**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 GLASS SEALING X'TAL 3.2*2.5
NOMINAL FREQ. : 12.288000MHz
TXC P/N : AV12200001
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**

**Pb used in sealing glass material is exempt from EU directive**

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# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD GLASS SEALING X'TAL 3.2*2.5
NOMINAL FREQ. : 12.288000MHz
TXC P/N : AV12200001
REVISION : A1

| PE/RD | QA | MFG |
|---|---|---|
| Wu Zhong Lin | Samson | Min-Chuang Chao |
| *7-Sep-11* | *7-Sep-11* | *7-Sep-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**

**Pb used in sealing glass material is exempt from EU directive**

| Rev | Revise page | Revise contents | Date | Ref.No. | Reviser |
|---|---|---|---|---|---|
| S1 | N/A | Initial released | 3-Jul-11 | N/A | Jun Wei |
| A1 | N/A | S Turn A | 7-Sep-11 | N/A | Xiaoyan Jiang |
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# 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±5℃
Relative humidity : 40%~70%

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

Ambient temperature : 25±3℃
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±0.001 g/pcs

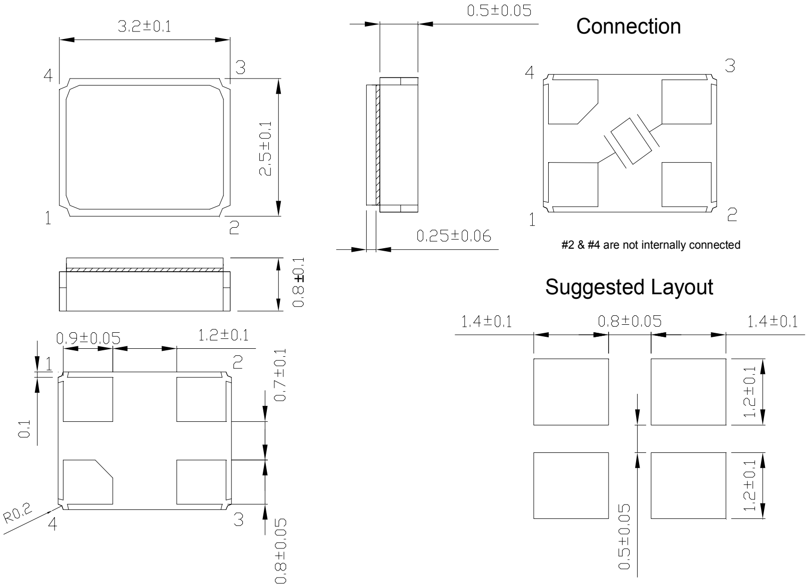
|  | Parameters | SYM. | Electrical Spec. |  |  |  | Notes |
|---|---|---|---|---|---|---|---|
|  |  |  | MIN | TYP | MAX | UNITS |  |
| 1 | Nominal Frequency | FL |  | 12.288000 |  | MHz | - |
| 2 | Oscillation Mode | - |  | Fundamental |  | - | - |
| 3 | Load Capacitance | CL |  | 18 |  | pF | - |
| 4 | Frequency Tolerance | - |  | ±20 |  | ppm | at 25 ℃ ± 3 ℃ |
| 5 | Frequency Stability | - |  | ±30 |  | ppm | Over Operating Temp. Range (Reference 25℃) |
| 6 | Operating Temperature | - | -40 | ~ | 85 | ℃ | - |
| 7 | Aging | - |  | ±3 |  | ppm | 1st Year |
| 8 | Drive Level | DL | - | 50 | - | uW | - |
| 9 | Series Resonant Resistance | Rr | - | - | 150 | Ω | - |
| 10 | Shunt Capacitance | C0 | - | - | - | pF | - |
| 11 | Insulation Resistance | - | 500 | - | - | MΩ | at DC 100V |
| 12 | Storage Temperature Range | - | -40 | ~ | 85 | ℃ | - |

## FACTORY LOCATION

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

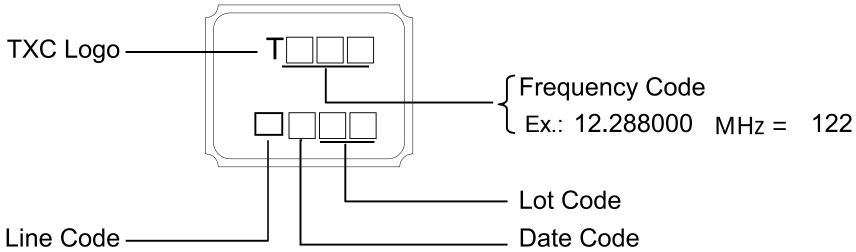
## DIMENSIONS

(Unit:mm)



*Coplanarity of solderable areas Camber 0.10 mm Max

## MARKING



**Date Code:**

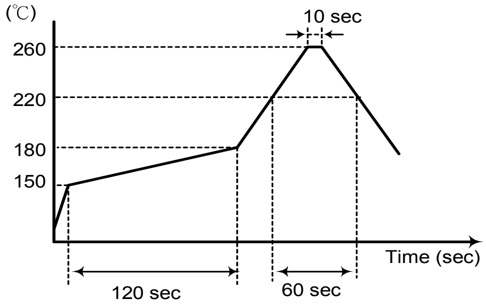
| MONTH<br>YEAR | | | | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005 | 2009 | 2013 | 2017 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2006 | 2010 | 2014 | 2018 | N | P | Q | R | S | T | U | V | 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 ℃, 60 sec. Min.

Peak Temperature: 260 ± 5 ℃, 10 sec. Max.



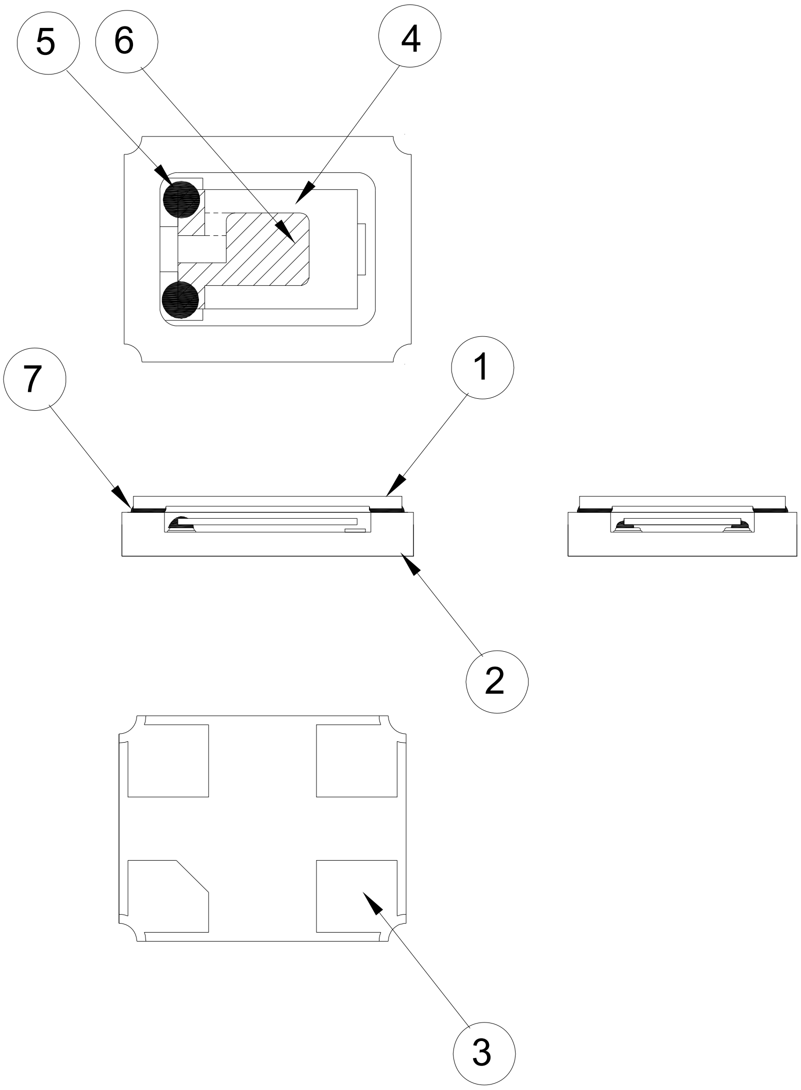
## SUGGESTED MANUAL SOLDER CONDITION

Temperature: 350 ± 10 ℃

Time: 3 sec.

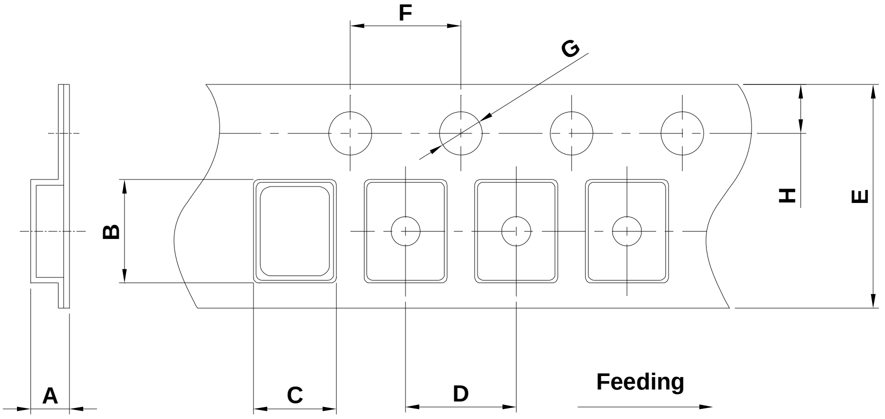
Re-solder times: twice

## ■ STRUCTURE ILLUSTRATION



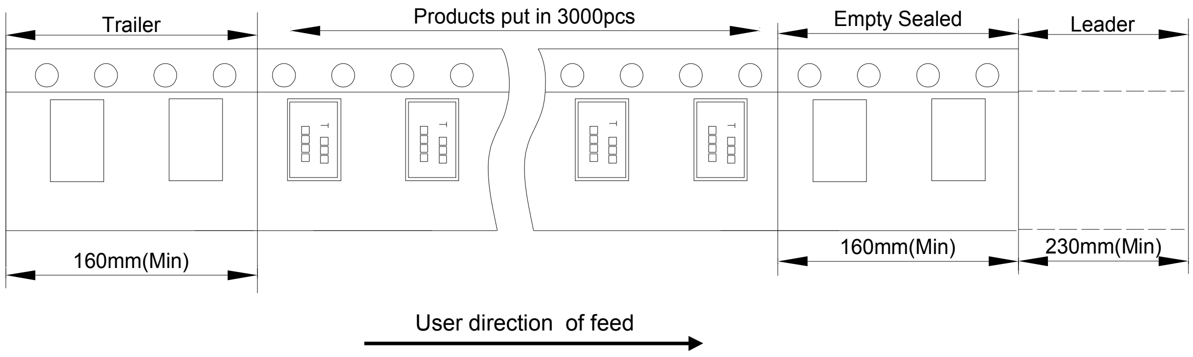
| NO | COMPONENTS | MATERIALS | FINISH/SPECIFICATIONS |
|---|---|---|---|
| 1 | Cap | Ceramic ($Al_2O_3$) | - |
| 2 | Package | Ceramic ($Al_2O_3$) | - |
| 3 | PAD | Au | Tungsten metalize<br>+ Ni plating<br>+ Au plating |
| 4 | Crystal blank | $SiO_2$ | - |
| 5 | Conductive adhesive | Resin+Ag | - |
| 6 | Electrode | Noble Metal | - |
| 7 | Sealing Glass | Glass(PbO) | - |

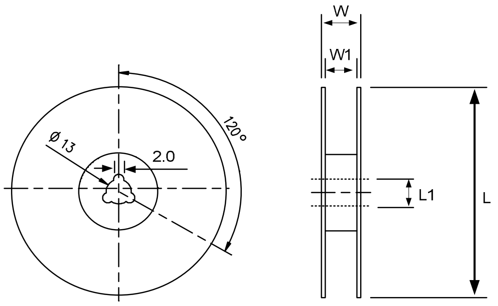
## ■ EMBOSS CARRIER TAPE & REEL



| DIMENSIONS | A | B | C | D | E | F | G | H | |
|---|---|---|---|---|---|---|---|---|---|
| | 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 | (UNIT：mm) |

REMARK :



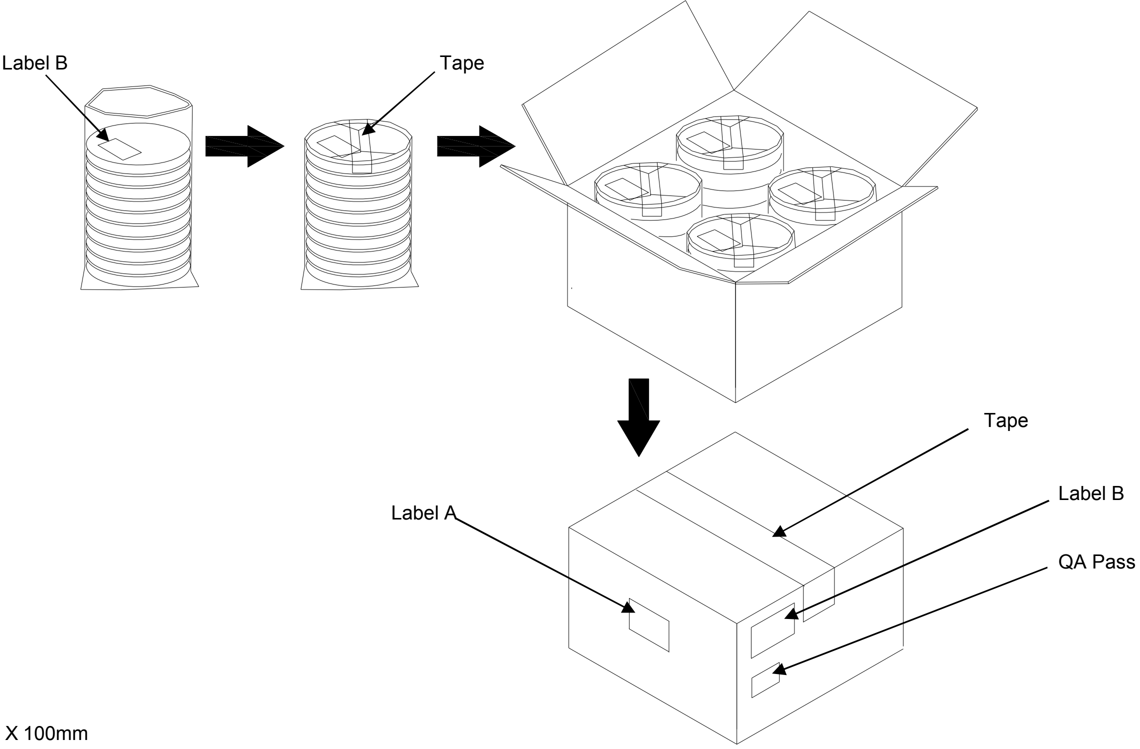


| DIMENSIONS | L | L1 | W | W1 | |
|---|---|---|---|---|---|
| | 178±1.00 | 13±0.50 | 11.5±0.20 | 8±0.10 | (UNIT：mm) |

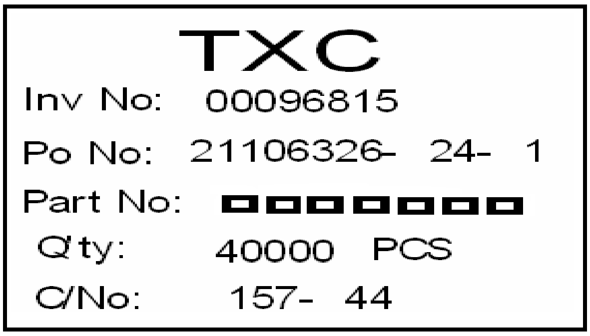
## ■ PACKING

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

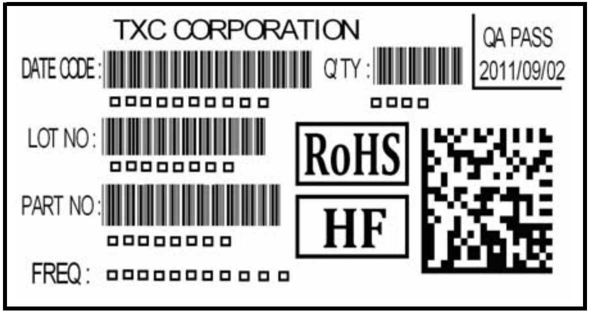
Po No: 21106326- 24- 1

Part No: □□□□□□□

Q'ty: 40000 PCS

C/No: 157- 44

(Lable B) Size:80 X 40mm



TXC CORPORATION

QA PASS
2011/09/02

DATE CODE: □□□□□□□□□□ Q'TY: □□□□

LOT NO: □□□□□□□□

PART NO: □□□□□□□□

FREQ: □□□□□□□□□□□□

RoHS

HF

**[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℃ ~40℃ temperature and 30% ~ 75%RH humidity and free from the sun shine.

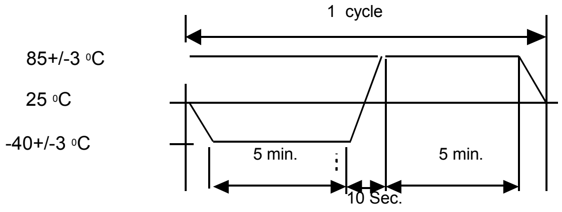
4.If customers have special requirements, we can paste labels according to it.

## ■ 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<br>Acceleration<br>Sweep time<br>Pendicular axes each test time | 10 ~ 2000 Hz<br>5G<br>20 minute<br>4 hours<br>(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<br>Immersing depth<br>Immersion time<br>Flux | 245 °C +/- 5°C<br>0.5 mm minimum<br>5 +/- 0.5 seconds<br>Rosin resin methyl alcohol solvent ( 1 : 4 ) | E |
| 2.2 | Resistance To Soldering Heat | Test temperature<br>Test time<br>Emersion Rate<br>Immersed of specimen | 260 +/- 5 °C<br>10 +/- 1 sec.<br>25 ± 6 mm/s<br>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℃~85℃,for 1000 cycles.<br> | | 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 ±5ppm or in customer's specification. |
| B | Frequency change: Within ±10ppm or in customer's specification. |
| C | Equivalent series resistance(E.S.R) change: Within ±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**

Electrical characteristics measured by S&A250B or equivalent.