

RXG1490L

Rakon's RXG1490L GHz XO enables output frequencies of up to 2.2 GHz with ultra-low RMS phase jitter (as low as 15 fs typ, 12 kHz to 20 MHz). RXG1490L 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 VCXO, Rakon RVG1490L.

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

- 100G/400G Data communications
- High speed ADC/DAC/SERDES
- Coherent Optical Modules

14.0 x 9.0 x 3.0mm SMD



Standard Specifications

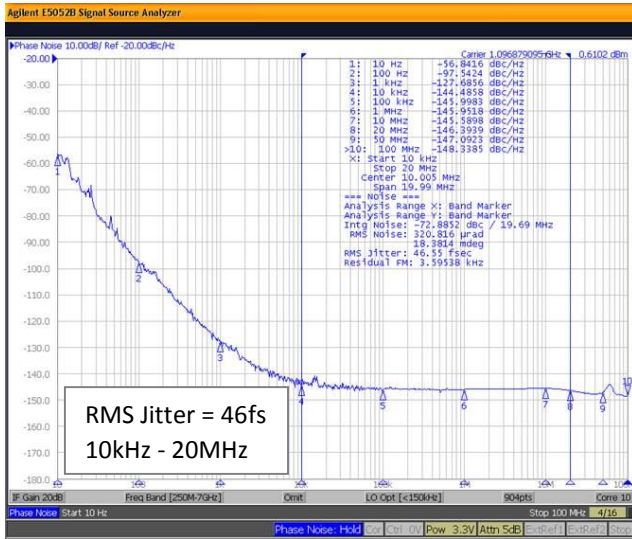
| Parameter | Min. | Typ. | Max. | Unit | Test Condition / Description |
|-----------------------------------|------|-----------|-----------------|----------------|---|
| Frequency | | 1.0 – 2.2 | | GHz | Sinewave, Differential Sinewave or LVPECL output type |
| Operating temperature range | -40 | | 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% |
| Supply current | | | 70 80 120 | mA mA mA | Sinewave Differential Sinewave LVPECL |
| Oscillator output | | | | | |
| Sub-harmonics | | -30 | -25 | dBc | |
| Output power | 2 | 4 | 6 | dBm | Single sinewave, 50Ω load |
| Output differential swing | 0.6 | | 1.6 | V | Differential sinewave |
| Output differential swing | 1.1 | 1.6 | | V | LVPECL |

SSB Phase Noise and RMS Phase Jitter

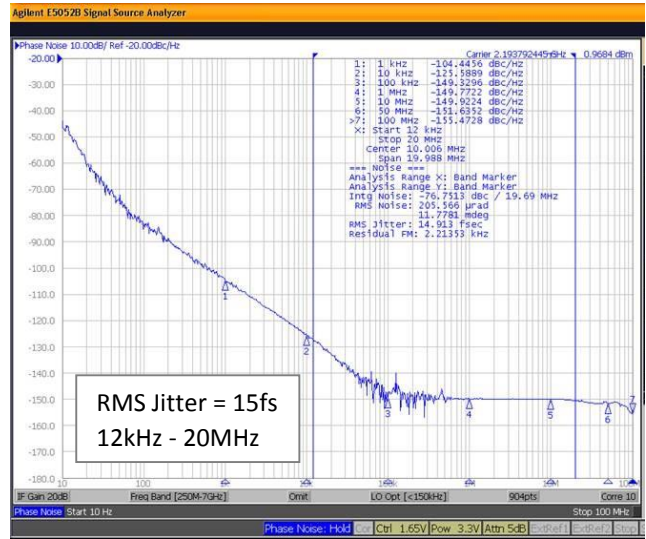
| Offset / Carrier Frequency | 1.096GHz LVPECL | 2.193GHz Sinewave | Unit | Test Condition / Description |
|-----------------------------|--------------------|----------------------|--------|--|
| a. 100 Hz | -97 | -83 | dBc/Hz | Typical at 25°C, VDD 3.3V ±5% |
| b. 1 kHz | -127 | -104 | dBc/Hz | |
| c. 10 kHz | -144 | -125 | dBc/Hz | |
| d. 100 kHz | -146 | -149 | dBc/Hz | |
| e. 1 MHz | -146 | -149 | dBc/Hz | |
| f. 10 MHz | -145 | -149 | dBc/Hz | |
| g. Typical RMS phase jitter | 46 | 15 | fs | Integrated 10kHz to 20MHz Integrated 12kHz to 20MHz |

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

1.096GHz XO with LVPECL Output



2.193GHz XO with Sinewave Output



Model Outline and Recommended Pad Layout

TOP VIEW

SIDE VIEW

H* NOTE:

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

BOTTOM VIEW

PIN CONNECTIONS (XO)

| | Sinewave | Differential Sinewave | LVPECL |
|---|-----------------|--|------------------------|
| 1 | NC | NC | NC |
| 2 | GND | GND | GND |
| 3 | GND | GND | GND |
| 4 | Sinewave Output | Output 1 ($\varnothing = 0^\circ$) | Output 1 (\bar{Q}) |
| 5 | GND | Output 2 ($\varnothing = 180^\circ$) | Output 2 (Q) |
| 6 | VDD | VDD | VDD |

RECOMMENDED PAD LAYOUT

UNIT: mm

XO Model Range

| 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 | 0.03ps Sine, Differential Sine, LVPECL 1.0 - 2.2GHz |
| Footprint | 14.0 x 9.0mm (1490) | | | RXG1490L Ultra-low jitter |
| | 7.0 x 5.0mm (7050) | RXO7050R Quick-turn, any frequency | RXO7050P Quick-turn, low jitter | RXO7050M Best-in-class jitter |
| | 5.0 x 3.2mm (5032) | RXO5032R Quick-turn, any frequency | RXO5032P Quick-turn, low jitter | RXO5032M Best-in-class jitter |
| | 2.5 x 2.0mm (2520) | RXO2520R Quick-turn, any frequency | RXO2520P Quick-turn, low jitter | |