



## Differential Positive ECL (DPECL) SJ-B2870 Series

Rev. F

### Description

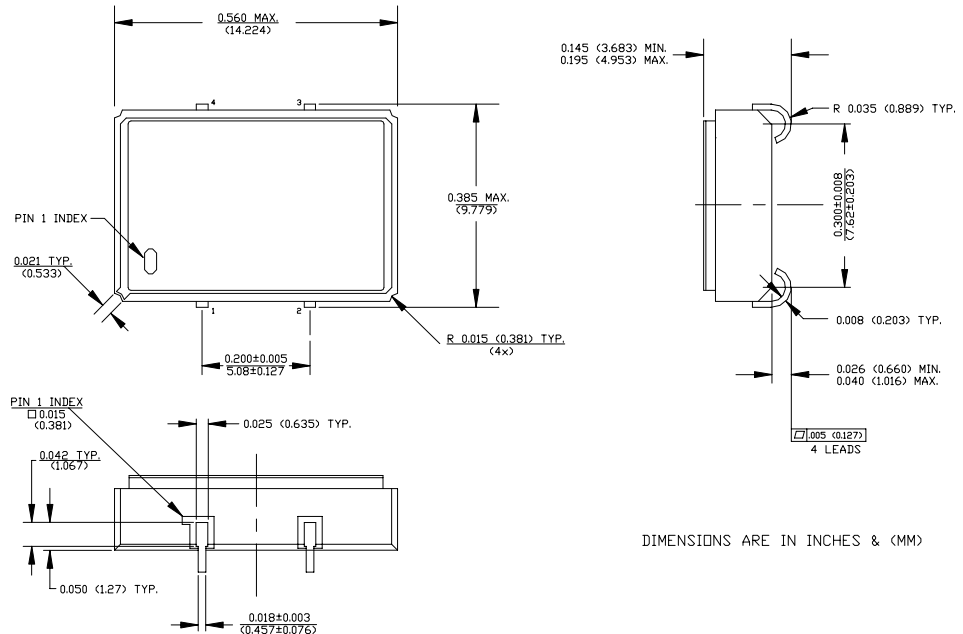
The **SJ-B2870 Series** of quartz crystal oscillators provide MECL 10K and 10KH series compatible signals in a ceramic SMD package. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

### Features

- Wide frequency range—50.0MHz to 100.0MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- 2.5 volt operation
- Metal lid electrically connected to ground to reduce EMI
- MECL 10K and 10KH series compatible output on Pin 3, complement on Pin 1
- COTS/Dual use
- Low Jitter - Wavecrest jitter characterization available
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- 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 leads - Solder dipped leads available upon request
- RoHS Compliant, Lead Free Construction (unless solder dipped leads are supplied)

### Electrical Connection

Pin	Connection
1	Output Complement
2	V <sub>EE</sub> /Ground
3	Output
4	V <sub>CC</sub>



## SJ-B2870 Series Continued Differential Positive ECL (DPECL)

Rev. F

### Operating Conditions and Output Characteristics

#### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	50.0MHz	-----	100.0MHz
Duty Cycle	-----	@ $V_{CC}-1.29V$	45/55%	-----	55/45%
Logic 0 <sup>(2)</sup>	$V_{OL}$	-----	$V_{CC}-1.95V$	-----	$V_{CC}-1.50V$
Logic 1 <sup>(2)</sup>	$V_{OH}$	-----	$V_{CC}-1.12V$	-----	$V_{CC}-0.74V$
Rise & Fall Time	tr,tf	20-80% $V_O$ with 50 ohm load to $V_{CC}-2V$	-----	1.0 ns	2.0 ns
Tpd <sup>(4)</sup>	-----	-----	-0.5 ns	-----	+0.5 ns
Jitter, RMS <sup>(3)</sup>	-----	-----	-----	-----	3 psec
Frequency Stability <sup>(1)</sup>	dF/F	Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration	-100ppm	-----	+100ppm

#### General Characteristics

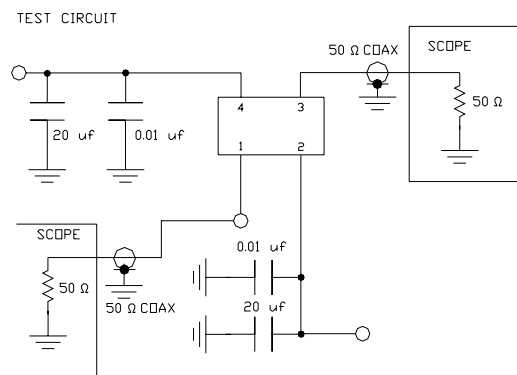
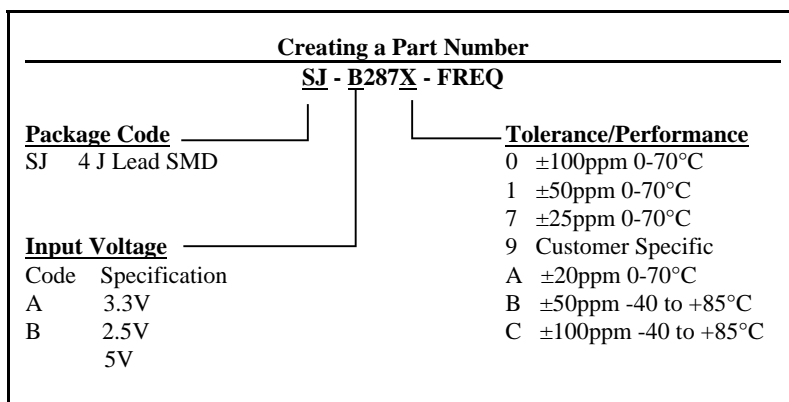
Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	$V_{CC}$	2.5V±5%	2.375V	2.5V	2.625V
Supply Current	$I_{CC}$	50 ohm termination To 2.00V below $V_{CC}$	0.0 mA	-----	50 mA
Output current	$I_O$	Low level Output Current	0.0 mA	-----	±50.0 mA
Operating temperature	$T_A$	-----	0°C	-----	70°C
Storage temperature	$T_S$	-----	-55°C	-----	125°C
Power Dissipation	$P_D$	-----	-----	-----	131 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 $1 \times 10^{-8}$ atm.cc/sec of helium
ESD Sensitivity	Human Body Model per ON Semiconductor 10kH series ECL: 500V min.

#### Footnotes:

- Standard frequency stability ( $\pm 20, \pm 25, \pm 50$ ppm & others available)
- $V_{OL}, V_{OH}$ , referenced to ground ( $V_{EE}$ ) with  $V_{CC} = 3.3V$
- Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization. RMS jitter bandwidth of 12kHz to 20MHz.
- Tpd is phase shift between the falling edge of pin 3 at  $V_{CC}-1.29V$  and rising edge of pin 1 at  $V_{CC}-1.29V$ .



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

SJ-B2870 Series Continued

Max Reflow Profile

