Low Noise Oscillator series

LNO 500 B2 OCSO @ 500 MHz

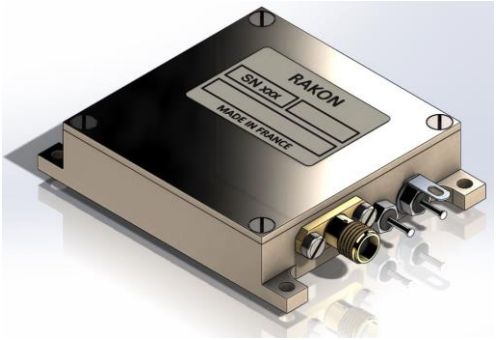
Specific request can be addressed to RAKON hirel@rakon.com

Product Description

LNO 500 B2 is a low noise and low power OCVCSO (Oven Controlled Voltage Controlled SAW Oscillator) at 500 MHz.

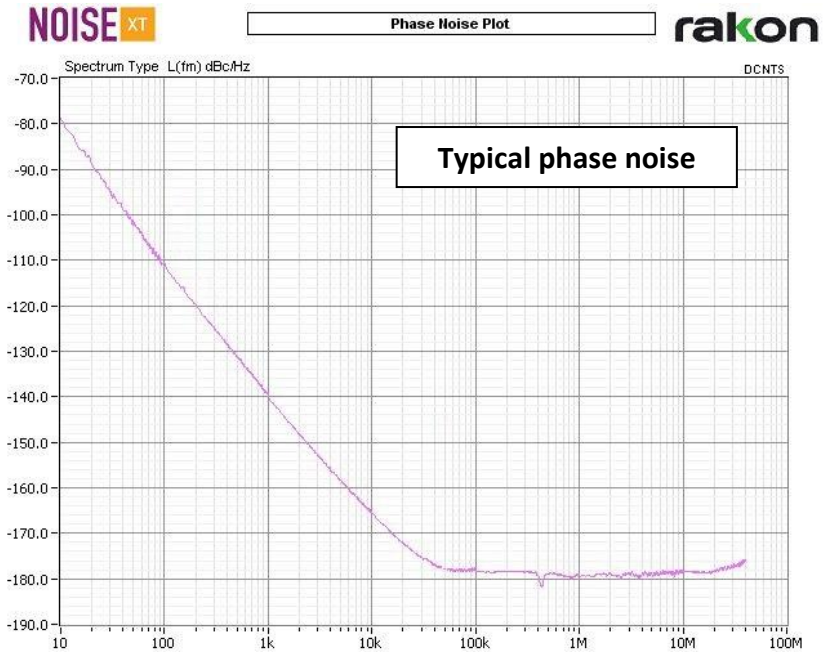
It is designed for lab environment (test equipment, shelter, ground based military equipment, etc.).

LNO 500 B2 is available in a 47.5 x 59.5 x 12.7 mm (typical values, excluding connectors) machined low profile package, including connectors and mounting pads.



Features

- Excellent phase noise performance (typical values) :
  - - 141 dBc/Hz @ 1 kHz offset
  - - 165 dBc/Hz @ 10 kHz offset
  - - 178 dBc/Hz noise floor



- Broadband jitter < 4 fs (offset frequencies from 10 kHz to 40 MHz)

Applications

- Instrumentation (test equipment, simulator)
- Ground based military equipment as per MIL-PRF-28800F, Class 3
- Clock for high speed ADC/DAC

Specifications

1.0 Environmental conditions

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
1.1	Operating temperature range		0 to +50		°C
1.2	Storage temperature range		-40 to +85		°C
1.3	Shock	As per MIL-PRF-28800F, Class 3, test equipment			
1.4	Random vibration	As per MIL-PRF-28800F, Class 3, test equipment			
1.5	G-sensitivity	@10Hz offset, on each axis	1	< 2	ppb/g

2.0 Electrical interface

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
2.1	Supply voltage	Pin 2	-	+10 ± 0.2	V
2.2	Load impedance	Pin 1, 50Ω all phases	-	< 1.3:1	VSWR
2.3	Control Input	Pin 4	-	+2 to +7	V
2.4	Input impedance	Pin 4	-	> 10	kΩ

3.0 Performances

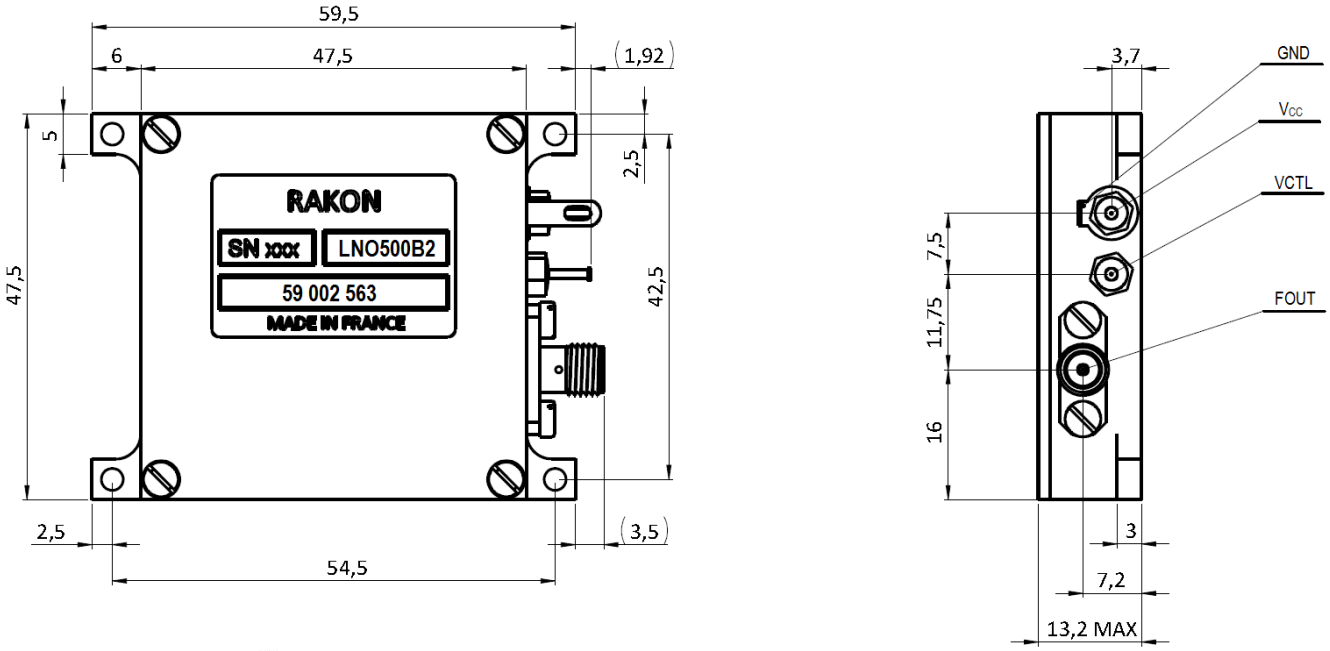
Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
3.1	Nominal frequency	Definition	500		MHz
3.2	Frequency calibration	Initial calibration @ 25°C	±0.2	< ±0.5	ppm
3.3	Frequency stability	On full temperature range	±1	< ±2	ppm
3.4	Long term stability	After 30 days of continuous operation 1st year 10 years	 - -	 < ±1 < ±6	 ppm ppm
3.5	Power consumption	Warm-up	5.4	< 5.6	W
3.6	Power consumption	@ 25 °C (calm air)	1.5	< 2.5	W
3.7	Warm-up time	@ 25 °C : ±1 ppm with reference to frequency reached after 1 hour of continuous operation	-	< 2	minutes
3.8	Frequency tuning	Monotone	±6	> ±4	ppm
3.9	Slope	Positive slope	-	1.5 to 3	ppm/V
3.10	Output power	Sine wave into 50 Ω load	-	+10 ±1	dBm
3.11	Output impedance	At 500 ± 1MHz	-	< 2.0:1	VSWR

4.0 Single side band phase noise (PN) and time jitter

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
4.1	PN power density @ 1 kHz offset	Static conditions, at 25°C (guaranteed values on full temperature range)	-141	< -136	dBc/Hz
4.2	PN power density @ 10 kHz offset		-165	< -162	dBc/Hz
4.3	PN power density @ 1 MHz offset		-178	< -176	dBc/Hz
4.4	Harmonic distortion	All sub-harmonics, 2^{nd} and 3^{rd} harmonics	-40	< -30	dBc
4.5	Spurious	Non-harmonics	-	< -80	dBc
4.6	Full offset range	From 10 Hz to 100 MHz	60	< 100	fs
4.7	Broadband	From 10 kHz to 40 MHz	-	< 4	fs

5.0 Mechanical features

Outline in mm, nominal values (general tolerances : ±0.2mm).



6.0 Pin description

Line	Name	Type	Description
6.1	F OUT	SMA jack	RF output signal
6.2	V_{CC}	Feed-thru	Input power supply (+)
6.3	GND	Lug	Mechanical and electrical ground (-)
6.4	VCTL	Feed-thru	Input control voltage