

# Oven Controlled Crystal Oscillator

## NI-100 MHz-2900 series

### 2900 Series in 36.3x27.2mm DIP package

NI-100M-2900 series is a 100.000 MHz high performance (VC)OCXO offering Low Phase Noise, low G sensitivity(LGS) and tight frequency stability down to  $\pm 50$ ppb(-30°C to +70°C). The part comes in a small hermetically sealed through hole package which makes it suitable for humid environmental conditions.



### FEATURES

- Low Phase Noise & Low G-Sensitivity
- 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 / Satellite Communication
- Clock Reference for Microwave Signal Source
- Test & Measurement
- Telecom Systems
- Radar Systems
- Medical (MRT)

**RoHS Compliant Standard**

## ELECTRICAL SPECIFICATIONS

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
1.1.	Frequency	100.000			MHz	
1.2.	Initial Accuracy	-0.2		+0.2	ppm	@ +25 $\pm$ 1°C after turn on power 30 $\pm$ 5 minutes $\leq$ 90 days following date code VCO Input at +4 $\pm$ 0.001V
1.3.	Waveform	Sine wave				
1.4.	Level	+7	+9	+11	dBm	
1.5.	Load		50		$\Omega$	
1.6.	Harmonics			-30	dBc	
1.7.	Spurious			-70	dBc	

## 2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition		
2.1.	Ambient	-50		+50	ppb	-30°C ~ +70°C	referenced to 25°C	
2.2.	Aging	-3		+3	ppb	per day, at time of shipment		
	Daily	-3		+3	ppb	after 30 days		
	Yearly	-0.3		+0.3	ppm			
	10 Years	-1.2		+1.2	ppm			
2.3.	Voltage	-20		+20	ppb	±5% change		
2.4.	Load	-50		+50	ppb	±5% change		
2.5.	Warm-up	-0.1		+0.1	ppm	in 10 minutes @ +25 ±1°C	referenced to 1 hour	
2.6.	Phase Noise	Option A		Option B		Refer to Table 1 : Ordering Information		
		-85		-90		dBc/Hz	@ 10Hz	
		-115		-120		dBc/Hz	@ 100Hz	
		-145		-150		dBc/Hz	@ 1KHz	Refer to Table 1 : Ordering Information
				-155			dBc/Hz	@ 10KHz
						-160		dBc/Hz
2.7.	G-Sensitivity (each axis)		0.5	1.5	ppb/g	10 ~ 700Hz.		

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition	
3.1.	Tuning Range			-1.5	ppm	VCO @ 0V	Referenced to frequency at nominal Center Voltage
		+1.5			ppm	VCO @ 8V	
3.2.	Control Voltage	0		+8	V		
3.3.	Slope	Positive					
3.4.	Center Voltage		+4		V	Note 1	
3.5.	Linearity	-10		+10	%		
3.6.	Input Impedance	25			kΩ		

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition	
4.1.	Voltage	+11.4	+12	+12.6	V		
4.2.	Current			350	mA	@ turn on	
4.3.	Steady State		1	1.5	W	@ +25°C	

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

	Parameter	Min.	Typ.	Max.	Units	Test Condition	
5.1.	Voltage	+7.6	+8.0	+8.4	V	Over temperature range in 2.1.	
5.2.	Load	9			kΩ		
5.3.	Temperature stability	-0.02		+0.02	V		

## 6. ENVIRONMENTAL

	Parameter	Reference Std.	Test Condition
6.1.	Operating Temperature	-40°C to +85°C	Note 2
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

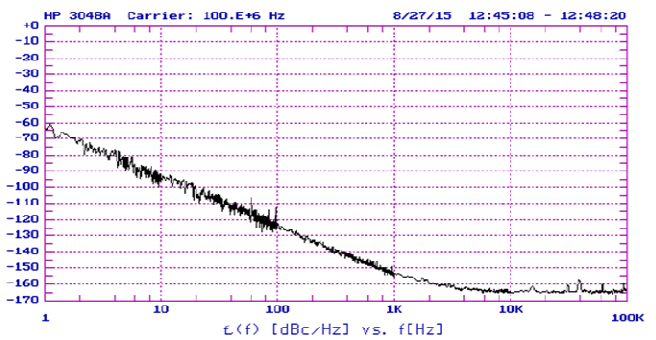
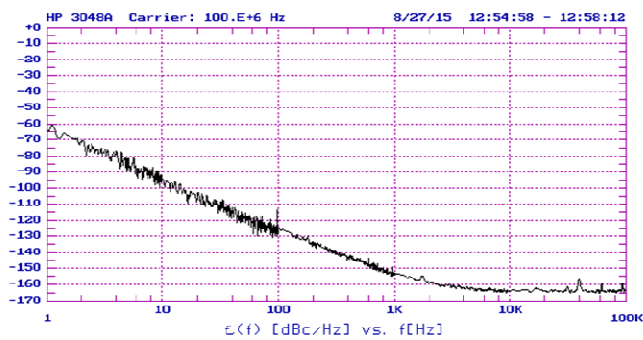
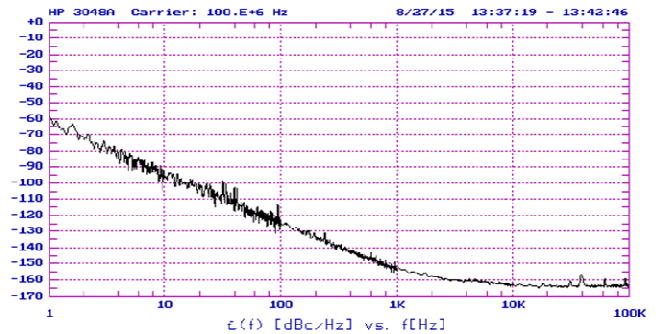
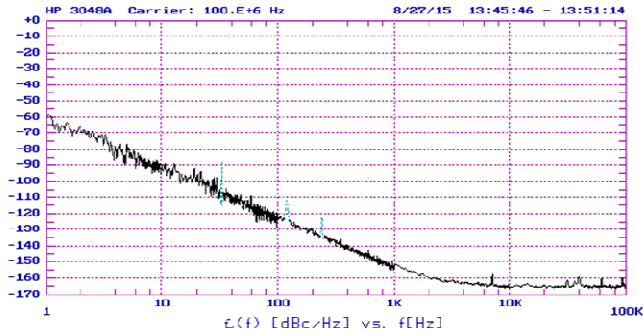
**Note 1.** When not connected, VCO INPUT is internally held at this voltage.

**Note 2.** Output maintained over this temperature range. Other requirements of this specification may not be met when operating outside the temperature range in 2.1.

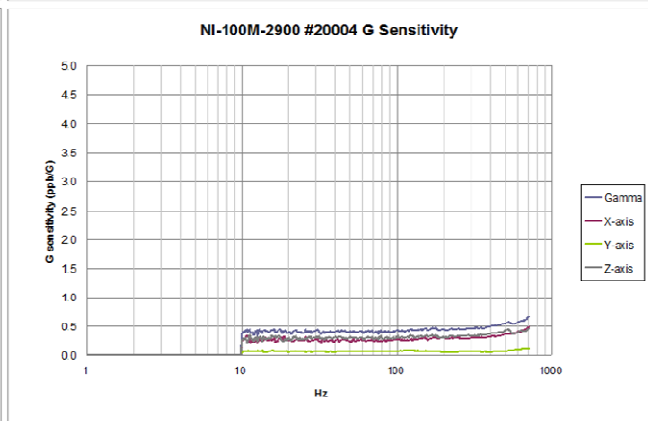
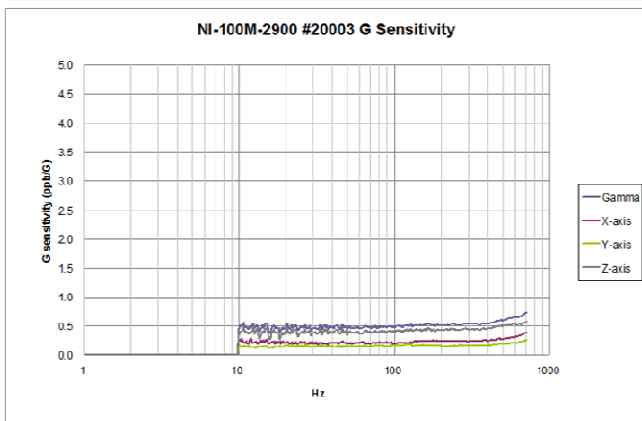
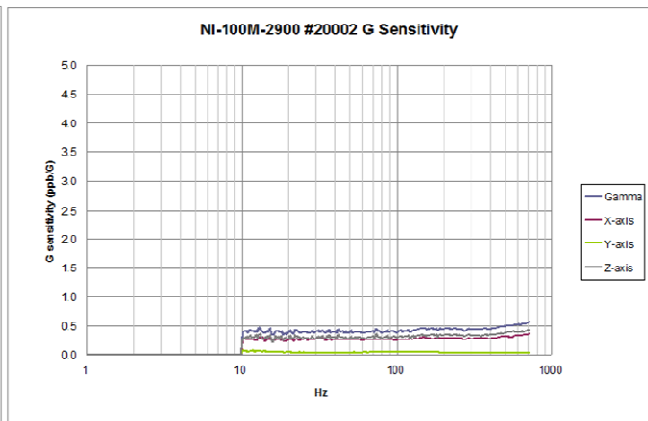
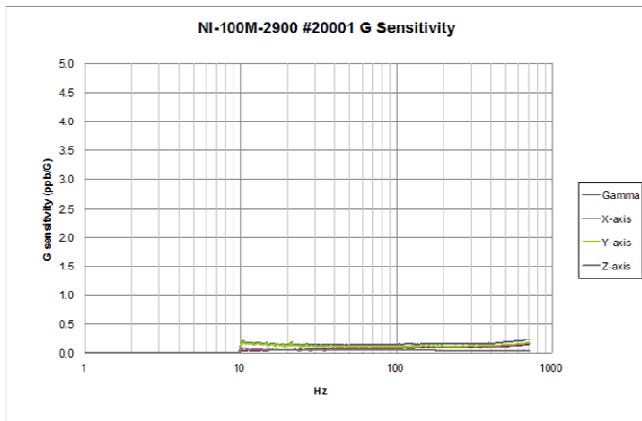
**Table 1 : ORDERING INFORMATION**

Phase Noise	Option A	Option B
TAITIEN P/N	NI-100M-2900	NI-100M-2901

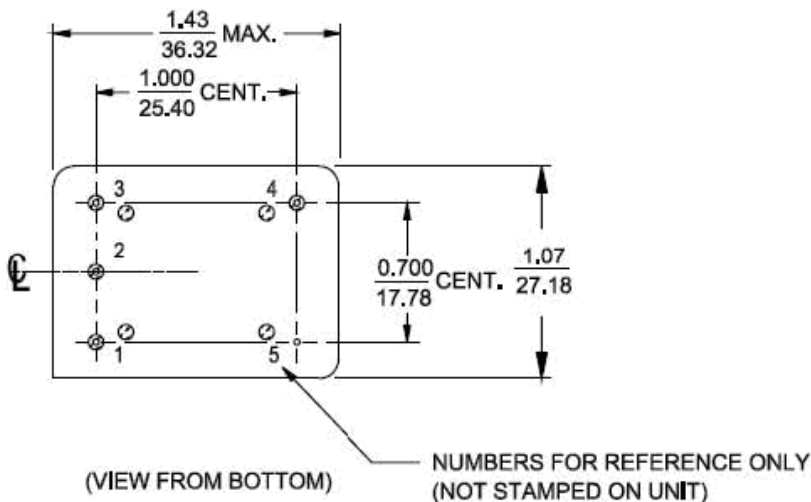
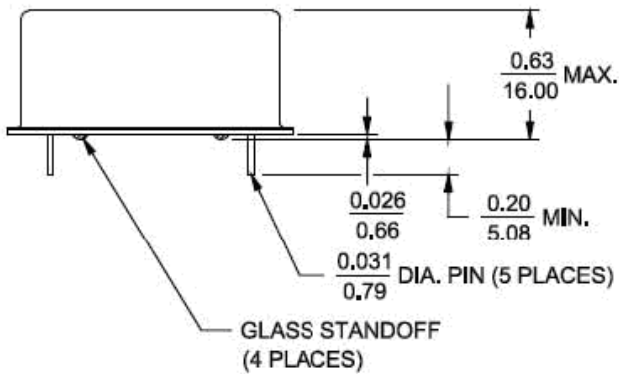
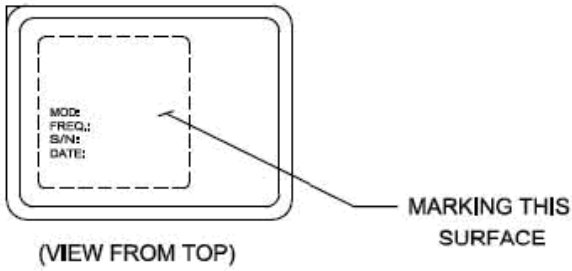
### Phase Noise Test Data



### G-Sensitivity Test Data



## OUTLINE DRAWING



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

Note 1. If the specification does not specify parameters for either PIN1 or PIN2 then that respective PIN is NOT Internally CONNECTED.

### MARKING

