



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER

NOMINAL FREQUENCY

148.500000 MHz

PRODUCT TYPE

TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. (P/N)

NX3211D0148.500000

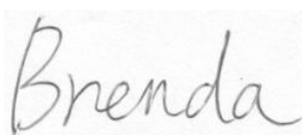
CUSTOMER P/N

ISSUE DATE

May 23, 2018

VERSION

B

APPROVED	PREPARED	QA
		

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

Diodes Internal Reference NO. 003

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VER. B 23-May-18

VERSION HISTORY

[illegible]

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ELECTRICAL SPECIFICATIONS

SRe Part Number : NX3211D0148.500000

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F ₀	148.500000	MHz	
Frequency Stability	FT	± 25	ppm	**See note
Operating Temperature Range	TR	-40 to +85	°C	
Supply Voltage	V _{DD}	+3.3 ± 5.0%	V	
Logic Type	LT	LVC MOS		
Supply Current, Output Enabled	I _{DD} /OE	60	mA	Max.
Supply Current, Output Disabled	I _{DD} /OD	40	mA	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}	0.4	V	Max.
Output Voltage "1" Level	V _{OH}	V _{DD} -0.4	V	Min.
Output Load	CL	15	pF	Max.
Jitter, Phase	RMS	1	ps	Max. 12kHz ~ 20MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	6	ps	Max, 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	40	ps	Max, 100,000 Random Periods
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
Output Disable Delay			100	ns	
Output Enable Delay			100	ns	
Start Up Time			10	ms	

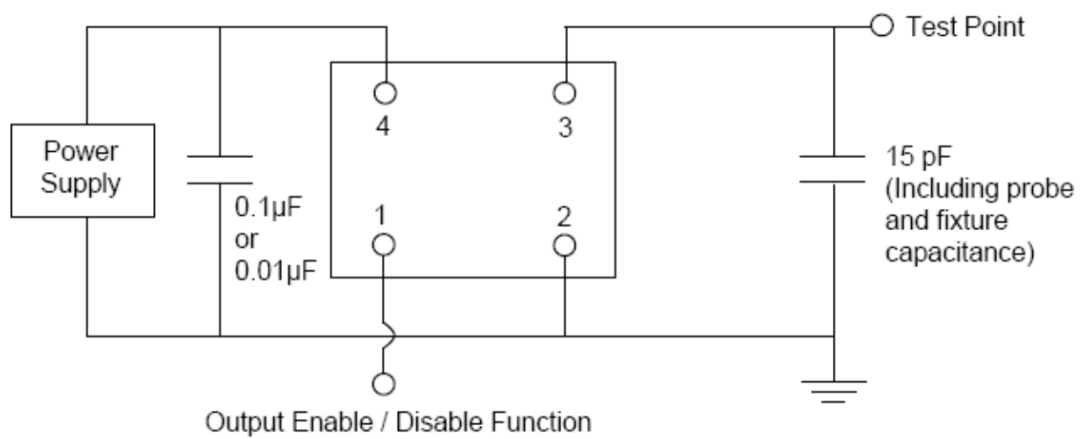


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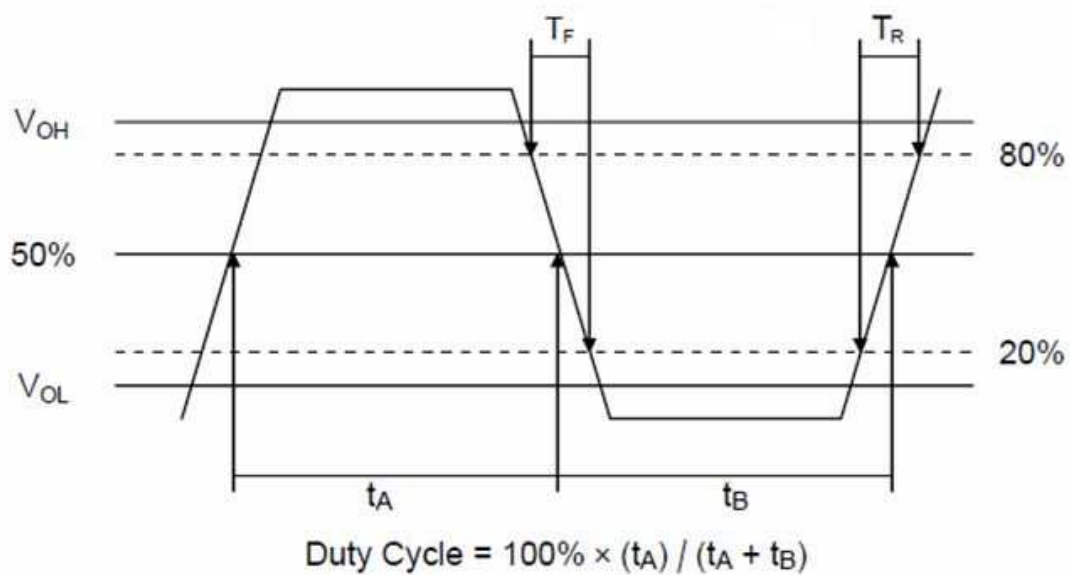
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VER. B 23-May-18

TEST CIRCUIT



OUTPUT WAVEFORM



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VER. B 23-May-18

RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

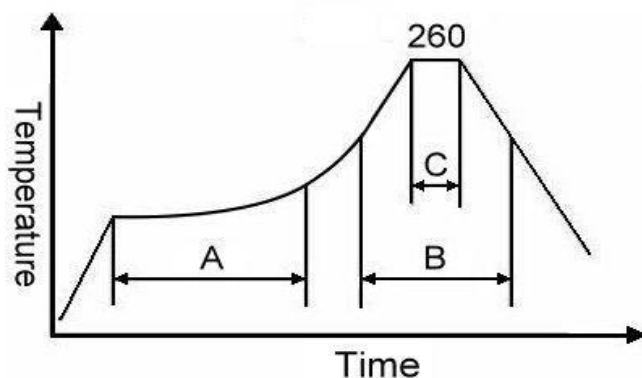
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS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

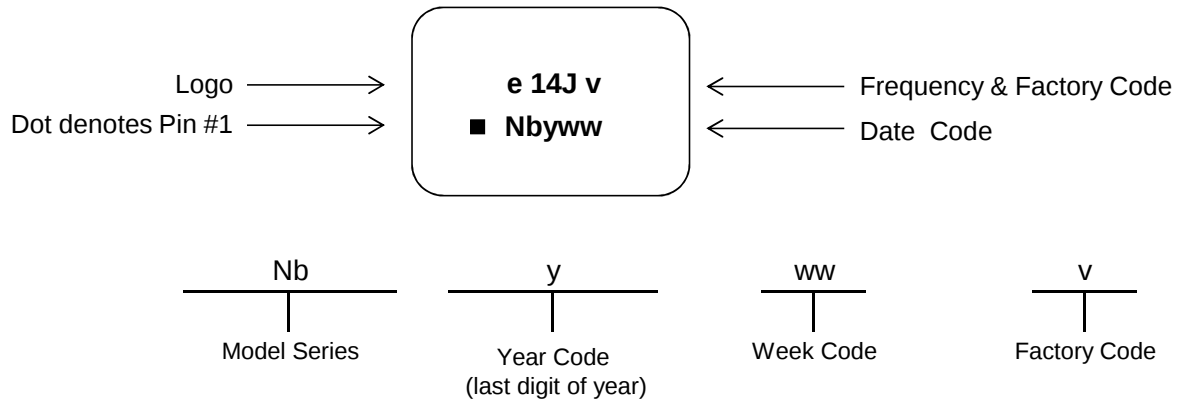
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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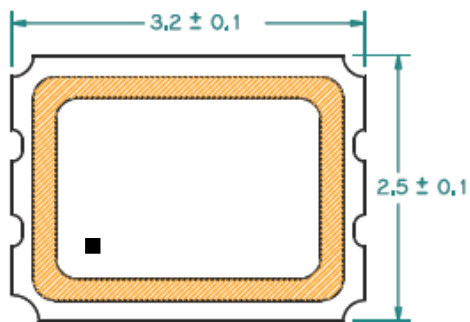
NX3211D0148.500000

VER. B 23-May-18

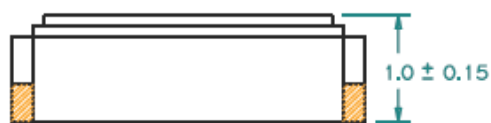
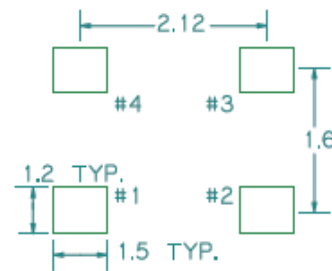
MARKING



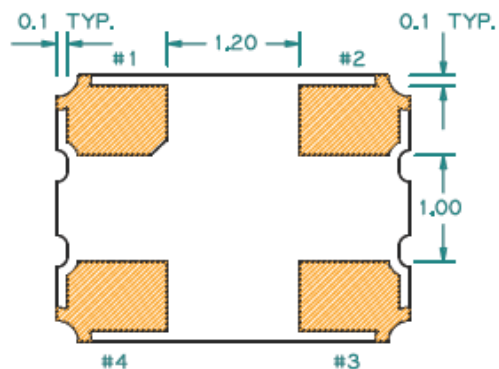
MECHANICAL DRAWINGS (Scale:None. Dimensions are in mm.)



Recommended Land Pattern*



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



(Bottom View)

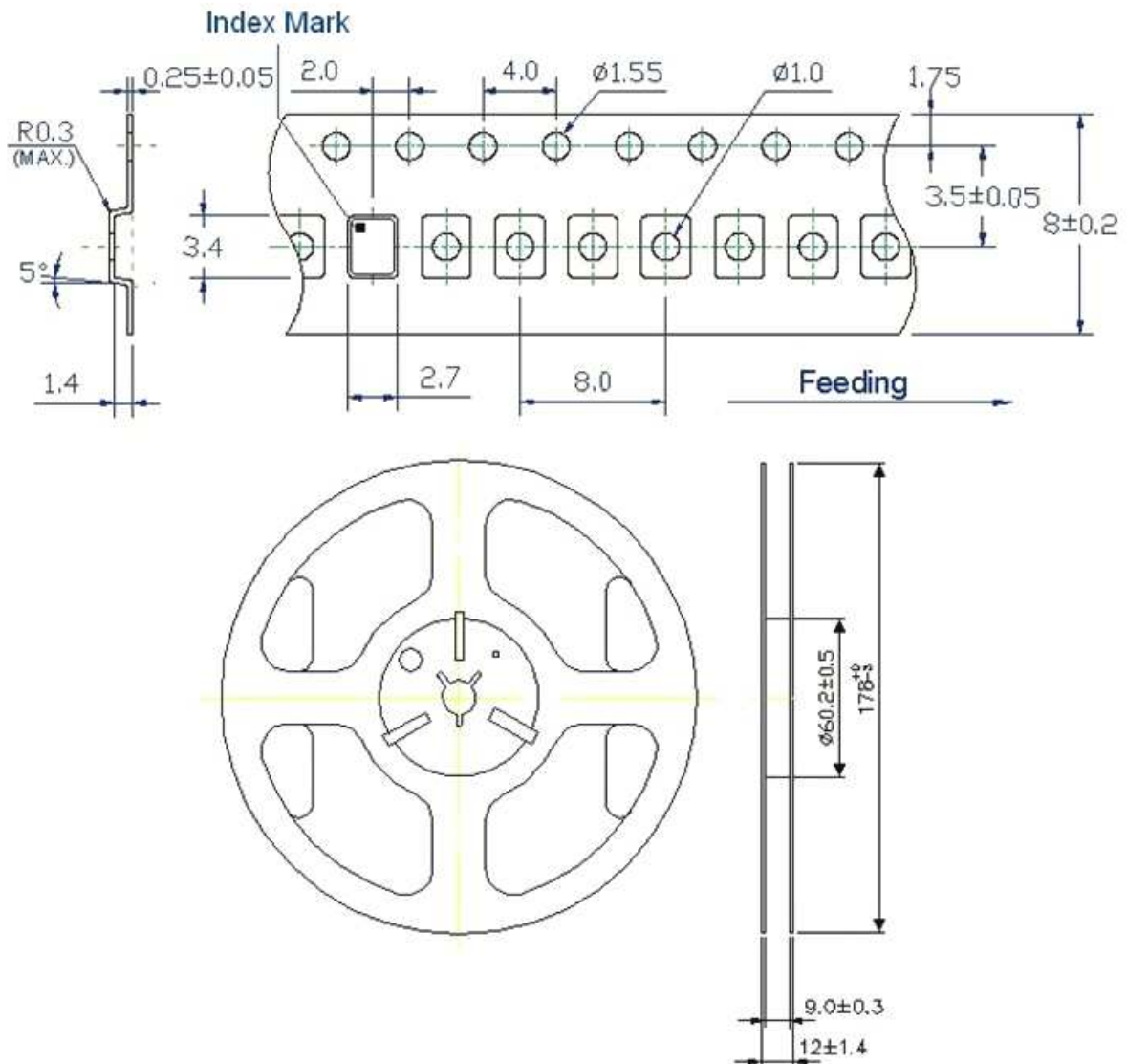
*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

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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

