



# SPECIFICATION FOR APPROVAL

CUSTOMER : MARITEX

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PRODUCT TYPE : HC-49/S SMD

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NOMINAL FREQ. : 11.059200MHz

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TXC P/N : 9C11000002

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REVISION : A1

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CUSTOMER P/N :

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PM / SALES : PAUL CHEN

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DATE : 2008/5/16

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CUSTOMER SIGNATURE & Date

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- (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**

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# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : HC-49/S SMD

NOMINAL FREQ. : 11.059200MHz

TXC P/N : 9C11000002

REVISION : A1

| PE/RD             | QA                | MFG                |
|-------------------|-------------------|--------------------|
| <i>Simon Wang</i> | <i>Tzen Hsieh</i> | <i>Shu-Chen ko</i> |
| 2008/5/16         | 2008/5/16         | 2008/5/16          |

**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**



## CONTENT

### SPECIFICATIONS

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### ATTACHMENT(S) (optional)

#### TESTING DATA

- ELECTRICAL CHARACTERISTICS TEST A  YES  NO
- TEMPERATURE CHARACTERISTICS TEST B  YES  NO

**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°C
- Relative humidity : 40%~70%

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

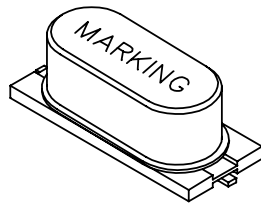
- Ambient temperature : 25+/-1°C
- Relative humidity : 40%~70%

**Measure equipment**

SAUNDERS 250A/250B CRYSTAL IMPEDANCE METER.

**Crystal cutting type**

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

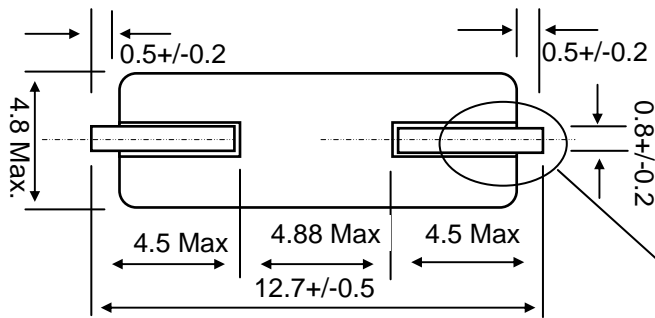
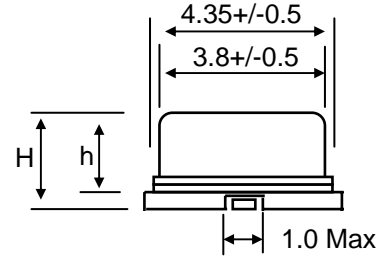
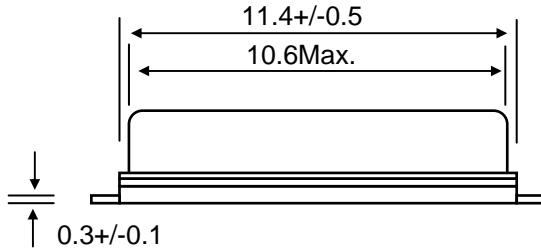


please refer to marking code page

|     |   |                               |
|-----|---|-------------------------------|
| 1.  | Nominal Frequency                           | 11.059200 MHz                 |
| 2.  | Oscillation Mode                            | Fundamental                   |
| 3.  | Load Capacitance                            | 22.0 pF                       |
| 4.  | Frequency Tolerance (25 °C)                 | +/- 30 ppm                    |
| 5.  | Effective Series Resistance                 | 40 Ohms Max.                  |
| 6.  | Shunt Capacitance (C0)                      | 7.0 pF Max.                   |
| 7.  | Motional Capacitance (C1)                   | N/A                           |
| 8.  | Drive Level                                 | 100 uW Typ.                   |
| 9.  | Operation Temperature Range                 | -40 °C ~ +85 °C               |
| 10. | Stability Over Temperature Range            | +/- 30 ppm (related to 25 °C) |
| 11. | Insulation Resistance                       | 500 MOhms Min. at DC 100V     |
| 12. | Attenuation of Spurious Frequency Amplitude | N/A                           |
| 13. | Ratio of Holder to Motional (C0/1)          | N/A                           |
| 14. | Storage Temperature                         | -40 °C ~ +85 °C               |
| 15. | Aging                                       | +/- 3.0 ppm/year              |
| 16. | Weight                                      | 0.58 g +/- 0.05g              |
|     |   |                               |
|     |   |                               |
|     |   |                               |

**DIMENSIONS**

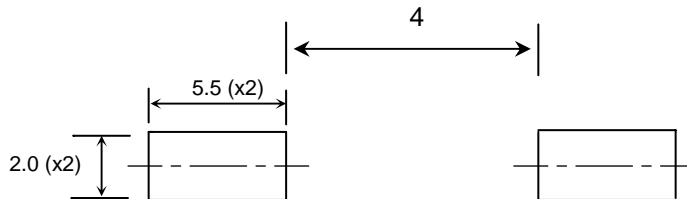
UNIT:mm



| CHOOSE | TYPE | H(SMDHIGH) | h(BODY HIGH) |
|--------|------|------------|--------------|
| ■      | S3   | 3.8+/-0.3  | 3.3+/-0.3    |
| □      | S2   | 3.0+/-0.3  | 2.3+/-0.3    |

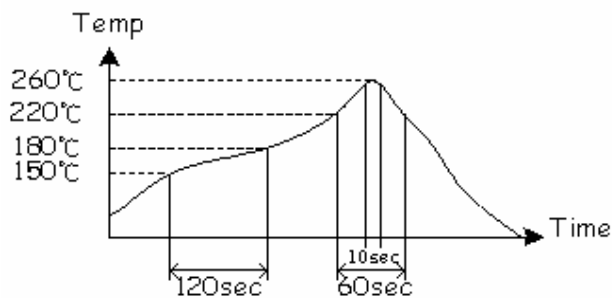
Solder Coating  
(Sn-Ag-Cu Pb Free Coating)

**Suggested Layout**



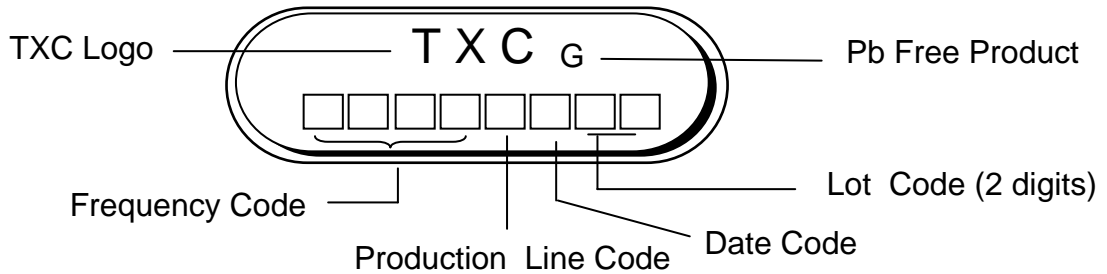
**SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.  
Solder melting point :220 °C



**MARKING**

**Marking For Pb Free Parts :**

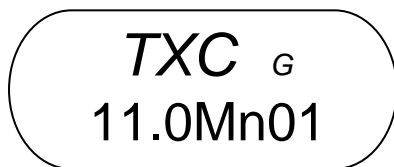


**Date Code:**

| YEAR |      |      |      |      | MONTH |     |     |     |     |     |     |     |     |     |     |     |
|------|------|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|      |      |      |      |      | JAN   | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
| 2005 | 2009 | 2013 | 2017 | 2021 | A     | B   | C   | D   | E   | F   | G   | H   | J   | K   | L   | M   |
| 2006 | 2010 | 2014 | 2018 | 2022 | N     | P   | Q   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |
| 2007 | 2011 | 2015 | 2019 | 2023 | a     | b   | c   | d   | e   | f   | g   | h   | j   | k   | l   | m   |
| 2008 | 2012 | 2016 | 2020 | 2024 | n     | p   | q   | r   | s   | t   | u   | v   | w   | x   | y   | z   |

\*This date code will be cycled every four years.

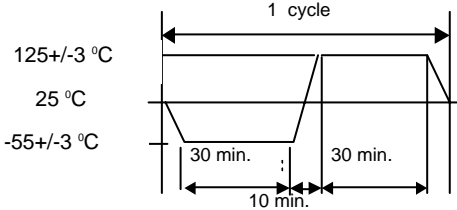
**For example : Marking**



→  
Introduction : Pb Free Product  
49S 11.0592 MHz  
Made in NGB 2008/JAN 01Lot



**RELIABILITY SPECIFICATIONS**

| No. | Test Item                    | Test Methods   | REF.DOC      |
|-----|------------------------------|--|--------------|
| 1   | Drop Test                    | 50 cm height, fall freely onto firm wood for 3 times.  | JIS C6701    |
| 2   | Mechanical Shock             | Device are shocked to half sine wave ( 1000 G ) three mutually pendicular axes each 3 times. 0.5m sec. duration time   | MIL-STD-202F |
| 3   | Vibration                    | Frequency range                      10 ~ 55 Hz<br>Amplitude                                      1.52 mm<br>Sweep time                                      1 minute<br>Pendicular axes each test time              2 hours<br>(Total test time 6 hours)  | MIL-STD-883E |
| 4   | Solderability                | Temperature                                  235 °C +/- 5°C<br>Immersing depth                              0.5 mm minimum<br>Immersion time                                5 +/- 0.5 seconds<br>Flux    Rosin resin methyl alcohol<br>solvent ( 1 : 4 ) | MIL-STD-883E |
| 5   | 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-202F |
| 6   | High Temp. Storage           | + 125 °C +/- 2 °C for 500 +/- 12 hours   | MIL-STD-883E |
| 7   | Low Temp. Storage            | - 40 °C +/- 2 °C for 500 +/- 12 hours  |              |
| 8   | Thermal Cycles               | Total 100 cycles of the following temperature cycle<br>  | MIL-STD-883E |
| 9   | Humidity                     | Device are left in temperature at +85 °C +/-2 °C with relative humidity of 85% for 500 hours.  | JIS-C-5023   |