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**

VERSION HISTORY

Version No.	Version Date	Description	Notes
A	Jul.29,2021	Initial Release	

TYPE HX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

HX31A0011Z

VER. A 29-Jul-21

ELECTRICAL SPECIFICATIONS

SRe Part Number : HX31A0011Z

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	Fo	100.000000	MHz	
Frequency Stability	FT	± 25	ppm	**See note
Operating Temperature Range	TR	-40 to +105	°C	
Supply Voltage	V_{DD}	+1.8±5% to +3.3±5%	V	at +2.5V Typ.
Logic Type	LT	LVCMOS		
Supply Current, Output Enabled	I_{DD}/OE	40	mA	Max.
Supply Current, Output Disabled	I_{DD}/OD	100	µA	Max.
Duty Cycle (Symmetry)	DC/SY	40 / 60	%	Measured 50% of Waveform
Rise / Fall Time	T_R/T_F	4	ns	Max. measured 20/80% of Waveform
Output Voltage "0" Level	V_{OL}	10% V_{DD}	V	Max at I_{OL} = 4.0mA Min.
Output Voltage "1" Level	V_{OH}	90% V_{DD}	V	Min at I_{OH} = -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	

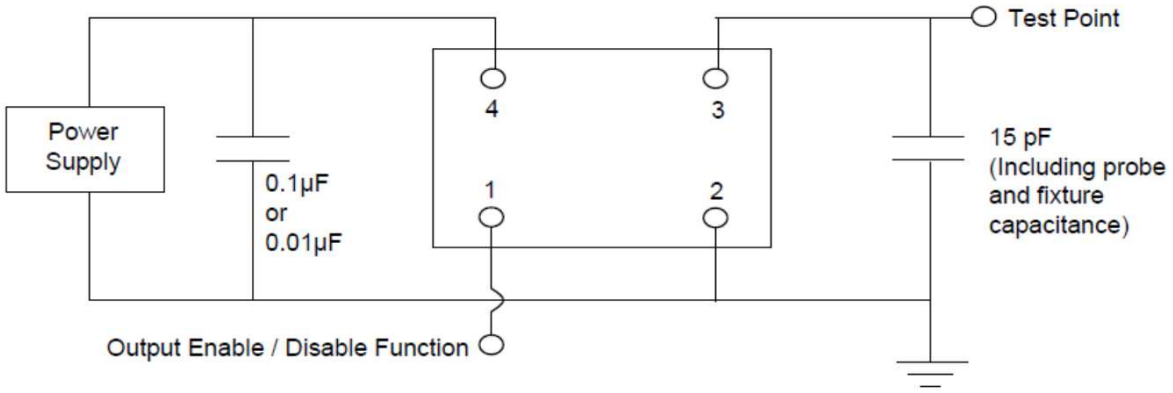
※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).

****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.**

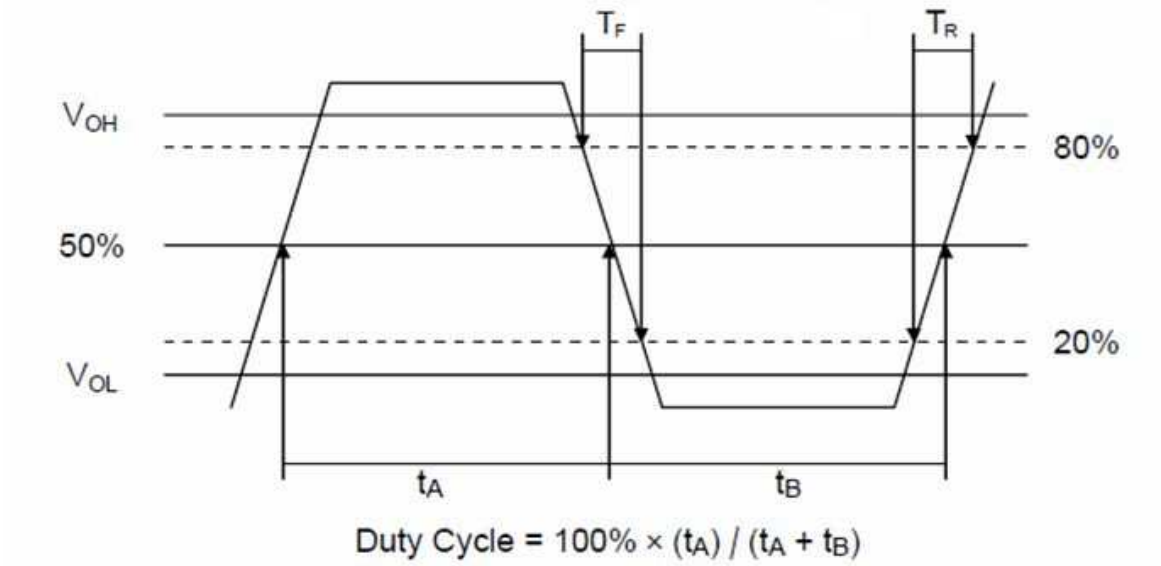
Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	$0.7V_{DD}$			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			200	ns	

TEST CIRCUIT



OUTPUT WAVEFORM



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

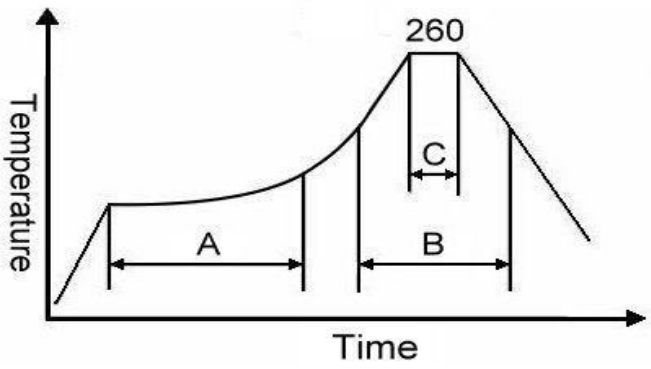
d) GROSS LEAK: MIL-STD-883, Method 1014, Condition C

e) FINE LEAK: MIL-STD-883, Method 1014, Condition A2, R1=2x10^{-8} atm cc/s

f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

SUGGESTED IR REFLOW PROFILE

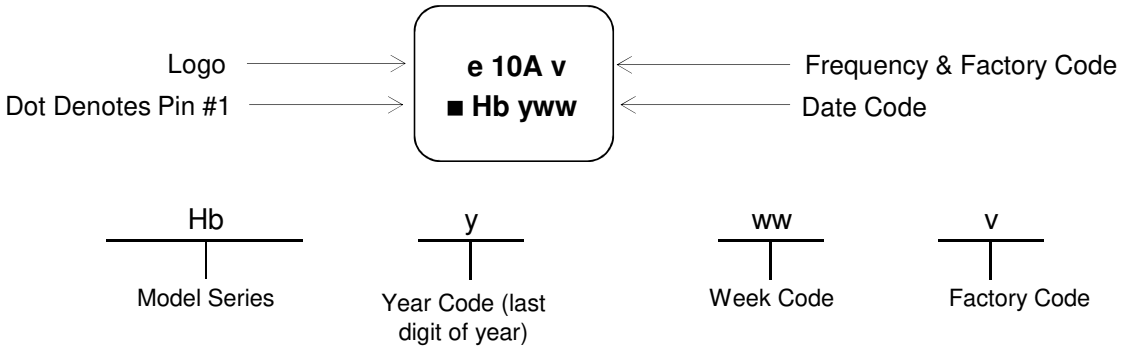
*As per IPC-JEDEC J-STD-020D



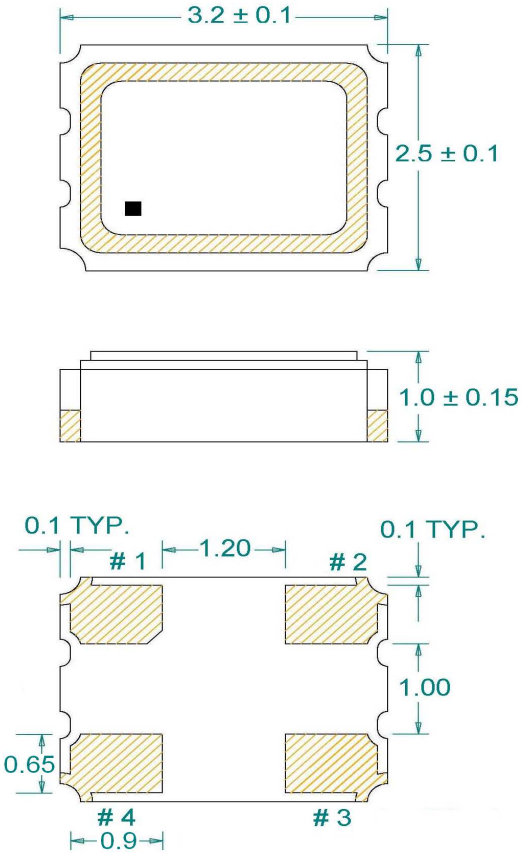
Note:

	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

MARKING

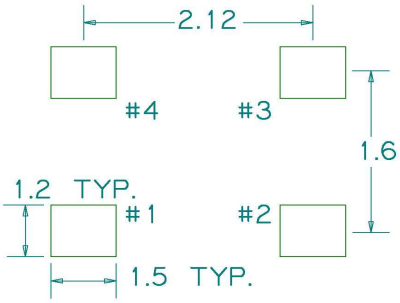


MECHANICAL DRAWINGS (Scale: None. Dimensions are in mm.)



(Bottom View)

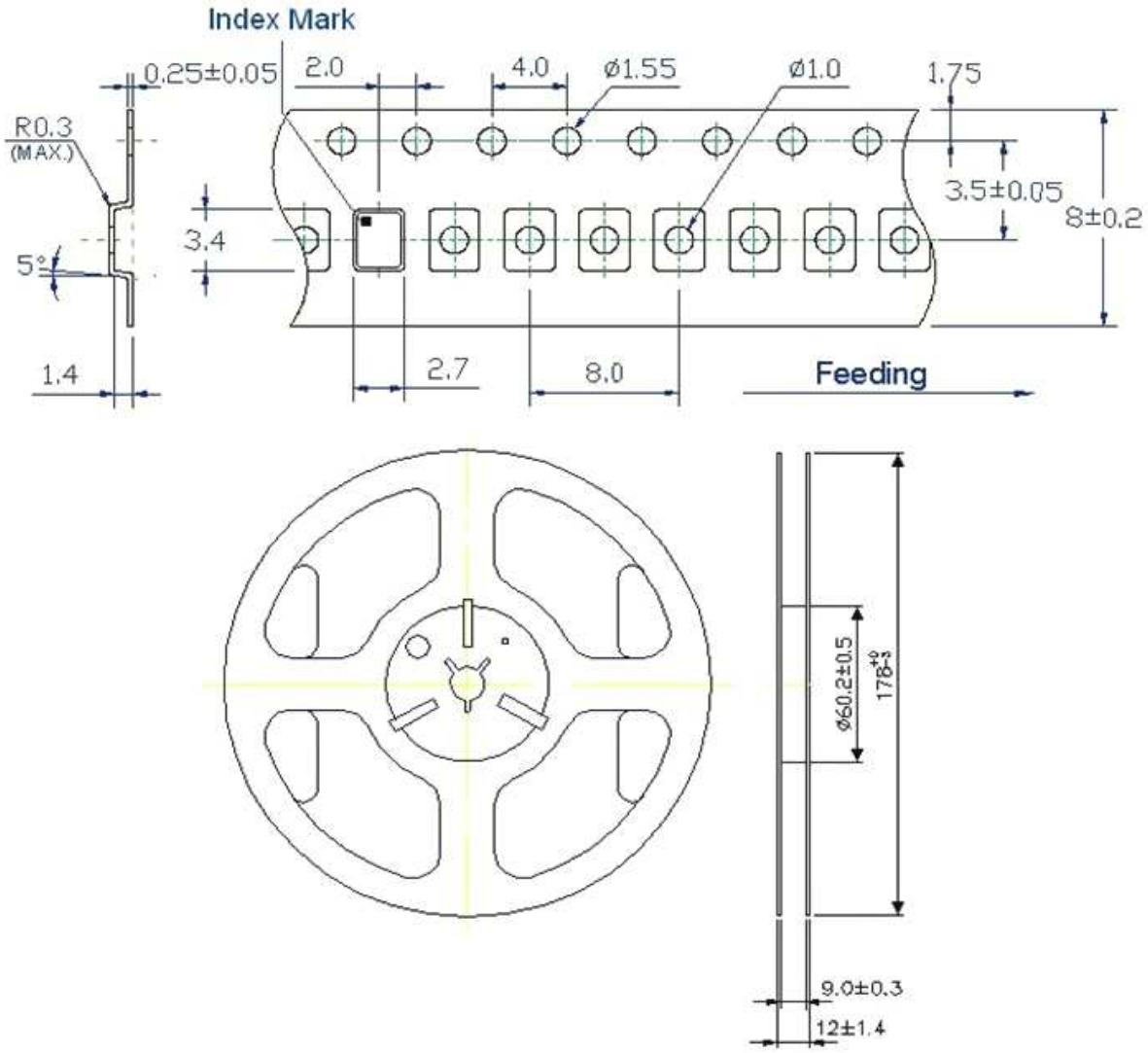
Recommended Land Pattern*



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

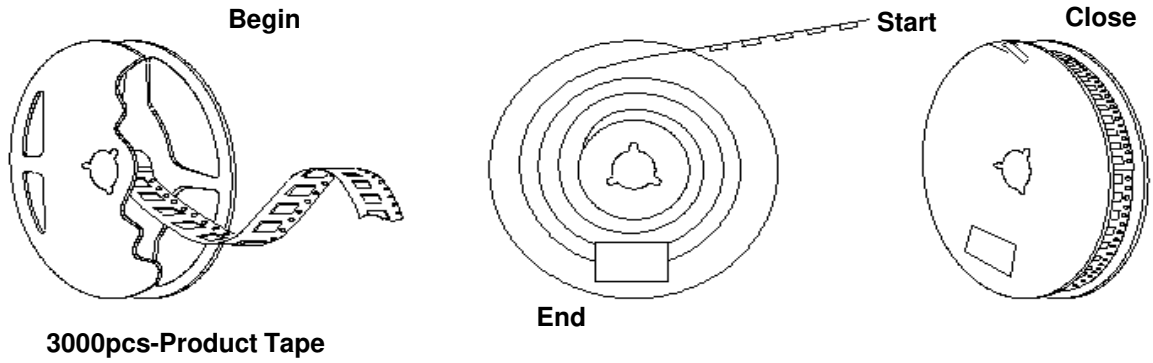
Pin	Function
1	OE
2	Ground
3	Clock Output
4	V_{DD}

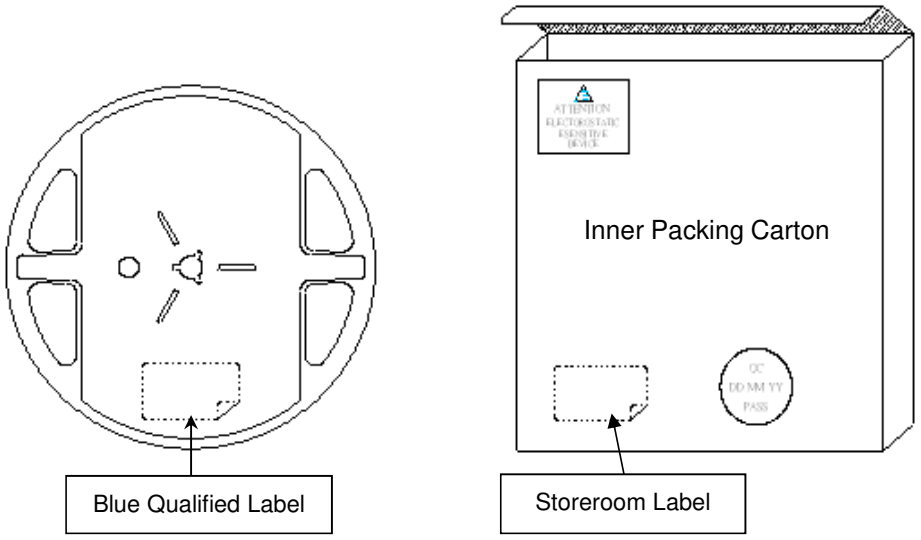
TAPE&REEL

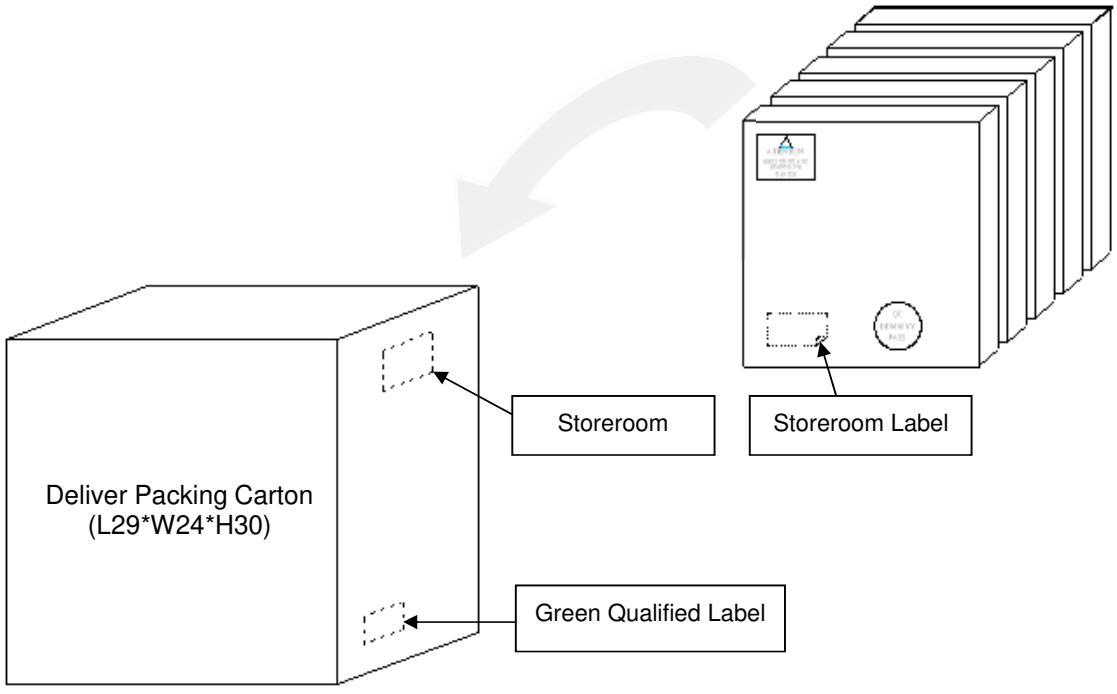


1. 230mm minimum leafer which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

PACKING


Begin
Start
Close
End
3000pcs-Product Tape


Inner Packing Carton
Blue Qualified Label
Storeroom Label


Storeroom
Storeroom Label
Deliver Packing Carton
(L29*W24*H30)
Green Qualified Label