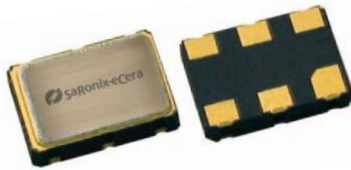


# 3.3V LVDS High Frequency VCXO

**LR**


7.0 x 5.0mm Ceramic SMD

## Product Features

- Frequencies available up to 800 MHz
- <3ps RMS jitter
- Designed for standard reflow and washing techniques
- Pb-free & RoHS/Green compliant

## Product Description

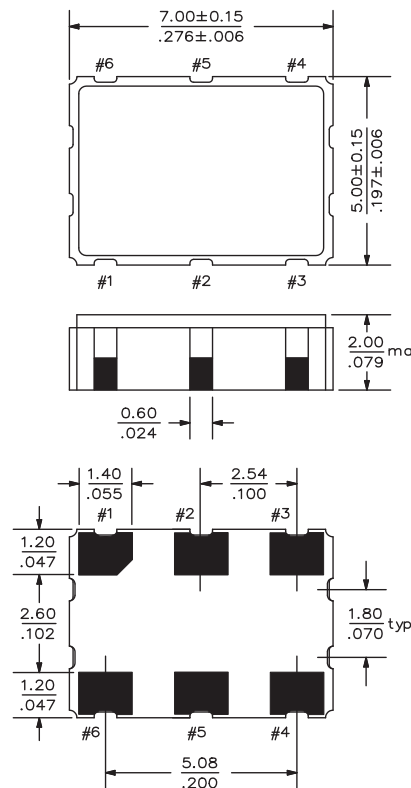
The LR Series 3.3V voltage controlled crystal oscillator achieves superb temperature stability over a broad range of operating conditions and frequencies. The device is constructed with a hermetically sealed quartz crystal resonator exhibiting a high-Q for exceptional performance. The device, available on tape and reel, is contained in a 7.0 x 5.0mm surface mount ceramic package.

## Applications

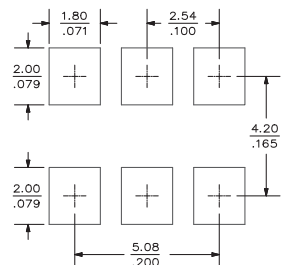
The LR Series VCXO is an ideal component in phase locked loop circuits that perform clock smoothing, clock/data recovery, or frequency translation and card synchronization functions, such as:

- SONET/SDH/DWDM/E4 timing control & line cards
- 1 & 10 Gigabit Ethernet and FibreChannel
- Satellite, microwave and cellular base stations
- Server & Storage platforms

## Package:



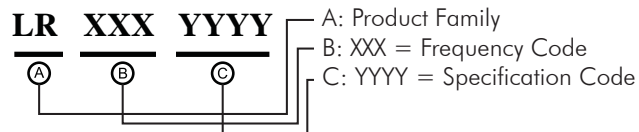
## Recommended Land Pattern:



## Pin Functions:

Pin	Function
1	Voltage Control
2	OE or NC
3	Ground
4	Q Output
5	$\bar{Q}$ Output
6	VCC

## Part Ordering Information:



Following the above format, Saronix-eCera part numbers will be assigned upon confirmation of exact customer requirements.

# 3.3V LVDS High Frequency VCXO LR

## LR Series Voltage Controlled Crystal Oscillator (VCXO) 7.0 x 5.0mm

### Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output Frequency (F <sub>N</sub> )	19.44		800	MHz	As specified
Supply Voltage	3.14	3.3	3.46	V	
Supply Current			80	mA	
Frequency Stability			±20 to ±50	ppm	See Note 1 below
Operating Temperature Range	-40		+85	°C	As specified
Output Logic 0, V <sub>OL</sub>	0.9	1.1		V	
Output Logic 1, V <sub>OH</sub>		1.4	1.6	V	
Output Amplitude Differential	500		900	mV	
Output Load	100Ω +5pF across both outputs				output requires termination
Duty Cycle	45		55	%	measured +1.25 VDC
Rise and Fall Time		0.7	1.0	ns	measured 20/80% of waveform
Jitter, Phase		2.5	4	ps RMS (1-σ)	12kHz to 20MHz frequency band
Jitter, Accumulated		5	10	ps RMS (1-σ)	10,000 adjacent periods

#### Notes:

- As specified. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, shock and vibration. Stability is inclusive of 5 years aging at 40°C average effective ambient temperature for ordering options A, B, D, E.
- For specifications other than those listed, please contact sales.

### Frequency Modulation Function

Parameter	Min.	Typ.	Max.	Units	Notes
Absolute Pull Range (APR)	±50			ppm	See #1 below
Control Voltage Range	0.3		3.0	V <sub>DC</sub>	As rated
Center Control Voltage	1.32	1.65	1.98	V	For RMT center frequency
Monotonic Linearity			10	%	Positive transfer slope
Input Impedance	50			kΩ	Control voltage pin
Modulation Bandwidth	10			kHz	-3dB

#### Notes:

- APR is relative to the nominal output frequency F<sub>N</sub>; APR is inclusive (net) of frequency deviation due to stability.

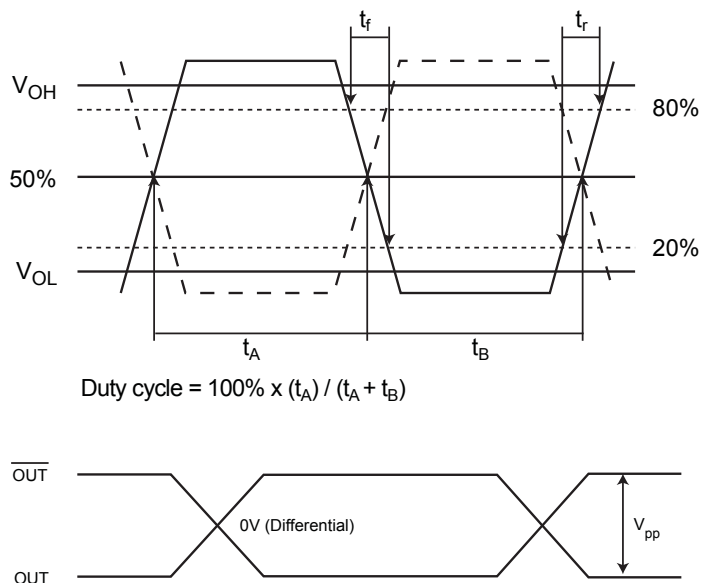
### Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage, Output Enable (pin 2)			V <sub>OL</sub>	V	or Open
Input Voltage, Output Disable (pin2)	V <sub>OH</sub>			V	Q and Q outputs disable to High Impedance

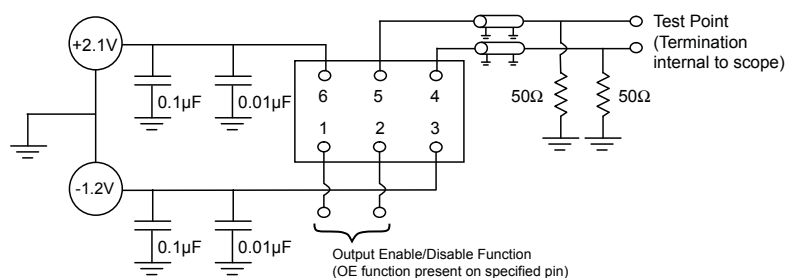
### Absolute Maximum Ratings

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

### Output Waveform



### Test Circuit

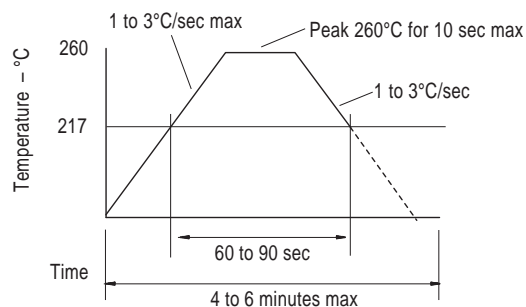


# 3.3V LVDS High Frequency VCXO LR

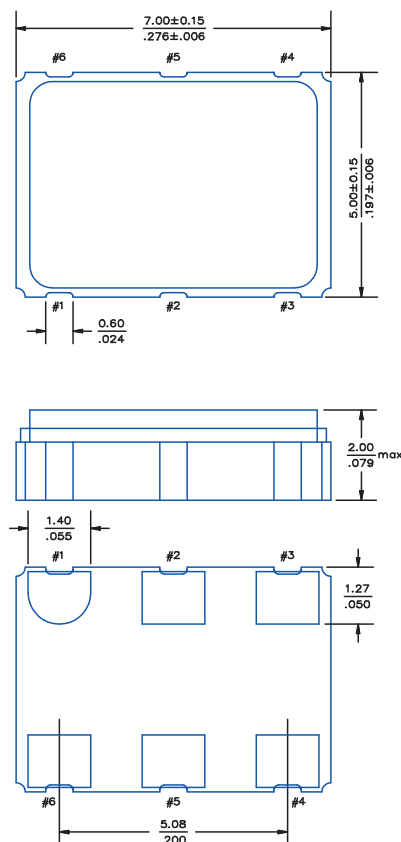
## LR Series Voltage Controlled Crystal Oscillator (VCXO) 7.0 x 5.0mm

### Reflow Soldering Profile

As per IPC/JEDEC J-STD-020C



### Mechanical Drawing



### 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	JESD22-B102-D Method 2 (Preconditioning E)
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	J-STD-020C Table 5-2 Pb-free devices (2 cycles max)