



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

| | |
|-------------------|--|
| CUSTOMER | _____ |
| NOMINAL FREQUENCY | 50.000000 MHz |
| PRODUCT TYPE | TYPE PB 7.0 x 5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR |
| SPEC. NO. (P/N) | PB5000017 |
| CUSTOMER P/N | _____ |
| ISSUE DATE | December 22, 2018 |
| VERSION | B |

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

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

TYPE PB 7.0 x 5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

PB5000017

VER. B 22-Dec-18

ELECTRICAL SPECIFICATIONS

SRe Part Number : **PB5000017**

| Item | Symbol | Specifications | Units | Notes |
|---------------------------------|--------------------------------|----------------------------|-------|-----------------------------------|
| Nominal Frequency | F ₀ | 50.000000 | MHz | |
| Frequency Stability | FT | ± 50 | ppm | **See note |
| Operating Temperature Range | TR | -40 to +85 | °C | |
| Supply Voltage | V _{CC} | +3.3 ± 10.0% | V | |
| Logic Type | LT | LVPECL | | |
| Supply Current, Output Enabled | I _{CC/OE} | 80 | mA | Max. |
| Supply Current, Output Disabled | I _{CC/OD} | 30 | uA | Max. |
| Duty Cycle (Symmetry) | DC/SY | 45 / 55 | % | Measured 50% of Waveform |
| Rise / Fall Time | T _R /T _F | 0.6 | ns | Max. measured 20/80% of Waveform |
| Output Voltage "0" Level | V _{OL} | V _{CC} -1.620V | V | Max. |
| Output Voltage "1" Level | V _{OH} | V _{CC} -1.025V | V | Min. |
| Output Load | | 50Ω to V _{CC} -2V | | |
| Jitter, Phase | RMS | 1 | ps | 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 | | 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 (5 years at 40°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 _{CC} | | | V | Or Open |
| Input Voltage (Pin1), Output Disable (low power standby) | | | 0.3V _{CC} | V | Output is Hi-Z |
| Internal Pullup Resistance | | 50 | | KΩ | |
| Output Disable Delay | | | 200 | ns | |
| Output Enable Delay | | | 2 | ms | |

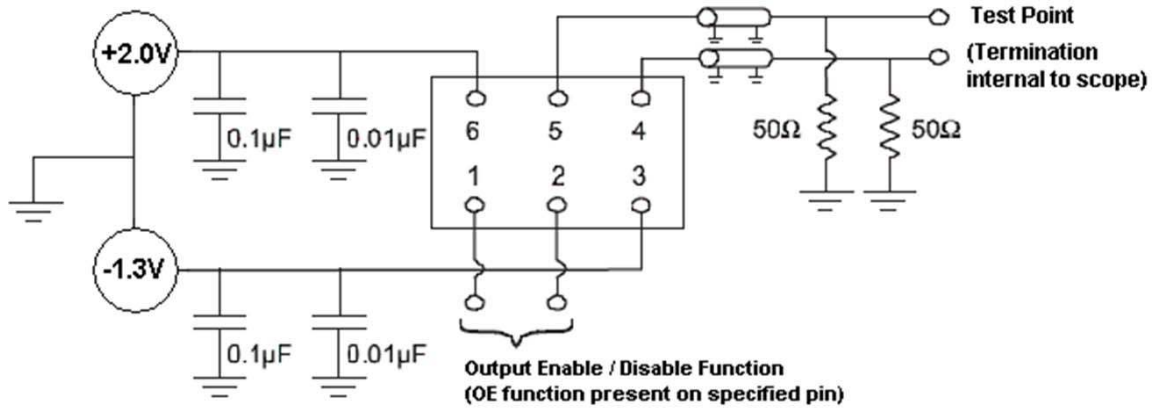


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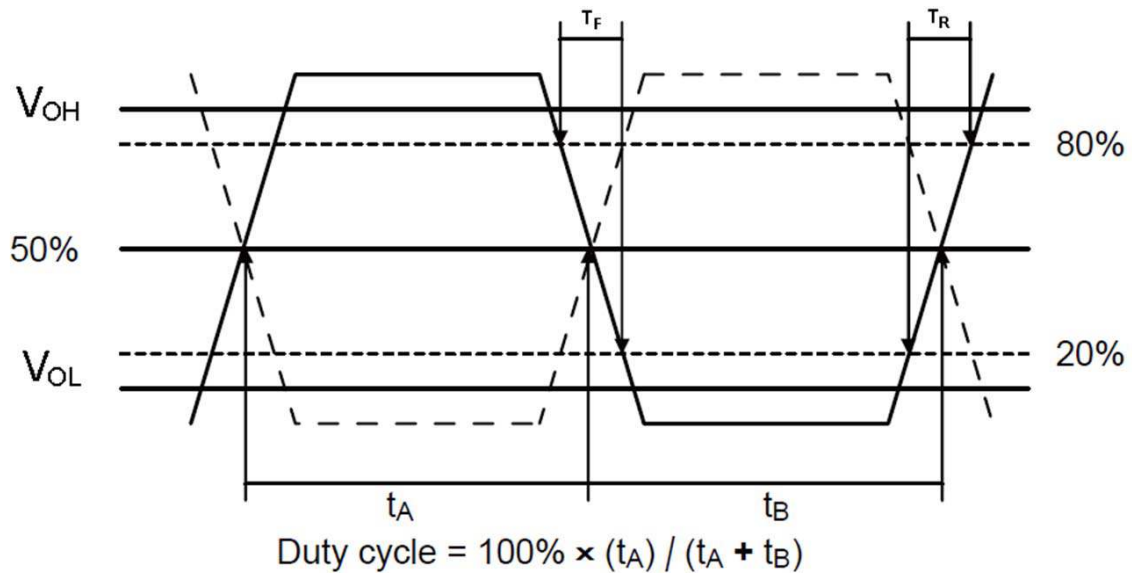
PB5000017

VER. B 22-Dec-18

TEST CIRCUIT



OUTPUT WAVEFORM



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PB5000017

VER. B 22-Dec-18

RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

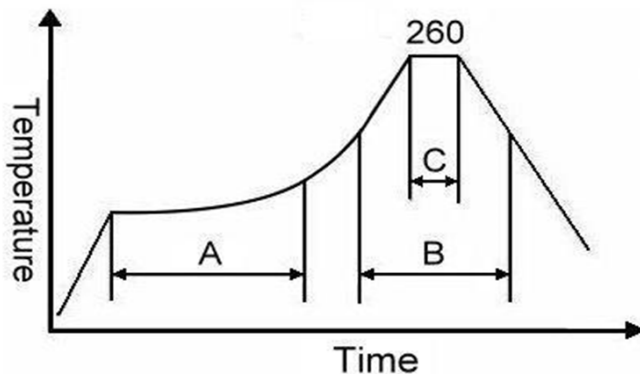
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS/Green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

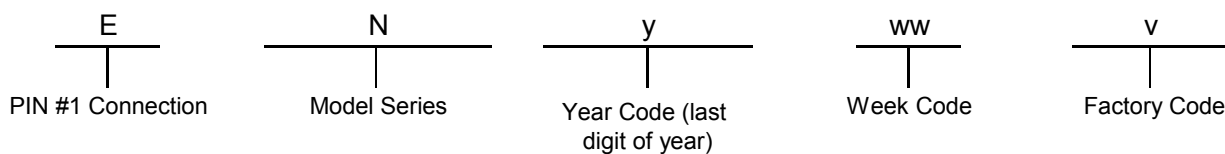
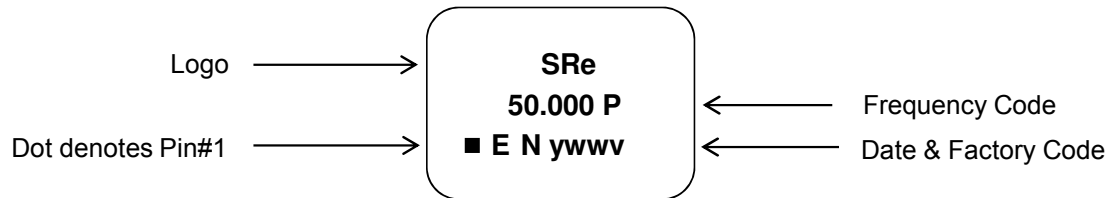
| | Stage | Temperature | Time |
|---|--------------|-------------|------------|
| A | Preheat | 150~200°C | 60~120 Sec |
| B | Primary Heat | 217°C | 60~150 Sec |
| C | Peak | 260°C | 10 Sec |

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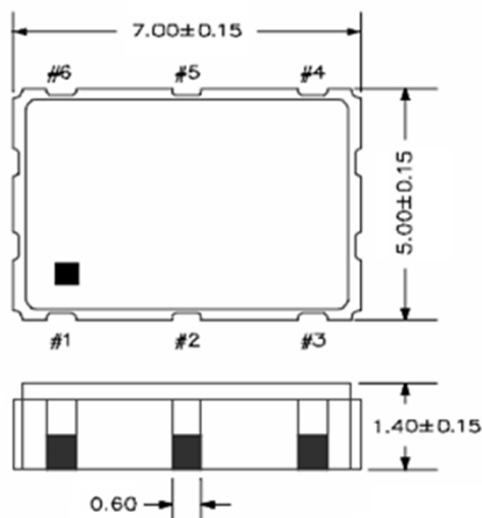
PB5000017

VER. B 22-Dec-18

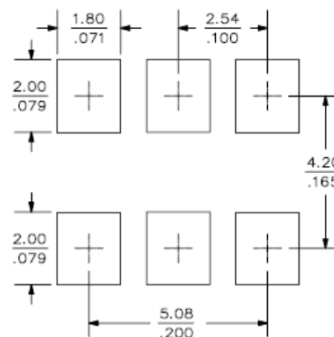
MARKING



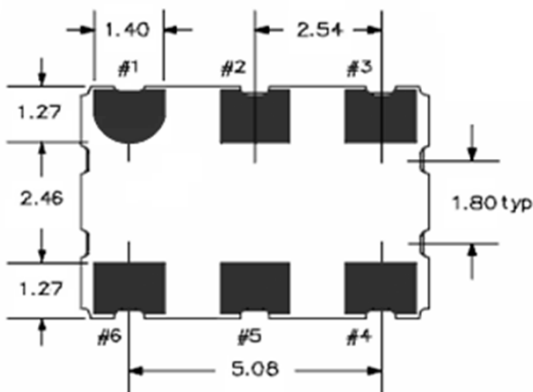
MECHANICAL DRAWINGS (Scale: None. Dimensions are in mm.)



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.



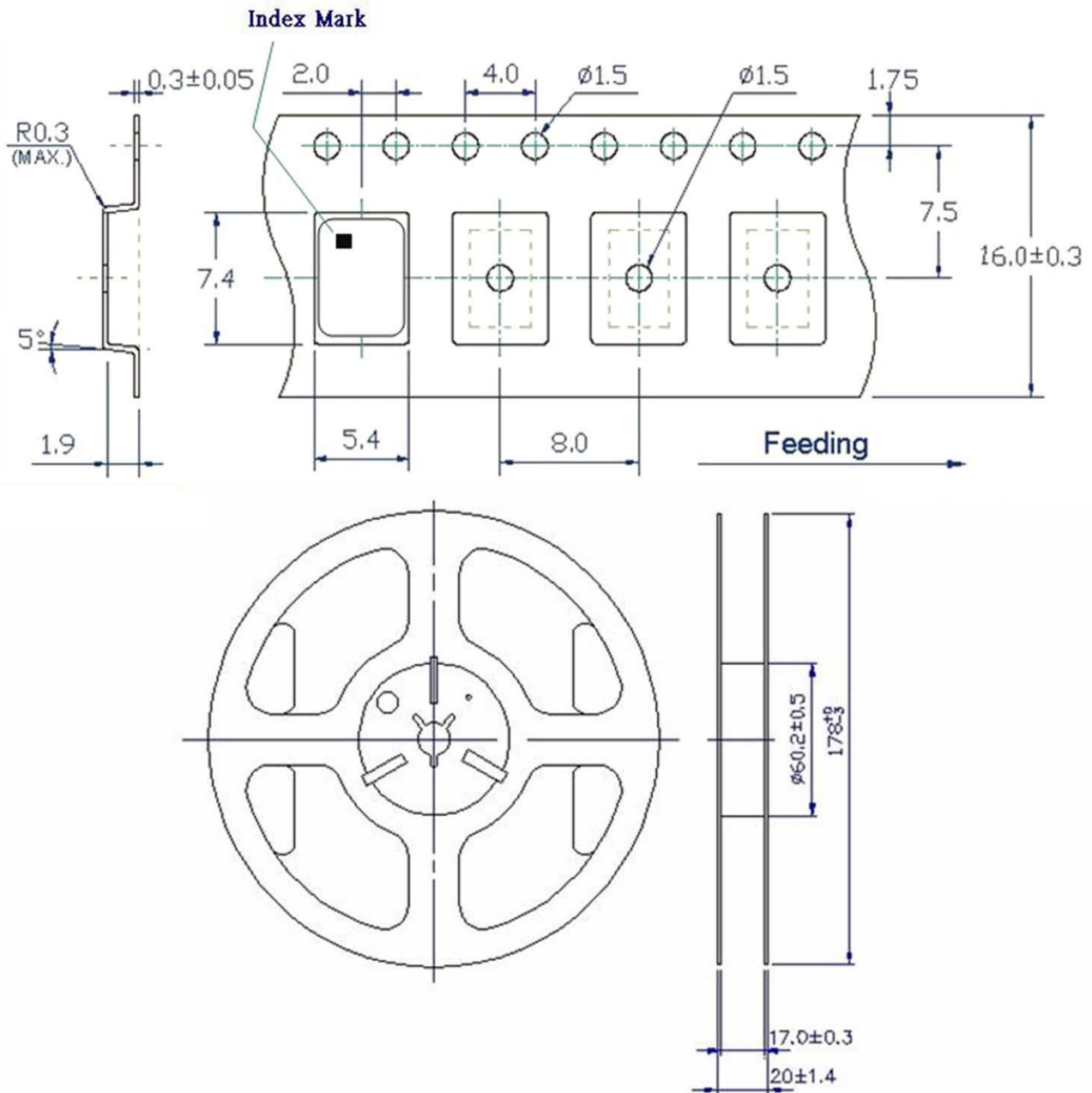
| Pin | Function |
|-----|-----------------|
| 1 | OE |
| 2 | NC |
| 3 | V _{EE} |
| 4 | OUTPUT |
| 5 | OUTPUT N |
| 6 | V _{CC} |

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VER. B 22-Dec-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.

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VER. B 22-Dec-18

PACKING

