

CRYSTAL CLOCK OSCILLATORS

Data Sheet 0350C



Differential Positive ECL (DPECL) Fast Edge PJ-B2980 Series

Rev. G

Description

The **PJ-B2980 Series** of quartz crystal oscillators provide DPECL Fast Edge compatible signals. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

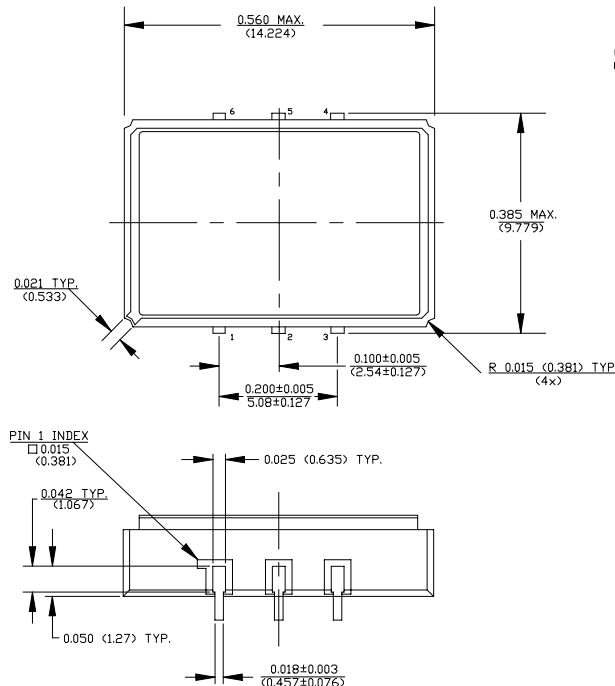
Features

- Wide frequency range—60.0MHz to 312.5MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- 2.5 volt operation
- Metal lid electrically connected to ground to reduce EMI
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Low Jitter - Wavecrest jitter characterization available
- 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 pads
- RoHS Compliant, Lead Free Construction

Electrical Connection

Pin Connection

1	Enable/Disable
2	N.C.
3	V _{EE} /Ground
4	Output
5	/Output
6	V _{CC}



DIMENSIONS ARE IN INCHES & (MM)



**FREQUENCY
CONTROLS, INC.**

PJ-B2980 Series Continued
Differential Positive ECL (DPECL) Fast Edge

Rev. G

Operating Conditions and Output Characteristics**Electrical Characteristics**

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	60.0MHz	-----	312.5MHz
Duty Cycle	-----	@ $V_{CC} = -1.29V$	45/55%	-----	55/45%
Logic 0 ⁽²⁾	V_{OL}	-----	-----	-----	$V_{CC} - 1.62V$
Logic 1 ⁽²⁾	V_{OH}	-----	$V_{CC} - 1.025V$	-----	-----
Rise & Fall Time	$t_{r,f}$	20-80% V_O with 50 ohm load to $V_{CC} - 2V$	-----	-----	1 ns
T_{pd} ⁽⁴⁾	-----	-----	-200 psec	-----	+200 psec
Jitter, RMS ⁽³⁾	-----	-----	-----	-----	1 psec
Enable Voltage ⁽⁵⁾	-----	with $V_{EE} = 0V$	1.6V	-----	-----
Disable Voltage	-----	with $V_{EE} = 0V$	-----	-----	0.4V
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}	50 ohm termination To 2.00V below V_{CC}	0.0 mA	-----	80 mA
Output current	I_O	Low level 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
Solder temperature	T_L	4 minutes	-----	-----	253°C
Load	-----	50 Ohm to $V_{CC} - 2V$ or Thevenin Equivalent, Bias Required	-----	-----	-----
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 1×10^{-8} atm.cc/sec of helium

Footnotes:

- 1) Standard frequency stability ($\pm 20, \pm 25, \pm 50$ ppm & others available)
- 2) V_{OL}, V_{OH} , referenced to ground (V_{EE}) with $V_{CC} = 2.5V$
- 3) Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
RMS jitter bandwidth of 12kHz to 20MHz.
- 4) T_{pd} is phase shift between the falling edge of pin 4 at 2.0V and the rising edge of pin 5 at 2.01V.
- 5) Open to enable pin also enables the output.
- 6) Internal high frequency power source decoupling.

Creating a Part Number**PJ - B298X - FREQ****Package Code**

PJ 6 J Lead SMD

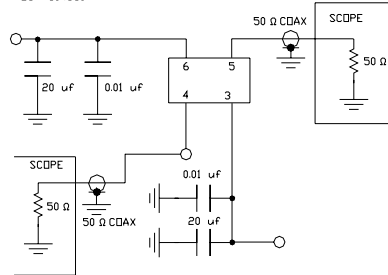
Tolerance/Performance

0 ± 100 ppm 0-70°C
 1 ± 50 ppm 0-70°C
 7 ± 25 ppm 0-70°C
 9 Customer Specific
 A ± 20 ppm 0-70°C
 B ± 50 ppm -40 to +85°C
 C ± 100 ppm -40 to +85°C

Input Voltage

Code Specification
 A 3.3V
 B 2.5V
 5V

TEST CIRCUIT



TEST CIRCUIT USES A SPLIT SUPPLY OF +2V AND -1.3V FOR EASE OF TESTING.



**FREQUENCY
CONTROLS, INC.**

357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591 FAX 262/763-2881

Email: nelsales@nelfc.com www.nelfc.com