

RVX1490U

The RVX1490U is an ultra-low phase noise VCXO featuring a superior phase noise floor of -173 dBc/Hz (@153.6 MHz), RMS phase jitter 12 fs (12 kHz to 20 MHz). It is available in frequencies ranging from 38.4 to 245.76 MHz. The excellent phase noise performance enables the oscillator to improve the data transmission capabilities of optical and radio networks.

The RVX1490U uses a high-Q (quality) factor quartz resonator with 3rd overtone technology together with Rakon's proprietary electric circuit design to deliver outstanding phase noise performance. It has an excellent all-causes frequency stability of ± 20 ppm over a wide temperature range of -40 to 95°C (inclusive of 20 years of all causes stability). The RVX1490U comes in a low profile 14 x 9 mm SMD package making it suitable for a wide variety of timing applications.

Apart from the next generation 5G radios, the device also targets satellite ground stations, test and measurement equipment, custom telecommunication equipment and optical communication equipment designs, all of which require very low phase noise reference clocks.

Features

- Frequency range: 38.4 to 245.76 MHz
- Ultra-low floor noise: -173 dBc/Hz
- All-inclusive stability: ± 20 ppm (-40 to 95°C)
- Output: Sinewave or CMOS

Applications

- 5G RRUs & small cells
- Test & measurement
- Satellite ground stations
- High-speed ADC/DAC/SERDES clocking
- Optical network equipment

14.0 x 9.0 x 2.8 mm



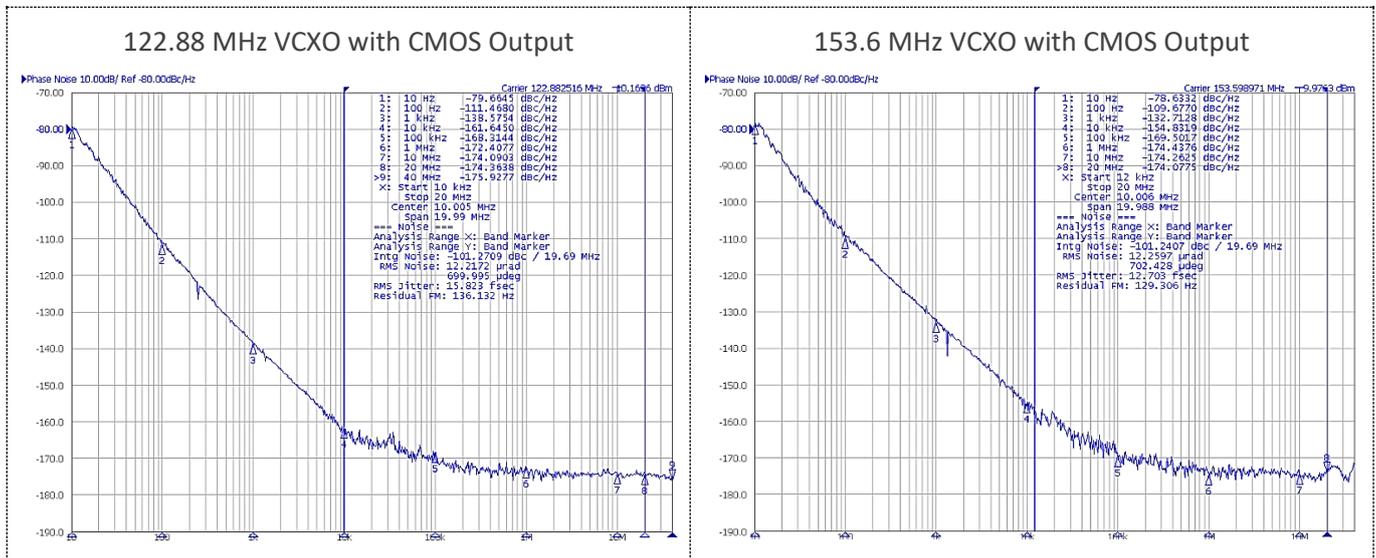
Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Frequency (Fn)		38.4 – 245.76		MHz	Standard Fn: 100, 122.88, 153.6 MHz
Operating temperature range	-40		95	°C	105°C available upon request
Frequency stability			± 20	ppm	Including initial calibration, temperature range, supply variation, load variation and 20 years ageing at 25°C
Supply voltage (VDD)		3.3		V	With a tolerance of $\pm 5\%$
Control voltage (VC)	0	1.65	3.3	V	
Supply current			30 30	mA	Sinewave CMOS
Absolute Pull Range (APR)	± 5			ppm	Reference to frequency at $V_c = 1.65V$
Linearity			± 10	%	Over the control voltage range
Modulation bandwidth (BW)	10			kHz	
Input impedance	1			M Ω	
Acceleration sensitivity		1	2	ppb/g	Gamma vector, 3-axes, 10 to 2000Hz

SSB Phase Noise and RMS Phase Jitter

Offset / Carrier Frequency	76.8MHz CMOS	100.0MHz CMOS	122.88MHz CMOS	153.6MHz CMOS	Unit	Test Condition / Description
10 Hz	-89	-86	-80	-78	dBc/Hz	Typical values at 25°C.
100 Hz	-123	-116	-111	-109	dBc/Hz	
1 kHz	-147	-139	-138	-132	dBc/Hz	
10 kHz	-166	-165	-161	-154	dBc/Hz	
100 kHz	-172	-170	-168	-169	dBc/Hz	
1 MHz	-175	-175	-174	-174	dBc/Hz	
10 MHz	-177	-176	-175	-174	dBc/Hz	
RMS phase jitter	18	17	15	12	fs	Integrated from 12kHz to 20MHz

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



Model Outline and Recommended Pad Layout

