

# 100MHz Low Noise/Low G-Sensitivity OCXO NJ-100M-6800 series

6800 Series in 25.4x22mm SMD package

NJ-100-6800 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 SMD package which makes it suitable for reflow soldering during pick and place assembly



RoHS Compliant Standard

## FEATURES

- **Low Phase Noise & Low G-Sensitivity**
- Small SMD 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
- Satellite Communication

## 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			-100	dBc	
1.8.	G-Sensitivity (each axis)			1	ppb/g	Option, Refer to Table 1 : Ordering Information

## 2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition		
2.1.	Ambient	±20, ±50, ±100			ppb	referenced 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 τ=1 sec		
2.5.	Load	-5		+5	ppb	±10% change		
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	Option, Refer to Table 1 : Ordering Information		
2.8.	Phase Noise (Max.)	Option A	Option B	Option C		Refer to Table 1 : Ordering Information		
		-93	-97	-100	dBc/Hz	@ 10Hz		
		-125	-130	-135	dBc/Hz	@ 100Hz		
		-154	-157	-160	dBc/Hz	@ 1KHz		
		-173	-173	-170	dBc/Hz	@ 10KHz		
		-177	-175	-172	dBc/Hz	@ 100KHz		
		-180	-178	-175	dBc/Hz	@ 1MHz		

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition	
3.1.	Tuning Range			-3	ppm	VCO @ Min. Voltage	Referenced to frequency at nominal Center Voltage
		+3			ppm	VCO @ Max. 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			2.1	W		
	During Warm-Up			380	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.	Operating Temperature	-40°C to +85°C	Note 1
6.2.	Storage Temperature	-55°C to +105°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
-20°C ~ +70°C	±100 ppb	NJ-100M-6805	NJ-100M-6806	NJ-100M-6807
	±50 ppb	NJ-100M-6815	NJ-100M-6816	NJ-100M-6817
	±20 ppb	NJ-100M-6835	NJ-100M-6836	NJ-100M-6837
-40°C ~ +85°C	±100 ppb	NJ-100M-6825	NJ-100M-6826	NJ-100M-6827

## Phase Noise Test Data



