



**Low Noise Crystal Oscillators > VHF ULN**

**Features:**

- Frequencies: 25 MHz to 130 MHz, fixed
- Ultra Low Phase Noise
- SMA(f) and Solder Pins on Side
- Internal Voltage Regulator

**Applications:**

- PN Measurement Reference
- Synthesizers
- Radar Systems
- Test Equipment



Electrical Specifications		
<b>Output Frequency</b> (fixed; specify within range)	<b>25 MHz to 130 MHz</b>	
<b>Output Level</b>	+13 dBm ±2 dB into 50 ohms	
<b>Aging</b>	(100 MHz model, typical)	
	Per day after 30 days operating, typical	$5 \times 10^{-9}$
	Second year, typical	$5 \times 10^{-7}$
Per year thereafter, typical	$3 \times 10^{-7}$	
<b>Temperature Stability</b> (consult factory for other ranges)	(100 MHz model, typical)	
	Range E: 0 to +50°C (Ref: +25°C)	$\leq \pm 2 \times 10^{-7}$
	Range F: -20 to +70°C (Ref: +25°C)	$\leq \pm 5 \times 10^{-7}$
	Range G: -55 to +85°C (Ref: +25°C)	N/A
<b>Phase Noise</b>	(Frequency Dependent: See Standard Specifications and Part Numbers table below for details)	
<b>Harmonics</b>	$\leq -30$ dBc	
<b>Spurious</b>	$\leq -80$ dBc	
<b>Tuning</b>	(MT and ET ranges can be reversed upon request)	
- Mechanical Tuning	$\geq \pm 4 \times 10^{-6}$ , typical	
- Electrical Tuning	Tuning A: 0 to +10 VDC	$\geq \pm 2 \times 10^{-7}$ , typical
	Tuning B: ±5 VDC	$\geq \pm 2 \times 10^{-7}$ , typical
	Slope: Negative	(Positive Slope available on some ET only models)
<b>Supply Voltage</b>	+15 VDC or +12 VDC (±5%)	
<b>Warm-up</b>	$\leq 5$ Watts for 5 minutes at +25°C	
<b>Total</b>	$\leq 2.5$ Watts at +25°C	
<b>Crystal Type</b>	SC-cut	
Mechanical		
<b>Packaging</b>	Solder sealed steel can	
<b>Dimensions</b>	1.75" x 2.94" x 1"	
<b>Connectors / Mounting</b>	- Package A SMA(f) and solder pins on side Threaded Inserts, #4-40, 4 places	

**Description:**

The VHF Ultra Low Noise oscillator has been the industry standard for the best phase noise performance for many years. The phase noise performance has been verified by NIST with noise floors to -180 dBc/Hz. The VHF ULN offers good temperature stability and ultra-low noise performance which makes this oscillator ideal for instrumentation and reference oscillator applications. A low noise internal voltage regulator is included, which provides excellent power supply line rejection. Please consult the factory to discuss any custom specification modifications which may better suit your application.





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### 100 MHz ULN

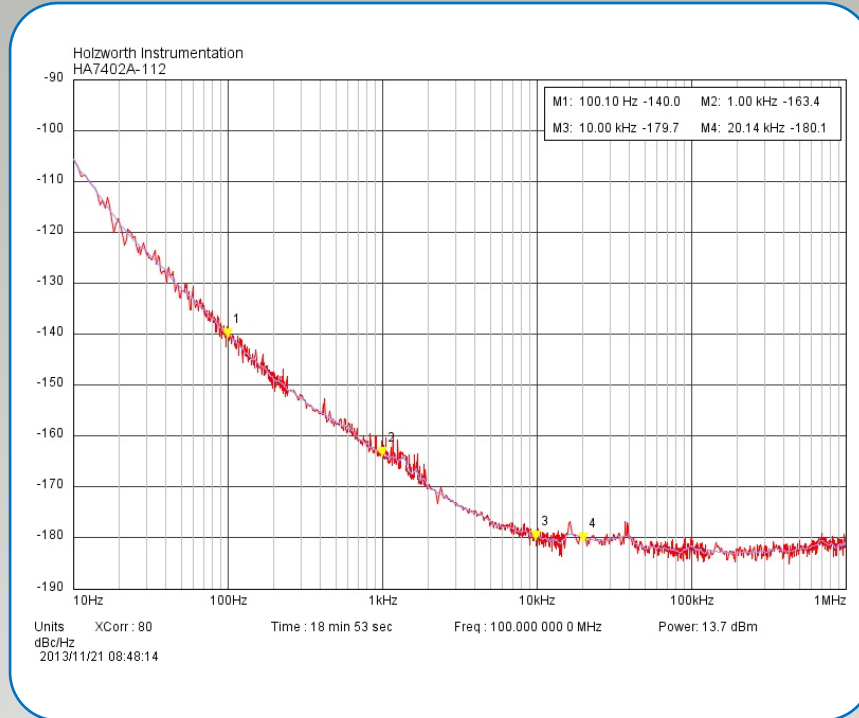


Figure 1: Typical Phase Noise Performance Plot for the 100 MHz ULN, P/N: 501-27524-11

### Standard Specifications and Part Numbers \*\*

Part Number	Output Frequency * (MHz)	Typical Phase Noise (dBc/Hz), Static *					Output Level (dBm) * into 50 ohms	Temperature Stability (Ref: +25°C) *	Supply Voltage (VDC)	Package / Connectors	Package Size (inches)
		10 Hz	100 Hz	1 kHz	10 kHz	100 kHz					
501-27522-01	50	-104	-134	-164	-174	-175	+13 ±2	±2E-7, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27522-02	50	-104	-134	-164	-174	-175	+13 ±2	±5E-7, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27522-12	50	-110	-140	-169	-177	-178	+13 ±2	±2E-7, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27522-21	50	-104	-134	-164	-174	-175	+13 ±2	±5E-7, -20° to +70°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27522-31	50	-110	-140	-169	-177	-178	+13 ±2	±2E-7, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27522-32	50	-110	-140	-169	-177	-178	+13 ±2	±5E-7, -20° to +70°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27523-02	80	-100	-130	-161	-175	-176	+13 ±2	±2E-7, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27523-11	80	-106	-136	-166	-178	-180	+13 ±2	±5E-7, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27523-21	80	-100	-130	-161	-175	-176	+13 ±2	±2E-7, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27523-22	80	-100	-130	-161	-175	-176	+13 ±2	±5E-7, -20° to +70°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27523-32	80	-106	-136	-166	-178	-180	+13 ±2	±2E-7, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27524-01	100	-100	-130	-158	-175	-176	+13 ±2	±5E-7, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27524-11	100	-105	-135	-160	-178	-180	+13 ±2	±2E-7, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27524-12	100	-105	-135	-160	-178	-180	+13 ±2	±5E-7, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27524-22	100	-100	-130	-158	-175	-176	+13 ±2	±2E-7, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27524-31	100	-105	-135	-160	-178	-180	+13 ±2	±5E-7, -20° to +70°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1

\* Consult factory for custom frequency, phase noise performance, output level, temperature stability and acceleration sensitivity options.

\*\* See website for additional Standard Part Numbers and Specifications.



Crystal Oscillators

• RF Modules

• Frequency Sources

• IMAs

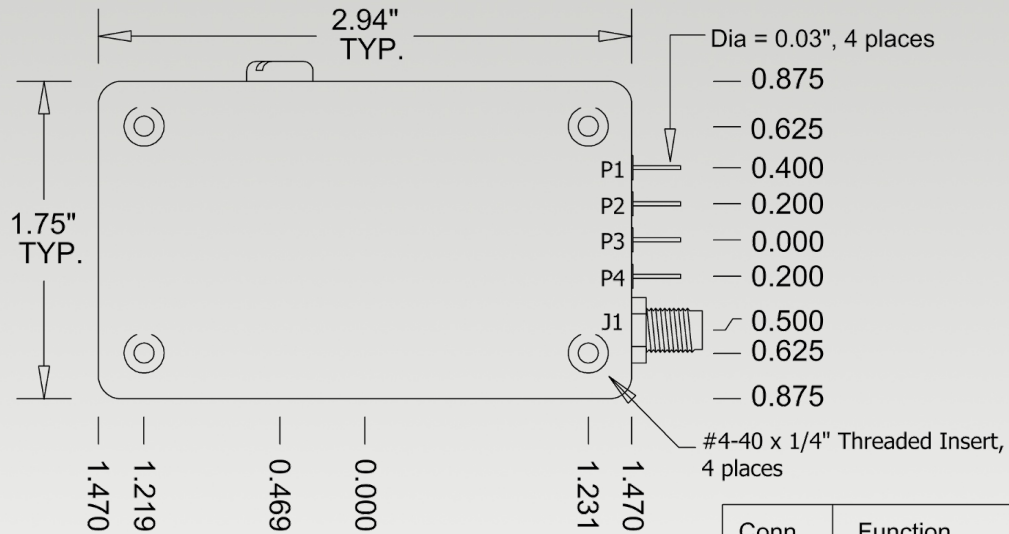
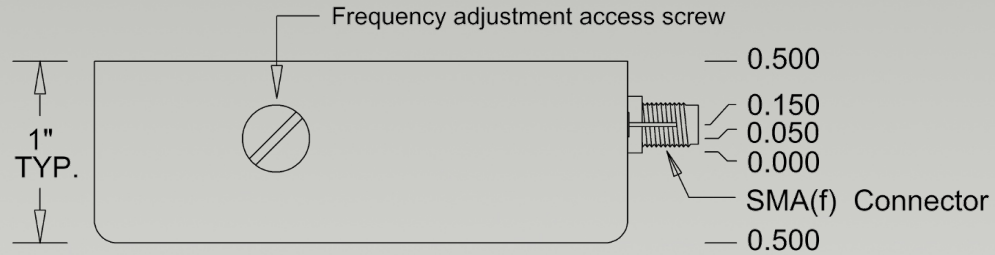
• Military

• Space





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Connector numbers are for reference only, they do not appear on unit.

Conn	Function
J1	RF Output
P1	N/C
P2	Electrical Tuning
P3	Supply Voltage
P4	Case Ground

