



Differential Positive ECL (DPECL) Fast Edge PJ-A2940 Series

Preliminary

Description

The **PJ-A2940 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.

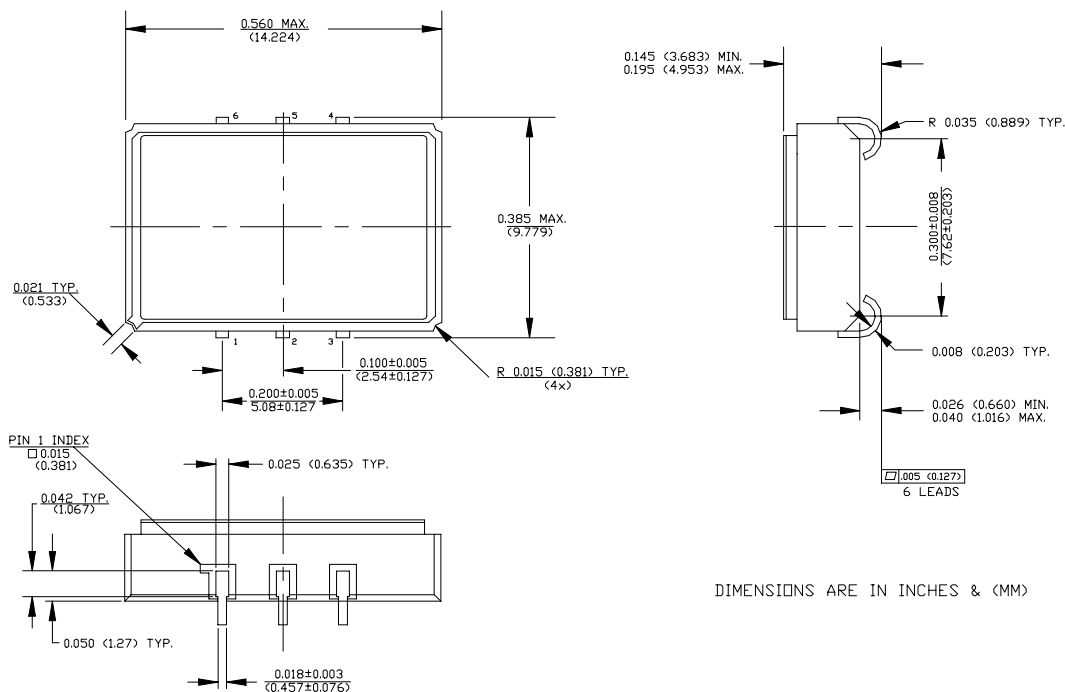
Features

- Wide frequency range—80.0MHz to 200.0MHz
- User specified tolerance available
- Will withstand vapor phase temperatures of 253°C for 4 minutes maximum
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 3000g
- 3.3 volt operation
- Fast rise and fall times <600 ps
- 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 leads - Solder dipped leads available upon request

Electrical Connection

Pin Connection

- | | |
|---|-------------------|
| 1 | Enable/Disable |
| 2 | NC |
| 3 | V _{EE} |
| 4 | Output |
| 5 | Output Complement |
| 6 | V _{CC} |



**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

PJ-A2940 Series Continued
Differential Positive ECL (DPECL) Fast Edge

Rev. E

Operating Conditions and Output Characteristics**Electrical Characteristics**

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	80.0MHz	-----	200.0MHz
Duty Cycle	-----	@ V_{CC} -1.29V	45/55%	-----	55/45%
Logic 0 ⁽²⁾	V_{OL}	-----	1.35V	-----	1.70V
Logic 1 ⁽²⁾	V_{OH}	-----	2.28V	-----	2.56V
Rise & Fall Time	tr,tf	20-80% V_O with 50 ohm load to V_{CC} -2V	-----	-----	600 psec
Tpd ⁽⁴⁾	-----	-----	-200 psec	-----	+200 psec
Jitter, RMS ⁽³⁾	-----	-----	-----	-----	3 psec
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}	-----	3.15V	3.3V	3.45V
Supply Current	I_{CC}	50 ohm termination To 2.00V below V_{CC}	0.0 mA	-----	110 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	-----	-----	-----	276 mW
Lead temperature	T_L	Soldering, 10 sec.	-----	-----	300°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-833, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Soldering Condition	300°C for 10 seconds
Hermetic Seal	Leak rate less than 1×10^{-8} atm.cc/sec

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 $V_{CC} = 3.3V$
- 3) Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
- 4) Tpd is phase shift between the falling edge of pin 3 at 2.0V and the rising edge of pin 1 at 2.01V.

Creating a Part Number**PJ - A294X - FREQ****Package Code**

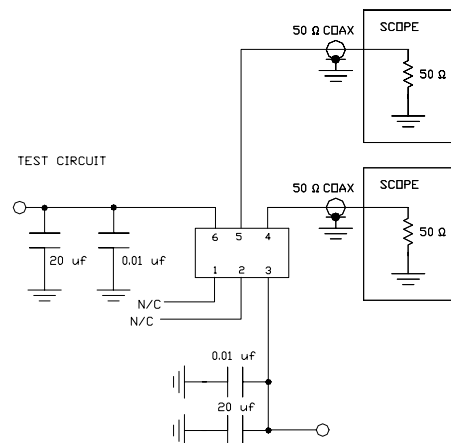
PJ 6 J Lead SMD

Input Voltage

Code Specification
A 3.3V
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



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



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