

# VFXO321

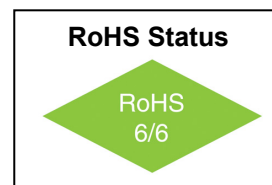
## XO Ultra Low Jitter 2.5V, 3.3V

### 5x7mm SMD, LVPECL / LVDS / LVCMOS



#### Features

- 10MHz to 320MHz frequency range
- Differential output levels (LVPECL/LVDS)
- Single ended LVCMOS output available
- <0.2ps RMS jitter over 12kHz to 20MHz
- Selectable OE logic



#### Applications

- Optical Networking, SONET / SDH
- 10 Gigabit Ethernet
- Broadband Access

#### Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		10 16		320 280	MHz	PECL*, LVDS CMOS
Frequency Stability	$\Delta F/F$	Vs. Operating temperature			$\pm 50$ $\pm 25$ $\pm 20$	ppm	Order Code B Order Code C Order Code D
		Vs. Supply voltage		$\pm 3$		ppm/V	
		Vs. Aging / Year		$\pm 3$ $\pm 1$		ppm	First Year After first year
Operating Temperature	T		0 -40		+70 +85	°C	Order Code B Order Code G
Output		LVPECL LVDS LVCMOS					Order Code L Order Code D Order Code C
Supply Voltage	V <sub>CC</sub>		3.15 2.25	3.3 2.5	3.45 2.75	V	Order Code E Order Code G
Period RMS Jitter		155.52MHz 311.04MHz		2.5 2.8	3 3.3	ps	
Integrated RMS Jitter 12kHz to 20MHz		155.52MHz 311.04MHz		0.25 0.18		ps	

\* NOTE: Refer to VFXO311 series for frequencies above 320MHz and up to 800MHz PECL.

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**Electrical Specifications**

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Current	$I_{CC}$	38MHz – 100MHz			65	mA	PECL
		100MHz – 300MHz			80		
		38MHz – 100MHz			45	mA	LVDS
		100MHz – 320MHz			60		
		At 100MHz, load = 15pF		16	20	mA	CMOS
Load		50 Ohms to $V_{DD}-2V$ (PECL) 100 Ohms (LVDS)					
Output High Voltage	$V_{OH}$	$R_L = 50$ Ohms to ( $V_{DD}-2V$ ) $I_{OH} = -8.5mA$	2.4	$V_{DD}-1.025$ 1.4	1.6	V	PECL LVDS CMOS
Output Low Voltage	$V_{OL}$	$I_{OL} = -8.5mA$	0.9	1.1	$V_{DD}-1.62$ 0.4	V	PECL LVDS CMOS
Output Differential Voltage	$V_{OD}$		247	355	454	mV	LVDS
Output Drive Voltage	$I_{OSD}$	$V_{OL} = 0.4V,$ $V_{OH} = 2.4V$		8.5		mA	CMOS
Offset Voltage	$V_{OS}$		1.125	1.2	1.375	V	LVDS
Rise / Fall Time	$T_R/T_F$	20% to 80%		0.25 0.3 1.2	0.45 0.7 1.6	ns	PECL LVDS CMOS
Duty Cycle		$V_{DD} - 1.3V$ @ 1.25V 50% $V_{DD}$	45	50	55	%	PECL LVDS CMOS
Tristate	"1": Output Enable – Pin 1 may float or 2.8V min (3.3V $V_{DD}$ ) or 2.25V min (2.5V $V_{DD}$ ) "0": Tristate – Pin 1 requires 0.4V max (3.3V or 2.5V $V_{DD}$ )						

**Phase Noise Performance**

Parameter	Output Type	Frequency Range (MHz)	Carrier Freq. (MHz)	10Hz	100Hz	1kHz	10 kHz	100 kHz	1 MHz	10 MHz
	CMOS	120 – 280	155.52	-50	-82	-110	-128	-142	-148	-150
	PECL LVDS	120 – 320	155.52	-50	-82	-110	-128	-142	-148	-150
	CMOS	16 – 160	155.52	-65	-95	-122	-138	-142	-148	-149
	PECL LVDS	10 – 160	155.52	-65	-95	-122	-138	-142	-148	-149

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**Absolute Maximum Ratings**

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Lead Temperature		Soldering, 10s max			260	°C	
Storage Temperature	T <sub>S</sub>		-55		+125°	°C	
Junction Temperature	T <sub>J</sub>				+125°	°C	
ESD Protection		Input static discharge voltage protection			2	kV	
Supply Voltage	V <sub>DD</sub>				4.6	V	
Output Voltage	V <sub>O</sub>		V <sub>DD</sub> -0.5		V <sub>DD</sub> +0.5	V	

**Environmental and Mechanical Conditions**

Parameter	Condition
Shock	1000 Gs, 0.35ms, ½ sine wave, 3 shocks in each plane
Humidity	Resistant to 85% R.H. at 85°C
Vibration	10-2000 Hz of 0.06" d.a. or 20 Gs, whichever is less
Leak	MIL STD 883, Method 1014, Condition A and Condition C
Case	Ceramic with hermetic resistance-welded metal lid
Pads	Solderable gold over nickel
Marking	Epoxy ink or laser engraved
Resistance to Solvents	MIL STD 202, Method 215

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## Pin Assignments

LVPECL, LVDS

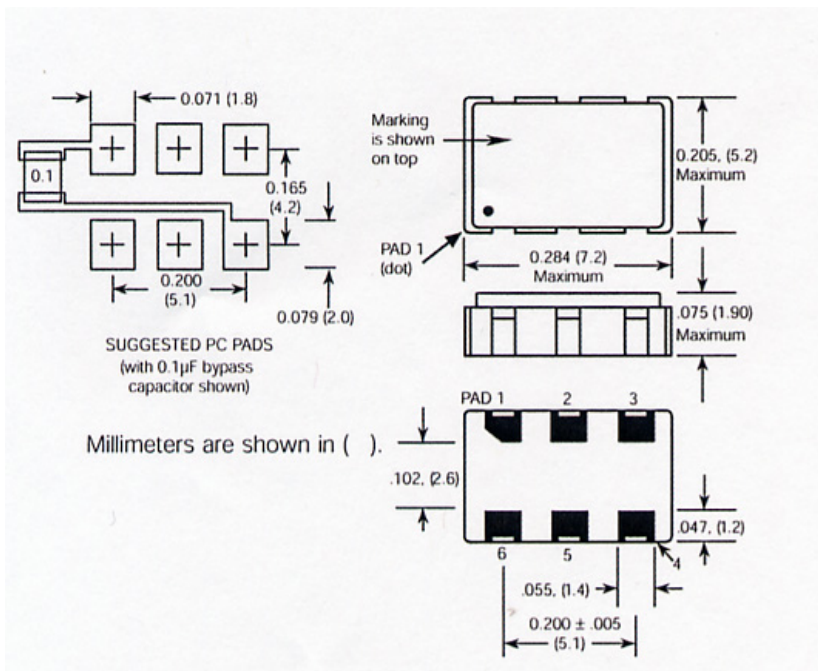
Pin #	Connection
1	Tristate
2	N/C
3	Case, GND
4	Output
5	Output
6	Supply Voltage

LVCMOS

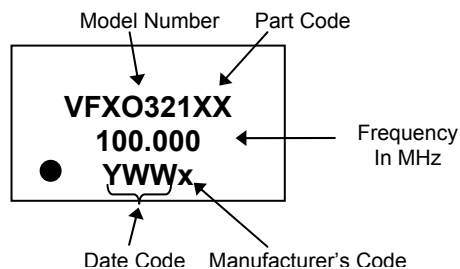
Pin #	Connection
1	Tristate
2	N/C
3	Case, GND
4	Output
5*	N/C
6	Supply Voltage

\*For LVCMOS, Dual single ended outputs available – consult factory

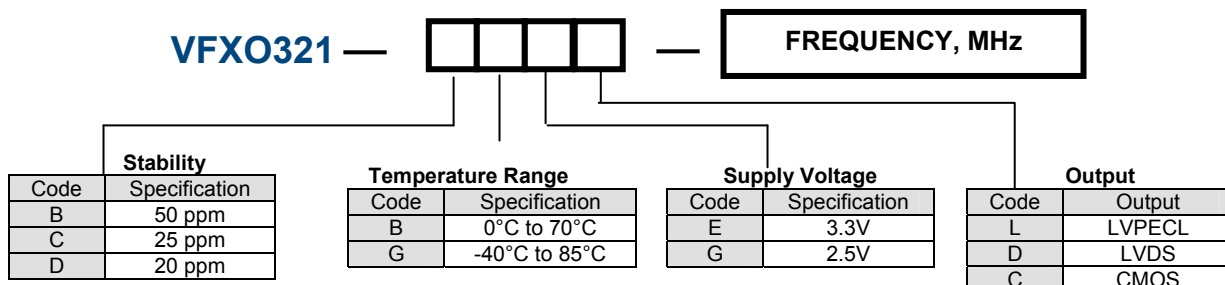
## Package



## Marking Specification



## How to Order



Note: DG combination not available at all frequencies. Consult factory.