



TXC CORPORATION

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# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD TA TYPE

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03200010

REVISION : A1

| PE/RD             | QA                | MFG                |
|-------------------|-------------------|--------------------|
| <i>Simon Wang</i> | <i>Tzen Hsieh</i> | <i>Shu-Chen ko</i> |
| 2015/8/4          | 2015/8/4          | 2015/8/4           |

## 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**

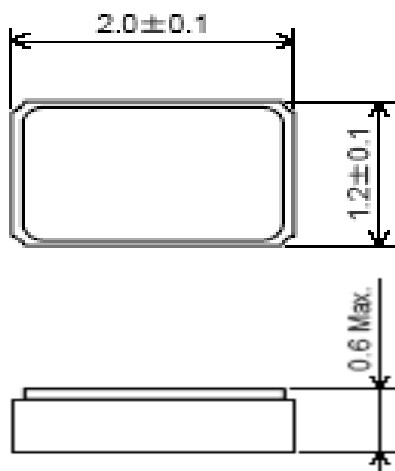
[illegible]

## ELECTRICAL SPECIFICATIONS

|    | Parameters                        | SYM. | Electrical Spec. |      |       |                     | Notes          |
|----|-----------------------------------|------|------------------|------|-------|---------------------|----------------|
|    |                                   |      | MIN              | TYPE | MAX   | UNITS               |                |
| 1  | Nominal Frequency                 | F0   | 32.768           |      |       | KHz                 | -              |
| 2  | Frequency Tolerance               | -    | ± 20             |      |       | ppm                 | at 25 °C       |
| 3  | Driver Level                      | DL   | -                | 0.1  | 0.5   | uW                  | -              |
| 4  | Load Capacitance                  | CL   | 9.0              |      |       | pF                  | -              |
| 5  | Series Resistance                 | -    | -                | -    | 90    | KΩ                  | -              |
| 6  | Peak Temperature (Frequency)      | -    | 20               | 25   | 30    | °C                  | at 25 °C ±5°C  |
| 7  | Frequency-Temperature coefficient | -    | -                | -    | -0.04 | ppm/°C <sup>2</sup> | -              |
| 8  | Storage Temperature               | -    | -55              | ~    | 125   | °C                  | -              |
| 9  | Operating Temperature             | -    | -40              | ~    | 85    | °C                  | -              |
| 10 | Shunt Capacitance                 | C0   | -                | 1.3  | -     | pF                  | -              |
| 11 | Motional Capacitance              | C1   | -                | 6.4  | -     | fF                  | -              |
| 12 | Insulation Resistance             | -    | 500              | -    | -     | MΩ                  | at DC 100V±15V |
| 13 | Aging                             | -    | ±3               |      |       | ppm                 | 1st Year       |

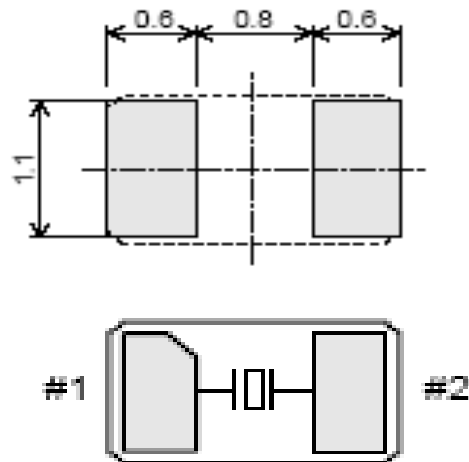
## DIMENSIONS

(UNIT:mm)



## RECOMMENDED SOLDER PAD

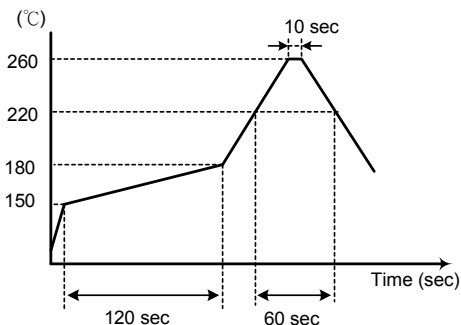
(UNIT:mm)



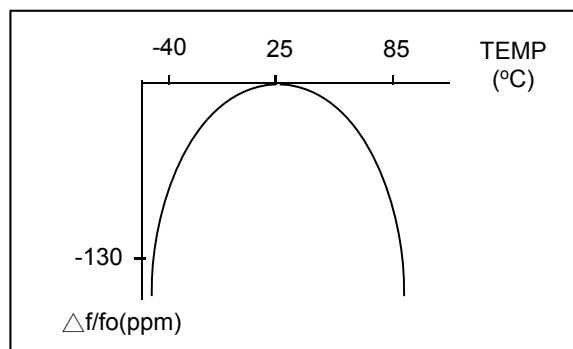
## SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220°C



## TEMPERATURE V.S FREQUENCY CURVE



**MARKING**

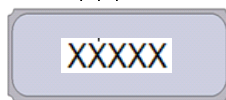
TXC Use<sup>2</sup>

Frequency/CL Code

- Date Code

Frequency /CL Code

| KHz    | PF   | CODE |
|--------|------|------|
| 32.768 | 12.5 | A    |
| 32.768 | 9    | B    |



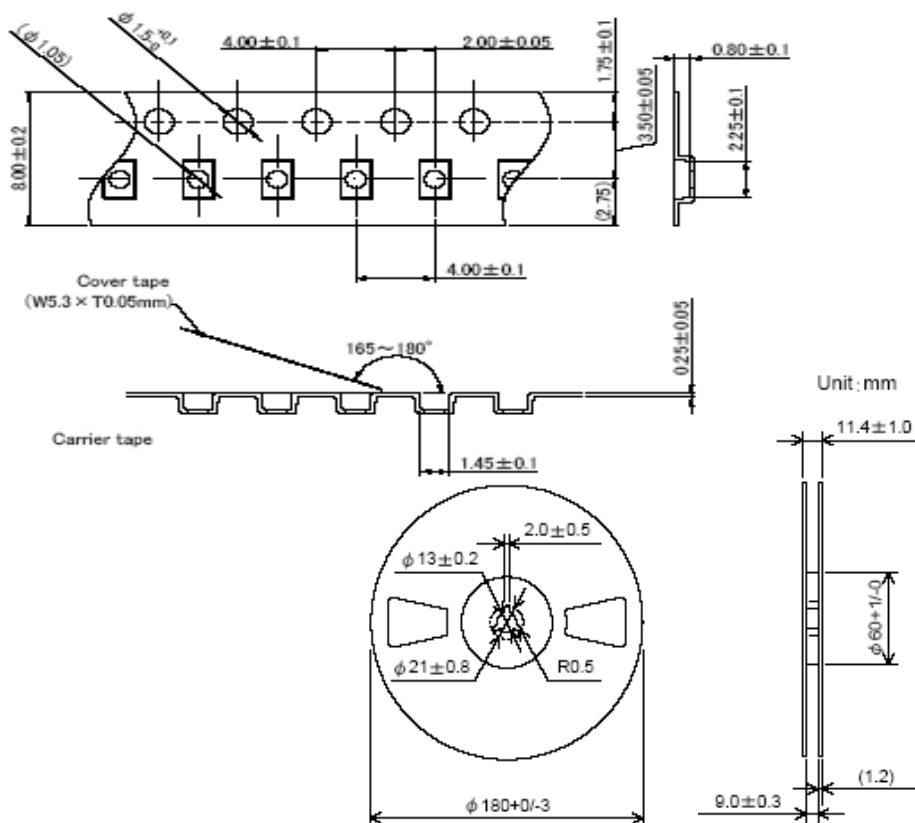
- TXC Use Code

Date Code

| YEAR |      |      |      |      | MONTH |     |     |     |     |     |     |     |     |     |     |     |
|------|------|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|      |      |      |      |      | JAN   | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
| 2001 | 2005 | 2009 | 2013 | 2017 | A     | B   | C   | D   | E   | F   | G   | H   | J   | K   | L   | M   |
| 2002 | 2006 | 2010 | 2014 | 2018 | N     | P   | Q   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |
| 2003 | 2007 | 2011 | 2015 | 2019 | a     | b   | c   | d   | e   | f   | g   | h   | j   | k   | l   | m   |
| 2004 | 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

■ **PACKING** (UNIT:mm)

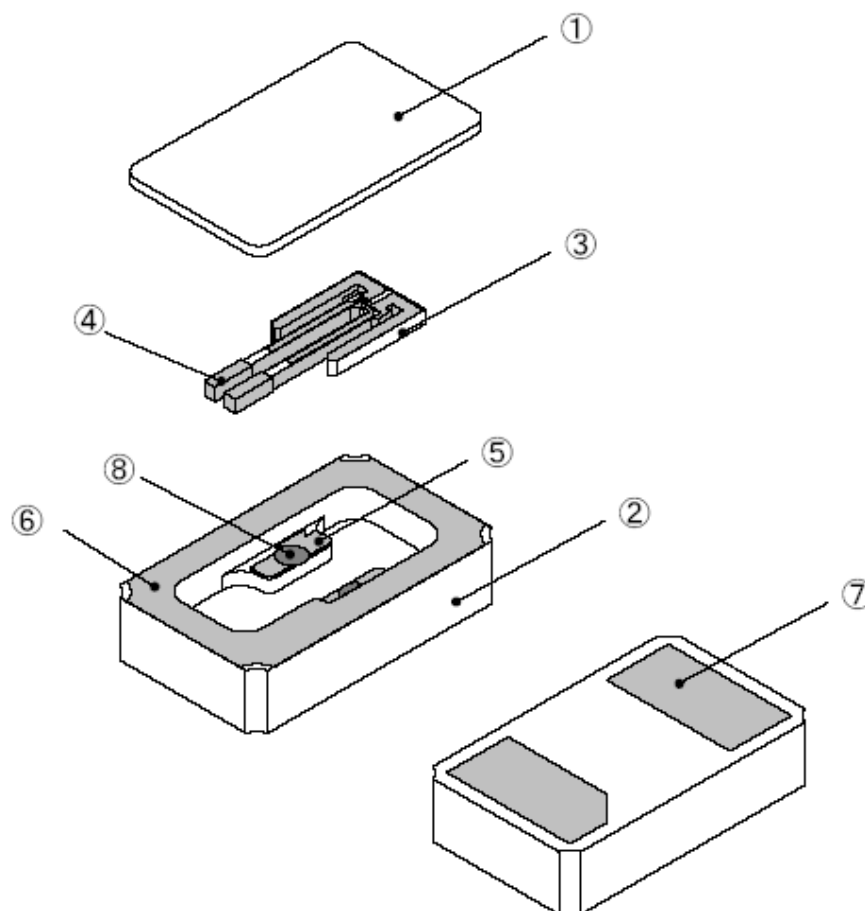


|        |          |
|--------|----------|
| Amount | PCS/REEL |
|        | 3K       |

3000 pieces of taped crystal units are put into a packing reels

- REMARK : 1. 230 mm (9.05) minimum leader which consist of carrier and/or tape followed by a minimum of 160 mm (6.3) of empty carrier tape sealed with cover tape.
2. 160 mm (6.3) minimum trailer of empty carrier tape sealed with cover tape.

# STRUCTURE ILLUSTRATION



| NO | COMPONENTS            | MATERIALS                          | QTY | FINISH/SPECIFICATIONS                              |
|----|-----------------------|------------------------------------|-----|----------------------------------------------------|
| 1  | Lid                   | Kovar (Fe/Co/Ni)                   | 1   | -                                                  |
| 2  | Base(Package)         | Ceramic( $\text{Al}_2\text{O}_3$ ) | 1   | Color Black                                        |
| 3  | Crystal blank         | $\text{SiO}_2$                     | 1   | -                                                  |
| 4  | Electrode             | Noble Metal                        | 2   | -                                                  |
| 5  | Internal terminals    | Au                                 | 2   | Tungsten metallize<br>+ Ni plating<br>+ Au plating |
| 6  | Metallize for sealing | Au                                 | 1   | Tungsten metallize<br>+ Ni plating<br>+ Au plating |
| 7  | PAD                   | Au                                 | 2   | Tungsten metallize<br>+ Ni plating<br>+ Au plating |
| 8  | Conductive adhesive   | Ag                                 | 2   | Silicon resin                                      |

**UNIT WEIGHT:**  
0.005 g/pcs

## ■ RELIABILITY SPECIFICATIONS

### 1.Mechanical Endurance

| No. | Test Item        | Test Methods                                                                                                                                        | REF. DOC        |
|-----|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1.1 | Drop Test        | 150 cm height, fall freely onto concrete floor 3 times.                                                                                             | JIS C6701       |
| 1.2 | Mechanical Shock | Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 1m sec. duration time                               | JIS C60068-2-27 |
| 1.3 | Vibration        | Frequency range 10 ~ 55 Hz<br>Amplitude 1.5 mm,20G<br>Sweep time 1 minute<br>Perpendicular axes each test time 2 hours<br>(Total test time 6 hours) | JIS C60068-2-6  |
| 1.4 | Solderability    | Temperature 255 °C ± 5°C<br>Immersing depth 0.5 mm minimum<br>Immersion time 3.5 ± 0.5 seconds<br>Flux Rosin resin methyl alcohol 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 160 °C<br>Pre-heat time 90 ± 10 sec.<br>Test temperature 260 ± 5 °C<br>Test time 5 ± 1 sec. | MIL-STD-202   |
| 2.2 | High Temp. Storage           | + 100 °C ± 3 °C for 100 ± 12 hours                                                                               | JIS C600682-2 |
| 2.3 | Low Temp. Storage            | - 40 °C ± 3 °C for 1000 ± 12 hours                                                                               | JIS C600682-1 |
| 2.4 | Thermal Shock                | Total 100 cycles of the following temperature cycle<br>                                                          | JIS C0025     |
| 2.5 | Pressure Cooker Storage      | 121 ± 3°C, RH100%, 2 bar, for 240 hours                                                                          | JIS C6701     |
| 2.6 | High Temp & Humidity         | 40°C ± 3°C, RH 90~95% , 1000Hrs                                                                                  | JIS C600682-3 |