

FN2500204 Datasheet

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| | |
|------------------------------|---|
| DiGi Electronics Part Number | FN2500204-DG |
| Manufacturer | Diodes Incorporated |
| Manufacturer Product Number | FN2500204 |
| Description | XTAL OSC XO 25.0000MHZ CMOS |
| Detailed Description | 25 MHz XO (Standard) CMOS Oscillator 3.3V |



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

FN2500204

Series:

SaRonix-eCera™ FN

Base Resonator:

Crystal

Frequency:

25 MHz

Voltage - Supply:

3.3V

Operating Temperature:

-20°C ~ 70°C

Manufacturer:

Diodes Incorporated

Product Status:

Active

Type:

XO (Standard)

Output:

CMOS

Absolute Pull Range (APR):

-

Size / Dimension:

0.276" L x 0.197" W (7.00mm x 5.00mm)

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

| | |
|-------------------|--|
| CUSTOMER | _____ |
| NOMINAL FREQUENCY | 25.000000 MHz |
| PRODUCT TYPE | TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR |
| SPEC. NO. (P/N) | FN2500204 |
| CUSTOMER P/N | _____ |
| ISSUE DATE | May 15, 2018 |
| VERSION | C |

| APPROVED | PREPARED | QA |
|-------------------|--------------------|------------------|
| <i>Brenda Kuo</i> | <i>Sylvia Yang</i> | <i>Dony Yang</i> |

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

TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR**FN2500204**

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ELECTRICAL SPECIFICATIONS**SRe Part Number : FN2500204**

| Item | Symbol | Specifications | Units | Notes |
|---------------------------------|--------------------------------|---------------------|-------|----------------------------------|
| Nominal Frequency | Fo | 25.000000 | MHz | |
| Frequency Stability | FT | +10 to +50 | ppm | **See note |
| Operating Temperature Range | TR | -20 to +70 | °C | |
| Supply Voltage | V _{DD} | +3.3 ± 10.0% | V | |
| Logic Type | LT | LVC MOS | | |
| Supply Current, Output Enabled | I _{DD} /OE | 10 | 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 | 5 | ns | Max. measured 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 |
| Jitter, Phase | RMS | 1.5 | ps | Max, 12KHz ~ 5MHz Frequency Band |
| Jitter, Accumulated | RMS(1-σ) | 5 | ps | Max, 20,000 Consecutive Periods |
| Jitter, Peak to Peak | Pk-Pk | 50 | 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 (1 year at 25°C Average Effective Ambient Temperature), Shock and Vibration.

Output Enable / Disable Function

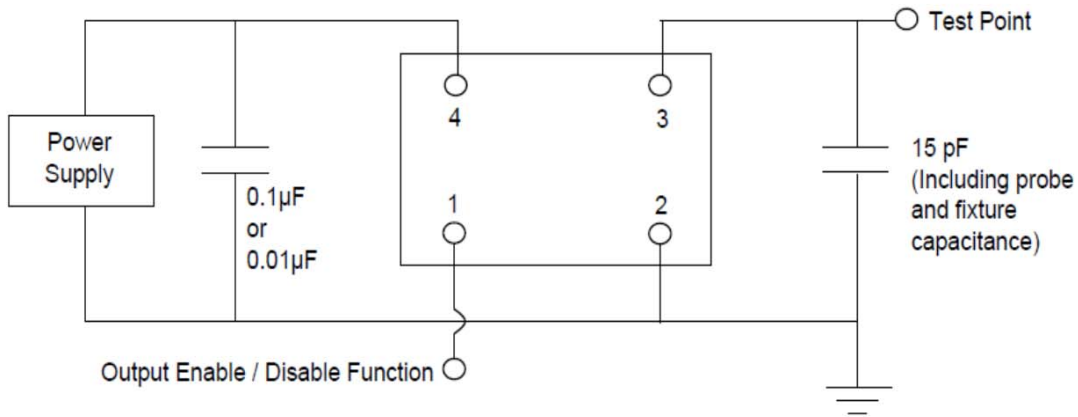
| Parameter | Min. | Typ. | Max. | Units | Notes |
|--|--------------------|------|--------------------|-------|----------------|
| Input Voltage (Pin1), Output Enable | 0.7V _{DD} | | | V | Or Open |
| Input Voltage (Pin1), Output Disable (low power standby) | | | 0.3V _{DD} | V | Output is Hi-Z |
| Internal Pullup Resistance | 30 | | | KΩ | |
| Output Disable Delay | | | 50 | ns | |

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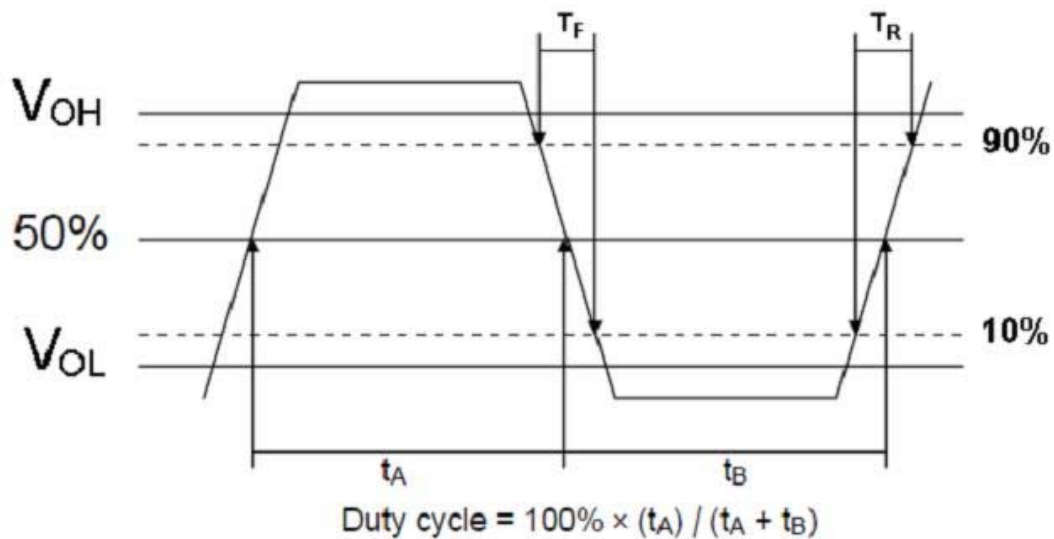
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TEST CIRCUIT



OUTPUT WAVEFORM



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RELIABILITY SPECIFICATIONS**ENVIRONMENTAL:**

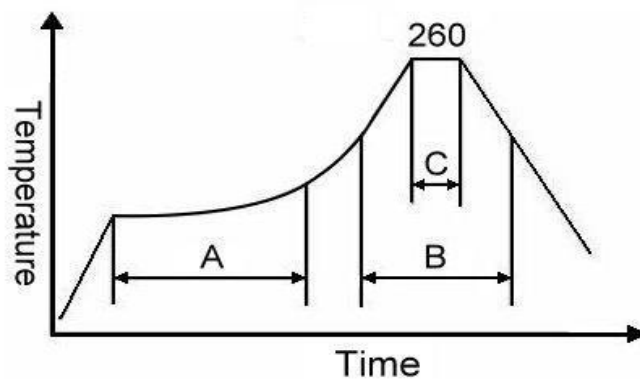
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS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

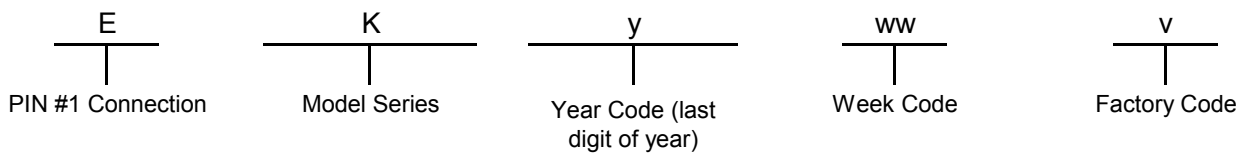
| | Stage | Temperature | Time |
|---|--------------|-------------|------------|
| A | Preheat | 150~200°C | 60~120 Sec |
| B | Primary Heat | 217°C | 60~150 Sec |
| C | Peak | 260°C | 10 Sec |

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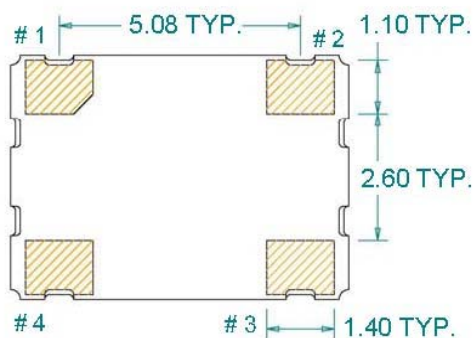
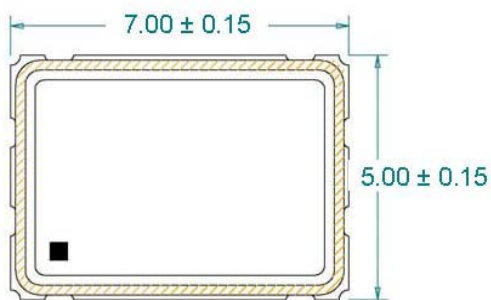
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MARKING

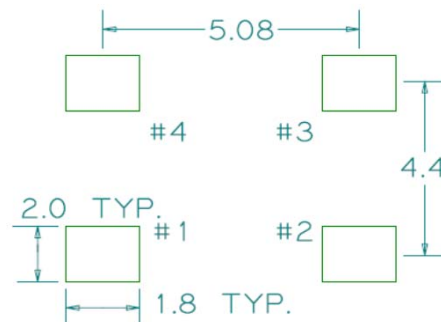


MECHANICAL DRAWINGS (Scale:None. Dimensions are in mm.)



(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.

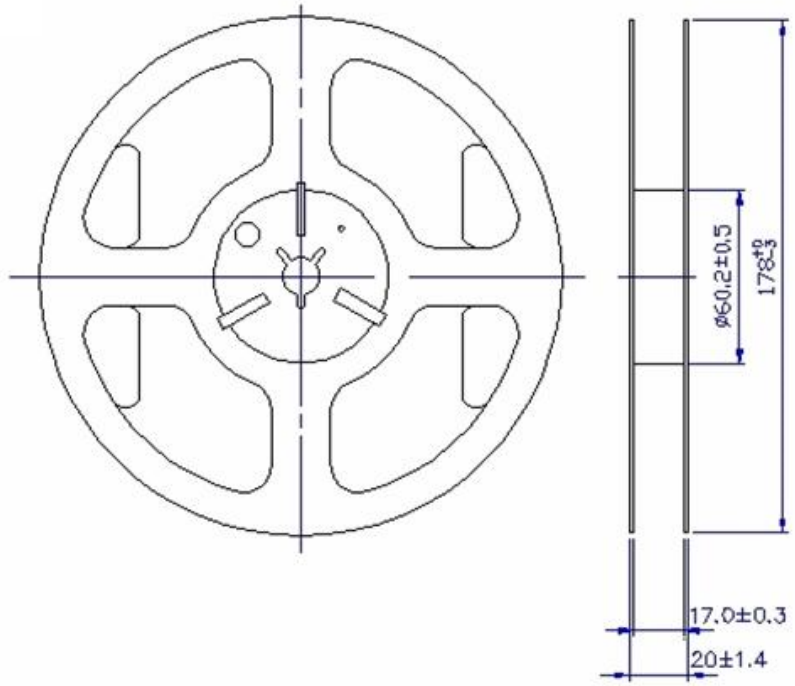
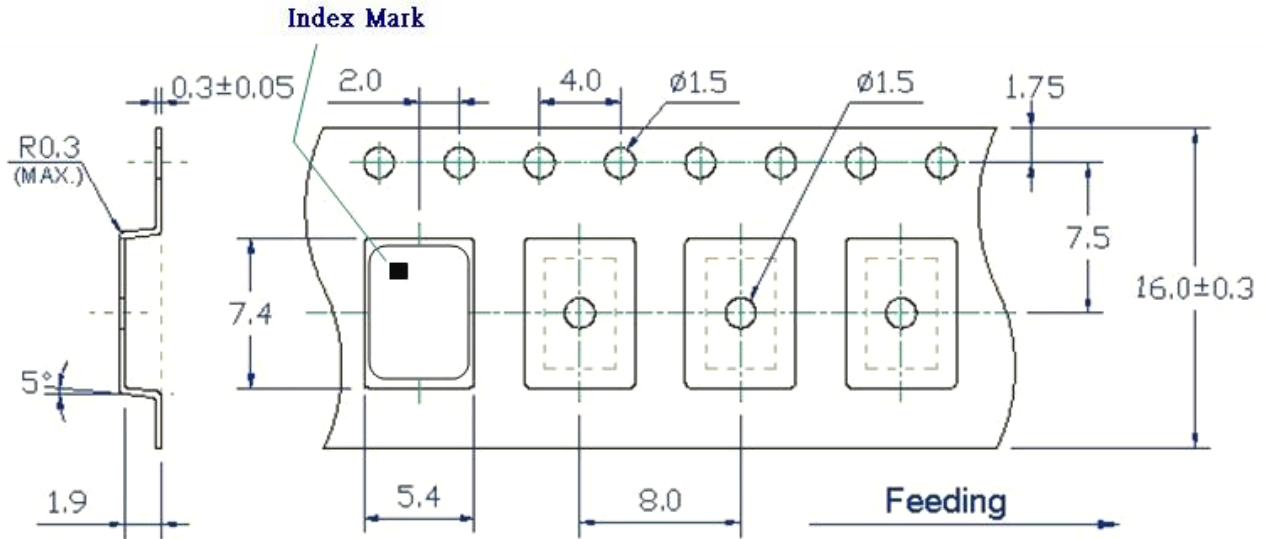
| Pin | Function |
|-----|-----------------|
| 1 | OE |
| 2 | Ground |
| 3 | Clock Output |
| 4 | V _{DD} |

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TAPE&REEL



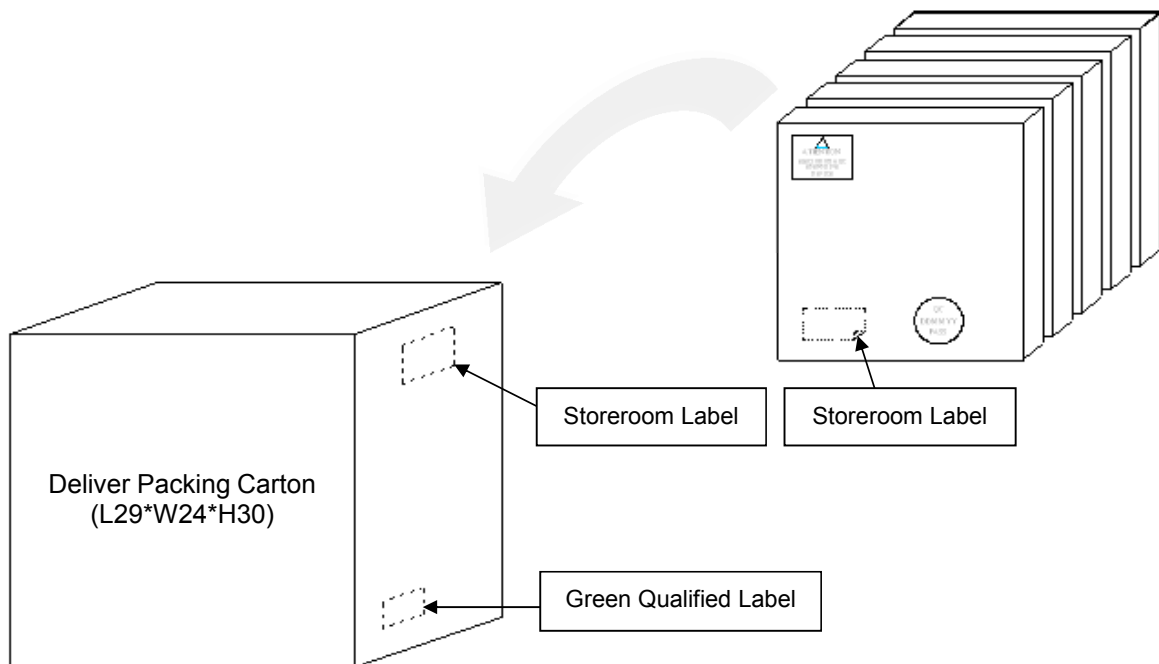
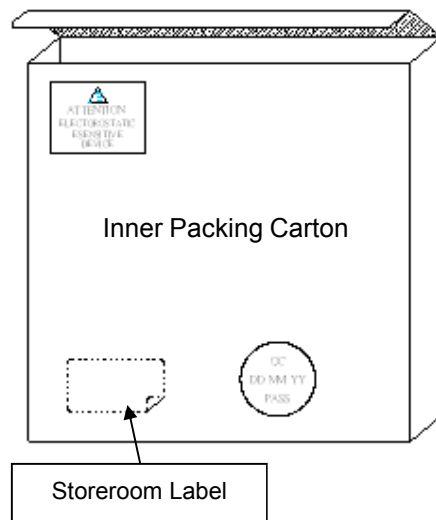
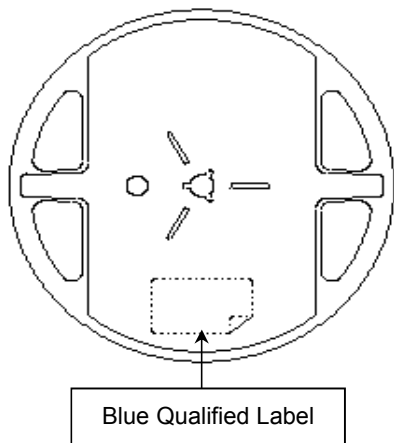
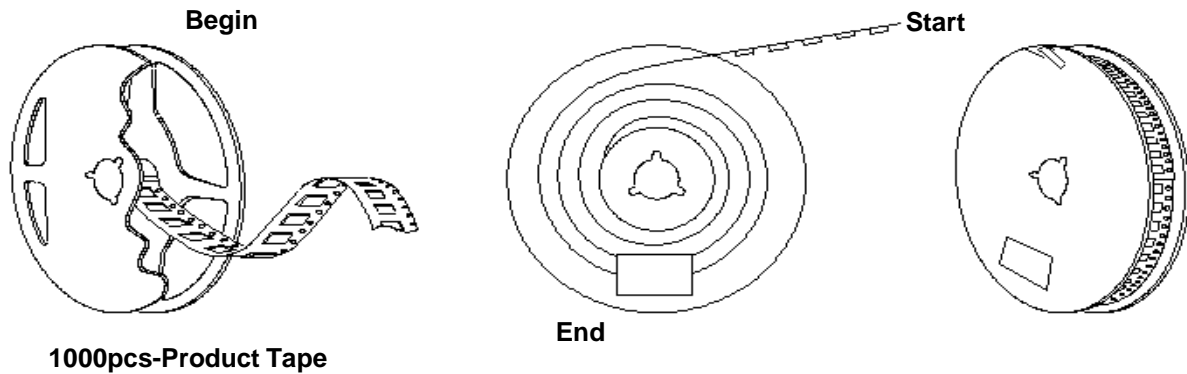
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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PACKING



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