

ISSUE 2; March 2020

## Description

- A low noise and low power OCVCSO (Oven Controlled, Voltage controlled, SAW Oscillator) at 800MHz, powered by a low voltage 5V power supply. The 800MHz signal is generated from a 400MHz fundamental frequency, followed by a low noise frequency doubler. It is designed for lab environment (test equipment, shelter, ground based military equipment). Manufactured for us by Rakon.



## Frequency Parameters

- Frequency: 800.0MHz
- Frequency Tolerance Max:  $\pm 0.50$ ppm
- Tolerance Condition: @ 25°C
- Frequency Stability:  $\pm 3.00$ ppm to  $\pm 4.00$ ppm
- Ageing:  $\pm 1$ ppm max in 1st year,  $\pm 6$ ppm max in 10yrs
- G-sensitivity (on each axis): 1ppb/g typ, 2ppb/g max

## Electrical Parameters

- Supply Voltage: 5.0V  $\pm 0.25$ V
- Power Consumption: Warm Up: 2.0W typ, 2.5W max; Steady State (@ 25°C): 1.0W typ, 1.5W max
- Warm Up Time ( $\pm 1$ ppm with reference to frequency reached after 1hr of continuous operation at -25°C): 3 minutes max.
- Supply Voltage, Absolute Maximum Rating: +6V

## Frequency Adjustment

- Pulling:  $\pm 6$ ppm min to  $\pm 10$ ppm typ
- Control Voltage: 2.5V  $\pm 2.0$ V
- Input Impedance: 10k $\Omega$  min
- Slope (Positive): 5ppm/V typ, 3ppm/V min

## Operating Temperature Ranges

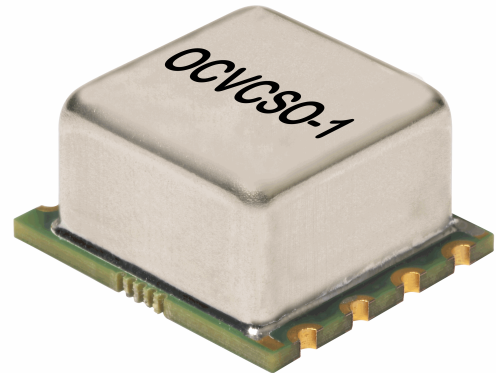
- 0 to 50°C
- 25 to 60°C

## Output Details

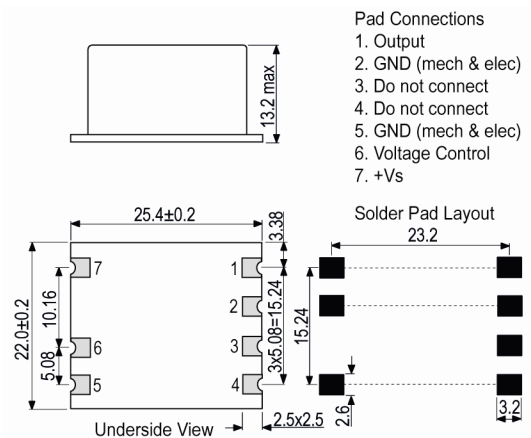
- Output Compatibility: Sinewave
- Drive Capability: 50 $\Omega$  (@ <1.3:1 VSWR)
- Output level: 8dBm  $\pm 2$ dBm
- Output impedance (@ 800MHz  $\pm 1$ MHz): <2.0:1 VSWR

## Noise Parameters

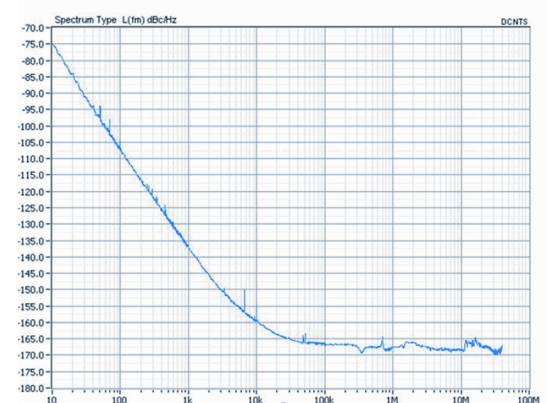
- Phase Noise (static condition at 25°C, guaranteed values over full temperature range):
  - (@ 1kHz): -137dBc/Hz typ, -130dBc/Hz max guaranteed
  - (@ 10kHz): -160dBc/Hz typ, -155dBc/Hz max guaranteed
  - (@ 1MHz): -167dBc/Hz typ, -165dBc/Hz max guaranteed
- Harmonic Distortion (all sub-harmonics, 2nd and 3rd harmonics): -40dBc typ, -30dBc max
- Spurious (Non Harmonic): -80dBc max
- Jitter:
  - Full offset range from 10Hz to 100MHz: 100fs typ, 200fs max
  - Broadband: from 10kHz to 100MHz: 10fs max



## Outline (mm)



## Example Phase Noise



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**Environmental Parameters**

- Start-up temperature range (with reduced performance): -40 to 60°C
- Storage Temperature Range: -40 to 85°C
- Shock: as per MIL-PRF-28800F, Class 3, test equipment.
- Random Vibration: As per MIL-PRF-28800F, Class 3, test equipment.

**Manufacturing Details**

- Reliability (ref MIL-HDBK-217F, Ground fixed, at 25°C):  
 FIT: 6018 fails/10<sup>9</sup> hours typ  
 MTBF: 19 years typ
- RoHS Reflow 240°C max for 30secs max

**Compliance**

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 3

**Packaging Details**

- Pack Style: Bulk Loose in bulk pack  
 Pack Size: 1

**Electrical Specification - maximum limiting values 5.00V ±0.25V**

Frequency Min	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
	°C	ppm	mA	ns	%
800.0MHz	-25 to 60	±4.00	-	-	-
	0 to 50	±3.00	-	-	-

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