

OCXO - OCVCXO Specification: OX14 - Series

CONNOR WINFIELD



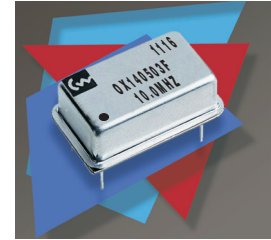
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Description:

Connor-Winfield's high stability OX14 - series are exceptionally precise frequency standards, excellent for use in cellular base stations, test equipment, Synchronous Ethernet and VSAT applications.

These 14 Pin DIP OCXO / OCVCXO provide temperature stabilities in the range of ± 50 ppb to ± 100 ppb, over the commercial, extended commercial or the industrial temperature range.

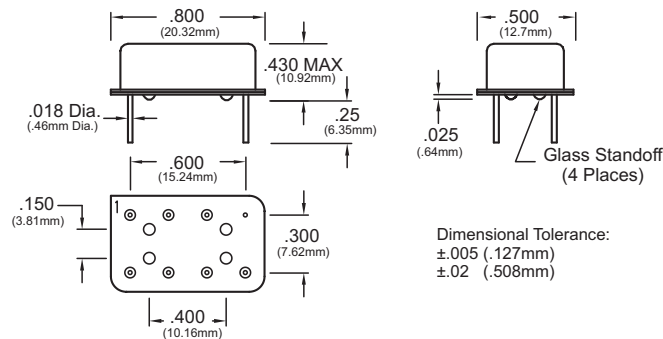
The OX14 - series is available with a CMOS output along with optional Electronic Frequency Tuning (OCVCXO). These oscillators provide outstanding phase noise characteristics that will meet the most stringent requirements.



Features:

OCXO / OCVCXO
Frequencies Available:
10, 12.8, 19.44, 20, 25 or 38.88 MHz
3.3 or 5.0 Vdc Operation
14 Pin DIP or SMT Package
Frequency Stabilities Available:
 ± 50 ppb or ± 100 ppb
Temperature Ranges Available:
0 to 70°C, -20 to 75°C or -40 to 85°C
CMOS Output / Low Phase Noise
Optional Electronic Frequency Tuning
RoHS Compliant / Lead Free

Package Outline



Marking Diagram



Pin Connections

1: N/C or Vc option
7: Ground:
8: Output
14: Supply Voltage (Vcc)

Ordering Information

OX14	05	0	3	F	-010.0M
Oscillator Type 14 Pin DIP OCXO or OCVCXO	Frequency Stability 05 = ± 50 ppb 10 = ± 100 ppb	Temperature Range 0 = 0 to 70°C 1 = -20 to 75°C 2 = -40 to 85°C	Supply Voltage 3 = 3.3 Vdc 5 = 5.0 Vdc	Voltage Control Option F = OCXO (Fixed Freq.) V = OCVCXO (Voltage Controlled)	Output Frequency Frequency Format -xxx.xM Min.* -xxx.xxxxxxM Max*

*Amount of numbers after the decimal point.
M = MHz

Example Part Numbers:

OX140503F-010.0M = 14 Pin DIP package, ± 50 ppb, 0 to 70°C, 3.3 Vdc, LVCMOS Output, OCXO, Output Frequency 10.0 MHz

OX140525V-020.0M = 14 Pin DIP package, ± 50 ppb, -40 to 85°C, 5.0 Vdc, HCMOS Output, OCVCXO, 20.0 MHz



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Absolute Maximum Ratings

Parameter		Minimum	Nominal	Maximum	Units	Notes
Storage Temperature		-55	-	125	°C	
Supply Voltage:	3.3 Vdc (Vcc)	-0.5	-	4.5	Vdc	
	5.0 Vdc (Vcc)	-0.5	-	7.0	Vdc	
Control Voltage (Vc)		-0.5	-	Vcc+0.5	Vdc	

Operating Specifications

Parameter		Minimum	Nominal	Maximum	Units	Notes
Center Frequency: (Fo)		10, 12.8, 19.44, 20, 25 or 38.88			MHz	
Frequency Stability vs. Change in Temperature: (See Ordering Information)						
	Stability Code 05	-50.0	-	50.0	ppb	1
	Stability Code 10	-100.0	-	100.0	ppb	1
Operating Temperature Range: (See Ordering Information)						
	Temperature Code 0	0	-	70	°C	
	Temperature Code 1	-20	-	75	°C	
	Temperature Code 2	-40	-	85	°C	
Frequency Calibration:		-1.0	-	1.0	ppm	2
Frequency Stability vs. Load		-20	-	20	ppb	±5%
Frequency Stability vs. Voltage		-20	-	20	ppb	±5%
Aging: Daily:		-10	-	10	ppb/day	3
Aging: First Year:		-300	-	300	ppb	3
Total Frequency Tolerance (20 Years)		-4.60	-	4.60	ppm	4
Supply Voltage: (Vcc) (See Ordering Information)						
	Supply Voltage Code 3	3.13	3.30	3.47	Vdc	±5%
	Supply Voltage Code 5	4.75	5.00	5.25	Vdc	±5%
Power Consumption: Vcc = Nominal Voltage						
	Turn On	-	-	3.0	W	
	Steady State @ 25°C	-	-	1.3	W	
Phase Jitter: (BW: 12 KHz to Fo/2)		-	0.5	1.0	ps RMS	
Short Term Stability		-	-	1.0E-9/s		
Start-Up Time:		-	-	1	ms	
Warm Up Time (Within Specification @ 25°C)		-	-	60	s	
Warm Up Time (Within Specification @ -40°C)		-	-	90	s	

OCVCXO Input Characteristics (Optional)

Parameter		Minimum	Nominal	Maximum	Units	Notes
Control Voltage Range:						
	Vcc = 3.3 Vdc	0.30	1.65	3.00	V	5
	Vcc = 5.0 Vdc	0.5	2.5	4.5	V	5
Frequency Pullability:		±10.0	-	-	ppm	6
Input Impedance		100K	-	-	Ohms	
Linearity		±5	-	-	%	



CMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	15	-	pF	7
Output Voltage:					
Vcc = 3.3 Vdc	High (Voh)	2.70	-	V	
	Low (Vol)	-	0.30	V	
Vcc = 5.0 Vdc	High (Voh)	4.00	-	V	
	Low (Vol)	-	0.50	V	
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time: 10% to 90%	-	-	6.5	ns	

Phase Noise Characteristics

Typical Phase Noise for OX140503F - 010.0M

Parameter	Minimum	Nominal	Maximum	Units	Notes
@ 1 Hz offset	-	-67	-	dBC/Hz	
@ 10 Hz offset	-	-100	-	dBC/Hz	
@ 100 Hz offset	-	-130	-	dBC/Hz	
@ 1 KHz offset	-	-148	-	dBC/Hz	
@ 10 KHz offset	-	-154	-	dBC/Hz	
@ 100 KHz offset	-	-155	-	dBC/Hz	

Package Characteristics

OX14-Series Package	14 Pin DIP Hermetically Metal Package
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Environmental Characteristics

Shock	500 G's 1ms, Halfsine, 3 shocks per direction, per MIL-STD 202G, Method 213B Test Condition D.
Sinusoidal Vibration	0.06" D.A. or 10G's Peak, 10 to 500 Hz, per MIL-STD-202G, Method 204D, Test Condition A.
Random Vibration	5.35 G's rms. 20 to 2000 Hz per MIL-STD-202G, Method 214, Test Condition 1A, 15 minutes each axis.
Moisture	10 cycles, 95% RH, Per MIL-STD-202G, Method 112.
Marking Permanency	Per MIL-STD-202G, Method 215J.
Solder Process	RoHS compliant, lead free. See solder profile on page 3.

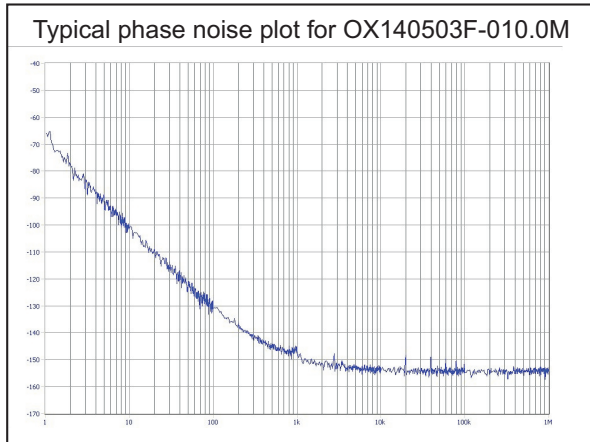
Notes:

1. Frequency stability vs. change in temperature. $[\pm(F_{max} - F_{min})/2.F_0]$.
2. Initial calibration @ 25°C. For OCVCXO control voltage must be fixed.
3. After 30 days of operation
4. Inclusive of calibration @ 25°C, frequency vs. change in temperature, change in supply voltage ($\pm 5\%$), load change ($\pm 5\%$), shock and vibration and 20 years aging.
5. Positive slope. (Frequency increases as Vc voltage increases.)
6. Referenced to F₀.
7. Attention: To achieve optimal frequency stability, and in some cases to meet the specification stated on this data sheet, it is required that the circuit connected to this OCXO output must have the equivalent input capacitance that is specified by the nominal load capacitance. Deviations from the nominal load capacitance will have a graduated effect on the stability of approximately 20 ppb per pF load difference.

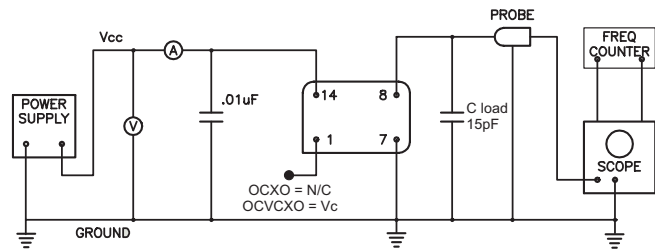
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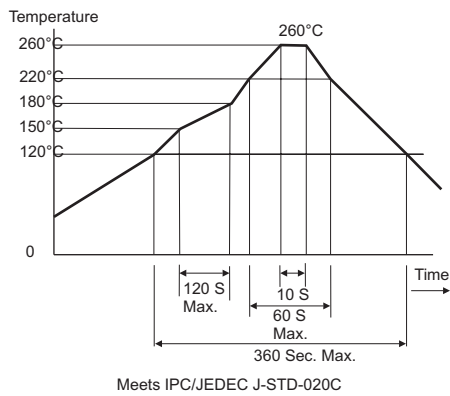
Phase Noise Plot



Test Circuit



RoHS Solder Profile



CMOS Output Waveform

