



Differential Positive ECL (DPECL) SD-B2980 Series

Description

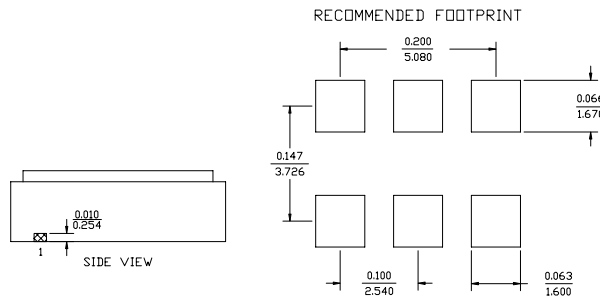
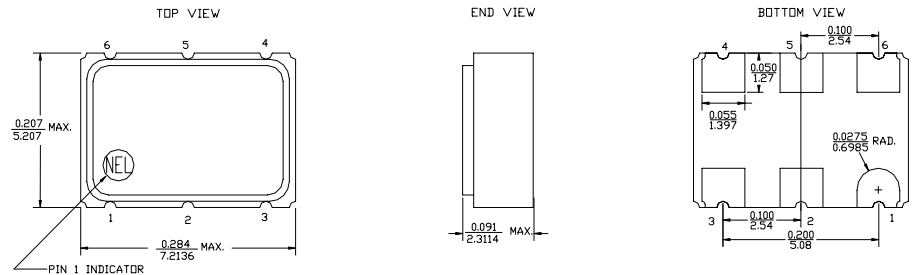
The **SD-B2980 Series** of quartz crystal oscillators provide DPECL compatible signals. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

Features

- Wide frequency range—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
- Overtone technology
- COTS/Dual use
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Wavecrest jitter characterization available
- 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}



ALL DIMENSIONS: $\frac{IN}{mm}$
All tolerances are ± 0.0005 inches (± 0.0127 mm) unless otherwise specified.

SD-B2980 Series Continued
Differential Positive ECL (DPECL)

Rev. U

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	tr,tf	20-80%V _O with 50 ohm load to V _{CC} -2V	-----	-----	700 psec
T _{PD} ⁽⁶⁾	-----	-----	-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	ƒ(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 ⁽⁴⁾	-----	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 ⁽⁵⁾	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
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:

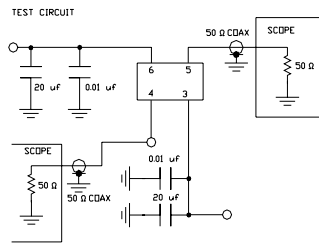
- Standard frequency stability (±20,±25,±50ppm & others available)
- V_{OL}, V_{OH}, referenced to ground (V_{EE}) with V_{CC} = 2.5V
- Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
- Open to enable pin also enables the output.
- Internal high frequency power source decoupling.
- 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.

Creating a Part Number

SD - B298X - FREQ

Package Code	Input Voltage	Tolerance/Performance
SD 6 pad 5x7mm SMD	Code Specification	0 ±100ppm 0-70°C
	A 3.3V	1 ±50ppm 0-70°C
	B 2.5V	7 ±25ppm 0-70°C
	5V	9 Customer Specific
		A ±20ppm 0-70°C
		B ±50ppm -40 to +85°C
		C ±100ppm -40 to +85°C

SD-B2980 Series Continued



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

Max Reflow Profile

