Ultra Low Phase Noise "Zeus" Series

Bliley Technologies Inc.
2545 W Grandview Blvd
Erie, Pa 16506
Factory +1-814-838-3571

Features:

- **Excellent Frequency Versus Temperature Stability**
- **Typical G-Sensitivity 0.5 ppb/g**
- **Frequency Range 30 to 130 MHz**
- **Excellent Long-Term Aging**
- **EMI Feed Thru on DC Inputs**
- **Rugged Package**
- **ROHS Compliant Version Available**
- **Hi-Rel Version Available on Request**

Description:

The Zeus Series from the Olympian OCVCXO Family is a customizable frequency range product specifically designed for applications requiring superior noise performance out to a 100KHz offset. It is ideal for phase-locked microwave signal sources such as DRO's, low noise test equipment, synthesizers, microwave com-systems, and radar applications.

Electrical Specifications:

1. Output Characteristics

	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
1.1	Frequency Range	30.0		130	MHz	
1.2	Initial Accuracy			±0.25	PPM	@ +25˚C±1˚C
1.3	Output Type		Sinusoidal			
1.4	Output Power	+10.0	+15.0		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*		1.0	0.2	ppb/g	

*Please consult factory for acceleration sensitivity options regarding other frequencies.

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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					
	Per Day			±5.0	PPB	
	1st Year**			±0.500	PPM	
	10 Years **			±1.0	PPM	
	15 Years**			±1.5	PPM	
2.3	Frequency vs. Voltage		±5.0		PPB	± 5% Δ in supply
2.4	Frequency vs. Load		±5.0		PPB	± 10% Δ in Load
2.5	Allan Variance		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	Option A	Option B	Option C	Option D	See Table 1 for Ordering Options
	L(f)@10Hz	-103	-100	-95	-90	dBc/Hz
	L(f)@100Hz	-133	-130	-125	-120	dBc/Hz
	L(f)@1KHz	-160	-157	-155	-153	dBc/Hz
	L(f)@10KHz	-174	-172	-172	-170	dBc/Hz
	L(f)@100KHz	-178	-176	-175	-174	dBc/Hz

Tested @ +25˚C±1˚C
Static Environment

Values listed above are typical performance of a 100 MHz Fo
**Long term aging projection is calculated per MIL-PRF 55310 f(t) = A(ln(Bt+1))+Fo

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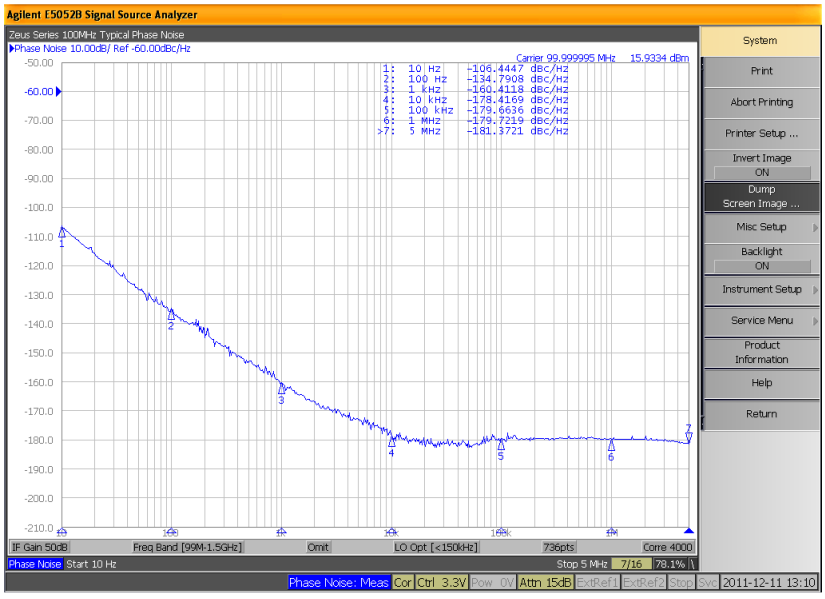
3. Input Characteristics

	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			6.0	Watts	@ Minimum Ambient Temp
	Steady State		3.0		Watts	@ +25˚C±1˚C
3.3	Electronic Frequency Control					
	Voltage Range	0		+10	Vdc	See Table 1 for Ordering Options
		-5.0		+5.0	Vdc	
	Center Voltage		+5.0		Vdc	(0Vdc to +10Vdc)
			0		Vdc	(-5Vdc to +5Vdc)
	Frequency Range	1.0		3.0	PPM	See Table 1 for Ordering Options (±ppm pull not available w/ 'A' phase noise option)
	Slope	Negative				
	Input Impedance	100k			Ω	
	Linearity				±10%	
3.4	Mechanical Trim Range	1, 2, 3, or (N/A)			PPM	See Table 1 for Ordering Options

Figure1. Typical 100MHz Performance



***Phase Noise performance verified using the Agilent 5052B signal source analyzer.**

****For Phase Noise performance at other frequencies please contact factory however at close to carrier offsets a 20*Log(N)dBc/Hz factor should be expected.**

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	155,000			Hours	Calculated using MIL-HDBK-217
4.7	Mechanical Package	Solder sealed package with glass feed through pins (See attached mechanical drawing for dimensions and pin functionality)				

Figure2. Mechanical Dimensions and Pin Functions

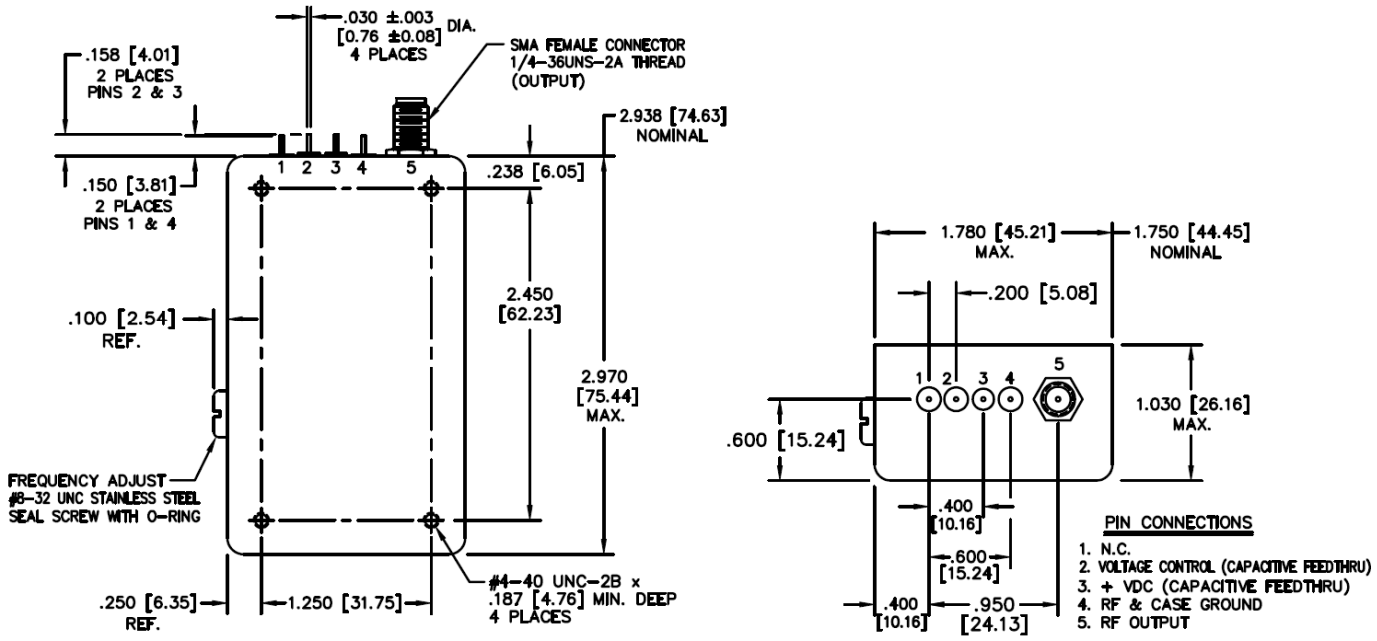


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Table1. Ordering Information

	Phase Noise (dBc/Hz) (100MHz Phase Noise Performance)					Temp Range	Stability	EFC Voltage	EFC	Mechanical Trim	Supply	Frequency
NV108C	Offset	A	B	C	D	A (0°C-+50°C)	A (±50ppb)	A (0-+10Vdc)	A (±3ppm)	A (±3ppm)	A (+12Vdc)	30M0 To 130M
	10Hz	-103	-100	-95	-90	B (-20°C-+70°C)	B (±100ppb)	B (-5-+5Vdc)	B (±2ppm)	B (±2ppm)	B (+15Vdc)	
	100Hz	-133	-130	-125	-120	C (-40°C-+70°C)	C (±250ppb)		C (±1ppm)	C (±1ppm)		
NVG108C (ROHS)	1KHz	-160	-157	-155	-153	D (-40°C-+85°C)	D (±500ppb)			D (None)		
	10KHz	-174	-172	-172	-170	E (Custom)	E (Custom)					
	100KHz	-178	-176	-175	-174							
	Contact Factory for PHN performance at different Freq.