

10MHz Low Noise/Low G-Sensitivity OCXO

NI-10M-6800 series

NI-10M-6800 Series in 36.1x27.2mm DIP package

NI-10M-6800 series is a 10.000 MHz high performance (VC)OCXO with low phase noise(LPN) and low G sensitivity(LGS). It has exceptional phase noise, low G-Sensitivity with many available options. The part is housed in a hermetically sealed RoHS package which protects it from extreme changes in external humidity and pressure.



RoHS Compliant Standard

FEATURES

- **Exceptional Low Phase Noise**
- **Very Low Short-Term Stability**
- **Low G-Sensitivity**
- Tight Frequency Stability
- Fast Warm-up Time
- Electrical Frequency Tuning Input
- Reference Voltage Output
- RoHS-Compliant (lead-free)

APPLICATIONS

- Instrument Reference
- Microwave Communication
- Clock Reference for Microwave Signal Source
- Test & Measurement
- Telecom Systems
- High End Audio

ELECTRICAL SPECIFICATIONS

Test conditions: VDC = +12 V; VCO = +5 V; at +25 ± 3°C unless otherwise identified

1. OUTPUT (PIN = "R.F. OUTPUT")

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
1.1.	Frequency (Fo)	10.000000			MHz	
1.2.	Initial Accuracy	-0.1		+0.1	ppm	@ +25 ±1°C after turn on power 30 minutes Vco=+5V
1.3.	Waveform	Sine wave				
1.4.	Level	+8			dBm	
1.5.	Load		50		Ω	
1.6.	Harmonics			-30	dBc	
1.7.	Spurious			-80	dBc	10Hz to 1MHz from carrier

2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition			
2.1.	Ambient	±5, ±10, ±20, ±50			ppb	referred to 25°C	Refer to Table 1 : Ordering Information		
		-20°C ~ +70°C -40°C ~ +85°C			°C				
2.2.	Aging					after 30 days of Continuous Operation			
	Daily	-0.5		+0.5	ppb	Tighter aging upon request			
	Yearly	-50		+50	ppb				
	10 Years	-0.3		+0.3	ppm				
2.3.	Voltage	-2		+2	ppb	±5% change			
2.4.	Short term			0.005	ppb	root Allan variance for τ=1 sec		Tighter short term upon request	
2.5.	Load	-1		+1	ppb	±5% change			
2.6.	Warm-up	-50		+50	ppb	in 5 minutes @ +25 ±1°C		referred to 1 hour	
2.7.	G-Sensitivity (each axis)			1	ppb/g				
2.8.	Phase Noise (Max.)	Option A	Option B	Option C	Option D	Option E	Option F		Refer to Table 1 : Ordering Information
		-105	-110	-115	-118	-120	-122	dBc/Hz	@ 1Hz
		-135	-140	-143	-145	-147	-148	dBc/Hz	@ 10Hz
		-155	-155	-158	-160	-161	-161	dBc/Hz	@ 100Hz
		-165	-165	-165	-165	-166	-167	dBc/Hz	@ 1KHz
		-170	-170	-170	-170	-170	-168	dBc/Hz	@ 10KHz
		-170	-170	-170	-170	-170	-168	dBc/Hz	@ 100KHz
		-170	-170	-170	-170	-170	-168	dBc/Hz	@ 1MHz

3. ELECTRICAL FREQUENCY ADJUSTMENT (PIN = "VCO INPUT")

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	Tuning Range	$\pm 0.4^*$			ppm	Referenced to frequency at nominal Center Voltage
3.2.	Control Voltage	0		+5.0	V	
3.3.	Slope	Positive				
3.4.	Center Voltage		+2.5		V	
3.5.	Linearity	-10		+10	%	

* Always greater than overall frequency stability.

4. INPUT POWER (PIN = "+VDC")

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
4.1.	Voltage	+11.4	+12	+12.6	V	5V is available. Refer to Table 1 : Ordering Information
4.2.	Current					
	Steady State			1.8	W	@ +25°C, operating -20°C ~ +70°C
				2.2		@ +25°C, operating -40°C ~ +85°C
	During Warm-Up			4.8	W	@ +25°C, operating -20°C ~ +70°C
				6.0		@ +25°C, operating -40°C ~ +85°C

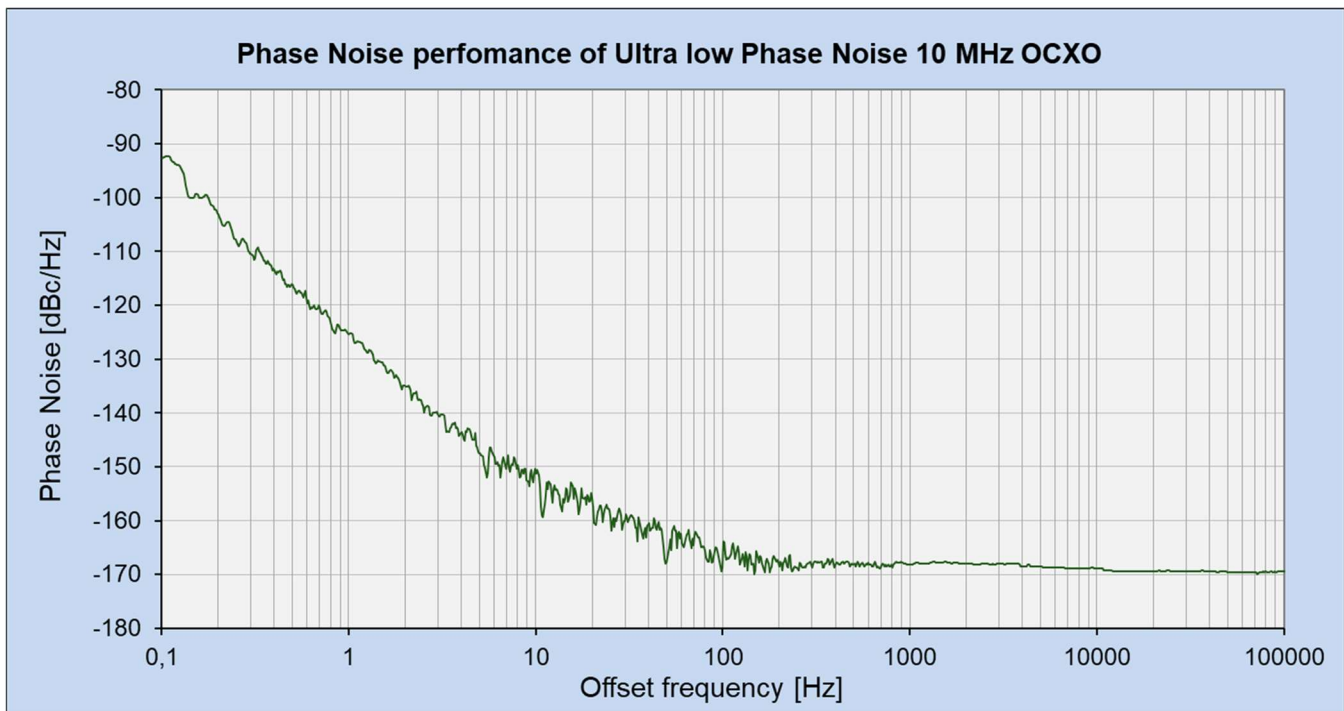
5. ENVIRONMENTAL

	Parameter	Reference Std.	Test Condition
5.1.	Storage Temperature	-50°C to +95°C	
5.2.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
5.3.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 to 55 Hz
5.4.	Shock (non-operating)	MIL-STD-202, Method 213, Test Condition J	30g, 11ms, half-sine

Table 1 : ORDERING INFORMATION

Temp. (°C)	Option Ambient	Supply Voltage	Phase Noise Option					
			A	B	C	D	E	F
-20°C ~ +70°C	±20 ppb	12V	NI-10M-6800	NI-10M-6801	NI-10M-6802	NI-10M-6803	NI-10M-6804	NI-10M-6805
		5.0V	NI-10M-6810	NI-10M-6811	NI-10M-6812	NI-10M-6813	NI-10M-6814	NI-10M-6815
	±10 ppb	12V	NI-10M-6820	NI-10M-6821	NI-10M-6822	NI-10M-6823	NI-10M-6824	NI-10M-6825
		5.0V	NI-10M-6830	NI-10M-6831	NI-10M-6832	NI-10M-6833	NI-10M-6834	NI-10M-6835
	±5 ppb	12V	NI-10M-6840	NI-10M-6841	NI-10M-6842	NI-10M-6843	NI-10M-6844	NI-10M-6845
		5.0V	NI-10M-6850	NI-10M-6851	NI-10M-6852	NI-10M-6853	NI-10M-6854	NI-10M-6855
-40°C ~ +85°C	±50 ppb	12V	NI-10M-6860	NI-10M-6861	NI-10M-6862	NI-10M-6863	NI-10M-6864	-
		5.0V	NI-10M-6870	NI-10M-6871	NI-10M-6872	NI-10M-6873	NI-10M-6874	-
	±20 ppb	12V	NI-10M-6880	NI-10M-6881	NI-10M-6882	NI-10M-6883	NI-10M-6884	-
		5.0V	NI-10M-6890	NI-10M-6891	NI-10M-6892	NI-10M-6893	NI-10M-6894	-
	±10 ppb	12V	NI-10M-68A0	NI-10M-68A1	NI-10M-68A2	NI-10M-68A3	NI-10M-68A4	-
		5.0V	NI-10M-68B0	NI-10M-68B1	NI-10M-68B2	NI-10M-68B3	NI-10M-68B4	-

Phase Noise Test Data



OUTLINE DRAWING

