



A Product Line of  
Diodes Incorporated



## SPECIFICATION FOR APPROVAL

|                   |                                                      |
|-------------------|------------------------------------------------------|
| CUSTOMER          | _____                                                |
| NOMINAL FREQUENCY | 156.250000 MHz                                       |
| PRODUCT TYPE      | TYPE UF 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR |
| SPEC. NO. ( P/N ) | UF33F6202Z                                           |
| CUSTOMER P/N      | _____                                                |
| ISSUE DATE        | May 12, 2021                                         |
| VERSION           | B                                                    |

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

### Diodes Incorporated

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

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

***UF33F6202Z***

VER. B 12-May-21

## VERSION HISTORY

[illegible]

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

## UF33F6202Z

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### ELECTRICAL SPECIFICATIONS

SRe Part Number : UF33F6202Z

| Item                             | Symbol                         | Specifications     | Units | Notes                                    |
|----------------------------------|--------------------------------|--------------------|-------|------------------------------------------|
| Nominal Frequency                | Fo                             | 156.250000         | MHz   |                                          |
| Frequency Stability              | FT                             | ± 25               | ppm   | **See note                               |
| Operating Temperature Range      | TR                             | -40 to +85         | °C    |                                          |
| Supply Voltage                   | V <sub>CC</sub>                | +2.5±5% to +3.3±5% | V     | at +3.3V Typ.                            |
| Logic Type                       | LT                             | LVDS               |       |                                          |
| Supply Current, Output Enabled   | I <sub>CC</sub> /OE            | 25                 | mA    | Max.                                     |
| Supply Current, Output Disabled  | I <sub>CC</sub> /OD            | 30                 | uA    | Max.                                     |
| Duty Cycle (Symmetry)            | DC/SY                          | 45 / 55            | %     | Measured 50% of Waveform                 |
| Rise / Fall Time                 | T <sub>R</sub> /T <sub>F</sub> | 0.3                | ns    | Max. measured 20/80% of Waveform         |
| Output Voltage "0" Level         | V <sub>OL</sub>                | 1.10 / 0.9         | V     | Typ. / Min.                              |
| Output Voltage "1" Level         | V <sub>OH</sub>                | 1.43 / 1.6         | V     | Typ. / Max.                              |
| Output Load                      |                                | 100Ω & 5pF LVDS    |       |                                          |
| Differential Output Voltage      | V <sub>OD</sub>                | 250 / 350 / 450    | mV    | Min. / Typ. / Max.                       |
| V <sub>OD</sub> Magnitude Change | ΔV <sub>OD</sub>               | 50                 | mV    | Max.                                     |
| Output offset Voltage            | V <sub>OS</sub>                | 1.15 / 1.25 / 1.35 | V     | Min. / Typ. / Max.                       |
| V <sub>OS</sub> Magnitude Change | ΔV <sub>OS</sub>               | 50                 | mV    | Max.                                     |
| Jitter, Phase                    | RMS                            | 60 / 90            | fs    | Typ. / Max. 12KHz ~ 20MHz Frequency Band |
| Jitter, Accumulated              | RMS(1-σ)                       | 4                  | ps    | Typ. 20,000 Consecutive Periods          |
| Jitter, Peak to Peak             | Pk-Pk                          | 40                 | ps    | Max. 100,000 Random Periods              |
| Start Up Time                    |                                | 3                  | 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 <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                                     |                    |      | 200                | ns    |                |
| Output Enable Delay                                      |                    |      | 2                  | ms    |                |

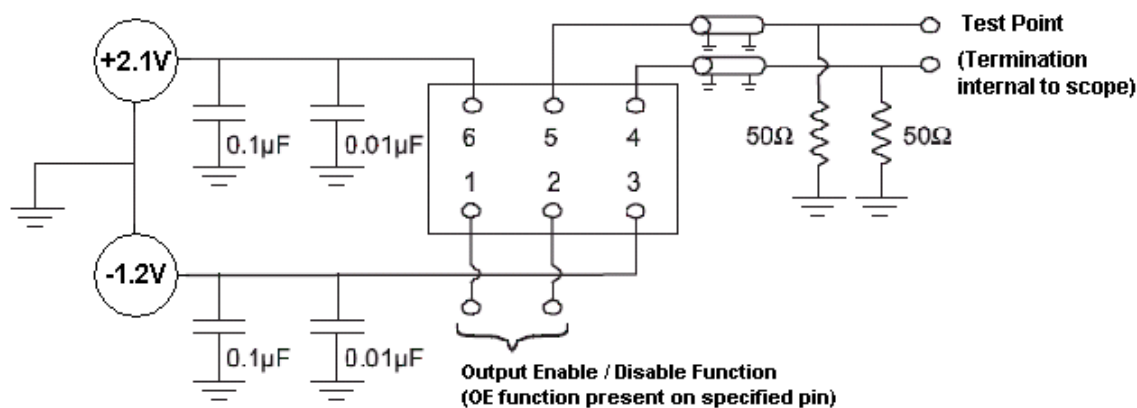


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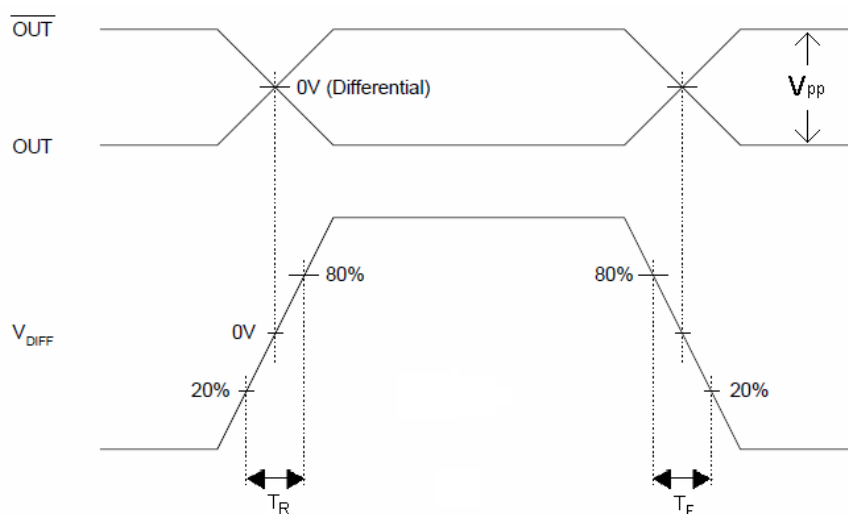
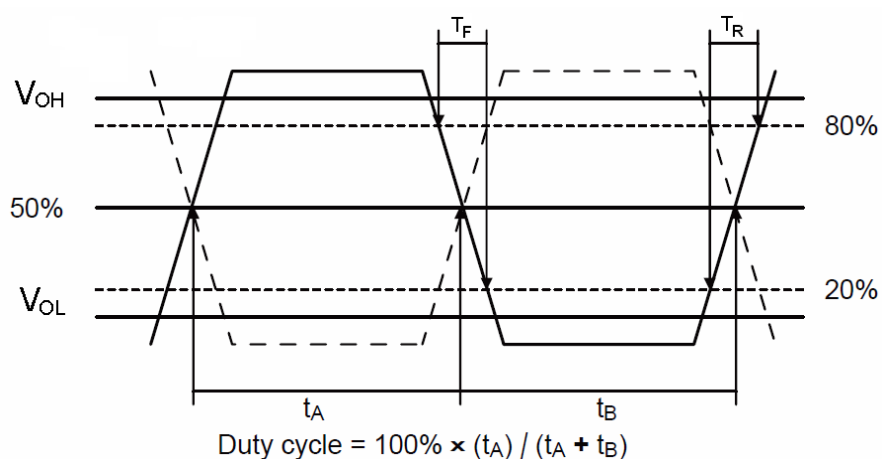
**UF33F6202Z**

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## TEST CIRCUIT



## OUTPUT WAVEFORM



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## RELIABILITY SPECIFICATIONS

### ENVIRONMENTAL:

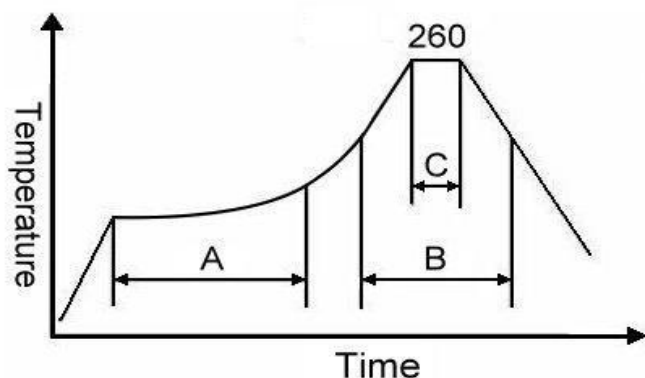
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices  
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS/ Green 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

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



Note:

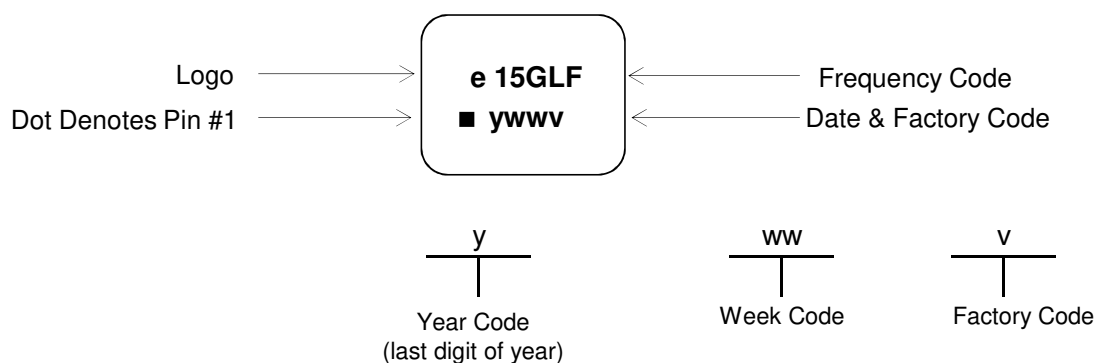
|   | Stage        | Temperature | Time       |
|---|--------------|-------------|------------|
| A | Preheat      | 150~200°C   | 60~120 Sec |
| B | Primary Heat | 217°C       | 60~150 Sec |
| C | Peak         | 260°C       | 10 Sec     |

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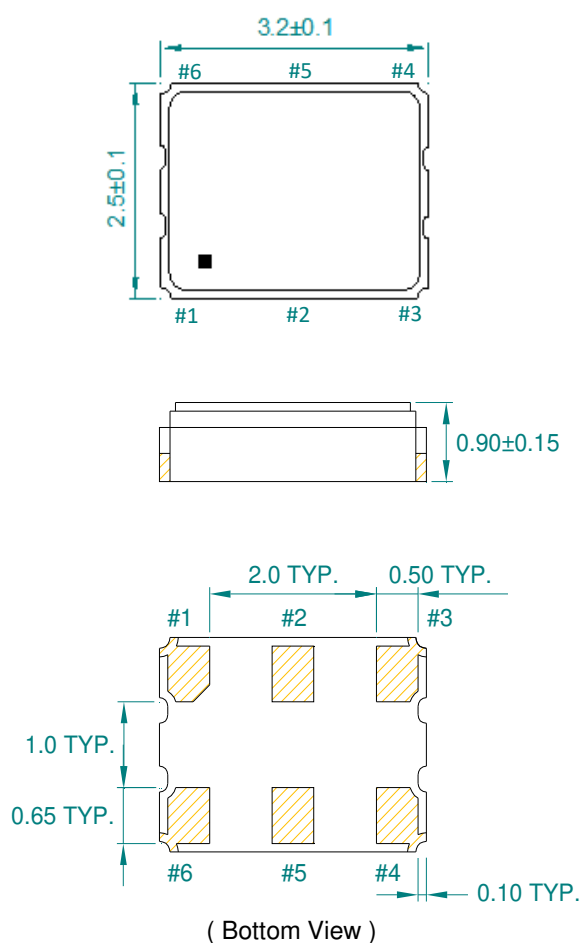
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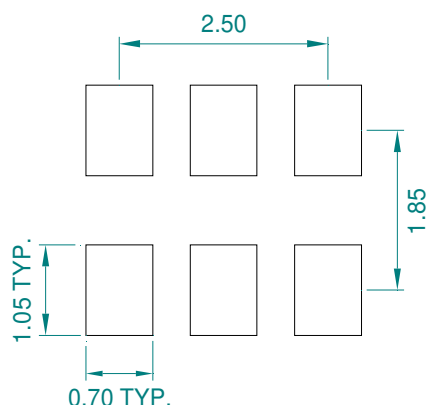
## MARKING



## 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.

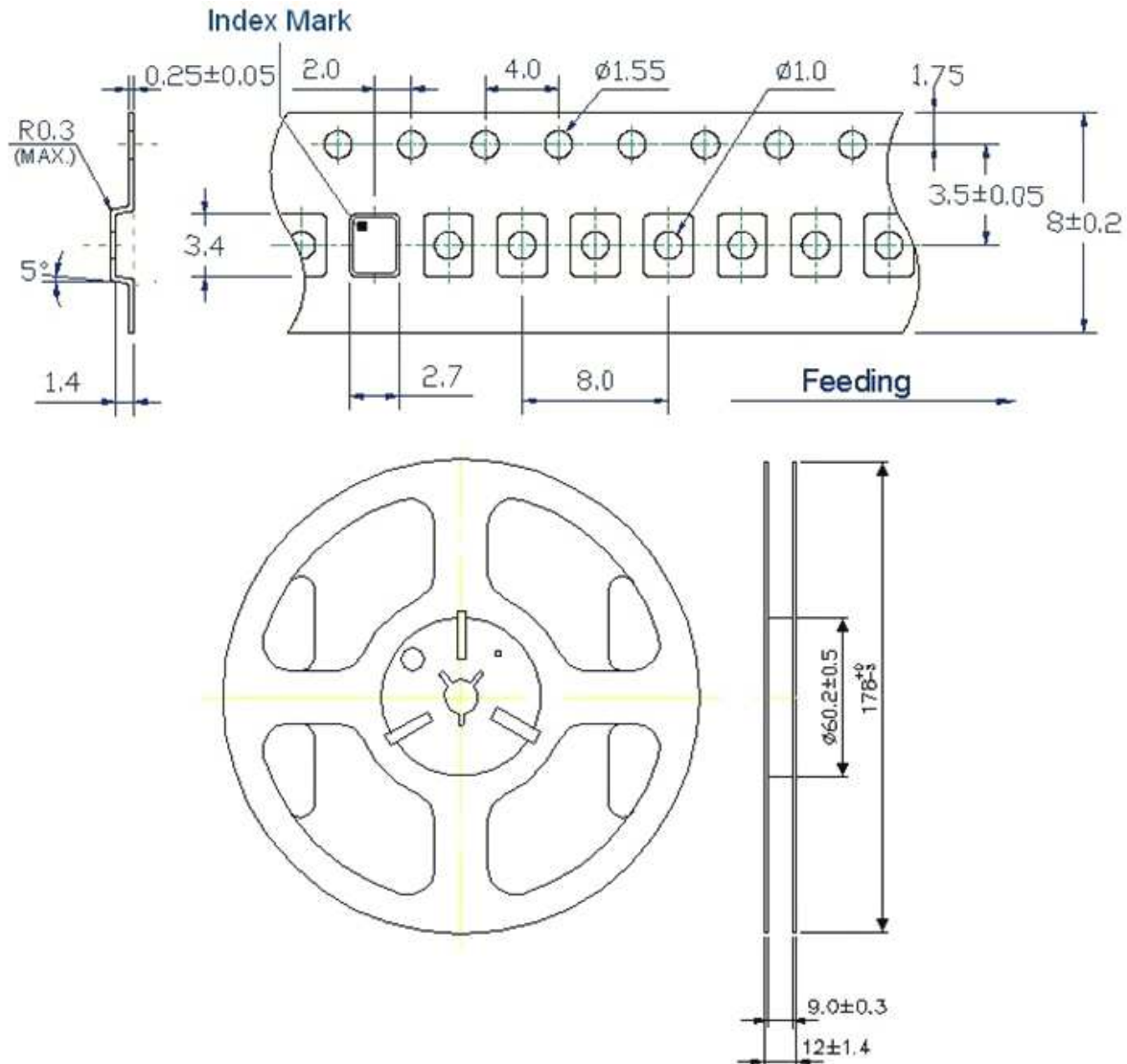
| Pin | Function        |
|-----|-----------------|
| 1   | EN              |
| 2   | NC              |
| 3   | V <sub>EE</sub> |
| 4   | OUTPUT          |
| 5   | OUTPUT N        |
| 6   | V <sub>CC</sub> |

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## 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.

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## PACKING

