

## Features:

- Typical Acceleration Sensitivity <math>2 \times 10^{-11}</math>/g
- Excellent FvT Performance
- Frequency Range 5MHz to 130 MHz
- Ultra low Static and Dynamic Phase Noise
- Excellent Long-Term Aging
- EMI Feed Thru on DC Inputs
- Rugged Package



## Description:

The Poseidon Series from the Olympian Family of Bliley OCVCXOs is a customizable frequency range product specifically designed for vibration prone environments where dynamic phase noise performance is paramount. The Poseidon’s active compensation and passive isolation are capable of providing a 30x-100x improvement in acceleration sensitivity over standard crystal oscillators.

## Electrical Specifications

### 1. Output Characteristics

	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
1.1	Frequency Range	5.0		130	MHz	
1.2	Initial Accuracy			±0.25	PPM	@ +25°C±1°C
1.3	Output Type		Sinusoidal			
1.4	Output Power	+7.0	+13.0		dBm	Into 50Ω ± 10%
1.5	Load Impedance	45	50	55	Ω	
1.6	VSWR		2:1			Into 50Ω ± 10%
1.7	Harmonic Content			-30	dBc	Into 50Ω ± 10%
1.8	Spurious Modulation			-80	dBc	Into 50Ω ± 10%
1.9	Acceleration Sensitivity		0.02	0.007	PPB/g	

## 2. Frequency Stability

	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
2.1	Frequency vs. Temperature	Referenced to +25°C See Table 1 For Ordering Options				
	0 to 50°C	±50, ±100, ±250, ±500			PPB	
	-20C to 70°C	±100, ±250, ±500			PPB	
	-40C to 70°C	±250, ±500			PPB	
	-40C to 85°C	±250, ±500			PPB	
2.2	Aging	10MHz (Typical)	100MHz (Typical)	For aging rates at other frequencies please Contact factory for more information.		
	Per Day	±0.1	±5.0	PPB		
	1 <sup>st</sup> Year**	±0.050	±0.50	PPM		
	10 Years **	±0.150	±1.0	PPM		
	20 Years**	±0.250	±1.75	PPM		
2.3	Frequency vs. Voltage		±5.0		PPB	
2.4	Frequency vs. Load		±5.0		PPB	
2.5	Allan Variance	10MHz 5e-12		100MHz 5e-10		τ = 1 Second
2.6	Warm-up			±0.1	PPM	5 Minutes @ +25°C±1°C Referenced to 1 Hour
2.7	Static Phase Noise	Fo = 10MHz		Fo = 100MHz		
		Option A	Option B	Option C	Option D	See Table 1 for Ordering Options
	$\mathcal{L}(f)$ @10Hz	-135	-130	-100	-95	Phase Noise options listed are for Static Conditions.
	$\mathcal{L}(f)$ @100Hz	-155	-152	-130	-125	
	$\mathcal{L}(f)$ @1KHz	-165	-160	-155	-152	
	$\mathcal{L}(f)$ @10KHz	-168	-165	-172	-170	
	$\mathcal{L}(f)$ @100KHz	-170	-165	-174	-170	

Values listed above are typical performance of a 10MHz and 100 MHz Fo

\*\*Long term aging projection is calculated per MIL-PRF 55310  $f(t) = A(\ln(Bt+1))+F_0$

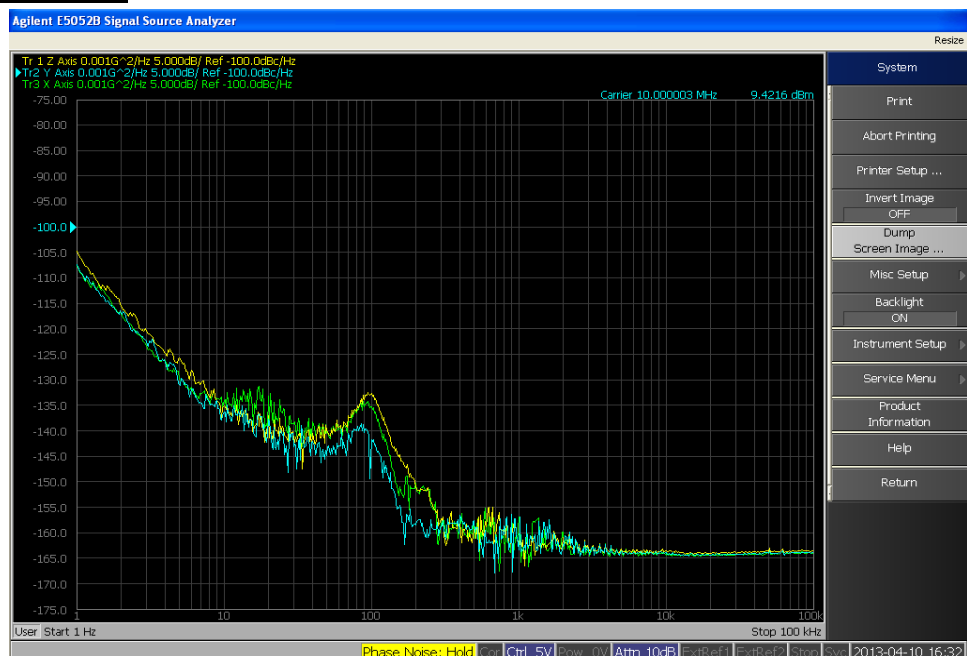
### 3. Input Characteristics

	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
3.1	Supply Voltage	+12 ±5%, +15 ±5%			Vdc	See Table 1 for Ordering Options
3.2	Power Dissipation					
	Warm-up			7.0	Watts	@ Minimum Ambient Temp
	Steady State		3.0		Watts	@ +25°C±1°C
3.3	Electronic Frequency Control					
	Voltage Range	0Vdc to +5Vdc, 0Vdc to +10Vdc				
	Center Voltage		+2.5		Vdc	@ 0 to +5Vdc Voltage Range
			+5.0		Vdc	@ 0 to +10 Voltage Range
	Frequency Range	10MHz		100MHz		See Table 1 for Ordering Options
		±0.5ppm, ±1.0ppm		±1.5ppm, ±2.5ppm		
	Slope		Negative			
	Input Impedance	100k			Ω	
	Linearity				±10%	

**Figure1. Typical 10MHz Performance**

-Vibration Profile  
0.001G<sup>2</sup>/Hz 10Hz to 2KHz

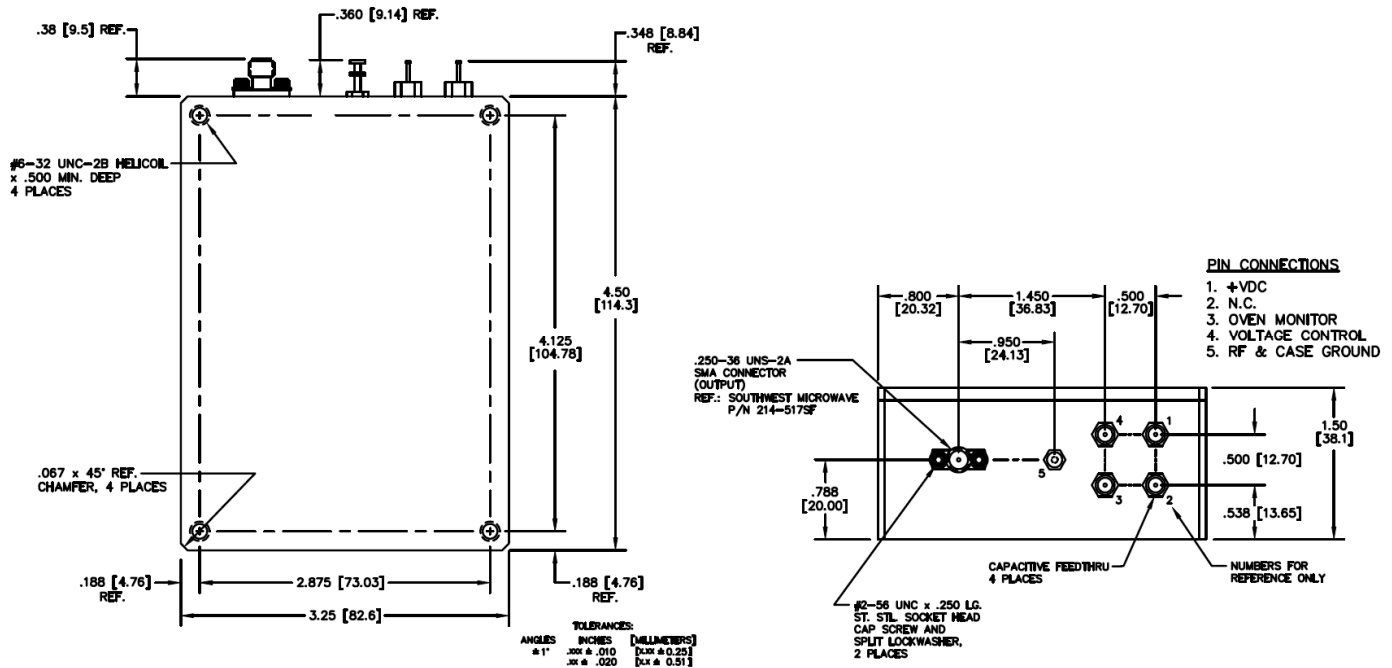
-3 axis Performance as low as  
0.007ppb/G!



## 4. Environmental, Reliability and Mechanical Specifications

	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
4.1	Operational Temperature	-40		+85	°C	See Table 1 For Ordering Options
4.2	Storage Temperature	-55		+95	°C	
4.3	Shock	Mil-Std 202G Method 213 Condition C				
4.4	Random Vibration	Mil-Std 810G Method 514 Procedure I				
4.5	Sinusoidal Vibration	Mil-Std 202G Method 204 Condition A				
4.6	MTTF	153,300			Hours	Calculated using MIL-HDBK-217
4.7	Mechanical Package	Nickel Plated Machined 6061-T6 Aluminum housing, EMI Feed-thru Pins, Field Replaceable SMA Output. (See Figure 2. for dimensions and pin functionality)				

**Figure2. Mechanical Dimensions and Pin Functions**



**Table1. Ordering Information**

Model	Phase Noise (dBc/Hz)				Temp Range	Stability	EFC Vdc Range	EFC Fo Range	Supply	Frequency	
	Offset	10MHz		100MHz							
NV109A		A	B	C	D	A (0°C -+50°C)	A (±50ppb)	A (0- +5Vdc)	A (±0.5ppm)	A (+12Vdc)	5M0 To 130M
	10Hz	-135	-130	-100	-95	B (-20°C -+70°C)	B (±100ppb)	B (0- +10Vdc)	B (±1ppm)	B (+15Vdc)	
	100Hz	-155	-152	-130	-125	C (-40°C -+70°C)	C (±250ppb)		C (±1.5ppm)		
	1KHz	-165	-160	-155	-152	D (-40°C -+85°C)	D (±500ppb)		D (±2.5ppm)		
	10KHz	-168	-165	-172	-170						
	100KHz	-170	-165	-174	-170						
	Contact Factory for PHN performance at different Freq.										

\*\*\*Please build your Poseidon part number below\*\*\*

