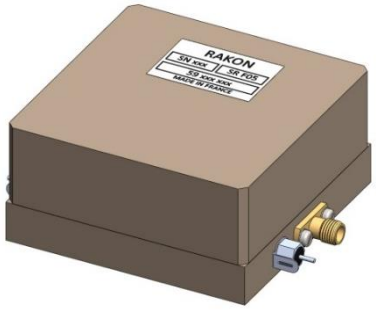
Low Noise Oscillator series

LNO 480 D1 OCSO @ 480 MHz

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

Product Description



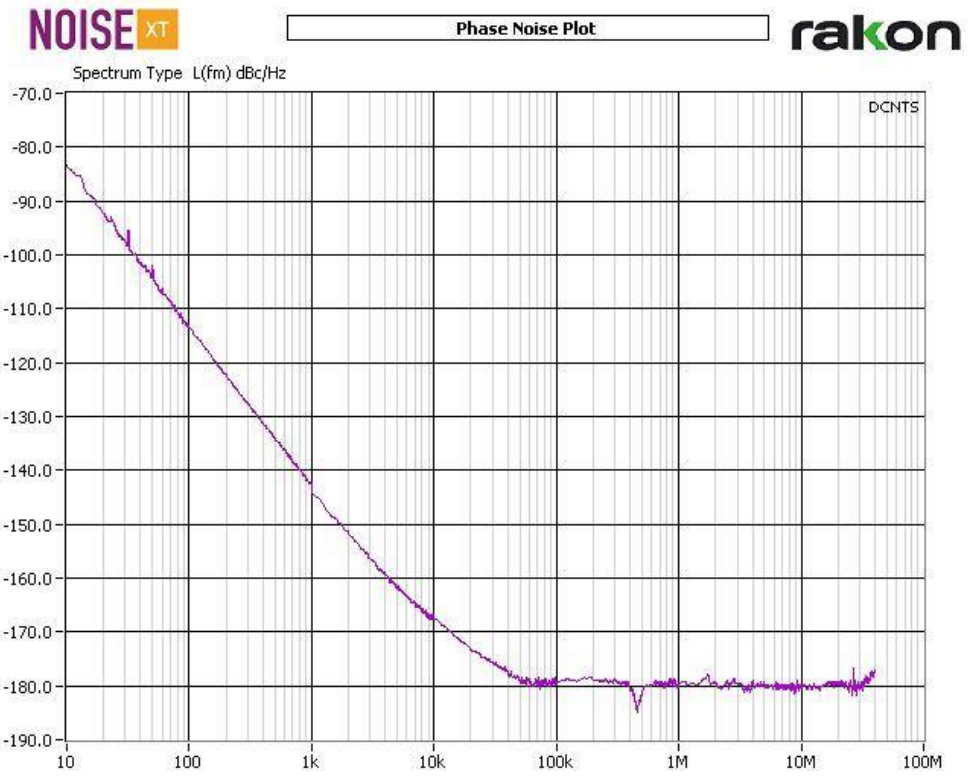
LNO 480 D1 is a low noise and low G vibration isolated OCVCSO (Oven Controlled Voltage Controlled SAW Oscillator) at 480 MHz.

LNO 480 D1 provides excellent phase noise performance, and is specially designed for airborne environment. The SAW oscillator is suspended with vibration and shock absorbers included.

LNO 480 D1 is available in a 70mm x 70mm x 34.75mm ruggedized package.

Features

- Excellent phase noise performance (typical value) :
  - -145 dBc/Hz @ 1kHz offset
  - -180 dBc/Hz noise floor



- BIT Status : Ready or Alarm

Applications

- Airborne radars

Specifications

1.0 Environmental conditions

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
1.1	Operating temperature range		-35 to +71		°C
1.2	Storage temperature range		-40 to +85		°C
1.3	Shock	Half sine 30 g 11 ms			
1.4	Random vibration	3.10^{-4} g²/Hz within [10 to 1000Hz] 3.10^{-5} g²/Hz at 2000Hz			
1.5	Humidity	93 % RH at 60 °C			
1.6	Low pressure & temperature	120 hPa within [-40 to 55 °C]			
1.7	Constant acceleration	18 g all directions			

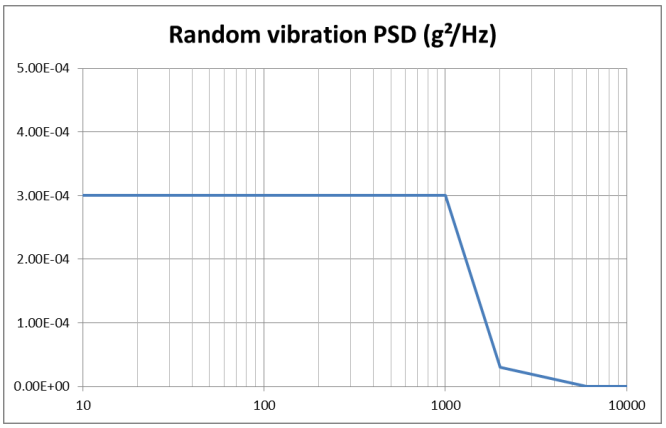
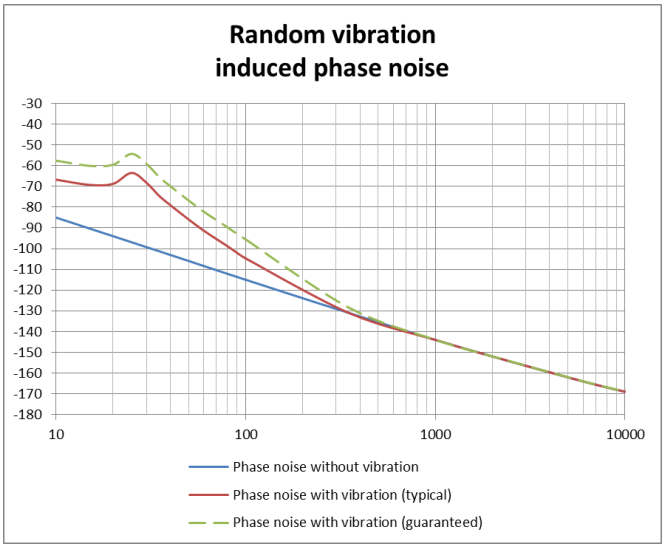
2.0 Electrical interface

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
2.1	Supply voltage	Pin 2	+12 ± 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	BIT status	Pin 3	TTL logic level		

3.0 Performances

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
3.1	Nominal frequency	Definition	480		MHz
3.2	Frequency calibration	Initial calibration @ 25°C	±0.2	< ±0.5	ppm
3.3	Frequency stability	All causes (temperature & load)	-	< ±2	ppm
3.4	Long term stability	After 30 days of continuous operation 1st year 10 years	 - -	 < ±1 < ±6	 ppm ppm
3.5	Frequency tuning	Monotone	±8	> ±3	ppm
3.6	Slope	Positive slope	3	1 to 4	ppm/V
3.7	Power consumption	Warm-up	12	< 15	W
3.8	Power consumption	25 °C (calm air)	3	< 4.5	W
3.9	Warm-up time	±3 ppm with reference to frequency reached after 1 hour of continuous operation at 25 °C	-	< 5	minutes
3.10	Output power	Sine wave into 50 Ω load	+10	+9 to +11	dBm

4.0 Single side band phase noise (PN)

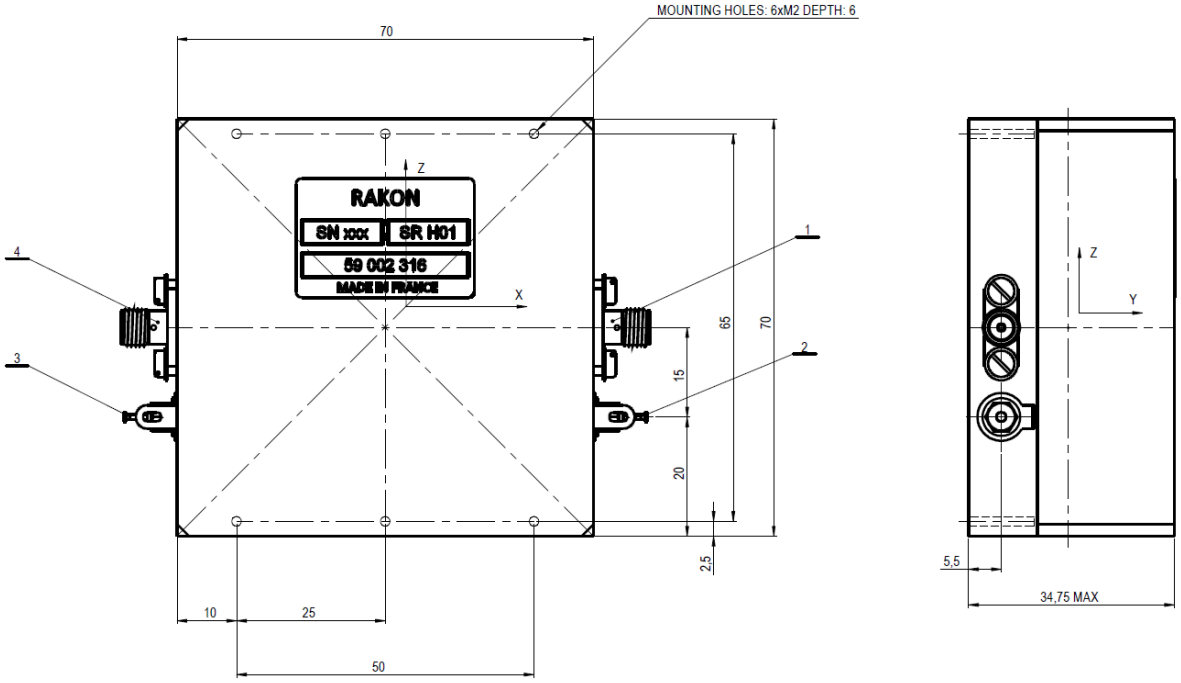
Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
	In static environment (free running mode)				
4.1	PN power density @ 100 Hz offset	Static conditions, at 25°C (guaranteed values on full temperature range)	-115	< -110	dBc/Hz
4.2	PN power density @ 1 kHz offset		-145	< -140	dBc/Hz
4.3	PN power density @ 10 kHz offset		-170	< -165	dBc/Hz
4.4	PN power density @ 1 MHz offset		-180	< -175	dBc/Hz
4.5	Harmonic distortion	Second and third harmonics	-40	< -30	dBc
4.6	Harmonic distortion	Non-harmonics		< -80	dBc
	In dynamic environment				
4.7	With the following random vibration spectrum (ref. 1.4):  The Single Side Band Phase Noise in dynamic environment is as described below : 				

5.0 BIT output

Line	Parameter	Test Condition	Typ. Value	Guaranteed	Unit
5.1	Interface		Open collector		
5.2	Logic 1	TTL level	Oscillator ready		
5.3	Logic 0	TTL level	Alarm		

6.0 Mechanical features

Outline in mm



7.0 Pin description

Line	Pin number	Name	Description
7.1	1	Frequency output	Output signal
7.2	2 + lug	Supply voltage	Input supply (2) & ground (lug)
7.3	3 + lug	BIT status	Logic output signal (3) & ground (lug)
7.4	4	Control Input	Tuning DC voltage or 10MHz reference