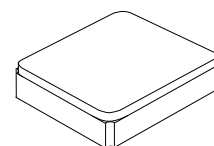


**XTL2008**

**60.000000 MHz**  
**Crystal Unit**



SM2016-4

## Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package
- Moisture Sensitivity Level (MSL) : Level-1

## Description and Applications:

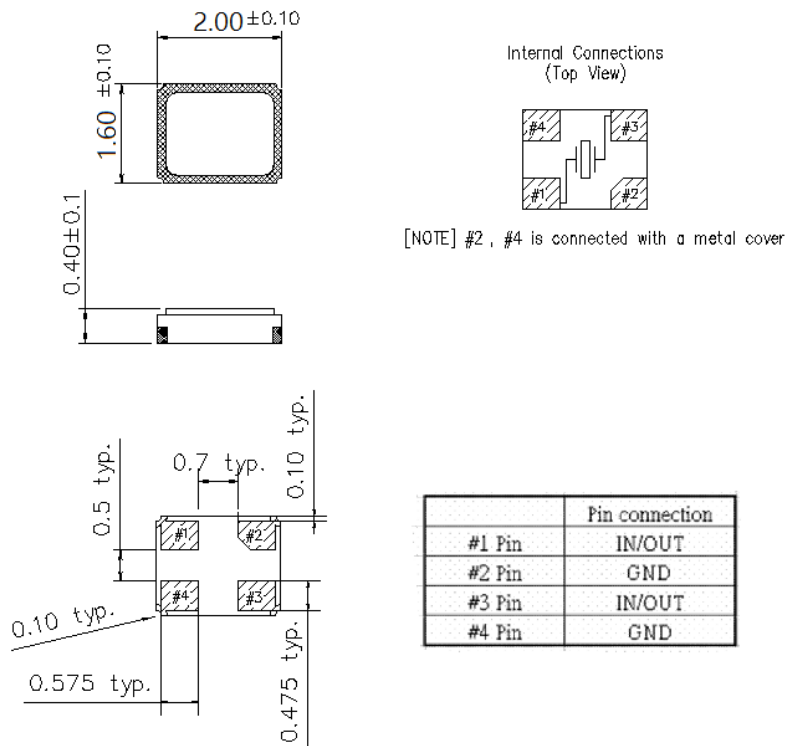
Surface mount 2.0mmx1.6mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

## Electrical Specifications:

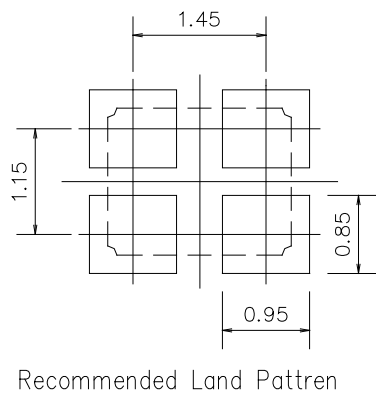
| <b>XTL2008</b>                                       | <b>Specification</b>                                                                                                 |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Nominal Frequency                                    | 60.000000 MHz                                                                                                        |
| Mode of Oscillation                                  | Fundamental                                                                                                          |
| Storage Temperature Range                            | -40°C to +125°C                                                                                                      |
| Operating Temperature Range                          | -30°C to +90°C                                                                                                       |
| Frequency Stability over Operating Temperature Range | +/-12 ppm (referred to the value at 25°C) -30°C to +85°C<br>+/-15 ppm (referred to the value at 25°C) -30°C to +90°C |
| Frequency Make Tolerance (FL)                        | +/-10 ppm @ 25°C +/- 3°C                                                                                             |
| Equivalent Series Resistance (ESR)                   | 60 $\Omega$ max                                                                                                      |
| Nominal Drive Level                                  | 50uW typical and 200uW max                                                                                           |
| Shunt Capacitance (Co)                               | 3.0 pF max                                                                                                           |
| Load Capacitance (CL)                                | 7 pF                                                                                                                 |
| Aging                                                | +/-2ppm/year                                                                                                         |
| Insulation Resistance                                | 500 M $\Omega$ min./DC 100V                                                                                          |
| Marking                                              | Laser Marking                                                                                                        |
| Unit Weight                                          | 5.7mg+/-0.5mg                                                                                                        |

# Mechanical Dimensions (mm):

## Base



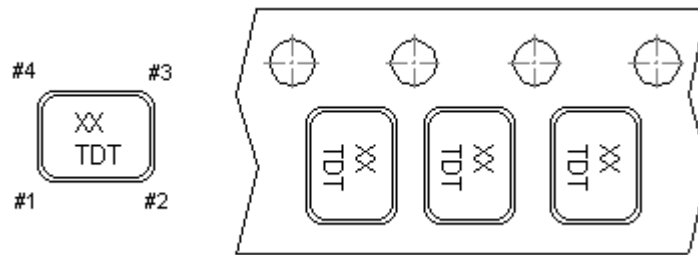
# Recommended Land Pattern: (unit: mm)



## Marking:

Line 1: XX; Frequency (60)

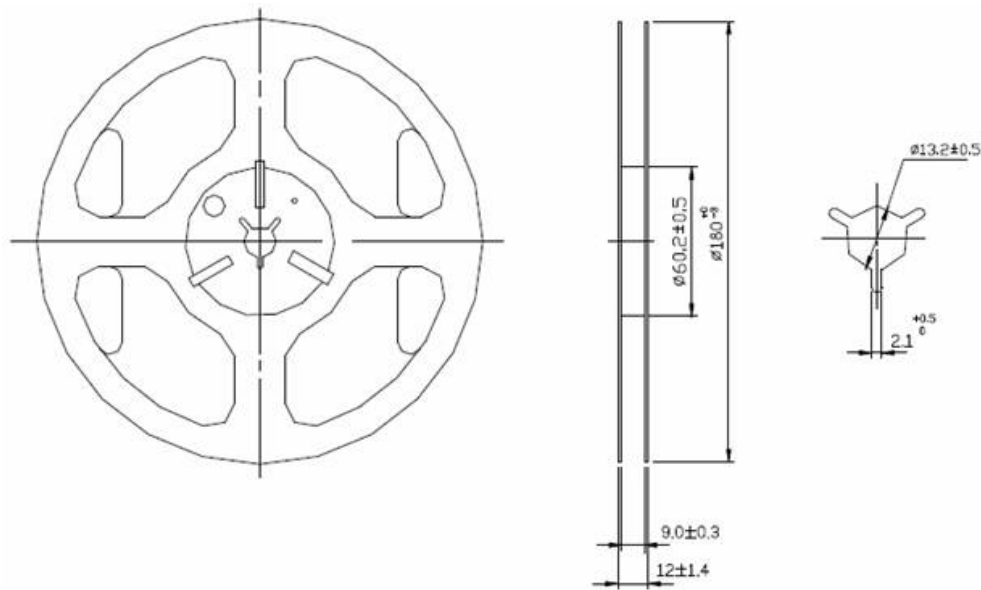
Line 2: T; Traceable Code + D; date Code of Year/Month +T ; Traceability code (1 or no letter)



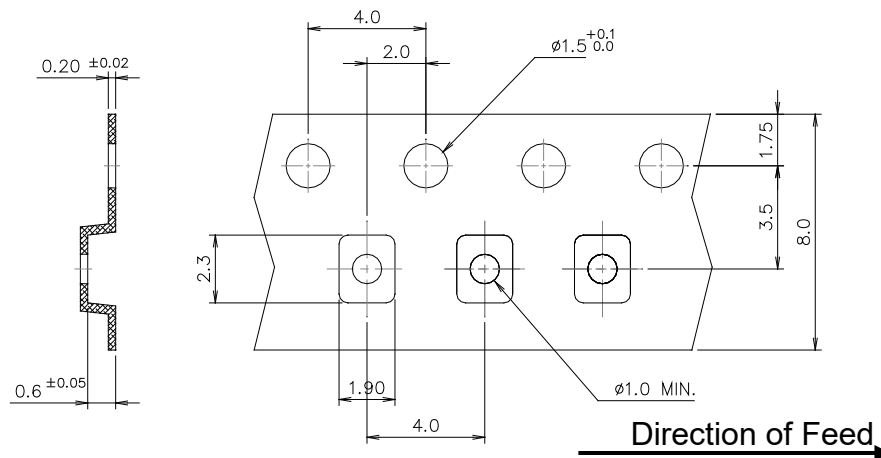
## Date Code Table: Year/Month

| Year/Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|
| 2009       | n | p | q | r | s | t | u | v | w | x  | y  | z  |
| 2010       | A | B | C | D | E | F | G | H | J | K  | L  | M  |
| 2011       | N | P | Q | R | S | T | U | V | W | X  | Y  | Z  |
| 2012       | a | b | c | d | e | f | g | h | i | j  | k  | m  |
| 2013       | n | p | q | r | s | t | u | v | w | x  | y  | z  |
| 2014       | A | B | C | D | E | F | G | H | J | K  | L  | M  |
| 2015       | N | P | Q | R | S | T | U | V | W | X  | Y  | Z  |
| 2016       | a | b | c | d | e | f | g | h | i | j  | k  | m  |
| 2017       | n | p | q | r | s | t | u | v | w | x  | y  | z  |
| 2018       | A | B | C | D | E | F | G | H | J | K  | L  | M  |
| 2019       | N | P | Q | R | S | T | U | V | W | X  | Y  | Z  |
| 2020       | a | b | c | d | e | f | g | h | i | j  | k  | m  |
| 2021       | n | p | q | r | s | t | u | v | w | x  | y  | z  |

## Reel Dimensions (mm):



## Tape Dimensions (mm):

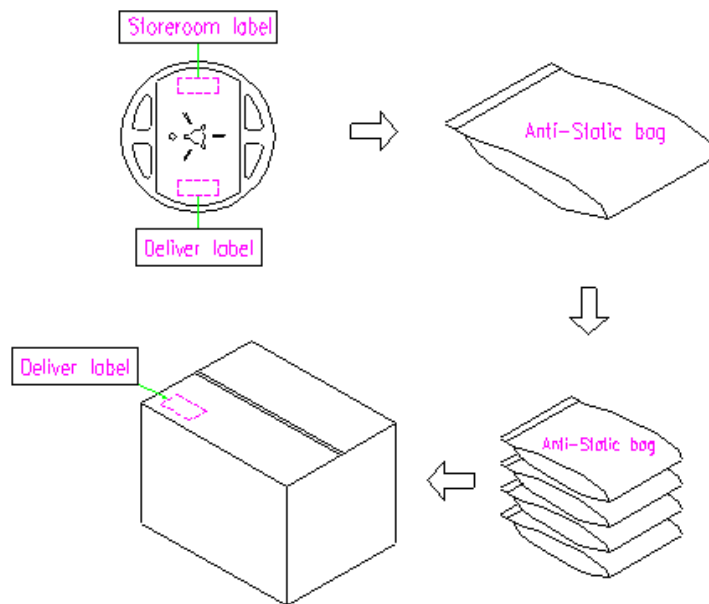


### [NOTE]:

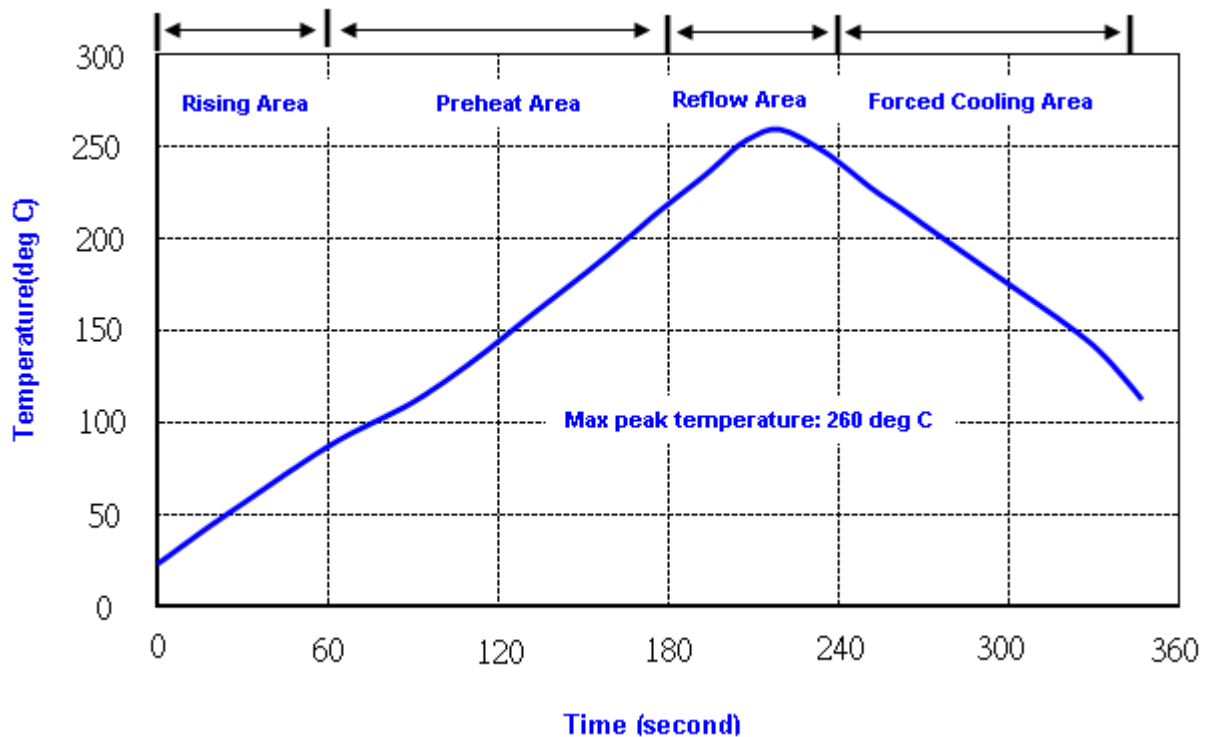
1. Unless otherwise specified tolerance on dimension  $\pm 0.1$  mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance  $\pm 0.2$  mm.

## Packing Quantity/Packing:

3K pcs maximum per reel



## Reflow Profile:



Note: 1. Max peak temperature: 260 $\pm$ 5 deg C; Time: 10 $\pm$ 2 sec  
2. Temperature: 217 $\pm$ 5 deg C; Time: 90~100 sec

## Reliability Specifications

| Test name                                | Test process / method                                                                                                                                                          | Reference standard            |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>Mechanical characteristics</b>        |                                                                                                                                                                                |                               |
| resistance to Soldering heat (IR reflow) | Temp./ Duration : 265°C /10sec ×2 times<br>Total time : 4min.(IR-reflow)                                                                                                       | EIAJED-4701<br>-300(301)M(II) |
| Vibration                                | Total peak amplitude : 1.5mm<br>Vibration frequency : 10 to 2000 Hz<br>Sweep period : 20 minute<br>Vibration directions : 3 mutually perpendicular<br>Duration : 2 hr / direc. | MIL-STD 202G<br>method 204    |
| Mechanical Shock                         | directions : 3 impacts per axis<br>Acceleration : 3000g's, +20/-0 %<br>Duration : 0.3 ms (total 18 shocks)<br>Waveform : Half-sine                                             | MIL-STD 202G<br>method 213    |
| Solderability                            | Solder Temperature:265±5°C<br>Duration time: 5±0.5 seconds.                                                                                                                    | J-STD-002                     |
| <b>Environmental characteristics</b>     |                                                                                                                                                                                |                               |
| Thermal Shock                            | Heat cycle conditions<br>-40 °C (30min) ↔ 85 °C (30min)<br>* cycle time : 10 times                                                                                             | MIL-STD 883G<br>method 1010.8 |
| Humidity test                            | Temperature : 85 ± 2 °C<br>Relative humidity : 85%<br>Duration : 96 hours                                                                                                      | MIL-STD 202G<br>method 103    |
| Dry heat<br>( Aging test )               | Temperature : 125 ± 2 °C<br>Duration : 168 hours                                                                                                                               | MIL-STD 202G<br>method 108A   |
| Cold resistance<br>(Low Temp Storage)    | Temperature : -40 ± 2 °C<br>Duration : 96 hours                                                                                                                                | IEC 60068-2-1                 |



**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.