High Reliability Surface Mount LVCMOS Clock Oscillator Series

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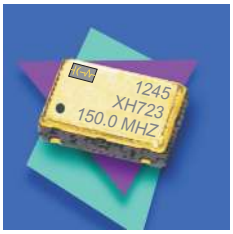
Description:



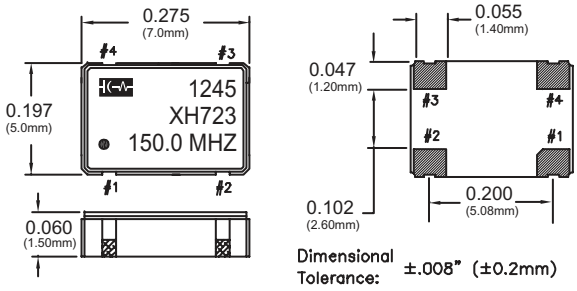
The Connor-Winfield's XH7xx, XH8xx and XH9xx, High Reliability Series are 5x7mm Surface Mount, Fixed Frequency Crystal Controlled Oscillators (XO). Designed for applications requiring tight frequency stability over a wide temperature range, operating at 2.5V or 3.3V supply voltage, the XH7xx, XH8xx and 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:

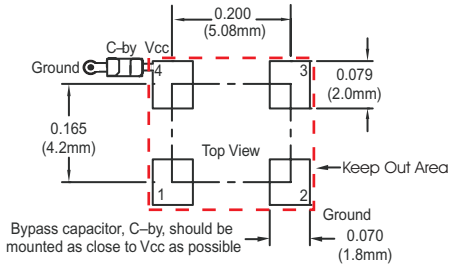
Model XH7xx - XH8xx - XH9xx Series
Pure Spectrum™ Technology

- 5.0 x7.0mm Surface Mount Package
- Supply Voltages: 2.5V or 3.3V
- LVCMOS Output Logic
- Frequency Stabilities: ±50ppm; ±75ppm; ±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



Keep Out Area: Do not route any traces in the keep out area. It is recommended the next layer under the keep out area is to be ground plane.

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 High Reliability Clock LVCMOS Series 5x7 mm	Temperature Range 7 = -55 to 125°C 8 = -40 to 85°C 9 = -55 to 85°C	Frequency Tolerance 2 = ±50 ppm 3 = ±100 ppm 4 = ± 75ppm	Supply Voltage 2 = 2.5 Vdc 3 = 3.3 Vdc	Output Frequency Frequency Format -xxx.xM Min.* -xxx.xxxxxxM 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

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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: XH74x, XH84x, XH94x	-75.0	-	75.0	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) (V_{IH})	70% Vcc	-	-	Vdc	2
Disable Voltage (Low) (V_{IL})	-	-	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		Output			
High or Open		Enabled			
Low		Disabled			

LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	15	-	pF	
Output Voltage:					
High (V_{OH})	Vcc-0.4	Vcc-0.3	-	V	
Low (V_{OL})	-	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

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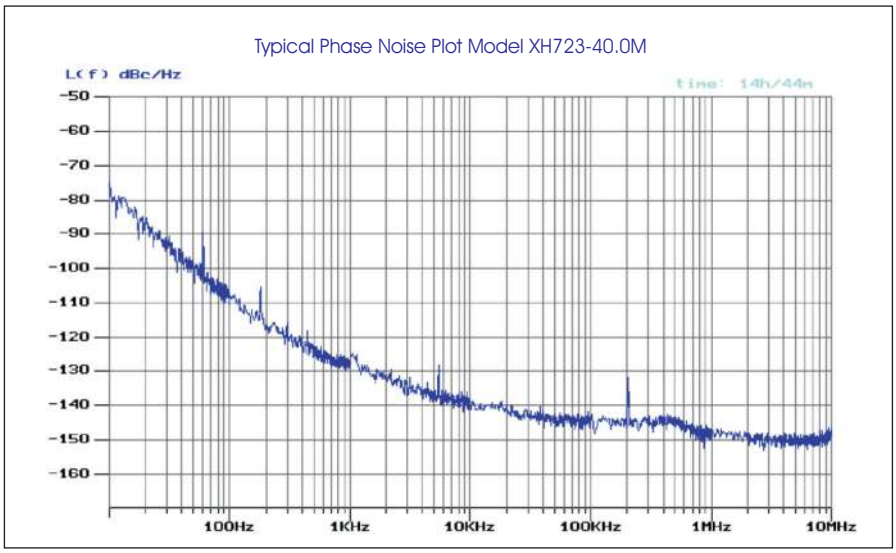
Jitter / Phase Noise Characteristics

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:

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

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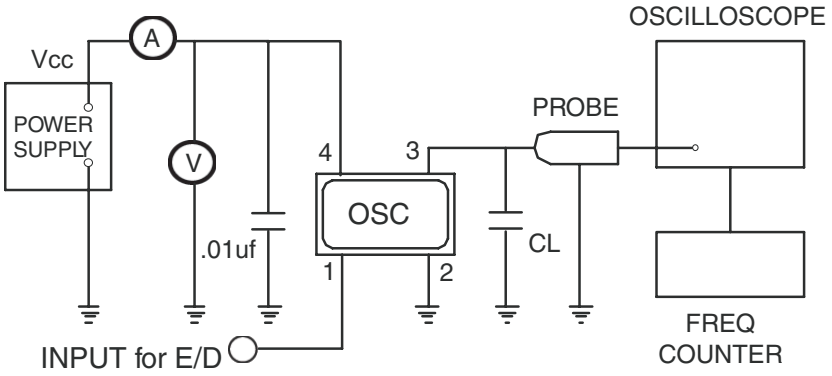
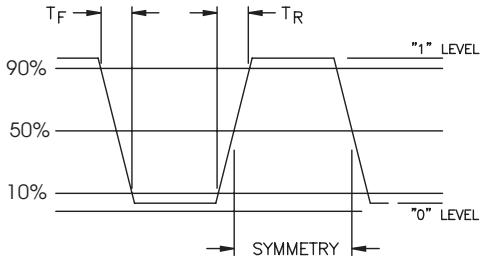
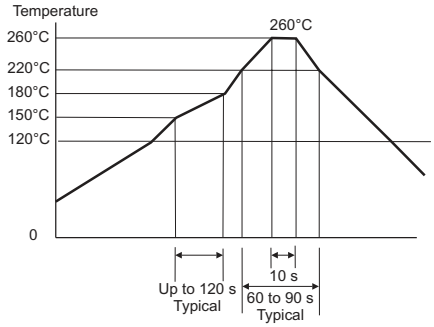
Test Circuit



Output Waveform

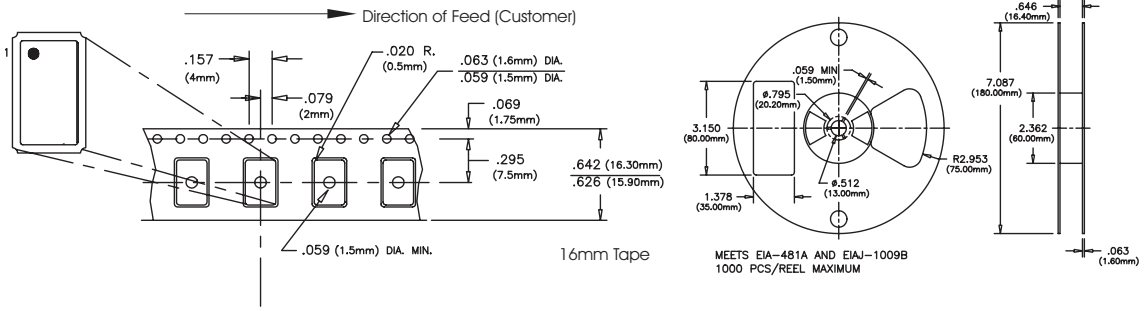


Solder Profile



Meets IPC/JEDEC J-STD-020C

Tape and Reel Dimensions



Revision History

Revision	Date	Note
00	08/15/08	New issue
01	01/14/09	Updated tape and reel information
02	05/06/09	Changed control voltage from 0.3 - 3.3 to 0.6 to 3.0, added note.
03	05/28/13	Added pure spectrum logo. 10.20.09
04	11/25/09	Added models XH822 XH832 XH823 XH833.
05	08/17/12	Removed RoHS and added screening options.
06	12/11/12	Updated data sheet format and rise and fall times, added 40 MHz phase noise plot.
07	01/16/13	Corrected pad numbering on package outline , top view. GD
08	04/19/19	Added ±75ppm total tolerance option