

3.3V CMOS Low Jitter, Hig Frequency XO



Actual Size $= 5 \times 7$ mm



Product Features

- Thicker crystal than conventional overtone for improved reliability
- Less than 1 ps RMS jitter with advanced non-PLL, patented clock circuit (U.S. Patent# 7002423)
- \bullet ± 50 ppM accuracy (all rated conditions including aging) standard for commercial or industrial operating conditions
- 3.3V CMOS/TTL compatible logic levels
- Pin-compatible with standard 7x5mm packages
- Designed for standard reflow and washing techniques
- IBIS model available
- RoHS compliant**

(**per #7, Annex of Directive 2002/05/EC)

Product Description

The SX Series includes an enhanced high-frequency version of the popular FN series, 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 LVCMOS/LVTTL logic levels. The device, available on tape and reel, is contained in a 7x5mm surface-mount ceramic package.

Applications

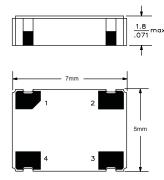
The SX Series is an ideal reference clock for high-speed applications requiring low jitter, including:

- 1/10 Gigabit Ethernet
- FibreChannel
- Serial Attached SCSI (SAS)
- Server & Storage platforms
- SONET/SDH linecards
- Passive Optical Network (PON) devices





Packaging Outline



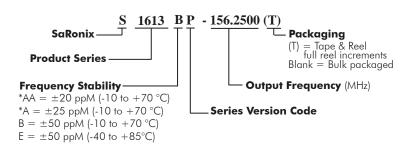
Pin Functions

Pin	Function
1	OE Function
2	Ground
3	Clock Output
4	V_{DD}

New Part Number Example

Note: After July 1, 2007, a Saronix - eCera part number following the above format will be assigned upon confirmation of exact customer requirements.

Legacy Ordering Information (for reference only)



* Availability varies by frequency.



3.3V CMOS Low Jitter, High Frequency XO SX SX Series Crystal Clock Oscillator (XO) Legger \$1613XB Society Legger \$1613XB So



Electrical Performance

Parameter	Min.	Тур.	Max.	Units	Notes
Output frequency	100		160	MHz	As specified (please inquire for higher)
Supply voltage	+2.97	+3.3	+3.63	V	
Supply current, output enabled			30	mA	
Supply current, output disabled			10	mA	Output Hi-Z
Frequency stability			±20 to ±50	ppM	See Note 1 below
Operating temperature	-40		+85	°C	As specified
Output logic 0, VOL			10% V _{DD}	V	
Output logic 1, VOH	90% V _{DD}			V	
Output load	15 pF (max) or 10 LSTTL				
Duty cycle	45		55	%	-10 to +70°C measured 50%VDD
Duty cycle	40		60	%	-40 to -10°C, +70 to +85°C measured 50%VDD
Rise and fall time			2	ns	measured 20/80% of waveform
Jitter, phase		0.25	1	ps RMS (1-σ)	12kHz to 40MHz frequency band
Jitter, total			40	ps pk-pk	100,000 random periods
Subharmonic Level			-40	dBc	

Output Enable / Disable Function

Parameter	Min.	Тур.	Max.	Units	Notes
Input Voltage (pin 1), Output Enable	2.2			V	or open
Input voltage (pin 1), Output Disable (low power standby)			0.8	V	Output is Hi-Z
Internal pullup resistance	50			kΩ	
Output disable delay			100	ns	
Output enable delay			1	ms	



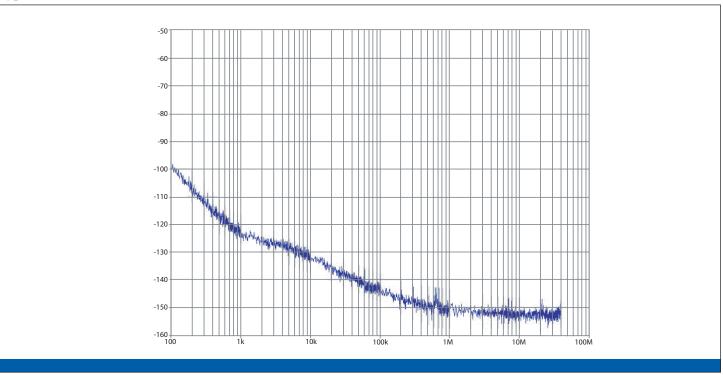
As specified. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (1 year at 25°C average effective ambient temperature), shock and vibration.

For specifications other than those listed, please contact sales.

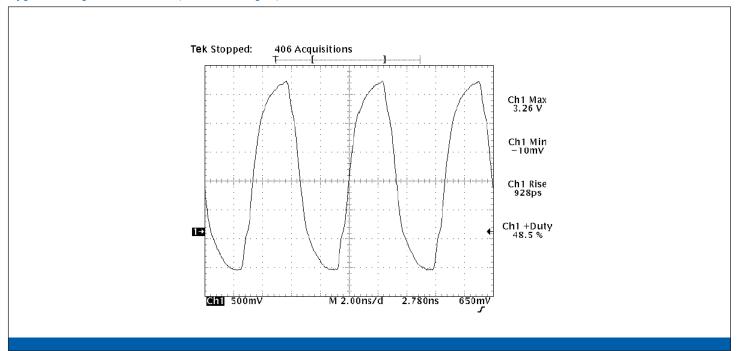


SX Series Crystal Clock Oscillator (XO) Legacy S1613XP Series

Typical Accumulated Jitter



Typical Output Waveform (75 MHz output)





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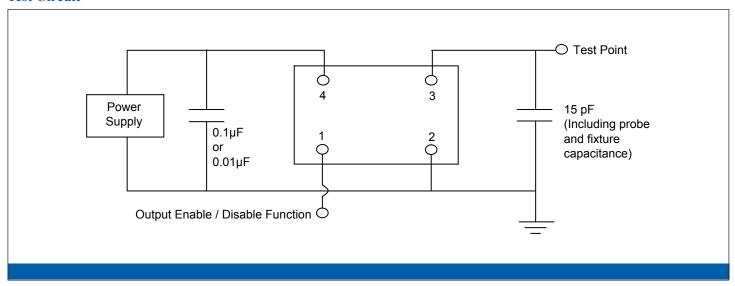
SX Series Crystal Clock Oscillator (XO)

Legacy S1613XP Series

Absolute Maximum Ratings

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

Test Circuit



Reliability Test Ratings

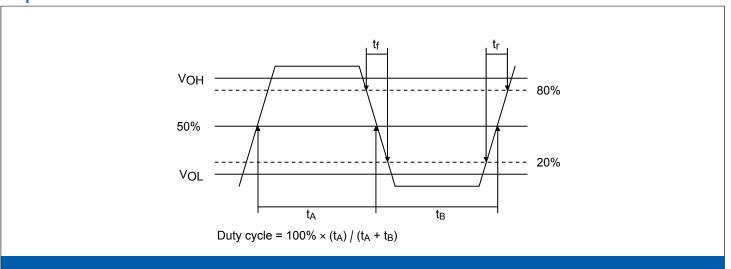
This product is rated to meet the following test conditions:

Туре	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 ($R_1 = 2x10^{-8}$ 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)

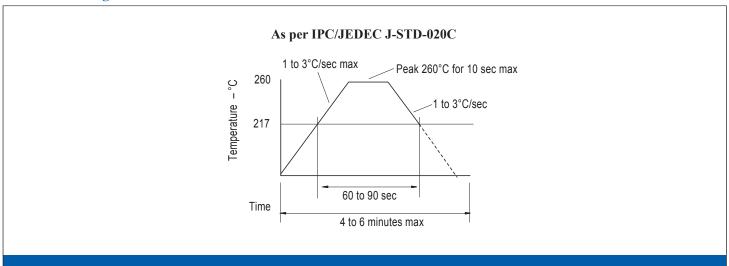




Output Waveform



Reflow Soldering Profile

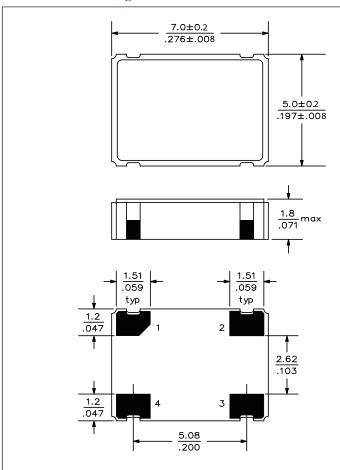




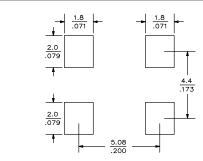


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Mechanical Drawings



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.

