RVG1490L

This high performance VCXO delivers frequencies up to 2.2 GHz with ultra-low RMS phase jitter (as low as 15 fs typ, 12kHz-20MHz). RVG1490L is an ideal solution for Optical Coherent Networking, and high speed ADC/DAC/SERDES clocking, where excellent oscillator phase noise and jitter is critical to system performance. This product is also available as a XO, Rakon RXG1490L.

Features

- Frequency range from 1 GHz up to 2.2 GHz
- Ultra-low RMS phase jitter
- Sinewave, Differential Sinewave or LVPECL
- Lower temperature sensitivity than SAW

Applications

- Coherent Optical Modules
- Base Station Remote Radiohead Units

14 x 9 mm

Standard Specifications

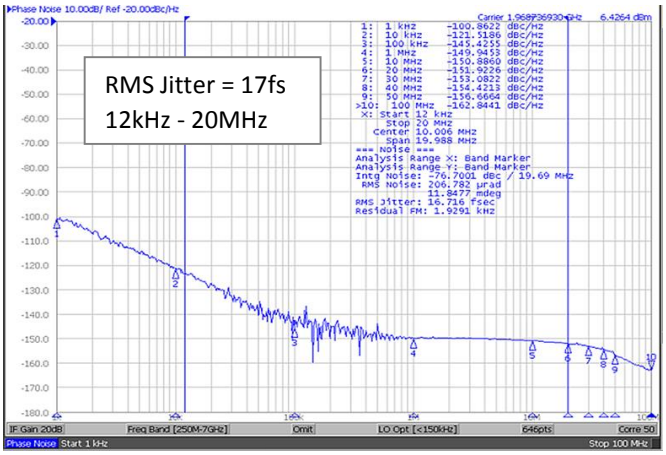
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Frequency		1.0 – 2.2		GHz	Single sinewave, differential sinewave, LVPECL
Operating temperature range	-40		85	°C	
Frequency stability			±70	ppm	Including initial calibration, temperature range, supply variation, load variation and 10 years aging at 25°C
Temperature stability			±20	ppm	Over operating temperature range only
Supply voltage (V_{DD})		3.3		V	±5%
Control voltage	0		3.3	V	
Supply current			70 80 120	mA	Sinewave Differential Sinewave LVPECL
Absolute Pull Range (APR)	±25			ppm	
Total pull range	±100		±200	ppm	Frequency shift from minimum to maximum control voltage
Linearity		±5	±10	%	
Modulation bandwidth (BW)	15			kHz	
Input impedance	5			MΩ	
Oscillator output Subharmonics Output power Output differential swing Output differential swing	 2 0.6 1.1	 -30 4 1.6	 6 1.6 	 dBc dBm V V	 Sinewave, 50Ω load Differential sinewave LVPECL

SSB Phase Noise and RMS Phase Jitter

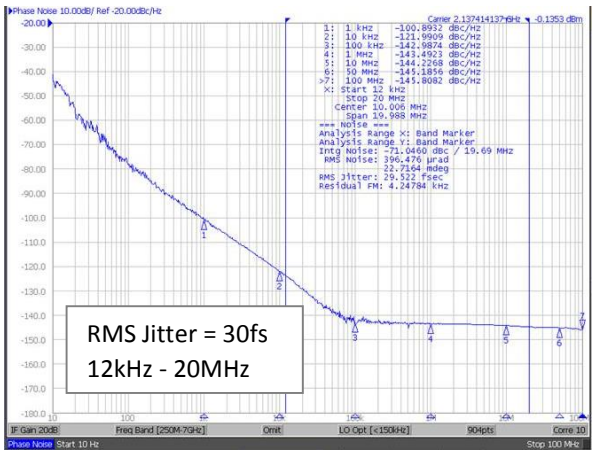
Offset / Carrier Frequency	1.4GHz Sinewave	1.88GHz Sinewave	1.96GHz Sinewave	2.137GHz LVPECL	Unit	Test Condition / Description
a. 100 Hz	-80	-77	-80	-78	dBc/Hz	Typical, 25°C, VDD 3.3V ±5%
b. 1 kHz	-106	-103	-101	-100	dBc/Hz	
c. 10 kHz	-127	-124	-121	-121	dBc/Hz	
d. 100 kHz	-143	-147	-145	-142	dBc/Hz	
e. 1 MHz	-151	-151	-149	-143	dBc/Hz	
f. 10 MHz	-151	-152	-150	-144	dBc/Hz	
g. Typical RMS phase jitter	26	16	15	30	fs fs	Integrated 10kHz to 20MHz Integrated 12kHz to 20MHz

SSB Phase Noise and RMS Phase Jitter (Typical value at 25°C)

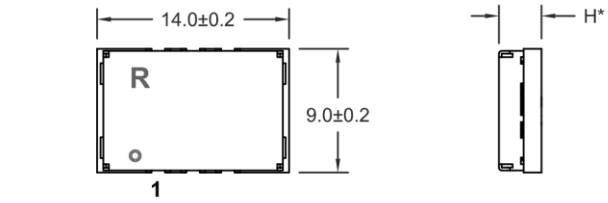
1.968GHz VCXO with Sinewave Output



2.137GHz VCXO with LVPECL Output

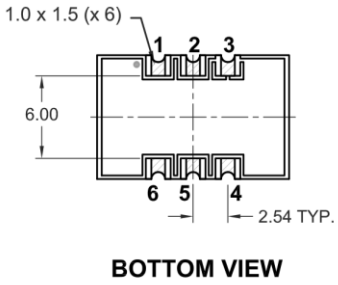


Model Outline and Recommended Pad Layout



H* NOTE:

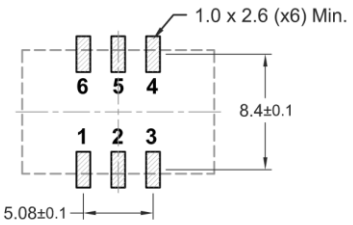
H = 3.3 ±0.2 mm (for LVPECL)
H = 2.8 ±0.2 mm (for Single and Differential Sinewave)



PIN CONNECTIONS

	Sinewave	Differential Sinewave	LVPECL
1	Vc	Vc	Vc
2	GND	GND	GND
3	GND	GND	GND
4	Sinewave Output	Output 1 (Ø = 0°)	Output 1 ($\overline{Q}$)
5	GND	Output 2 ($\overline{Ø}$ = 180°)	Output 2 (Q)
6	V_{DD}	V_{DD}	V_{DD}

RECOMMENDED PAD LAYOUT
TOP VIEW



UNIT: mm

VCXO Model Range

Footprint	Typical RMS Phase Jitter (12kHz-20MHz)			
	1.00ps CMOS, LVPECL, LVDS 8 - 1500MHz	0.50ps CMOS, LVPECL, LVDS 8 - 1500MHz	0.10ps CMOS, LVPECL, LVDS 10 – 800MHz	0.015ps Sine, Differential Sine, LVPECL 1.0 - 2.2GHz
14.0 x 9.0mm (1490)				**RVG1490L** Ultra-low jitter
7.0 x 5.0mm (7050)	**RVX7050R** Quick-turn, any frequency	**RVX7050P** Quick-turn, low jitter	**RVX7050M** Best-in-class jitter	
5.0 x 3.2mm (5032)	**RVX5032R** Quick-turn, any frequency	**RVX5032P** Quick-turn, low jitter	**RVX5032M** Best-in-class jitter	
2.5 x 2.0mm (2520)	**RVX2520R** Quick-turn, any frequency	**RVX2520P** Quick-turn, low jitter		