

# Precision OCXO OH4 Series

# CONNOR WINFIELD



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## Description:

The Connor-Winfield OH4 Series, 14 Pin DIP Oven Stabilized Crystal Controlled Oscillators (OCXO) series and Oven Stabilized Crystal Controlled Voltage Controlled Oscillators (OCVCXO) series are designed for use in applications requiring stabilities of  $\pm 5$ ppb to  $\pm 50$ ppb. The OH4 series is also designed for compliance to ITU-T G.8262 Options 1 and 2, and ITU-T G.8263.



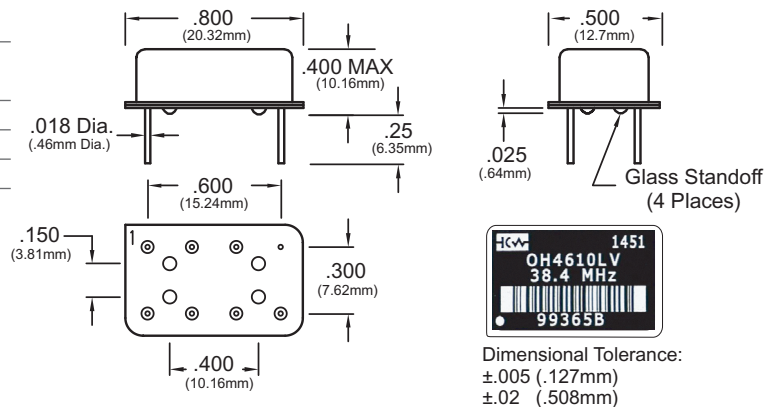
## Features:

- OCXO - Fixed Frequency
- OCVCXO - Voltage Controlled
- Frequencies Range: 6.4 MHz to 40 MHz  
Higher Frequencies available upon request
- 3.3V or 5.0V Operation
- LVCMOS, HCMOS or Sinewave Output
- Frequency Stabilities Available:  
\*05:  $\pm 5$ ppb; 10:  $\pm 10$ ppb;  
20:  $\pm 20$ ppb; 50:  $\pm 50$ ppb
- Temperature Ranges Available:  
0 to 70°C, -20 to 70°C, -20 to 75°C,  
-40 to 70°C, or -40 to 85°C
- Low Phase Noise
- 14 Pin DIP Package
- RoHS Compliant / Lead Free

## Pin Connections

### Pin Function

1: OCXO - N/C
VCOXO - Voltage Control
7: Ground (Case)
8: Output
14: Vcc



Dimensional Tolerance:  
 $\pm .005$  (.127mm)  
 $\pm .02$  (.508mm)

## Ordering Information

<b>OH4</b>	<b>5</b>	<b>10</b>	<b>L</b>	<b>F</b>	<b>-010.0M</b>
Oscillator Type Precision Frequency Std OCXO or OCVCXO	Temperature Range 5 = 0 to 70°C 6 = -40 to 85°C 7 = -20 to 70°C 8 = -40 to 70°C 9 = -20 to 75°C	Frequency Stability *05 = $\pm 5$ ppb 10 = $\pm 10$ ppb 20 = $\pm 20$ ppb 50 = $\pm 50$ ppb	Supply Voltage / Output L = 3.3Vdc / LVCMOS H = 5.0Vdc / HCMOS S = 5.0Vdc / Sinewave R = 3.3Vdc / Sinewave	Output F = OCXO (Fixed Freq.) V = OCVCXO (Voltage Controlled)	Output Frequency M = MHz xxx.xxM
Package Type OH4 = 14 Pin DIP					

\*  $\pm 5$ ppb stability only available for 0 - 70°C or -20 to 70°C



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Date **15 April 2015**



## Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	125	°C	
Supply Voltage (Vcc)					
3.3V LVC MOS	-0.5	-	4.5	Vdc	
5.0V HCMOS / Sinewave	-0.5	-	7.0	Vdc	
Control Voltage (Vc)					
3.3V LVC MOS	-0.5	-	4.5	Vdc	
5.0V HCMOS / Sinewave	-0.5	-	7.0	Vdc	

## Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Calibration	-0.1	-	0.1	ppm	1, 4, 9,
Frequency Stability	*05: ±5; 10: ±10; 20: ±20; 50: ±50			ppb	2
Frequency vs Change in Supply Voltage	-10	-	10	ppb	3
Aging Daily	-5	-	5	ppb	4
Aging 1st Year	-0.3	-	0.3	ppm	
Total Frequency Tolerance (20 years)	-1.5	-	1.5	ppm	5, 10
Supply Voltage (Vcc)					
3.3V LVC MOS	3.13	3.3	3.47	Vdc	
5.0V HCMOS / Sinewave	4.75	5.0	5.25	Vdc	
Supply Power (0 to 70°C)	-	-	1.4	Watts	
Supply Power (-40 to 85°C)	-	-	2.2	Watts	
Phase Jitter (BW = 10KHz to Fo/2)	-	-	1	ps RMS	
Period Jitter	-	-	1	ps RMS	
Allan Variance (1 second)	-	5.0E-11	-		
SSB Phase Noise at 10Hz offset	-	-100	-	dbc/Hz	6
SSB Phase Noise at 100Hz offset	-	-120	-	dbc/Hz	6
SSB Phase Noise at 1kHz offset	-	-140	-	dbc/Hz	6
SSB Phase Noise at 10kHz offset	-	-150	-	dbc/Hz	6
Start-Up Time Oscillator	-	-	35	ms	
Warm-Up Time	-	-	3	Minutes	7

## OCVCXO Characteristics

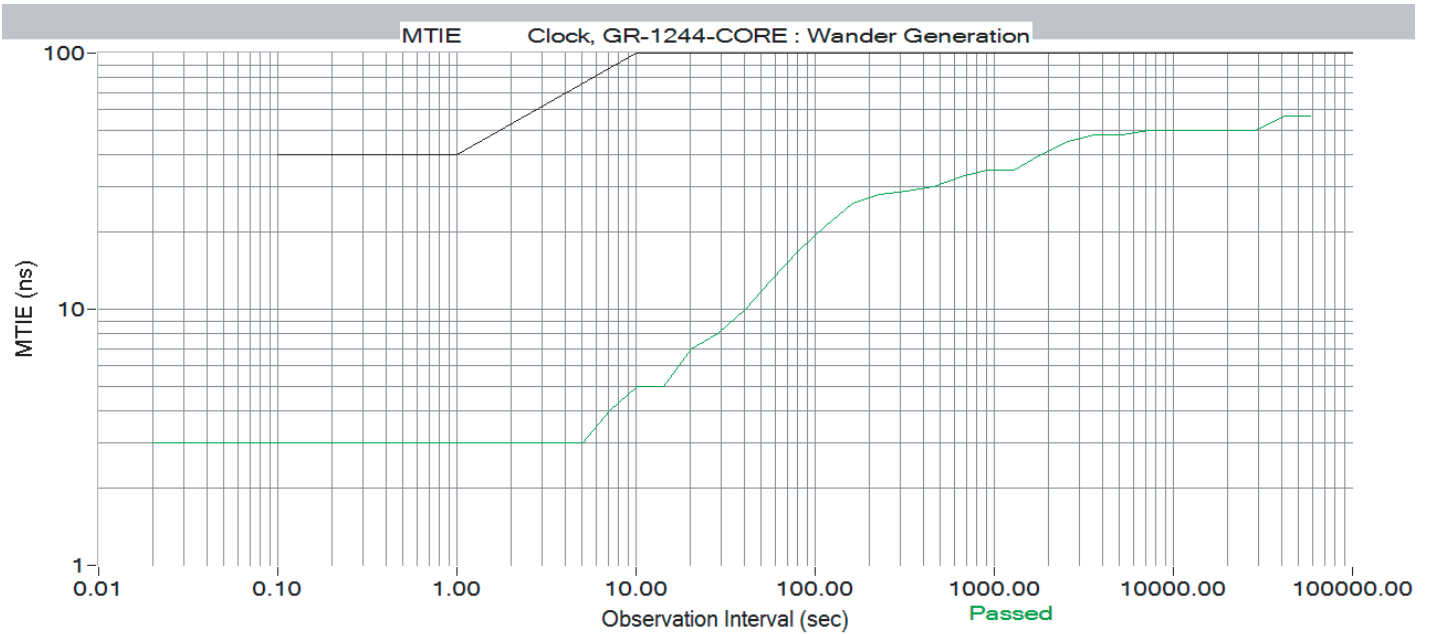
Parameter	Minimum	Nominal	Maximum	Units	Notes
Control Voltage Range:(Vc)					
3.3V LVC MOS	0.30	1.65	3.0	Vdc	
5.0V HCMOS / Sinewave	0.50	2.50	4.50	Vdc	
Frequency					
3.3V LVC MOS at Vc=0.3 Vdc	-	-7	-5	ppm	8
3.3V LVC MOS at Vc=3.0 Vdc	5	7	-	ppm	8
5.0V HCMOS /Sinewave at Vc=0.5Vdc	-	-7	-5	ppm	8
5.0V HCMOS /Sinewave at Vc=4.5Vdc	5	7	-	ppm	8
Slope of Frequency Adjust					
3.3V LVC MOS	3.7	-	-	ppm/V	
5.0V HCMOS /Sinewave	2.5	-	-	ppm/V	
Input Impedance	100K	-	-	Ohms	

- Initial calibration @ 25C. OCVCXO model Vc = Nominal.
- Frequency stability vs. Change in temperature, referenced to 25C.
- Frequency stability per 5% change in supply voltage.
- At the time of shipment after 48 hours of operation.
- Inclusive of calibration, operating temperature range, supply voltage change, shock and vibration 20 years aging, OCVCXO models Vc = Nominal.
- Typical phase noise, results will vary depending on center frequency. The phase noise shown are typical for 20 MHz.
- Measured @ 25C, within 3 minutes, the unit will be within +/-0.1ppm of its reference frequency, measured after 30 minutes of continuous operation at a stable 25C.
- OCVCXO models pullability referenced to Fo @ 25°C, Positive Transfer Characteristics
- Initial calibration @ 25C. OCVCXO model Vc = Nominal.
- Inclusive of calibration, operating temperature range, supply voltage change, shock and vibration 20 years aging, OCVCXO models Vc = Nominal.

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**OH4610LF-020.0M MTIE per Stratum 3E (OCXO is covered)**  
**Loop Bandwidth = 0.0016 Hz**



**OH4610LF-020.0M TDEV per Stratum 3E (OCXO is covered)**  
**Loop Bandwidth = 0.0016 Hz**

