SaRonix

Crystal Clock Oscillator 3.3 & 5V, High Frequency, ECL

Technical Data SEL2400 / SEL3400 Series

ACTUAL SIZE

Description

A crystal controlled, high frequency, highly stable oscillator, compatible with Motorola 10KH,10KE or 100LVE logic families. SaRonix proprietary fundamental high frequency sealed crystals available for exceptional stability and reliability. The output can be disabled and wired-OR for testing or combining multiple clocks. Open emitter output allows the user to select the load termination to optimize performance. Complementary outputs are available.*

Applications & Features

- Frequencies up to 250 MHz including SONET/ATM/SDH 155.52 MHz
- Gigabit Ethernet
- Fibre Channel Hubs/Routers
- Ideal for high resolution graphics & imaging applications
- Provides 10KH and 10KE (Motorola ECLinPS) compatible outputs
- 3.3V PECL versions are LVDS compatible
- Disable/wired-OR output feature and complementary output are available
- Superior stability with AT-cut crystal performance compared to SAW technology
- Fundamental or overtone crystal operation results in superior jitter characteristics over PLL implementations
- Standard 0.200" high package
- Surface mountable gull wing version available

*For internal termination contact factory.

Frequency Range:	7 MHz to 250 MHz
Frequency Stability:	±20, ±25, ±50 or ±100 ppm over all conditions: calibration tolerance, operating temperature, input voltage change, load change, aging, shock and vibration.
Temperature Range:	
Operating:	0 to +70°C or -40 to +85°C
Storage:	-55 to +125°C
Supply Voltage:	5.0V or -5.2V, 3.3V PECL
Supply Current:	
SEL34xx:	70mA typ, 100mA max, 75mA max @ 3.3V
SEL24xx:	48mA typ, 80mA max, 65mA max @ 3.3V
Output Drive:	
Symmetry:	45/55% max @ V_{BB} or Complementary Outputs Crossing
Rise & Fall Times:	1ns typ, 3ns max 20% to 80% for 10KH Logic 350ps typ, 550ps max 20% to 80% for 10KE Logic
Logic 0:	V_{CC} -1.595 max, 0 to +70°C V_{CC} -1.595 max, -40 to +85°C
Logic 1:	V_{CC} -1.02 min, 0 to +70°C V_{CC} -1.08 min, -40 to +85°C
Load:	50Ω to V_{CC} -2V
Jitter:	3.5ps max RMS period jitter, 1ps max 1σ cycle-to-cycle jitter
Mechanical:	
Shock:	MIL-STD-883, Method 2002, Condition B
Solderability:	MIL-STD-883, Method 2003
Terminal Strength:	MIL-STD-202, Method 211, Conditions A & C
Vibration:	MIL-STD-883, Method 2007, Condition A
Solvent Resistance:	MIL-STD-202, Method 215
Resistance to Soldering Heat:	MIL-STD-202, Method 210, Condition A, B or C (I or J for Gull Wing on SEL34xx)
Environmental:	
Gross Leak Test:	MIL-STD-883, Method 1014, Condition C
Fine Leak Test:	MIL-STD-883, Method 1014, Condition A2
Thermal Shock:	MIL-STD-883, Method 1011, Condition A
Moisture Resistance:	MIL-STD-883, Method 1004

Part Numbering Guide

SEL 340 0 B - 250.0000

Series
ECL/PECL

Device Type
241 = open blank, +5V 10KH, 7 to 200 MHz
243 = open blank, +3.3V 10KE, 25 to 200 MHz
340 = double seal, +5V 10KE, 70 to 250 MHz
341 = double seal, +5V 10KH, 70 to 250 MHz
343 = double seal,+3.3V 10KE, 70 to 155.52 MHz
350 = double seal, -5.2V 10KE, 70 to 250 MHz
351 = double seal, -5.2V 10KH, 70 to 250 MHz
353 = double seal, -3.3V 10KE, 70 to 155.52 MHz

Pin 1 Function (See Table I)
0 = Pin 1 - Control
1 = Pin 1 - $\overline{Q}$ Complementary
2 = Pin 1 - No Connect

Stability Tolerance
AA = ±20 ppm, 0 to +70°C
A = ±25 ppm, 0 to +70°C
B = ±50 ppm, 0 to +70°C
C = ±100 ppm, 0 to +70°C
E = ±50 ppm, -40 to +85°C
F = ±100 ppm, -40 to +85°C

K = Gull Wing Package
SEL24x/34x series only,
not applicable to SEL35x series

Frequency (MHz)

DS-116 REV G

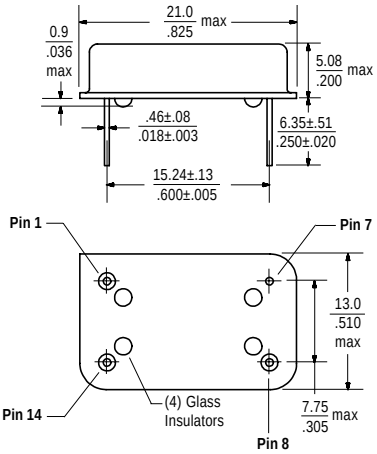
Crystal Clock Oscillator

3.3 & 5V, High Frequency, ECL

Technical Data

SEL2400 / SEL3400 Series

Package Details



Pin Functions:

Pin 1: $\overline{Q}$ SELxxx1, E/D SELxxx0, N/C SELxxx2

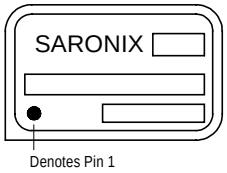
Pin 7: Case, V_{EE} SELx4xx, V_{CC} SELx5xx

Pin 14: V_{CC} SELx4xx, V_{EE} SELx5xx

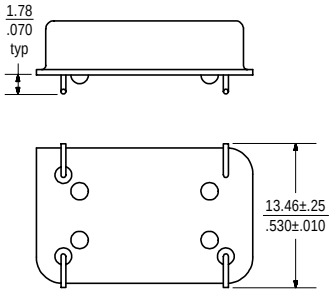
Pin 8: Q

Marking Format**

Includes Date Code, Frequency, Model



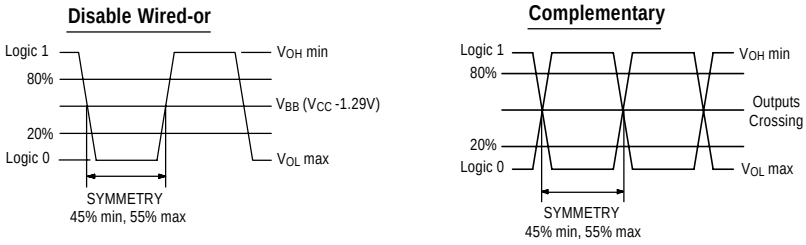
Gull Wing Package



Scale: None (Dimensions in $\frac{mm}{inches}$)

**Exact location of items may vary

Output Waveforms



Enable Function and Supply Options

Truth Table I - Positive Supply	
Pin 1 $\overline{EN}$	Pin 8
Logic 0	Clock Output
Logic1	Logic 0

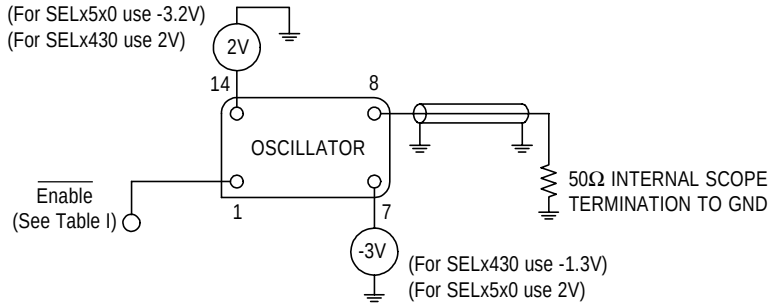
Enable/Disable Propagation Delay:
10K: ((1/f) / 2) +250ps max
10KH: ((1/f) / 2) +2ns max

Table II		
Device Type	Pin 7 (Case)*	Pin 14
SELx4xx	V_{EE} 0V (or V_{EE} -5V [-3.3V 10KE])	V_{CC} +5V (+3.3V 10KE) (or V_{CC} 0V)
SELx5xx	V_{CC} 0V (or V_{CC} +5V [+3.3V 10KE])	V_{EE} -5V (-3.3V 10KE) (or V_{EE} 0V)

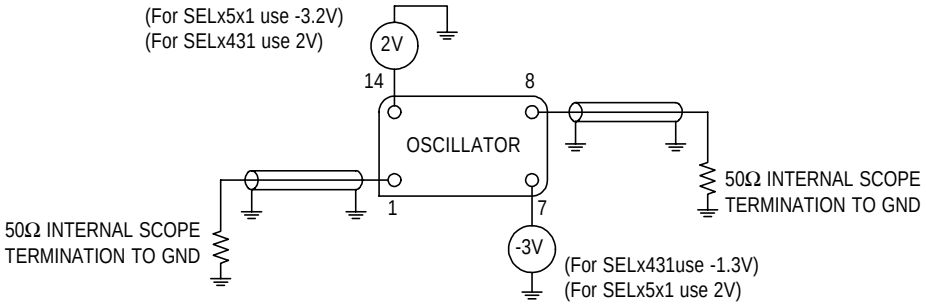
*Pin 14 connected to case available, please contact SaRonix.

Test Circuits

SELx4x0



SELx4x1



All specifications are subject to change without notice.

DS-116 REV G