



Differential Positive ECL (DPECL) Fast Edge PJ-A2980 Series

Description

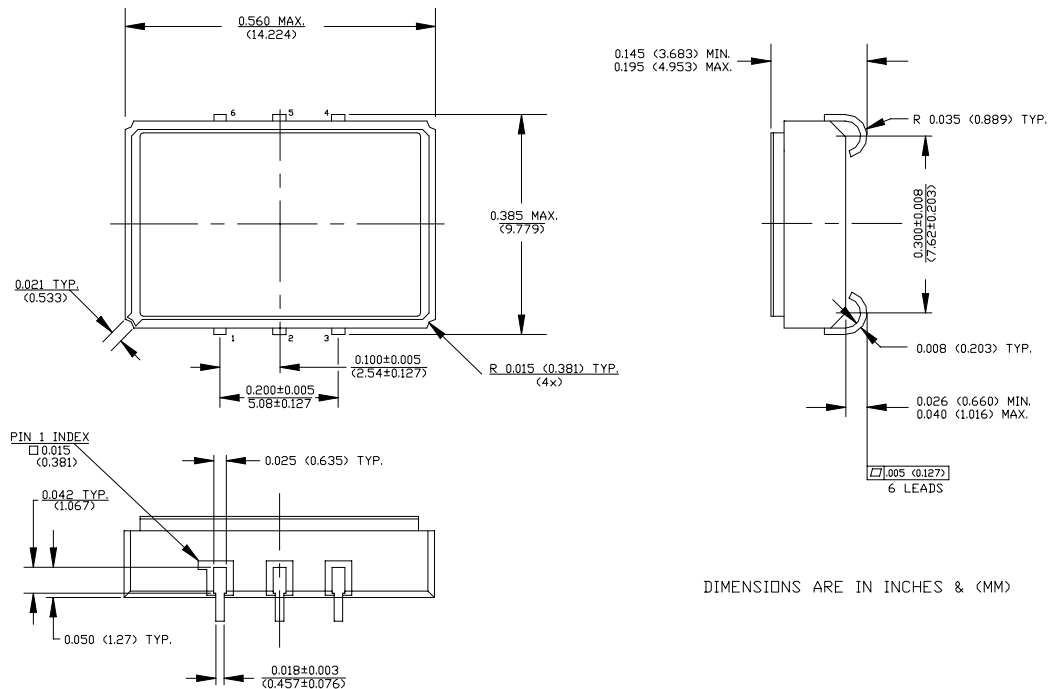
The PJ-A2980 Series of quartz crystal oscillators provide DPECL Fast Edge compatible signals. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

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
- 3.3 volt operation
- Metal lid electrically connected to ground to reduce EMI
- Fast rise and fall times <600 ps
- COTS/Dual use
- 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}



PJ-A2980 Series Continued
Differential Positive ECL (DPECL) Fast Edge

Rev. K

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} -1.025	-----	-----
Rise & Fall Time	tr,tf	20-80% V_O with 50 ohm load to V_{CC} -2V	-----	-----	600 psec
T_{pd} ⁽⁴⁾	-----	-----	-200 psec	-----	+200 psec
Jitter, Integrated	J	Integrated from phase noise, 12kHz to 20MHz, RMS	-----	0.1 ps	-----
Jitter, Wavecrest Characterized ⁽³⁾	-----	Random Period Accum, pk-to-pk	-----	2.3ps 29ps	-----
Phase Noise	$\epsilon(\Delta f)$	125MHz	-----	-----	-----
		@ 10Hz	-----	-70 dBc/Hz	-----
		@ 100Hz	-----	-102 dBc/Hz	-----
		@ 1kHz	-----	-135 dBc/Hz	-----
		@ 10kHz	-----	-145 dBc/Hz	-----
		@ 100kHz	-----	-145 dBc/Hz	-----
		@ >1Mhz	-----	-145 dBc/Hz	-----
Enable Voltage ⁽⁵⁾	-----	with $V_{EE} = 0V$	2.0V	-----	-----
Disable Voltage	-----	with $V_{EE} = 0V$	-----	-----	0.8V
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 ⁽⁶⁾	V_{CC}	-----	3.135V	3.3V	3.465V
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	-----	-----	-----	277 mW
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

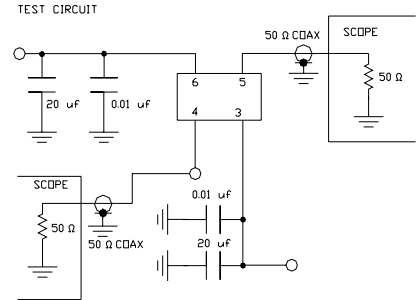
Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Soldering Condition	300°C for 10 seconds
Hermetic Seal	Leak rate less than 1×10^{-8} atm.cc/sec of helium

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 $V_{CC} = 3.3V$
- 3) Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
- 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.

PJ-A2980 Series Continued

Creating a Part Number	
PJ - A298X - FREQ	
Package Code	Tolerance/Performance
PJ 6 J Lead SMD	0 ±100ppm 0-70°C
	1 ±50ppm 0-70°C
	7 ±25ppm 0-70°C
	9 Customer Specific
Input Voltage	A ±20ppm 0-70°C
Code Specification	B ±50ppm -40 to +85°C
A 3.3V	C ±100ppm -40 to +85°C
5V	



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

Max Reflow Profile

