



# Precision OCXO OX400-620LF

# CONNOR WINFIELD



2111 Comprehensive Drive

Aurora, Illinois 60505

Phone: 630-851-4722

Fax: 630-851-5040

www.conwin.com

US Headquarters:

630-851-4722

European Headquarters:

+353-61-472221

## Description:

The Connor-Winfield OX400-620LF, a 14-Pin DIP Oven Stabilized Crystal Oscillator (OCXO), is a precise frequency standard excellent for use in cellular base stations, test equipment, Synchronous Ethernet, VSAT, and Stratum 3 applications.



## Features:

- OCXO - Fixed Frequency
- 3.3V Operation
- LVCMOS
- Frequency Stability:  $\pm 20$ ppb
- Temperature Range: -40 to 85°C
- Low Phase Noise
- 14 Pin DIP Package
- RoHS Compliant / Lead Free

## Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	125	°C	
Supply Voltage (Vcc)	-0.5	-	4.5	Vdc	

## Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Nominal Frequency (Fo)		20.0 and 24.576		MHz	
Frequency Calibration	-0.3	-	0.3	ppm	1, 4
Frequency Stability	-20	-	20	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
Operating Temperature Range	-40	-	85	°C	
Supply Voltage (Vcc)	3.13	3.3	3.47	Vdc	
Supply Power (-40 to 85°C)	-	-	2.2	Watts	
Phase Jitter (BW = 10KHz to Fo/2)	-	-	1	ps RMS	
Period Jitter	-	-	5	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

## LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	15	-	pF	
Voltage:					
High (Voh)	2.60	-	-	Vdc	
Low (Vol)	-	-	0.40	Vdc	
Current					
High (Ioh)	-4	-	-	mA	
Low (Iol)	-	-	4	mA	
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time: 10% to 90%	-	-	6.5	ns	

## Package Characteristics

OX400-Series DIP Package

14 Pin DIP Hermetically Sealed Grounded Welded Package

1. Initial calibration @ 25C.
2. Frequency stability vs. Change in temperature, referenced to 25C.
3. Frequency stability per 5% change in supply voltage.
4. At the time of shipment after 48 hours of operation.
5. Inclusive of calibration, operating temperature range, supply voltage change, shock and vibration 20 years aging.
6. Typical phase noise, results will vary depending on center frequency. The phase noise shown are typical for 20 MHz.
7. Measured @ 25C, within 3 minutes, the unit will be within  $\pm 0.1$ ppm of its reference frequency, measured after 30 minutes of continuous operation at a stable 25C.



**RoHS  
COMPLIANT**

Bulletin **Cx262**Page **1 of 2**Revision **03**Date **04 Oct 2017**



## 14 Pin DIP Package Environmental Characteristics

### ENVIRONMENTAL CHARACTERISTICS

Temperature Cycle: Per MIL-STD-883, Method 1010, Condition B. -55°C to 125°C, 300 cycles, 10 minute dwell, 1 minute transition.  
Gross Leak Test: Per MIL-STD-202, Method 112, Condition D. No Bubbles in flourinert (FC-43) at 125°C ±5°C for 20 seconds

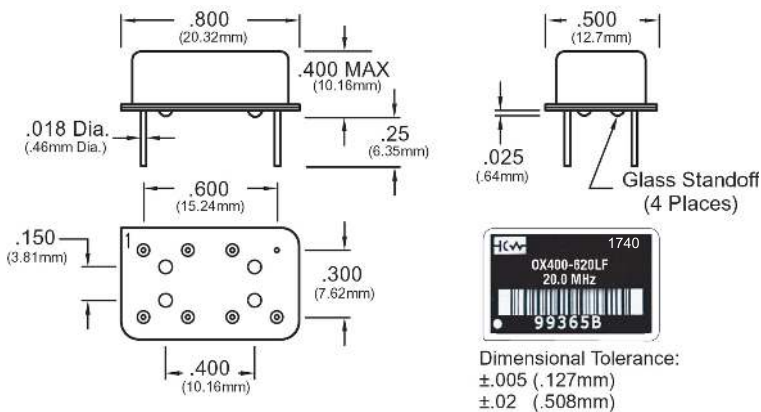
### SOLDERING

Pin Solderability: Per MIL-STD-883, Method 2003. 8 hour steam age prior to 254°C ±5°C Solder on dip, 95% Coverage.  
Resistance to Solder Heat: Per MIL-STD-202, Method 210, Condition C. Wave: Topside board-mount product. 260°C ±5°C for 20 seconds

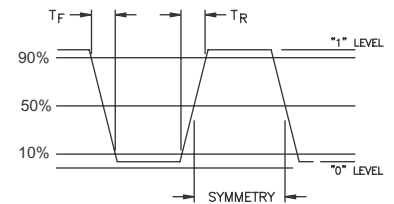
### MECHANICAL CHARACTERISTICS

Vibration: Per MIL-STD-202, Method 204, Condition A. 10G's peak, 10Hz to 500Hz, 15 minute cycles 12 times each perpendicular axis.  
Shock: Per MIL-STD-202, Method 213, Condition F 1500G's, 0.5ms, half sine, 3 shocks per direction.  
Moisture Resistance: Per MIL-STD-202, Method 106. 95% RH @ 65°C, 10 cycles 10°C to 65°C.

### 14 Pin DIP Package



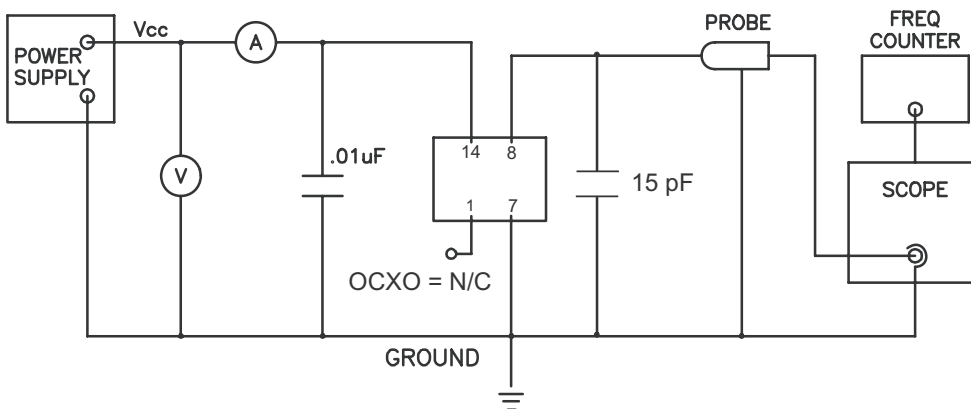
### CMOS Output Waveform



### Pin Connections

Pin	Function
1:	N/C
7	Ground (Case)
8:	Output
14:	Vcc

### Test Circuit



### Ordering Information

OX400-620LF - 020.0M
OX400-620LF - 024.576M

Bulletin	Cx262
Page	2 of 2
Revision	03
Date	04 Oct 2017