

# 10MHz Low Noise OCXO

## NJ-10M-6800 series

### NJ-10M-6800 Series in 25.4x22mm SMD package

NJ-10M-6800 series is a 10.000 MHz high performance (VC)OCXO with low phase noise(LPN). It has excellent temperature versus frequency stability with many available options. 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**
- 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

#### 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 60 minutes Vco=+5V
1.3.	Waveform	Sine wave				
1.4.	Level	+8	+10	+12	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, ±30, ±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					after 30 days of continuous operation.	
	Daily	-0.5		+0.5	ppb		
	Yearly	-50		+50	ppb		
	10 Years	-0.3		+0.3	ppm		
2.3.	Voltage	-1		+1	ppb	±5% change	
2.4.	Short term		0.002		ppb	root Allan variance for $\tau=1$ sec	
2.5.	Load	-1		+1	ppb	±5% change	
2.6.	Warm-up	-50		+50	ppb	in 5 minutes @ +25 ±1°C      referenced to 1 hour	
2.7.	Phase Noise (Max.)	Option A	Option B	Option C		Refer to Table 1 : Ordering Information	
		-105	-110	-115	dBc/Hz	@ 1Hz	
		-135	-140	-142	dBc/Hz	@ 10Hz	
		-155	-155	-155	dBc/Hz	@ 100Hz	
		-165	-165	-165	dBc/Hz	@ 1KHz	
		-170	-170	-170	dBc/Hz	@ 10KHz	
		-170	-170	-170	dBc/Hz	@ 100KHz	
		-170	-170	-170	dBc/Hz	@ 1MHz	

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	Tuning Range	±0.4*			ppm	Referenced to frequency at nominal Center Voltage
3.2.	Control Voltage	0.5		+9.5	V	
3.3.	Slope	Positive				
3.4.	Center Voltage		+5.0		V	
3.5.	Linearity	-10		+10	%	

\* Sufficient to adjust the oscillator to nominal frequency for 10 years. Some unit will have ±0.7ppm tuning range.

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition	
4.1.	Voltage	+11.4	+12	+12.6	V		
4.2.	Current					Refer to Table 1 : Ordering Information	
	Steady State			2.0	W		@ +25°C, operating -20°C ~ +70°C
				2.3			@ +25°C, operating -40°C ~ +85°C
	During Warm-Up			400	mA		@ +25°C, operating -20°C ~ +70°C
			500	@ +25°C, operating -40°C ~ +85°C			

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

	Parameter	Min.	Typ.	Max.	Units	Test Condition
5.1.	Voltage	+9.25	+9.5	+9.75	V	
5.2.	Source Resistance			100	Ohm	
5.3.	Load Impedance	10			Kohm	

## 6. ENVIRONMENTAL

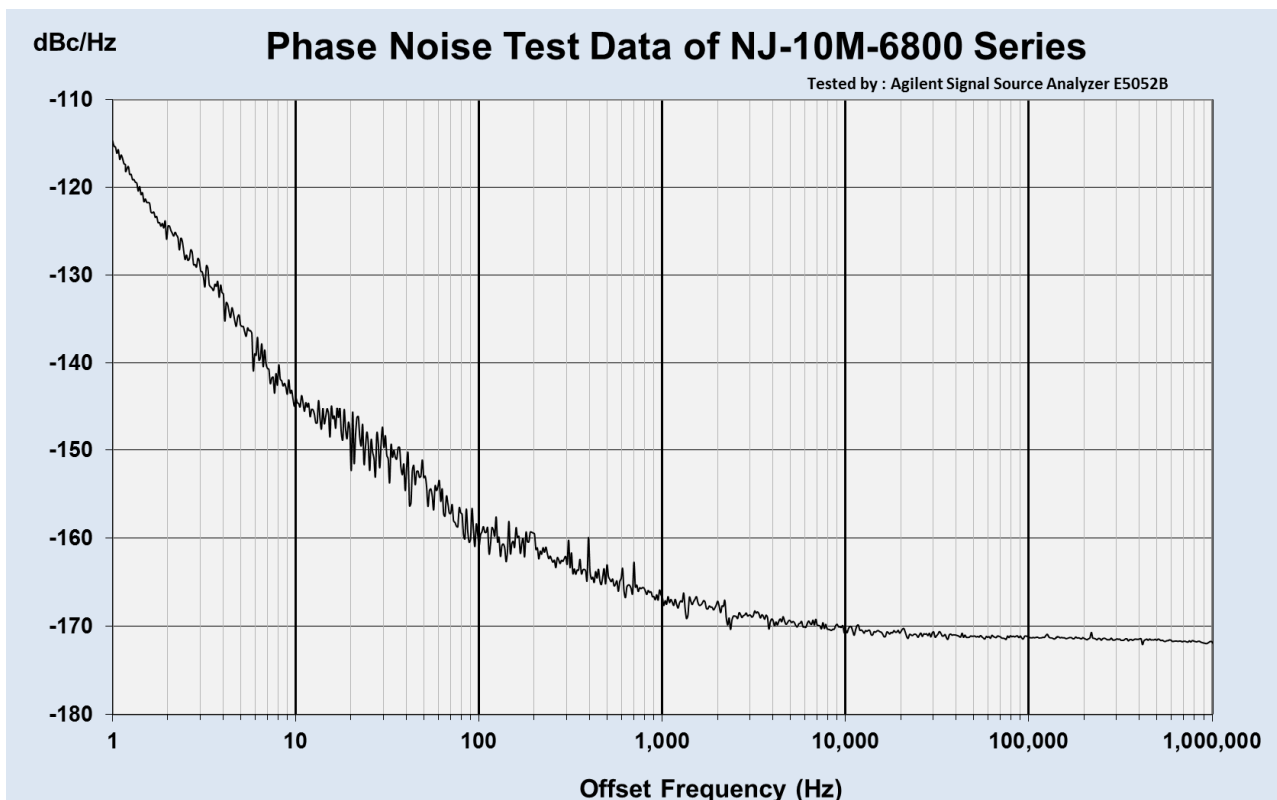
	Parameter	Reference Std.	Test Condition
6.1.	Operable Temperature	-45°C to +90°C	Note 1
6.2.	Storage Temperature	-50°C to +95°C	
6.3.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
6.4.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 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	±30 ppb	NJ-10M-6815	NJ-10M-6816	NJ-10M-6817
	±20 ppb	NJ-10M-6825	NJ-10M-6826	NJ-10M-6827
	±10 ppb	NJ-10M-6835	NJ-10M-6836	NJ-10M-6837
	±5 ppb	NJ-10M-6845	NJ-10M-6846	NJ-10M-6847
-40°C ~ +85°C	±100 ppb	NJ-10M-6865	NJ-10M-6866	-
	±50 ppb	NJ-10M-6875	NJ-10M-6876	-
	±30 ppb	NJ-10M-6885	NJ-10M-6886	-
	±20 ppb	NJ-10M-6895	NJ-10M-6896	-

## Phase Noise Test Data



# OUTLINE DRAWING

