CRYSTAL CLOCK OSCILLATORS

Data Sheet 0439B

Rev. G

LVDS
PJ-B2D00 Series

Description

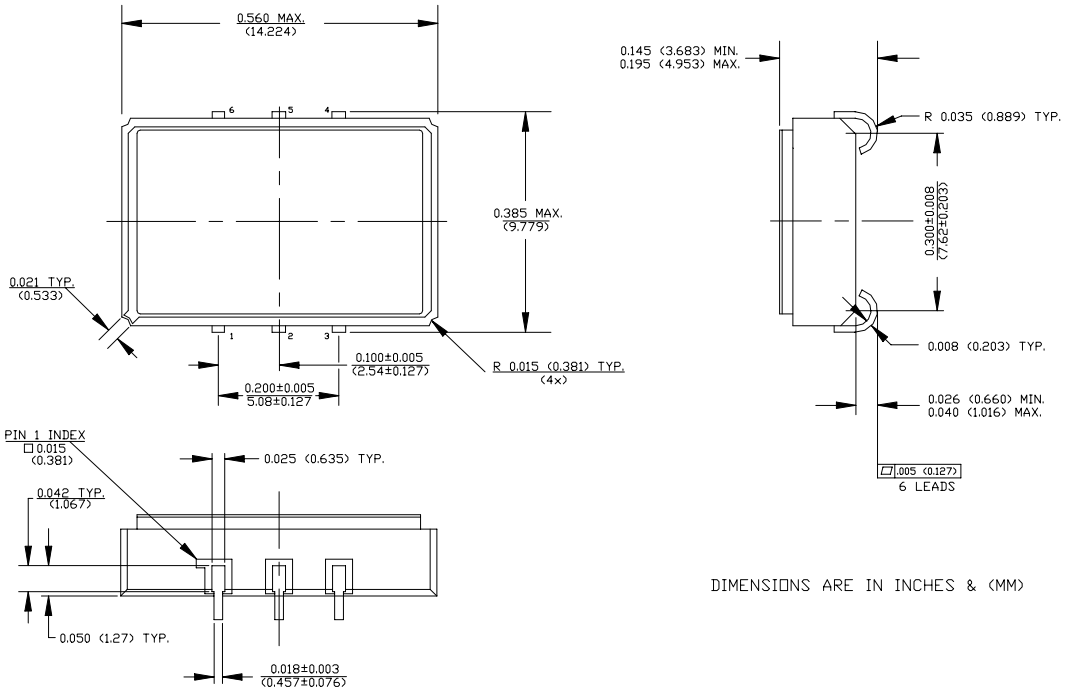
The **PJ-B2D00 Series** of quartz crystal oscillators provide LVDS compatible signals in a ceramic SMD package. Systems designers may now specify space-saving, cost-effective packaged LVDS oscillators to meet their timing requirements.

Features

- Wide frequency range–80.0MHz to 312.5MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- 2.5 volt operation (other voltages available upon request)
- 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
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Overtone technology
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- High frequencies due to proprietary design
- Gold plated leads
- RoHS Compliant, Lead Free Construction

Electrical Connection

Pin	Connection
1	Enable/Disable
2	N.C.
3	Ground
4	Output
5	Output Complement
6	V_{CC}



NEL FREQUENCY CONTROLS, INC.

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PJ-B2D00 Series Continued
LVDS

Rev. G

Operating Conditions and Output Characteristics

Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	80.0MHz	-----	312.5MHz
Duty Cycle(2)	-----	@ V_O /2	45/55%	-----	55/45%
Logic 0 (2)	V_{OL}	-----	0.80V	-----	1.10V
Logic 1 (2)	V_{OH}	-----	1.25V	-----	1.55V
Differential Voltage (2)	V_{OD}	-----	250 mV	-----	450 mV
Disable Voltage	-----	V_{EE}=0V	-----	-----	0.8V
Enable Voltage(5)	-----	V_{EE}-0V	2.0V	-----	V_{CC}
Rise & Fall Time (2)	tr,tf	20-80%V_O	-----	0.8 ns	1.0 ns
Tpd (4)	-----	-----	-0.5 ns	-----	+0.5 ns
Jitter, Integrated	J	Integrated from phase noise, 12kHz to 20MHz, RMS	-----	0.1 ps	-----
Jitter, Wavecrest Characterized (3)	-----	Random Period	-----	2.3ps	-----
		Accum, pk-to-pk	-----	28ps	-----
Phase Noise	£(Δf)	200MHz			
		@ 10Hz	-----	-65 dBc/Hz	-----
		@100Hz	-----	-100 dBc/Hz	-----
		@1kHz	-----	-130 dBc/Hz	-----
		@10kHz	-----	-143 dBc/Hz	-----
		@100kHz	-----	-143 dBc/Hz	-----
		@ >1Mhz	-----	-145 dBc/Hz	-----
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}	-----	2.375V	2.5V	2.625V
Supply Current	I_{CC}	-----	0.0 mA	-----	80 mA
Output current	I_O	Continuous Output Current	0.0 mA	-----	±50.0 mA
Operating temperature	T_A	------	0°C	-----	70°C
Storage temperature	T_S	-----	-55°C	-----	125°C
Power Dissipation	P_D	-----	-----	-----	210 mW
Load	100 ohms across differential outputs				
Start-up time	t_S	-----	-----	2 ms	10 ms

Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
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) Tpd is phase shift between the falling edge of pin 4 and the rising edge of pin 5.
5) Open to enable pin also enables the output

Creating a Part Number

PJ - B2D0X - FREQ

Package Code
PJ 6 J Lead 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
A	±20ppm 0-70°C
B	±50ppm -40 to +85°C
C	±100ppm -40 to +85°C

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PJ-B2D00 Series Continued

Max Reflow Profile