**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 CXO 7.0*5.0 |
| NOMINAL FREQ. | : | 48.000000MHz |
| TXC P/N | : | 7W48000078 |
| REVISION | : | A5 |
| 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**

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# PRODUCT SPECIFICATION SHEET

| | | |
|---|---|---|
| PRODUCT TYPE | : | SMD SEAM SEALING CXO 7.0*5.0 |
| NOMINAL FREQ. | : | 48.000000MHz |
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| REVISION | : | A5 |

| PE/RD | QA | MFG |
|---|---|---|
|  |  |  |
| 24-Oct-07 | 24-Oct-07 | 24-Oct-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 | 4-May-05 | N/A | Yachuan Miao |
| A2 | 3 | Dimensions<br>Suggested Layout Change | 9-Feb-06 | ECN-06P020602 | Yachuan Miao |
| A3 | - | Document version chang C to D | 27-Jun-06 | DCN-06P030701 | Yachuan Miao |
| A4 | 3 | Marking 取消 “Administrative Symbol” | 20-Aug-07 | DCN-07P072403 | Yachuan Miao |
| A5 | 2 | Output Disable Delay Time,Output Enable Delay Time Change(100ns to 150 us) | 24-Oct-07 | ECN-07P091202 | 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 MD 37WX-05M or equivalent.

**Crystal cutting type**

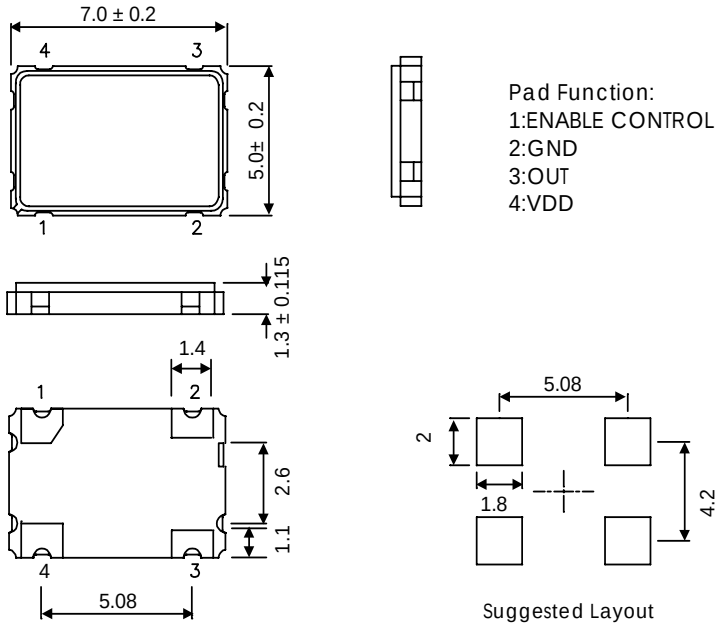
The crystal is using AT CUT (thickness shear mode).

**Unit Weight:**

0.152±0.001 g/pcs

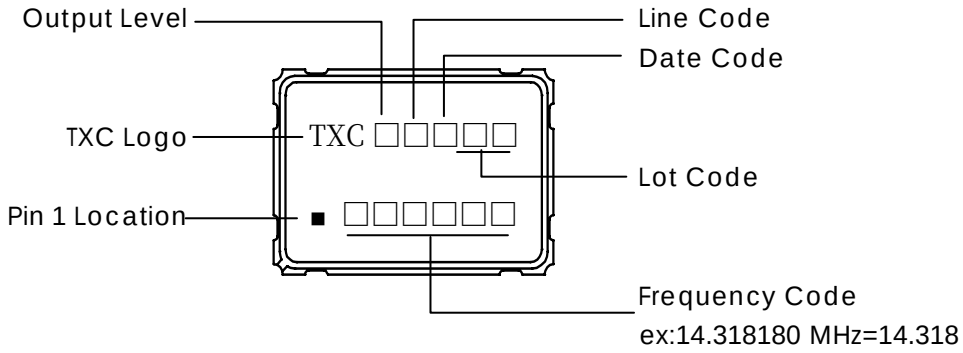
| | Parameters | SYM. | Electrical Spec. | | | | Notes |
|---|---|---|---|---|---|---|---|
| | | | MIN | TYPE | MAX | UNITS | |
| 1 | Nominal Frequency | - | | 48.000000 | | MHz | - |
| 2 | Frequency Stability | - | | ±50 | | ppm | - |
| 3 | Operating Temperature | Topr | -10 | 25 | 70 | ℃ | - |
| 4 | Storage Temperature | Tstg | -55 | ~ | 125 | ℃ | - |
| 5 | Supply Voltage | VDD | | 3.3 ±10% | | V | - |
| 6 | Input Current | Icc | - | - | 18 | mA | - |
| 7 | Enable Control | - | | Yes | | - | Pad 1 |
| 8 | Output Load : CMOS | CL | | 15 | | pF | - |
| 9 | Output Voltage High | VoH | 90%Vdd | - | - | V | - |
| 10 | Output Voltage Low | VoL | - | - | 10%Vdd | V | - |
| 11 | Rise Time | Tr | - | - | 7 | ns | 10%→90%VDD Level |
| 12 | Fall Time | Tf | - | - | 7 | ns | 90%→10%VDD Level |
| 13 | Symmetry (Duty ratio) | TH/T | 45 | ~ | 55 | % | - |
| 14 | Start-up Time | Tosc | - | - | 10 | ms | - |
| 15 | Enable Voltage High | Vhi | 70%Vdd | - | - | V | - |
| 16 | Disable Voltage Low | Vlo | - | - | 30%Vdd | V | - |
| 17 | Aging | - | | ±3 | | ppm/yr. | 1st. Year at 25℃ |
| 19 | Output Disable Delay Time | T off | - | - | 150 | us | - |
| 20 | Output Enable Delay Time | T on | - | - | 150 | us | - |

## ■ DIMENSIONS




Units:mm

## ■ MARKING




Output Level:

| VDD | 5.0V | 3.3V | 2.8V | 2.5V | 1.8V | 2.9V | 3.0V | 2.85V | 2.6V |
|---|---|---|---|---|---|---|---|---|---|
| CODE | A | B | C | D | E | F | G | H | J |

Date Code:

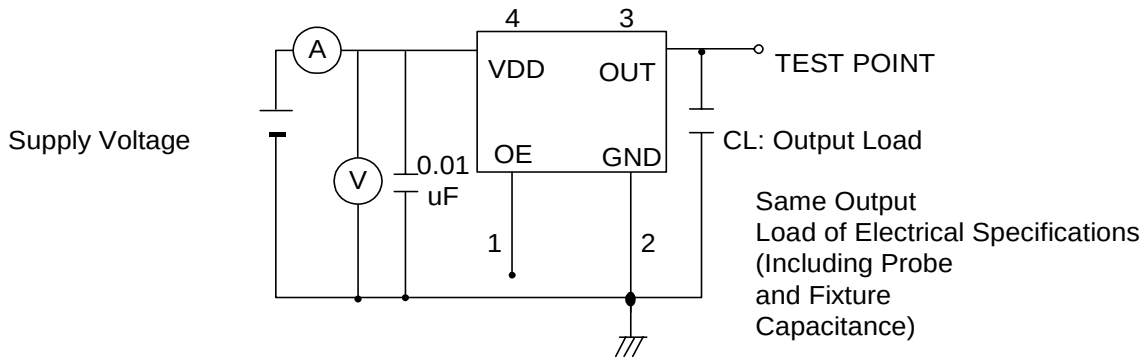
| YEAR \ MONTH | | | | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005 | 2009 | 2013 | 2017 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2006 | 2010 | 2014 | 2018 | N | P | Q | R | S | T | U | V |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

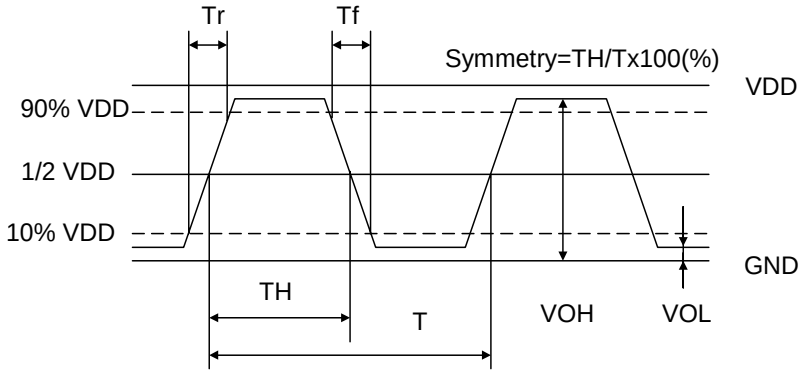
## ■ TEST DIAGRAM

Control input (output enable/disable)
Logic 1 or open on pad 1: Oscillator output
Logic 0 on pad 1 : Disable output to high impedance



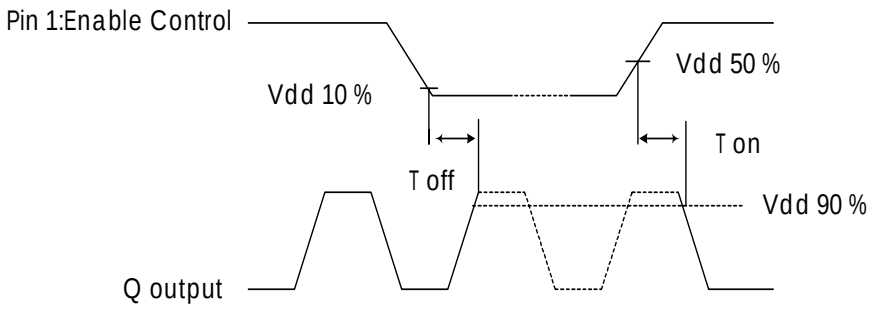

## ■ WAVEFORM CONDITIONS

Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.



## ■ OUTPUT ENABLE / DISABLE DELAY

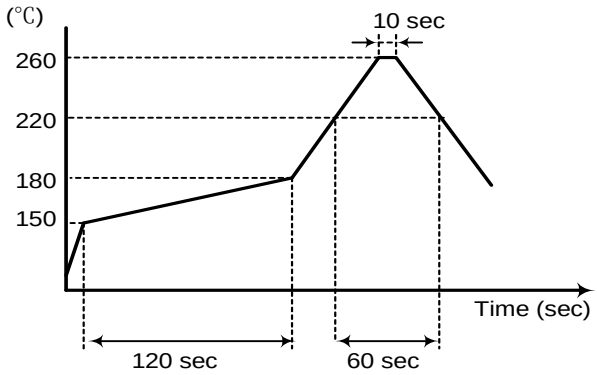
The following figure shows the oscillator timing during normal operation . Note that when the device is in standby, the oscillator stops. When standby is released, the oscillator starts and stable oscillator output occurs after a short delay.



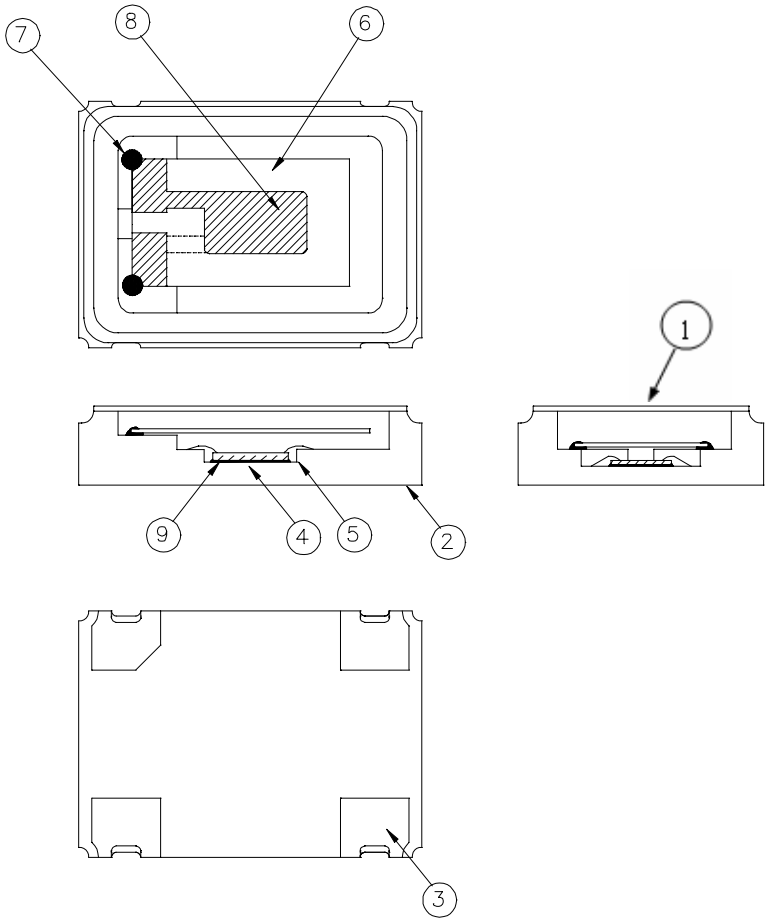

## ■ SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220 ℃

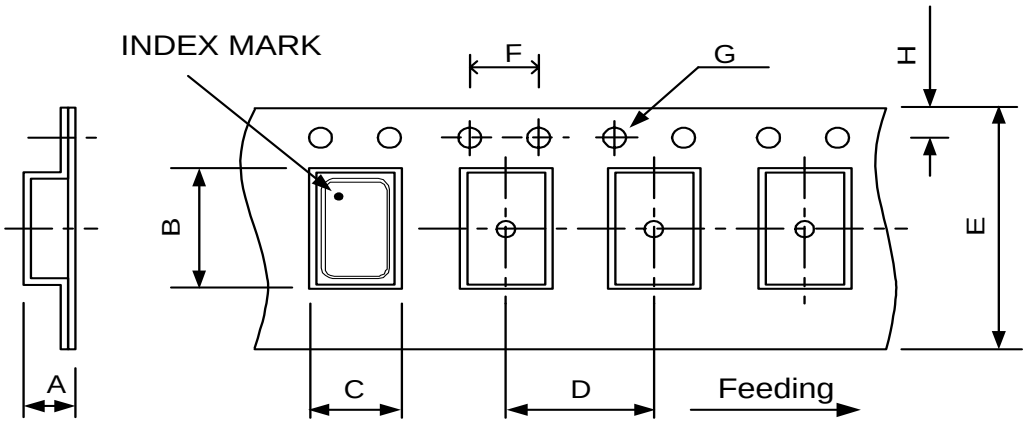


## ■ STRUCTURE ILLUSTRATION



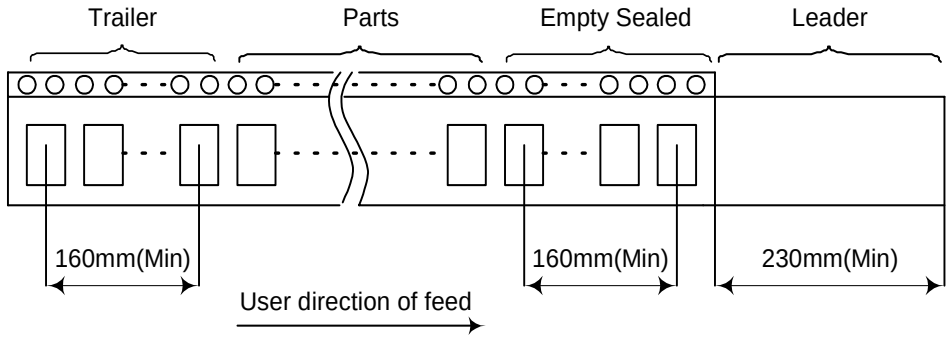

| NO | COMPONENTS | MATERIALS | QTY | FINISH/SPECIFICATIONS |
|---|---|---|---|---|
| 1 | Lid | Kovar (Fe/Co/Ni) | 1 | - |
| 2 | Base(Package) | Ceramic ($Al_2O_3$) + Kovar (Fe/Co/Ni)+ Ag/Cu | 1 | Color black |
| 3 | PAD | Au | 4 | Tungsten metalize<br>+ Ni plating<br>+ Au plating |
| 4 | IC chip | - | 1 | - |
| 5 | Bonding wire | Au | 5 or 6 | Pad 1 options : NC is 5 wires ,<br>EN is 6 wires. |
| 6 | Crystal blank | $SiO_2$ | 1 | - |
| 7 | Conductive adhesive | Ag | 4 | Silicon resin |
| 8 | Electrode | Noble Metal | 2 | - |
| 9 | Conductive adhesive | Ag | 1 | Epoxy resin |

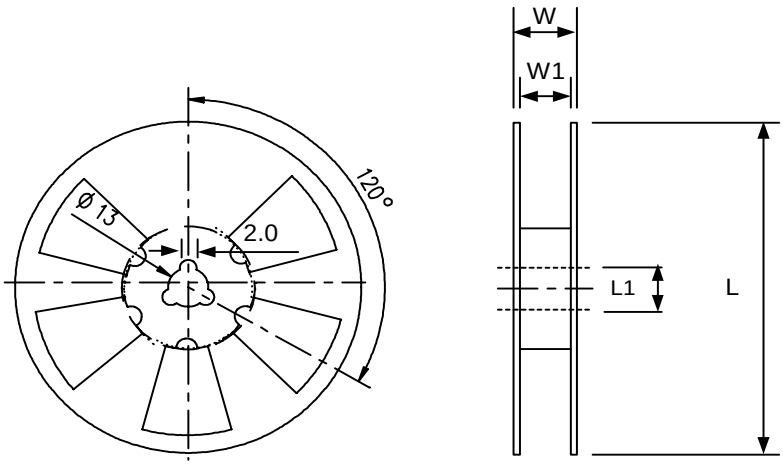
## ■ PACKING : (EIA-481-2)




| DIMENSIONS | A | B | C | D | E | F | G | H | |
|---|---|---|---|---|---|---|---|---|---|
| | 2.00 | 7.90 | 5.45 | 8.00 | 16.00 | 4.00 | 1.50 | 1.75 | (UNIT : mm) |

REMARK :



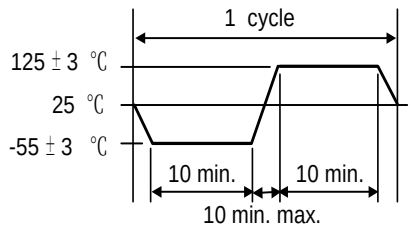

| DIMENSIONS | L | L1 | W | W1 | pcs / Reel (UNIT : mm) |
|---|---|---|---|---|---|
| | 180 | 13 | 20.5 | 16 | Standard Reel Quantity is 1,000 pcs per reel |

## ■ RELIABILITY SPECIFICATIONS

1.Mechanical Endurance

| No. | Test Item | Test Methods | | REF. DOC |
|---|---|---|---|---|
| 1.1 | Drop Test | 75 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 Bomging 4.5 Kgf / $cm^2$ for 2 hr | | |
| 1.6 | Solderability | 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 1000 ± 12 hours | | MIL-STD-883E |
| 2.3 | Low Temp. Storage | - 40 ℃ ± 3 ℃ for 1000 ± 12 hours | | |
| 2.4 | Thermal Shock | Total 100 cycles of the following temperature cycle   | | MIL-STD-883E |
| 2.5 | Pressure Cooker Storage | 121 ± 3℃ , RH100% , 2 bar , 240Hrs | | JIS C6701 |
| 2.6 | High Temp & Humidity | 85℃ ± 3℃, RH 85% , 1000Hrs | | JIS C5023 |