A BRAND OF AKOUSTIS

# RFM Integrated Device, Inc.

# PRODUCT SPECIFICATION

## Part Number: XTL2022

## Description:
## XTAL,27.12000 MHz,
## +/-10ppm@25C+/-3C

## 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:

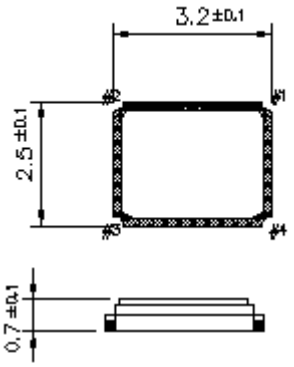
Surface mount 3.2mmx2.5mm crystal unit for customer for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

## Electrical Specifications:

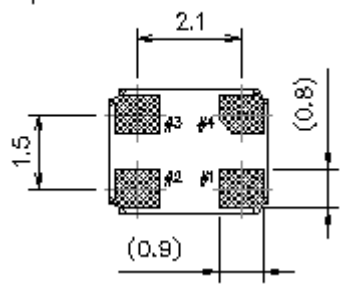
| **XTL2022** | **Specification** |
|---|---|
| Nominal Frequency | 27.12000 MHz |
| Mode of Oscillation | Fundamental |
| Storage Temperature Range | -40°C to +105°C |
| Operating Temperature Range | -40°C to +85°C |
| Frequency Stability over Operating Temperature | +/- 20 ppm (referred to the value at 25°C) |
| Frequency Make Tolerance (FL) | +/- 10 ppm @ 25°C +/- 3°C |
| Equivalent Series Resistance (ESR) | 80 Ω max. |
| Nominal Drive Level | 50uW typical and 100uW max |
| Shunt Capacitance (Co) | 3.0 pF max |
| Load Capacitance (CL) | 10 pF |
| Aging | +/-2ppm/year |
| Insulation Resistance | 500 MΩ min./DC 100V |
| Marking | Laser Marking |
| Unit Weight | 0.017+/-0.005 g |

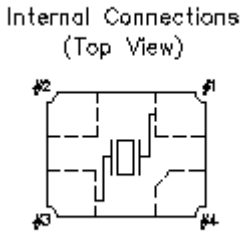
# Mechanical Dimensions (mm):

## Base

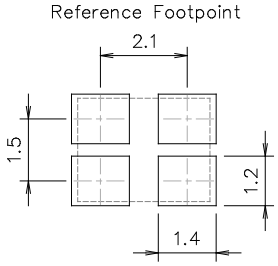



| | Pin Connection |
|---|---|
| #1 pin | IN/OUT |
| #2 pin | GND |
| #3 pin | IN/OUT |
| #4 pin | GND |




# Recommended Land Pattern: (unit: mm)



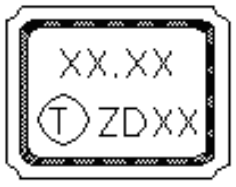

# Marking:

Line 1: Frequency (27.12)

Line 2: Crystal Product Code + Date Code + Traceability code ( 1 or 2 letters)

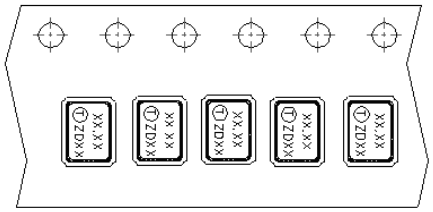
Pin#2

Pin#3




Pin#1

Pin#4



**The inner vision of Pin#1, Pin#4 side is XTAL blank mounting pad.**

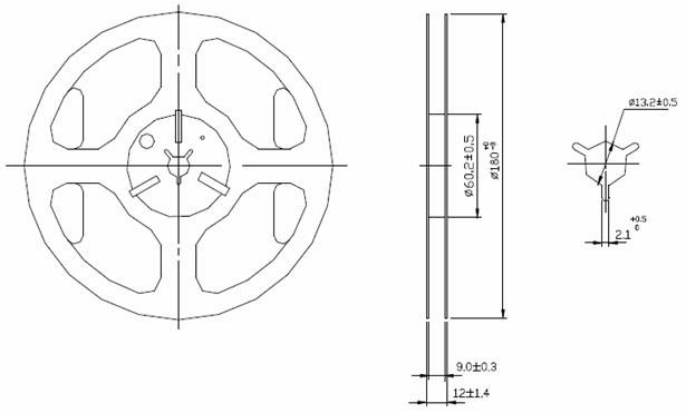
## Product Code Table

| Year | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 |
| | 2021 | 2022 | 2023 | 2024 |
| product code | Z | z | Z | z |

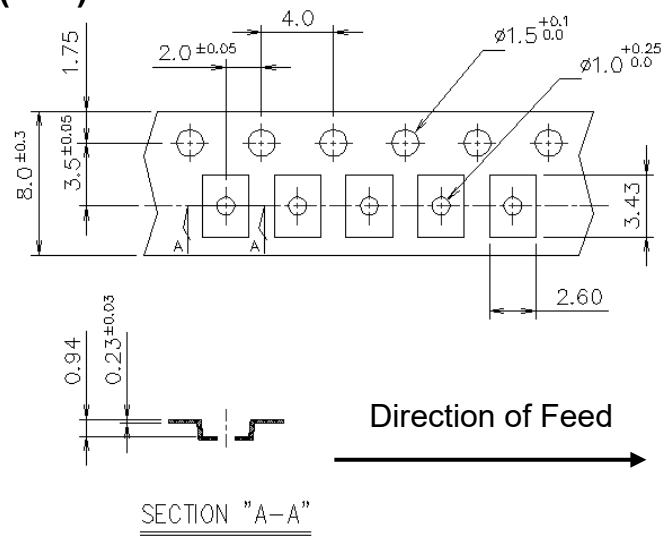
## Date Code Table

| WK01 | WK02 | WK03 | WK04 | WK05 | WK06 | WK07 | WK08 | WK09 | WK10 | WK11 | WK12 | WK13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| WK14 | WK15 | WK16 | WK17 | WK18 | WK19 | WK20 | WK21 | WK22 | WK23 | WK24 | WK25 | WK26 |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| WK27 | WK28 | WK29 | WK30 | WK31 | WK32 | WK33 | WK34 | WK35 | WK36 | WK37 | WK38 | WK39 |
| a | b | c | d | e | f | g | h | i | j | k | l | m |
| WK40 | WK41 | WK42 | WK43 | WK44 | WK45 | WK46 | WK47 | WK48 | WK49 | WK50 | WK51 | WK52 |
| n | o | p | q | r | s | t | u | v | w | x | y | z |

## Reel Dimensions (mm):




## Tape Dimensions (mm):




[NOTE]

1 UNIT : mm.

2 UNLESS OTHERWISE SPECIFIED TOLERANCEON DIM. +/-0.1mm.

3 MATERIAL : CONDUCTIVE POLYSTYRENE.

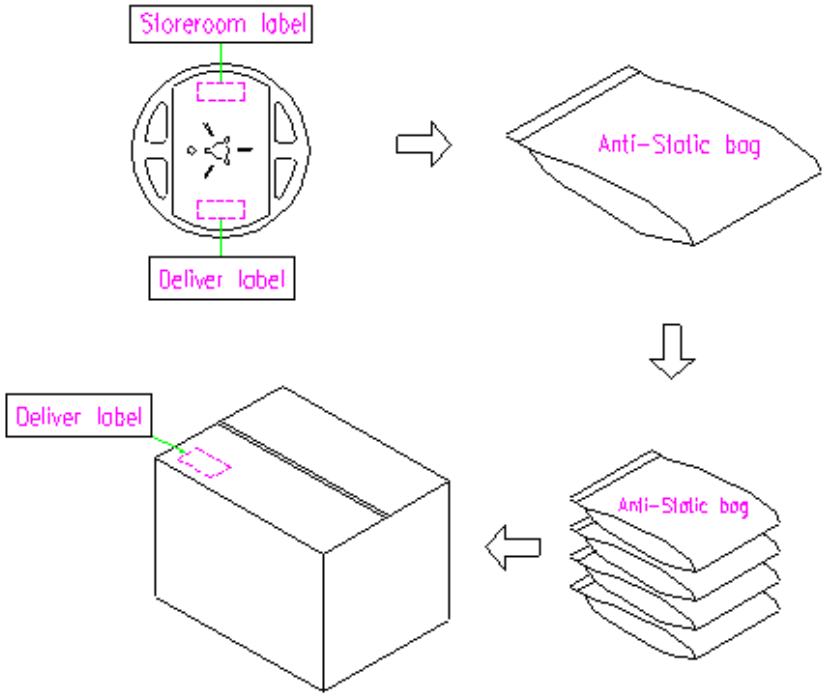
4 COLOR : BLACK.

5 10 PITCHES CUMULATIVETOLERANCE +/-0.2mm.

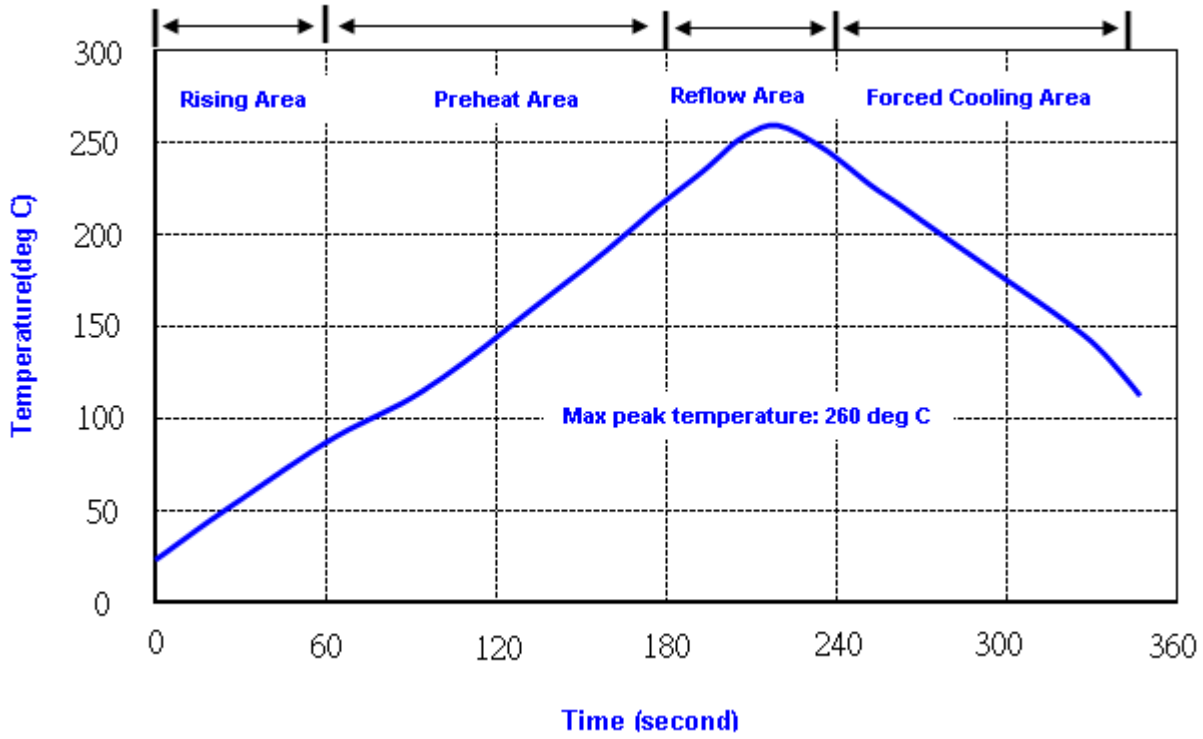
# Packing Quantity/Packing:

Reel Count: 7" = 3000

**3K pcs maximum per reel**




## Reflow Profile:




**Note: 1.Max peak temperature: 260+/-5 deg C; Time: 10+/-2 sec**

**2. Temperature: 217+/-5 deg C; Time: 90~100 sec**

# Reliability Specifications

| Test name | Test process / method | Reference standard |
|---|---|---|
| **Mechanical characteristics** | | |
| resistance to Soldering heat (IR reflow) | Temp./ Duration : 265°C /10sec ×2 times<br>Total time : 4min.(IR-reflow) | EIAJED-4701<br><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 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 method 213 |
| Solderability | Solder Temperature:265±5°C<br>Duration time: 5±0.5 seconds. | J-STD-002 |
| **Environmental characteristics** | | |
| Thermal Shock | Heat cycle conditions<br>-40 ℃ (30min) ⟷ 85 ℃ (30min)<br>* cycle time : 10 times | MIL-STD 883G method 1010.8 |
| Humidity test | Temperature : 85 ± 2 °C<br>Relative humidity : 85%<br>Duration : 96 hours | MIL-STD 202G method 103 |
| Dry heat ( Aging test ) | Temperature : 125 ± 2 °C<br>Duration : 168 hours | MIL-STD 202G method 108A |
| Cold resistance (Low Temp Storage) | Temperature : -40 ± 2 °C<br>Duration : 96 hours | IEC 60068-2-1 |