

# SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD Crystal 1.6×1.2

NOMINAL FREQ. : 32.000000MHz

TXC P/N : 8Q32000002

REVISION : A2

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**



**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

# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD Crystal 1.6×1.2

NOMINAL FREQ. : 32.000000MHz

TXC P/N : 8Q32000002

REVISION : A2

| PE/RD    | QA      | MFG       |
|----------|---------|-----------|
| 邱智宏      | 陳建宇     | 張明        |
| 6/8/2012 | 6/12/12 | 6/12/2012 |

**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**



## ■ ELECTRICAL SPECIFICATIONS

### Standard atmospheric conditions

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

Ambient temperature :  $25 \pm 10^{\circ}\text{C}$   
 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 HP E5100A or equivalent.

### Crystal cutting type

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

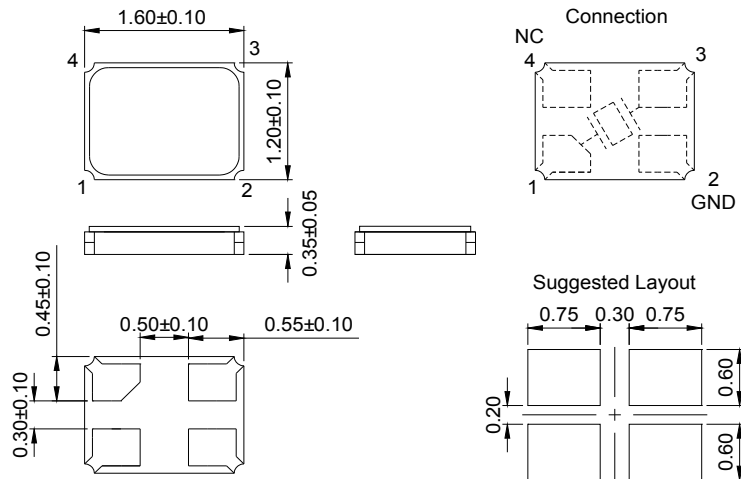
### Unit Weight:

0.0029 $\pm$ 0.0010 g/pcs

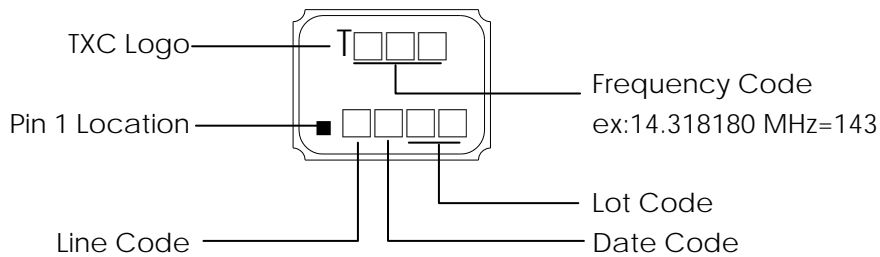
|    | Parameters                   | Symbol | Electrical Spec. |      |      |                    | Notes                                                        |
|----|------------------------------|--------|------------------|------|------|--------------------|--------------------------------------------------------------|
|    |                              |        | Min.             | Typ. | Max. | Units              |                                                              |
| 1  | Nominal Frequency            | FL     | 32.000000        |      |      | MHz                | -                                                            |
| 2  | Oscillation Mode             | -      | Fundamental      |      |      | -                  | -                                                            |
| 3  | Load Capacitance             | CL     | 8                |      |      | pF                 | -                                                            |
| 4  | Frequency Tolerance          | -      | $\pm 10$         |      |      | ppm                | at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$                |
| 5  | Frequency Stability          | -      | $\pm 10$         |      |      | ppm                | Over Operating Temp. Range (Reference $25^{\circ}\text{C}$ ) |
| 6  | Operating Temperature        | -      | -20              | ~    | 75   | $^{\circ}\text{C}$ | -                                                            |
| 7  | Aging                        | -      | $\pm 3$          |      |      | ppm                | 1st Year                                                     |
| 8  | Drive Level                  | DL     | 50               | ~    | 100  | $\mu\text{W}$      | -                                                            |
| 9  | Equivalent Series Resistance | ESR    | -                | -    | 50   | $\Omega$           | -                                                            |
| 10 | Insulation Resistance        | -      | 500              | -    | -    | M $\Omega$         | at DC 100V                                                   |
| 11 | Storage Temperature Range    | -      | -40              | ~    | 85   | $^{\circ}\text{C}$ | -                                                            |

**■ DIMENSIONS**

(Unit:mm)



**■ 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 |

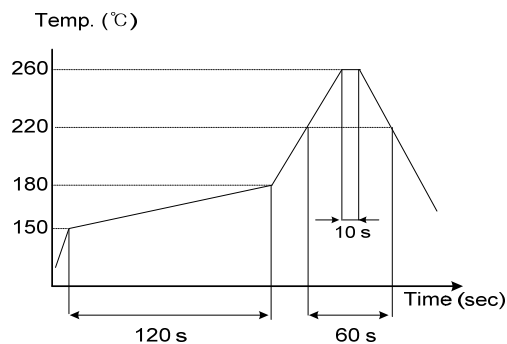
\*This date code will be cycled every four years

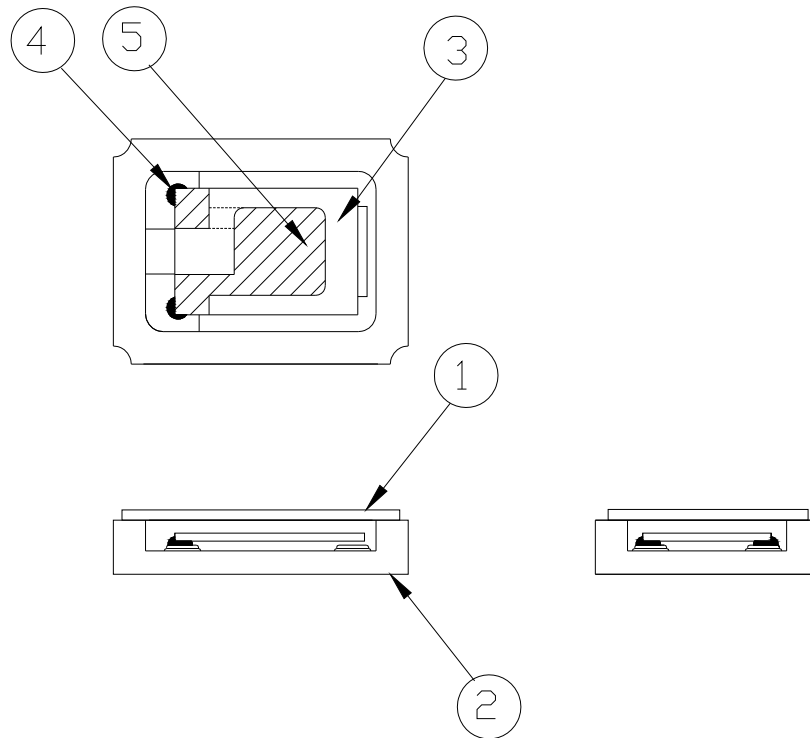
**Production location: Taiwan**

**■ SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.

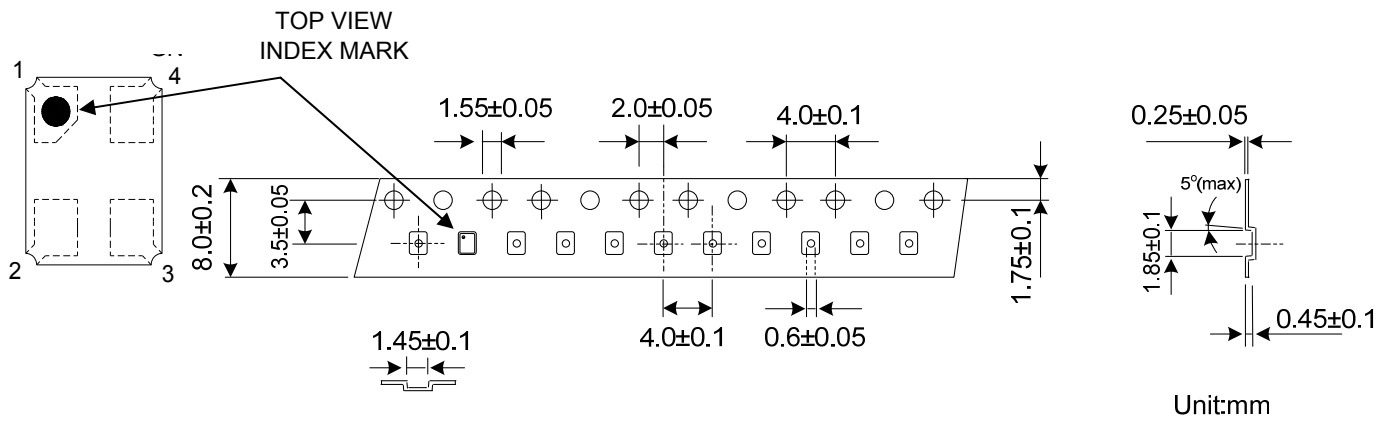
Solder melting point : 220 °C



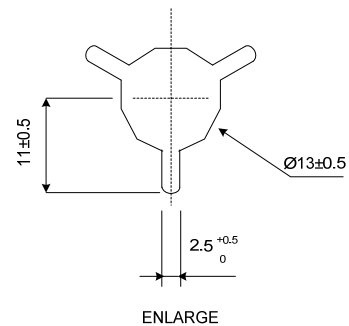
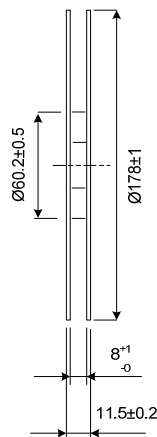
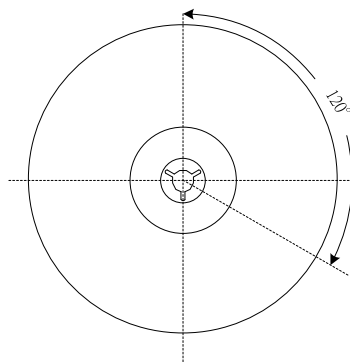
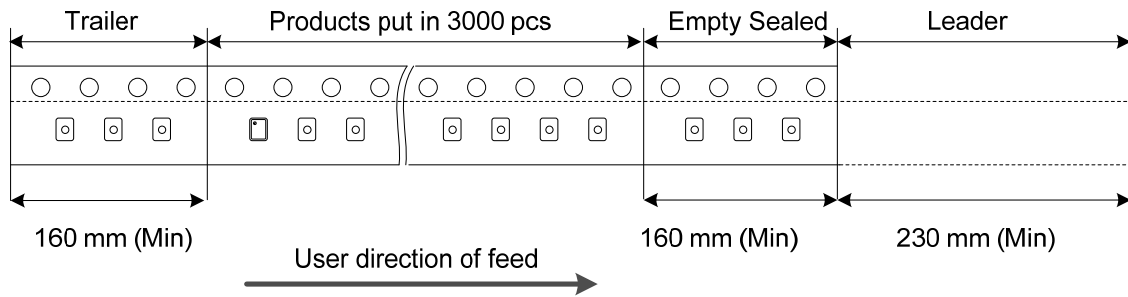
**■ STRUCTURE ILLUSTRATION**


| NO | COMPONENTS          | MATERIALS                                          | FINISH/SPECIFICATIONS |
|----|---------------------|----------------------------------------------------|-----------------------|
| 1  | Lid                 | Kovar                                              | -                     |
| 2  | Base(Package)       | Ceramic (Al <sub>2</sub> O <sub>3</sub> )+Pad (Au) | Alumina ceramics      |
| 3  | Crystal blank       | SiO <sub>2</sub>                                   | -                     |
| 4  | Conductive adhesive | Ag                                                 | Silicone resin        |
| 5  | Electrode           | Noble Metal                                        | -                     |

PACKING



REMARK :



## ■ RELIABILITY SPECIFICATIONS

### 1. Mechanical Endurance

| No. | Test Item        | Test Methods                                                                                                                                                                                                                                                            | REF.DOC     |
|-----|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1.1 | Drop Test        | 150 cm height, 3 times on concrete floor.                                                                                                                                                                                                                               | MIL-STD-202 |
| 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-202 |
| 1.3 | Vibration        | Frequency range                      10 ~ 2000 Hz<br>Amplitude                                1.52 mm/20G<br>Sweep time                                20 minute<br>perpendicular axes each test time 4 hours<br>(Total test time 12 hours)                             | MIL-STD-883 |
| 1.4 | Gross Leak       | Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm <sup>2</sup>                                                                                                                                                                                 | MIL-STD-883 |
| 1.5 | Fine Leak        | Helium Bombing 4.5 Kg/ cm <sup>2</sup> for 2 hr                                                                                                                                                                                                                         |             |
| 1.6 | Solder ability   | Temperature                              245 °C ± 5°C<br>Immersing depth                        0.5 mm minimum<br>Immersion time                         5 ± 1 seconds<br>Flux                                          Rosin resin methyl alcohol<br>solvent ( 1 : 4 ) | MIL-STD-883 |

### 2. Environmental Endurance

| No. | Test Item                    | Test Methods                                                                                                                                                                                                         | REF. DOC    |
|-----|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 2.1 | Resistance To Soldering Heat | Pre-heat temperature                125 °C<br>Pre-heat time                            60 ~ 120 sec.<br>Test temperature                        260 ± 5 °C<br>Test time                                  10 ± 1 sec. | MIL-STD-202 |
| 2.2 | High Temp. Storage           | + 125 °C ± 3 °C for 500 ± 12 hours                                                                                                                                                                                   | MIL-STD-883 |
| 2.3 | Low Temp. Storage            | - 40 °C ± 3 °C for 500 ± 12 hours                                                                                                                                                                                    |             |
| 2.4 | Thermal Shock                | Total 100 cycles of the following temperature cycle<br>                                                                                                                                                              | MIL-STD-883 |
| 2.5 | High Temp & Humidity         | 85°C ± 3°C, RH 85% , 500Hrs                                                                                                                                                                                          | EIA-JESD22  |
| 2.6 | Pressure Cooker Storage      | 121 ± 3°C , RH100% , 2 bar , 240Hrs                                                                                                                                                                                  | EIA-JESD22  |