15.7GHz Phase Locked DRO



Revision 1.2 (08/11/23)

GENERAL DESCRIPTION

The NANOWAVE NWO1570-12-02 is one of a product line consists of a series of fixed frequency phase locked dielectric resonator oscillators covering the range 6 to 35 GHz. This family of oscillators offers exceptionally low phase noise floors at microwave frequencies making them suitable for high performance RADAR systems.

This phase locked dielectric resonator oscillator is designed for applications demanding a fixed frequency low phase noise phase locked STALO such as in up and down converters for high performance RADAR and communications systems.



Figure 1- Ku -Band PLDRO

FEATURES

- Low phase noise <-150dBc/Hz at 1MHz, <-170dBc/Hz at 10MHz
- Low spurious < -80dBc beyond 100 kHz.
- Wide operational temperature range 0°C to +70°C
- Low sensitivity to micro-phonic phase hits as a result of proprietary resonator structure
- Single +15V supply

APPLICATIONS

RADAR Products

- High data rate communication systems.
- High performance RADAR.
- High clutter rejection RADAR.

NANOWAVE Technologies Inc.

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ELECTRICAL PARAMETERS

Parameter	Unit	Min	Тур	Max	Remarks
Frequency range	GHz		15.7		Standard units available in 100MHz steps across the frequency range 6 – 35GHz. Phase noise dependent on frequency
Output power	dBm	10	12	14	Increased power available on request.
Spurious fc+/-100kHz to fc+/-30MHz	dBc			-80	
Phase noise	Offset		PN/[dBc/Hz]		Phase noise under static vibration
	100Hz	-60	-55	-50	
	1KHz	-65	-55	-50	
	10KHz	-90	-85	-80	
	100KHz	-120	-115	-110	
	1MHz	-150	-145	-135	
	10MHz	-170	-165	-160	
	100MHz	-170	-165	-160	
External reference frequency	MHz		100		
External reference power	dBm		0		
Lock detect	TTL	TTL high when locked			
DC voltage	V			+15	
Steady state current	A			1.5	

MECHANICAL AND ENVIRONMENTAL PARAMETERS

Parameter	Unit	Min	Тур.	Max	Remarks
Operating Temperature Range	°C	0	25	+70	Extended temperature on request
Non-operating Temperature	°C	-40		+85	RE assemblies bermetically sealed
Range	Ŭ	40		100	Ri assemblies hernetidally sealed
Size (length, width, height)	Inches	3.8" x4.3" x 0.82"			See outline drawing
RF Output Connector		SMA-F			
100MHz reference input	SMA-F				
DC Connector			Feed-thru filter p		
TTL lock detect			Feed-thru filter p		
Marking	Manufactu	rer name	e, model, serial		
Warking	date code				

Notes: Specifications subject to change without notice.

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Fig 2: Measured Phase noise Performance at 25°C





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Fig 4: Measured Phase noise Performance at 0°C

COMMUNICATION AND CONTROL INTERFACE

The PLDRO lock status is monitored through a TTL level brought to a feedthrough pin. Power is similarly applied through a feedthrough pin whilst the RF signal and reference input signal are connected via SMA connectors. Additional monitoring function such as supply current and voltage can be added on request.

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Fig 5: Outline Drawing of 15.7GHz Phase Locked Dielectric Resonator Oscillator

Notes:

The outline of this source unit is customizable. Arbitrary shapes are possible to accommodate form-fit functionality.

Additional features:

- Marking: The unit is marked with manufacturer part no., date code, and Serial Number.
- All plating and painting is RoHS compliant

For further information please contact NANOWAVE Technologies Inc. at <u>sales@nanowavetech.com</u>, or call at (+1) 416-252-5602

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