

# FN4000161 Datasheet

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DiGi Electronics Part Number	FN4000161-DG
Manufacturer	<a href="#">Diodes Incorporated</a>
Manufacturer Product Number	FN4000161
Description	XTAL OSC XO 40.0000MHZ CMOS
Detailed Description	40 MHz XO (Standard) CMOS Oscillator 3.3V



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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## Purchase and inquiry

Manufacturer Product Number:

FN4000161

Series:

SaRonix-eCera™ FN

Base Resonator:

Crystal

Frequency:

40 MHz

Voltage - Supply:

3.3V

Operating Temperature:

-10°C ~ 70°C

Manufacturer:

Diodes Incorporated

Product Status:

Active

Type:

XO (Standard)

Output:

CMOS

Absolute Pull Range (APR):

-

Size / Dimension:

0.276" L x 0.197" W (7.00mm x 5.00mm)

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



A Product Line of  
Diodes Incorporated



## SPECIFICATION FOR APPROVAL

CUSTOMER	
NOMINAL FREQUENCY	40.000000 MHz
PRODUCT TYPE	TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR
SPEC. NO. ( P/N )	FN4000161
CUSTOMER P/N	
ISSUE DATE	May 31, 2019
VERSION	D

APPROVED	PREPARED	QA
<i>Brenda</i>	<i>Clair</i>	<i>Sheng Yang</i>

**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



**TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR****FN4000161**

VER. D 31-May-19

**ELECTRICAL SPECIFICATIONS****SRe Part Number : FN4000161**

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F <sub>o</sub>	40.000000	MHz	
Frequency Stability	FT	± 20	ppm	**See note
Operating Temperature Range	TR	-10 to +70	°C	
Supply Voltage	V <sub>DD</sub>	+3.3 ± 10.0%	V	
Logic Type	LT	LVC MOS		
Supply Current, Output Enabled	I <sub>DD</sub> /OE	25	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>	5	ns	Max. measured 10/90% 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	1.5	ps	Max, 12KHz ~ 20MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	5	ps	Max, 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	50	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	
Output Enable Delay			2	ms	

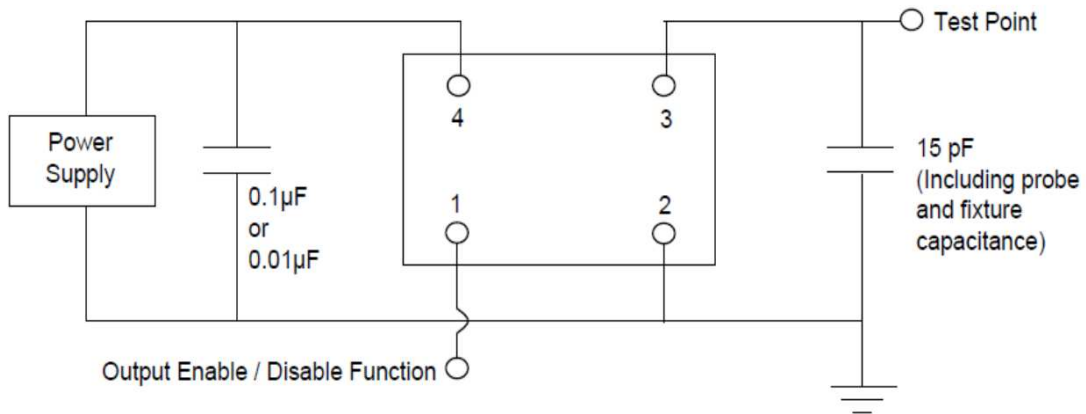


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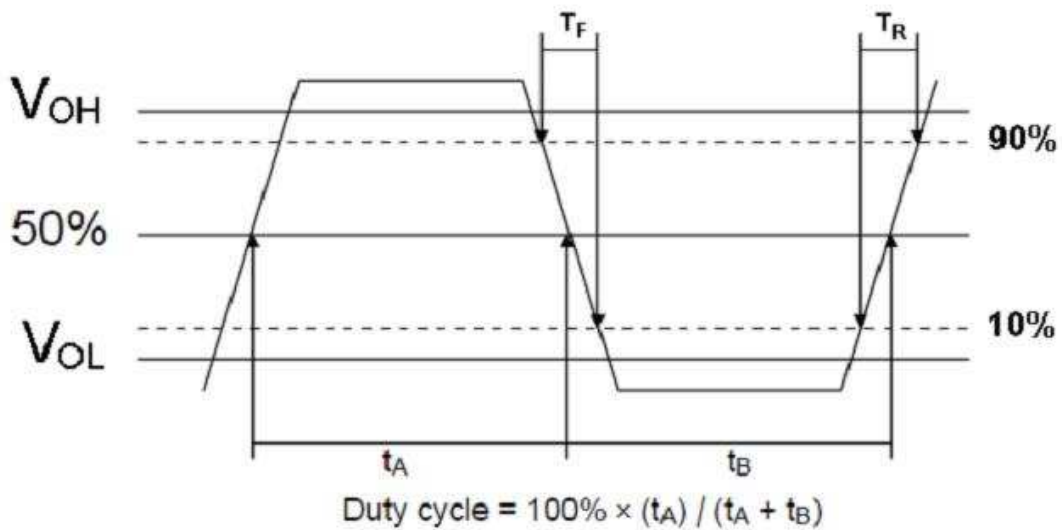
**FN4000161**

VER. D 31-May-19

## TEST CIRCUIT



## OUTPUT WAVEFORM



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VER. D 31-May-19

**RELIABILITY SPECIFICATIONS****ENVIRONMENTAL:**

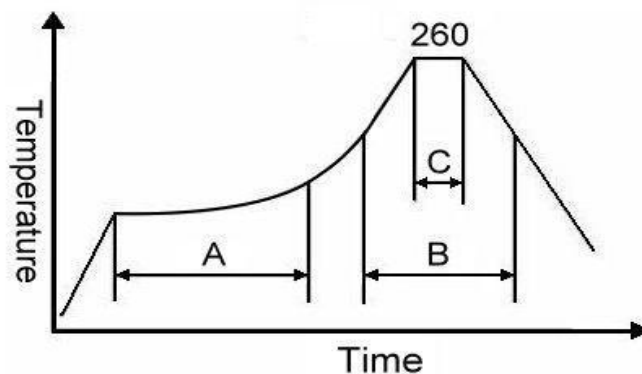
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices  
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS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

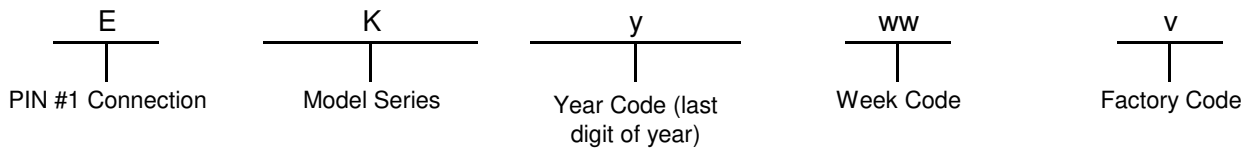
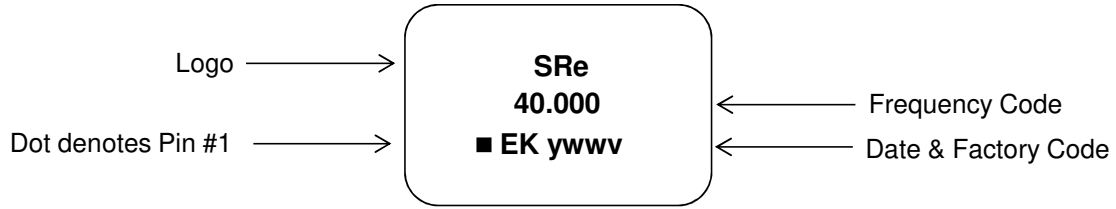
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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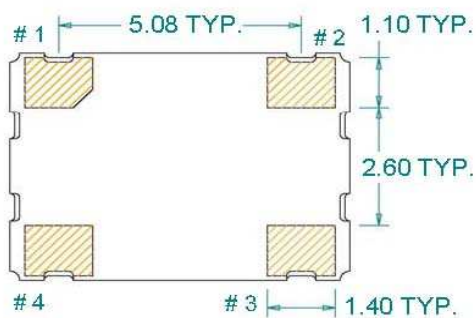
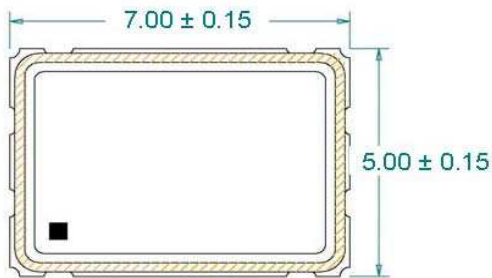
## FN4000161

VER. D 31-May-19

### MARKING

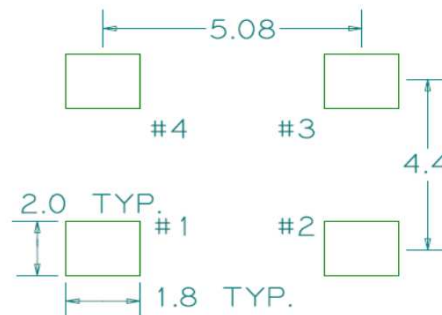


### MECHANICAL DRAWINGS ( Scale:None. Dimensions are in mm.)



(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>

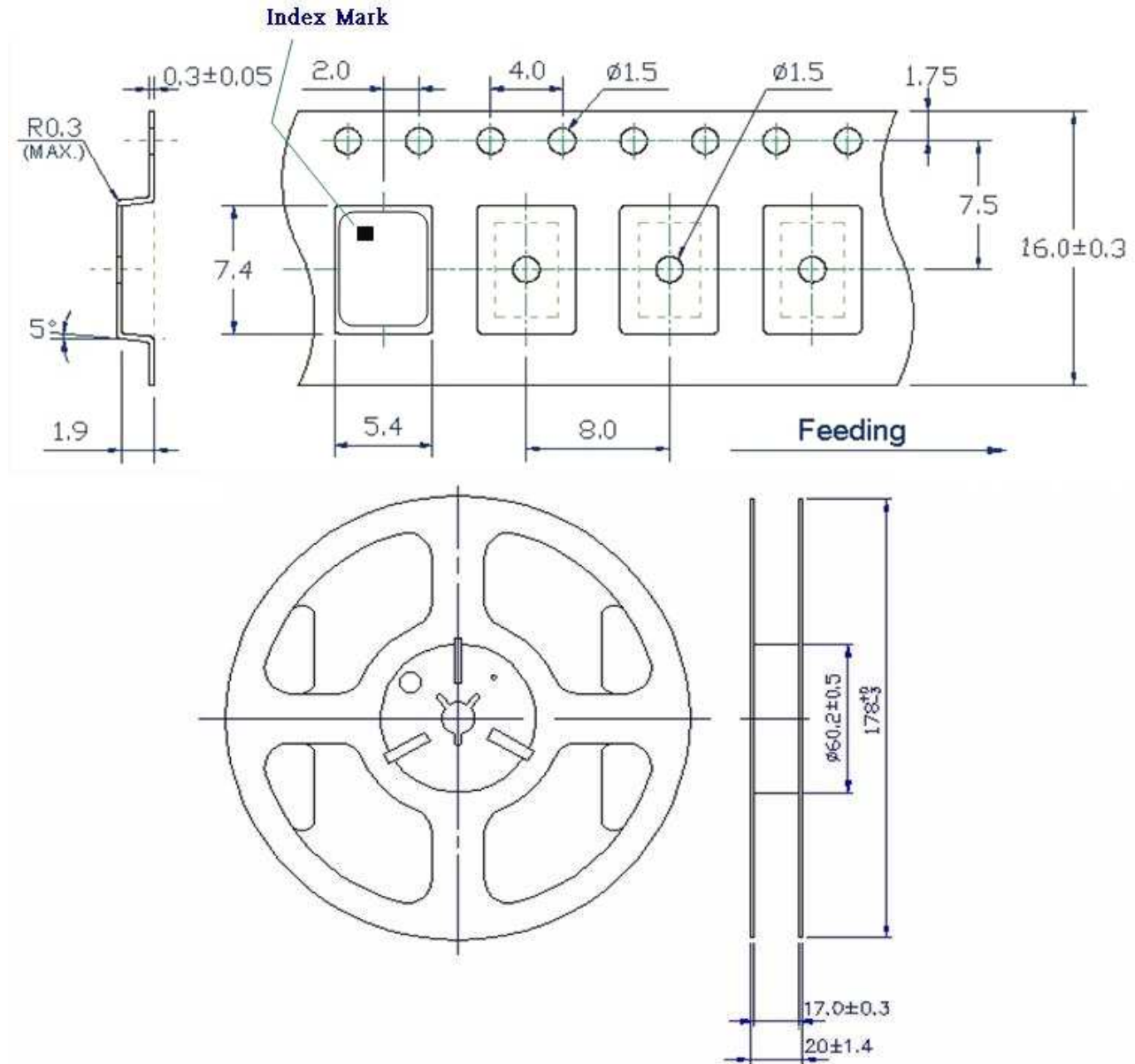


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VER. D 31-May-19

## TAPE&REEL



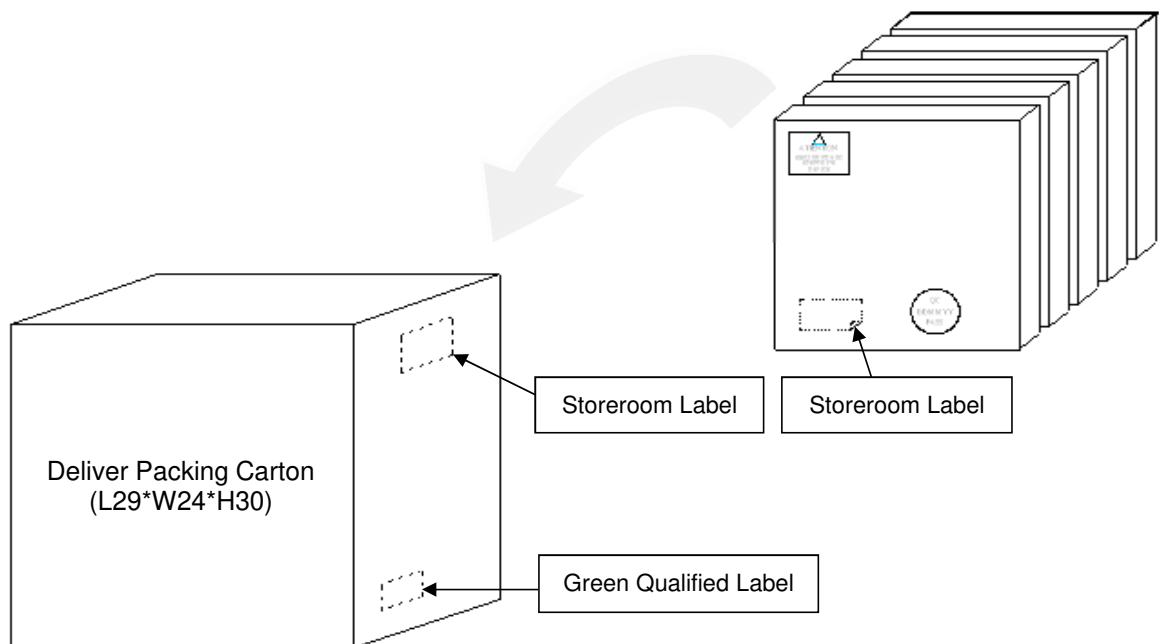
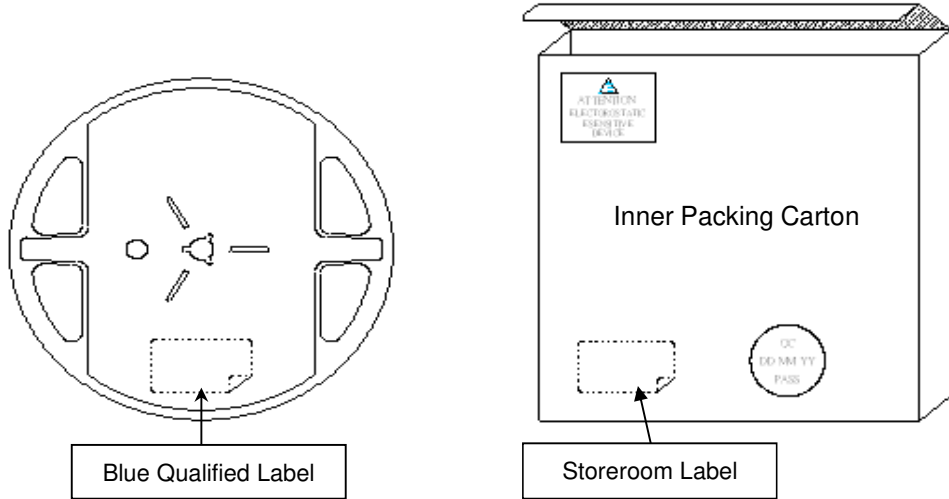
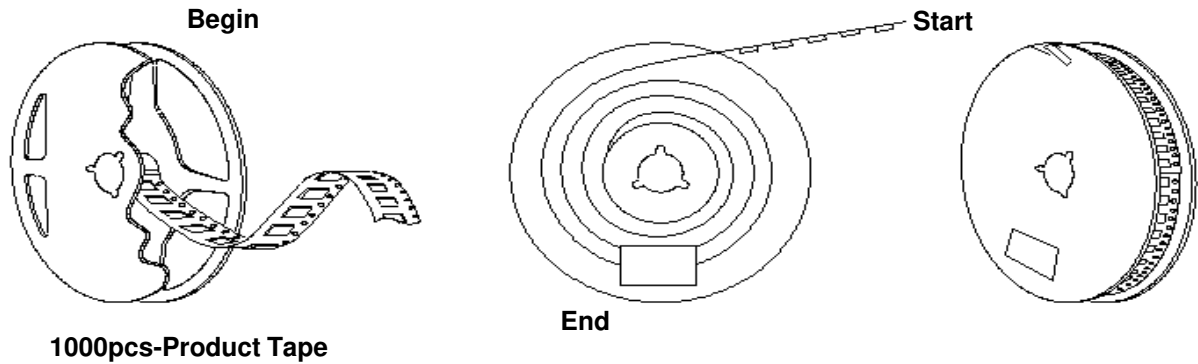
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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## FN4000161

VER. D 31-May-19

### PACKING



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