



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

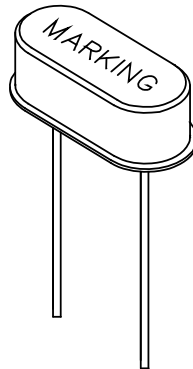
SAUNDERS 250A/250B CRYSTAL IMPEDANCE METER.

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

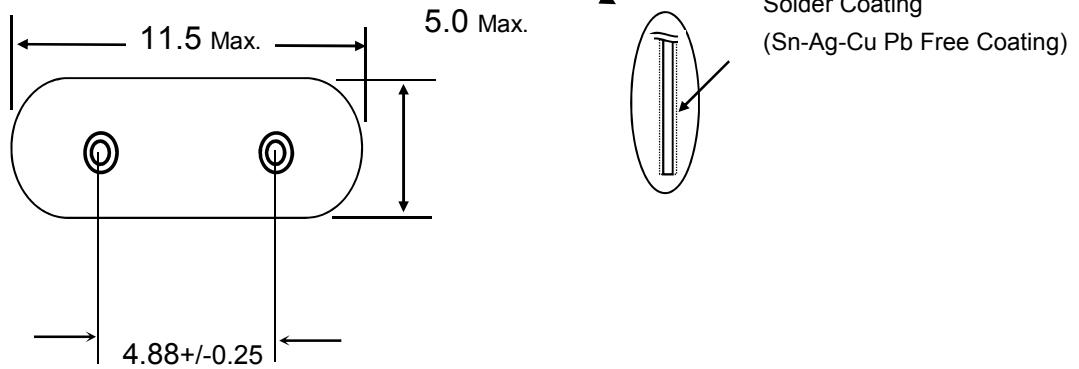
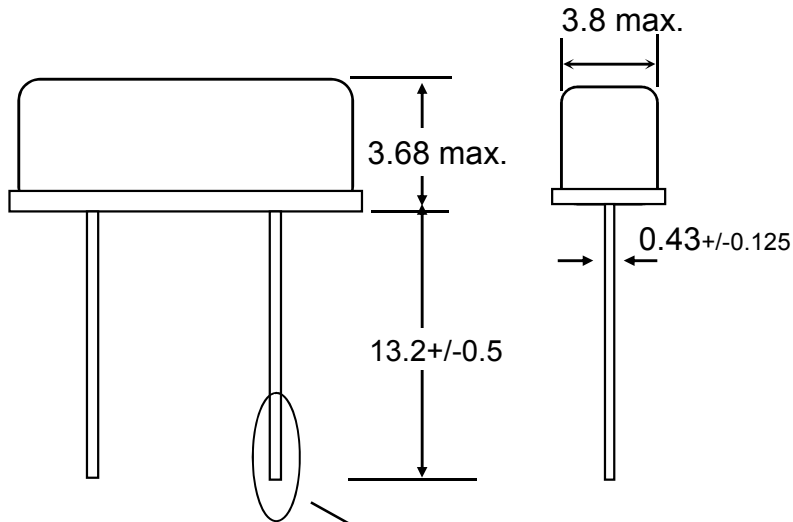
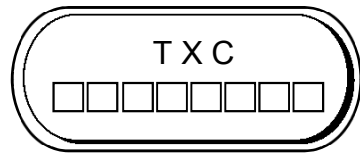
	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL	4.000000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	20			pF	-
4	Frequency Tolerance	-	±30			ppm	at 25 °C ± 3 °C
5	Frequency Stability	-	±30			ppm	Over Operating Temp. Range (Reference 25°C)
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.

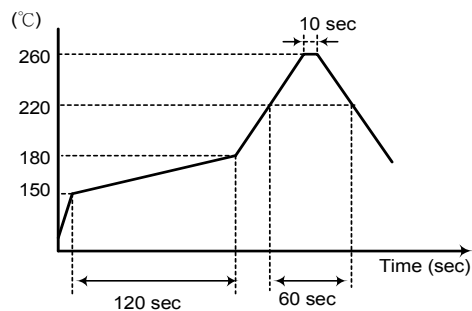
Peak Temperature: 260 ± 5 °C, 10 sec. Max.

■ **SUGGESTED MANUAL SOLDER CONDITION**

Temperature: 350 ± 10 °C

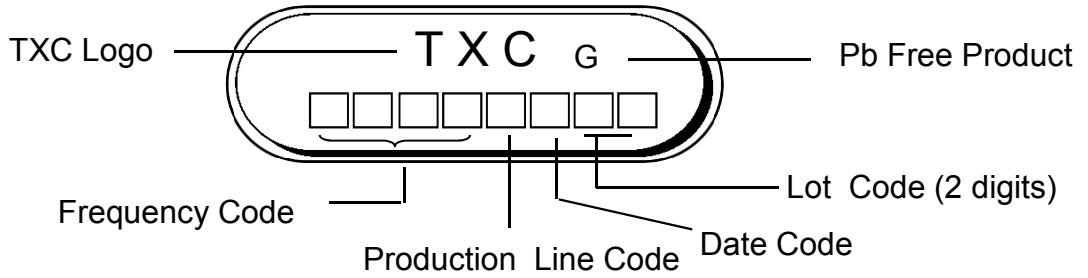
Time: 3 sec.

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

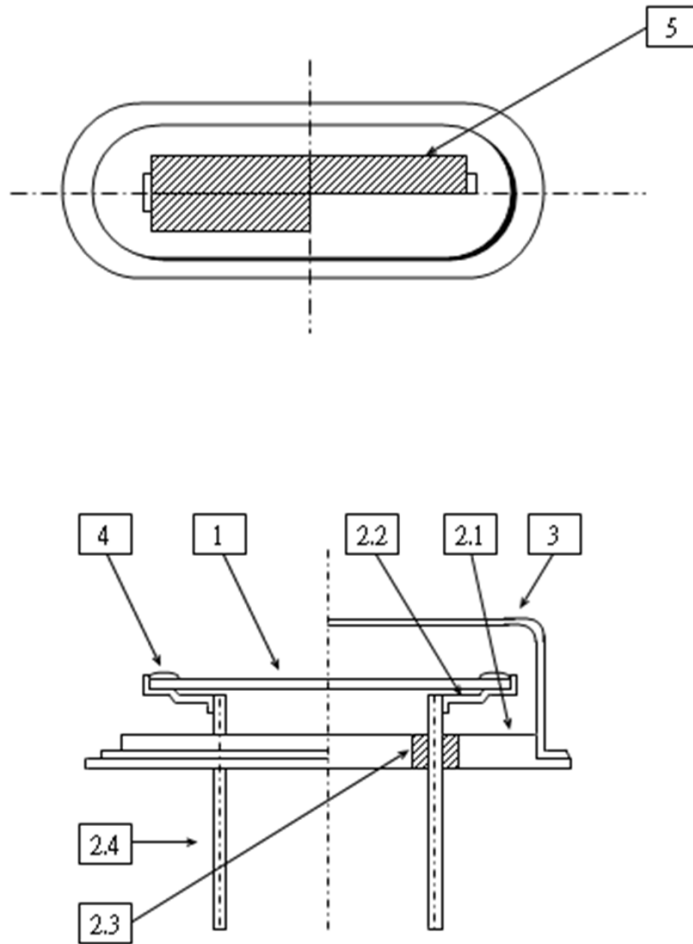
*This date code will be cycled every four years.

For example : Marking



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

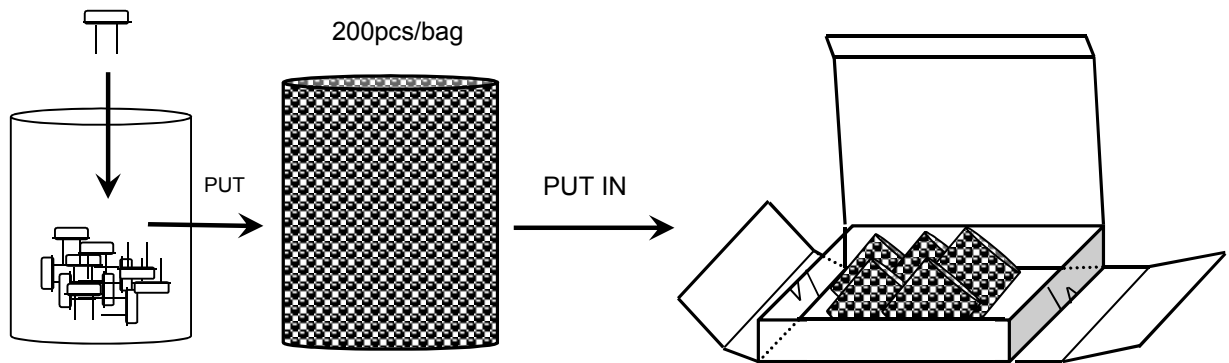
■ **STRUCTURE ILLUSTRATION**



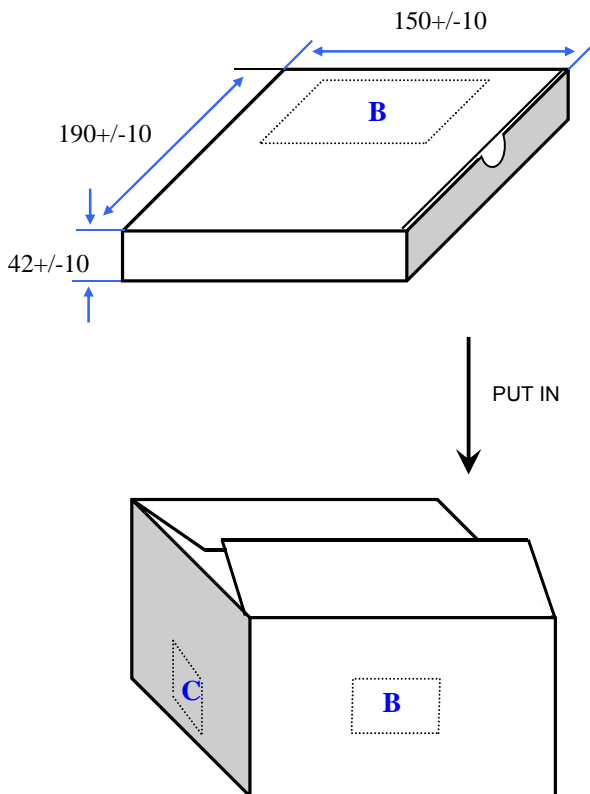
NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	CRYSTAL BLANK	QUARTZ(SiO ₂)	-
2	CRYSTAL BASE	HOLDER	SPCC(Fe) Ni Plated
		SUPPORTER	Nickel Silver(Cu/Zn/Ni) -
		GLASS	GLASS -
		LEAD	Kovar (Fe/Co/Ni) Ni Plated+Solder(Sn/Ag/Cu) Dipped
3	CRYSTAL COVER	Nickel Silver(Cu/Zn/Ni)	Ni Plated
4	CONDUCTIVE ADHESIVE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

Packing For Pb Free Parts :

1. INNER BOX : (Unit : mm)

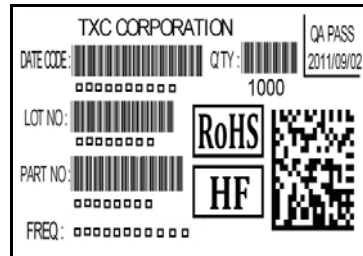


2. LOGO STICKER(CARTON and INNER BOX) : (Unit : mm)



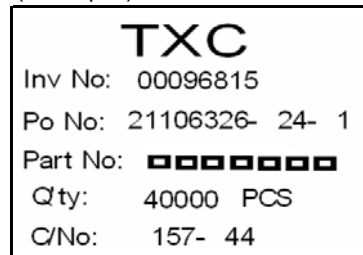
Label B

(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 ± 20 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

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