SOP-14301213-SF-EB-2

Phase Locked Oscillator, 13.8 GHz, +13 dBm, 100 MHz Externally Referenced

SOP-14301213-SF-EB-2 is a phase locked oscillator with high performance DRVCO (Dielectric Resonator Voltage Controller Oscillator) technology to generate a clean and high-quality microwave signal. The oscillator is designed and fabricated to be phase locked to the high quality 100 MHz external reference oscillator so that the superior phase noise performance can be achieved. The oscillator delivers a typical output power of +13 dBm and has nominal harmonic and spurious levels of -25 dBc and -80 dBc, respectively. The oscillator has a built-in voltage regulator to further improve the signal quality and prevent possible damage due to the over voltage operation. The oscillator is hermetically sealed to offer the maximum environmental performance.

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency		13.8 GHz	
Output Power		+13 dBm	
Phase Noise*	Reference Source +20 Log (N) +3 dB -97 dBc/Hz @ 10 kHz -105 dBc/Hz @ 100 kHz -125 dBc/Hz @ 1 MHz		
External Reference Frequency		100 MHz	
External Reference Input Power	-3 dBm	0 dBm	+3 dBm
Sub-Harmonics			-60 dBc
Harmonic		-25 dBc	-20 dBc
Spurious		-80 dBc	-70 dBc
Phase Locked Indicator (Lock)	TLL “High”		
Phase Error Voltage (V_T)	0 to +10 V_{DC}		
DC Voltage		+12 V_{DC}	+15 V_{DC}
DC Supply Current		250 mA	
Frequency Stability (Externally Referenced)*	Same as reference		
Specification Temperature		+25°C	
Operating Temperature	-40°C		+70°C

*For externally referenced phase locked oscillators, phase noise is reference source dependent, in general. Phase Noise = Reference Source + 20 Log (N) + 3 dB. The phase noise data shown here is tested with Wenzel model 501-27501-32

ECCN

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FEATURES

- High Output Power
- Low Phase Noise
- Low Harmonic Components

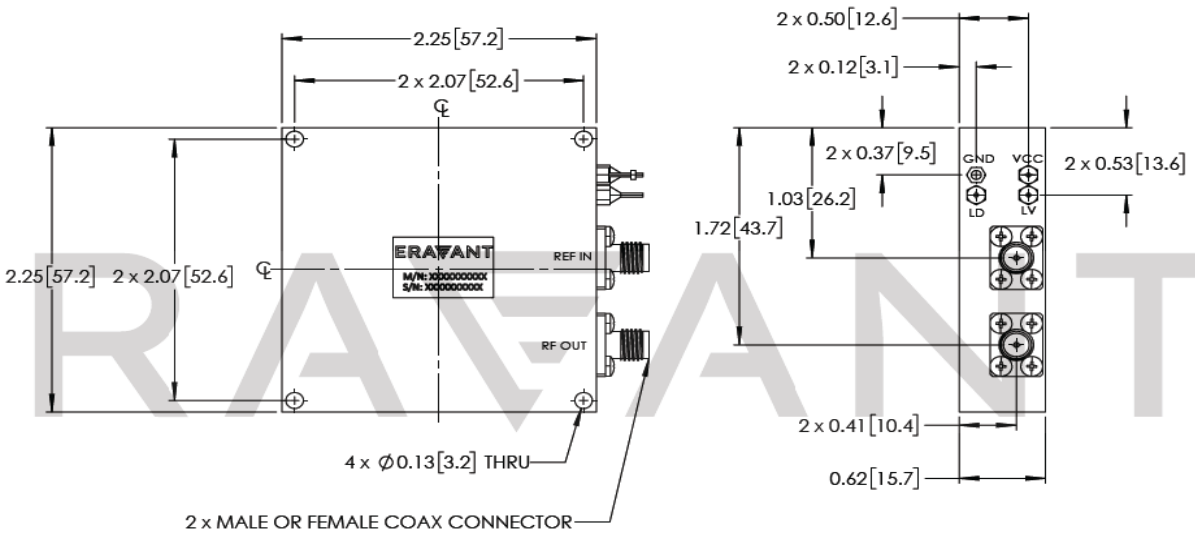
APPLICATIONS

- Radar Systems
- Communication Links
- Transmitters/Receivers

Mechanical Specifications:

Item	Specification
RF Output	SMA (F) Connector
REF Output	SMA (F) Connector
DC Bias Port (V_{CC})	Feedthru Pin
Phase Lock Indicator Port (LD)	Feedthru Pin
Phase Error Voltage (V_T)	Feedthru Pin
Ground Terminal	Ground Lug
Case Material	Aluminum
Finish	Nickel Plated and Bare Aluminum
Package	Hermetically Sealed
Weight	4.0 Oz
Outline	OP-EC-SM3

Mechanical Outline: Unless otherwise specified, all dimensions are in inches [millimeters])



NOTE:

- Test data provided is collected from a sample lot. Actual data may vary slightly from unit to unit. Phase noise testing is performed under +25 °C room temperature.
- Eravant reserves the right to change the information presented without notice.

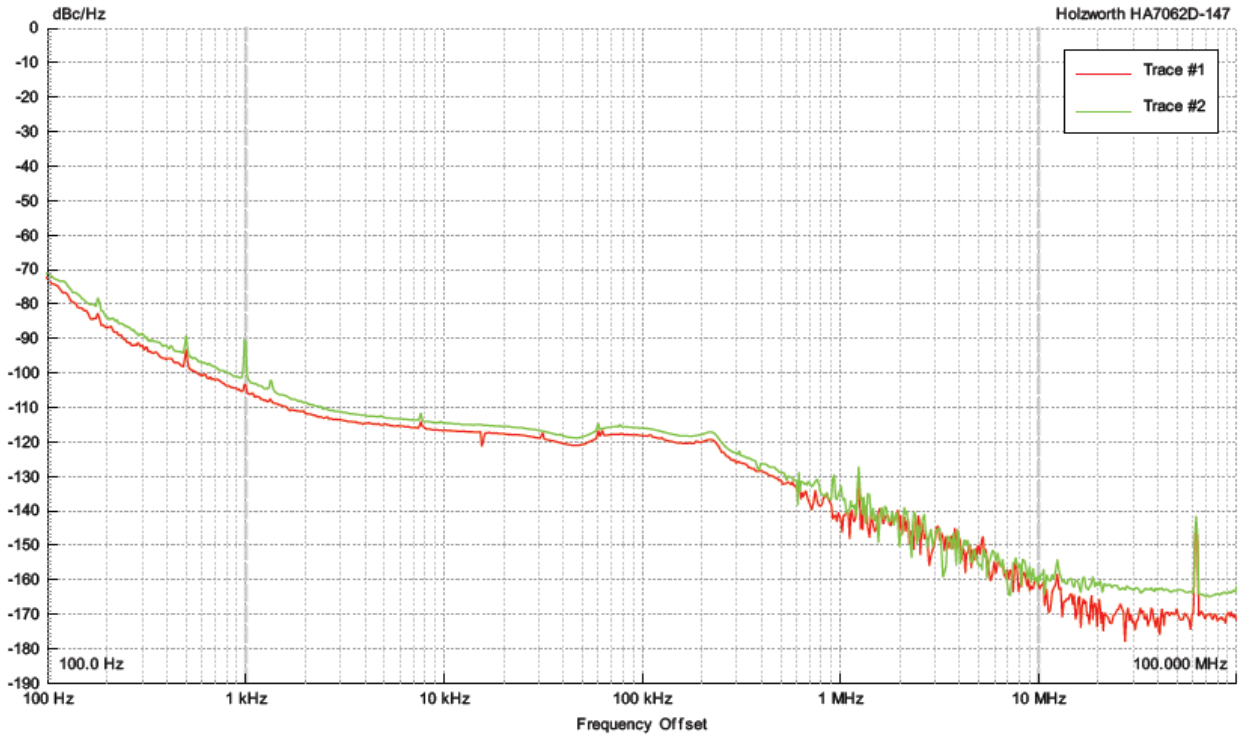
CAUTION:

- For 1.35 mm, 1.85 mm, 2.4 mm, 2.92 mm, and SMA connectors proper torque should be applied: 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm). Torque wrench model SCH-08008-S1 is highly recommended.

Measured Data:

Parameter	Operating Temperature		
	-40°C	+25°C	+70°C
Output Frequency	13.8 GHz	13.8 GHz	13.8 GHz
Output Power	18 dBm	16.2 dBm	17 dBm
Spurious	-75 dBc	-76 dBc	-74 dBc
Harmonics	/	/	/
Voltage (V)	12	12	12
Current (mA)	260	250	250

Measured Phase Noise:



Trace #1	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq: 13.7999843200 GHz	Start: 1.00 kHz	1.00 kHz	-103.85	62.500 MHz	-87.27
Type: Absolute	Power: 14.770 dBm	Stop: 10.000 MHz	10.00 kHz	-116.74		
Date: 2022-04-05	Gain: 42 dB	Jitter: 10.292 fs	100.00 kHz	-118.23		
Time: 10:58:56	Acq: 53.687 s	Noise: 5.113e-02°	1.000 MHz	-142.12		
Temp: 31.45°C	Offset: 100.0 Hz		10.000 MHz	-161.23		
Limit Test: None	# Correlations: 200					

Trace #2	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq: 13.7999228800 GHz	Start: 1.00 kHz	1.00 kHz	-92.08	62.500 MHz	-85.31
Type: Absolute	Power: 14.760 dBm	Stop: 10.000 MHz	10.00 kHz	-114.54		
Date: 2022-04-05	Gain: 42 dB	Jitter: 13.365 fs	100.00 kHz	-115.99		
Time: 11:00:47	Acq: 53.687 s	Noise: 6.640e-02°	1.000 MHz	-133.52		
Temp: 32.25°C	Offset: 100.0 Hz		10.000 MHz	-159.05		
Limit Test: None	# Correlations: 200					