

## SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD GLASS SEALING X'TAL 3.2\*2.5

NOMINAL FREQ. : 28.636360MHz

TXC P/N : AV28600001

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**

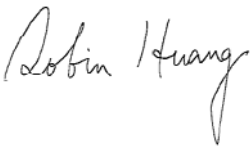
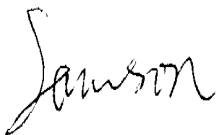

# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD GLASS SEALING X'TAL 3.2\*2.5

NOMINAL FREQ. : 28.636360MHZ

TXC P/N : AV28600001

REVISION : A1

PE/RD	QA	MFG
		
6-Dec-11	6-Dec-11	6-Dec-11

**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

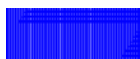
**MSL:Level 1**  
**RoHS Compliant**





## **Spec Sheet Contents**

No.	Content	Page
1	ELECTRICAL SPECIFICATIONS	P.3
2	FACTORY LOCATION	P.3
3	DIMENSIONS	P.4
4	MARKING	P.4
5	SUGGESTED REFLOW PROFILE& MANUAL SOLDER CONDITION	P.4
6	STRUCTURE ILLUSTRATION	P.5
7	EMBOSS CARRIER TAPE & REEL	P.6
8	PACKING	P.7
9	RELIABILITY SPECIFICATIONS	P.8~9

**ELECTRICAL SPECIFICATIONS****Standard atmospheric conditions**

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

Ambient temperature :  $25\pm 5^{\circ}\text{C}$   
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).

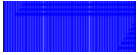
**Unit Weight:**

0.018 $\pm$ 0.001 g/pcs

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYP	MAX	UNITS	
1	Nominal Frequency	FL	28.636360			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	8			pF	-
4	Frequency Tolerance	-	$\pm 30$			ppm	at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
5	Frequency Stability	-	$\pm 50$			ppm	Over Operating Temp. Range (Reference $25^{\circ}\text{C}$ )
6	Operating Temperature	-	-40	~	85	$^{\circ}\text{C}$	-
7	Aging	-	$\pm 3$			ppm	1st Year
8	Drive Level	DL	-	10	100	uW	-
9	Series Resonant Resistance	Rr	-	-	60	$\Omega$	-
10	Shunt Capacitance	C0	-	-	-	pF	-
11	Insulation Resistance	-	500	-	-	M $\Omega$	at DC 100V
12	Storage Temperature Range	-	-40	~	85	$^{\circ}\text{C}$	-

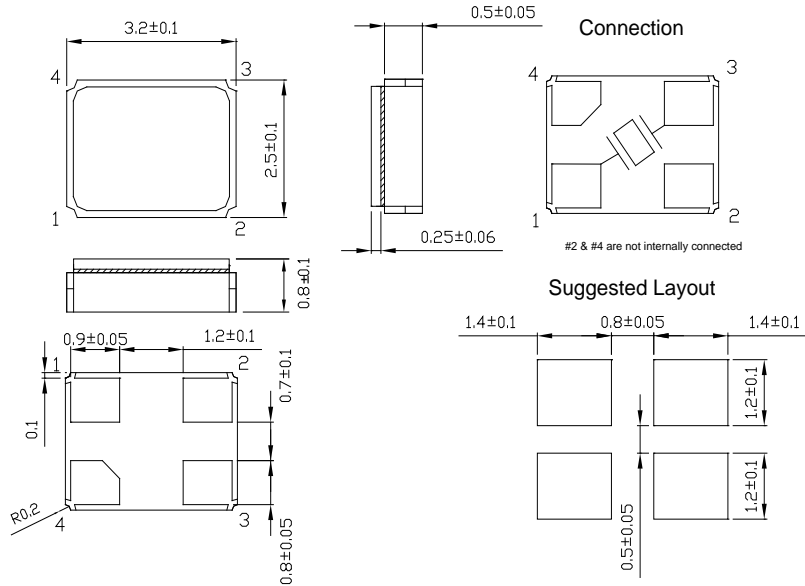
**FACTORY LOCATION**

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



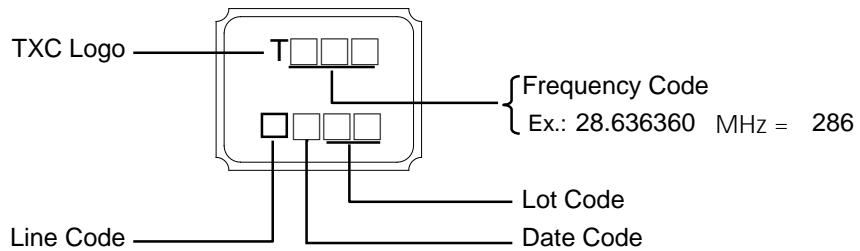
**DIMENSIONS**

(Unit:mm)



\*Coplanarity of solderable areas Camber 0.10 mm Max

**MARKING**



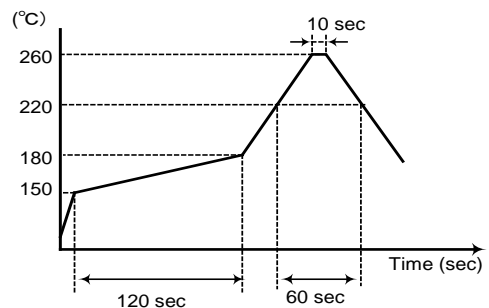
**Date Code:**

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±10 °C, 60 sec. Min.  
Peak Temperature: 260 ± 5 °C, 10 sec. Max.

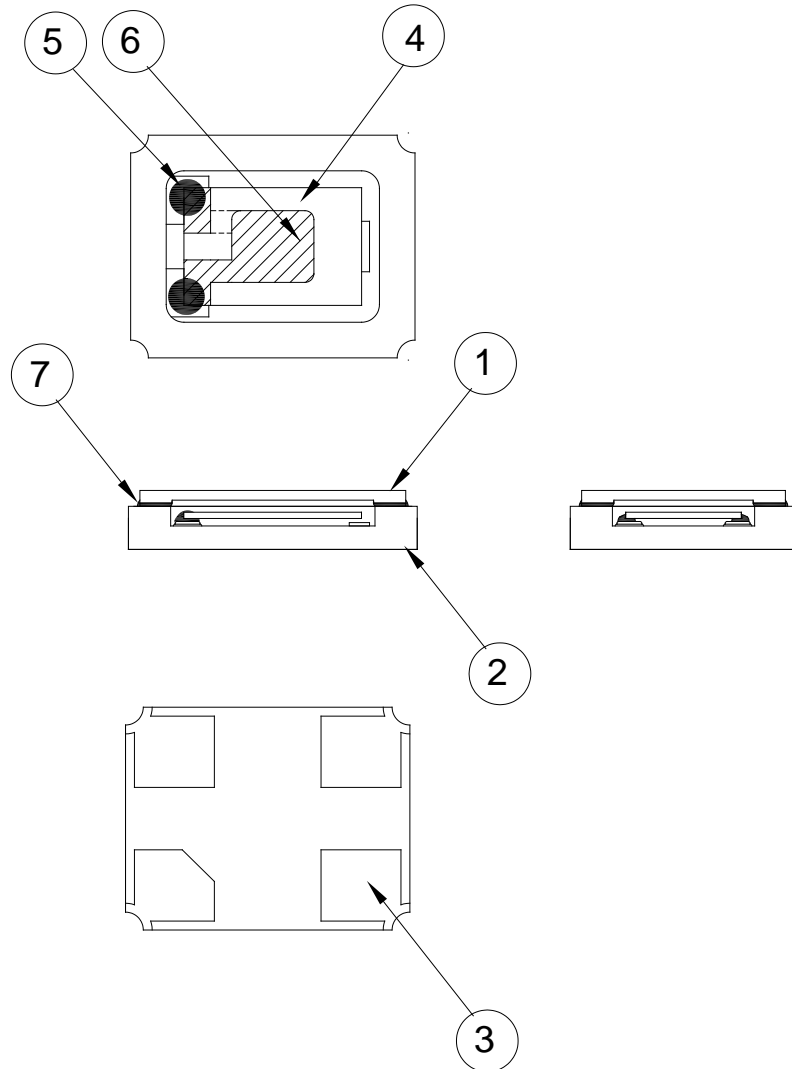


**SUGGESTED MANUAL SOLDER CONDITION**

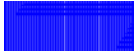
Temperature: 350 ± 10 °C  
Time: 3 sec.  
Re-solder times: twice



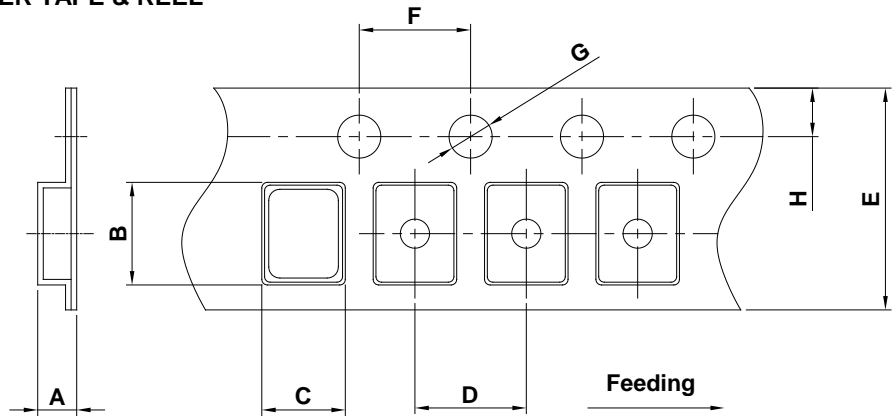
■ STRUCTURE ILLUSTRATION



NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Cap	Ceramic (Al <sub>2</sub> O <sub>3</sub> )	-
2	Package	Ceramic (Al <sub>2</sub> O <sub>3</sub> )	-
3	PAD	Au	Tungsten metalize + Ni plating + Au plating
4	Crystal blank	SiO <sub>2</sub>	-
5	Conductive adhesive	Resin+Ag	-
6	Electrode	Noble Metal	-
7	Sealing Glass	Glass(PbO)	-

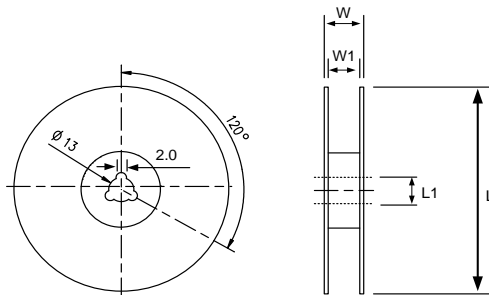
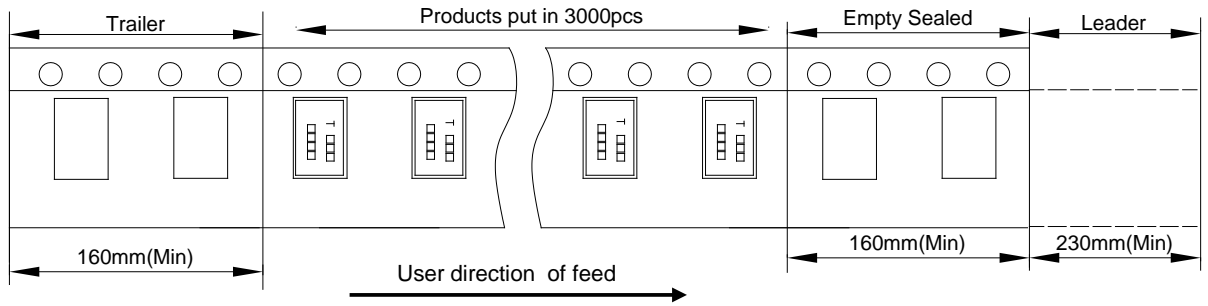


EMBOSS CARRIER TAPE & REEL



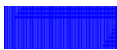
DIMENSIONS	A	B	C	D	E	F	G	H	(UNIT : mm)
	1.65±0.10	3.40±0.10	2.70±0.10	4.00±0.10	8.00±0.20	4.00±0.10	1.55±0.10	1.75±0.10	

REMARK :



DIMENSIONS	L	L1	W	W1	(UNIT : mm)
	178±1.00	13±0.50	11.5±0.20	8±0.10	





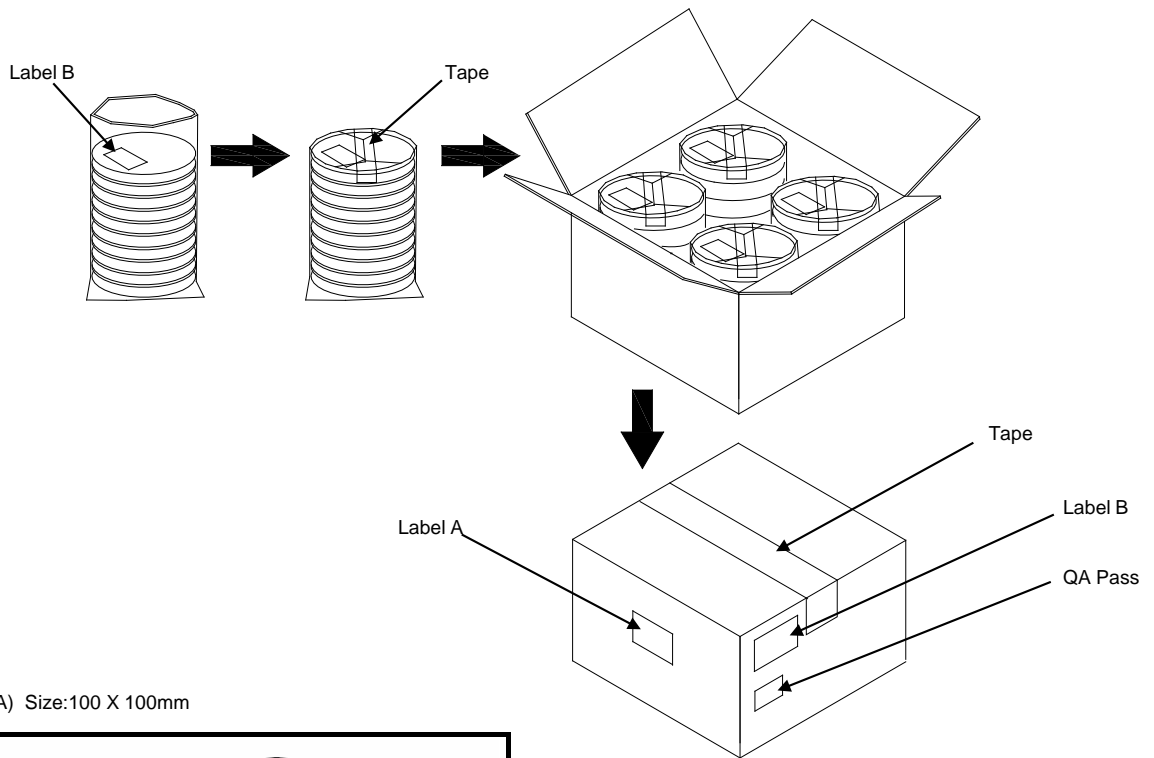
PACKING

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

TXC

Inv No: 00096815

Po No: 21106326- 24- 1

Part No:                     

Q'ty: 40000 PCS

C/No: 157- 44

(Label B) Size:80 X 40mm

TXC CORPORATION

DATE CODE: QTY: QA PASS 2011/09/02

LOT NO: RoHS

PART NO: HF

FREQ:

[STORAGE]

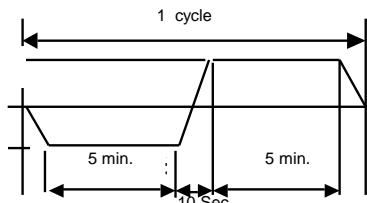
- 1.The storage time to be 1 year maximum.
- 2.Don't be caught in the rain.
- 3.The storage environment shall be 5°C ~40°C temperature and 30% ~ 75%RH humidity and free from the sun shine.
- 4.If customers have special requirements, we can paste labels according to it.

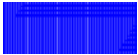
**RELIABILITY SPECIFICATIONS**

**1.Mechanical Endurance**

No.	Test Item	Test Methods	Test Criteria
1.1	Mechanical Shock	2000 G , 0.3 m Sec. ,3 times for all 3 directions.	B C
1.2	Vibration	Frequency range 10 ~ 2000 Hz Acceleration 5G Sweep time 20 minute Pendicular axes each test time 4 hours (Total test time 12 hours)	B C
1.3	Terminal Strength	17.7N force for 60sec +/-1sec.	F
1.4	Board Flex	Duration time:60 Sec Minimum,Deviation:3mm	B C

**2.Environmental Endurance**

No.	Test Item	Test Methods	SPEC
2.1	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
2.2	Resistance To Soldering Heat	Test temperature 260 +/- 5 °C Test time 10 +/- 1 sec. Emersion Rate 25 ± 6 mm/s Immersed of specimen 1.5mm	BCD
2.3	High Temp. Storage	+ 85°C ± 3 °C for 1000 ± 12 Hrs	BCD
2.4	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 Hrs	BCD
2.5	Thermal Shock	-40°C ~85°C ,for 1000 cycles.  	BCD
2.6	Operational Life	1000 hrs @ 85± 3°C. Rated VDD applied with 1 MΩ.	BCD
2.7	High Temp & Humidity	85°C ± 3°C , RH 85% , 1000 Hrs	BCD



**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 24 hour, and measured.
E	Minimum 95% of immersed terminal shall be covered with new uniform solder.
F	No damage on specimen

**Measurement condition**

Electrical characteristics measured by S&A250B or equivalent.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Crystals category](#):*

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

Other Similar products are found below :

[CS325S24000000ABJT](#) [718-13.2-1](#) [MC405 32.0000K-R3:PURE SN](#) [FC-135R 32.7680KF-A3](#) [7A-40.000MAAE-T](#) [7B-27.000MBBK-T](#)  
[FL2000085](#) [9B-15.360MBBK-B](#) [9C-7.680MBBK-T](#) [ASH7K-32.768KHZ](#) [AT-41.600MAGQ-T](#) [BTD1062E05A-513](#) [LFX TAL066198Cutt](#)  
[9C-14.31818MBBK-T](#) [FA-238 50.0000MB30X-K3](#) [FC-12M 32.7680KA-AC3](#) [SSPT7F-9PF20-R](#) [FX325BS-38.88EEM1201](#)  
[LFX TAL065253Cutt](#) [LFX TAL066431Cutt](#) [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](#)