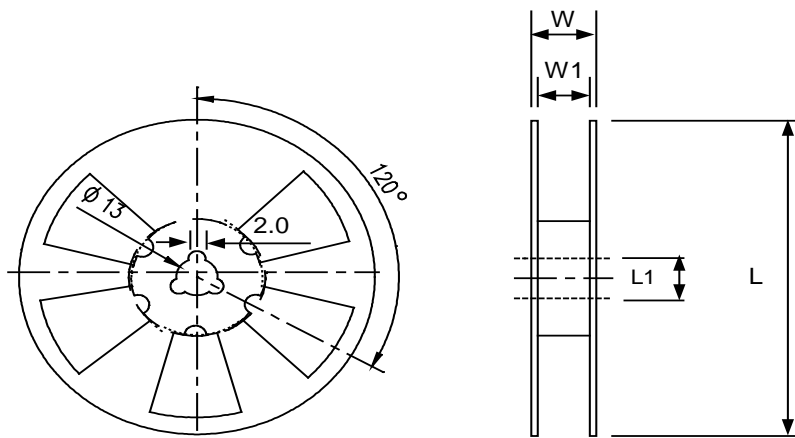
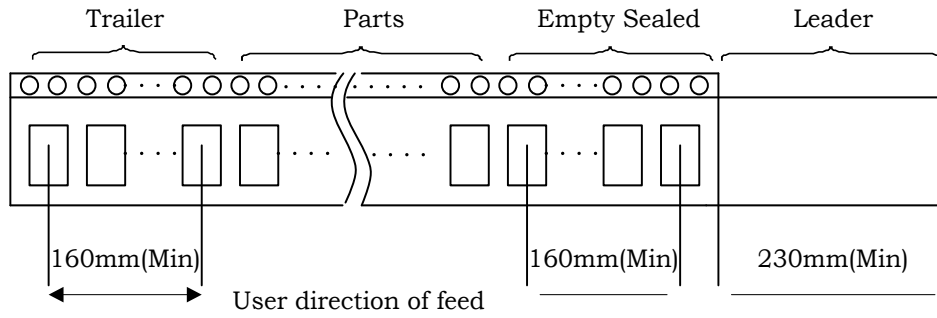


PACKING



DIMENSIONS	A	B	C	D	E	F	G	H	(UNIT : mm)
	1.65	3.4	2.7	4	8	4	1.5	1.75	

REMARK :



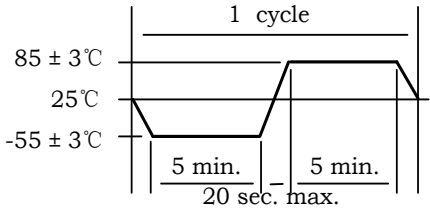
DIMENSIONS	L	L1	W	W1	pcs / Reel (UNIT : mm)
	178	13	11.5	8	Standard Reel Quantity is 3,000 pcs per reel

## ■ RELIABILITY SPECIFICATIONS

### 1. Mechanical Endurance

No.	Test Item	Test Methods	REF.DOC
1.1	Drop Test	120 cm height, 5 times on Stainless Plate .	JIS C 6701
1.2	Mechanical Shock	Device are shocked to half sine wave ( 3000 G ) three mutually perpendicular axes each 3 times. 0.3m sec. duration time	MIL-STD-202 Method 213
1.3	Vibration	Frequency range 10 ~ 2000 Hz~10 Hz Amplitude 1.52 mm/10 G Sweep time 20 minute Perpendicular axes each test time 4 Hrs (Total test time 12 Hrs)	MIL-STD-202 Method 204
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 )	J-STD-002
1.5	Terminal Strength	Mount on PCB board and shear strength 1.8 kg for 60 sec.	AEC-Q200-006
1.6	Board Flex	Duration Time: 60 sec, Deviation: 3mm	AEC-Q200-005

### 2.Environmental Endurance

No.	Test Item	Test Methods	REF. DOC
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.	MIL-STD 202 Method 210
2.2	High Temp. Storage	+ 85 °C ± 3 °C for 1000 Hrs.	MIL-STD-202 Method 108
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 1000 Hrs.	JIS C 6701
2.4	Thermal Shock	Total 1000 cycles of the following Thermal Shock 	MIL-STD-202 Method 107
2.5	Temperature Cycle	Total 1000 cycles of the following temperature cycle - 40°C ± 3 to 85°C ± 3 , Dwell time :15min.	JESD 22 Method JA-104
2.6	High Temp & Humidity	+ 85°C ± 3°C , RH 85% , 1000 Hrs.	MIL-STD-202 Method 103
2.7	Moisture Resistance	10 cycles ( +25°C~65°C , 80%~100% RH ) , 24 hrs/cycle	MIL-STD 202 Method 106
2.8	Operational Life	+ 85 °C ± 3 °C for 1000 Hrs.	MIL-STD-202 Method 108