



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# Oven Controlled Crystal Oscillator

## NA-10 MHz-2000 series

2000 Series in 25.4x25.4mm DIP package

NA-10M-2000 series oscillators is designed for applications where space is at a premium and good frequency stability is required. The oscillators can be used in many communications applications. A choice of quartz resonators offers a variety of performance versus cost options to fit most applications.



**RoHS Compliant Standard**

### 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 15 ±1 minutes ≤ 90 days following date code VCO Input at Center Voltage ±0.001V
1.3.	Waveform	Rectangular				
1.4.	Level	LVTTTL				
	"1" level	+2.4			V	
	"0" level			+0.4	V	
1.5.	Load		15		pF	
1.6.	Duty cycle	45	50	55	%	@ +1.65V
1.7.	Rise/fall time			6	ns	10% to 90%
1.8.	Spurious			-60	dBc	

#### 2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
2.1.	Ambient	±3, ±5, ±10			ppb	referenced to 25°C Refer to Table 1 : Ordering Information
		-30 ~ +70			°C	
		-40 ~ +85				
2.2.	Aging	-0.5		+0.5	ppb	per day, at time of shipment
	Daily	-0.5		+0.5	ppb	after 30 days
	Yearly	-50		+50	ppb	
	10 Years	-0.3		+0.3	ppm	
2.3.	Voltage	-0.5		+0.5	ppb	±5% change
2.4.	Short term			0.05	ppb/s	root Allan variance
2.5.	Load	-0.5		+0.5	ppb	±5% change
2.6.	Warm-up	-10		+10	ppb	in 10 minutes @ +25 ±1°C referenced to 1 hour

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
2.7.	Phase Noise		-95	-90	dBc/Hz	@ 1Hz
			-125	-120	dBc/Hz	@ 10Hz
			-140	-135	dBc/Hz	@ 100Hz
			-148	-145	dBc/Hz	@ 1KHz
			-156	-155	dBc/Hz	@ 10KHz
			-158	-155	dBc/Hz	@ 100KHz

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	Tuning Range			-0.5	ppm	VCO @ Min. Voltage
		+0.5			ppm	VCO @ Max. Voltage
3.2.	Control Voltage	0		+3.3	V	<b>Optional, Refer to Table 1 : Ordering Information</b>
		0		+2.8	V	
3.3.	Slope	Positive				
3.4.	Center Voltage		+1.65		V	<b>Optional, Refer to Table 1 : Ordering Information</b>
			+1.4		V	
3.5.	Linearity	-10		+10	%	
3.6.	Input Impedance	100			kΩ	

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
4.1.	Voltage	+3.135	+3.3	+3.465	V	
4.2.	Current			1000	mA	@ turn on
4.3.	Steady State			1.3	W	@ +25°C

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

(Optional Function. Refer to Table 1 : Ordering Information.)

	Parameter	Min.	Typ.	Max.	Units	Test Condition
5.1.	Voltage	+2.7	+2.8	+2.9	V	Over temperature range in 2.1.
5.2.	Load	9			kΩ	

### 6. ENVIRONMENTAL

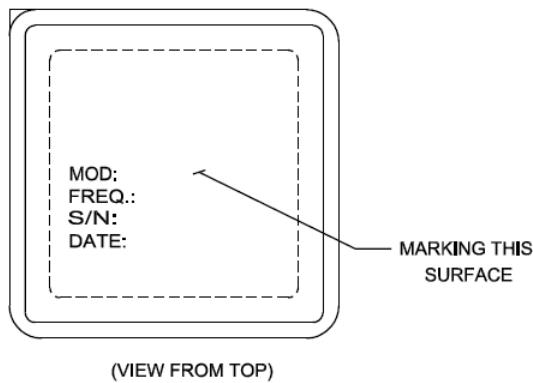
	Parameter	Reference Std.	Test Condition
6.1.	Operating Temperature	-40°C to +85°C	Note 2
6.2.	Storage Temperature	-55°C to +105°C	
6.3.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
6.4.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 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.

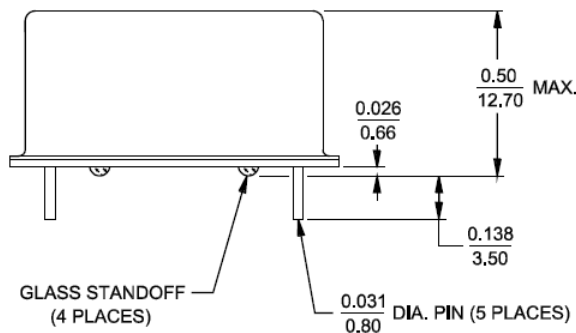
**Note 2.** Output maintained over this temperature range. Other requirements of this specification may not be met when operating outside the temperature range in 2.1.

**Table 1 : ORDERING INFORMATION**

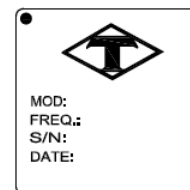
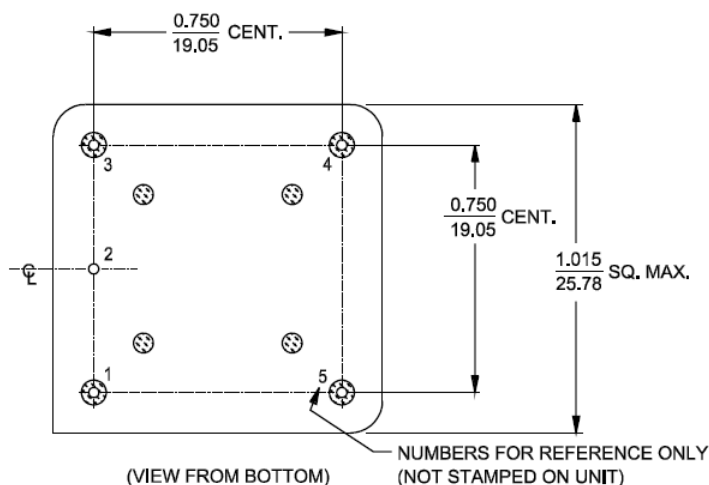
Temp. (°C)	TAITIEN Model No.	ppb	±3	±5	±10	Control Voltage	Reference Voltage
-30~+70			NA-10M-2000	NA-10M-2001	NA-10M-2002	+1.65V	N/A
-40~+85			NA-10M-2003	NA-10M-2004	NA-10M-2005		
-30~+70			NA-10M-2050	NA-10M-2051	NA-10M-2052	+1.4V	+2.8V
-40~+85			NA-10M-2053	NA-10M-2054	NA-10M-2055		

**OUTLINE DRAWING**


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


**Note:**

- For NA-10M-2000 THRU NA-10M-2005  
NOT internally CONNECTED.



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