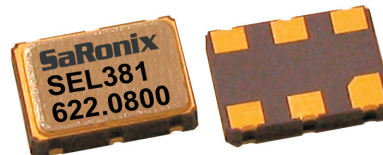


### 3.3V PECL High Frequency Crystal Clock Oscillator (XO)



Actual Size = 5 x 7mm



#### Product Features

- Less than 3 ps RMS jitter
- Tight stability over a broad range of operating conditions
- 3.3V PECL (LVPECL) compatible logic levels
- Pin-compatible with standard 5x7mm packages
- Designed for standard reflow and washing techniques
- Pb-free and RoHS/Green compliant

#### Product Description

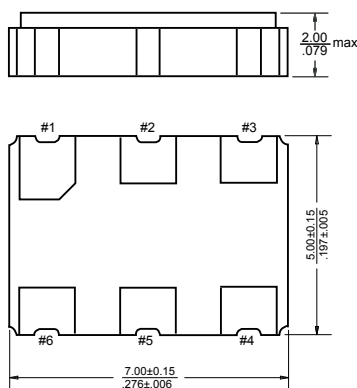
The SEL381 Series is a 3.3V crystal clock oscillator that achieves superb stability over a broad range of operating conditions and frequencies. The output clock signal is compatible with LVPECL logic levels. The device, available on tape and reel, is contained in a 5x7mm surface-mount ceramic package.

#### Applications

The SEL381 Series is an ideal reference clock for high-speed applications including:

- 1/10 Gigabit Ethernet
- 2/4/10G FibreChannel
- Serial Attached SCSI (SAS)
- Server & Storage platforms
- SONET/SDH linecards

#### Packaging Outline



#### Pin Functions

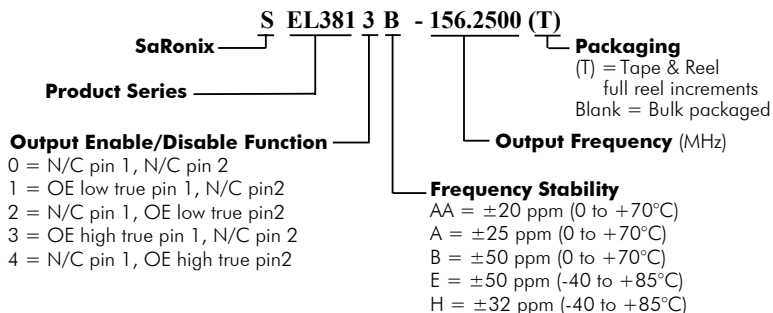
Pin	Function
1	OE or NC
2	OE or NC
3	V <sub>EE</sub>
4	Q Output
5	$\bar{Q}$ Output
6	V <sub>CC</sub>

#### Common Frequencies

Contact SaRonix for additional frequencies

25.0000 MHz	133.0000 MHz	250.0000 MHz
38.8800 MHz	150.0000 MHz	312.5000 MHz
62.5000 MHz	155.5200 MHz	350.0000 MHz
66.0000 MHz	156.2500 MHz	400.0000 MHz
66.6667 MHz	159.3750 MHz	425.0000 MHz
75.0000 MHz	160.0000 MHz	500.0000 MHz
77.7600 MHz	161.1328 MHz	622.0800 MHz
100.0000 MHz	187.5000 MHz	625.0000 MHz
106.2500 MHz	200.0000 MHz	644.5312 MHz
125.0000 MHz	212.5000 MHz	

#### Ordering Information



**Electrical Performance**

Parameter	Min.	Typ.	Max.	Units	Notes
Output frequency	25		670	MHz	As specified
Supply voltage	2.97	3.3	3.63	V	
Supply current		85	110	mA	
Frequency stability			±20 to ±50	ppM	See Note 1 below
Operating temperature	-40		+85	°C	As specified
Output logic 0, V <sub>OL</sub>			V <sub>CC</sub> - 1.620	V	0 to +85°C
Output logic 0, V <sub>OL</sub>			V <sub>CC</sub> - 1.555	V	-40 to 0°C
Output logic 1, V <sub>OH</sub>	V <sub>CC</sub> - 1.025			V	0 to +85°C
Output logic 1, V <sub>OH</sub>	V <sub>CC</sub> - 1.085			V	-40 to 0°C
Output load	50Ω to V <sub>CC</sub> - 2V				output requires termination
Duty cycle	45		55	%	measured 50% of waveform
Rise and fall time			850	ps	measured 20/80% of waveform
Jitter, phase			3	ps RMS (1-σ)	12kHz to 40MHz frequency band
Jitter, accumulated			10	ps RMS (1-σ)	20,000 adjacent periods
Jitter, total			40	ps pk-pk	100,000 random periods

**Notes:**

- As specified. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (5 years at 40°C average effective ambient temperature), shock and vibration.

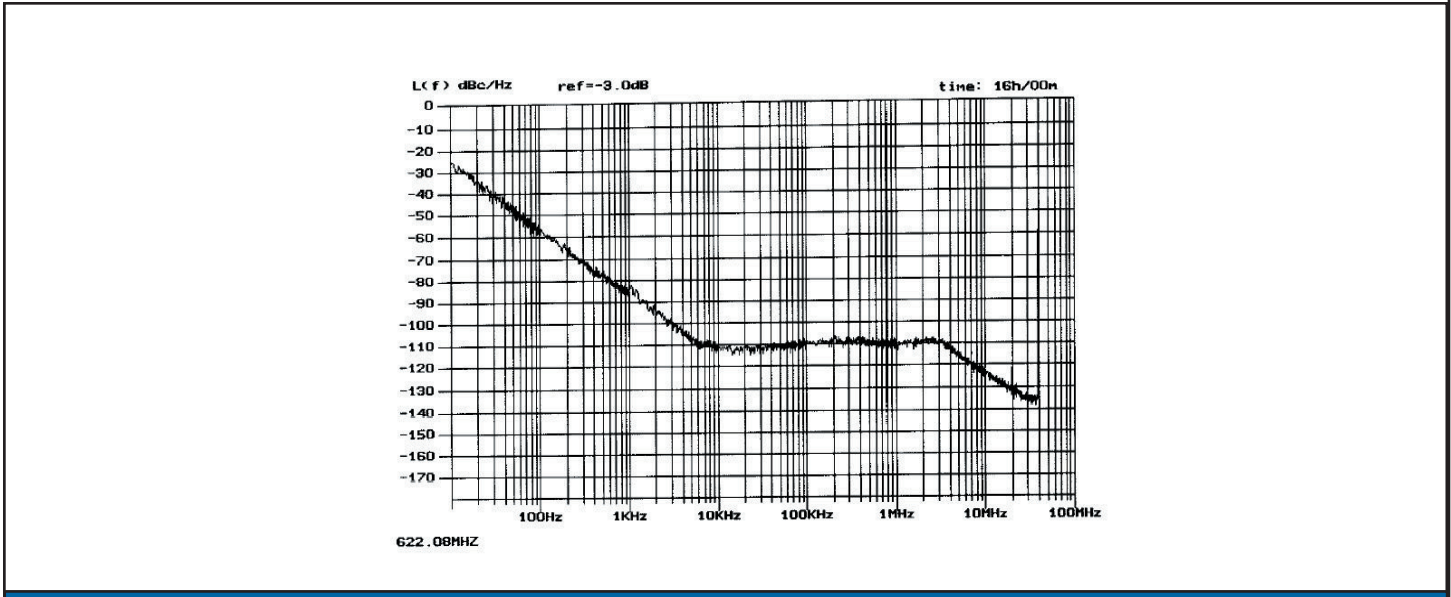
**Output Enable / Disable Function (SEL3813 and SEL 3814)**

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (OE pin), Output Enable	V <sub>OH</sub>			V	or open
Input voltage (OE pin), Output Disable			V <sub>OL</sub>	V	Outputs disabled to Hi-Z

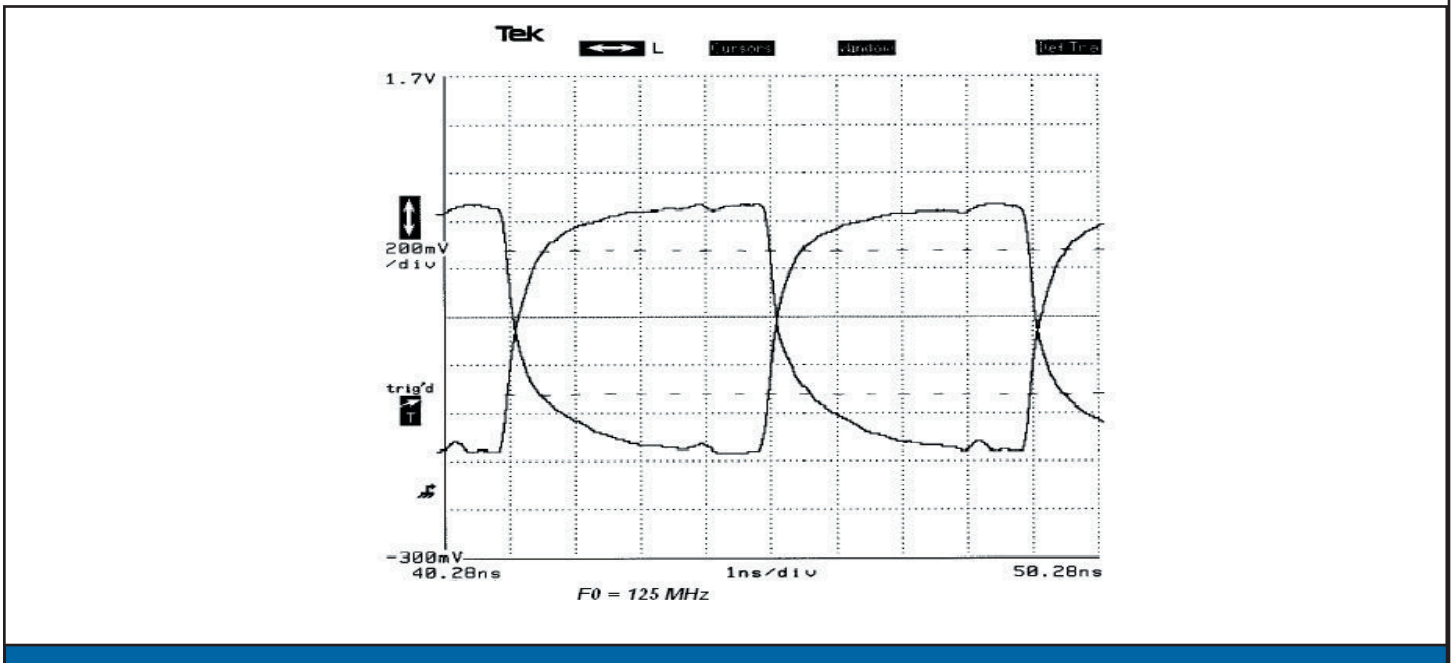
**Output Enable / Disable Function (SEL3811 and SEL 3812)**

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (OE pin), Output Enable			V <sub>OL</sub>	V	or open
Input voltage (OE pin), Output Disable	V <sub>OH</sub>			V	Outputs disabled to Hi-Z

**Typical Phase Noise**



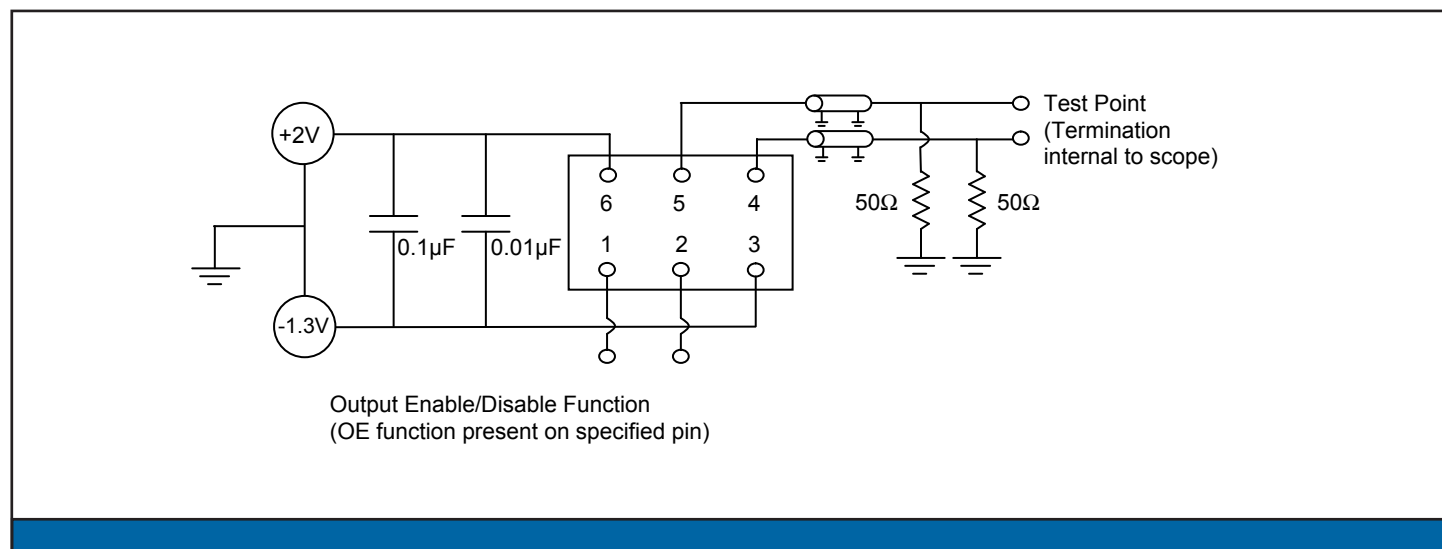
**Typical Output Waveform**



**Absolute Maximum Ratings**

Parameter	Min.	Typ.	Max.	Units	Notes
Storage temperature	-55		+125	°C	

**Test Circuit**

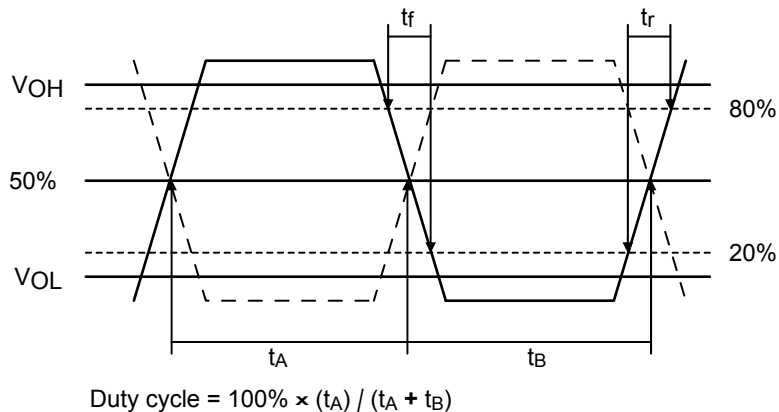


**Reliability Test Ratings**

This product is rated to meet the following test conditions:

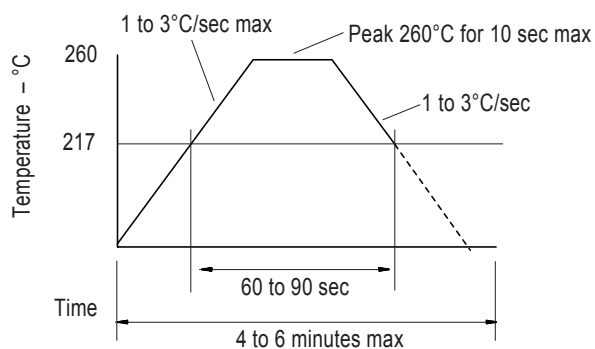
Type	Parameter	Test Condition
Mechanical	Shock	MIL-STD-883, Method 2002, Condition B
Mechanical	Solderability	MIL-STD-883, Method 2003
Mechanical	Terminal strength	MIL-STD-883, Method 2004, Condition D
Mechanical	Gross leak	MIL-STD-883, Method 1014, Condition C
Mechanical	Fine leak	MIL-STD-883, Method 1014, Condition A2 ( $R_1 = 2 \times 10^{-8}$ atm cc/s)
Mechanical	Solvent resistance	MIL-STD-202, Method 215
Environmental	Thermal shock	MIL-STD-883, Method 1011, Condition A
Environmental	Moisture resistance	MIL-STD-883, Method 1004
Environmental	Vibration	MIL-STD-883, Method 2007, Condition A
Environmental	Resistance to soldering heat	MIL-STD-202, Method 210, Condition I or J

**Output Waveform**

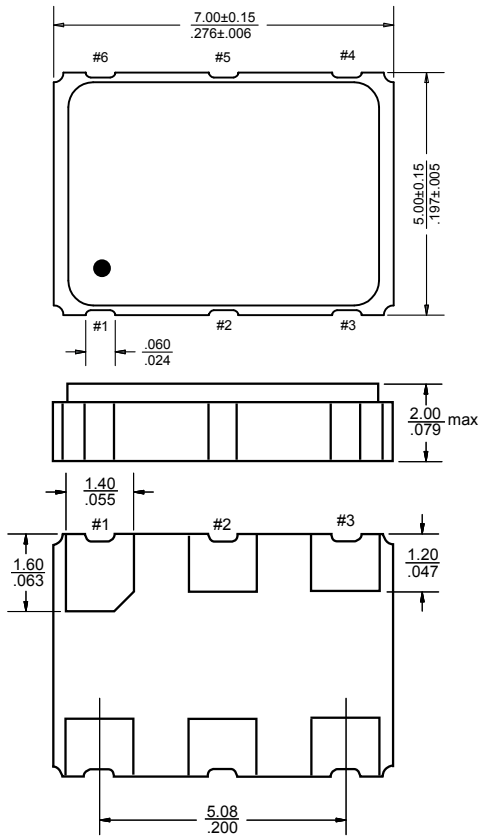


**Reflow Soldering Profile**

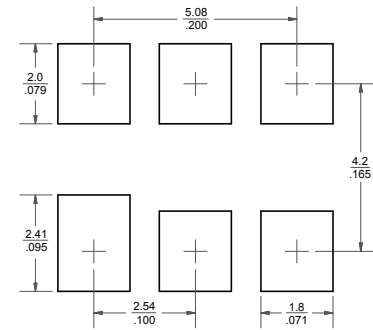
As per IPC/JEDEC J-STD-020C



**Mechanical Drawings**



**Recommended Land Pattern\***



\*External high-frequency power decoupling is recommended. (see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

Scale: None. Dimensions are in mm/inches.

**Marking LINE 1:** SEL381 X (SaRonix, Model, Stability code)  
**Marking LINE 2:** Frequency (Frequency code)  
**Marking LINE 3:** ● YY WW X (Pin 1, Year, Week, Origin)

\*\* Exact location of markings may vary

**Ordering Information**

