



**TXC CORPORATION**

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# SPECIFICATION FOR APPROVAL

CN: 1306000567

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

PRODUCT TYPE : HC-49/S

NOMINAL FREQ. : 4.000000MHz

TXC P/N : AS04000003

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**



# PRODUCT SPECIFICATION SHEET

CN: 1306000567

PRODUCT TYPE : HC-49/S

NOMINAL FREQ. : 4.000000MHz

TXC P/N : AS04000003

REVISION : A1

PE/RD	QA	MFG
<i>Shih-Yung Pao</i>	<i>Samson Xiong</i>	<i>Jake Liu</i>
Shih-Yung Pao	Samson Xiong	Jake Liu
<i>25-Feb-13</i>	<i>25-Feb-13</i>	<i>25-Feb-13</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





## 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+/-1°C  
 Relative humidity : 40%~70%

Measure equipment

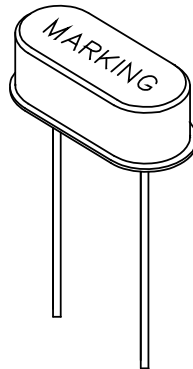
SAUNDERS 250A/250B CRYSTAL IMPEDANCE METER.

Crystal cutting type

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

**Unit Weight:**

0.58±0.050 g/pcs



please refer to marking code page

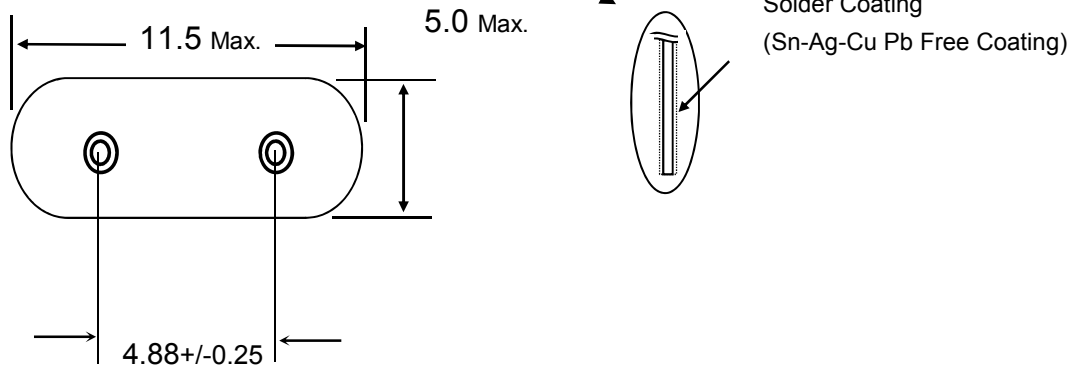
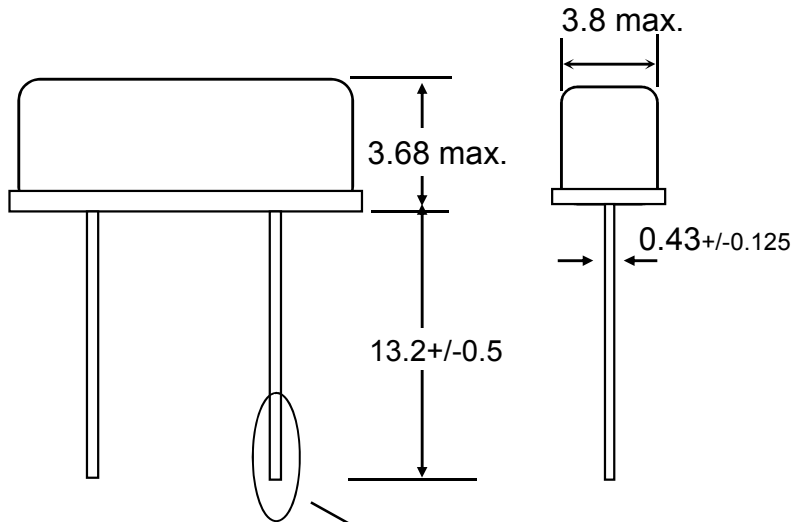
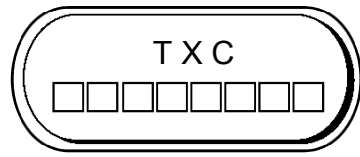
	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL	4.000000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	20			pF	-
4	Frequency Tolerance	-	±30			ppm	at 25 °C ± 3 °C
5	Frequency Stability	-	±30			ppm	Over Operating Temp. Range (Reference 25°C)
6	Operating Temperature	-	-40	~	85	°C	-
7	Aging	-	±5			ppm	1st Year
8	Drive Level	DL	-	100	-	uW	-
9	Effective Resistance Rr	Rr	-	-	100	Ω	-
10	Shunt Capacitance C0	C0	-	-	7	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 Road, Dagong Industrial City,  
 Ningbo Economics & Technical Development Zone, Ningbo Zhejiang China

**DIMENSIONS**

UNIT:mm



■ **SUGGESTED REFLOW PROFILE**

Solder melting point :220±10 °C, 60 sec. Min.

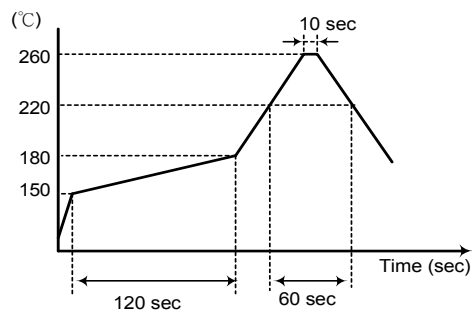
Peak Temperature: 260 ± 5 °C, 10 sec. Max.

■ **SUGGESTED MANUAL SOLDER CONDITION**

Temperature: 350 ± 10 °C

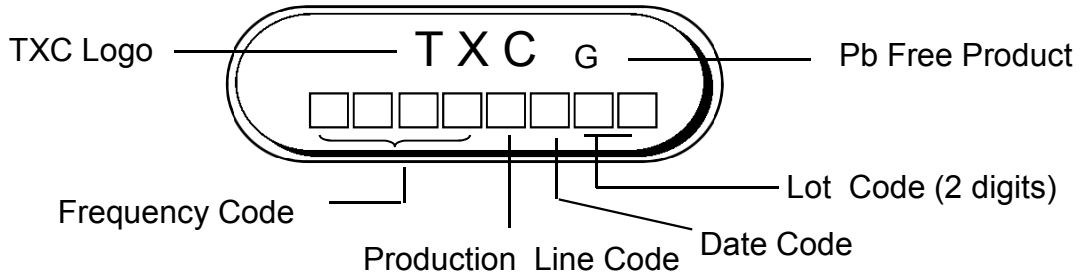
Time: 3 sec.

Re-solder times: twice



**MARKING**

**Marking For Pb Free Parts :**



**Date Code:**

YEAR					MONTH											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2001	2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M
2002	2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2003	2007	2011	2015	2019	a	b	c	d	e	f	g	h	j	k	l	m
2004	2008	2012	2016	2020	n	p	q	r	s	t	u	v	w	x	y	z

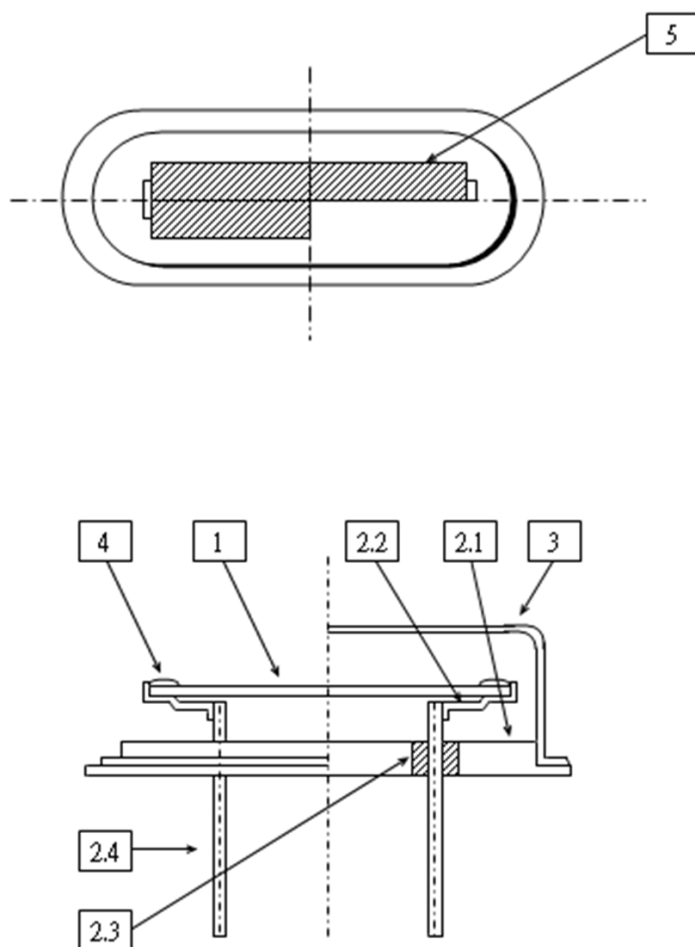
\*This date code will be cycled every four years.

**For example : Marking**



→  
Introduction : Pb Free Product  
49S 4.000 MHz  
Made in 2009/JAN. 01Lot

■ **STRUCTURE ILLUSTRATION**

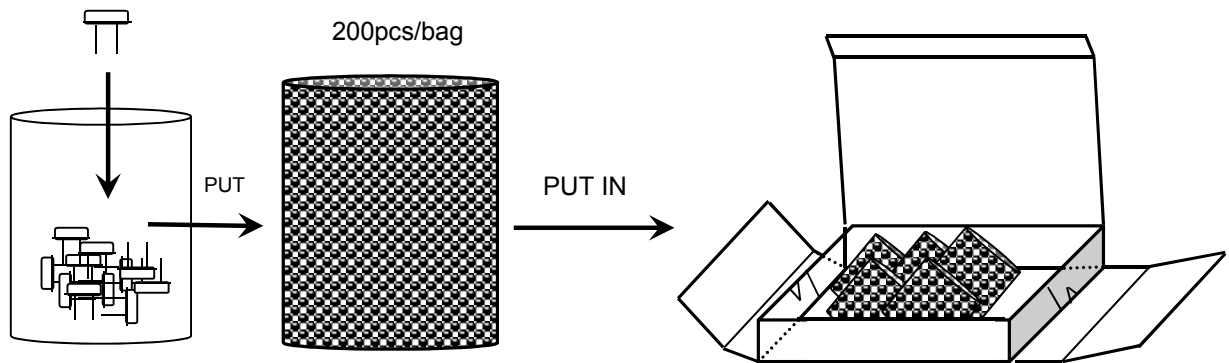


NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	CRYSTAL BLANK	QUARTZ(SiO <sub>2</sub> )	-
2	CRYSTAL BASE	HOLDER	SPCC(Fe) Ni Plated
		SUPPORTER	Nickel Silver(Cu/Zn/Ni) -
		GLASS	GLASS -
		LEAD	Kovar (Fe/Co/Ni) Ni Plated+Solder( Sn/Ag/Cu) Dipped
3	CRYSTAL COVER	Nickel Silver(Cu/Zn/Ni)	Ni Plated
4	CONDUCTIVE ADHESIVE	Resin + Ag	-
5	ELECTRODE	Noble Metal	-

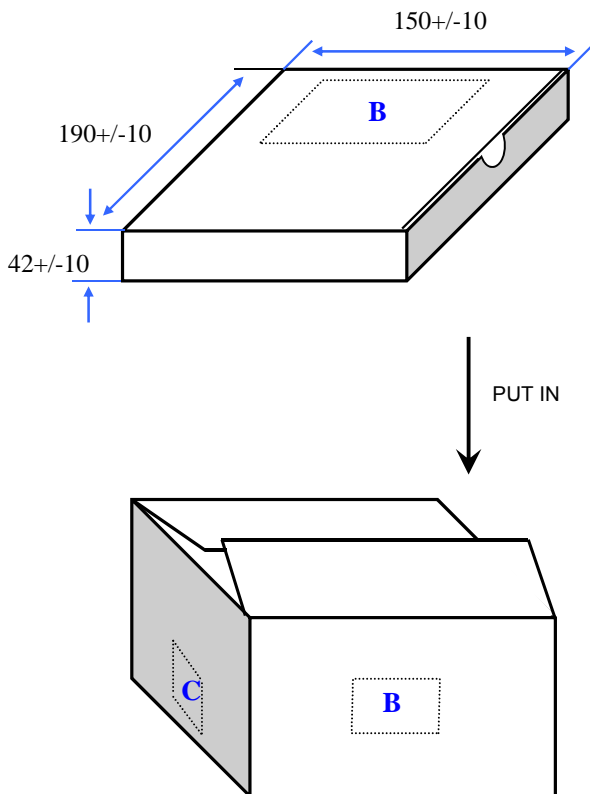


**Packing For Pb Free Parts :**

**1. INNER BOX : (Unit : mm)**

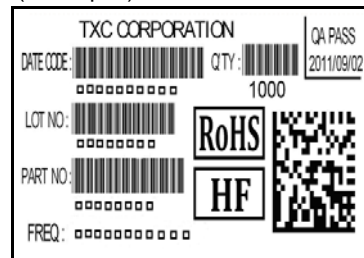


**2. LOGO STICKER(CARTON and INNER BOX) : (Unit : mm)**



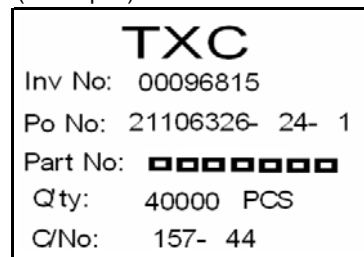
**Label B**

( Example )



**Label C**

( Example )



# Put in stuff between space.

**[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 (AEC-Q200 Compliant)**

1.Mechanical Endurance

No.	Test Item	Test Methods	Test Criteria
1.1	Mechanical Shock	1000 G , 0.5 m Sec. , 3 times for all 3 directions.	B C
1.2	Vibration	Frequency range 10 ~ 2000 Hz Acceleration 20G Sweep time 20 minute Pencicular axes each test time 4 hours (Total test time 12 hours)	B C
1.3	Terminal Strength	A: 10N force in axes of terminal, 10±1sec. B: A bend through 90°and return to normal position shall be defined as one bend , for a total of three ,the rate of bending shall be approximately 3sec per bend in each direction.	F
1.4	Board Flex	Duration time:60 Sec Minimum,Deviation:3mm	B C
1.5	Solderability	Temperature 245 °C +/- 5°C Immersing depth 0.5 mm minimum Immersion time 5 +/- 0.5 seconds Flux Rosin resin methyl alcohol solvent ( 1 : 4 )	E

2.Environmental Endurance

No.	Test Item	Test Methods	SPEC
2.1	Resistance To Soldering Heat	Test temperature 260 +/- 5 °C Test time 10 +/- 1 sec.	ACD
2.2	High Temp. Storage	+ 85°C ± 3 °C for 1000 ± 12 Hrs	ACD
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 Hrs	ACD
2.4	Temperature cycle	-40°C~85°C ,for 1000 cycles.  	ACD
2.5	Operational Life	1000 hrs @ 85± 3°C. Rated VDD applied with 1 MΩ.	ACD
2.6	High Temp & Humidity	85°C ± 3°C , RH 85% , 1000 Hrs	ACD

**HANDING CAUTIONS**

Prohibit the use of ultrasonic welding in Assemblying

**RELIABILITY SPECIFICATIONS**

Specifications	
A	Frequency change: Within $\pm 20$ 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 24 hour, and measured.
E	Minimum 95% of immersed terminal shall be covered with new uniform solder.
F	No damage on specimen

**Measurement condition**

Measurements are carried out with Network-analyzer( S&A 250B or equivalent).

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

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*Click to view products by [TXC Corporation](#) manufacturer:*

Other Similar products are found below :

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[FL2000085](#) [9B-15.360MBBK-B](#) [9C-7.680MBBK-T](#) [ASH7K-32.768KHZ](#) [AT-41.600MAGQ-T](#) [BTD1062E05A-513](#) [LFXTAL066198Cutt](#)  
[9C-14.31818MBBK-T](#) [FA-238 50.0000MB30X-K3](#) [FC-12M 32.7680KA-AC3](#) [SSPT7F-9PF20-R](#) [FX325BS-38.88EEM1201](#)  
[LFXTAL065253Cutt](#) [LFXTAL066431Cutt](#) [XT9S20ANA14M7456](#) [XT9SNLANA16M](#) [646G-24-2](#) [7A-24.576MBBK-T](#) [7B-30.000MBBK-T](#)  
[WX26-32.768K-6PF](#) [9B-14.31818MBBK-B](#) [CD1AM](#) [7B-25.000MAAE-T](#) [7A-14.31818MBBK-T](#) [6504-202-1501](#) [6526-202-1501](#) [FA-118T](#)  
[27.1200MB50P-K0](#) [FC-135R 32.7680KA-A3](#) [ABM12-104-37.400MHZT](#) [ABLS-10.000MHZ-D3W-T](#) [BTJ112E01E-513](#) [BTJ722K01C-7067](#)  
[BTL-20-513](#) [TSX-3225 24.0000MF15X-AC](#) [TSX-3225 16.0000MF18X-AC](#) [BTJ120E02C](#) [BTL-12-513](#) [7A-10.000MBBK-T](#) [7A-](#)  
[11.0592MBBK-T](#) [ABM12-103-24.000MHZT](#) [CS325S25000000ABJT](#) [ABM3B-25.000MHZ-B2-X-T](#) [FC-135 32.7680KA-A5](#) [FX0800015](#)