10MHz Ultra Low Noise OCXO
NA-10M-6800 series

NA-10M-6800 Series in 25.4x25.4mm DIP package

NA-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 is housed in a hermetically sealed RoHS package which protects it from extreme changes in external humidity and pressure.

RoHS Compliant Standard

FEATURES

- **Low Phase Noise**
- 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

1. OUTPUT (PIN = "R.F. OUTPUT")

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
1.1.	Frequency		10.000000		MHz	
1.2.	Initial Accuracy	-0.1		+0.1	ppm	@ +25 ±1°C after turn on power 60 minutes Vc=+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	
	Yearly	-50		+50	ppb		
	10 Years	-0.3		+0.3	ppm		
2.3.	Voltage	-1		+1	ppb	±5% change	
2.4.	Short term			0.01	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

	Parameter	Option A	Option B	Option C		Test Condition
2.7.	Phase Noise (Max.)					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	VCO @ Min. Voltage	Referenced to frequency at nominal Center Voltage
		+0.4*			ppm	VCO @ Max. 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						
	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**	NA-10M-6805	NA-10M-6806	NA-10M-6807
	±30 ppb	NA-10M-6815	NA-10M-6816	NA-10M-6817
	±20 ppb	NA-10M-6825	NA-10M-6826	NA-10M-6827
-40°C~+85°C	**±200 ppb**	NA-10M-6855	NA-10M-6856	NA-10M-6857
	±100 ppb	NA-10M-6865	NA-10M-6866	NA-10M-6867
	±50 ppb	NA-10M-6875	NA-10M-6876	NA-10M-6877

Phase Noise Test Data

Phase Noise Test Data of NA-10M-6800 Series
Tested by : Agilent Signal Source Analyzer E5052B

OUTLINE DRAWING

MOD:
FREQ.:
S/N:
DATE:

MARKING THIS SURFACE

(VIEW FROM TOP)

PIN CONNECTIONS

PIN	FUNCTION
1	R. F. OUTPUT
2	0 VOLTS & CASE
3 (See Note 1)	VCO INPUT or NOT CONNECTED
4 (See Note 1)	REFERENCE VOLTAGE or NOT CONNECTED
5	+VDC

$\frac{0.583}{14.80}$ MAX.

$\frac{0.031}{0.80}$

$\frac{0.146}{3.70}$ MIN.

GLASS STANDOFF (4 PLACES)

$\frac{0.031}{0.80}$ DIA. PIN (5 PLACES)
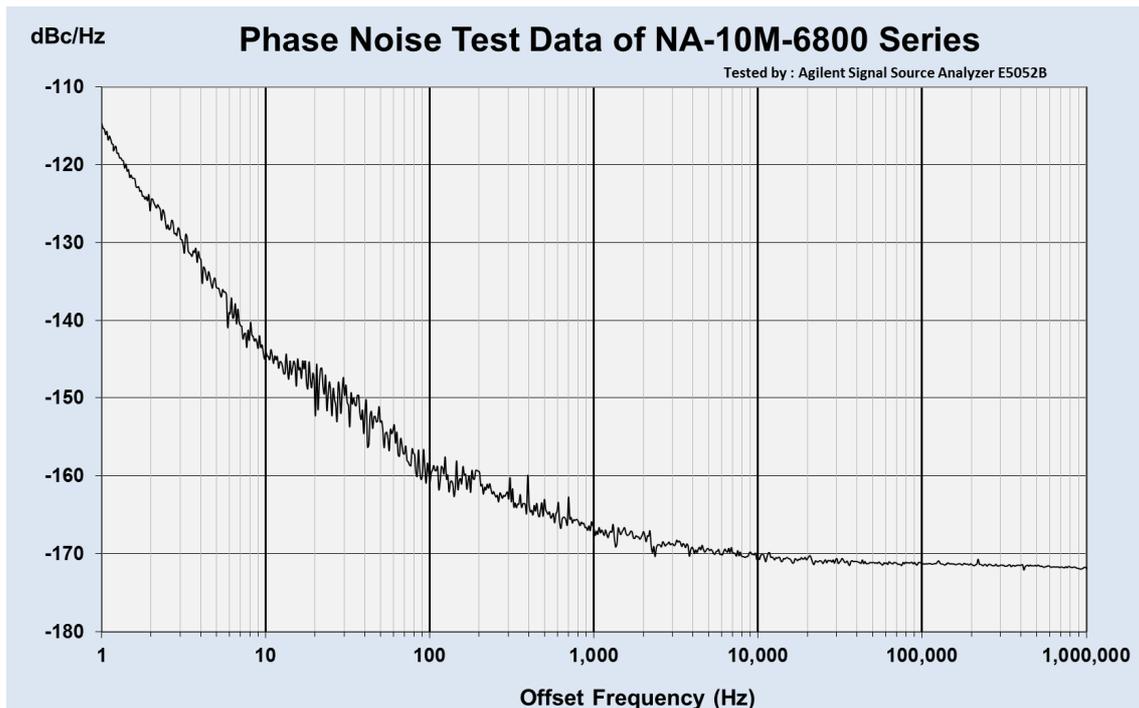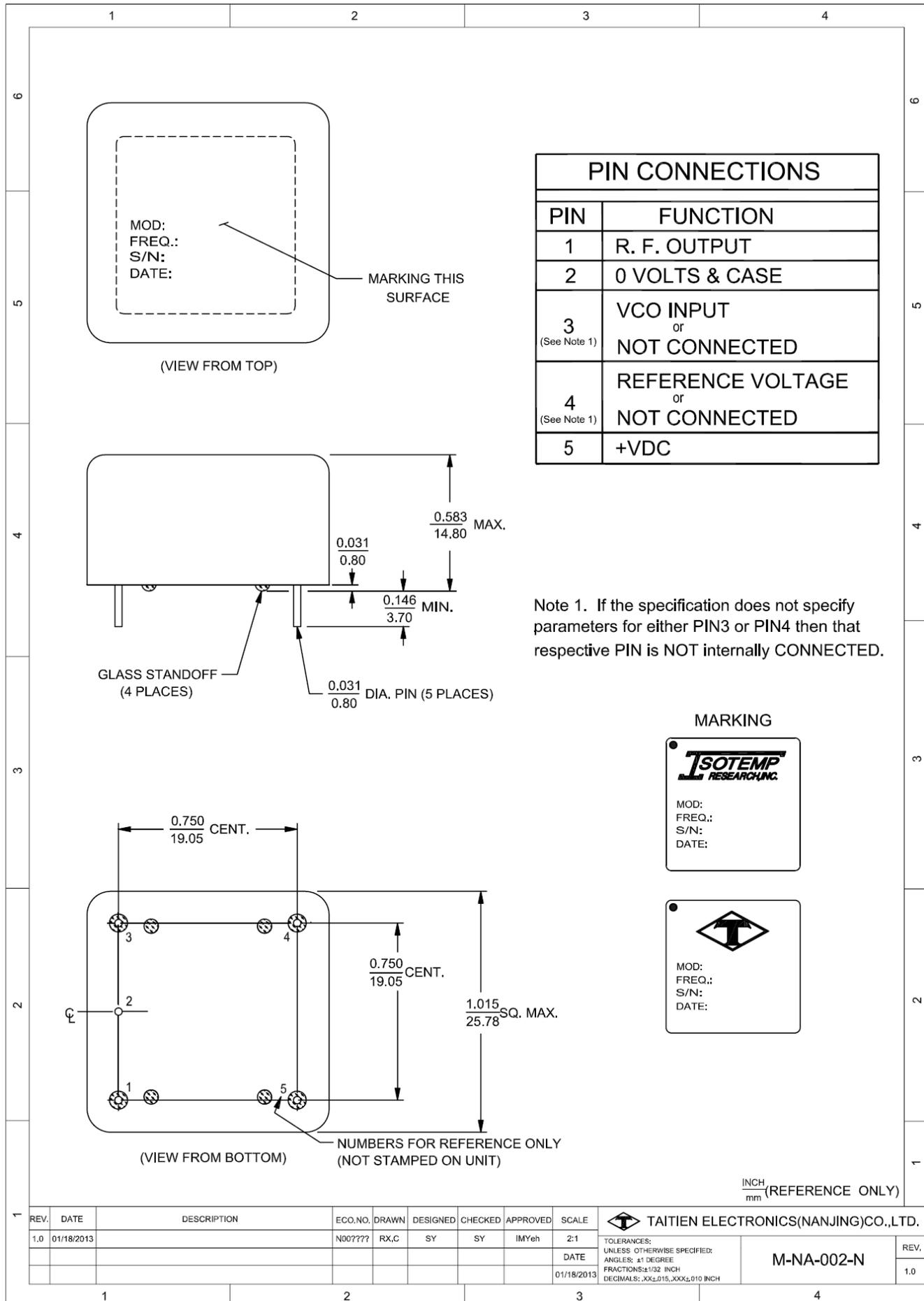
Note 1. If the specification does not specify parameters for either PIN3 or PIN4 then that respective PIN is NOT internally CONNECTED.

MARKING

ISOTEMP RESEARCH,INC.

MOD:
FREQ.:
S/N:
DATE:

MOD:
FREQ.:
S/N:
DATE:

$\frac{0.750}{19.05}$ CENT.

$\frac{0.750}{19.05}$ CENT.

$\frac{1.015}{25.78}$ SQ. MAX.

3   4

2

1   5

(VIEW FROM BOTTOM)

NUMBERS FOR REFERENCE ONLY (NOT STAMPED ON UNIT)

$\frac{INCH}{mm}$ (REFERENCE ONLY)

REV.	DATE	DESCRIPTION	ECO.NO.	DRAWN	DESIGNED	CHECKED	APPROVED	SCALE	TAITIEN ELECTRONICS(NANJING)CO.,LTD.	
1.0	01/18/2013		N00????	RX,C	SY	SY	IMYeh	2:1		REV.
								DATE	M-NA-002-N	
								01/18/2013		1.0

TOLERANCES:
UNLESS OTHERWISE SPECIFIED:
ANGLES: ±1 DEGREE
FRACTIONS:±1/32 INCH
DECIMALS: .XX±.015,.XXX±.010 INCH