A Product Line of Diodes Incorporated

# SPECIFICATION FOR APPROVAL

| | |
|---|---|
| CUSTOMER | |
| NOMINAL FREQUENCY | 49.152000 MHz |
| PRODUCT TYPE | TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR |
| SPEC. NO. ( P/N ) | FN4910024 |
| CUSTOMER P/N | |
| ISSUE DATE | May 17, 2018 |
| VERSION | C |

| APPROVED | PREPARED | QA |
|---|---|---|
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*Pb-free
*RoHS Compliant
*HF-Halogen Free
*REACH Compliant

# VERSION HISTORY

| Version No. | Version Date | Description | Notes |
|---|---|---|---|
| A | Oct.13,2010 | Initial Release | |
| B | Jan.25,2011 | Revised format | |
| C | May.17,2018 | Updated Logo | |
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# TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

## *FN4910024*

VER. C 17-May-18

## ELECTRICAL SPECIFICATIONS

**SRe Part Number : FN4910024**

| Item | Symbol | Specifications | Units | Notes |
|---|---|---|---|---|
| Nominal Frequency | Fo | 49.152000 | MHz | |
| Frequency Stability | FT | ± 25 | ppm | **See note |
| Operating Temperature Range | TR | -20 to +70 | °C | |
| Supply Voltage | $V_{DD}$ | +3.3 ± 10.0% | V | |
| Logic Type | LT | LVCMOS | | |
| Supply Current, Output Enabled | $I_{DD}$/OE | 25 | mA | Max. |
| Supply Current, Output Disabled | $I_{DD}$/OD | 10 | µA | Max. |
| Duty Cycle (Symmetry) | DC/SY | 45 / 55 | % | Measured 50% of Waveform |
| Rise / Fall Time | $T_R/T_F$ | 7 | ns | Max. measured 20/80% of Waveform |
| Output Voltage "0" Level | $V_{OL}$ | 10% $V_{DD}$ | V | Max. |
| Output Voltage "1" Level | $V_{OH}$ | 90% $V_{DD}$ | V | Min. |
| Output Load | CL | 15 | pF | Max |
| Jitter, Phase | RMS | 1.5 | ps | Max, 12KHz ~ 20MHz Frequency Band |
| Jitter, Accumulated | RMS(1-σ) | 5 | ps | Max, 20,000 Consecutive Periods |
| Jitter, Peak to Peak | Pk-Pk | 50 | ps | Max, 100,000 Random Periods |
| Start Up Time | | 10 | ms | Max |
| Storage Temperature Range | | -55 to +125 | °C | |

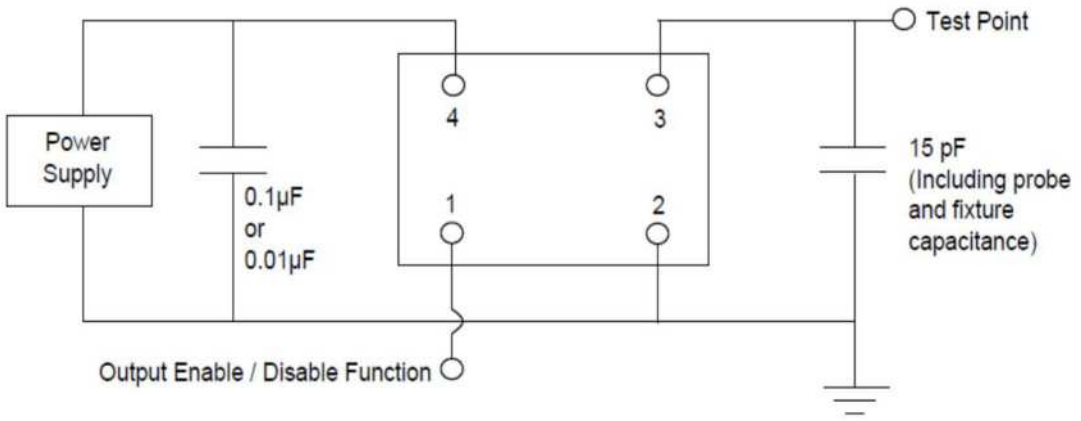
**※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).**

****Stability includes all combinations of Operating Temperature, Load changes, rated Input (Supply) Voltage changes, Initial Calibration Tolerance (25°C), Aging (1 year at 25°C Average Effective Ambient Temperature), Shock and Vibration.**

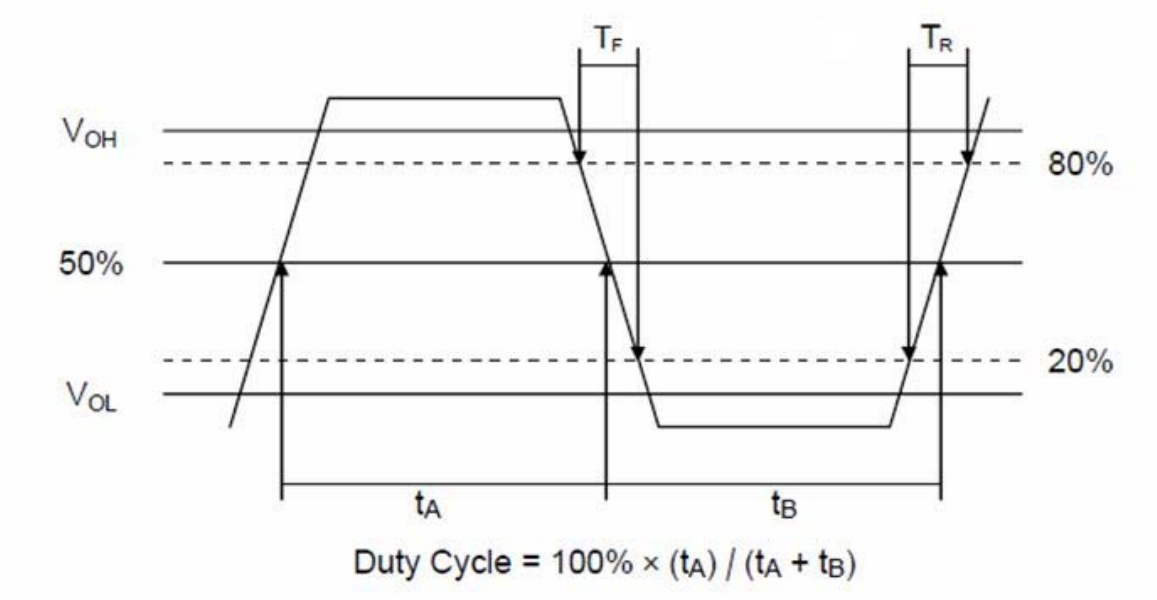
**Output Enable / Disable Function**

| Parameter | Min. | Typ. | Max. | Units | Notes |
|---|---|---|---|---|---|
| Input Voltage (Pin1), Output Enable | $0.7V_{DD}$ | | | V | Or Open |
| Input Voltage (Pin1), Output Disable (low power standby) | | | $0.3V_{DD}$ | V | Output is Hi-Z |
| Internal Pullup Resistance | 30 | | | KΩ | |
| Output Disable Delay | | | 200 | ns | |
| Output Enable Delay | | | 2 | ms | |

## TEST CIRCUIT




## OUTPUT WAVEFORM



## RELIABILITY SPECIFICATIONS

**ENVIRONMENTAL:**

a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A

b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004

c) VIBRATION: MIL-STD-883, Method 2007, Condition A

d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)

e) HAZARDOUS SUBSTANCE: Pb - free and RoHS Compliant.

**MECHANICAL:**

a) SHOCK: MIL-STD-883, Method 2002, Condition B

b) SOLDERABILITY: JESD22-B102-D Method 2 (Preconditioning E)

c) TERMINAL STRENGTH: MIL-STD-883, Method 2004, Test Condition D

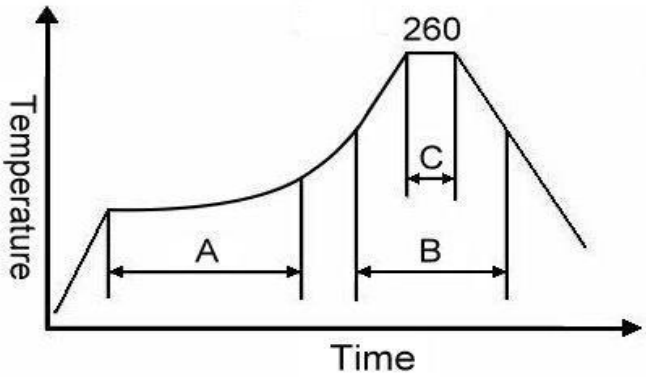
d) GROSS LEAK: MIL-STD-883, Method 1014, Condition C

e) FINE LEAK: MIL-STD-883, Method 1014, Condition A2, R1=2x10$^{-8}$ atm cc/s

f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

## SUGGESTED IR REFLOW PROFILE

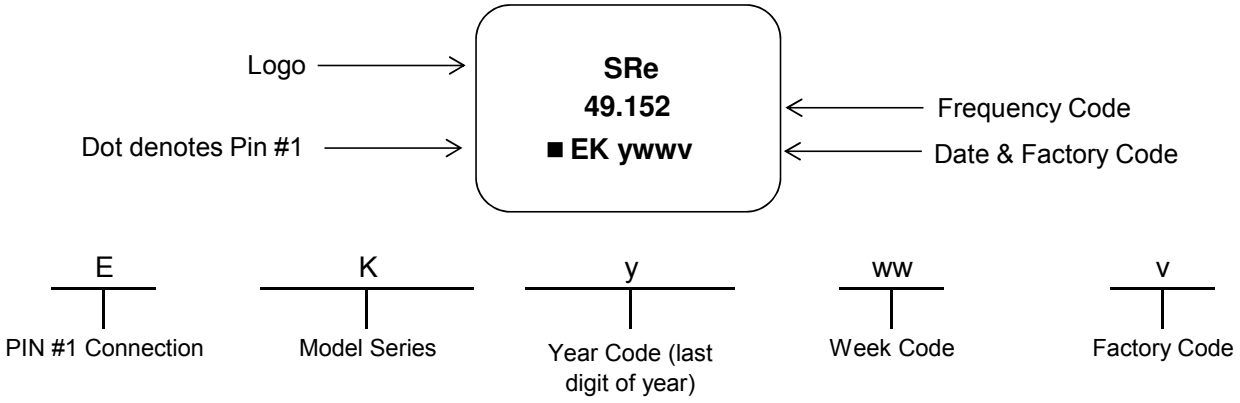
*As per IPC-JEDEC J-STD-020D



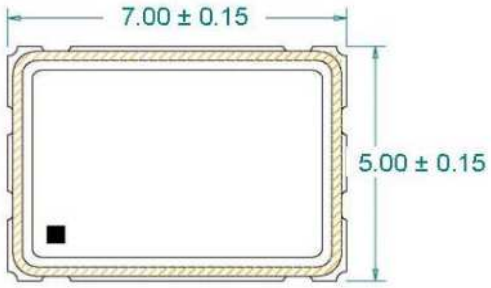

Note:

| | Stage | Temperature | Time |
|---|---|---|---|
| A | Preheat | 150~200°C | 60~120 Sec |
| B | Primary Heat | 217°C | 60~150 Sec |
| C | Peak | 260°C | 10 Sec |

## MARKING

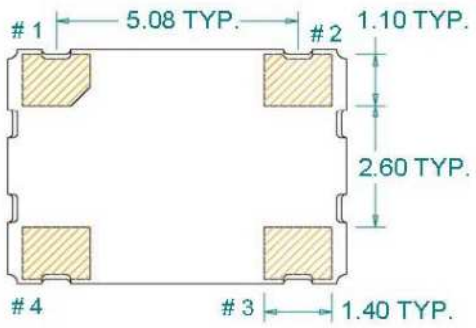



## MECHANICAL DRAWINGS ( Scale:None. Dimensions are in mm.)



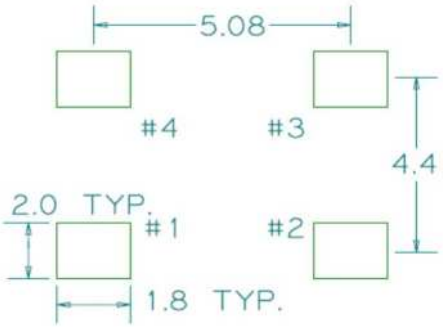







(Bottom View)

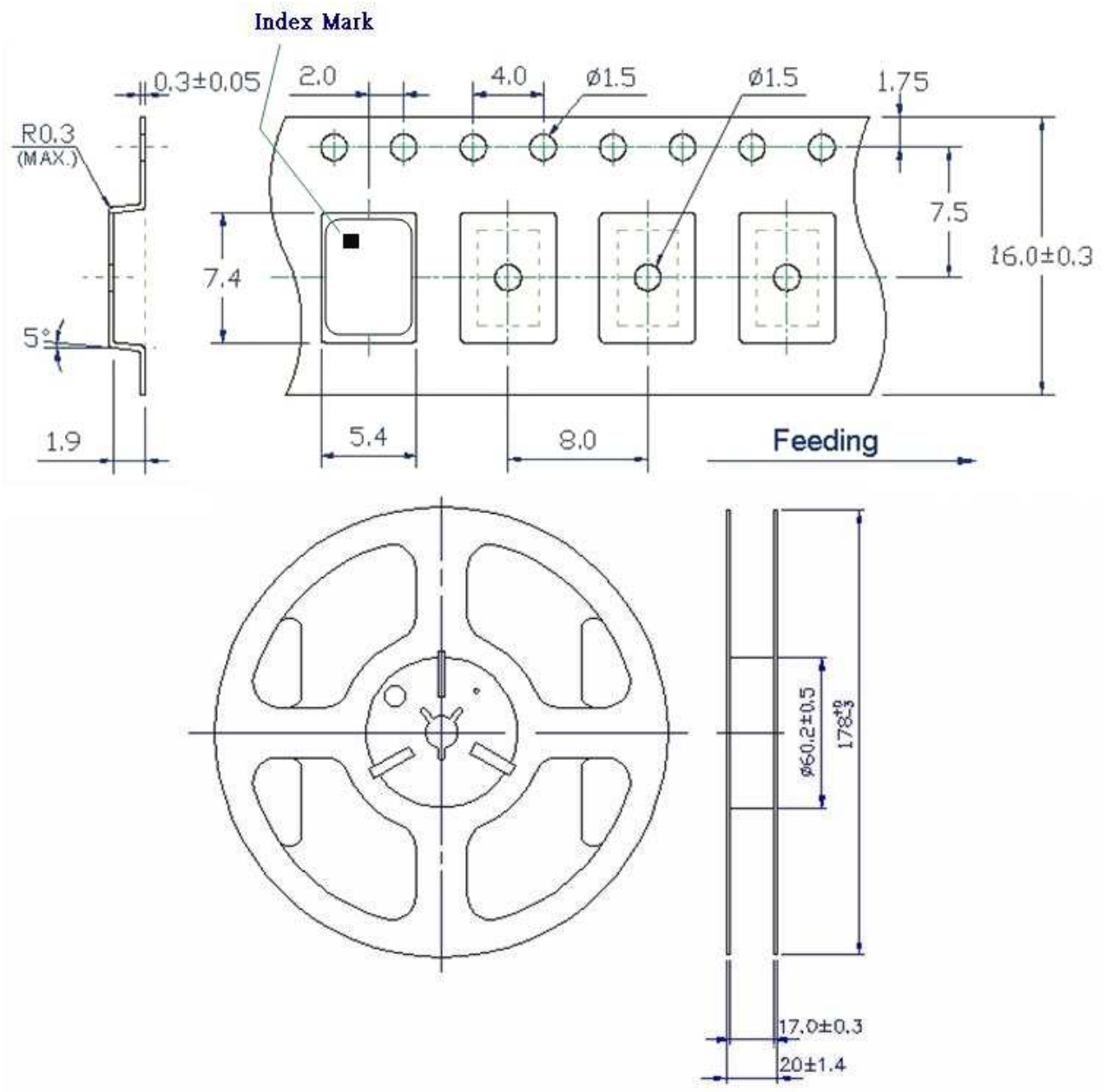
Recommended Land Pattern*




*External high-frequency power decoupling is recommended.(see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

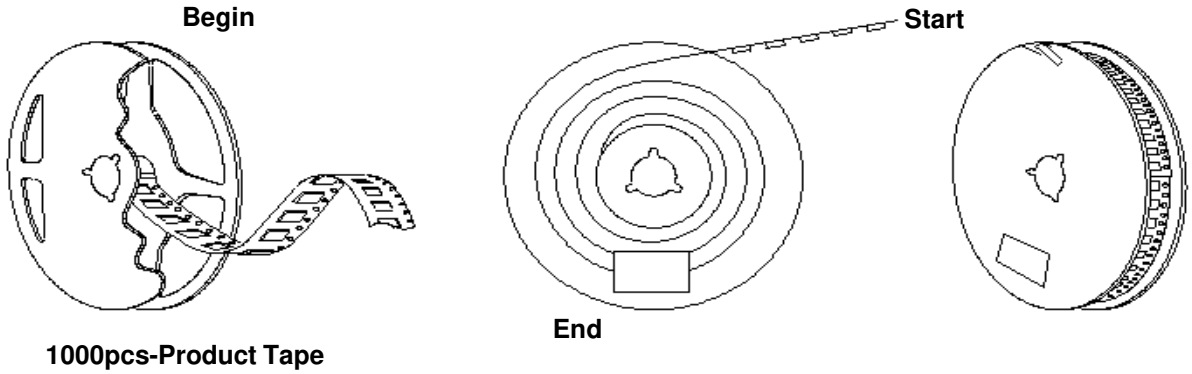
| Pin | Function |
|---|---|
| 1 | OE |
| 2 | Ground |
| 3 | Clock Output |
| 4 | $V_{DD}$ |

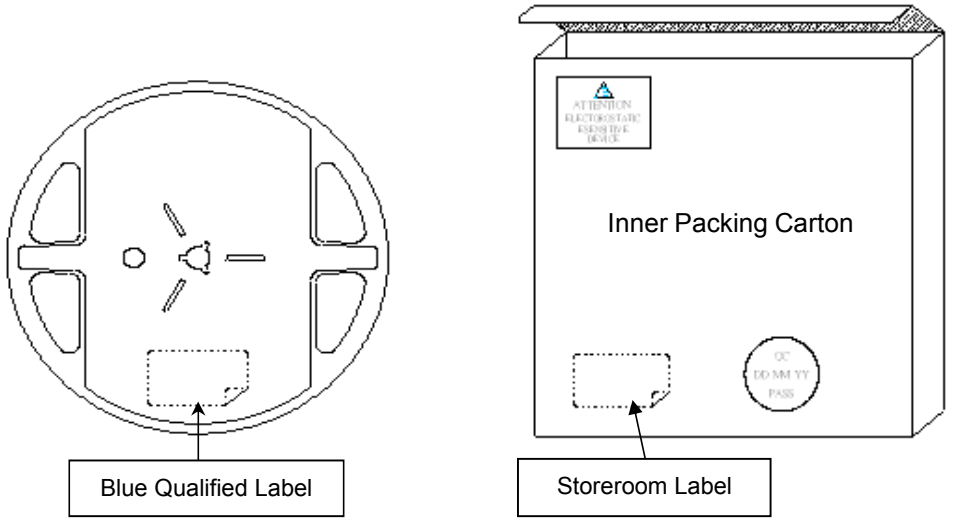
## TAPE&REEL

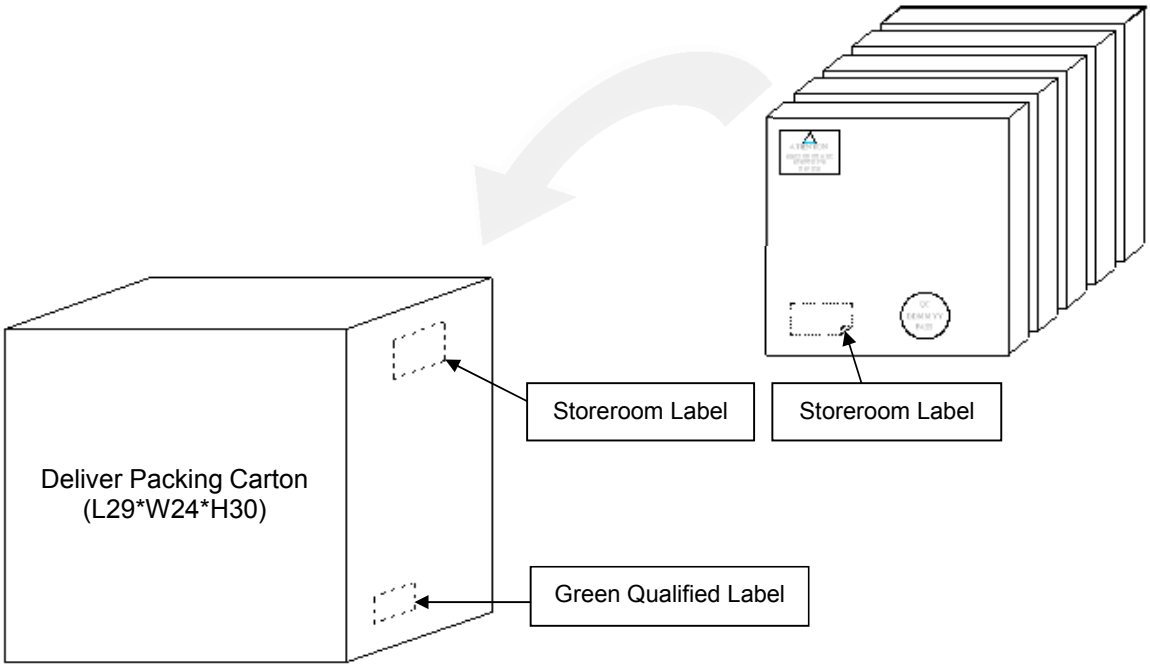



1. 230mm minimum leafer which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

## PACKING


Begin
Start
End
1000pcs-Product Tape


Inner Packing Carton
Blue Qualified Label
Storeroom Label


Storeroom Label
Storeroom Label
Deliver Packing Carton
(L29*W24*H30)
Green Qualified Label