

3.3V CMOS Low Jitter XO



Actual Size $= 5 \times 7$ mm



Product Features

- Less than 1.5 ps RMS jitter with non-PLL design
- 3.3V CMOS/TTL compatible logic levels
- Pin-compatible with standard 5x7mm packages
- Designed for standard reflow and washing techniques
- Low power standby mode
- Pb-free and RoHS/Green compliant

Product Description

The FN Series includes 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 non-PLL oscillator design, is compatible with LVCMOS/LVTTL logic levels. The device, available on tape and reel, is contained in a 5x7mm surface-mount ceramic package.

Applications

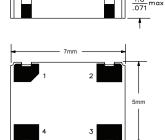
The FN Series is an ideal reference clock for applications requiring low jitter or tight stability, including:

- Ethernet
- FibreChannel
- Serial Attached SCSI (SAS)
- Server & Storage platforms
- SONET/SDH linecards
- T1/E1, T3/E3 linecards
- DSLAM
- 802.11a/b/g WiFi





Packaging Outline



Pin Functions

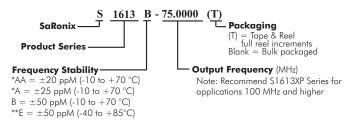
Pin	Function
1	OE Function
2	Ground
3	Clock Output
4	V_{DD}

New Part Number Example

A = Product Family B = Frequency Code C = Specification Code

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

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Electrical Performance

P	arameter	Min.	Тур.	Max.	Units	Notes	
Output frequen	ncy	1.544		156.25	MHz	As specified	
Supply voltage		+2.97	+3.3	+3.63	V		
				15		1.544 to 32 MHz	
Supply current, output enabled				25	mA	>32 to 50 MHz	
				40		>50 to 80 MHz	
				55		>80 to 156.25 MHz	
Supply current	t, standby mode			10	μA	Output Hi-Z	
Frequency stal	oility			±20 to ±50	ppM	See Note 1 below	
Operating tem	perature	-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 (1.5	44 to 80 MHz)	45		55	%	-40 to +85°C measured 50%VDD	
Duty cycle (>80	0 to 156.25 MHz)	45		55	%	-10 to +70°C measured 50%VDD	
Duty cycle (>80	0 to 156.25 MHz)	40		60	%	-40 to-10°C, +70 to +85°C measured 50%VDD	
	up to 50 MHz			7			
Rise and fall	>50 to 80 MHz			5		1.20/000/	
time	>80 to 125 MHz			3	ns	measured 20/80% of waveform	
	>125 to 156.25 MHz			2			
Jitter,	up to 80 MHz			1.5	ps RMS	10kHz to 20 MHz frequency band	
Phase	>80 to 156.25 MHz			1	(1-σ)		
Jitter,	up to 80 MHz			5	ps RMS (1-σ)	20.000 adjacent periods	
Accumulated	>80 to 156.25 MHz			3			
Jitter,	up to 80 MHz			50	ps	100.000 random periods	
Total	>80 to 156.25 MHz			30	pk-pk		

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			10	ms	

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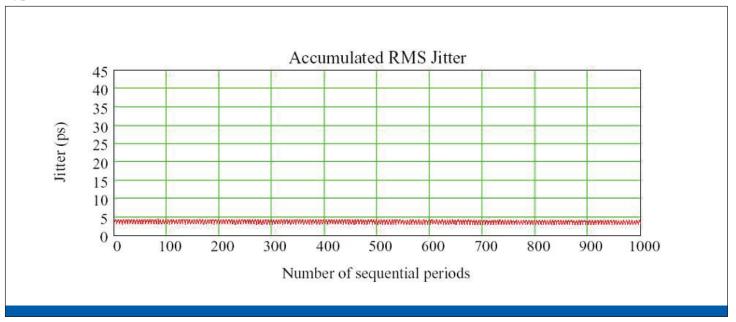
As specified. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (1 year at 25°C average effective ambient temperature), shock and vibration.

For specifications other than those listed, please contact sales.

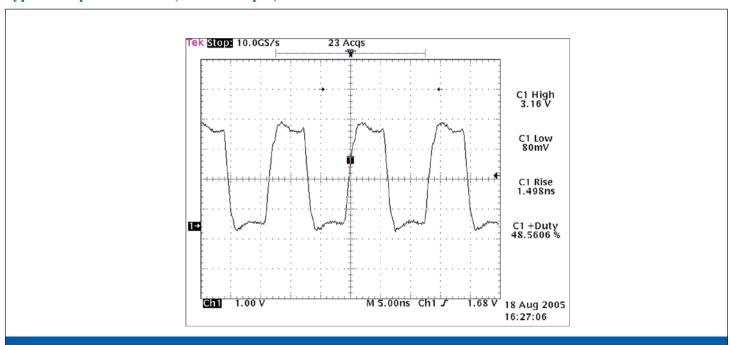




Typical Accumulated Jitter



Typical Output Waveform (75 MHz output)





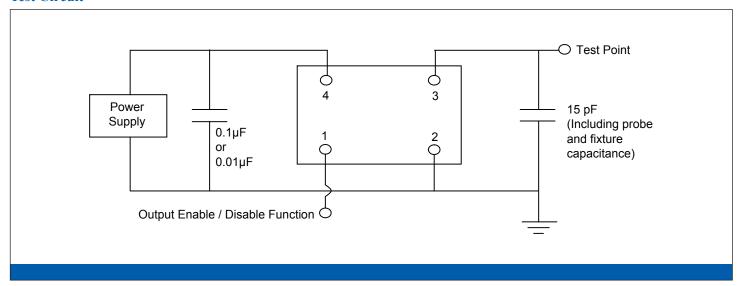




Absolute Maximum Ratings

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:

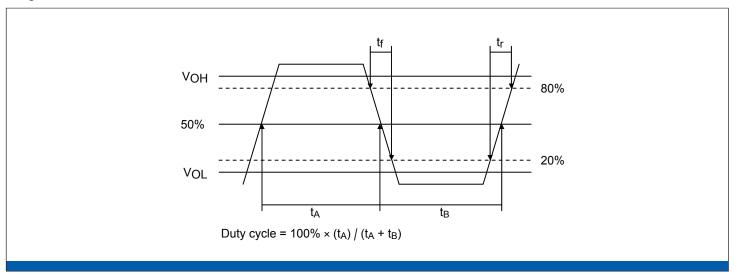
Туре	Parameter	Test Condition
Mechanical	Shock	MIL-STD-883, Method 2002, Condition B
Mechanical	Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Mechanical	Terminal strength	MIL-STD-883, Method 2004, Condition D
Mechanical	Gross leak	MIL-STD-883, Method 1014, Condition C
Mechanical	Fine leak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



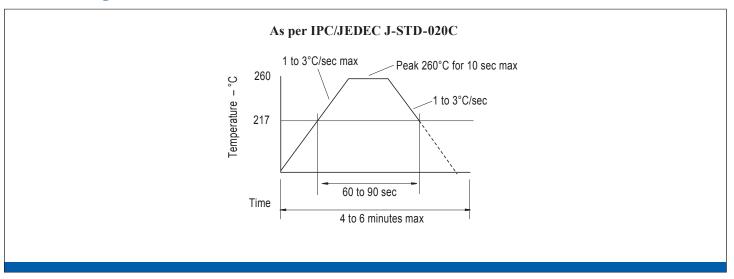




Output Waveform



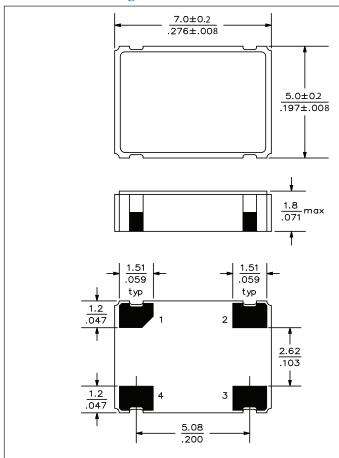
Reflow Soldering Profile



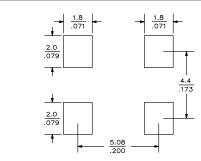




Mechanical Drawings



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.

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