

# 100MHz *Ultra Low Noise/Low G-Sensitivity* OCXO

## NI-100M-6900 series

### NI-100M-6900 Series in 36.3x27.2mm DIP package

NI-100M-6900 series is a 100.000 MHz high performance (VC)OCXO offering Ultra Low Phase Noise(ULPN), low G sensitivity(LGS) and tight frequency stability down to  $\pm 50\text{ppb}$ (-20°C to +70°C). The part comes in a small hermetically sealed through hole package which makes it suitable for humid environmental conditions.



RoHS Compliant Standard

#### FEATURES

- **Ultra Low Phase Noise & Low G-Sensitivity**
- Hermetically Sealed Package
- Tight Frequency Stability
- Low Power Consumption
- 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
- Radar Systems
- Medical (MRT)

#### ELECTRICAL SPECIFICATIONS

**Test conditions: VDC = +5 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)		100.000000		MHz	
1.2.	Initial Accuracy	-0.3		+0.3	ppm	@ +25 ±1°C
						after turn on power 30 minutes
						Vco=+5V
1.3.	Waveform	Sine wave				
1.4.	Level	+15			dBm	
1.5.	Load		50		Ω	+/-10%
1.6.	Harmonics			-30	dBc	
1.7.	Spurious			-100	dBc	

## 2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
2.1.	Ambient	±50, ±100 ±200, ±500			ppb	referenced to 25°C <b>Refer to Table 1 : Ordering Information</b>
		-20°C ~ +70°C -40°C ~ +85°C			°C	
2.2.	Aging					after 30 days of continuous operation
	Daily	-5		+5	ppb	
	Yearly	-200		+200	ppb	
	15 Years	-2		+2	ppm	
2.3.	Voltage	-5		+5	ppb	±5% change
2.4.	Load	-5		+5	ppb	±10% change
2.5.	Short term			0.05	ppb	root Allan variance for τ=1 sec
2.6.	Warm-up	-50		+50	ppb	in 5 minutes @ +25 ±1°C referenced to 1 hour
2.7.	G-Sensitivity (each axis)			1	ppb/g	
2.8.	Phase Noise (Max.)	Option A	Option B			<b>Refer to Table 1 : Ordering Information</b>
		-100	-105	dBc/Hz	@ 10Hz	
		-130	-135	dBc/Hz	@ 100Hz	
		-157	-162	dBc/Hz	@ 1KHz	
		-180	-180	dBc/Hz	@ 10KHz	
		-185	-185	dBc/Hz	@ 100KHz	
		-185	-185	dBc/Hz	@ 1MHz	

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	Tuning Range	±2.5			ppm	Referenced to frequency at nominal Center Voltage
3.2.	Control Voltage	0		+10.0	V	
3.3.	Slope	Positive				
3.4.	Center Voltage		+5		V	
3.5.	Linearity	-10		+10	%	

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
4.1.	Voltage	+4.75	+5	+5.25	V	
4.2.	Current					
	Steady State			2.1	W	@ +25°C
During Warm-Up			950	mA		

## 5. ENVIRONMENTAL

	Parameter	Reference Std.	Test Condition
5.1.	Operable Temperature	-40°C to +85°C	Note 1
5.2.	Storage Temperature	-55°C to +105°C	
5.3.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
5.4.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 to 55 Hz
5.5.	Shock (non-operating)	MIL-STD-202, Method 213, Test Condition J	30g, 11ms, half-sine

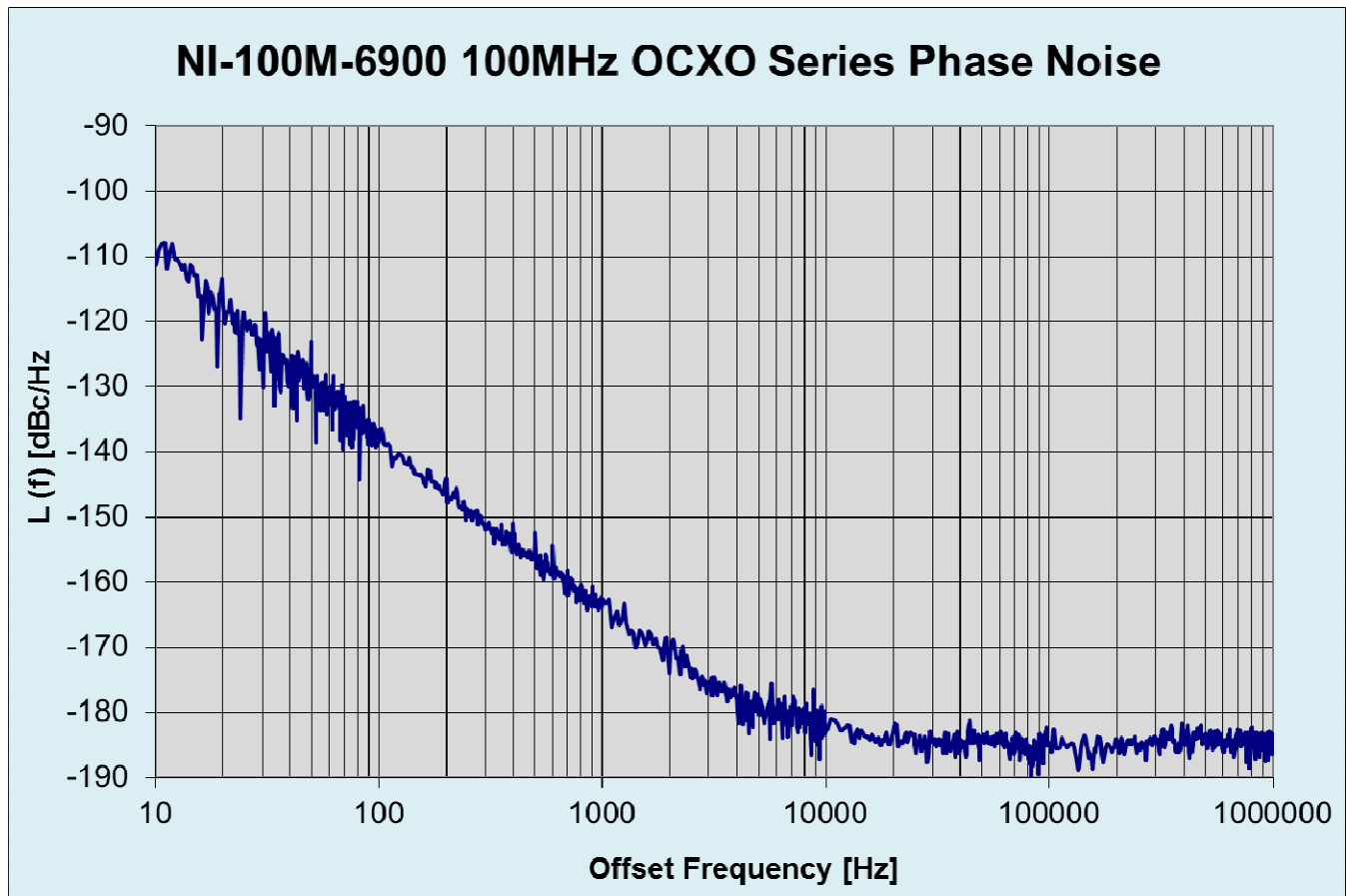
**Note 1 :** Output maintained over this temperature range. Other requirements of this specification may not be met when operating outside the temperature range in 2.1.

**Table 1 : ORDERING INFORMATION**

Ambient Temp. (°C)	Option	Phase Noise Option	
		A	B
-20°C ~ +70°C	±100 ppb	NI-100M-6900	NI-100M-6901
	±50 ppb	NI-100M-6910	NI-100M-6911
-40°C ~ +85°C	±500 ppb	NI-100M-6920	NI-100M-6921
	±200 ppb	NI-100M-6930	NI-100M-6931

Other specifications may be available upon request.

## Phase Noise Test Data



# OUTLINE DRAWING

