



A Product Line of  
Diodes Incorporated



## PRODUCT SPECIFICATION

NOMINAL FREQUENCY	100.000000 MHz
PRODUCT TYPE	TYPE HX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR
SPEC. NO. ( P/N )	HX31A0011Z
ISSUE DATE	July 29, 2021
VERSION	A

### Diodes Incorporated

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- \*Pb-free
- \*RoHS Compliant
- \*HF-Halogen Free
- \*REACH Compliant
- \*MSL: Level 1



# TYPE HX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

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### ELECTRICAL SPECIFICATIONS

SRe Part Number : HX31A0011Z

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F <sub>0</sub>	100.000000	MHz	
Frequency Stability	FT	± 25	ppm	**See note
Operating Temperature Range	TR	-40 to +105	°C	
Supply Voltage	V <sub>DD</sub>	+1.8±5% to +3.3±5%	V	at +2.5V Typ.
Logic Type	LT	LVC MOS		
Supply Current, Output Enabled	I <sub>DD</sub> /OE	40	mA	Max.
Supply Current, Output Disabled	I <sub>DD</sub> /OD	100	µA	Max.
Duty Cycle (Symmetry)	DC/SY	40 / 60	%	Measured 50% of Waveform
Rise / Fall Time	T <sub>R</sub> /T <sub>F</sub>	4	ns	Max. measured 20/80% of Waveform
Output Voltage "0" Level	V <sub>OL</sub>	10% V <sub>DD</sub>	V	Max at I <sub>OL</sub> = 4.0mA Min.
Output Voltage "1" Level	V <sub>OH</sub>	90% V <sub>DD</sub>	V	Min at I <sub>OH</sub> = -4.0mA Max.
Output Load	CL	15	pF	Max.
Jitter, Phase	RMS	1	ps	Max. 12KHz ~ 20MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	4	ps	Max. 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 (1 year at 25°C Average Effective Ambient Temperature), Shock and Vibration.

#### Output Enable / Disable Function

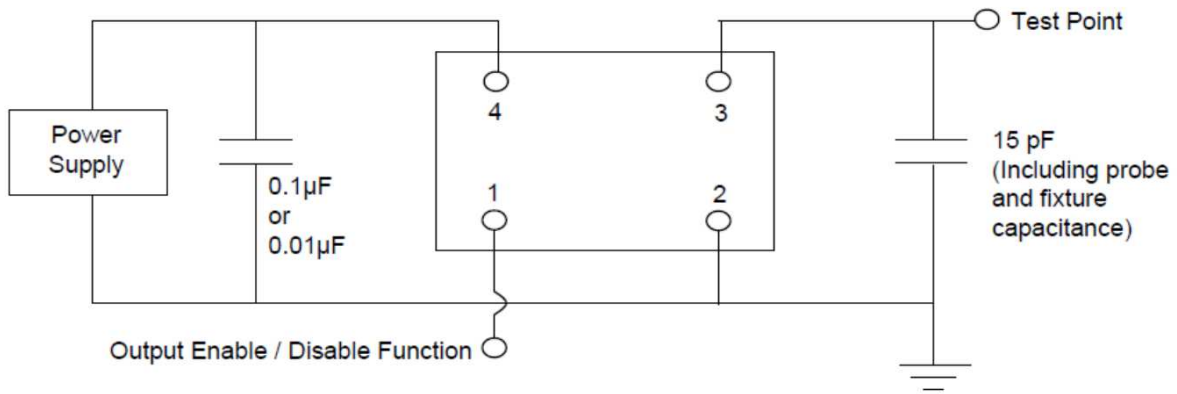
Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	0.7V <sub>DD</sub>			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.3V <sub>DD</sub>	V	Output is Hi-Z
Internal Pullup Resistance	30			KΩ	
Output Disable Delay			200	ns	

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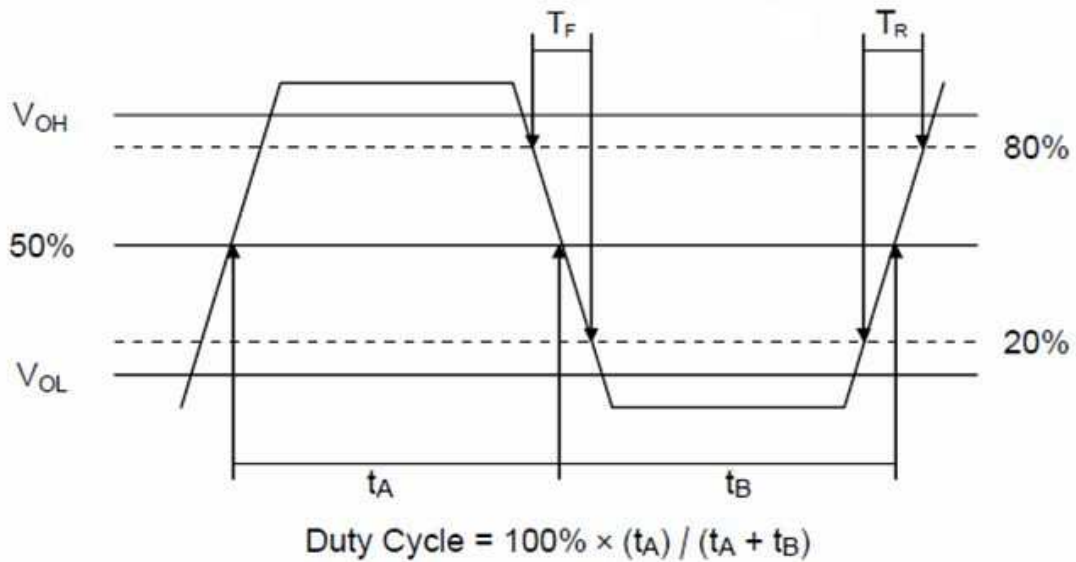
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### TEST CIRCUIT



### OUTPUT WAVEFORM



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### RELIABILITY SPECIFICATIONS

#### ENVIRONMENTAL:

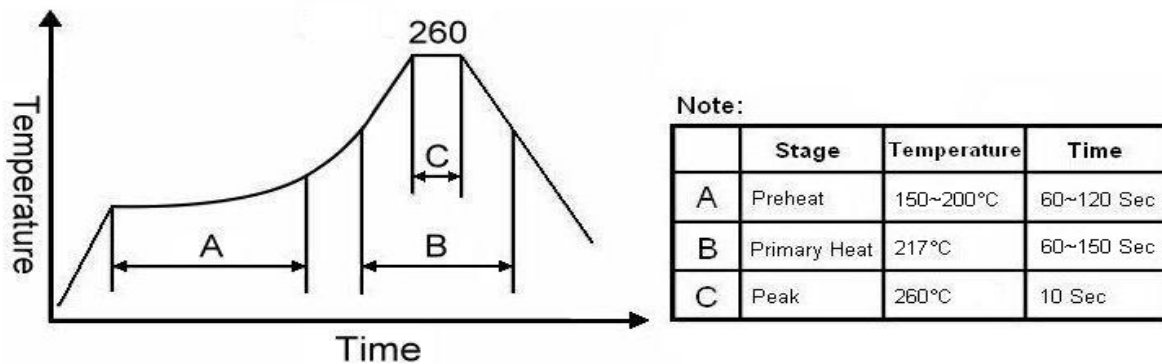
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS Compliant.
- f) ESD Testing: JESD22 A114 / JESD22 C101
- g) Latch up Testing: JESD78

#### 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

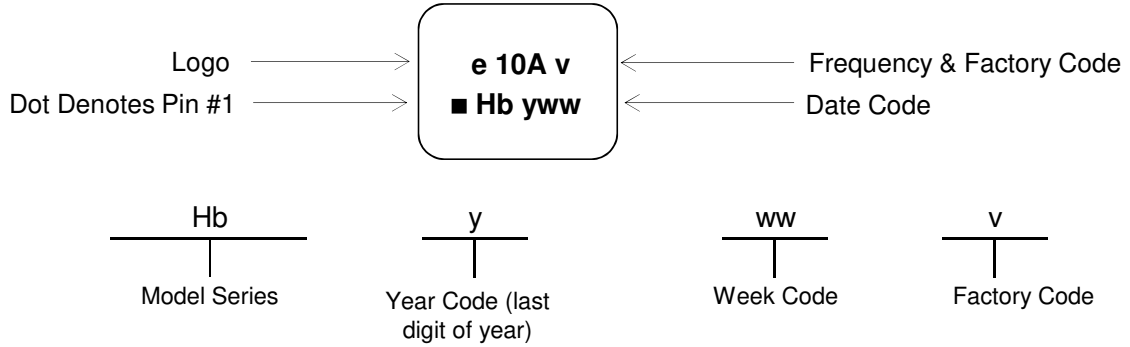


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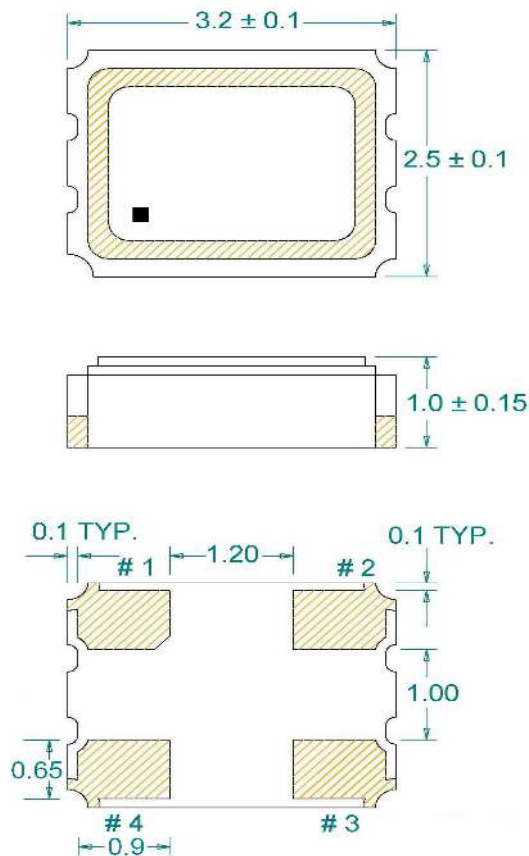
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### MARKING

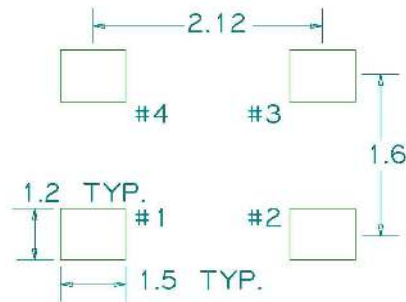


### MECHANICAL DRAWINGS ( Scale: None. Dimensions are in mm.)



(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.

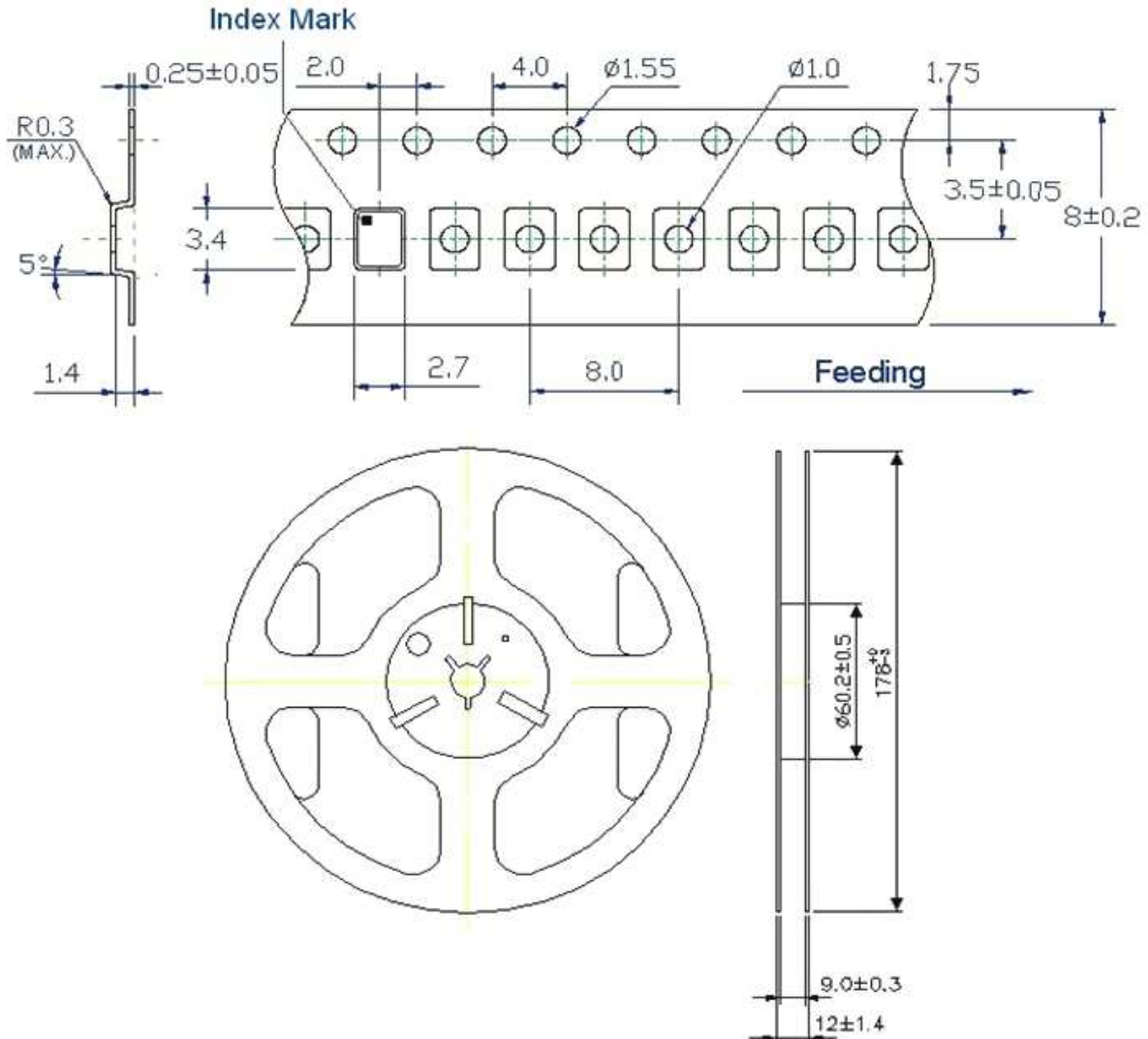
Pin	Function
1	OE
2	Ground
3	Clock Output
4	V <sub>DD</sub>

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### TAPE&REEL



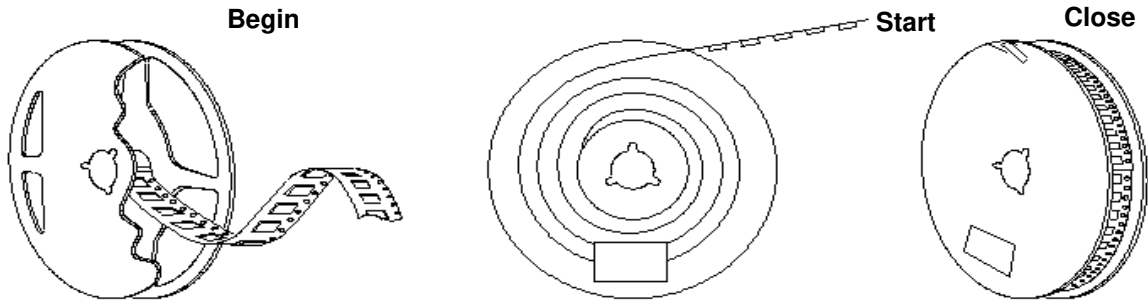
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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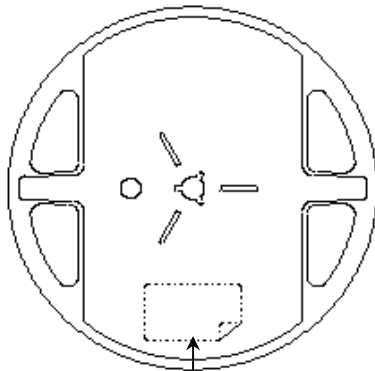
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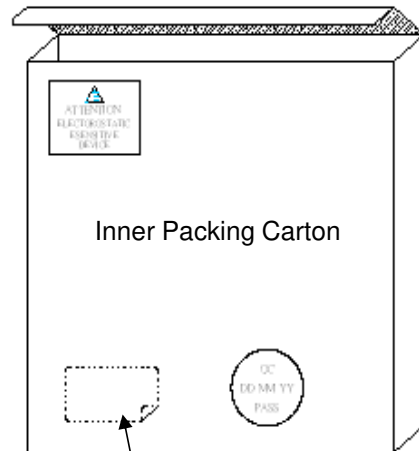
### PACKING



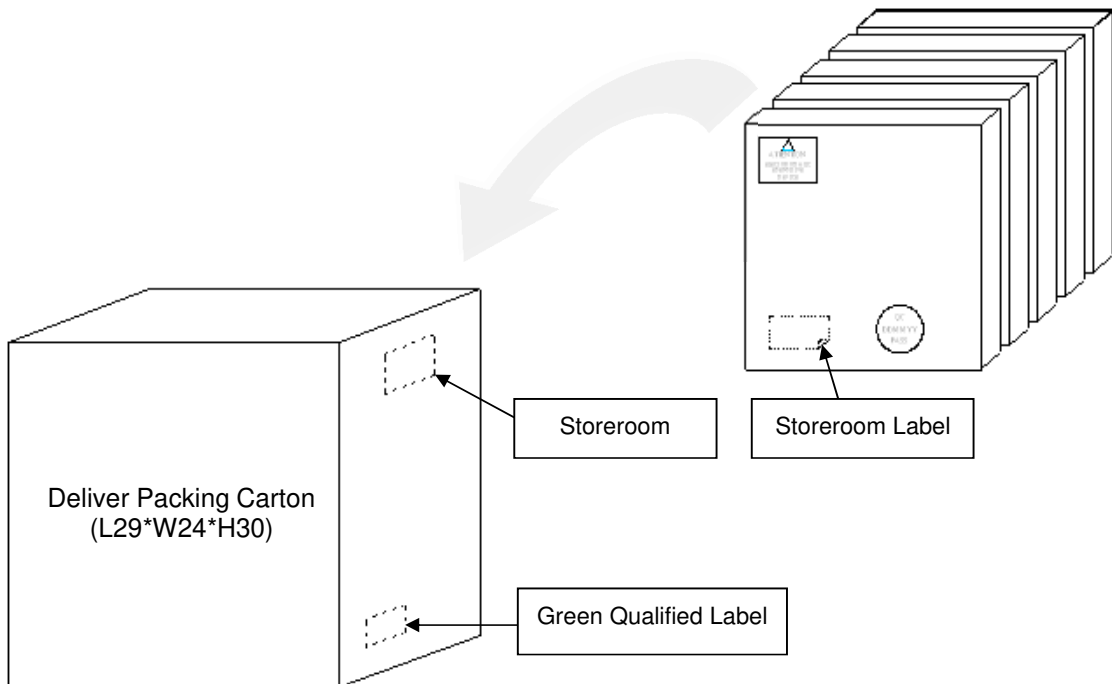
3000pcs-Product Tape



Blue Qualified Label



Storeroom Label



Storeroom

Storeroom Label

Green Qualified Label

Deliver Packing Carton  
(L29\*W24\*H30)