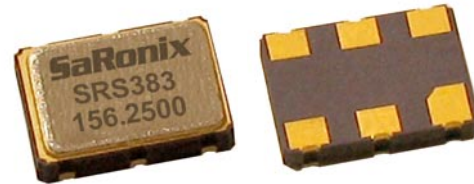


RateSelect™ 3.3V PECL Low Jitter Crystal Clock Oscillator (XO)



Actual Size = 7 x 5mm



Product Features

- RateSelect™ function toggles output frequency between primary and primary/2
- Less than 1 ps RMS jitter with advanced non-PLL, patented design (U.S. Patent #7002423)
- Tight stability over a broad range of operating conditions
- 3.3V PECL (LVPECL) compatible logic levels
- Pin-compatible with standard 7 x 5mm packages
- Designed for standard reflow and washing techniques
- RoHS compliant**
(**per #7, Annex of Directive 2002/EC/05)

Product Description

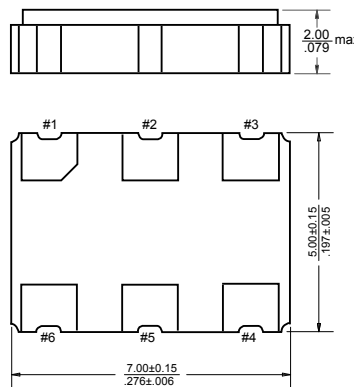
The SRS383 Series is a 3.3V crystal clock oscillator that achieves superb jitter and stability over a broad range of operating conditions and frequencies. The output clock signal, generated internally with a patented oscillator design, is compatible with LVPECL logic levels. The device contains a divide-by-2 RateSelect™ function that toggles the output frequency and is available on tape and reel, is contained in a 7x5mm surface-mount ceramic package.

Applications

The SRS383 Series is an ideal reference clock for high-speed applications requiring low jitter, including:

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

Packaging Outline



Pin Functions

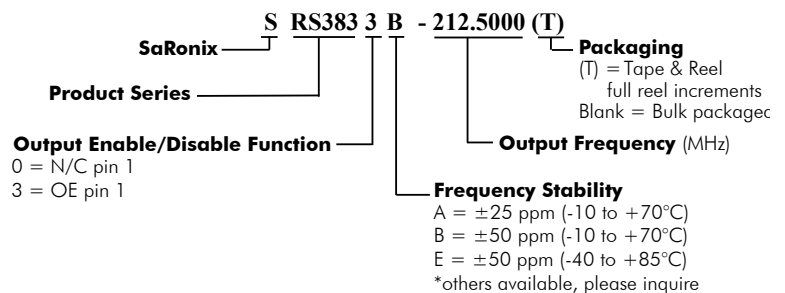
Pin	Function
1	OE or NC
2	RS (RateSelect™)
3	V _{EE}
4	Q Output
5	Q̄ Output
6	V _{CC}

Common Frequencies (Primary)

Contact SaRonix for additional frequencies

100.0000 MHz	148.5000 MHz	160.0000 MHz
106.2500 MHz	150.0000 MHz	187.5000 MHz
125.0000 MHz	155.5200 MHz	198.0000 MHz
133.0000 MHz	156.2500 MHz	200.0000 MHz
148.3516 MHz	159.3750 MHz	212.5000 MHz

Ordering Information



Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output frequency	100		212.50	MHz	Primary output frequency, as specified
Supply voltage	2.97	3.3	3.63	V	
Supply current		50	60	mA	Output Enabled
Supply current			15	mA	Output Disabled
Frequency stability			±25 to ±50	ppM	See Note 1 below
Operating temperature	-40		+85	°C	As specified
Output logic 0, V _{OL}			V _{CC} - 1.620	V	0 to +85°C
Output logic 0, V _{OL}			V _{CC} - 1.555	V	-40 to 0°C
Output logic 1, V _{OH}	V _{CC} - 1.025			V	0 to +85°C
Output logic 1, V _{OH}	V _{CC} - 1.085			V	-40 to 0°C
Output load	50Ω to V _{CC} - 2V				output requires termination
Duty cycle	45		55	%	measured 50% of waveform
Rise and fall time		500	850	ps	measured 20/80% of waveform
Jitter, phase			1	ps RMS (1-σ)	12kHz to 40MHz frequency band
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.

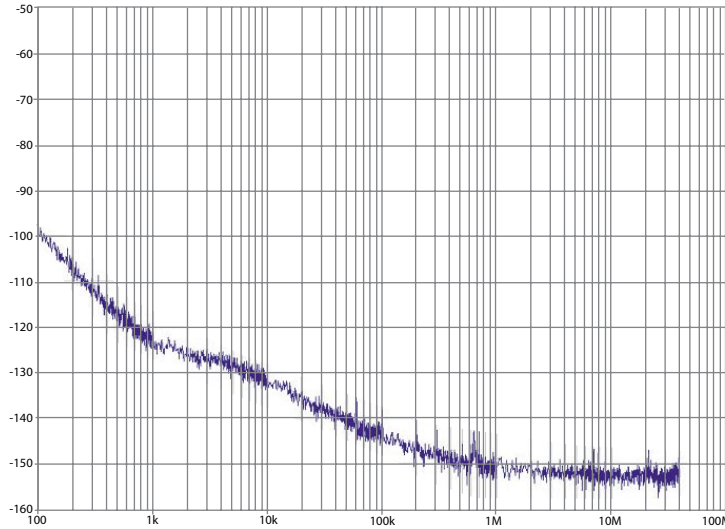
Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input voltage (OE pin), Output Enable	2.2			V	or open
Input voltage (OE pin), Output Disable			0.8	V	Outputs disabled to Hi-Z
Internal Pullup Resistance	50			kΩ	
Output disable delay			200	ns	
Output enable delay			10	ms	

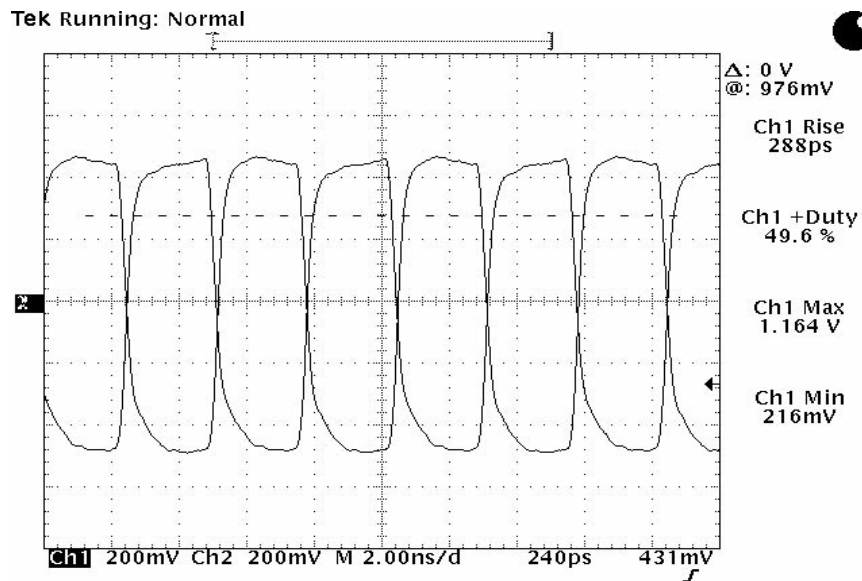
RateSelect™ Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input voltage (RS pin), Primary	2.0			V	or open
Internal Pullup Resistance	50			kΩ	
Input voltage (RS pin), Primary/2			0.8	V	Output is primary frequency divided by 2

Typical Phase Noise



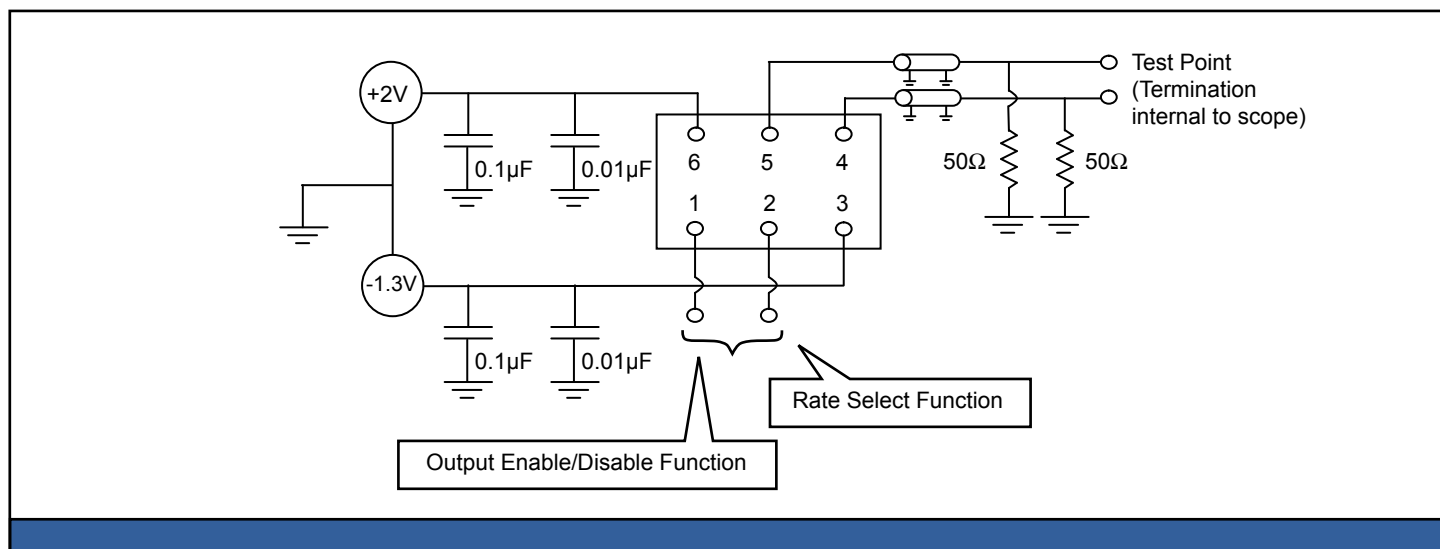
Typical Output Waveform



Absolute Maximum Ratings

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

Test Circuit

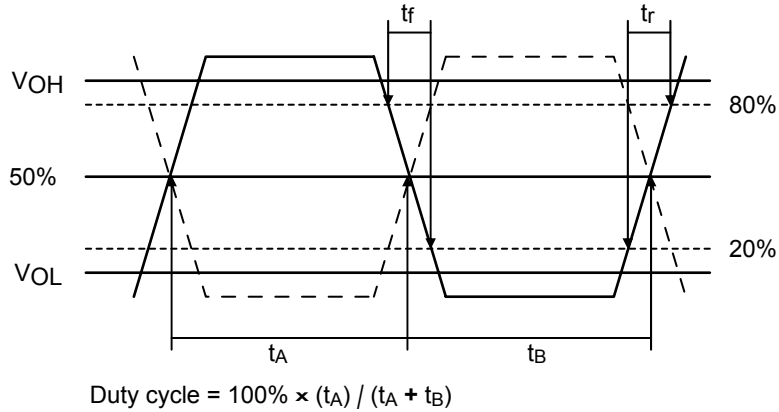


Reliability Test Ratings

This product is rated to meet the following test conditions:

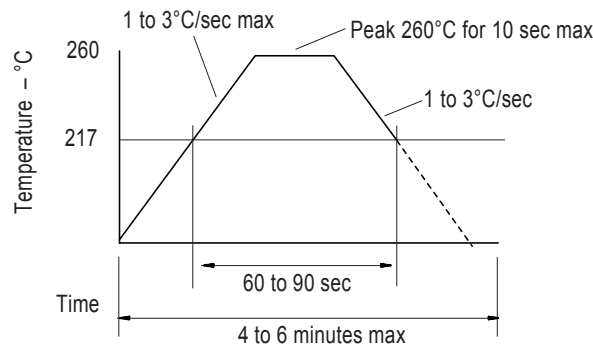
Type	Parameter	Test Condition
Mechanical	Shock	MIL-STD-883 Method 2002 Condition B
Mechanical	Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Mechanical	Terminal strength	MIL-STD-883, Method 2004, Condition D
Mechanical	Gross leak	MIL-STD-883, Method 1014, Condition C
Mechanical	Fine leak	MIL-STD-883, 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)

Output Waveform

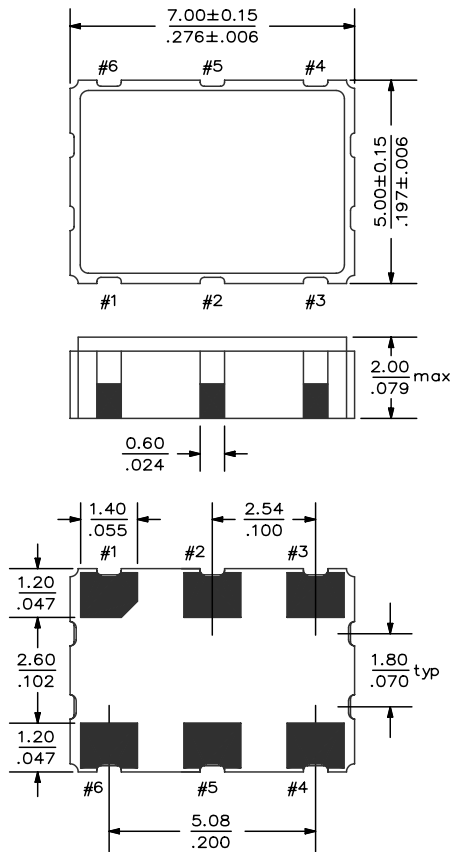


Reflow Soldering Profile

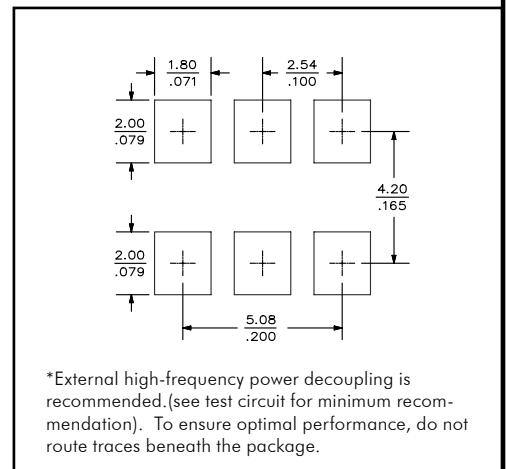
As per IPC/JEDEC J-STD-020C



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: SRS383 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