



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY _____ 32.768 KHz _____

PRODUCT TYPE _____ TYPE KK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR _____

SPEC. NO. (P/N) _____ KK3270057 _____

CUSTOMER P/N _____

ISSUE DATE _____ March 9, 2018 _____

VERSION _____ A _____

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

Diodes Incorporated

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

TYPE KK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

KK3270057

VER. A 9-Mar-18

VERSION HISTORY

| Version No. | Version Date | Description | Notes |
|-------------|--------------|---|-------|
| 01 | Apr.27,2012 | Initial Release | |
| 02 | Jun.11,2012 | Added Supply Current, Output Enabled : 0.06mA typ | |
| A | Mar.9,2018 | Updated logo | |
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VER. A 9-Mar-18

ELECTRICAL SPECIFICATIONS

SRe Part Number : KK3270057

| Item | Symbol | Specifications | Units | Notes |
|---------------------------------|--------------------------------|---------------------|-------|----------------------------------|
| Nominal Frequency | F ₀ | 32.768 | KHz | |
| Frequency Stability | FT | ± 25 | ppm | **See note |
| Operating Temperature Range | TR | -40 to +85 | °C | |
| Supply Voltage | V _{DD} | +1.8 ± 5% | V | |
| Logic Type | LT | LVCMOS | | |
| Supply Current, Output Enabled | I _{DD} /OE | 0.06 / 0.1 | mA | Typ. / 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 | 10 | ns | Measured at 10 / 90% 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. |
| Start Up Time | | 2 | ms | Max. |
| Storage Temperature Range | | -55°C to +125°C | °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 |
| Output Disable Delay | | | 0.1 | µs | |
| Output Enable Delay | | | 1 | ms | |

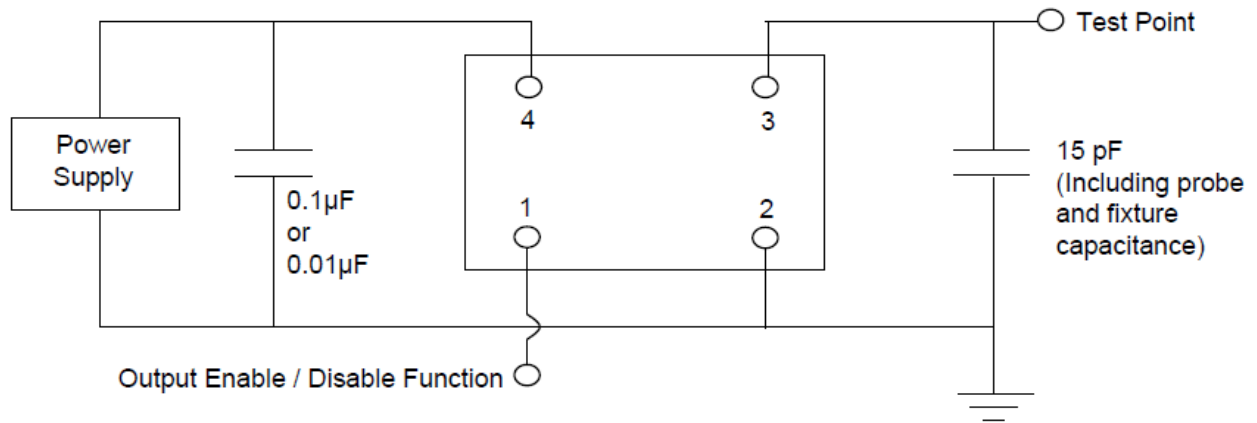


TYPE KK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

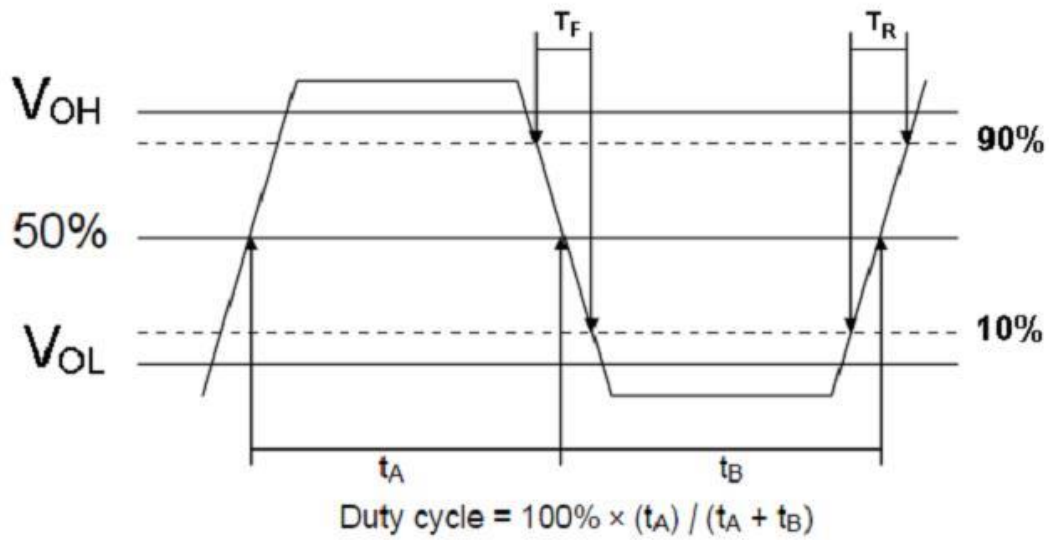
KK3270057

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TEST CIRCUIT



OUTPUT WAVEFORM



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RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

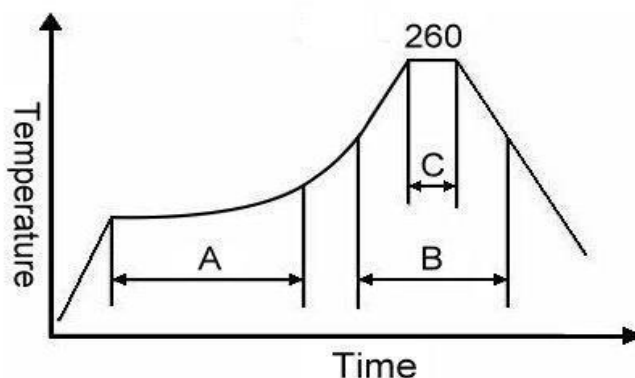
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS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

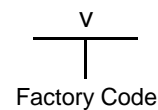
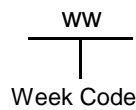
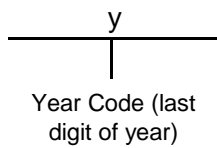
| | Stage | Temperature | Time |
|---|--------------|-------------|------------|
| A | Preheat | 150~200°C | 60~120 Sec |
| B | Primary Heat | 217°C | 60~150 Sec |
| C | Peak | 260°C | 10 Sec |

TYPE KK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

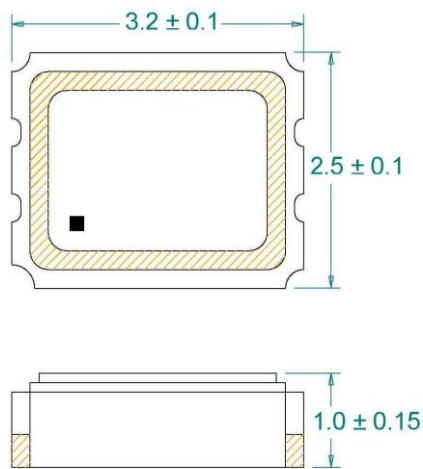
KK3270057

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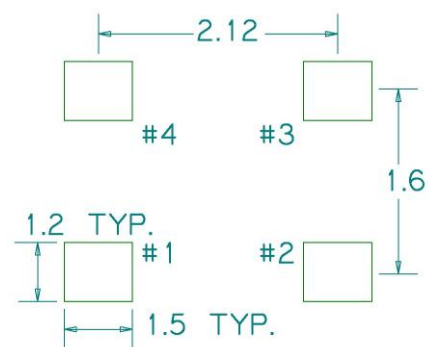
MARKING



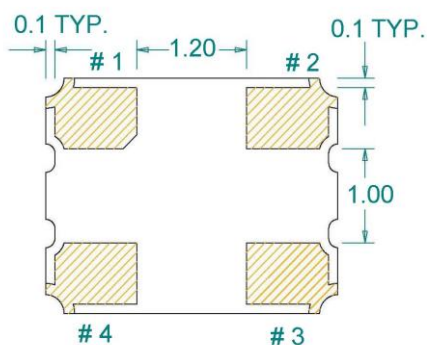
MECHANICAL DRAWINGS (Scale:None. Dimensions are in mm.)



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.



(Bottom View)

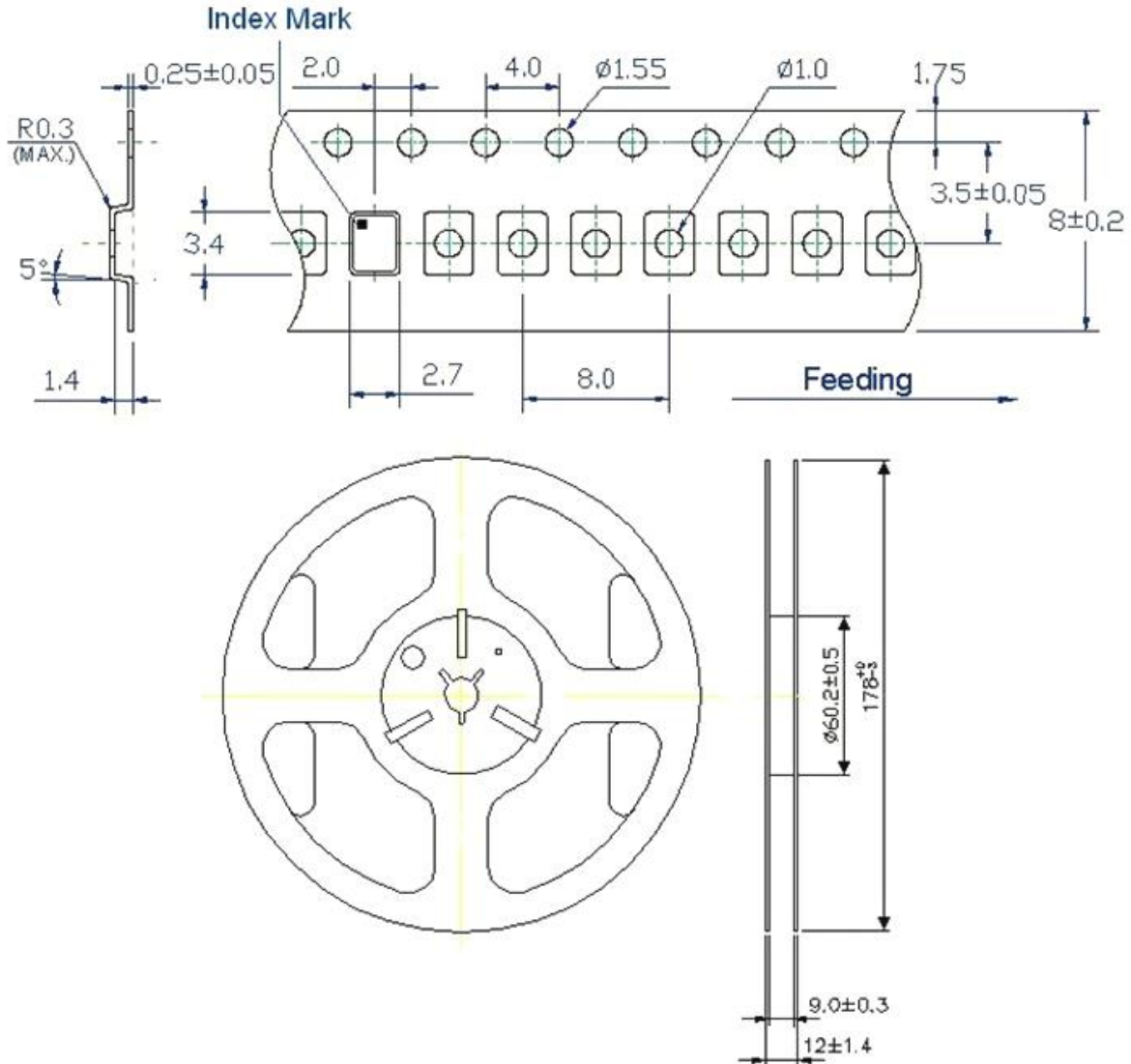
| Pin | Function |
|-----|-----------------|
| 1 | OE |
| 2 | Ground |
| 3 | Clock Output |
| 4 | V _{DD} |

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TAPE&REEL



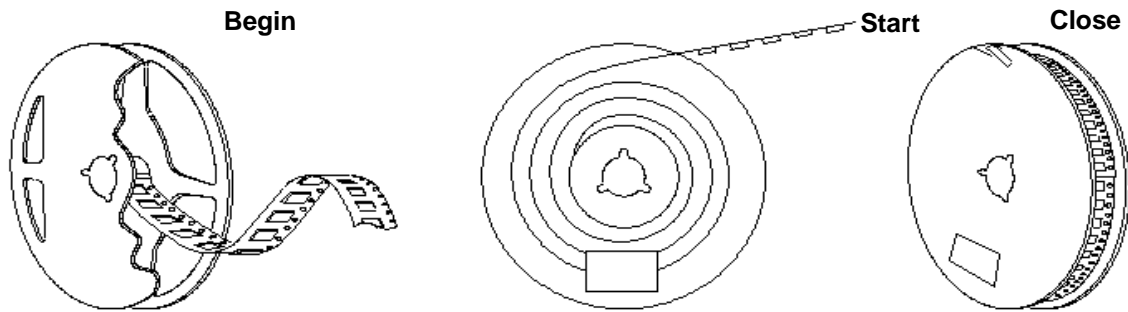
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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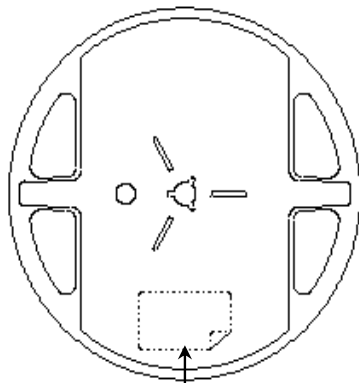
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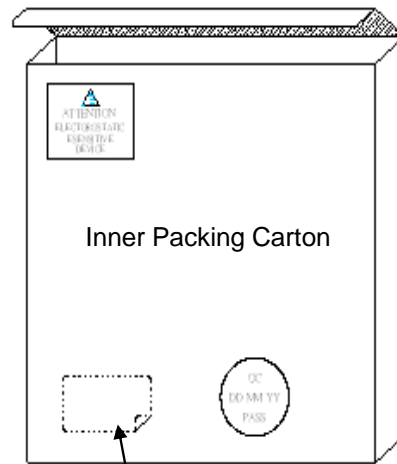
PACKING



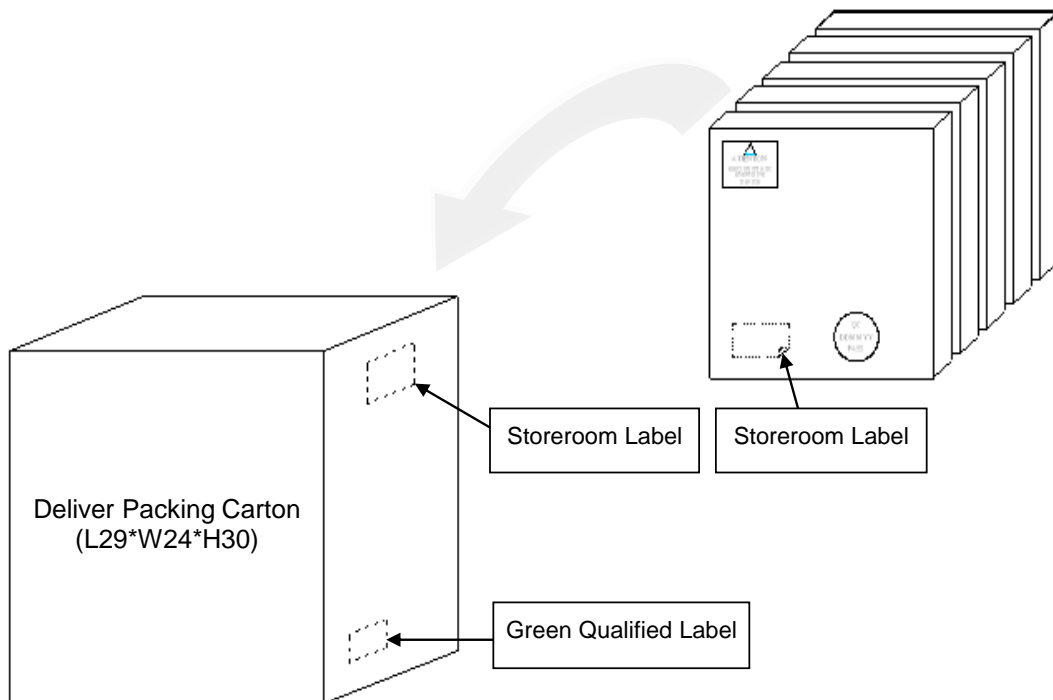
3000pcs-Product Tape



Blue Qualified Label



Storeroom Label



Storeroom Label

Storeroom Label

Green Qualified Label

