



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY 100MHz, 125MHz




PRODUCT TYPE TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. (P/N) NX33SA0001

CUSTOMER P/N _____

ISSUE DATE March 12, 2018

VERSION B

APPROVED	PREPARED	QA
		

Diodes Incorporated

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

TYPE NX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

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ELECTRICAL SPECIFICATIONS

SRe Part Number : NX33SA0001

Item	Symbol	Specifications	Units	Notes	
Nominal Frequency 1	Fo	100.000000	MHz	See Frequency Select Table on page 4	
Nominal Frequency 2		125.000000			
Frequency Stability	FT	± 20	ppm	**See note	
Operating Temperature Range	TR	-40 to +85	°C		
Supply Voltage	V _{CC}	+3.3 ± 5.0%	V		
Logic Type	LT	LVDS			
Supply Current, Output Enabled	I _{CC} /OE	70	mA	Max. OE tied to "1" or open	
Supply Current, Output Disabled	I _{CC} /OD	40	mA	Max. Output is Hi-Z	
Duty Cycle (Symmetry)	DC/SY	45 / 55	%	Measured 50% of Waveform	
Rise / Fall Time	T _R /T _F	0.4	ns	Max. measured 20/80% of Waveform	
Output Voltage "0" Level	V _{OL}	1.10 / 0.9	V	Typ. / Min.	
Output Voltage "1" Level	V _{OH}	1.43 / 1.6	V	Typ. / Max.	
Output Load		100Ω connected between outputs		Output requires termination	
Differential Output Voltage	V _{OD}	247 / 454	mV	Min. / Max.	
Jitter, Phase	100MHz	RMS	1	ps	Max. 12kHz ~ 20MHz Frequency Band
	125MHz	RMS	0.4 / 0.6	ps	Typ./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 years at 25°C Average Effective Ambient Temperature), Shock and Vibration.

Output Enable / Disable & Frequency Select Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1 & Pin2), OE & FS (High)	0.7V _{CC}			V	
Input Voltage (Pin1 & Pin2), OE & FS (Low)			0.3V _{CC}	V	
Output Disable Delay			100	ns	
Output Enable Delay			100	ns	
Settling Time after FS change			10	ms	
Start Up Time			10	ms	

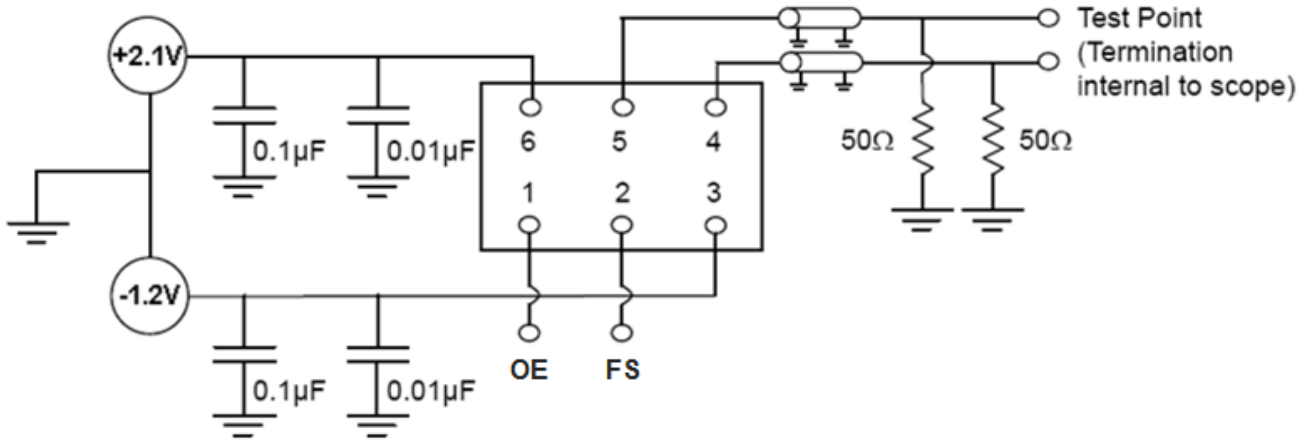


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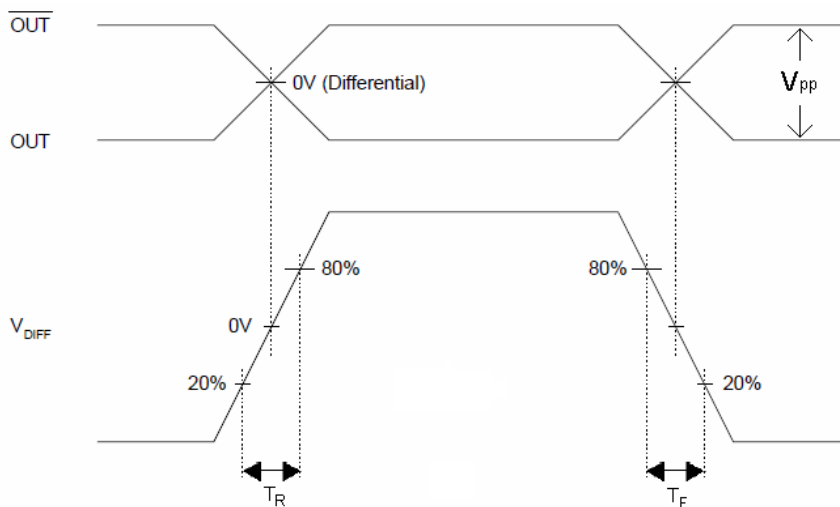
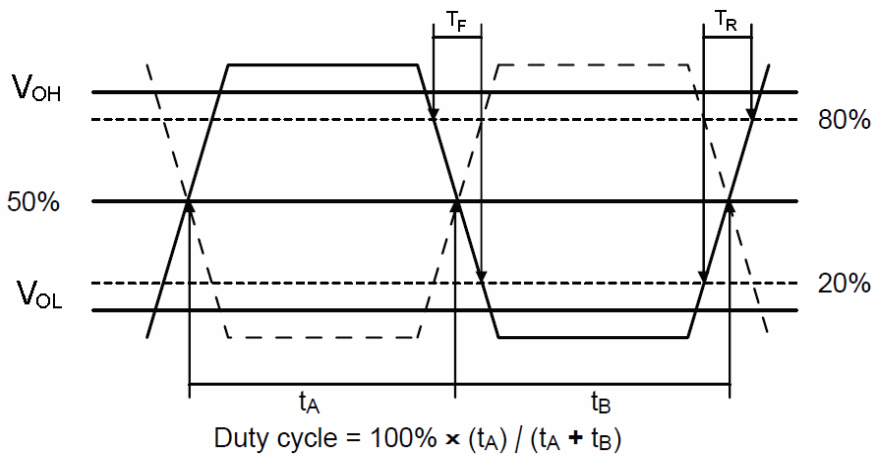
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TEST CIRCUIT



OUTPUT WAVEFORM



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RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

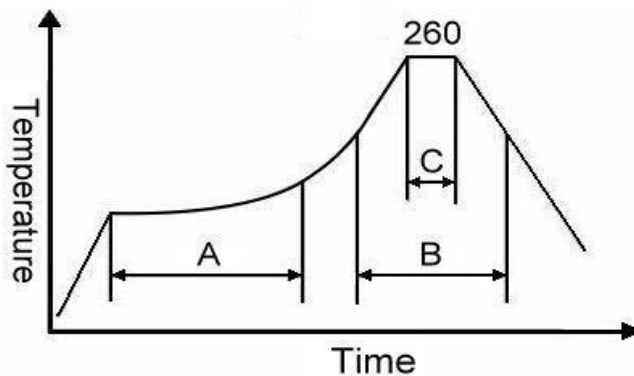
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS/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

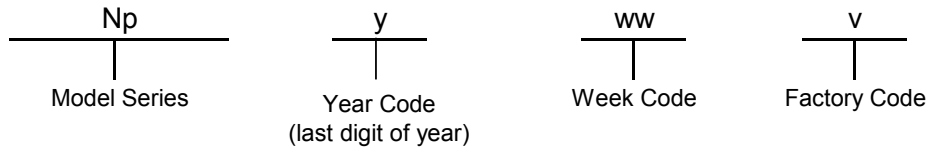
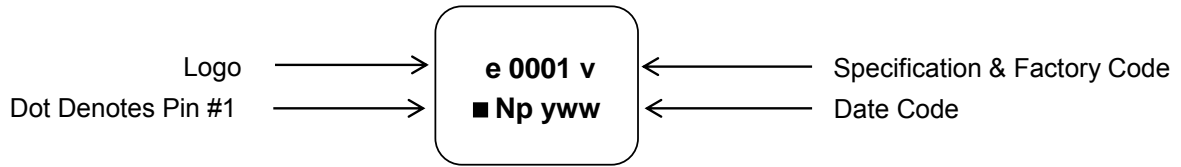
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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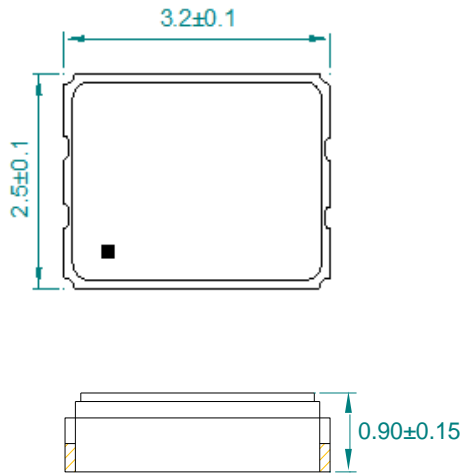
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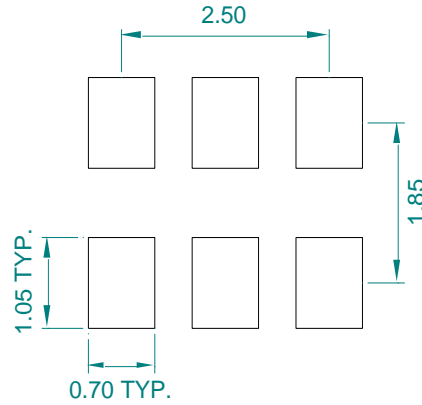
MARKING



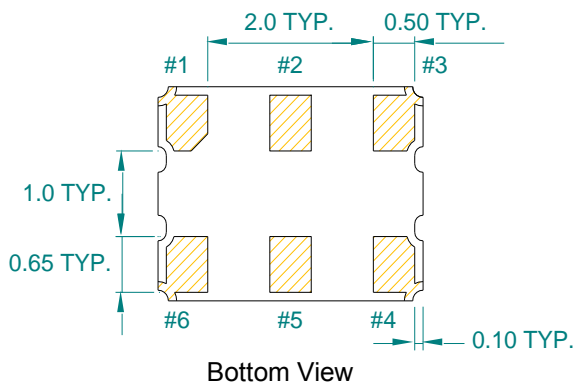
MECHANICAL DRAWINGS (Scale: None. Dimensions are in mm.)



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.



Pin	Function
1	OE
2	FS
3	Ground
4	Q
5	\bar{Q}
6	V _{CC}

Frequency Select Table

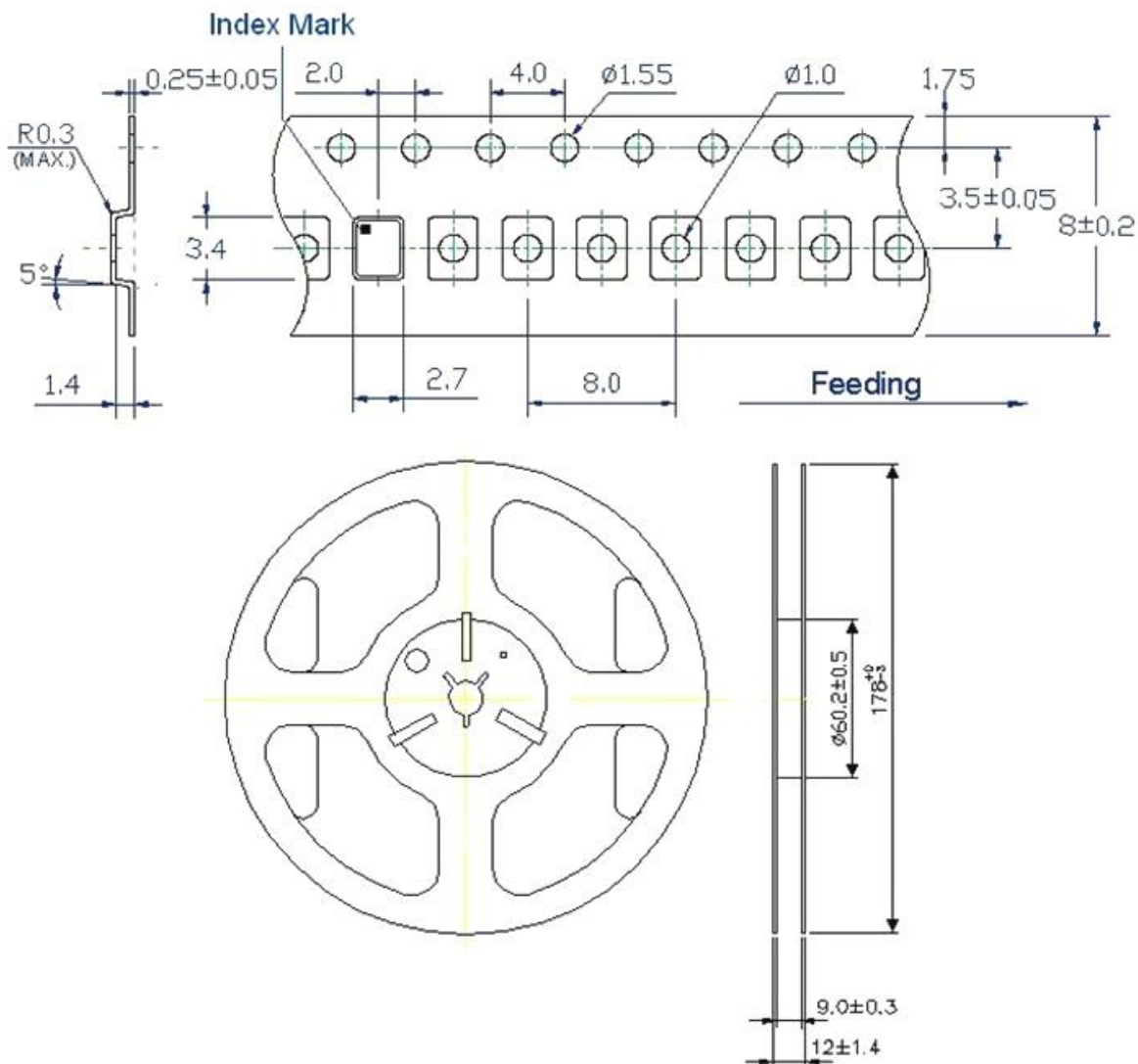
FS	Output
0	Frequency 1
1	Frequency 2

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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

