

Differential Positive ECL (DPECL) Fast Edge SD-A2960 Series

PRELIMINARY

Description

The **SD-A2960 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.

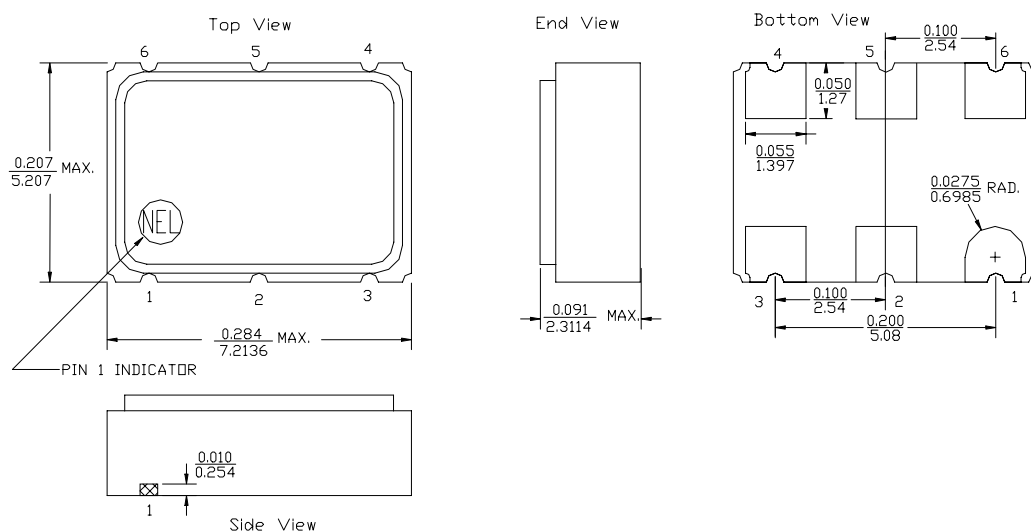
Features

- Wide frequency range—180.0MHz to 250.0MHz
- 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
- Metal lid electrically connected to ground to reduce EMI
- Fast rise and fall times <600 ps
- 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

Electrical Connection

Pin Connection

- | | |
|---|------------------|
| 1 | Enable/Disable |
| 2 | N.C. |
| 3 | V_{EE} /Ground |
| 4 | Output |
| 5 | /Output |
| 6 | V_{CC} |



SD-A2960 Series Continued
Differential Positive ECL (DPECL) Fast Edge

Rev. A

Operating Conditions and Output Characteristics**Electrical Characteristics**

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	180.0MHz	-----	250.0MHz
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	$t_{r,f}$	20-80% V_O with 50 ohm load to V_{CC} -2V	-----	-----	600 psec
T_{pd} ⁽⁴⁾	-----	-----	-200 psec	-----	+200 psec
Jitter, RMS ⁽³⁾	-----	-----	-----	-----	3 psec
Enable Voltage ⁽⁵⁾	-----	with $V_{EE} = 0V$	0V	-----	1.0V
Disable Voltage	-----	with $V_{EE} = 0V$	3.0V	-----	V_{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	V_{CC}	-----	3.15V	3.3V	3.45V
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	-----	-----	-----	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-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 phse 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.

Creating a Part Number**SD - A296X - FREQ****Package Code**

SD 6 pad 5x7mm SMD

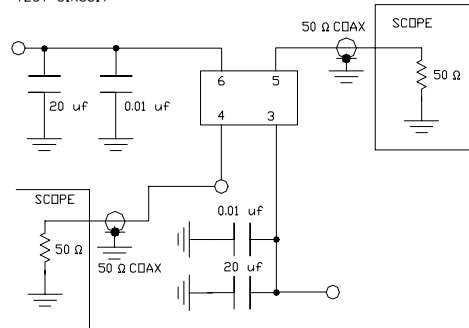
Tolerance/Performance

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

Input Voltage

Code Specification
 A 3.3V
 5V

TEST CIRCUIT



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



**FREQUENCY
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