**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 3.2*2.5 |
| NOMINAL FREQ. | : | 12.000000MHz |
| TXC P/N | : | 7M12000001 |
| 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

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3
4
5

**RoHS Compliant**

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# PRODUCT SPECIFICATION SHEET

| | | |
|---|---|---|
| PRODUCT TYPE | : | SMD SEAM SEALING X'TAL 3.2*2.5 |
| NOMINAL FREQ. | : | 12.000000MHz |
| TXC P/N | : | 7M12000001 |
| REVISION | : | A1 |

| PE/RD | QA | MFG |
|---|---|---|
| Scott Chen | Jason Hao | Jelly Teng |
| *14-Nov-07* | *21-Nov-07* | *19-Nov-07* |

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**

| Rev | Revise page | Revise contents | Date | Ref.No. | Reviser |
|---|---|---|---|---|---|
| A1 | N/A | Initial released | 7-Nov-07 | N/A | Yachuan Miao |
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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℃

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 HP E5100A or equivalent.

**Crystal cutting type**

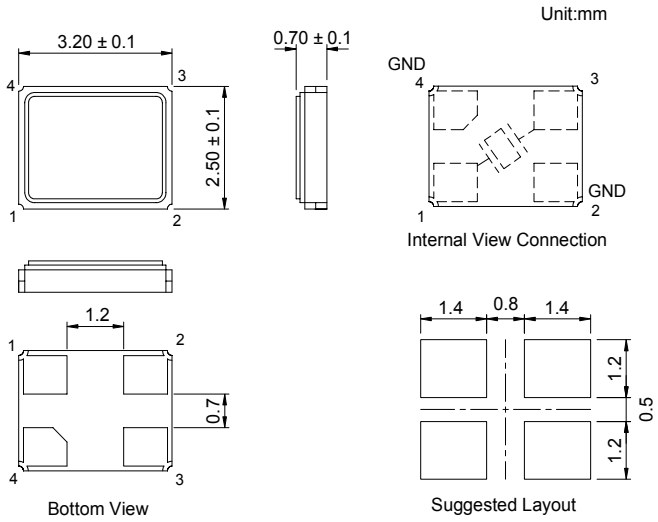
The crystal is using AT CUT (thickness shear mode).

**Unit Weight:**

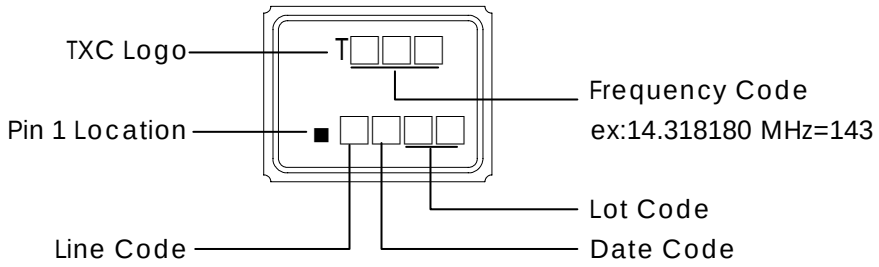
0.018±0.001 g/pcs

| | Parameters | SYM. | Electrical Spec. | | | | Notes |
|---|---|---|---|---|---|---|---|
| | | | MIN | TYPE | MAX | UNITS | |
| 1 | Nominal Frequency | FL | | 12.000000 | | MHz | - |
| 2 | Oscillation Mode | - | | Fundamental | | - | - |
| 3 | Load Capacitance | CL | | 18 | | pF | - |
| 4 | Frequency Tolerance | - | | ±30 | | ppm | at 25 ℃ ± 3 ℃ |
| 5 | Frequency Tolerance | - | | ±30 | | ppm | Over Operating Temp. Range (Reference 25℃) |
| 6 | Operating Temperature | - | -20 | ~ | 70 | ℃ | - |
| 7 | Aging | - | | ±5 | | ppm | 1st Year |
| 8 | Drive Level | DL | - | 100 | - | uW | - |
| 9 | Effective Resistance Rr | Rr | - | - | 100 | Ω | - |
| 10 | Shunt Capacitance C0 | C0 | - | - | 5 | pF | - |
| 11 | Insulation Resistance | - | 500 | - | - | MΩ | at DC 100V |
| 12 | Storage Temperature Range | - | -40 | ~ | 85 | ℃ | - |

## ■ DIMENSIONS




## ■ 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 |

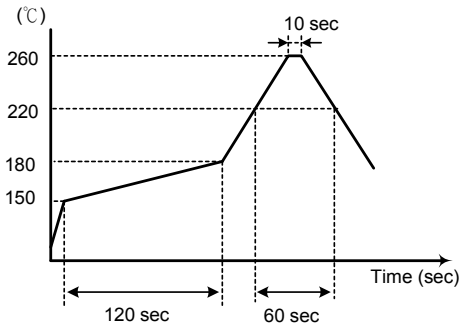
*This date code will be cycled every four years

**Production location:Taiwan**

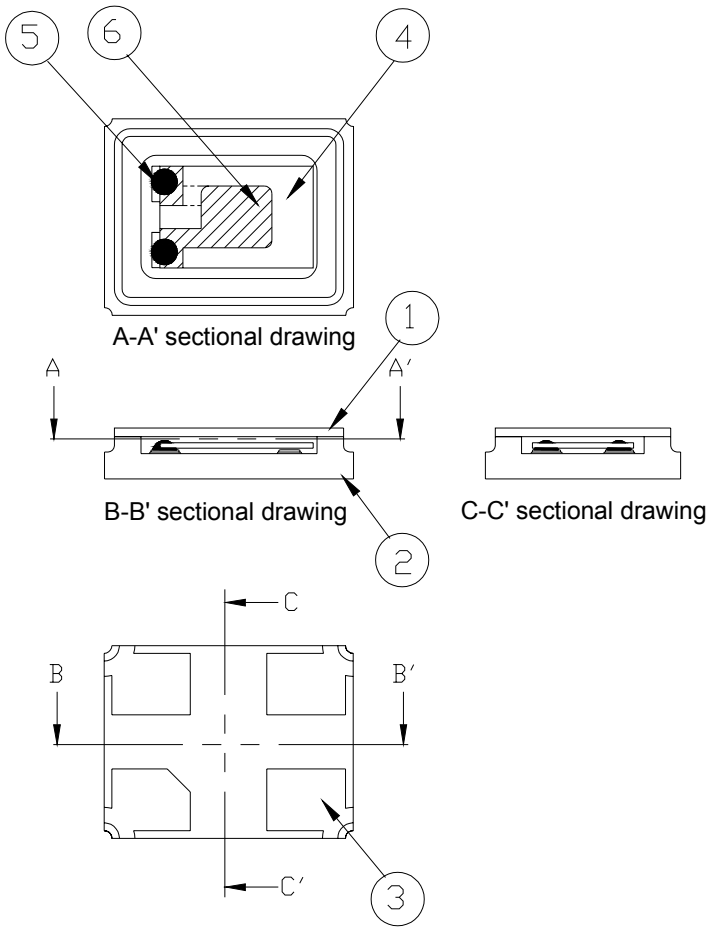
## ■ SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220 ℃

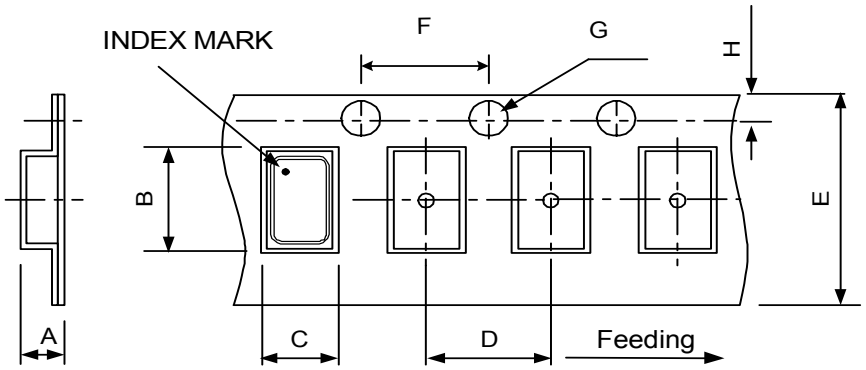


## STRUCTURE ILLUSTRATION



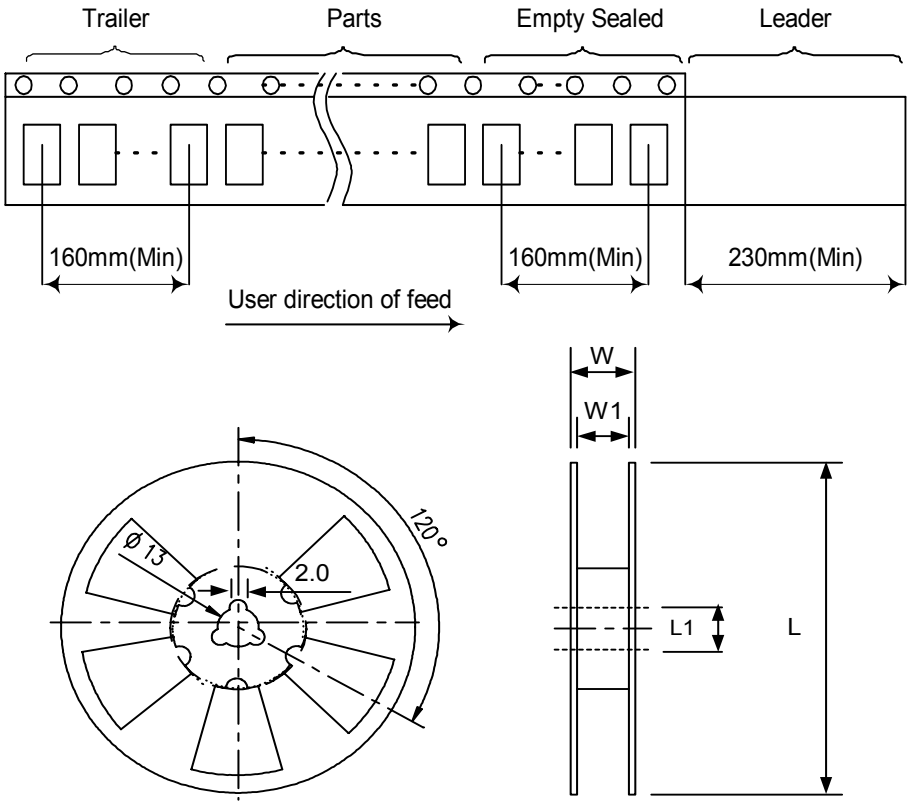

| NO | COMPONENTS | MATERIALS | QTY | FINISH/SPECIFICATIONS |
|---|---|---|---|---|
| 1 | Lid | Kovar (Fe/Co/Ni) | 1 | - |
| 2 | Base(Package) | Ceramic ($Al_2O_3$) + Kovar (Fe/Co/Ni)+ Ag/Cu | 1 | Color black |
| 3 | PAD | Au | 4 | Tungsten metalize<br>+ Ni plating<br>+ Au plating |
| 4 | Crystal blank | $SiO_2$ | 1 | - |
| 5 | Conductive adhesive | Ag | 4 | Silicon resin |
| 6 | Electrode | Noble Metal | 2 | - |

## ■ PACKING : (EIA-481-2)




| DIMENSIONS | A | B | C | D | E | F | G | H | |
|---|---|---|---|---|---|---|---|---|---|
| | 1.40 | 3.40 | 2.70 | 4.00 | 8.00 | 4.00 | 1.50 | 1.75 | (UNIT : mm) |

REMARK :



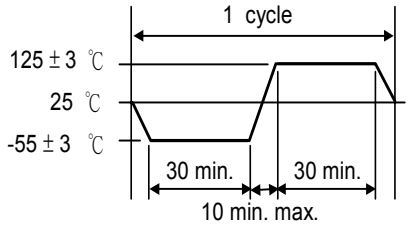

| DIMENSIONS | L | L1 | W | W1 | pcs / Reel (UNIT : mm) |
|---|---|---|---|---|---|
| | 178 | 13 | 11.5 | 8 | Standard Reel Quantity is 3,000 pcs per reel |

## ■ RELIABILITY SPECIFICATIONS

1.Mechanical Endurance

| No. | Test Item | Test Methods | | REF.DOC |
|---|---|---|---|---|
| 1.1 | Drop Test | 150 cm height, 3 times on concrete floor. | | JIS C6701 |
| 1.2 | Mechanical Shock | Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 0.5m sec. duration time | | MIL-STD-202F |
| 1.3 | Vibration | Frequency range<br>Amplitude<br>Sweep time<br>Perpendicular axes each test time | 10 ~ 2000 Hz<br>1.52 mm/20G<br>20 minute<br>4 hours<br>(Total test time 12 hours) | MIL-STD-883E |
| 1.4 | Gross Leak | Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / $cm^2$ | | MIL-STD-883E |
| 1.5 | Fine Leak | Helium Bombing 4.5 Kg/ $cm^2$ for 2 hr | | |
| 1.6 | Solder ability | Temperature<br>Immersing depth<br>Immersion time<br>Flux | 245 ℃ ± 5℃<br>0.5 mm minimum<br>5 ± 1 seconds<br>Rosin resin methyl alcohol solvent ( 1 : 4 ) | MIL-STD-883E |

2.Environmental Endurance

| No. | Test Item | Test Methods | | REF. DOC |
|---|---|---|---|---|
| 2.1 | Resistance To Soldering Heat | Pre-heat temperature<br>Pre-heat time<br>Test temperature<br>Test time | 125 ℃<br>60 ~ 120 sec.<br>260 ± 5 ℃<br>10 ± 1 sec. | MIL-STD-202F |
| 2.2 | High Temp. Storage | + 125 ℃ ± 3 ℃ for 500 ± 12 hours | | MIL-STD-883E |
| 2.3 | Low Temp. Storage | - 40 ℃ ± 3 ℃ for 500 ± 12 hours | | |
| 2.4 | Thermal Shock | Total 100 cycles of the following temperature cycle<br> | | MIL-STD-883E |
| 2.5 | High Temp & Humidity | 85℃ ± 3℃, RH 85% , 500Hrs | | JIS C5023 |
| 2.6 | Pressure Cooker Storage | 121 ± 3℃ , RH100% , 2 bar , 240Hrs | | JIS C6701 |