

Rev A

V-AN-XXYY-X –10.000 MHz Phase-Locked Clean-up ULPN VCXO with Low G-sensitivity

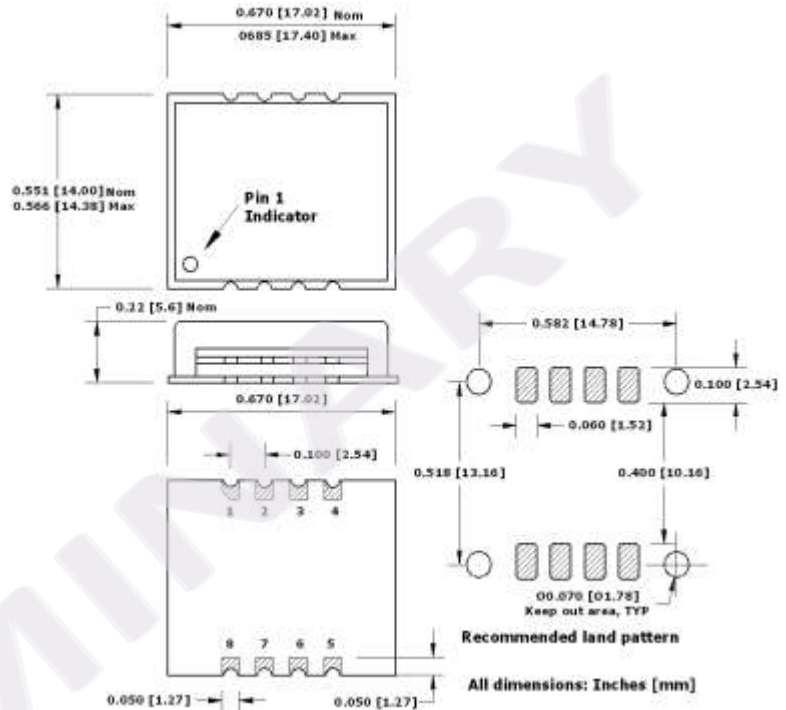
Product Data Sheet

Features

- Low G-sensitivity
- Low Phase Noise Similar to OCXO
- Compact SMD Package
- Low Power Consumption Independent on Ambient Temperature and no Warm-up
- Fast Ready

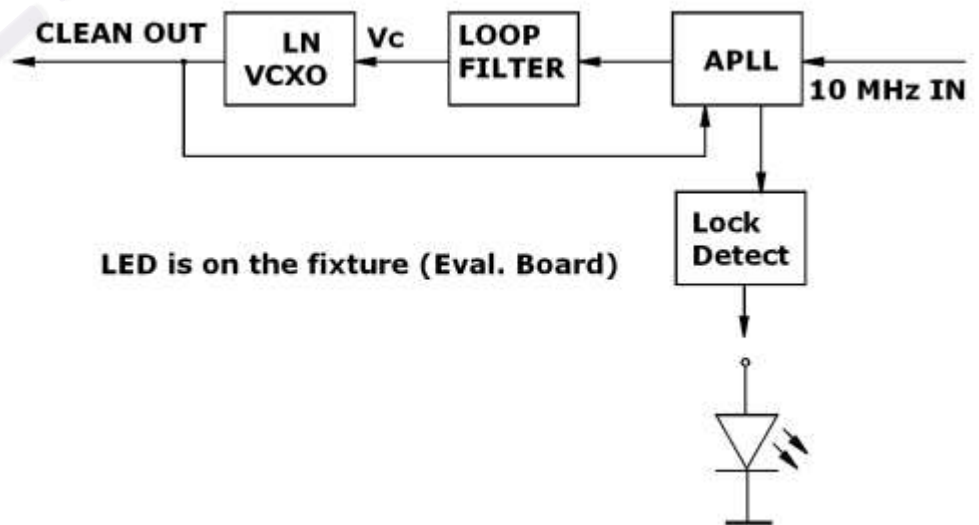
Applications

- Significantly improves Phase Noise of incoming signal
- Atomic Clocks, GNSS Based Clocks
- Test and Measurement
- COTS/Dual use



Pinout

- Pad #1 - Vcc
- Pad #2 - GND
- Pad #3 - GND
- Pad #4 - GND
- Pad #5 - RF OUT
- Pad #6 - Do Not Connect
- Pad #7 - 10 MHz In
- Pad #8 - Lock Detect



Specifications:

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Absolute Maximum Ratings							
Input Break Down Voltage	V _{cc}		-0.5		5.5	V	V _{cc} = 5 V
Operating Temp.	T _o		-20		70	°C	
Operable Temp.	T _O		-40		85	°C	
Storage temper.	T _s		-40		85	°C	

Electrical

Input Frequency	F _{in}			10.000		MHz	
Output Frequency	F _{out}			10.000		MHz	*2
Frequency Capture Range (APR)	ΔF/F	Overall	±100			ppb	
Allan Deviation		.01s to 1.0s		1E-11			
Frequency stability	ΔF/F	Locked	Equal to incoming signal				
Recommended MAX Input SSB Phase Noise	£(Δf)	10 Hz			-80	dBc/Hz	
		100 Hz			-110		
		1 KHz			-130		
		10 KHz			-140		
		100 KHz			-140		
Input signal		CMOS	2			V	Swing
		Sine Wave	0		5		dBm
Output SSB Phase Noise Floor	£(Δf)	1 Hz		-90		dBc/Hz	
		10 Hz		-120			
		100 Hz		-143			
		1 KHz		-158			
		10 KHz		-160			
		100 KHz		-160			
Output SSB Phase Noise Improvement Compared to Input Phase Noise		1 Hz		20		dBc/Hz	Cannot improve beyond listed above noise floor
		10 Hz		40			
		100 Hz		50			
		1 KHz		50			
		10 KHz		50			
		100 KHz		50			
G-sensitivity		worst direction			±0.5	ppb/G	
Input Voltage	V _{cc}	Code 0	4.75	5.0	5.25	V	By special request
		Code A	3.2	3.3	3.45		
Power consumption	P			50		mW	Driving 50 Ohm code S
Spectral Purity		Subharmonics		none		dBc	Output Code S
		Spurious			-80		
		Harmonics		-35	-30		
Load	Internally AC coupled 50 Ohm (Sinewave) 10K Ohm//15pf (CMOS/TTL)						
Lock Time				1		minute	
Output Power	P _{out}	Into 50 Ohm	9	11			Output Code S
Logic 1 (CMOS)	V _{oh}		0.7V _{ref}			V	Output Code T
Logic 0 (CMOS)	V _{ol}				0.1V _{ref}	V	Output Code T
Duty Cycle			45/55		55/45	%	Output Code T
Rise/Fall Time	Tr/Tf			4	5	ns	Output Code T
Lock Detect			Logic "1"				Can drive LED

All parameters for output frequency 10 MHz

Environmental and Mechanical

Operating temp. range	-20°C to 70°C Standard, Other options – see chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms, survival
Vibration	Per MIL-STD-202, 5G to 2000 Hz, Survival
Soldering Conditions	See MAX reflow profile below; The device may be reflowed once. Reflowing upside down is not allowed. Hand soldering is highly encouraged. NO CLEAN assembly is recommended

Electrical Connections



FREQUENCY CONTROLS, INC.

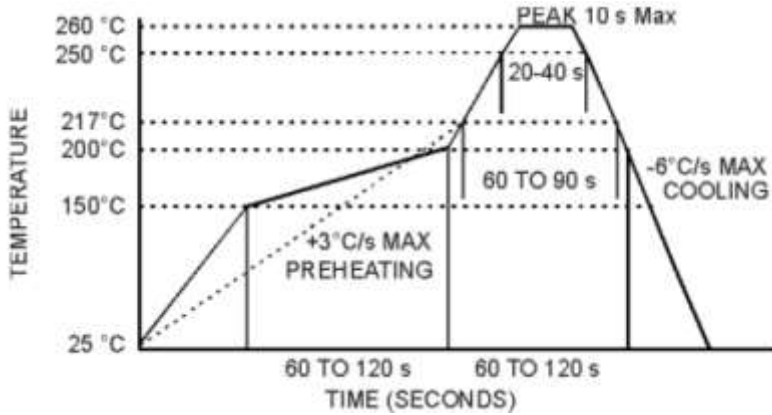
357 Beloit Street, Burlington, WI 53105 U.S.A. Phone 262/763-3591 FAX 262/763-2881

 Email: nelsales@nelfc.com www.nelfc.com

Notes:

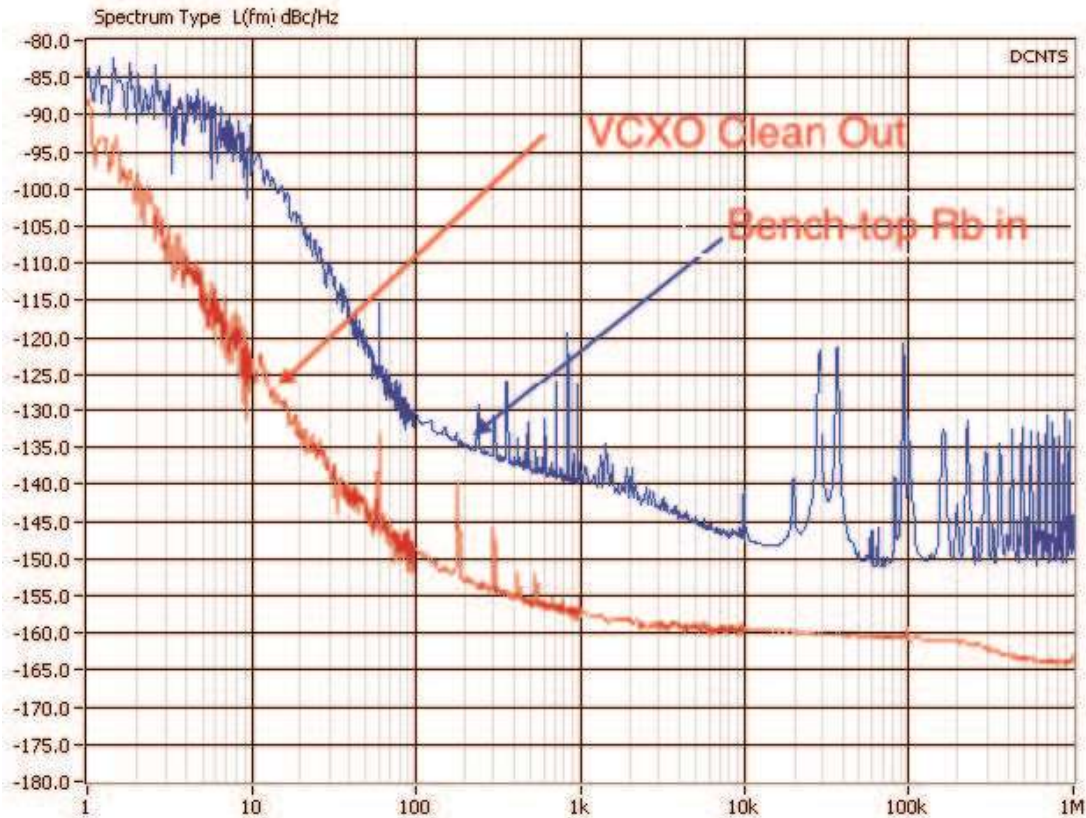
- * All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal
- *2 Up to 20 MHz Output frequencies can be discussed with NEL. For HF range (80 to 125 MHz) please visit <https://nelfc.com/pdf/2023A.pdf>

MAX Reflow Profile



NOISE XT

Phase Noise Plot



**FREQUENCY
CONTROLS, INC.**

357 Beloit Street, Burlington, WI 53105 U.S.A. Phone 262/763-3591 FAX 262/763-2881

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Creating a Part Number

V - VCXO

AN -

X X

YY -

X - 10.000 MHz

Package Code
17x14 mm SMD

Environmental

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant

Supply Voltage

Code	Specification
0	5 V TYP
A	3.3 V (special request)

Output

Code	Specification
S	Sinewave
T	CMOS/TTL

Temperature Range

Code	In 5°C steps **
First letter	Lowest temperature from A = -40°C
Second letter	Highest temperature to Z = 85°C
Examples	
IS	0°C to 50°C
GU	-10°C to 60°C
EW	-20°C to 70°C

****Temperature Code Table**

Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

