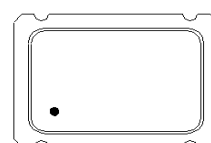


**XO6013**

**50.000000 MHz**  
**XO**



**SM7050-4**

## Features:

- Surface Mount Seam Weld Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature

## Application:

- 3.3 V Supply Voltage LVPECL Output
- Option-able stand-by function for output .

## Electrical Characteristics:

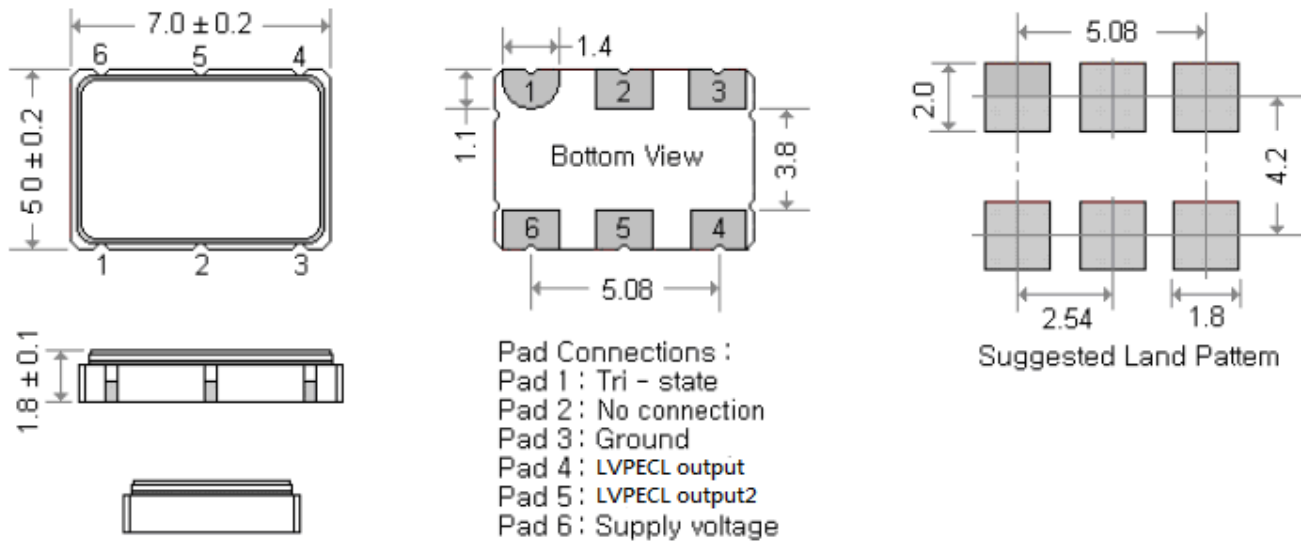
| <b>XO6013</b>                                                                                                                                                                                                                                               | <b>Specifications</b>                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Nominal Frequency, Fo                                                                                                                                                                                                                                       | 50.000000 MHz                                                                                                |
| Storage Temperature Range                                                                                                                                                                                                                                   | -50°C to +105°C                                                                                              |
| Operating Temperature Range                                                                                                                                                                                                                                 | -40°C to +85°C                                                                                               |
| Power Supply Voltage, Vcc                                                                                                                                                                                                                                   | 3.3 V +/- 5%                                                                                                 |
| Load                                                                                                                                                                                                                                                        | 50 ohm (LVPECL)                                                                                              |
| “0” Level<br>“1” Level                                                                                                                                                                                                                                      | 1.49 V min , 1.60 V typ. , 1.68 V max<br>2.27 V min , 2.35 V typ. , 2.62 V max                               |
| Output Voltage Swing                                                                                                                                                                                                                                        | 595 mV min , 750 mV typ. , 930 mV max                                                                        |
| Power Supply Current, Icc                                                                                                                                                                                                                                   | 30 mA typ. and 50 mA max                                                                                     |
| Frequency Tolerance                                                                                                                                                                                                                                         | +/-50 ppm max                                                                                                |
| Duty Cycle                                                                                                                                                                                                                                                  | 45% ~ 55%                                                                                                    |
| Star-up Time                                                                                                                                                                                                                                                | 5.0 msec typ. , 10 msec max                                                                                  |
| RMS Phase Jitter (12K~20MHz)                                                                                                                                                                                                                                | 0.2 ps typ. , 0.5 ps max                                                                                     |
| Rise Time ( 20% -> 80% of final RF level in Vp-p )<br>Fall Time ( 80% -> 20% of final RF level in Vp-p )                                                                                                                                                    | 0.3 nsec typ. , 0.5 nsec max.<br>0.3 nsec typ. , 0.5 nsec max.                                               |
| Aging at Ta = + 25°C                                                                                                                                                                                                                                        | +/-3 ppm max first year<br>+/-2 ppm max per year thereafter                                                  |
| SSB Phase Noise (@10Hz Carrier Offset)<br>SSB Phase Noise (@100Hz Carrier Offset)<br>SSB Phase Noise (@1KHz Carrier Offset)<br>SSB Phase Noise (@10KHz Carrier Offset)<br>SSB Phase Noise (@1MHz Carrier Offset)<br>SSB Phase Noise (@10MHz Carrier Offset) | -50 dBc/Hz typ<br>-82 dBc/Hz typ<br>-116 dBc/Hz typ<br>-138 dBc/Hz typ<br>-144 dBc/Hz typ<br>-149 dBc/Hz typ |

Enable/Disable Function

PIN 1: High or Open, PIN 3:Output Enable  
PIN 1: Low, PIN 3:Output Disable

#Note 1: Frequency accuracy includes 25C tolerance, operating temperature range -40 to 85deg C, aging and voltage or load change

## Mechanical Dimensions: (Unit: mm)



## Marking :

Line 1 : Frequency (50.000)

Line 2 : ①WDXX (Product Code + Date Code + Internal Traceability Code (XX) : Can be 1 or 2 letters)



## Product Code Table

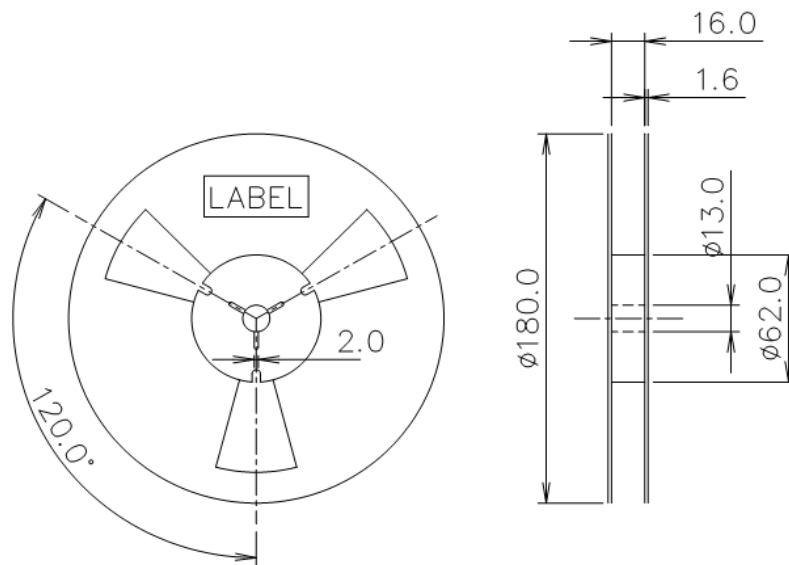
|              |      |      |          |          |
|--------------|------|------|----------|----------|
| Year         | 2013 | 2014 | 2015     | 2016     |
|              | 2017 | 2018 | 2019     | 2020     |
|              | 2021 | 2022 | 2023     | 2024     |
| Product code | W    | w    | <u>W</u> | <u>w</u> |

## Date Code Table

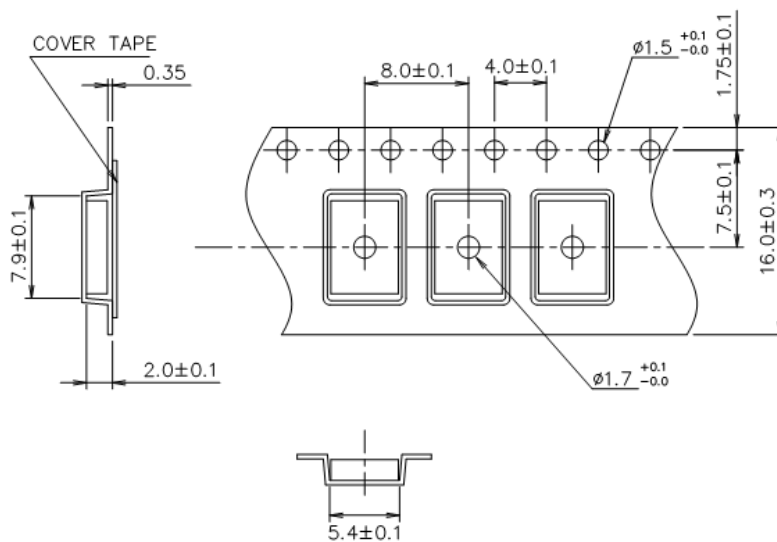
|      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| WK01 | WK02 | WK03 | WK04 | WK05 | WK06 | WK07 | WK08 | WK09 | WK10 | WK11 | WK12 | WK13 |
| A    | B    | C    | 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    |

## Packing:

### ■ Reel Dimension (Unit: mm)



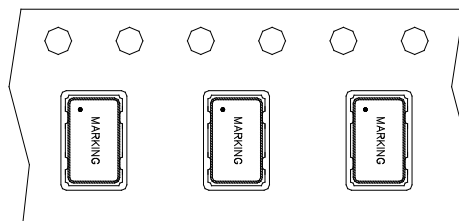
### ■ Tape Dimension (Unit: mm)



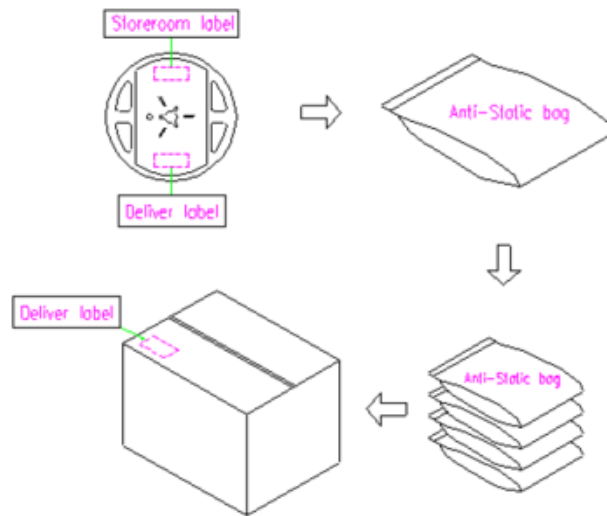
#### [NOTE]:

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.
4. Packing Direction: dot or the logo of marking should be close to the hole of tape.

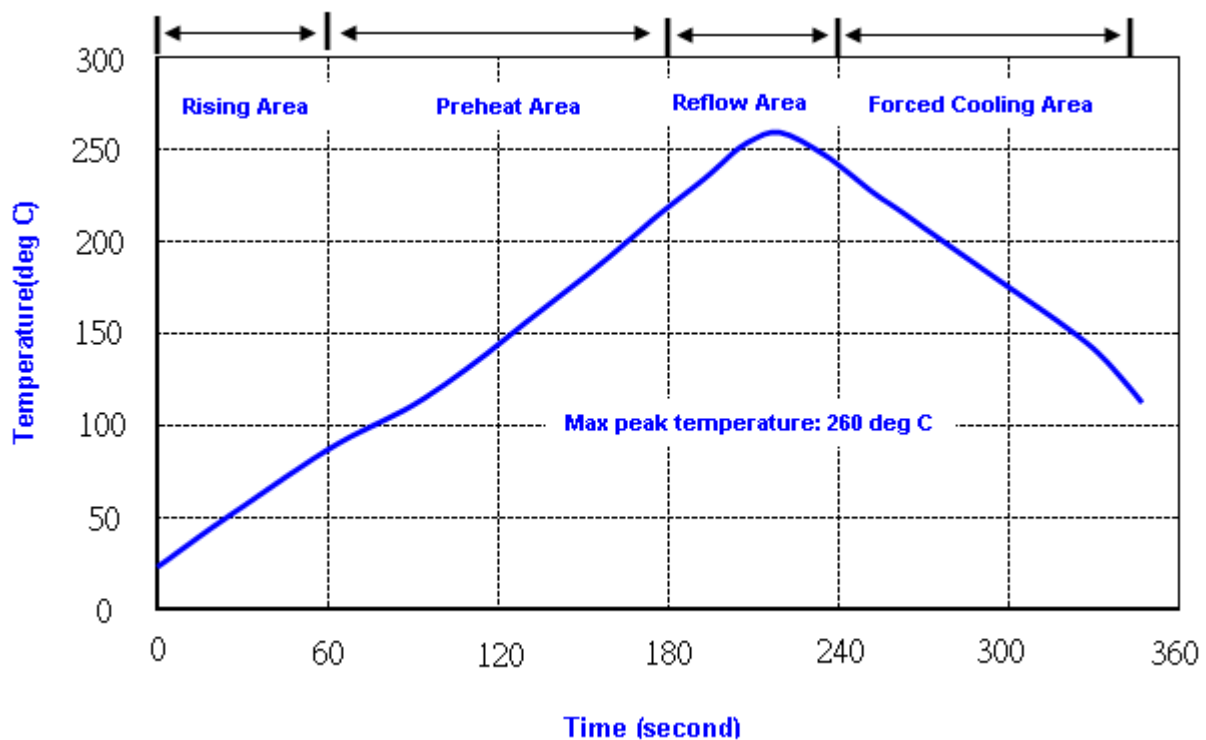
### ■ PACKING DIRECTION:



## Packing Quantity/Packing: 1K 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 ( Aging test )                  | Temperature : 125 ± 2 °C<br>Duration : 168 hours                                                                                                                               | MIL-STD 202G<br>method 108A   |
| Cold resistance (Low Temp Storage)       | Temperature : -40 ± 2 °C<br>Duration : 96 hours                                                                                                                                | IEC 60068-2-1                 |



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

**NOTES:**

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.