

5V CMOS Low Jitter XO





Actual Size $= 5 \times 7$ mm



Product Features

- 5V CMOS/TTL compatible logic levels
- Pin-compatible with standard 5x7mm packages
- Designed for standard reflow and washing techniques
- Output Tri-state function
- Pb-free and RoHS/Green compliant

Product Description

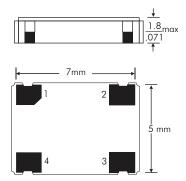
The FN Series is a 5V crystal clock oscillator that achieves superb jitter and stability over a broad range of operating conditions and frequencies. The output clock signal, generated internally with a non-PLL oscillator design, is compatible with CMOS/TTL logic levels. The device, available on tape 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

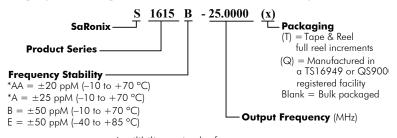
Pin	Function			
1	OE Function			
2	Ground			
3	Clock Output			
4	V_{DD}			

New Part Number Example

 $\frac{\text{FN}}{\Theta}$ $\frac{750}{\Theta}$ $\frac{0001}{\Theta}$ 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)



Availibility varies by frequency.



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FN Series Crystal Clock Oscillator (XO) **Legacy \$1615 Series** 7.0 x 5.0mm

Electrical Performance

	Parameter	Min.	Тур.	Max.	Units	Notes
Output freque	ency	1.544		106.25	MHz	As specified
Supply voltage	e	+4.5	+5.0	+5.5	V	
				27	mA	1.544 to 32 MHz
Supply currer	nt, output enabled			50		>32 to 50 MHz
				65		>50 to 106.25 MHz
Frequency sta	bility			±20 to ±50	ppM	See Note 1 below
Operating ten	nperature	-40		+85	°C	As specified
Output logic () VOI			10% V _{DD}	V	HCMOS
Output logic (, vol			+0.4	V	TTL
Output logic 1	VOH	90% V _{DD}			V	HCMOS
Output logic i	Output logic 1, VOH				V	TTL
				50	pF	HCMOS up to <50 MHz
Output load				30	pF	HCMOS 50 to <70 MHz
Output load				15	pF	HCMOS 70 to 106.25 MHz
				10	TTL	TTL
	1.544 to 80 MHz	45		55	%	-40 to +85°C measured 50%VDD
Duty cycle	>80 to 106.25 MHz	45		55	%	-10 to +70°C measured 50%VDD
Duty cycle	>80 to 100.25 MHZ	40		60	%	-40 to +85°C measured 50%VDD
	1.544 to 106.25 MHz	40		60	%	-40 to +85°C measured 1.5V
D. 141	1.544 up to <50 MHz			8	ns	
	50 to <70 MHz			5	ns	measured 20/80% of waveform
Rise and fall time	70 to 106.25 MHz			3	ns	
	1.544 to <70 MHz			5	ns	measured 0.4V to 2.4V
	70 to 106.25 MHz			2	ns	measureu 0.4 v to 2.4 v

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			100	ns	

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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.

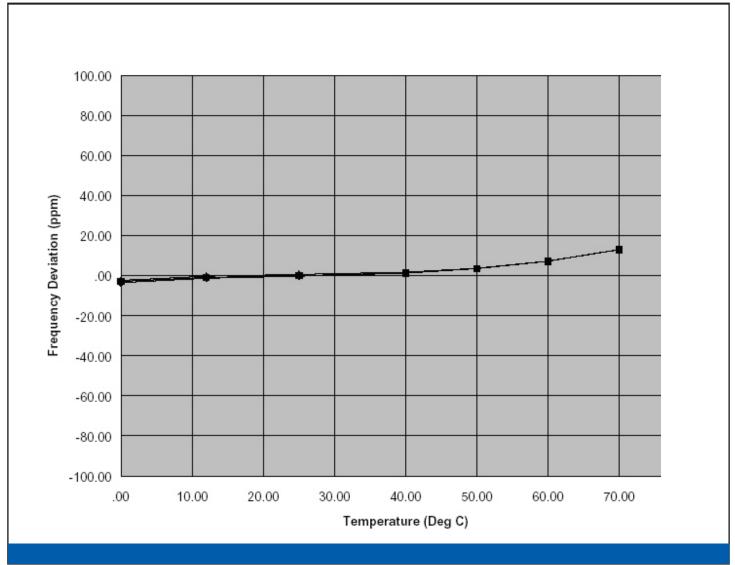
For specifications other than those listed, please contact sales.

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FN Series Crystal Clock Oscillator (XO)
Legacy \$1615 Series
7.0 x 5.0mm

Typical Frequency Stability







FN Series Crystal Clock Oscillator (XO)

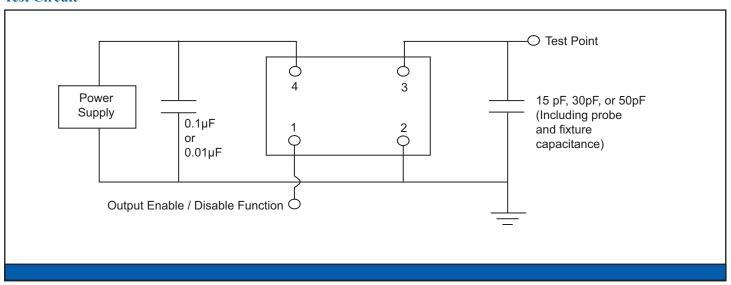
Legacy \$1615 Series

7.0 x 5.0mm

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:

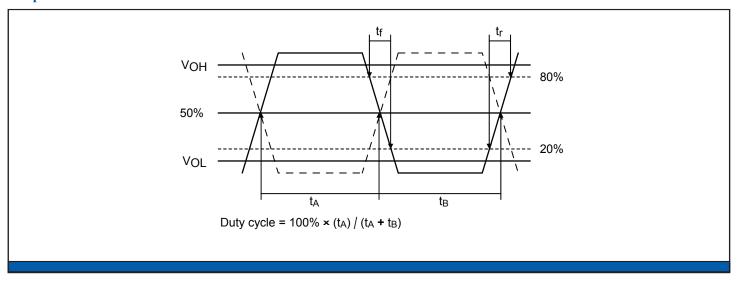
Туре	Parameter	Test Condition
Mechanical	Shock	MIL-STD-883, Method 2002, Condition B
Mechanical	Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Mechanical	Terminal strength	MIL-STD-883, Method 2004, Condition D
Mechanical	Gross leak	MIL-STD-883, Method 1014, Condition C
Mechanical	Fine leak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



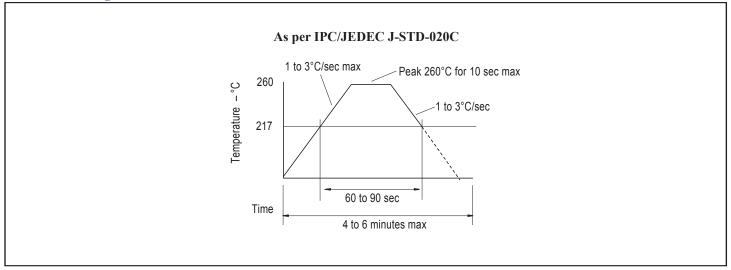


FN Series Crystal Clock Oscillator (XO) Legacy \$1615 Series 7.0 x 5.0mm

Output Waveform



Reflow Soldering Profile





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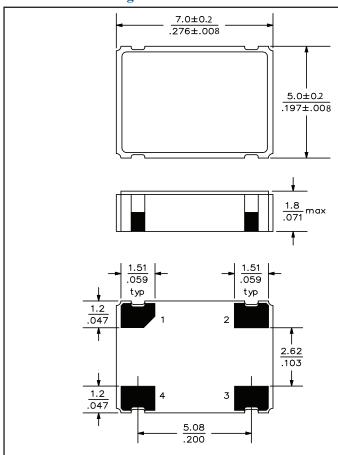


FN Series Crystal Clock Oscillator (XO)

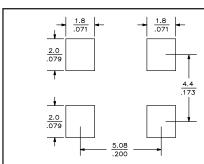
Legacy \$1615 Series

7.0 x 5.0mm

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.