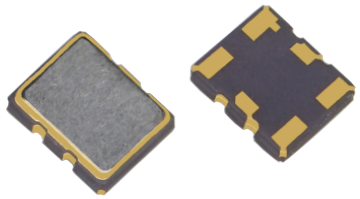
A product Line of Diodes Incorporated

The World's Smallest Ultra Low Jitter Crystal Oscillator 2.5 x 2.0mm

2.5V/3.3V LVPECL XO

UX22/UX252



2.5 x 2.0mm Ceramic SMD

Product Features

- Ultra low phase jitter for 40G/100G systems
  - 0.1 to 0.2ps RMS max. (12kHz to 20MHz), Category 1
  - 0.3ps RMS max. (12kHz to 20MHz), Category 2
- Industrial Temperature Range
- Pb-free & RoHS compliant

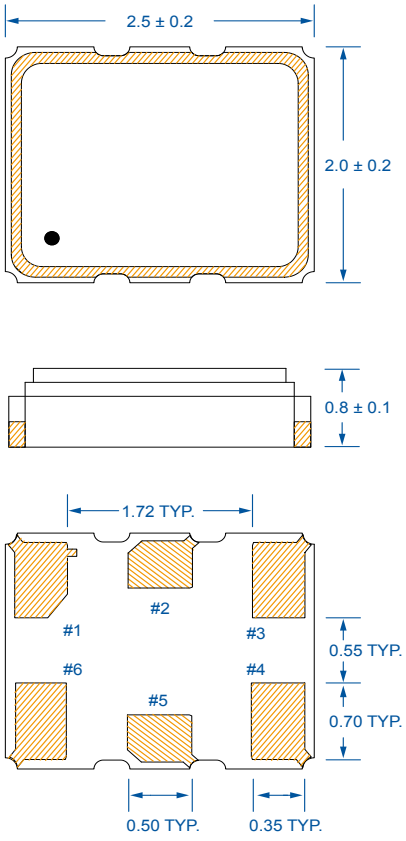
Product Description

The UX22/UX252 XO series is the world's smallest crystal oscillator family optimized to save board space. The series consists of high performance LVPECL crystal oscillators with ultra low jitter performance to meet strict chipset requirements. It supports various options including wider frequency range, 2.5V/3.3V voltage, and various stabilities. It is designed to meet the clock source specifications for communication systems, and other high performance equipment.

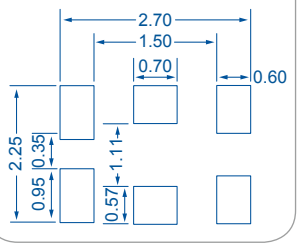
Applications

- Networking Systems
- Servers and Storage Systems
- Profession Video Equipment
- Test and Measurement
- FPGA/ASIC Clock Generation

Package: (Scale: none; dimensions are in mm)



Recommended Land Pattern:



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

Pin Functions:

Pin	Function
1	OE
2	NC
3	V_{EE}
4	Output
5	Output N
6	V_{CC}

*Not for all frequencies in the frequency range. Please contact sales for details.

Part Ordering Information Category 1*:

UX22 XXX YYY

- A: Product Family
- B: XXX = Frequency Code
- C: YYYY = Specification Code

Part Ordering Information Category 2*:

UX 252 V I FFFF.FFFFFF

- A — Voltage: 1=+3.3V, 2=+2.5V
- B — Stability and Temp Range:

Stability	Temp Range
B = ±25 ppm	-20 to +70°C
C = ±50 ppm	-20 to +70°C
D = ±25 ppm	-40 to +85°C
E = ±50 ppm	-40 to +85°C

- C — Frequency: FFFF.FFFFFF MHz, "4 digits/decimal/6 digits" format

*Please contact us for custom requirements for your specific application needs

Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output Frequency	100		212.5	MHz	
Supply Voltage	3.135	3.3	3.465	V	See ordering options
	2.375	2.5	2.625		
Supply Current, Output Enabled			70	mA	
Supply Current, Output Disabled			30	uA	
Frequency Stability			±100	ppm	See ordering options
Operating Temperature Range	-40		+85	°C	See ordering options
Output Logic 0, V_{OL}			V_{CC}-1.620	V	
Output Logic 1, V_{OH}	V_{CC}-1.025			V	
Output Load	50Ω to V_{CC}-2V output termination				
Duty Cycle	45		55	%	Measured 50% V_{DD}
Rise and Fall Time			0.4	ns	Measured 20/80% of waveform
RMS Phase Jitter, Category 1			0.1	ps	Offset frequency 12kHz to 20MHz, See ordering information category 1
			0.2	ps	
RMS Phase Jitter, Category 2			0.3	ps	Offset frequency 12kHz to 20MHz, See ordering information category 2
Total Period Jitter (Peak to Peak)			30	ps	100,000 random periods

Notes:
1. 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.
2. For specifications other than those listed, please contact sales.

Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (pin 1), Output Enable	0.7 V_{DD}			V	or open
Input Voltage (pin 1), Output Disable (low power standby)			0.3 V_{DD}	V	Output is Hi-Z
Output Disable Delay			200	ns	
Output Enable Delay			2	ms	
Start up Time			10	ms	

Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Units	Notes
Storage Temperature	-55		+125	°C	

For the latest product information visit: https://www.diodes.com/products/connectivity-and-timing/crystal-and-crystal-oscillator/

For test circuit go to: https://www.diodes.com/assets/sre/tc_pecl.pdf

For soldering reflow profile and reliability test ratings go to: https://www.diodes.com/assets/sre/reflow.pdf

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