

### Differential Positive ECL (DPECL) SD-A2980 Series

*PRELIMINARY*

#### Description

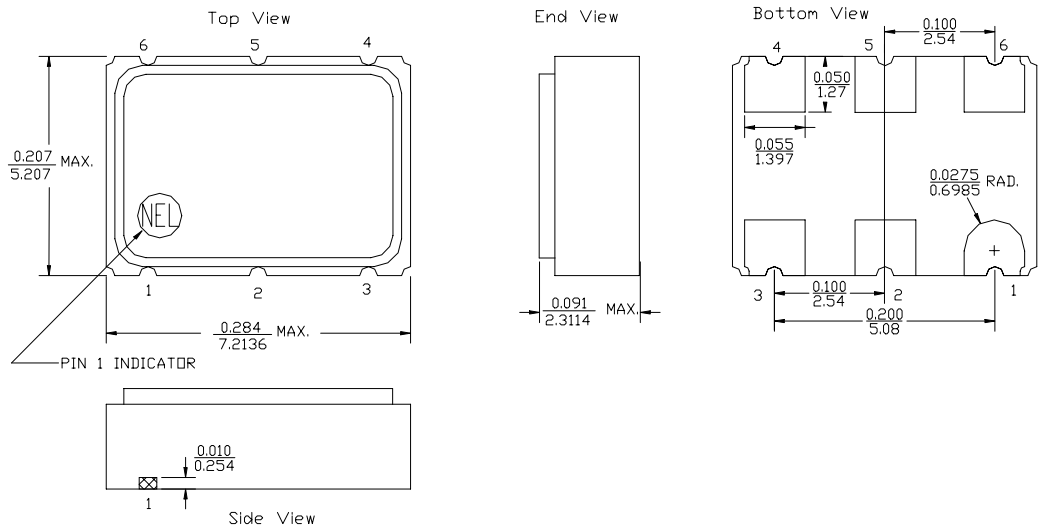
The **SD-A2980 Series** of quartz crystal oscillators provide DPECL compatible signals. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

#### Features

- Wide frequency range—100.0MHz to 160.0MHz
- 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 1000g
- 3.3 volt operation
- Wavecrest jitter characterization available
- Overtone technology
- High Q Crystal actively tuned oscillator circuit
- No internal PLL avoids cascading PLL problems
- Metal lid electrically connected to ground to reduce EMI
- Gold plated pads

#### Electrical Connection

| Pin | Connection              |
|-----|-------------------------|
| 1   | Enable/Disable          |
| 2   | N.C.                    |
| 3   | V <sub>EE</sub> /Ground |
| 4   | Output                  |
| 5   | /Output                 |
| 6   | V <sub>CC</sub>         |



SD-A2980 Series Continued  
Differential Positive ECL (DPECL)

Rev. B

## Operating Conditions and Output Characteristics

### Electrical Characteristics

| Parameter                          | Symbol   | Conditions   | Min      | Typical | Max      |
|------------------------------------|----------|--|----------|---------|----------|
| Frequency                          | ----     | ----   | 100.0MHz | ----    | 160.0MHz |
| Duty Cycle                         | ----     | @ $V_{CC}$ -1.29V  | 45/55%   | ----    | 55/45%   |
| Logic 0 <sup>(2)</sup>             | $V_{OL}$ | ----   | 1.35V    | ----    | 1.70V    |
| Logic 1 <sup>(2)</sup>             | $V_{OH}$ | ----   | 2.28V    | ----    | 2.56V    |
| Rise & Fall Time                   | tr,tf    | 20-80% $V_O$ with 50 ohm load to $V_{CC}$ -2V  | ----     | ----    | 1 nsec   |
| Jitter, RMS <sup>(3)</sup>         | ----     | ----   | ----     | ----    | 3 psec   |
| Enable Voltage <sup>(5)</sup>      | ----     | with $V_{EE} = 0V$   | 2.0V     | ----    | ----     |
| Disable Voltage                    | ----     | with $V_{EE} = 0V$   | ----     | ----    | 0.8V     |
| Frequency Stability <sup>(1)</sup> | dF/F     | Overall conditions including:<br>voltage, calibration, temp.,<br>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<br>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     | $P_D$    | ----   | ----   | ----    | 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    |

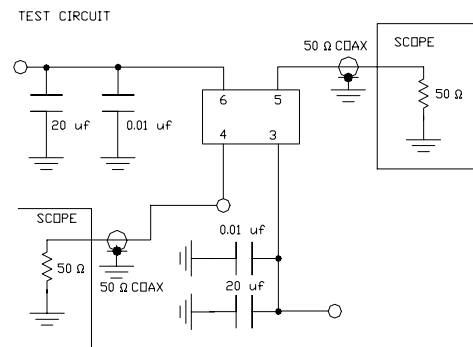
### Environmental and Mechanical Characteristics

|                     |   |
|---------------------|---|
| 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 $1 \times 10^{-8}$ 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.
- 5) Open to enable pin also enables the output.

| Creating a Part Number   |                              |
|--------------------------|------------------------------|
| <b>SD - A298X - FREQ</b> |                              |
| <b>Package Code</b>      | <b>Tolerance/Performance</b> |
| SD 6 pad 5x7mm SMD       | 0 ±100ppm 0-70°C             |
|                          | 1 ±50ppm 0-70°C              |
|                          | 7 ±25ppm 0-70°C              |
|                          | 9 Customer Specific          |
| <b>Input Voltage</b>     | 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.