



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY 125.000000 MHz

PRODUCT TYPE TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. (P/N) FNC500139

CUSTOMER P/N _____

ISSUE DATE May 3, 2018

VERSION C

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

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

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FNC500139

VER. C 3-May-18

VERSION HISTORY

| Version No. | Version Date | Description | Notes |
|-------------|--------------|---|-------|
| 01 | Mar.17,2009 | Initial Release | |
| A | Jun.5,2009 | Updated to Ver.A | |
| B | May.7,2010 | Removed RJ, DJ spec & Jitter, Peak to Peak, Start up timeTyp. Spec & changed Jitter, Phase to 1ps max. | |
| C | May.2,2018 | 1.Updated logo 2.Changed Jitter, Phase to 0.18ps typ / 0.3ps max. 3.Changed Jitter, Peak to Peak to 22ps typ / 30ps max. 4.Changed Start Up Time to 0.8ms typ. | |
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ELECTRICAL SPECIFICATIONS

SRe Part Number : FNC500139

| Item | Symbol | Specifications | Units | Notes |
|---------------------------------|--------------------------------|---------------------|-------|---|
| Nominal Frequency | Fo | 125.000000 | MHz | |
| Frequency Stability | FT | ± 50 | ppm | **See note |
| Operating Temperature Range | TR | -20 to +70 | °C | |
| Supply Voltage | V _{DD} | +2.5 ± 5.0% | V | |
| Logic Type | LT | LVC MOS | | |
| Supply Current, Output Enabled | I _{DD} /OE | 35 | 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 | 3 | 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 | 0.18 / 0.3 | ps | Typ / Max, 12KHz ~ 20MHz Frequency Band |
| Jitter, Accumulated | RMS(1-σ) | 3 | ps | Max, 20,000 Consecutive Periods |
| Jitter, Peak to Peak | Pk-Pk | 22 / 30 | ps | Typ / Max, 100,000 Random Periods |
| Start Up Time | | 0.8 | ms | Typ. |
| 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 | |

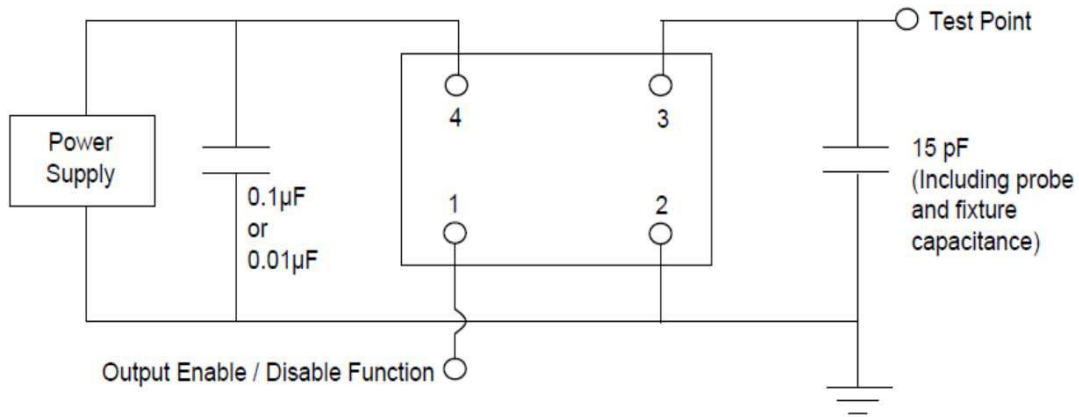


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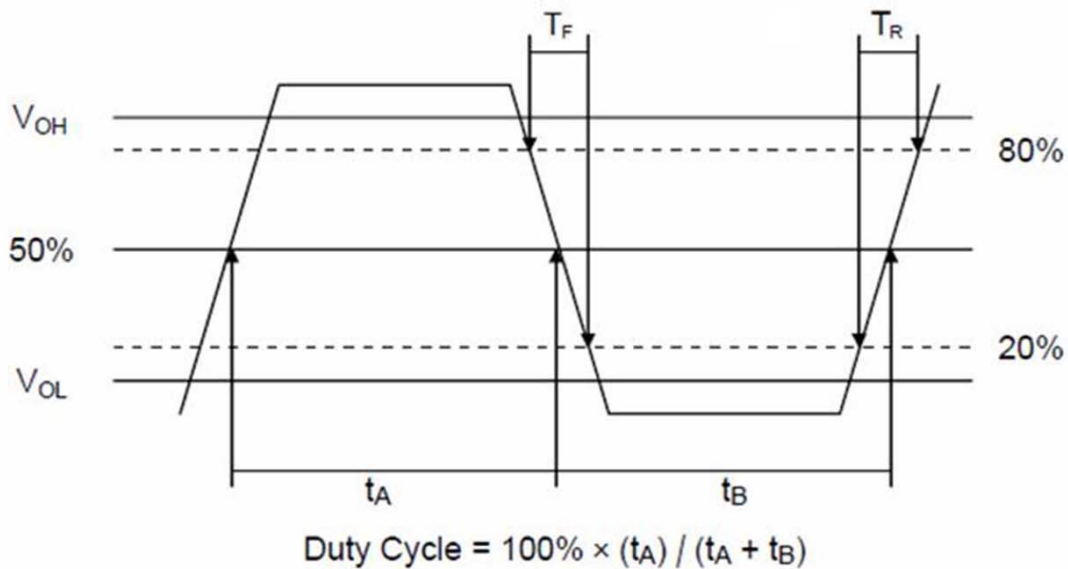
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TEST CIRCUIT



OUTPUT WAVEFORM



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RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

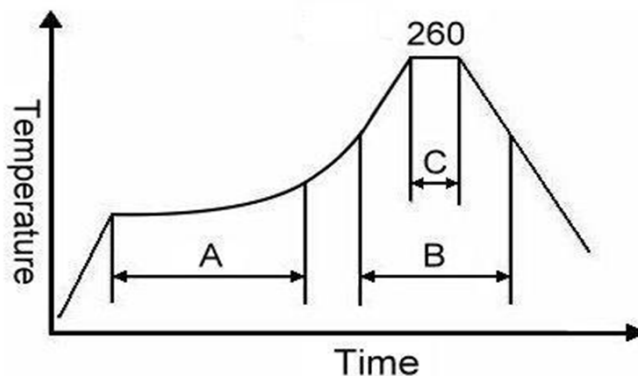
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS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

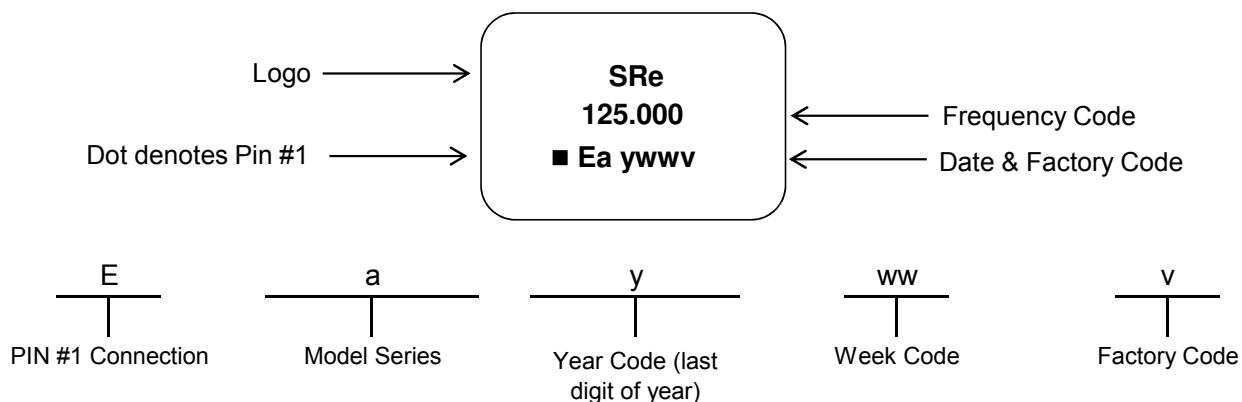
| | Stage | Temperature | Time |
|---|--------------|-------------|------------|
| A | Preheat | 150~200°C | 60~120 Sec |
| B | Primary Heat | 217°C | 60~150 Sec |
| C | Peak | 260°C | 10 Sec |

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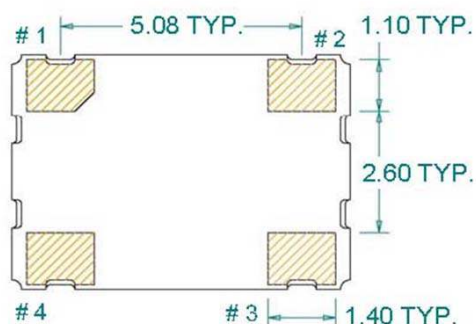
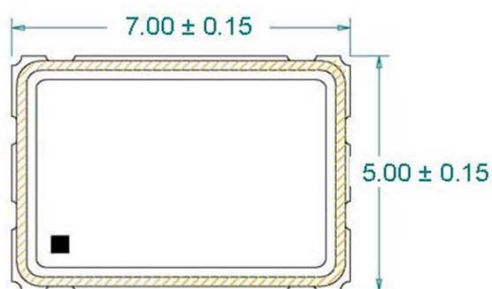
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MARKING

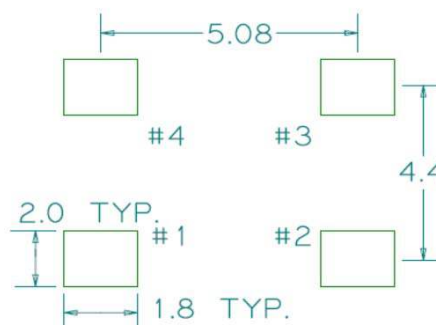


MECHANICAL DRAWINGS (Scale:None. Dimensions are in mm.)



(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.

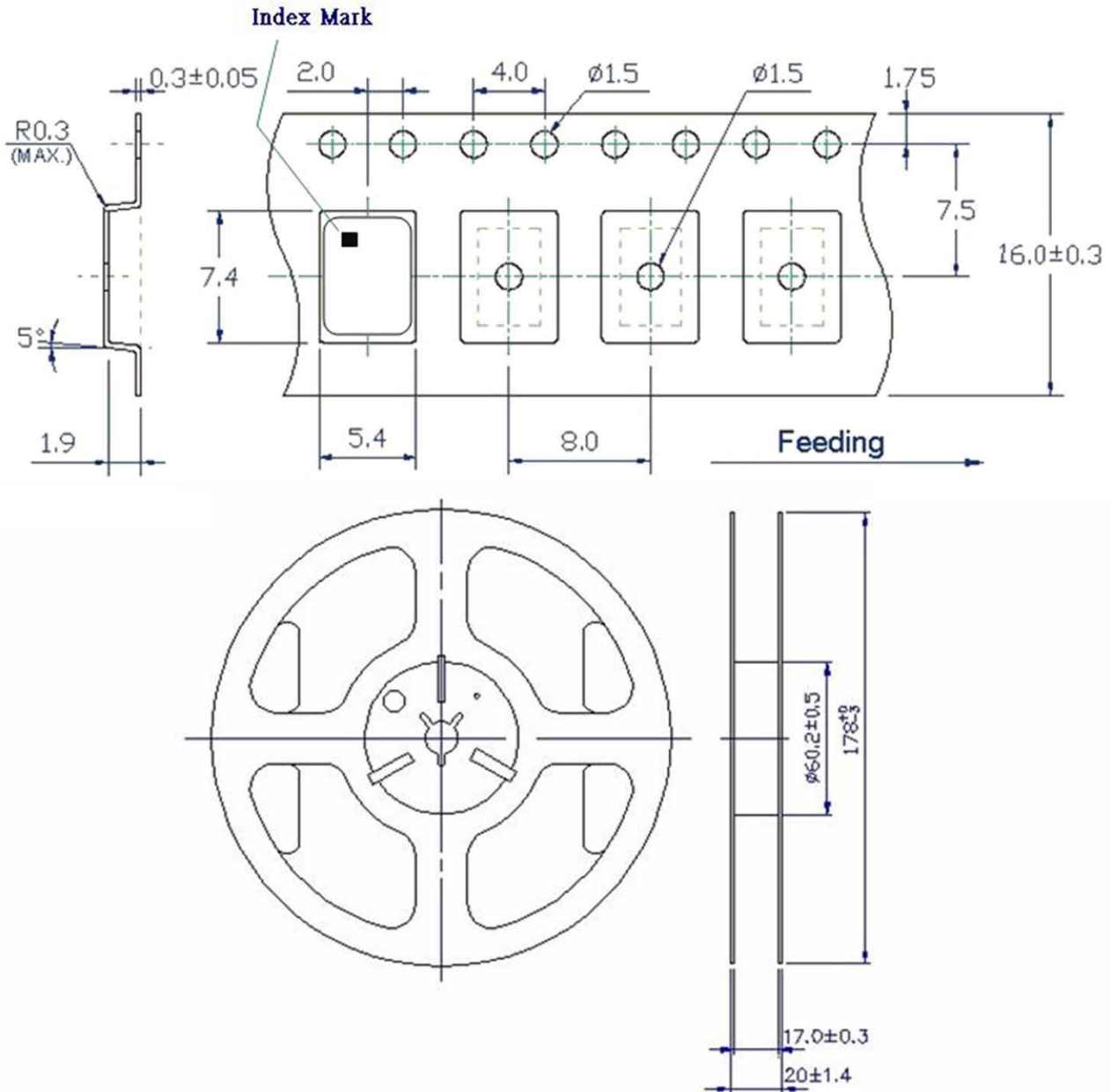
| Pin | Function |
|-----|-----------------|
| 1 | OE |
| 2 | Ground |
| 3 | Clock Output |
| 4 | V _{DD} |

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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

