

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	±20, ±30, ±50, ±100, ±200			ppb	referenced to 25°C	Refer to Table 1 : Ordering Information	
		-20°C ~ +70°C -40°C ~ +85°C			°C			
2.2.	Aging							
	Daily	-0.5		+0.5	ppb	after 30 days of continuous operation.		
	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 τ=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	$\pm 0.4^*$			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 ± 0.7 ppm 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						
	Steady State			2.0	W	@ +25°C, operating -20°C ~ +70°C	Refer to Table 1 : Ordering Information
				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

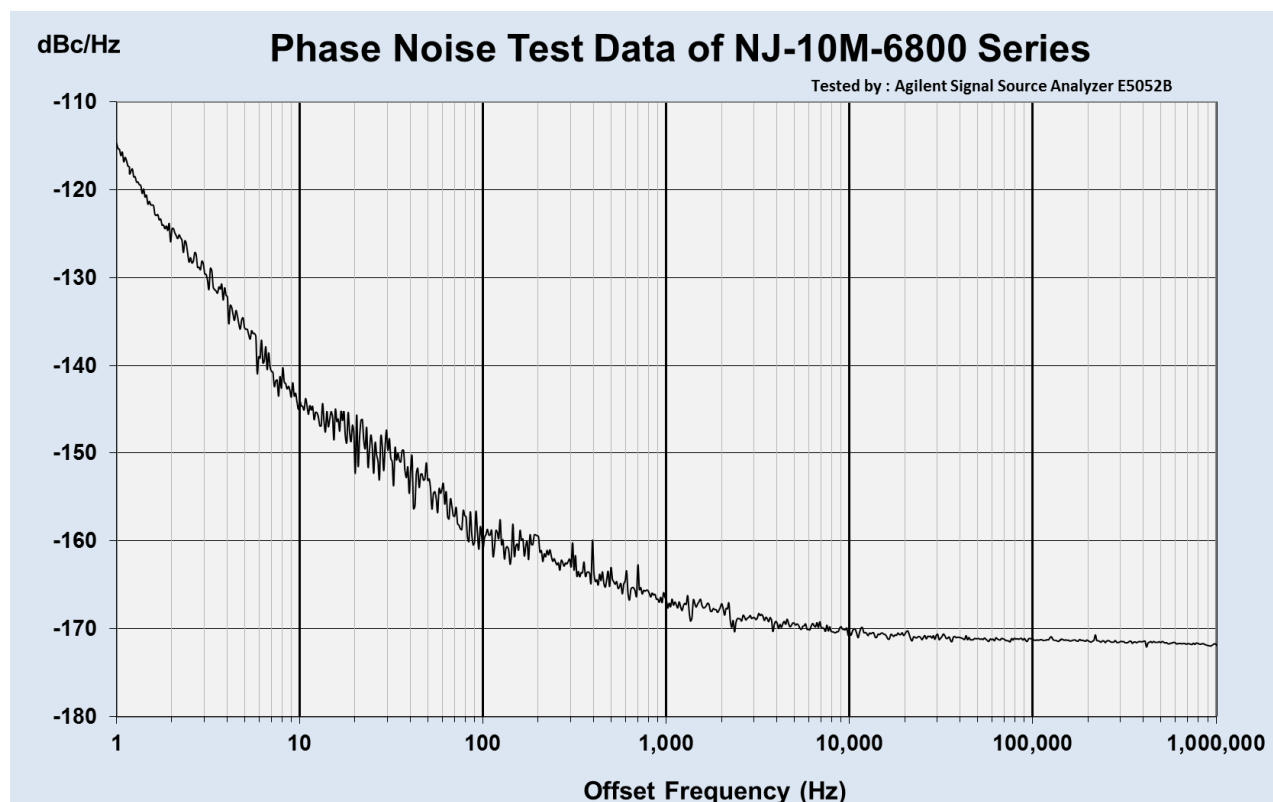
	Parameter	Reference Std.	Test Condition
6.1.	Operable Temperature	-45°C to +90°C	Note 1
6.2.	Storage Temperature	-50°C to +95°C	
6.3.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
6.4.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 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.

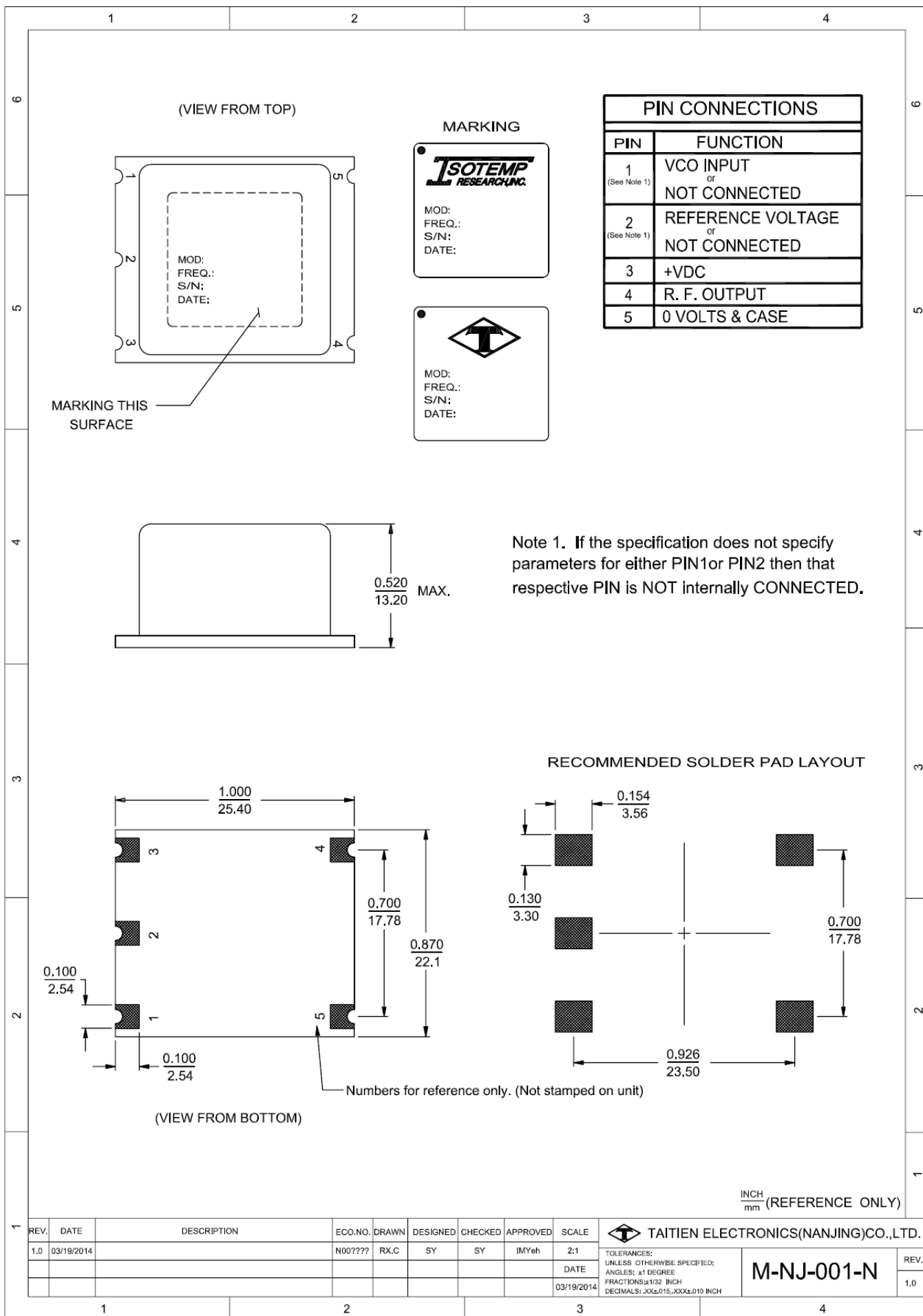
Table 1 : ORDERING INFORMATION

Ambient Temp. (°C)	Option	Phase Noise Option		
		A	B	C
-20°C ~ +70°C	±50 ppb	NJ-10M-6800	NJ-10M-6801	NJ-10M-6802
	±30 ppb	NJ-10M-6810	NJ-10M-6811	NJ-10M-6812
	±20 ppb	NJ-10M-6820	NJ-10M-6821	NJ-10M-6822
-40°C ~ +85°C	±200 ppb	NJ-10M-6850	NJ-10M-6851	NJ-10M-6852
	±100 ppb	NJ-10M-6860	NJ-10M-6861	NJ-10M-6862
	±50 ppb	NJ-10M-6870	NJ-10M-6871	NJ-10M-6872

Phase Noise Test Data



OUTLINE DRAWING



Model Numbering Guide – OCXO

Available options

Type	Package (mm)	Supply Voltage (V)	Pulling Range (ppm)	Freq. Stability (ppb)	Temp. Range(°C)	Output Logic and Symmetry	Oscillator Mode	Pin out	Lead Free	Dash	Freq. (MHz)
N: OCXO	K: 14.3x9.3 (SMD) F: 20.3x12.7 P: 20.6x20.6 J: 25.4x22.1 (SMD) A: 25.4x25.4 I: 36.3x27.2	E: 3.3 T: 5 A: 12	K: ±0.2 H: ±0.4 D: ±1 G: ±3 E: ±5 N: No Voltage Control Function	R: ±2 A: ±5 B: ±10 C: ±20 E: ±30 G: ±50	B: 0~+50 E: 0~+70 D: -30~+70 L: -40~+85	W: Sine wave J: CMOS15pF / 50±5%	Not selectable by customer	N: Normal (Please refer to "outline drawing")	F: RoHs Compliant	-	XX.XXXXXX

N	A	T	H	C	E	W	H	N	F	-	10.000000
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*Not all combinations of options are available.

Example: NATHCEWHNF-10.000000

Type	OCXO
Package	25.4 x 25.4 mm
Supply Voltage(V)	5 V
Pulling Range	±0.4 ppm
Freq. Stability	±20 ppb
Temp Range	0~+70 °C
Output	Sine wave
Pin Out	Normal
Lead Free	RoHs Compliant
Frequency	10.000000 MHz