Rev. A

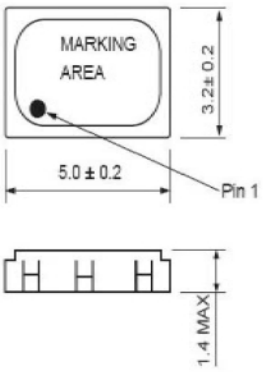
LVDS
AC-X2D00 Series

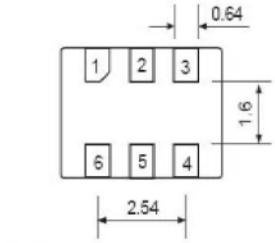
Description

The **AC-X2D00 Series** of quartz crystal oscillators provide LVDS compatible signals in a ceramic SMD package. Systems designers may now specify space-saving, cost-effective packaged LVDS oscillators to meet their timing requirements.

Features

- Wide frequency range–13.5MHz to 212.5MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 100g
- Metal lid electrically connected to ground to reduce EMI
- Enable/Disable
- LVDS output on pin 4, complement on Pin 5
- COTS/Dual use
- Low Jitter - Wavecrest jitter characterization available
- Overtone technology
- High Q Crystal actively tuned oscillator circuit
- No internal PLL avoids cascading PLL problems
- Gold plated pads
- RoHS Compliant, Lead Free Construction



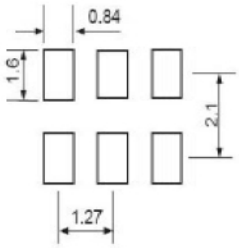


Pin Connections

#1: E/D	#2: N/C
#3: Ground/Case	#4: Output
#5: Comple-Output	#6: Vcc

All dimensions are typical unless otherwise specified

Recommended Solder Pad Layout



Dimensions in Millimeters

NEL FREQUENCY CONTROLS, INC.
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AC-X2D00 Series Continued
LVDS

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Operating Conditions and Output Characteristics

Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	13.5MHz	-----	212.5MHz
Duty Cycle(2)	-----	@ V_O /2	45/55%	-----	55/45%
Logic 1	V_{OH}	-----	-----	1.43V	-----
Logic 0	V_{OL}	-----	-----	1.10V	-----
Offset Voltage(2)	V_{OS}	-----	-----	1.25V	-----
Disable Voltage	-----	V_{EE}=0V	-----	-----	0.3V_{CC}
Enable Voltage(4)	-----	V_{EE}=0V	0.7V_{CC}	-----	-----
Rise & Fall Time (2)	tr,tf	20-80%V_O	-----	-----	0.7 ns
Jitter, Period (3)	tRMS	13.5MHz to<27MHz, RMS	-----	5.0 ps	-----
		27MHz to212.5MHz, RMS	-----	2.5 ps	-----
	tp-p	13.5MHz to <27MHz, peak to peak	-----	33 ps	-----
		27MHz to 212.5MHz, peak to peak	-----	22 ps	-----
Total Jitter (3)	tTL	13.5MHz to <27MHz, deterministic	-----	50 ps	-----
		27MHz to 212.5MHz, deterministic	-----	35 ps	-----
Phase Jitter (6)	tpj	13.5MHz to <27MHz	-----	-----	1.5 ps
		27MHz to 212.5MHz	-----	-----	1.0 ps
Frequency Stability (1)	dF/F	Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration	-100ppm	-----	+100ppm

General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V_{CC}	Code A:3.3V±5%	3.135V	3.3V	3.465V
		Code B:2.5V±5%	2.375V	2.5V	2.625V
Supply Current	I_{CC}	-----	0.0 mA	-----	66 mA
Operating temperature	T_A	------	0°C	-----	70°C
Storage temperature	T_S	-----	-55°C	-----	125°C
Power Dissipation	P_D	3.3V	-----	-----	229 mW
		2.5V	-----	-----	173 mW
Load	100 ohms across differential outputs				
Start-up time	t_S	-----	-----	2 ms	5 ms

Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213
Thermal Shock	Per MIL-STD-883, Method 1011, Condition B
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Hermetic Seal	Leak rate less than 1 x 10^{-8} atm.cc/sec of helium

Footnotes:

1) Standard frequency stability (±20,±25,±50ppm & others available)
2) With Load of 100 ohms across differential outputs.
3) Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
4) Open to enable pin also enables the output.
5) If phase noise data at a particular frequency is needed, contact factory.
6) 13.5 to 40MHz, fo offset: 12kHz to 5MHz; >/=40MHz, fo offset: 12kHz to 20MHz

Creating a Part Number

AC - X2D0X - FREQ

Package Code
AC 6 Pad 5x3.2mm SMD

Input Voltage

Code	Specification
A	3.3V
B	2.5V

Tolerance/Performance

0	±100ppm 0-70°C
1	±50ppm 0-70°C
7	±25ppm 0-70°C
9	Customer Specific
B	±50ppm -40 to +85°C
C	±100ppm -40 to +85°C

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Max Reflow Profile