

Differential Positive ECL (DPECL) SJ-B2870 Series

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.

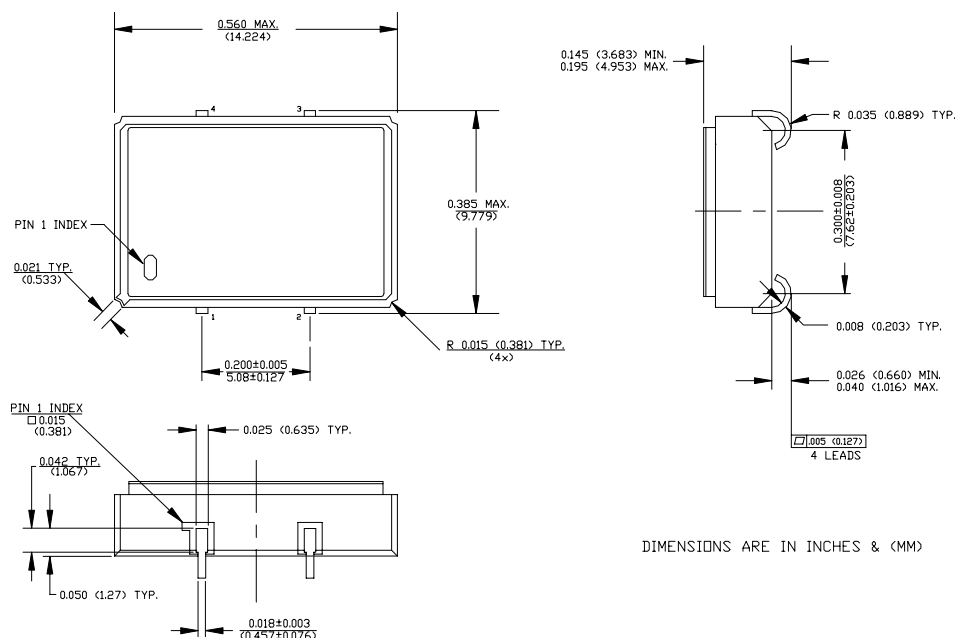
Features

- Wide frequency range—50.0MHz to 100.0MHz
- User specified tolerance available
- Will withstand SMD reflow temperatures of 253°C for 4 minutes maximum
- 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
- 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_{EE} /Ground |
| 3 | Output |
| 4 | V_{CC} |



**FREQUENCY
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SJ-B2870 Series Continued

Differential Positive ECL (DPECL)

Rev. C

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 ⁽²⁾	V_{OL}	----	V_{CC} -1.95V	----	V_{CC} -1.50V
Logic 1 ⁽²⁾	V_{OH}	----	V_{CC} -1.12V	----	V_{CC} -0.74V
Rise & Fall Time	$t_{r,f}$	20-80% V_O with 50 ohm load to V_{CC} -2V	----	1.0 ns	2.0 ns
T_{pd} ⁽⁴⁾	----	----	-0.5 ns	----	+0.5 ns
Jitter, RMS ⁽³⁾	----	----	----	----	3 psec
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}	2.5V $\pm$ 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	----	$\pm$ 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
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
ESD Sensitivity	Human Body Model per ON Semiconductor 10kH series ECL: 500V min.

Footnotes:

- 1) Standard frequency stability ($\pm$ 20, $\pm$ 25, $\pm$ 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.
RMS jitter bandwidth of 12kHz to 20MHz.
- 4) T_{pd} 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.

Creating a Part Number

SJ - B287X - FREQ

Package Code

SJ 4 J Lead SMD

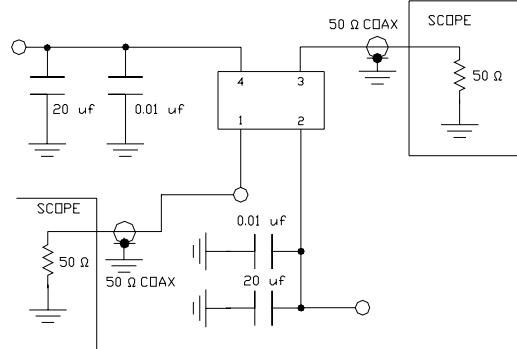
Tolerance/Performance

0 $\pm$ 100ppm 0-70°C
 1 $\pm$ 50ppm 0-70°C
 7 $\pm$ 25ppm 0-70°C
 9 Customer Specific
 A $\pm$ 20ppm 0-70°C
 B $\pm$ 50ppm -40 to +85°C
 C $\pm$ 100ppm -40 to +85°C

Input Voltage

Code	Specification
A	3.3V
B	2.5V
	5V

TEST CIRCUIT



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


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