

Oven Controlled Crystal Oscillator

NF-H Series

NF-H Series in 20.3x12.7mm DIP 14 package

The NF-H series OCXO offers exceptional performance with a **hermetic seal** for long-term reliability and stability. It supports **Stratum 3E timing requirements** with **tight frequency stability**, making it ideal for precision applications. Designed for a **wide range of products**, such as **RF communication and testing instruments**, the NF-H series ensures **dependable performance** and is **highly cost-effective**.



RoHS Compliant Standard

FEATURES

- Frequency Range, 10 MHz to 40MHz
- ± 10 ppb Stability over -40 to 85°C
- SC Cut Crystal
- Stratum 3E Available

APPLICATIONS

- SDH/SONET, Telecommunication Base Station
- Test and Measurement Equipment
- Synthesizer , Digital switch , Reference Timing Circuit

ELECTRICAL SPECIFICATIONS

Test conditions: $V_{DC} = +3.3\text{ V}$; $V_{CON} = +1.65\text{V}$; at $+25 \pm 1^{\circ}\text{C}$ unless otherwise identified

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

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
1.1.	Frequency (F_o)	10		40	MHz	
1.2.	Standard Frequency	10, 12.8, 20, 24.576, 25, 25.6, 40			MHz	
1.3.	Initial Accuracy	-0.3		+0.3	ppm	@ $+25 \pm 1^{\circ}\text{C}$ 30 minutes after turn on $V_{CON} = +1.65\text{V}$
1.4.	Waveform	CMOS				
1.5.	Level				V	
	"1" level	2.4				
	"0" level			0.4		
1.6.	Rise/Fall Time			8	nSec.	
1.7.	Duty Cycle	45		55	%	
1.8.	Load	15pF				

2. FREQUENCY STABILITY

	Parameter	Min.	Typ.	Max.	Unit	Test Condition	
2.1.	Ambient	±10			ppb	reference to (Fmax+Fmin)/2	See table1
		-40°C ~ +85°C			°C		
2.2.	Aging					after 30 days	
	Daily	-1		+1	ppb		
	Yearly	-100		+100	ppb		
	10 Years	-0.4		+0.4	ppm		
2.3.	Voltage	-5		+5	ppb	±5% change	
2.4.	Short term			0.05	ppb/s	root Allan variance	
2.5.	Warm-up	-10		+10	ppb	in 3 minutes @ +25 ±3°C	referred to 1 hour
2.6.	Phase Noise @20M (No pulling)			-120	dBc/Hz	@ 10Hz	
				-140	dBc/Hz	@ 100Hz	
				-150	dBc/Hz	@ 1KHz	
				-155	dBc/Hz	@ 10KHz	

3. ELECTRICAL FREQUENCY ADJUSTMENT (PIN = “V_{CON}”)

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	Tuning Range	± 0.7			ppm	Referenced to frequency at nominal Center Voltage
3.2.	Control Voltage	0		+3.3	V	
3.3.	Slope	Positive				
3.4.	Center Voltage		+1.65		V	
3.5.	Linearity	-10		+10	%	

4. INPUT POWER (PIN = “+VDC”)

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
4.1.	Voltage	+3.13	+3.3	+3.47	V	
4.2.	Power Consumption					
	Steady State			0.8	W	at 25°C
	During Warm-Up			2.4		

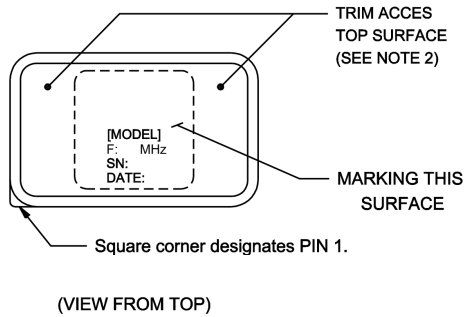
5. ENVIRONMENTAL

	Parameter	Reference Std.	Test Condition
5.1.	Operable Temperature	-40°C to +85°C	
5.2.	Storage Temperature	-45°C to +90°C	
5.3.	Humidity	MIL-STD-202, Method 103 Test Condition A	95% RH @ +40°C, non-condensing, 240 hours
5.4.	Vibration (non-operating)	MIL-STD-202, Method 201	0.06" Total p-p, 10 to 55 Hz
5.5.	Shock (non-operating)	MIL-STD-202, Method 213, Test Condition J	30g, 11ms, half-sine

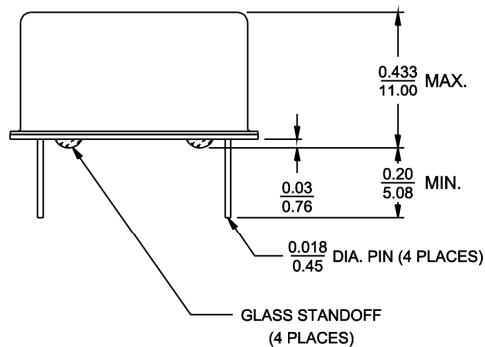
Table1 FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C) \ ppb	±3	±5	±10	±20	±30
-30 ~ +70	Yes	Yes	Yes	Yes	Yes
-40 ~ +85	No	Yes	Yes	Yes	Yes

OUTLINE DRAWING



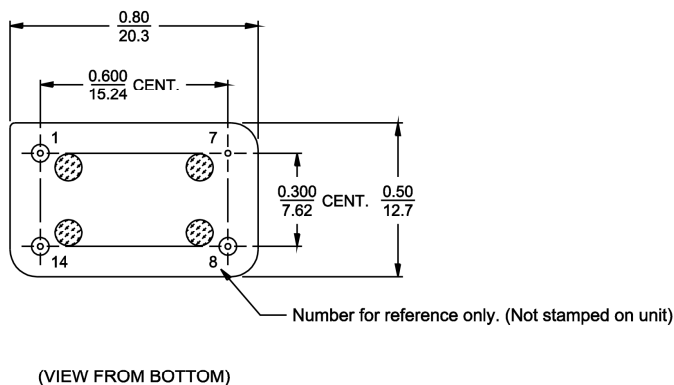
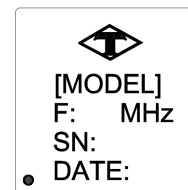
PIN CONNECTIONS	
PIN	FUNCTION
1 (See Note 1)	V _{CON} or NOT CONNECTED
7	0 VOLTS & CASE
8	R.F. OUTPUT
14	+VDC



Notes:

- 1.If the specification does not specify parameters for PIN 1 then PIN 1 is not internally CONNECTED.
- 2.If the specification does not specify parameters for "MECHANICAL FREQUENCY ADJUSTMENT" then there is no Trim Access.

MARKING



INCH
mm (REFERENCE ONLY)