



A Product Line of  
Diodes Incorporated



## SPECIFICATION FOR APPROVAL

|                   |                                                      |
|-------------------|------------------------------------------------------|
| CUSTOMER          | _____                                                |
| NOMINAL FREQUENCY | 156.250000 MHz                                       |
| HOLDER TYPE       | TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR |
| SPEC. NO. ( P/N ) | NX3241E0156.250000                                   |
| CUSTOMER P/N      | _____                                                |
| ISSUE DATE        | June 4, 2018                                         |
| VERSION           | A                                                    |

| APPROVED                                                                            | PREPARED                                                                            | QA                                                                                    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |

### Diodes Incorporated

No.2, Ziqiang 5th Rd., Zhongli Industrial Park,  
Zhongli Dist., Taoyuan City 32063, Taiwan (R.O.C.)  
TEL: 886-3-451-8888  
FAX: 886-3-461-3865  
<https://www.diodes.com>

\*Pb-free  
\*RoHS Compliant  
\*HF-Halogen Free  
\*REACH Compliant

Diodes Internal Reference NO. 002

## TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

***NX3241E0156.250000***

VER. A

4-Jun-18

## VERSION HISTORY

[illegible]

# TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

**NX3241E0156.250000**

VER. A

4-Jun-18

## ELECTRICAL SPECIFICATIONS

**SRe Part Number : NX3241E0156.250000**

| Item                            | Symbol                         | Specifications         | Units | Notes                                       |
|---------------------------------|--------------------------------|------------------------|-------|---------------------------------------------|
| Nominal Frequency               | F <sub>0</sub>                 | 156.250000             | MHz   |                                             |
| Frequency Stability             | FT                             | ± 50                   | ppm   | **See note                                  |
| Operating Temperature Range     | TR                             | -40 to +85             | °C    |                                             |
| Supply Voltage                  | V <sub>CC</sub>                | +3.3 ± 5.0%            | V     |                                             |
| Logic Type                      | LT                             | HCSL                   |       |                                             |
| Supply Current, Output Enabled  | I <sub>CC</sub> /OE            | 70                     | mA    | Max.                                        |
| Supply Current, Output Disabled | I <sub>CC</sub> /OD            | 40                     | mA    | Max.                                        |
| Duty Cycle (Symmetry)           | DC/SY                          | 45 / 55                | %     | Measured 50% of Waveform                    |
| Rise / Fall Time                | T <sub>R</sub> /T <sub>F</sub> | 700                    | ps    | Max. measured from Vol=0.175V to Voh=0.525V |
| Output Voltage "0" Level        | V <sub>OL</sub>                | -0.150 / 0             | V     | Min. / Typ.                                 |
| Output Voltage "1" Level        | V <sub>OH</sub>                | 0.66 / 0.70 / 0.90     | V     | Min. / Typ. / Max.                          |
| Output Load                     |                                | Rs=33Ω, Rp=50Ω, CL=2pF |       | Output requires termination                 |
| Jitter, Phase                   | RMS                            | 1                      | ps    | Max. 12KHz ~ 20MHz Frequency Band           |
| Jitter, Accumulated             | RMS(1-σ)                       | 6                      | ps    | Max. 20,000 Consecutive Periods             |
| Jitter, Peak to Peak            | Pk-Pk                          | 40                     | ps    | Max. 100,000 Random Periods                 |
| 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

| Parameter                                                | Min.               | Typ. | Max.               | Units | Notes          |
|----------------------------------------------------------|--------------------|------|--------------------|-------|----------------|
| Input Voltage (Pin1), Output Enable                      | 0.7V <sub>CC</sub> |      |                    | V     | Or Open        |
| Input Voltage (Pin1), Output Disable (low power standby) |                    |      | 0.3V <sub>CC</sub> | V     | Output is Hi-Z |
| Output Disable Delay                                     |                    |      | 100                | ns    |                |
| Output Enable Delay                                      |                    |      | 100                | ns    |                |
| Start Up Time                                            |                    |      | 10                 | ms    |                |



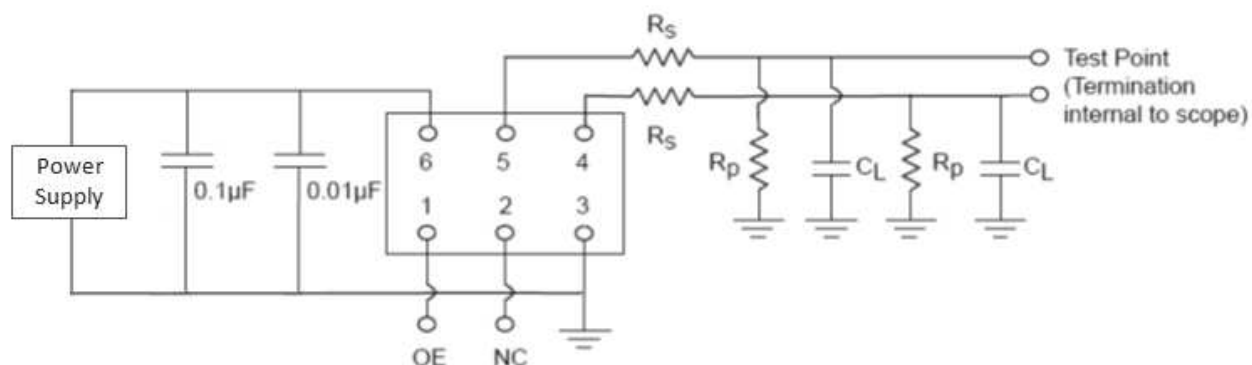
# TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

***NX3241E0156.250000***

VER. A

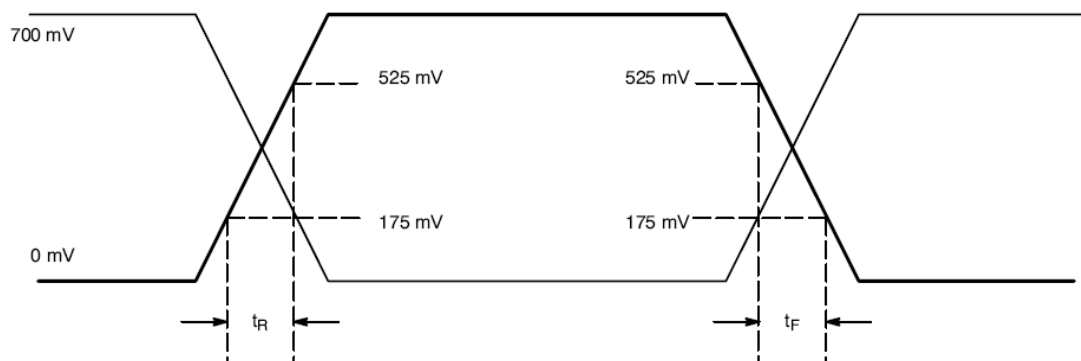
4-Jun-18

## TEST CIRCUIT



$$R_S = 33\Omega \quad R_P = 50\Omega, \quad C_L = 2\text{pF}$$

## OUTPUT WAVEFORM



# TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

***NX3241E0156.250000***

VER. A

4-Jun-18

## RELIABILITY SPECIFICATIONS

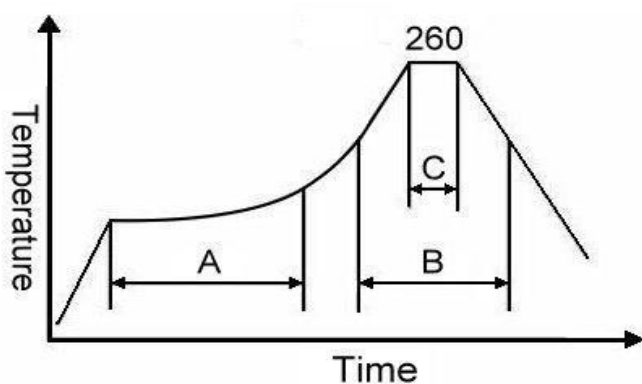
### ENVIRONMENTAL:

- 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: 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,  $R1=2 \times 10^{-8}$  atm cc/s
- f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

## SUGGESTED IR REFLOW PROFILE



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     |

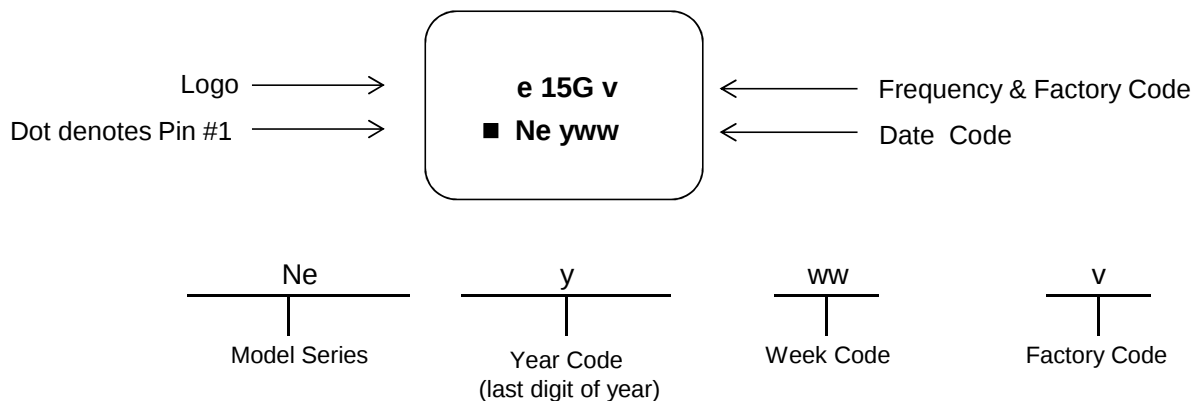
# TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

**NX3241E0156.250000**

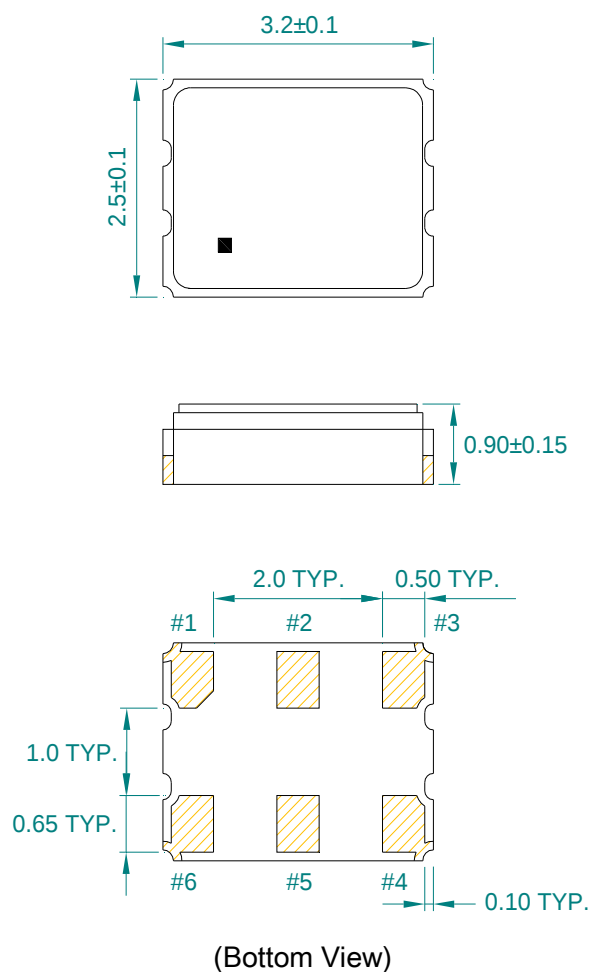
VER. A

4-Jun-18

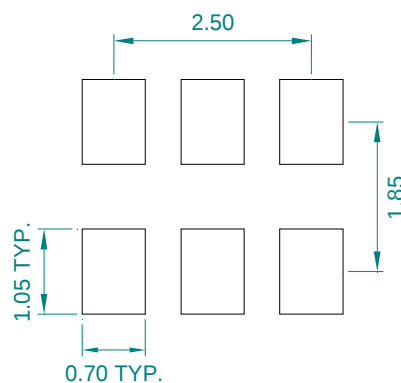
## MARKING



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



### 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   | NC              |
| 3   | V <sub>EE</sub> |
| 4   | OUTPUT          |
| 5   | OUTPUT N        |
| 6   | V <sub>CC</sub> |

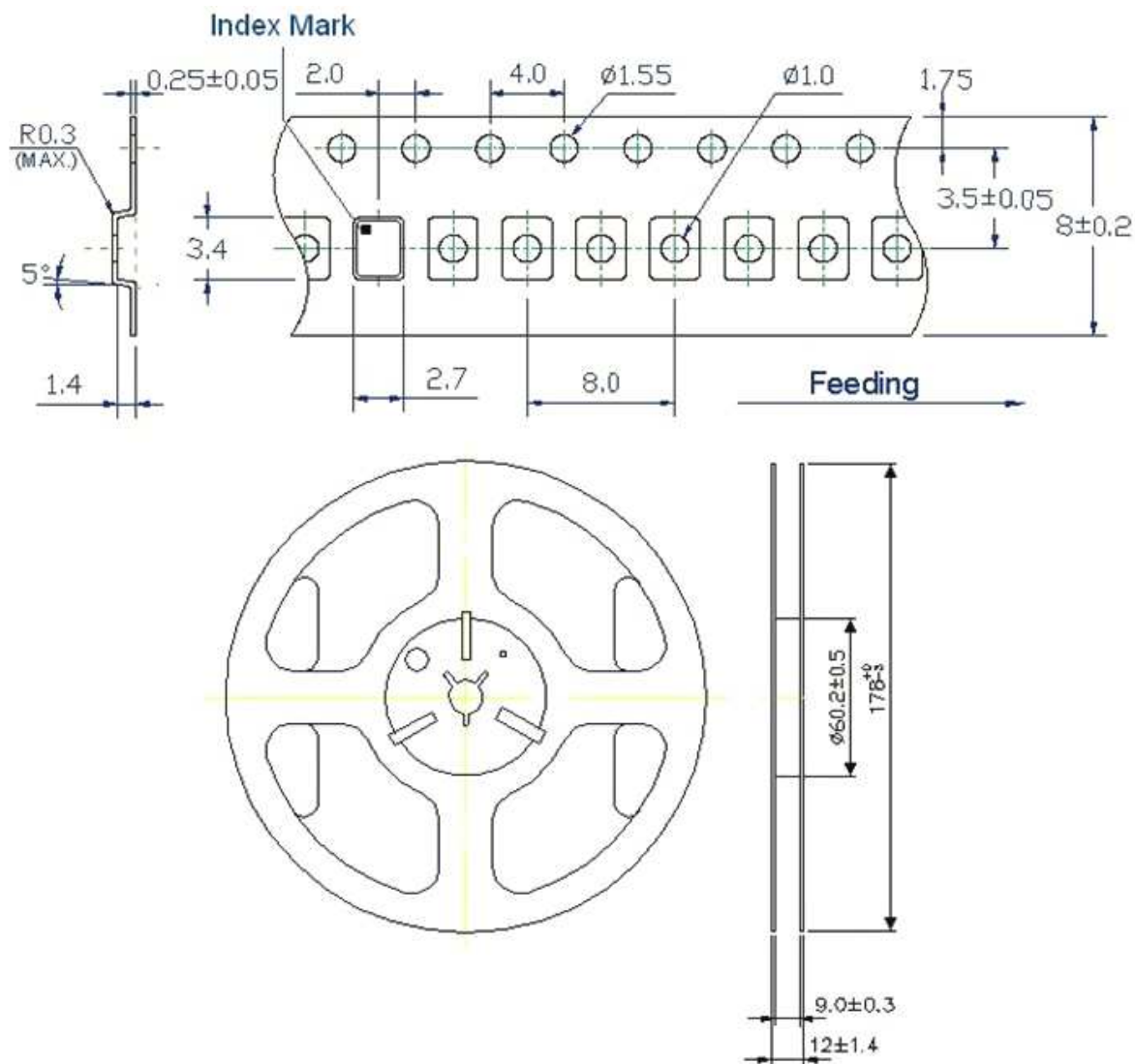
# TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

**NX3241E0156.250000**

VER. A

4-Jun-18

## TAPE&REEL



1. 230mm minimum leader 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.

# TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

***NX3241E0156.250000***

VER. A

4-Jun-18

## PACKING

