



A Product Line of  
Diodes Incorporated



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## ***PRODUCT SPECIFICATION***

NOMINAL FREQUENCY	125.000000 MHz
PRODUCT TYPE	TYPE HX 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR
SPEC. NO. ( P/N )	HX3AC5006Q
ISSUE DATE	April 17, 2023
VERSION	A

### **Diodes Incorporated**

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<https://www.diodes.com>

- \*Pb-free**
- \*RoHS Compliant**
- \*HF-Halogen Free**
- \*REACH Compliant**
- \*AEC-Q104 Compliant**
- \*MSL: Level 1**



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

## HX3AC5006Q

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### ELECTRICAL SPECIFICATIONS

SRe Part Number : HX3AC5006Q

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F <sub>0</sub>	125.000000	MHz	
Frequency Stability	FT	± 50	ppm	**See note
Operating Temperature Range	TR	-55 to +125	°C	
Supply Voltage	V <sub>DD</sub>	+3.3 ± 10%	V	
Logic Type	LT	LVC MOS		
Supply Current, Output Enabled	I <sub>DD</sub> /OE	26	mA	Max.
Supply Current, Output Disabled	I <sub>DD</sub> /OD	10	µA	Max.
Duty Cycle (Symmetry)	DC/SY	45 / 55	%	Measured 50% of Waveform
Rise / Fall Time	T <sub>R</sub> /T <sub>F</sub>	2	ns	Max. measured 20/80% of Waveform
Output Voltage "0" Level	V <sub>OL</sub>	10% V <sub>DD</sub>	V	Max.
Output Voltage "1" Level	V <sub>OH</sub>	90% V <sub>DD</sub>	V	Min.
Output Load	CL	15	pF	Max.
Jitter, Phase	RMS	0.3	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		2	ms	Max.
Storage Temperature Range		-55 to +125	°C	

**\*\*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

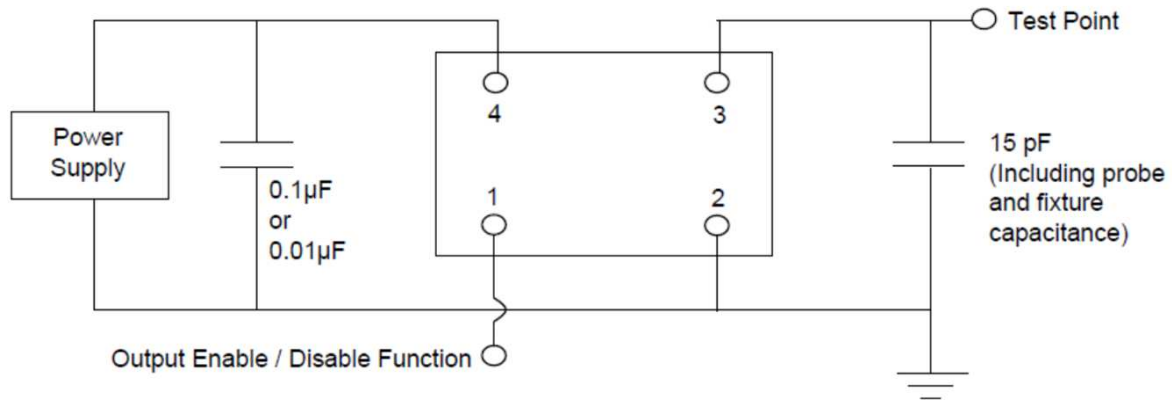
Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	0.7V <sub>DD</sub>			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.3V <sub>DD</sub>	V	Output is Hi-Z
Output Disable Delay			200	ns	
Output Enable Delay			1	ms	

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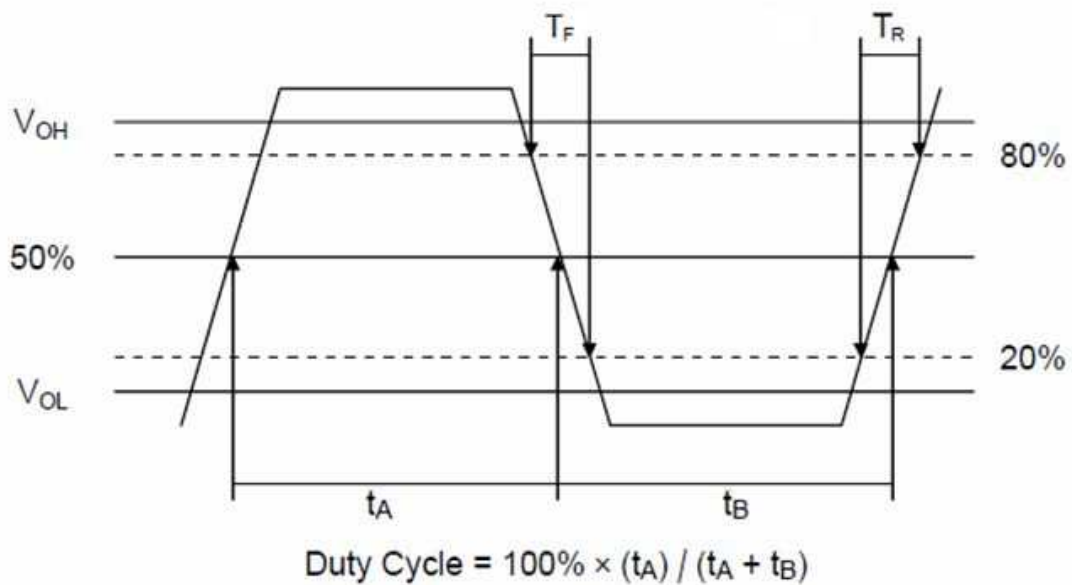
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### TEST CIRCUIT



### OUTPUT WAVEFORM



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### AEC-Q104 RELIABILITY TEST SPECIFICATIONS:

#### 1. Initial

1.1 Physical Dimensions: JESD22, Method JB1-100

1.2 External Visual: MIL-STD-883, Method 2009

1.3 Start Up and Temperature Steps: ISO 16750-4

#### 2. Mechanical

2.1 Mechanical Shock: Customize (Test condition: 5,000g, 0.3ms, 1/2 sine)

2.2 Vibration: MIL-STD-202G Method 204D (Test condition : 20g, 10-2,000Hz swept sine)

2.3 Solderability: JEDEC, J-STD-002

2.4 Drop testing: JEDEC, JESD22-B111

#### 3. Environmental

3.1 Temperature Cycle: JEDEC, JESD22-A104

3.2 Biased HAST: JEDEC, JESD22-A101

3.3 High Temperature Operating Life: JEDEC, JESD22-A108

3.4 High Temperature Storage Life: JEDEC, JESD22-A103

3.5 High Temperature & High Humidity: JEDEC, JESD22-A102

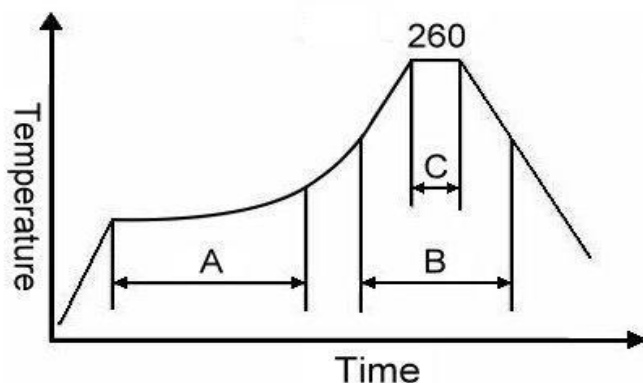
3.6 Low Temperature Storage Life: JEDEC, JESD22-A119

3.7 ESD Testing : JEDEC JS-001 / JEDEC JS-002

3.8 Latch up Testing : JESD78

### SUGGESTED IR REFLOW PROFILE

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



Note:

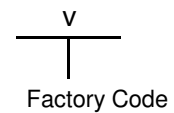
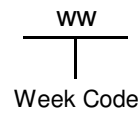
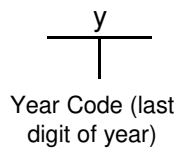
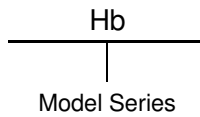
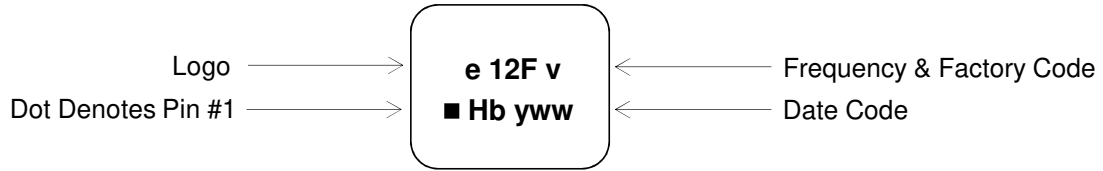
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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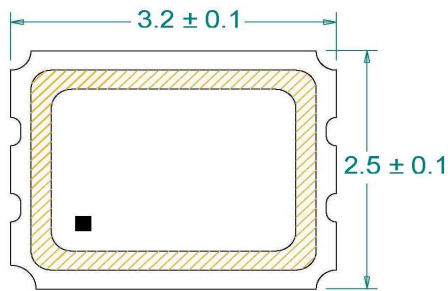
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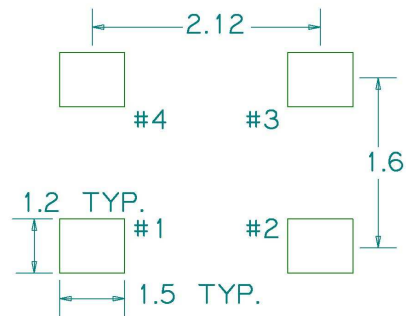
### MARKING



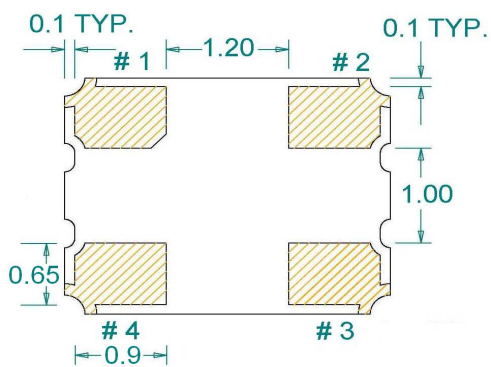
### MECHANICAL DRAWINGS ( Scale: None. Dimensions are in mm.)



#### 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.



(Bottom View)

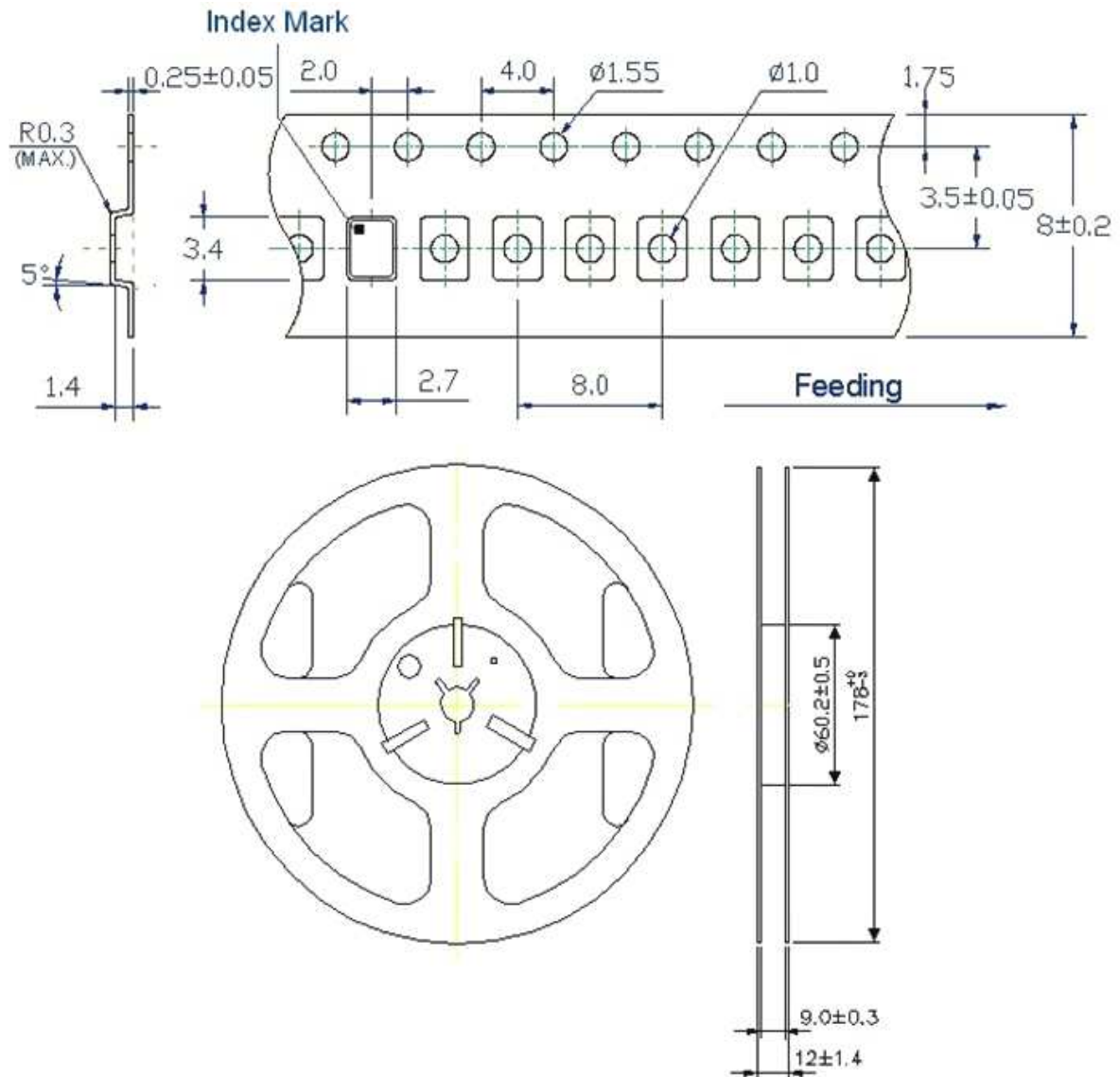
Pin	Function
1	OE
2	Ground
3	Clock Output
4	V <sub>DD</sub>

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### TAPE&REEL



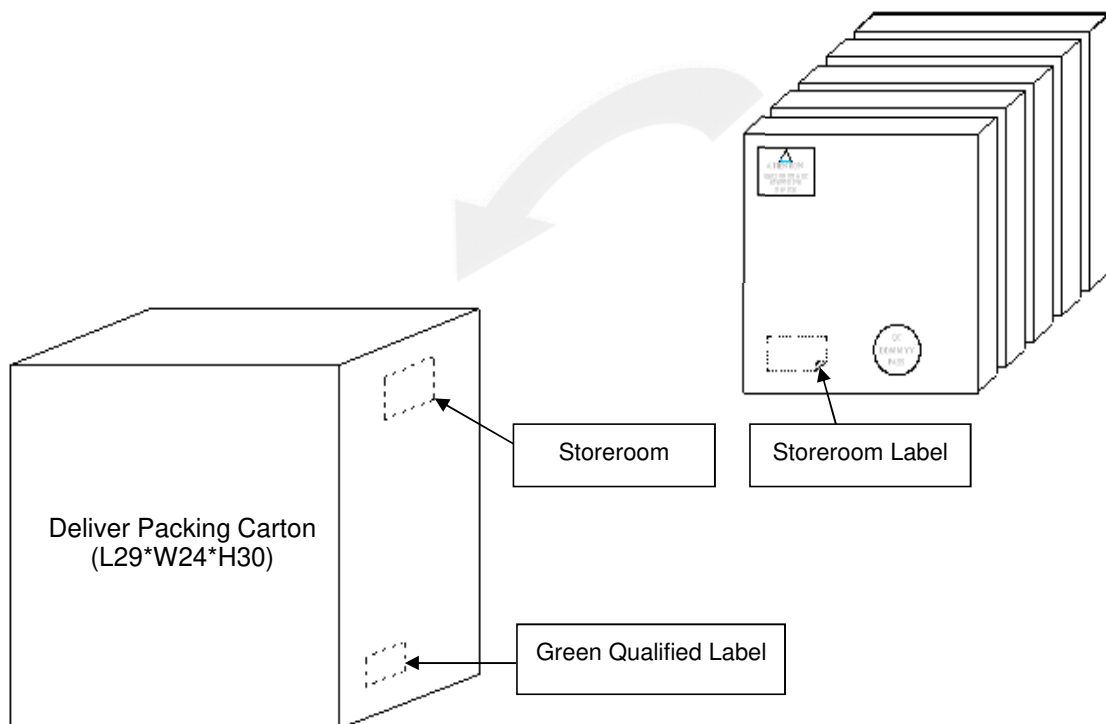
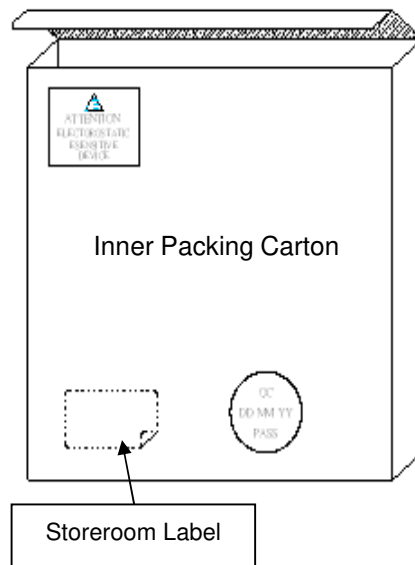
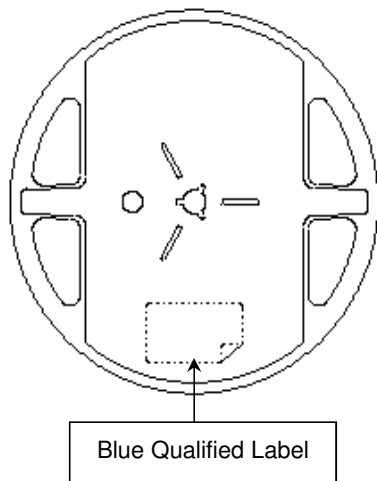
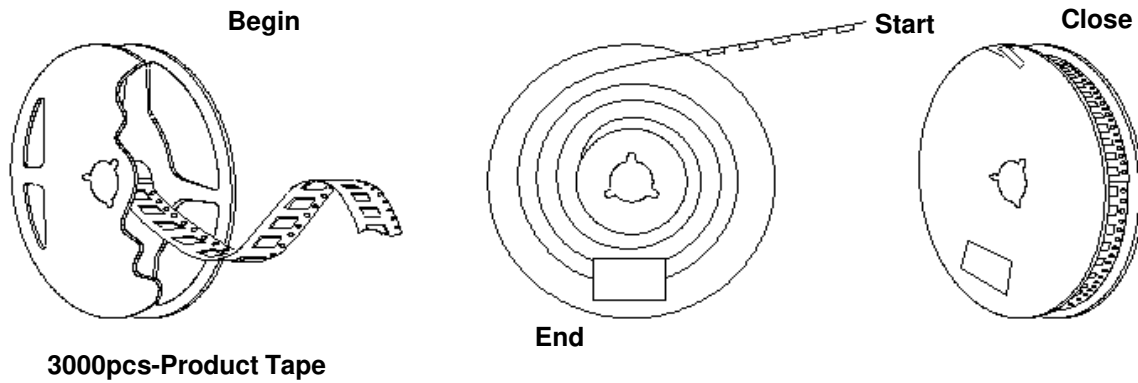
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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### PACKING





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