

Pluto+™ Ultra-Low Noise (LNO) TCXO

RPT1490LN

The RPT1490LN is a high-performance ultra-low noise (ULN) TCXO in a compact package size of 14.5 x 9.5 x 6.0 mm. It is designed for clock reference applications where ultra-low phase noise and low wander generation performance are crucial. The RPT1490LN is a QUALCOMM qualified reference part supporting the 5G FSM100xx platform. The registered QUALCOMM design reference numbers are FSM10055 and FSM10056.

High bandwidth applications performing QAM-like modulation require low phase noise at large frequency offsets. The RPT1490LN achieves a noise floor as low as -175 dBc/Hz. The unique combination of ± 0.3 ppm stability over -40 to 95°C and low phase noise enables the device to be the single reference oscillator for network synchronisation and phase noise clean up.

Features

- Ultra-low noise floor: -175 dBc/Hz
- Frequency: 10 to 50 MHz
- Stability: ± 0.3 ppm over -40 to 95°C
- High-Q XMEMS® crystal technology
- Patent "Tilt Compensation" in voltage control.

Applications

- 5G RRUs and 5G small cells
- Microwave & millimetre wave systems
- Test & measurement equipment
- Coherent optical modules

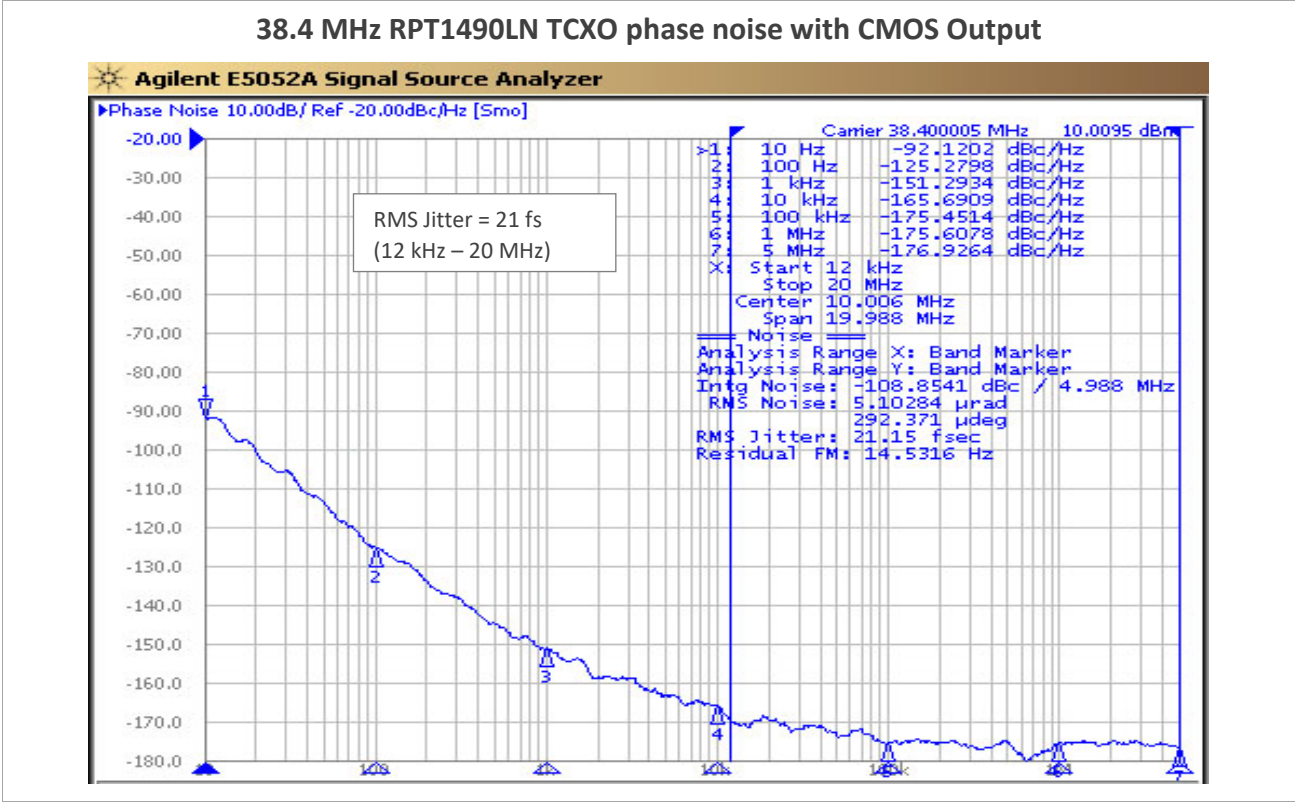
14.5 x 9.5 x 6.0 mm



Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		10 – 50		MHz	Standard frequency 38.4 MHz
Frequency calibration			± 1	ppm	At 25°C $\pm 2^\circ\text{C}$
Reflow shift			± 0.5	ppm	After 1 hour of recovery at 25°C
Operating temperature range	-40		95	°C	-40 to 105°C available on request
Frequency stability over temperature in still air			± 0.3	ppm	Reference to $(F_{\text{MAX}} + F_{\text{MIN}})/2$
Supply voltage stability			± 0.1	ppm	$\pm 5\%$ variation, reference to frequency at 3.3V
Load sensitivity			± 0.1	ppm	$\pm 10\%$ variation, reference to frequency at 15pF
Long term stability (ageing at 25°C)			± 1 ± 4	ppm	First year 15 years
Supply voltage (V _{CC})	3.135	3.3	3.465	V	
Input current		10	15	mA	At nominal condition, 15 pF
Control voltage (V _c)	0.5		2.5	V	0 to 3.3V operational
Frequency tuning	± 6		± 10	ppm	Reference to the frequency at V _c = 1.5 V
Slope		+7		ppm/V	
Input impedance	1			MΩ	
Linearity			1	%	Deviation from the straight line curve fit
Port input impedance	1			MΩ	
Modulation bandwidth		3.5		Hz	
Oscillator output – CMOS					
Output voltage low (V _{OL})			0.4	V	
Output voltage high (V _{OH})	2.7		3	V	
Rise and fall time	1		2	ns	10% to 90% level
Duty cycle	49		51	%	Measured at 50% level
Output load		15		pF	

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



Model Outline and Recommended Pad Layout

