

# 100MHz Low Noise/Low G-Sensitivity OCXO

## NA-100M-6800 series

NA-100M-6800 Series in 25.4x25.4mm DIP package

NA-100M-6800 series is a 100.000 MHz high performance (VC)OCXO offering low phase noise(LPN), low G sensitivity(LGS) and tight frequency stability down to  $\pm 50$ 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

- **Low Phase Noise & Low G-Sensitivity**
- Small 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

### ELECTRICAL SPECIFICATIONS

**Test conditions: VDC = +12 V; VCO = +5 V; at +25  $\pm$  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 $\pm$ 1°C after turn on power 60 minutes Vco=+5V
1.3.	Waveform	Sine wave				
1.4.	Level	+10			dBm	
1.5.	Load		50		$\Omega$	
1.6.	Harmonics			-30	dBc	
1.7.	Spurious			-80	dBc	10Hz ~ 1KHz from carrier
				-100	dBc	1KHz ~ 1MHz from carrier

## 2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition	
2.1.	Ambient	±20, ±50, ±100, ±200			ppb	referred to 25°C	Refer to Table 1 : Ordering Information
		-20°C ~ +70°C -40°C ~ +85°C			°C		
2.2.	Aging						
	Daily	-5		+5	ppb	after 30 days	
	Yearly	-500		+500	ppb		
	10 Years	-2		+2	ppm		
2.3.	Voltage	-5		+5	ppb	±5% change	
2.4.	Short term			0.05	ppb	root Allan variance for $\tau=1$ sec	
2.5.	Load	-5		+5	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		Refer to Table 1 : Ordering Information
		-93	-97	-100	-105	dBc/Hz	@ 10Hz
		-125	-130	-135	-138	dBc/Hz	@ 100Hz
		-157	-160	-162	-163	dBc/Hz	@ 1KHz
		-173	-173	-173	-172	dBc/Hz	@ 10KHz
		-177	-177	-176	-173	dBc/Hz	@ 100KHz
		-178	-178	-176	-174	dBc/Hz	@ 1MHz

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	Tuning Range	±3			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	+11.4	+12	+12.6	V	
4.2.	Current					
	Steady State			2.0	W	
	During Warm-Up			350	mA	

## 5. REFERENCE VOLTAGE (PIN = "REFERENCE VOLTAGE")

	Parameter	Min.	Typ.	Max.	Units	Test Condition
5.1.	Voltage	+9.5	+10	+10.5	V	

## 6. ENVIRONMENTAL

	Parameter	Reference Std.	Test Condition
6.1.	Operable Temperature	-40°C to +85°C	Note 1
6.2.	Storage Temperature	-45°C to +90°C	
6.3.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
6.4.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 to 55 Hz
6.5.	Shock (non-operating)	MIL-STD-202, Method 213, Test Condition J	30g, 11ms, half-sine

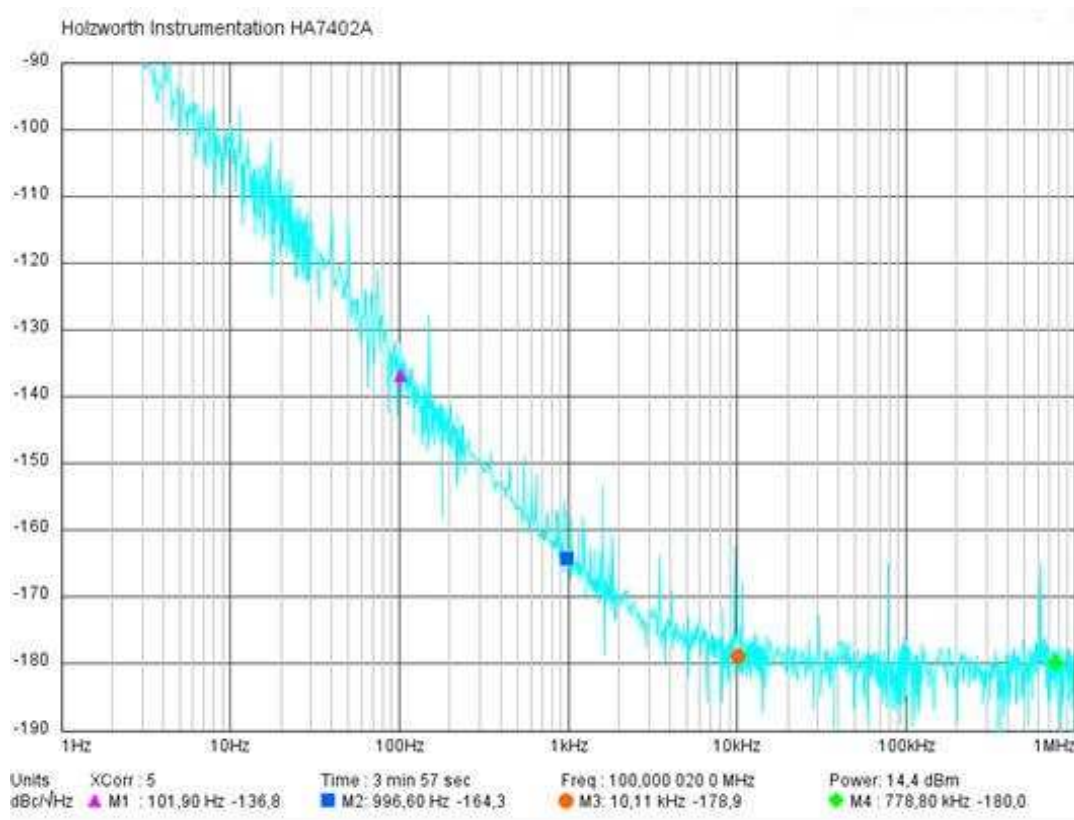
**Note 1 :** Output maintained over this temperature range. Other requirements of this specification may not be met when operating outside the temperature range in 2.1.

**Table 1 : ORDERING INFORMATION**

Ambient Temp. (°C)	Option	Phase Noise Option			
		A	B	C	D
-20°C ~ +70°C	±100 ppb	NA-100M-6800	NA-100M-6801	NA-100M-6802	NA-100M-6803
	±50 ppb	NA-100M-6810	NA-100M-6811	NA-100M-6812	NA-100M-6813
	±20 ppb	NA-100M-6830	NA-100M-6831	NA-100M-6832	NA-100M-6833
-40°C ~ +85°C	±200 ppb	NA-100M-6860	NA-100M-6861	NA-100M-6862	NA-100M-6863
	±100 ppb	NA-100M-6820	NA-100M-6821	NA-100M-6822	NA-100M-6823
	±50 ppb	NA-100M-6870	NA-100M-6871	NA-100M-6872	NA-100M-6873

Other specifications may be available upon request.

## Phase Noise Test Data



# OUTLINE DRAWING

