



High Reliability Surface Mount LVCMOS Clock Oscillator Series

CONNOR WINFIELD



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Description:

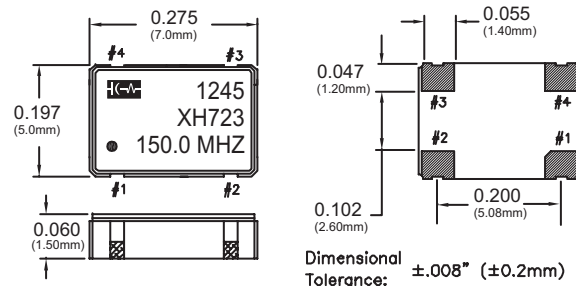
The Connor-Winfield's XH7xx, XH8xx and XH9xx, High Reliability Series are 5x7mm Surface Mount, Fixed Frequency Crystal Controlled Oscillators (XO). Designed for applications requiring tight frequency stability over a wide temperature range, operating at 2.5V or 3.3V supply voltage, the XH7xx, XH8xx and XH9xx series provides an LVCMOS output with enable / disable function. The surface mount package is designed for high-density mounting and is optimum for mass production.



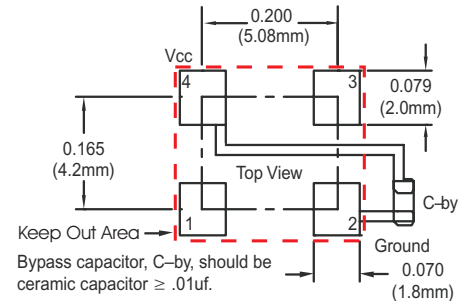
Features:

Model XH7xx - XH8xx - XH9xx Series
Pure Spectrum™ Technology
5.0 x7.0mm Surface Mount Package
Supply Voltages: 2.5V or 3.3V
LVCMOS Output Logic
Frequency Stabilities:
+/-50ppm / +/-100ppm
Temperature Ranges:
-40 to 85°C / -55 to 125°C / -55 to 85°C
Low Jitter <1pS RMS
Sub-harmonics / Spurious: -70 dBc
Minimal Frequency Perturbations:
3ppm Max.
Guaranteed Proper Frequency Startup.
Screening Options are Available
Gold Plated Terminations

Package Outline



Suggested Pad Layout



Pad Connections

- 1: Enable / Disable (OE)
- 2: Ground:
- 3: Output
- 4: Supply Voltage (Vcc)

Enable / Disable Function

Function: (Pad 1)	Output
High or Open:	Enabled
Low	Disabled (High Impedance)

Ordering Information

XH	7	2	3	-150.0M
Oscillator Type	Temperature Range	Frequency Tolerance	Supply Voltage	Output Frequency
High Reliability Clock LVCMOS Series 5x7 mm	7 = -55 to 125°C 8 = -40 to 85°C 9 = -55 to 85°C	2 = ± 50 ppm 3 = ± 100 ppm	2 = 2.5 Vdc 3 = 3.3 Vdc	Frequency Format -xxx.xM Min.* -xxx.xxxxxM Max*

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

Example Part Numbers:

XH723-150.0M = 5x7 mm package, -55 to 125°C, ± 100 ppm, 3.3 Vdc, LVCMOS, Output Frequency 150.0 MHz
XH922-44.736M = 5x7 mm package, -55 to 85°C, ± 50 ppm, , 3.3 Vdc, LVCMOS, Output Frequency 44.736 MHz

Bulletin **Sm127**
Page **1 of 4**
Revision **07**
Date **16 Jan 2012**



Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	125	°C	
Supply Voltage (Vcc)	-0.5	-	5.0	Vdc	
Input Voltage	-0.5	-	Vcc+0.5	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Center Frequency: (Fo)	10	-	200	MHz	
Operating Temperature Range: (See Ordering Information)					
Model: XH7xx	-55	-	125	°C	
Model: XH8xx	-40	-	85	°C	
Model: XH9xx	-55	-	85	°C	
Total Frequency Tolerance: (See Ordering Information)					
Model: XH72x, XH82x, XH92x	-50.0	-	50.0	ppm	1
Model: XH73x, XH83x, XH93x	-100.0	-	100.0	ppm	1
Supply Voltage: (Vcc) (See Ordering Information)					
Model: XH7x2, XH8x2, XH9x2	2.375	2.5	2.625	Vdc	±5%
Model: XH7x3, XH8x3, XH9x3	3.135	3.3	3.465	Vdc	±5%
Supply Current (Icc)					
10 to 39.999 MHz	-	-	10	mA	
40 to 79.999 MHz	-	-	20	mA	
80 to 89.999 MHz	-	-	35	mA	
90 to 124.999 MHz	-	-	45	mA	
125 to 164.999 MHz	-	-	65	mA	
165 to 200 MHz	-	-	75	mA	

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage (High) (VIH)	70% Vcc	-	-	Vdc	2
Disable Voltage (Low) (VIL)	-	-	30% Vcc	Vdc	2
Enable Time	-	-	2	ms	
Disable Time	-	-	200	ns	
Output Disable Current (Standby Current) (Icc)	-	-	10	uA	
Enable / Disable Function Pad 1					
High or Open		Output Enabled			
Low		Disabled			

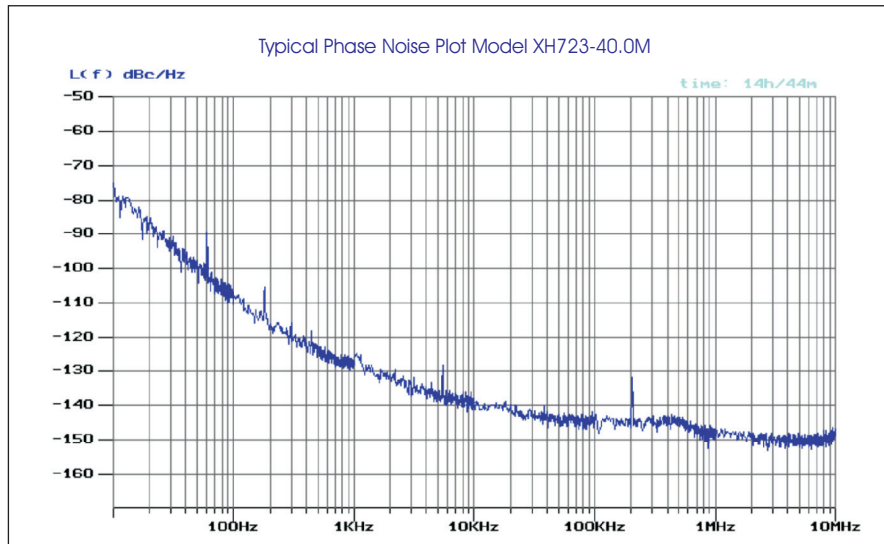
LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	15	-	pF	
Output Voltage:					
High (VOH)	Vcc-0.4	Vcc-0.3	-	V	
Low (VOL)	-	0.3	0.4	V	
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time: measured from 10% to 90%					
For Frequencies < 60 MHz	-	2.0	3.0	ns	
For Frequencies > 60 MHz	-	1.3	2.0	ns	
Start-Up Time:	-	-	2	ms	3
Sub-harmonics	-	-	-70	dBc	
Spurious	-	-	-70	dbc	
Frequency Perturbations over Temperature	-	-	3	ppm	4

Jitter / Phase Noise Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Jitter					
Period Jitter	-	3	5	ps RMS	
Integrated Phase Jitter	-	0.5	1	ps RMS	
SSB Phase Noise for XH723 Fo = 40.0 MHz					
@ 10 Hz offset	-	-75	-	dBc/Hz	
@ 100 Hz offset	-	-105	-	dBc/Hz	
@ 1 KHz offset	-	-125	-	dBc/Hz	
@ 10 KHz offset	-	-140	-	dBc/Hz	
@ 100 KHz offset	-	-145	-	dBc/Hz	
@ 1 MHz offset	-	-148	-	dBc/Hz	

Phase Noise Plot



Package Characteristics

Package	Hermetically sealed ceramic package and metal cover
Package Terminations	Solder pads are Au plated, thickness 0.30 to 1.00 micron thick.

Environmental Characteristics

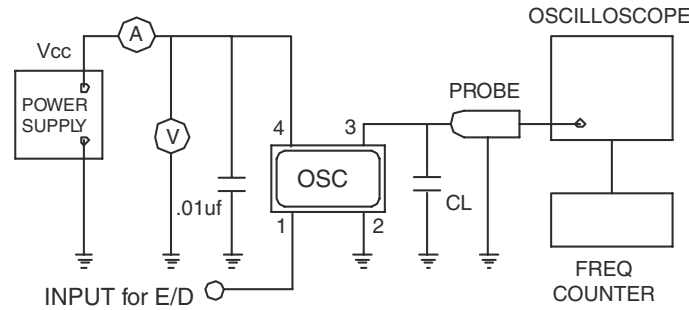
Vibration:	Vibration per Mil Std 883E Method 2007.3 Test Condition A.
Shock:	Mechanical Shock per Mil Std 883E Method 2002.4 Test Condition B.
Soldering Process;	Meets IPC/JEDEC J-STD-020C. See soldering profile on page 4.
Screening	Other screening options are available.

Notes:

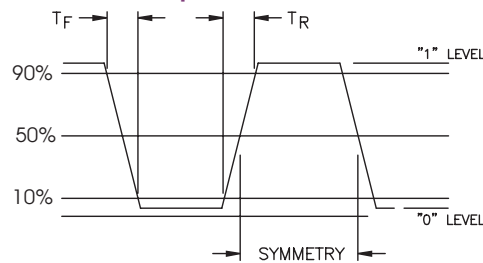
- Inclusive of calibration @ 25°C, frequency stability vs. change in temperature, supply voltage and load variations, shock and vibration and 10 years aging.
- When the oscillator is disabled the output is at high impedance.. Outputs is enabled with no connection on E/D pad 1.
- Oscillator is guaranteed to start at the specified frequency (Fo) under all conditions.
- This part will not exhibit frequency jumps of more than 3 ppm when tested every 2°C within the operating temperature range specified supply voltage and load.

Bulletin	Sm127
Page	3 of 4
Revision	07
Date	16 Jan 2013

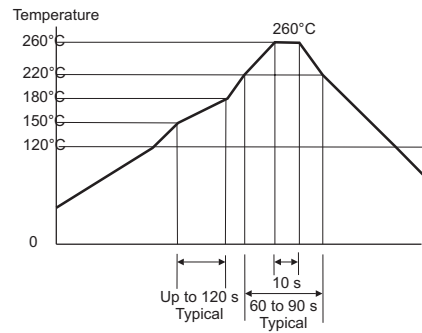
Test Circuit



Output Waveform

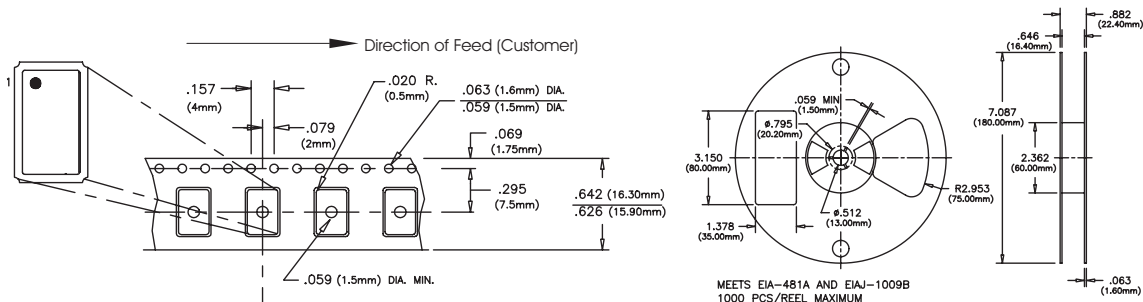


Solder Profile



Meets IPC/JEDEC J-STD-020C

Tape and Reel Dimensions



Revision History

Rev 00.	Data sheet issued 08/15/08
Rev 01	Updated tape and reel information 01/14/09
Rev 02.	Changed min frequency to 10 MHz. 5/6/09.
Rev 03.	Added pure spectrum logo. 10.20.09.
Rev 04.	Added models XH822 XH832 XH823 XH833. 11/25/09
Rev 05.	Removed RoHS and added screening options. 08/17/12
Rev 06.	Updated data sheet format and rise and fall times, added 40 MHz phase noise plot. 12/11/12.
Rev 07.	Corrected pad numbering on package outline, top view. GD 01/16/13.

Bulletin	Sm127
Page	4 of 4
Revision	07
Date	16 Jan 2013