

2.5V/3.3V HCSL FS XO

**NX24SB**



2.5 x 2.0mm Ceramic SMD

**Product Features**

- 4 selectable output frequencies
- Meet PCIe Gen2 and Gen3 clock requirements at 100MHz
- Very low phase jitter - < 1.0ps RMS max.
- Wide frequency range - 5 ~ 212.5MHz
- Thicker crystal for improved reliability
- Low supply current - 70mA max.
- Industrial Temperature Range
- Pb-free & RoHS compliant
- Fast lead time

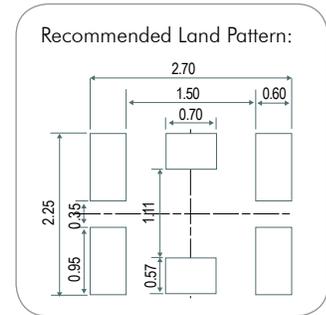
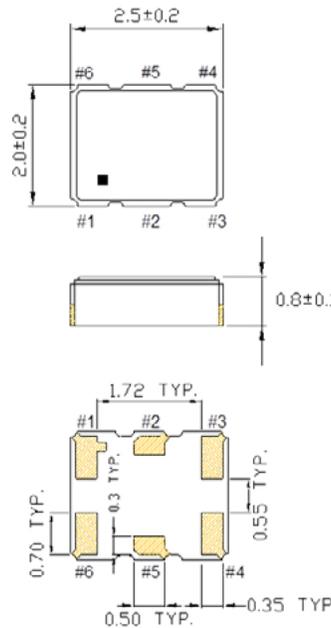
**Product Description**

The NX24SB XO series is a high performance HCSL crystal oscillator family with very low jitter performance. Depending on customers' needs, this family devices can support 4 different frequencies using the FS select pins. 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
- FPGA/ASIC clock generation

**Package:** (Scale: none, Dimensions are in mm)



**Pin Functions:**

Pin	Function
1	FS1
2	FS0
3	Ground
4	Q
5	$\bar{Q}$
6	Vcc

\*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.

**Frequency Select Table:**

FS0	FS1	Output
0	0	Freq. 1*
0	1	Freq. 2*
1	0	Freq. 3*
1	1	Freq. 4*

\*Freq. 1, Freq. 2, Freq. 3, Freq. 4 can be any frequencies within the output frequency range.

**Part Ordering Information:**

**NX 24 SB XXXX**





## Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output Frequency	5		212.5	MHz	
Supply Voltage	3.135	3.3	3.465	V	
	2.375	2.5	2.625		
Supply Current, Output Enabled			70	mA	
Frequency Stability			±50	ppm	±20ppm is for -20°C to 70°C only
Operating Temperature Range	-40		+85	°C	
Output Logic 0, V <sub>OL</sub>	-0.15	0		V	
Output Logic 1, V <sub>OH</sub>	0.66	0.7	0.9	V	
Output Load	R <sub>S</sub> = 33Ω, R <sub>P</sub> = 50Ω, C <sub>L</sub> = 2pF				Output requires termination
Duty Cycle	45		55	%	Measured 50% V <sub>CC</sub>
Rise and Fall Time			700	ps	Measured from V <sub>OL</sub> = 0.175V to V <sub>OH</sub> = 0.5252V
Jitter, RMS	PCIe Gen2, 100 MHz	2.0	3.0	ps	As defined by PCI-SIG for PCIe Gen2
Jitter, RMS	PCIe Gen3, 100 MHz	0.43	1.0	ps	As defined by PCI-SIG for PCIe Gen3
Jitter, Accumulated, RMS (1-σ)			6	ps	20,000 adjacent periods
Jitter, Phase, RMS	< 40MHz	0.4	1	ps	12kHz to 5 MHz frequency band
	40 to 212.5MHz	0.4	1	ps	12kHz to 20 MHz frequency band
	100MHz, 125MHz	0.4	0.6	ps	12kHz to 20 MHz frequency band
Jitter, pk-pk			40	ps	100,000 random periods

### Notes:

- 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.
- Phase jitter typical value is depending on output frequencies.
- For specifications other than those listed, please contact sales.

## Frequency Select Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (pin 1 & pin 2), FS1 & FS0	0.7 V <sub>CC</sub>			V	
Input Voltage (pin 1 & pin 2), FS1 & FS0			0.3 V <sub>CC</sub>	V	
Settling Time after FS Change			10	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:** <http://www.pericom.com/products/crystals-and-crystal-oscillators/hiflex-xo/?part=NX24SB>

**For test circuit go to:** <http://www.pericom.com/pdf/sre/tc-hcsl-sb.pdf>

**For soldering reflow profile and reliability test ratings go to:** <http://www.pericom.com/pdf/sre/reflow.pdf>

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