**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 | : | HC-49/S SMD |
| NOMINAL FREQ. | : | 26.000000MHz |
| TXC P/N | : | 9C26070006 |
| 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**

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# PRODUCT SPECIFICATION SHEET

| | | |
|---|---|---|
| PRODUCT TYPE | : | HC-49/S SMD |
| NOMINAL FREQ. | : | 26.000000MHz |
| TXC P/N | : | 9C26070006 |
| REVISION | : | A2 |

| PE/RD | QA | MFG |
|---|---|---|
| Simon Wang | Tom Hsieh | Shu-Chen Ko |
| *2013/8/1* | *2013/8/1* | *2013/8/1* |

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 | 2011/6/17 | N/A | Shu-Chen Ko |
| A2 | 4,7,9,10 | Form Change(Page 4,Page 9, Add Page 7,Page 10). | 2013/5/16 | ECR-12A112101 | Shu-Chen Ko |
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# CONTENT


| SPECIFICATIONS | PAGE |
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| • SUGGESTED REFLOW PROFILE | 5 |
| • SUGGESTED MANUAL SOLDER CONDITION | 5 |
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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).**

**Unit Weight :** 0.58 g +/- 0.05g



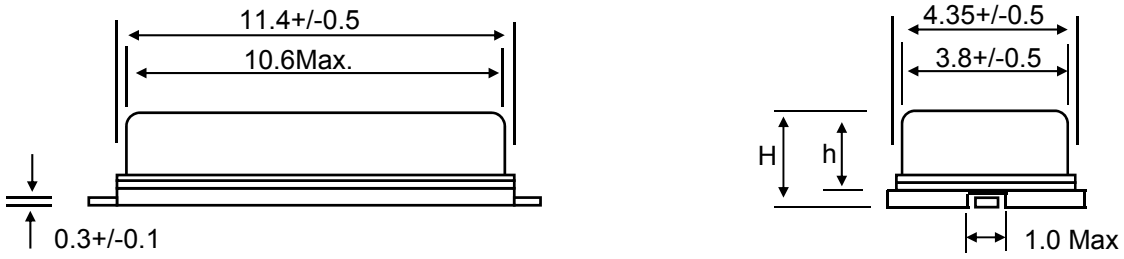

please refer to marking code page

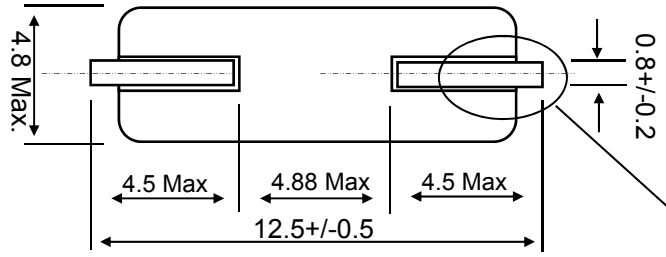
| | Parameters | SYM | Electrical | | | | Notes |
|---|---|---|---|---|---|---|---|
| | | | MIN. | TYP. | MAX. | UNITS | |
| 1 | Nominal Frequency | FL | 26.000000 MHz | | | MHz | |
| 2 | Oscillation Mode | | Fundamental | | | | |
| 3 | Load Capacitance | CL | | 18.0 | | pF | |
| 4 | Frequency Tolerance | FT | -10 | | +10 | ppm | at 25 °C +/- 3 °C |
| 5 | Frequency Tolerance | ST | -10 | | +10 | ppm | Over Operating Temp.Range |
| 6 | Operating Temperature | OT | -20 | | +70 | °C | |
| 7 | Aging | | -5 | | +5 | ppm | 1st year |
| 8 | Drive level | DL | | 100 | 500 | uW | |
| 9 | Effective Resistance Rr | Rr | | | 40 | ohm | |
| 10 | Shunt Capacitance | C0 | | | 7 | pF | |
| 11 | Motional Capactiance | C1 | | | | fF | |
| 12 | Insulation Resisstance | | 500 | | | Mohm | at DC 100V |
| 13 | Storage Tempeature Range | | -40 | | +85 | °C | |
| 14 | SPDB(+/-5000ppm) | | | | -3.0 | dB | |

■ FACTORY LOCATION : CHINA

**DIMENSIONS**

UNIT:mm

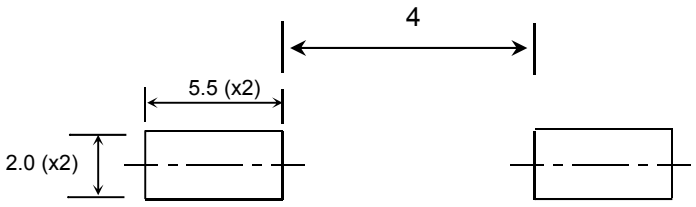



| CHOOSE | TYPE | H(SMDHIGH) | h(BODY HIGH) |
|---|---|---|---|
| ■ | S3 | 3.8+/-0.3 | 3.3+/-0.3 |
| □ | S2 | 3.0+/-0.3 | 2.3+/-0.3 |

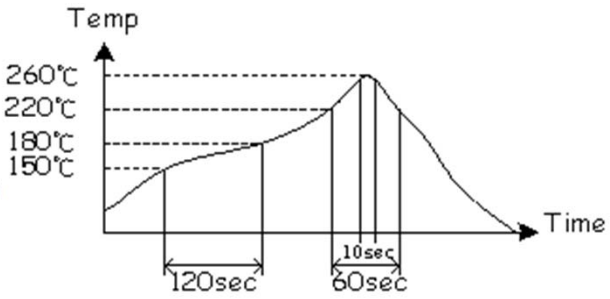
Solder Coating
(Sn-Ag-Cu Pb Free Coating)

**Suggested Layout**




**■ SUGGESTED REFLOW PROFILE**

Solder melting point :220+/-10 °C, 60 sec. Min.
Peak Temperature: 260 +/- 5 °C, 10 sec. Max.

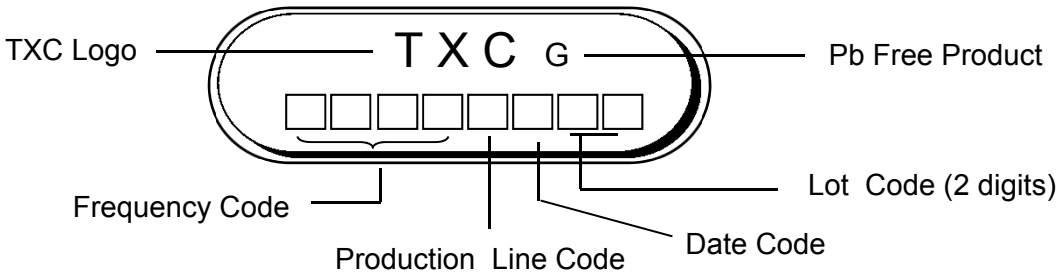



**■ SUGGESTED MANUAL SOLDER CONDITI**

Temperature: 350 +/- 10 °C
Time: 3 sec.
Re-solder times: twice

**MARKING**

**Marking For Pb Free Parts：**

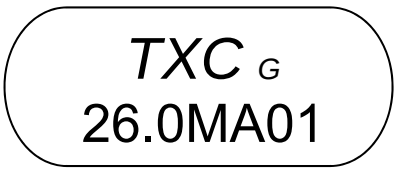



**Date Code:**

| YEAR \ MONTH | | | | | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | 2017 | 2021 | 2025 | 2029 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2014 | 2018 | 2022 | 2026 | 2030 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2015 | 2019 | 2023 | 2027 | 2031 | a | b | c | d | e | f | g | h | j | k | l | m |
| 2016 | 2020 | 2024 | 2028 | 2032 | n | p | q | r | s | t | u | v | w | x | y | z |

*This date code will be cycled every four years.

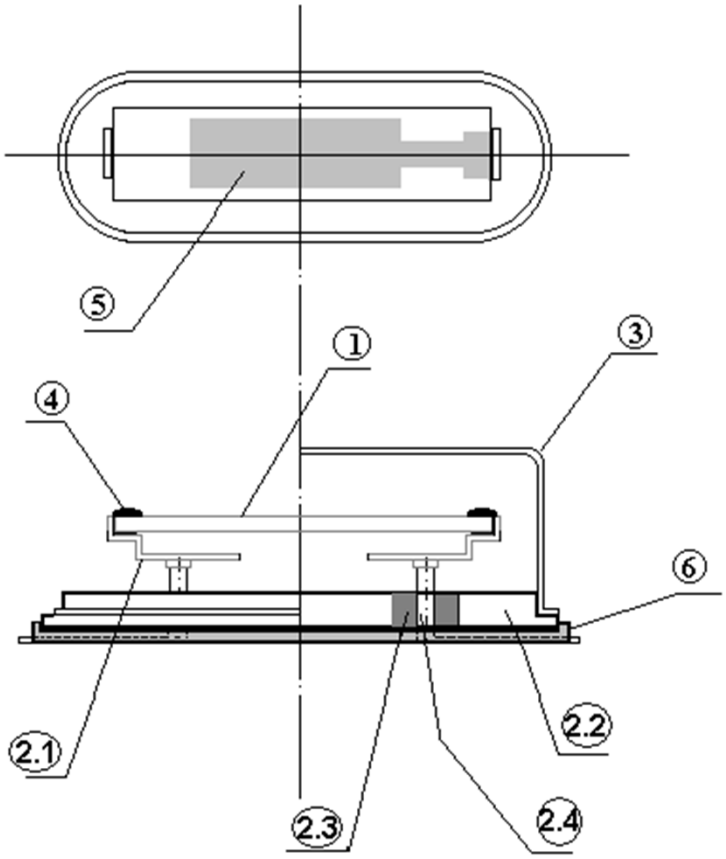
**For example： Marking**




→

Introduction： Pb Free Product
49S 26.000 MHz
Made in NGB 2013/JAN 01Lot

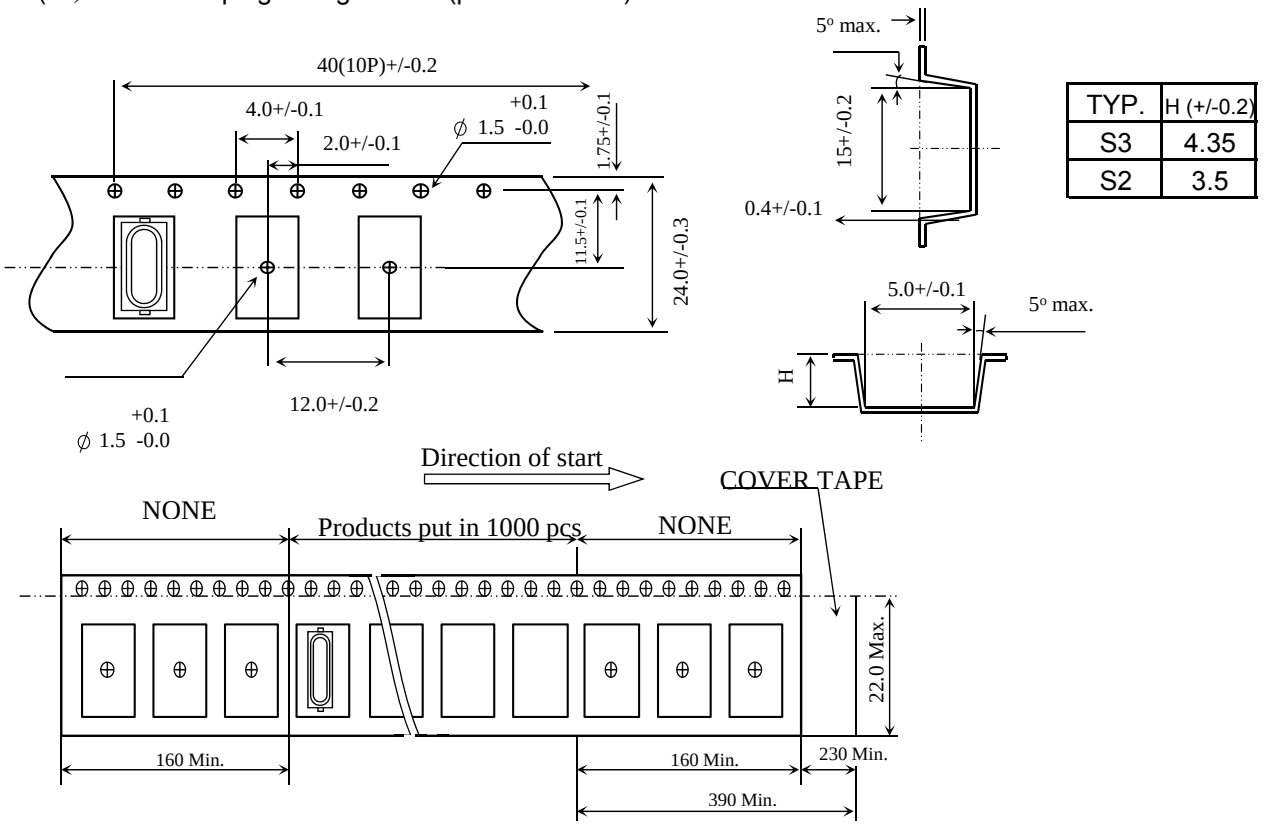
**STRUCTURE ILLUSTRATION :**




| NO | | COMPONENTS | | MATERIALS | FINISH/SPECIFICATIONS |
|---|---|---|---|---|---|
| 1 | | CRYSTAL BLANK | | QUARTZ ($SiO_2$) | / |
| 2 | 2.1 | CRYSTAL BASE | SUPPORTER | NICKEL SILVER | / |
| | 2.2 | | HOLDER | SPCC | Ni PLATED |
| | 2.3 | | GLASS | GLASS | / |
| | 2.4 | | LEAD | KOVAR | Ni PLATED+SOLDER DIPPED (Coating : Sn/Ag/Cu) |
| 3 | | CRYSTAL COVER | | NICKEL SILVER | Ni PLATED |
| 4 | | CONDUCTIVE ADHESIVE | | Ag + RESIN | / |
| 5 | | ELECTRODE | | Noble Metal | / |
| 6 | | INSULATION PAD | | PPS | / |

## (A) Tape and reel configuration:(Unit：mm)

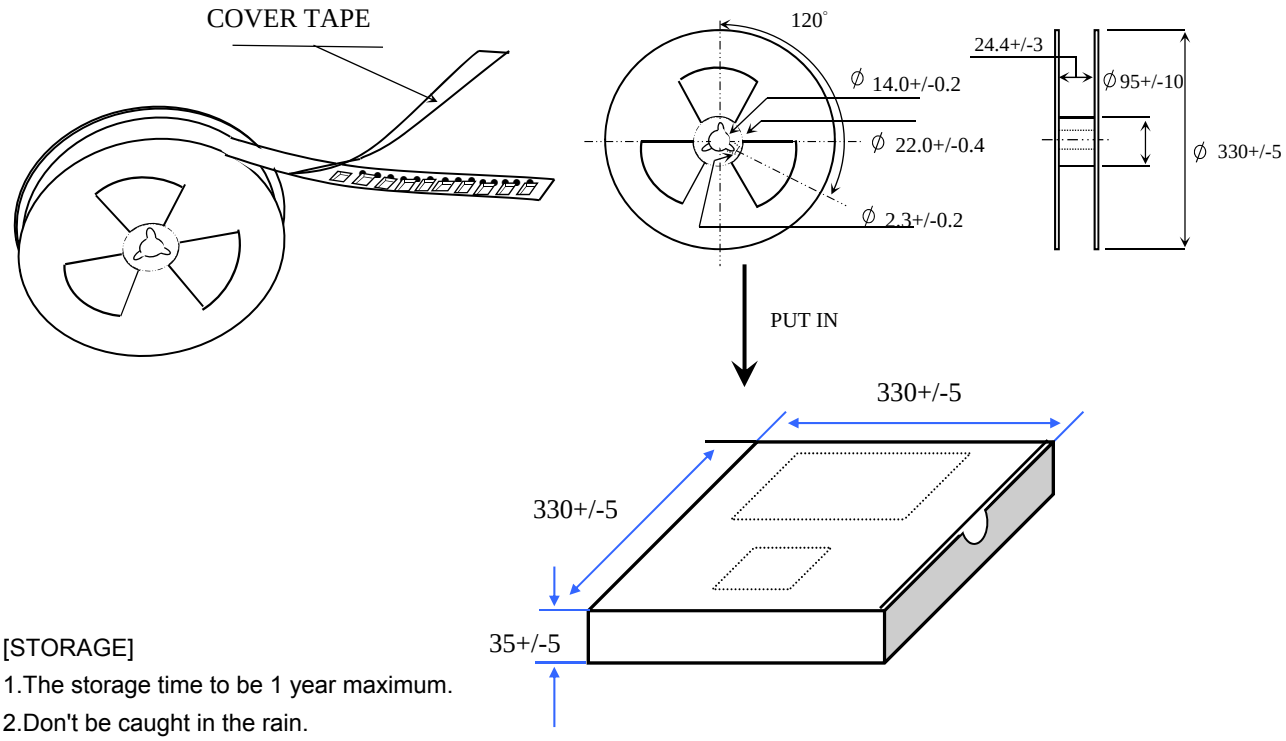
( a ) Emboss taping configuration. (per EIA-481-2)




| TYP. | H (+/-0.2) |
|---|---|
| S3 | 4.35 |
| S2 | 3.5 |

( b ) Reel configuration.

## (B) Packing & Label :(Unit：mm)




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

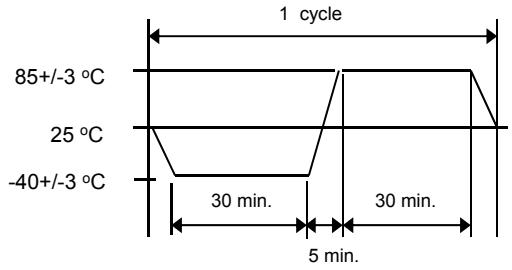
4.If customers have special requirements, we can paste labels according to it.

## ■ RELIABILITY SPECIFICATIONS

1.Mechanical Endurance

| No. | Test Item | Test Methods | Test Criteria |
|---|---|---|---|
| 1.1 | Drop test | 50 cm Height, Fall freely onto firm wood for 3 times. | B C |
| 1.2 | Mechanical Shock | 1000 G , 0.5 m Sec. , 3 times for all 3 directions. | B C |
| 1.3 | Vibration | Frequency range 10 ~ 2000 Hz<br>Acceleration 5G<br>Sweep time 20 minute<br>Pendicular axes each test time 4 hours<br>(Total test time 12 hours) | B C |
| 1.4 | Terminal Strength | 17.7N force for 60sec +/-1sec. | F |
| 1.5 | Solderability | Pb free :Temperature 235+/-5°C,Immersion time:5+/-1sec<br>Pb :Temperature 215+/-5°C,Immersion time:5+/-1sec | E |

2.Environmental Endurance

| No. | Test Item | Test Methods | SPEC |
|---|---|---|---|
| 2.1 | Resistance To Soldering Heat | Test temperature 260 +/- 5 °C<br>Test time 10 +/- 1 sec.<br>Emersion Rate 25 +/- 6 mm/s<br>Immersed of specimen 1.5mm | ACD |
| 2.2 | High Temp. Storage | + 85°C +/- 3 °C for 500 +/- 12 Hrs | ACD |
| 2.3 | Low Temp. Storage | - 40 °C +/- 3 °C for 500 +/-12 Hrs | ACD |
| 2.4 | Temperature cycle | -40°C~85°C,for 300 cycles.<br> | ACD |
| 2.5 | High Temp＆Humidity | 85°C +/- 3°C , RH 85% , 500 Hrs | ACD |

## ■HANDING CAUTIONS

Prohibit the use of ultrasonic welding in Assemblying

**RELIABILITY SPECIFICATIONS**

| Specifications | |
|---|---|
| A | Frequency change: Within +/-20ppm 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**

Measurements are carried out with Network-analyzer( S&A 250B or equivalent).