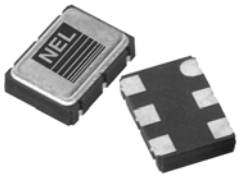
CRYSTAL CLOCK OSCILLATORS

Data Sheet 0244A

Rev. Y



Differential Positive ECL (DPECL)
SD-X2980 Series

Description

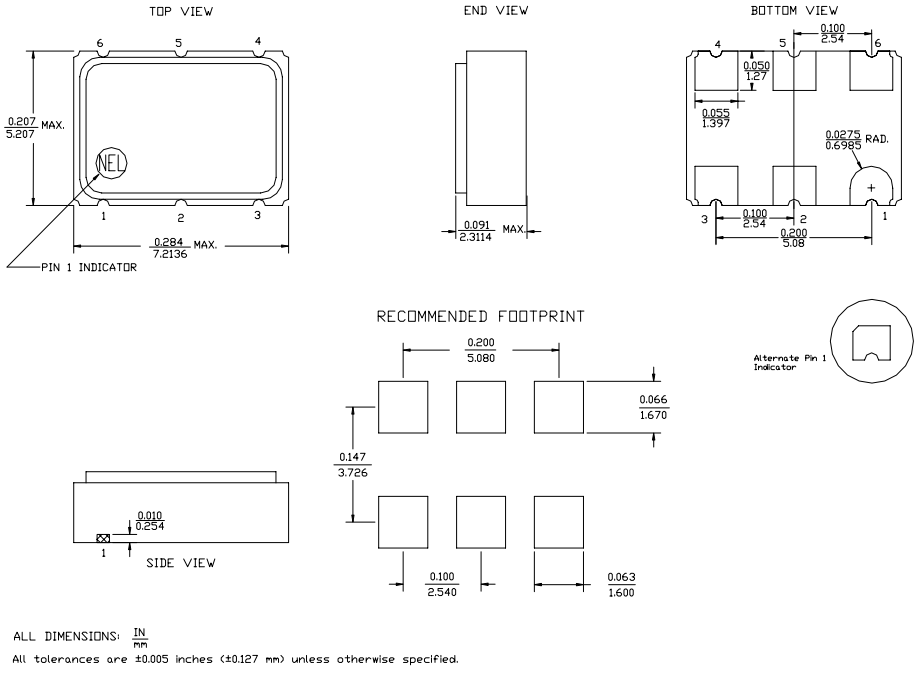
The **SD-X2980 Series** of quartz crystal oscillators provide DPECL compatible signals. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

Features

- Wide frequency range - 25.0MHz to 312.5MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- COTS/Dual use
- Wavecrest jitter characterization available
- Overtone technology
- High Q Crystal actively tuned oscillator circuit
- No internal PLL avoids cascading PLL problems
- Power supply decoupling internal
- Metal lid electrically connected to ground to reduce EMI
- 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}



NEL FREQUENCY CONTROLS, INC.

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SD-X2980 Series Continued
Differential Positive ECL (DPECL)

Rev. Y

Operating Conditions and Output Characteristics

Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	25.0MHz	-----	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	tr,tf	20-80%V_O with 50 ohm load to V_{CC}-2V	-----	-----	600ps
T_{pd} (6)	-----	-----	-200psec	-----	+200psec
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	-----	29ps	-----
Phase Noise (7)	£(Δf)	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	0.7V_{CC}	-----	-----
Disable Voltage	-----	with V_{EE} = 0V	-----	-----	0.3V_{CC}
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(4)	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}	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	3.3V	-----	-----	277mW
		2.5V	-----	-----	210mW
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 x 10^{-8} atm.cc/sec of helium

Footnotes:

1) Standard frequency stability (±20,±25,±50ppm & 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) Internal high frequency power source decoupling.
5) Open to enable pin also enables the output.
6) Tpd is phase shift between the falling edge of pin 4 at 2.0V and the rising edge of pin 5 at 2.01V.
7) If phase noise data at a particular frequency is needed, contact factory.

Creating a Part Number

SD - X298X - FREQ

Package Code
SD 6 pad 5x7mm 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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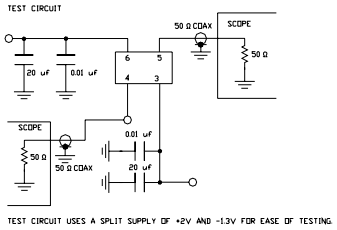
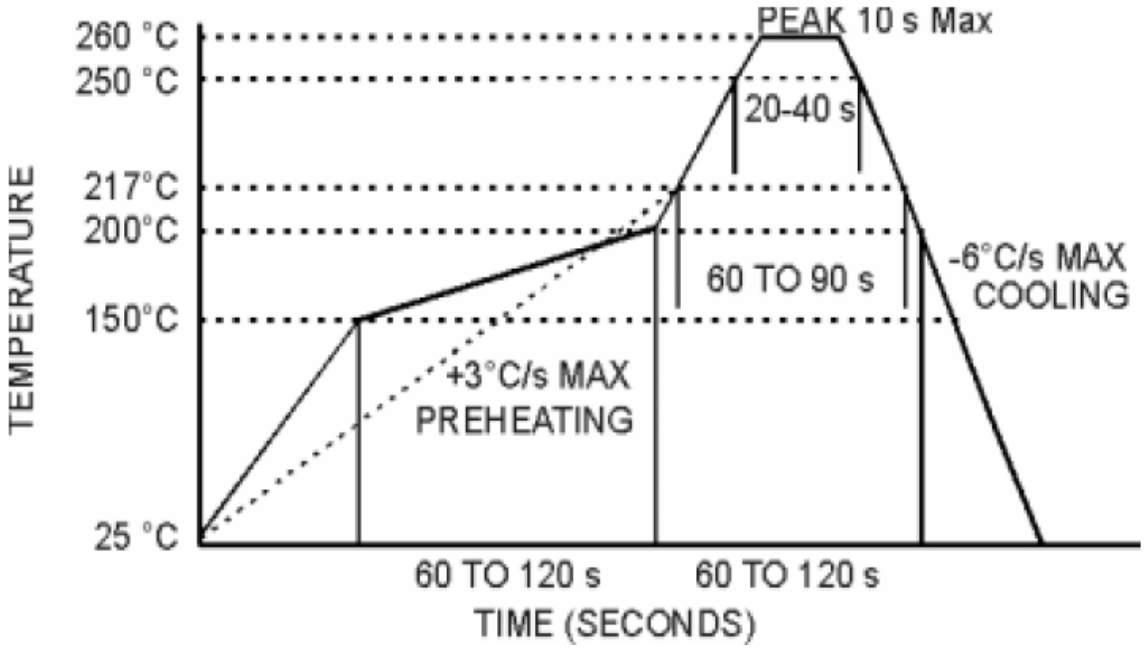
SD-X2980 Series Continued



Max Reflow Profile



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