

LNO100

The LNO100 series consists of Low Noise OCXOs (LNOs) with 80 to 125 MHz output frequencies. These high-reliability OCXOs deliver ultra-low noise performance. For instance, a 100 MHz LNO100 provides a guaranteed phase noise as low as -165 dBc/Hz @ 1 kHz offset. Small form factor package options are available on Pin Through Hole (PTH) and Surface Mount Device (SMD) products. Customised designs are available on request.

The LNO100 products are also low *g*-sensitive OCXOs that achieve a 0.5 ppb/*g* performance. They are designed to meet the requirements of the most demanding phase noise applications in the instrumentation and defence industries. The LNO100 provide the ideal solution when end applications have additional SWaP (Size, Weight, and Power) requirements.

Features

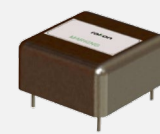
- Frequency: 80 to 125 MHz
- Guaranteed low phase noise @100 MHz:
 - 1 kHz offset: -165 dBc/Hz
 - 100 kHz offset: -178 dBc/Hz
- Low *g*-sensitivity 0.5 ppb/*g*
- Supply voltage: 12 V (15 V on request)
- Frequency stability vs temperature: ± 0.2 ppm
- Ageing: ± 1.8 ppm/10 years

Applications

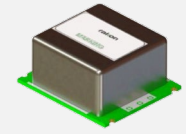
- Reference for phase noise measurements
- Test equipment
- Synthesisers
- Radar
- Military communications

Packages

PTH3
25.4 x 25.4 x 12.7 mm



SMD1
25.4 x 22 x 12.7 mm

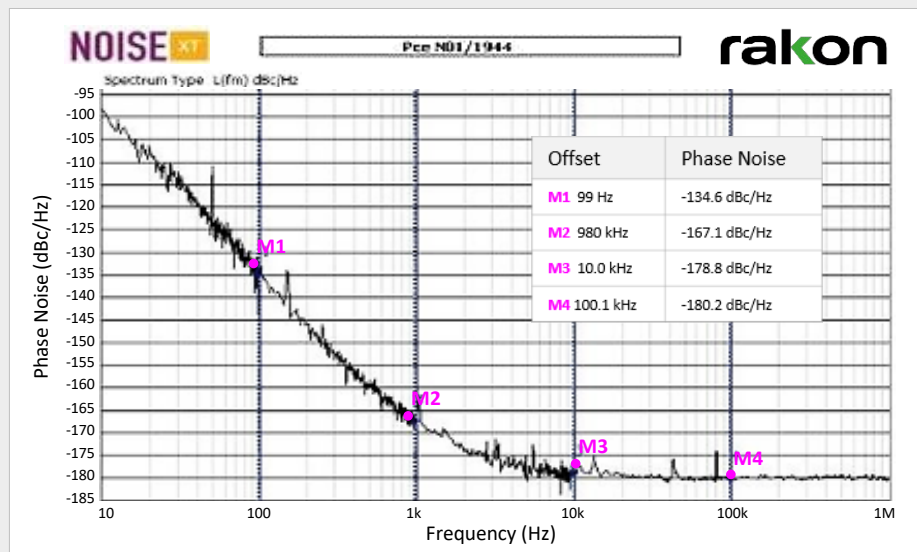


Phase Noise

Parameter

Condition / Remarks

LNO100 phase noise
@100 MHz (Typ)



Guaranteed phase noise
(Min)

PN options ¹	Frequency (MHz)	100Hz	1kHz	10kHz	100kHz	Unit
65	100	-133	-165	-177	-178	dBc/Hz
62	80, 100, 120, 125	-130	-162	-175	-175	
58	80, 100, 120, 125	-130	-158	-172	-172	
50	80, 100, 120, 125	120	-150	-165	-170	

¹ The PN option codes, 65, 62, 58 and 50, correspond to phase noises at 1 kHz offset. Specifically, 65 = -165 dBc/Hz; 62 = -162 dBc/Hz, 58 = -158 dBc/Hz and 50 = -150 dBc/Hz.

Environmental Conditions

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Operating temperature (T _{OP})	Option A Option C	0 -40	25 25	70 85	°C
Switch-on temperature (T _{SO})		-40	-	85	°C
Non-operating temperature (T _{NOP})		-55	-	125	°C
Vibration (non-operating)	Level as per MIL-PRF-28800F, Class 3, test equipment				
Shocks (non-operating)	Level as per MIL-PRF-28800F, Class 3, test equipment				

Electrical Interface

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Power supply (V _{CC})	Option 12 Option 15 (available on specific request)	11.4 14.25	12 15	12.6 15.75	V
Load impedance	-	45	50	55	Ω
Input impedance	-	10	-	-	kΩ

Performances

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Nominal frequency (Fn)	Standard Fn: 80, 100, 120, 125MHz	80	100	125	MHz
Relative pulling frequency range	Positive slope	±1.8	-	-	ppm
Control voltage	-	0	-	10	V
Modulation bandwidth	-	3	-	-	kHz
Initial frequency accuracy	@25°C, control voltage range is providing to reach the initial frequency accuracy at shipment	-	-	±0.1	ppm
Freq. stability vs temperature	Option A: 0 to 70°C / Temperature slope 1°C/min Option C: -40 to 85°C / Temperature slope 1°C/min	-	-	±0.2 ±0.5	ppm
Freq. variation vs supply voltage	@ V _{CC} ±5% / @ 25°C	-	-	±0.02	ppm
Freq. stability vs load	@ ±10% variation of load / @25°C	-	-	±0.02	ppm
Frequency warm-up	Time to be within the initial frequency accuracy compared to frequency after 1hour	-	-	5	mn
<i>g</i> -sensitivity ^{2, 3}	Option SG: Worst axis, bandwidth 10 to 500Hz Option LG: Worst axis, bandwidth 10 to 500Hz	-	-	±2 ±0.5	ppb/g
Long-term stability (ageing) ⁴	1 st year 10 years	-	-	±0.5 ±1.6	ppm
Allan deviation	Tau = 1s Tau = 10s	-	-	5E-11 5E-10	-
Output level	Sine	11	13	15	dBm
Hamonic level	Bandwidth from DC to 10xFn	-	-	-25	dBc
Non-harmonic level (spurious)	Bandwidth from DC to 5GHz	-	-100	-90	dBc
Warm-up input power	-	3.0	3.7	4.5	W
Steady-state supply power	@ 25°C	-	-	2.2	W

² LNOs with lower *g*-sensitivity can be provided on specific request

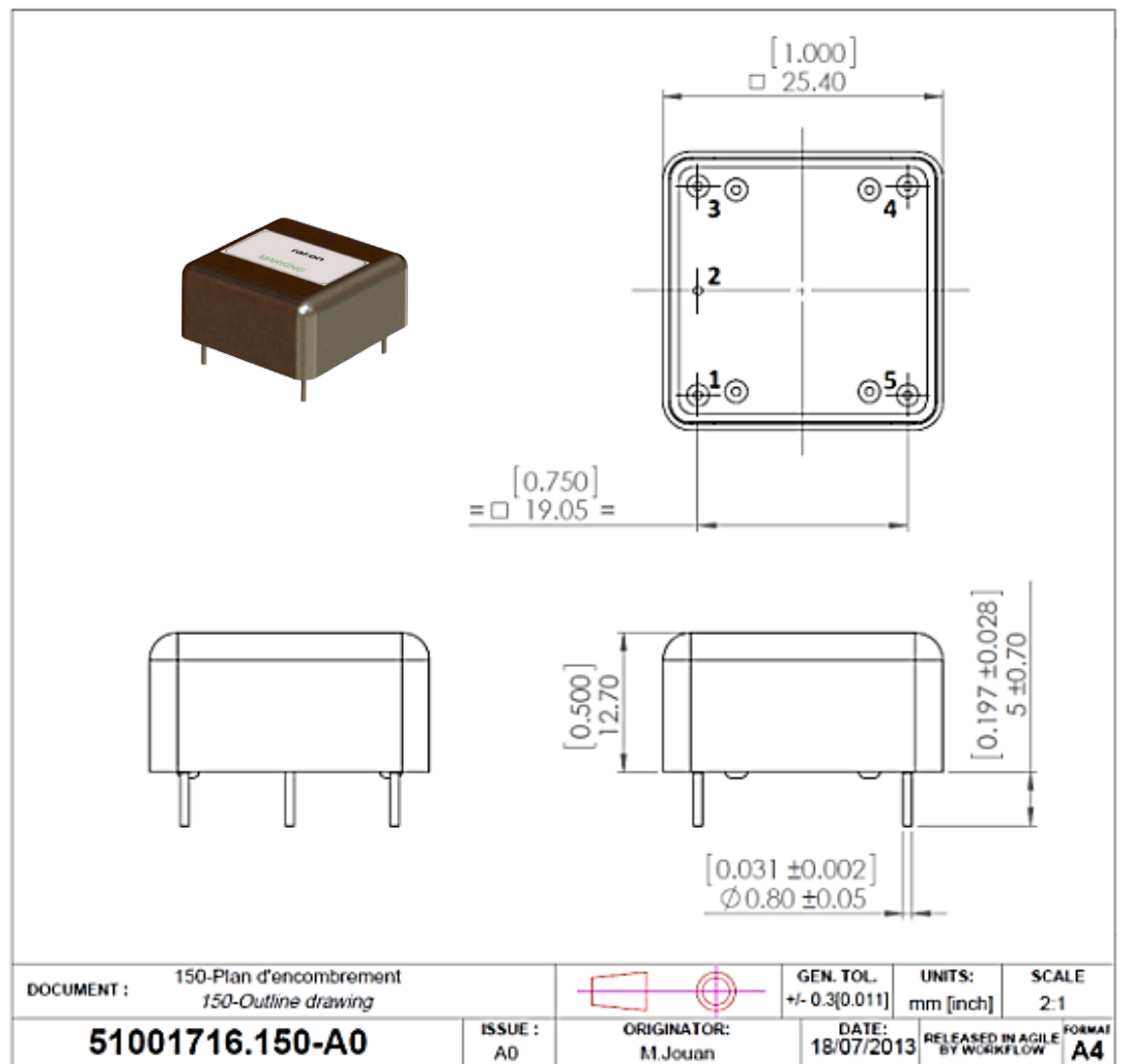
³ The *g*-sensitivity sanction is the measurement of the oscillator according to MIL-PRF-55310 (random vibration method)

⁴ The projected change for 1 year or other periods is not calculated as per as MIL-PRF-55310. The fit calculation is based on measurement during 15 days minimum; the measurements obtained are fitted using the method of least squares to function defined in MIL-PRF-55310. The projected total frequency change for one year is determined by using this.

Model Outline and Pin Connections – LNO100 PTH3

Parameter	Package	Pin #	Connections
Package and pin connections	PTH3 (Pin Through Hole) Size: 25.4 x 25.4 x 12.7 mm	1	F _{OUT} Frequency output
		2	GND Electrical & mechanical ground
		3	V _C Voltage control for electric tuning
		4	GND Electrical & mechanical ground
		5	V _{CC} Supply voltage

Model outline



Net weight

20 g/pc max.

STEP file

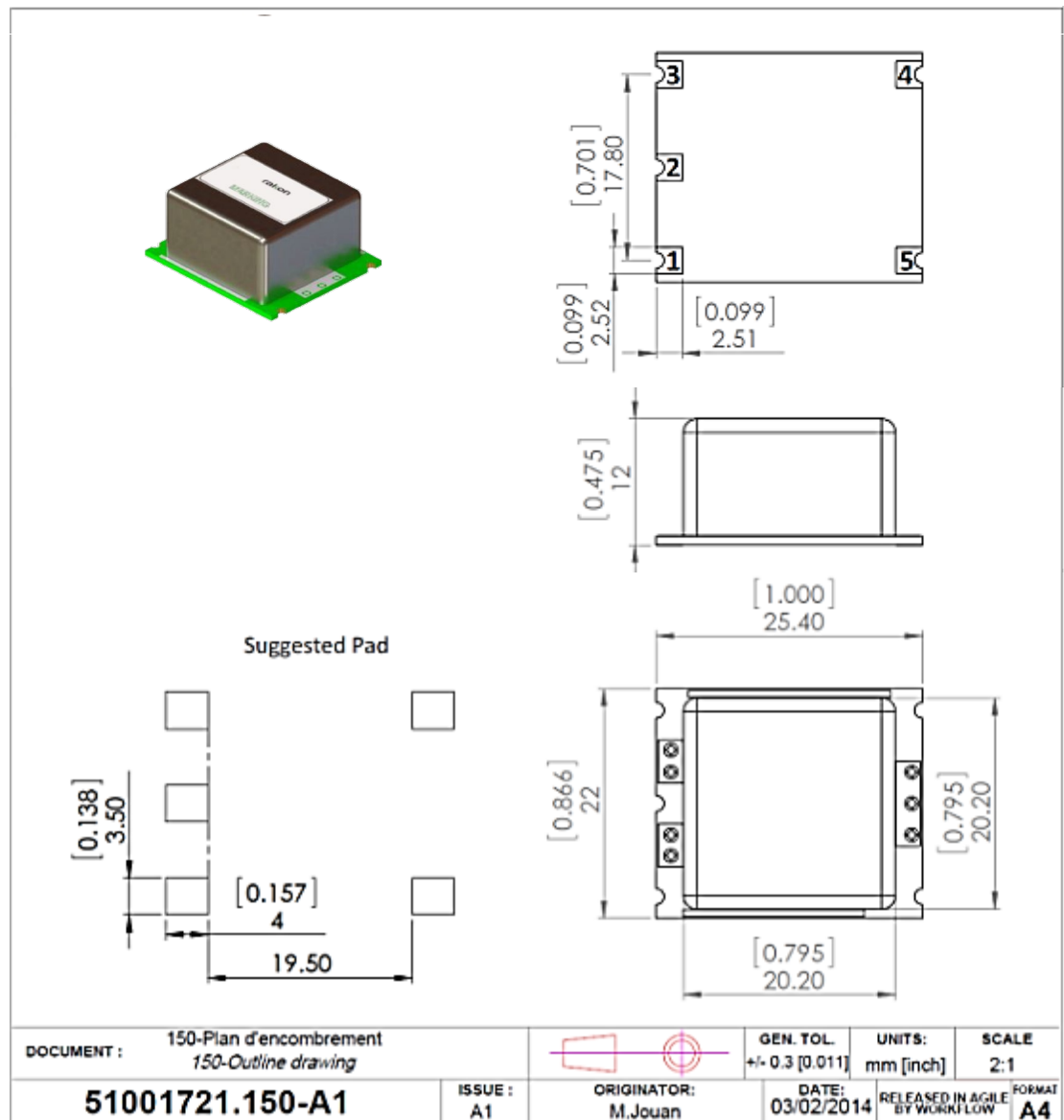
[LNO100 PTH3 3D model](#)

To open or view the STP file, you will need to import it into one of the following software programs:
Autodesk Fusion 360, CATIA, SolidWorks, Solid Edge, TurboCAD, Kubotek KeyCreator, FreeCAD, ABViewer, ShareCAD, or eMachineShop.

Model Outline and Pin Connections – LNO100 SMD1

Parameter	Package	Pin #	Connections
Package and pin connections	SMD1 (Surface Mount Device) Size: 25.4 x 22 x 12.7mm	1	V _C Voltage control
		2	NC Not connect
		3	V _{CC} Supply voltage
		4	F _{OUT} Frequency output
		5	GND Electrical & mechanical ground

Model outline



Net weight

18 g/pc max.

STEP file

[LNO100 SMD1 3D model](#)

To open or view the STP file, you will need to import it into one of the following software programs:
Autodesk Fusion 360, CATIA, SolidWorks, Solid Edge, TurboCAD, Kubotek KeyCreator, FreeCAD, ABViewer, ShareCAD, or eMachineShop.

Ordering Part Example

