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500 MHz Phase Locked Oscillator

Features

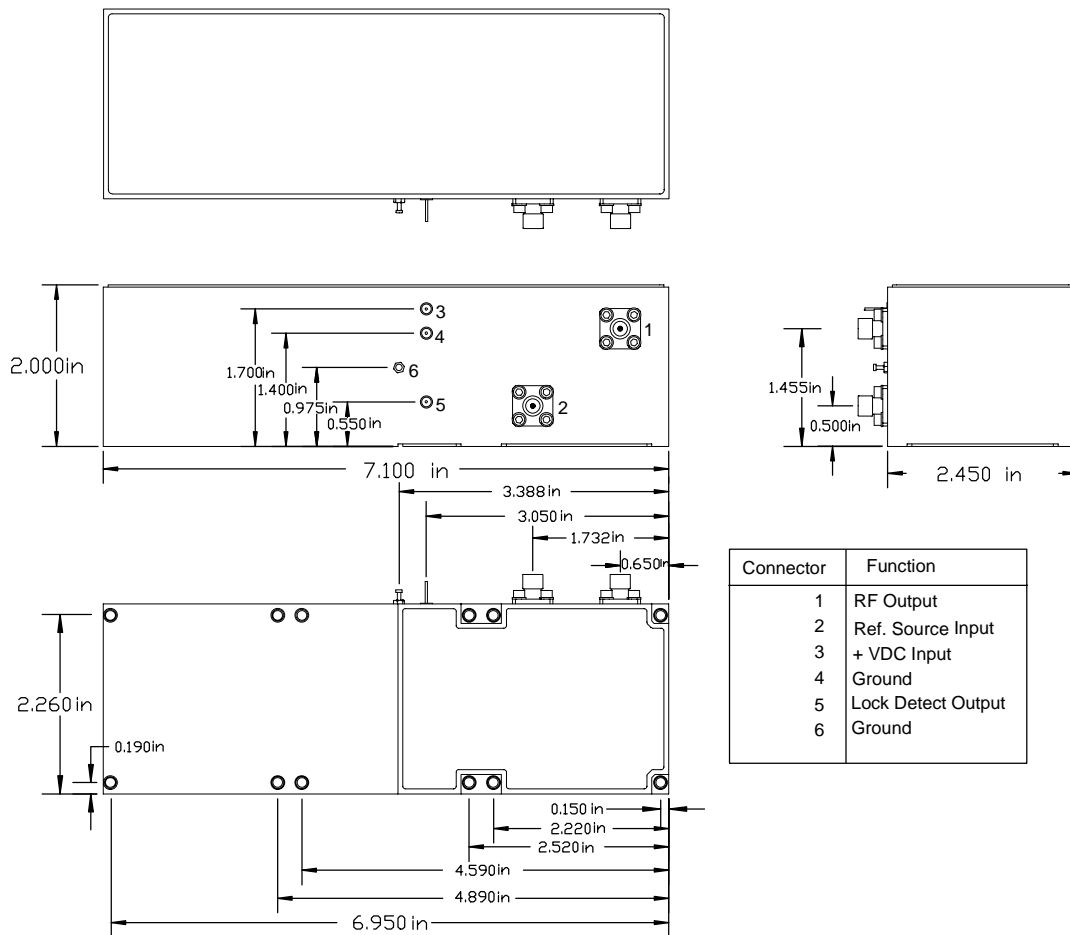
- Low Phase Noise
- Modular Design
- Excellent Spectral Purity
- Power Level Detectors
- Custom Specifications Readily Available
- Liquid Cooling Option

Applications

- Airborne Integration
- Frequency Distribution
- Low Noise Reference Source



This low phase noise frequency source generates and distributes 25, 100 MHz, 1, 1.2, and 2 GHz signals. The RF outputs are organized in a single row on the front of the unit along with power and ground interfaces. Included with this system are power level detector BITS for each output for monitoring purposes. The phase noise performance of this system is derived from an Ultra Low Noise Crystal Oscillator and integrated Low Noise Multipliers and Dividers.





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REFERENCE INPUT

Frequency
10 MHz, $\pm 5 \times 10^{-7}$

Level
+7 dBm ± 5 dB into 50 ohms

OUTPUT

Frequency
500 MHz

Level
+3 dBm ± 2 dB

Aging
 $\pm 1 \times 10^{-6}$ per year after 30 days operating, typical

Output Phase Noise L(f), (dBc/Hz) (Free-Running)

	Static	Dynamic, goal*
10 Hz	-80	-60
15 Hz		-63
80 Hz		-79
100 Hz	-110	-83
110 Hz		-85
160 Hz		-92
490 Hz		-113
1 kHz	-135	-127
2 kHz		-143
10 kHz	-158	-158
100 kHz	-158	-158
1 MHz	-158	-158

* Calculated using profile provided. Internal vibration isolation system included.

Temperature Stability

$\pm 5 \times 10^{-7}$ free-running from -20 to +55°C, (Ref. +25°C)

Harmonics and Sub-Harmonics

<-50 dBc

Spurious

<-80 dBc

Phase Lock Alarm

TTL
Locked: +3.5 VDC to +5.2 VDC (Hi)
Out-of-Lock: +0.8 VDC max (Lo)

MECHANICAL

Dimensions

7.10 x 2.00 x 2.45"

Connectors

SMA(f), ground lug, and feedthru capacitor

Packaging

Machined aluminum case

POWER REQUIREMENTS

Supply Voltage

+12 VDC $\pm 5\%$

Warm-Up Power

<16 Watts (Est.) at start-up for 5 minutes at +25° C

Total Power

<14 Watts (Est.) at steady state +25°C

ADJUSTMENT

Loop BW

Target Bandwidth: < 10 Hz
Type 2 Loop

CRYSTAL

100 MHz, SC-cut, 5th overtone

OTHER

Acceleration Sensitivity

5×10^{-10} /g per axis, typical

Vibration Profile

15 to 80 Hz, 0.0025 g²/Hz
80 to 110 Hz, 0.0035 g²/Hz
110 to 160 Hz, 0.0025 g²/Hz
160 to 490 Hz, 0.0035 g²/Hz
490 to 1000 Hz, 0.0025 g²/Hz
2000 Hz, 0.001 g²/Hz