

## Phase Locked Oscillator, 1.28 GHz, +18 dBm, 10 MHz Externally Referenced

### Description:

**Model SOP-13210018-SF-E8** is a phase locked oscillator based on a high performance DRVCO (Dielectric Resonator Voltage Controlled Oscillator) technology to generate a clean and high-quality microwave signal. The oscillator is designed and fabricated to be phase locked to a high quality 10 MHz external reference oscillator so that superior phase noise performance can be achieved. The oscillator delivers a typical output power of +18 dBm and has nominal harmonic and spurious levels of -25 dBc and -75 dBc, respectively. The oscillator has a built-in voltage regulator to further improve the signal quality and prevent possible damage due to over voltage operation. The oscillator is hermetically sealed to offer the maximum environmental performance.



### Features:

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

### Applications:

- Radar Systems
- Communication Links
- Transmitters and Receivers

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency		1.28 GHz	
Output Power		+18 dBm	
Phase Noise*	Reference Source + 20 Log (N) + 3 dB		
	-95 dBc/Hz @10 kHz		
	-110 dBc/Hz @100 kHz		
	-135 dBc/Hz @1 MHz		
External Reference Frequency		10 MHz	
External Reference Input Power	-3 dBm	+0 dBm	+3 dBm
Sub-Harmonics			-60 dBc
Harmonics		-25 dBc	-20 dBc
Spurious		-75 dBc	-70 dBc
Phase Locked Indicator (LOCK)		TTL "High"	
DC Voltage		+12 V <sub>DC</sub>	+15 V <sub>DC</sub>
DC Supply Current		200 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.





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## Mechanical Specifications:

Item	Specification
RF Output	SMA(F) Connector
REF Input	SMA(F) Connector
DC Bias Port ( $V_{CC}$ )	Feedthru Pin
Phase Lock Indicator Port (LT)	Feedthru Pin
Ground Terminal	Ground Lug
Case Material	Aluminum
Finish	Nickel Plated and Bare Aluminum
Package	Hermetically Sealed
Weight	4.0 Oz
Size	1.50" (L) X 1.50" (W) X 0.62" (H)
Outline	OP-EC-SM4

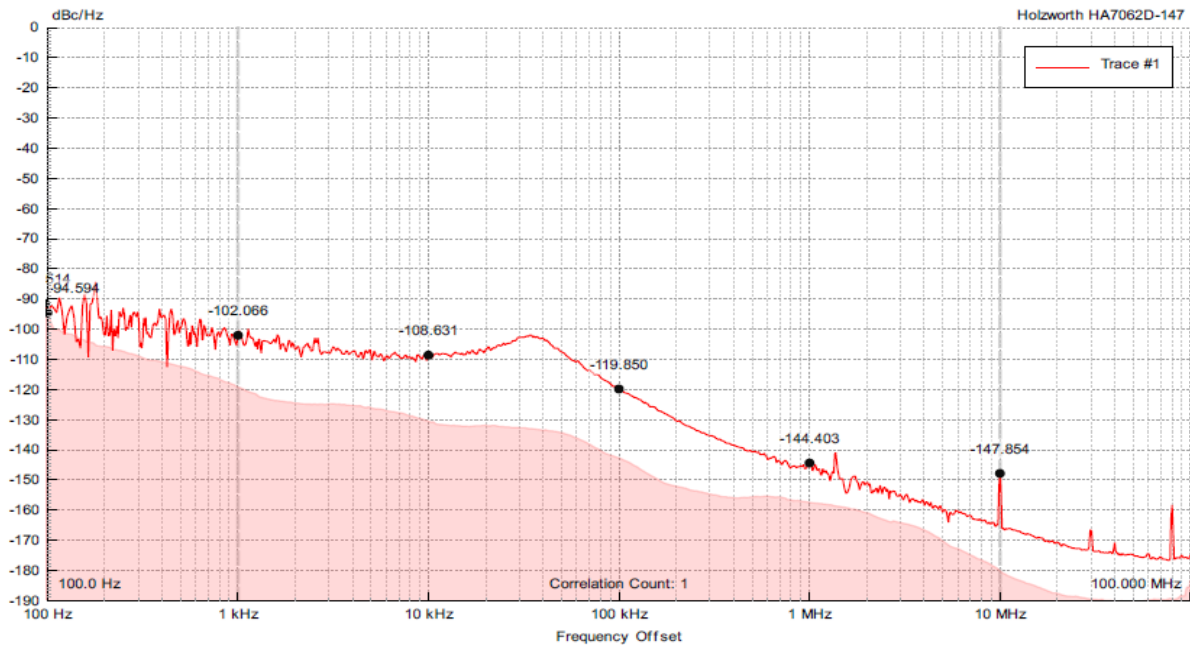
## Measured Data:

Parameter	Operating Temperature		
	-30°C	+25°C	+70°C
Output Frequency	1.28 GHz	1.28 GHz	1.28 GHz
Output Power	22 dBm	21 dBm	19 dBm
Spurious	-74 dBc	-75 dBc	-74 dBc
Harmonics	-25 dBc	-24 dBc	-25 dBc
Voltage (V)	12	12	12
Current (mA)	150	140	140



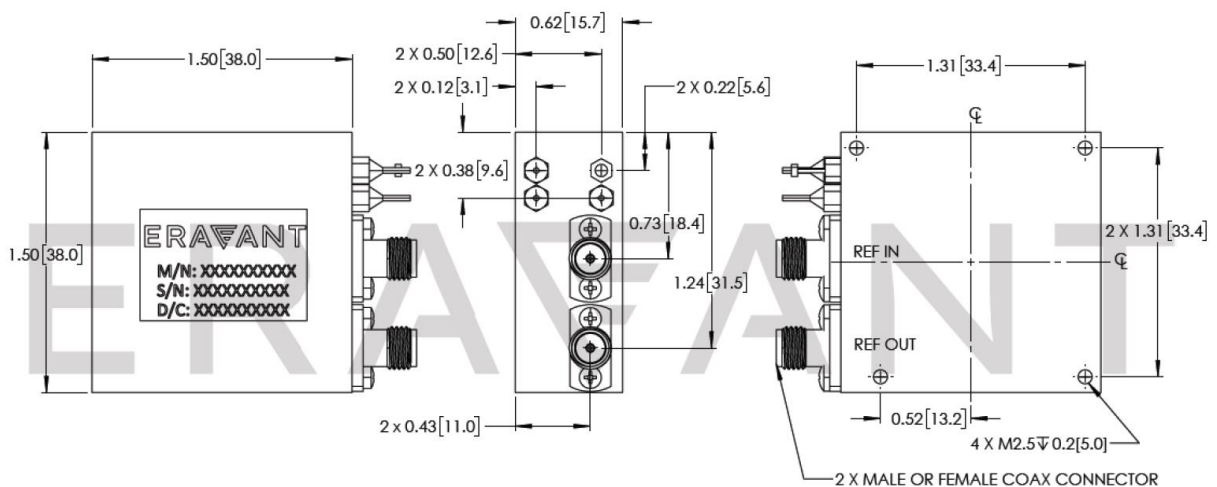
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## Measured Phase Noise



Trace #1	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq: 1.2799595500 GHz	Start: 1.00 kHz	10.0 Hz	-91.51	178.8 Hz	-82.17
Type: Absolute	Power: 10.480 dBm	Stop: 10.000 MHz	100.0 Hz	-94.59	10.010 MHz	-100.25
Date: 2022-01-19	Gain: 42 dB	Jitter: 233.908 fs	1.00 kHz	-102.07	80.078 MHz	-102.08
Time: 15:39:04	Acq: 0.268 s	Noise: 1.078e-01°	10.00 kHz	-108.63		
Temp: 52.92°C	Offset: 100.0 Hz		100.00 kHz	-119.85		
Limit Test: None	# Correlations: 1		1.000 MHz	-144.40		
			10.000 MHz	-147.85		

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





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### Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit.
- All testing was performed under +25 °C case temperature.
- Eravant reserves the right to change the information presented without notice.
- Other mechanical configurations are available under different model number.

### Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- The case temperature of the device shall never exceed **+70 °C**. Use additional heatsink or fan if necessary.
- Proper torque,  $8.0 \pm 0.15$  inch-pounds ( $0.90 \pm 0.02$  Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

