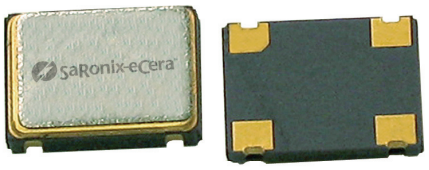
SaRonix-eCera™

FN Series Crystal Clock Oscillator (XO)
Legacy S1615 Series
7.0x5.0mm

5V CMOS Low Jitter XO

FN



Actual Size = 5 x 7mm

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

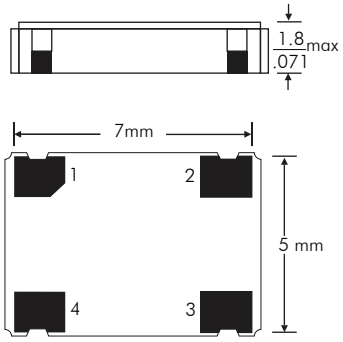
The FN Series is a 5V crystal clock oscillator that achieves superb jitter and stability over a broad range of operating conditions and frequencies. The output clock signal, generated internally with a non-PLL oscillator design, is compatible with CMOS/TTL logic levels. The device, available on tape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

FN Ⓐ **750** Ⓑ **0001** Ⓒ

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)

S 1615 B - 25.0000 (x)

SaRonix

Product Series

Frequency Stability
*AA = ±20 ppM (–10 to +70 °C)
*A = ±25 ppM (–10 to +70 °C)
B = ±50 ppM (–10 to +70 °C)
E = ±50 ppM (–40 to +85 °C)

Packaging
(T) = Tape & Reel full reel increments
(Q) = Manufactured in a TS16949 or QS900(registered facility
Blank = Bulk packaged

Output Frequency (MHz)

Availability varies by frequency.

Electrical Performance

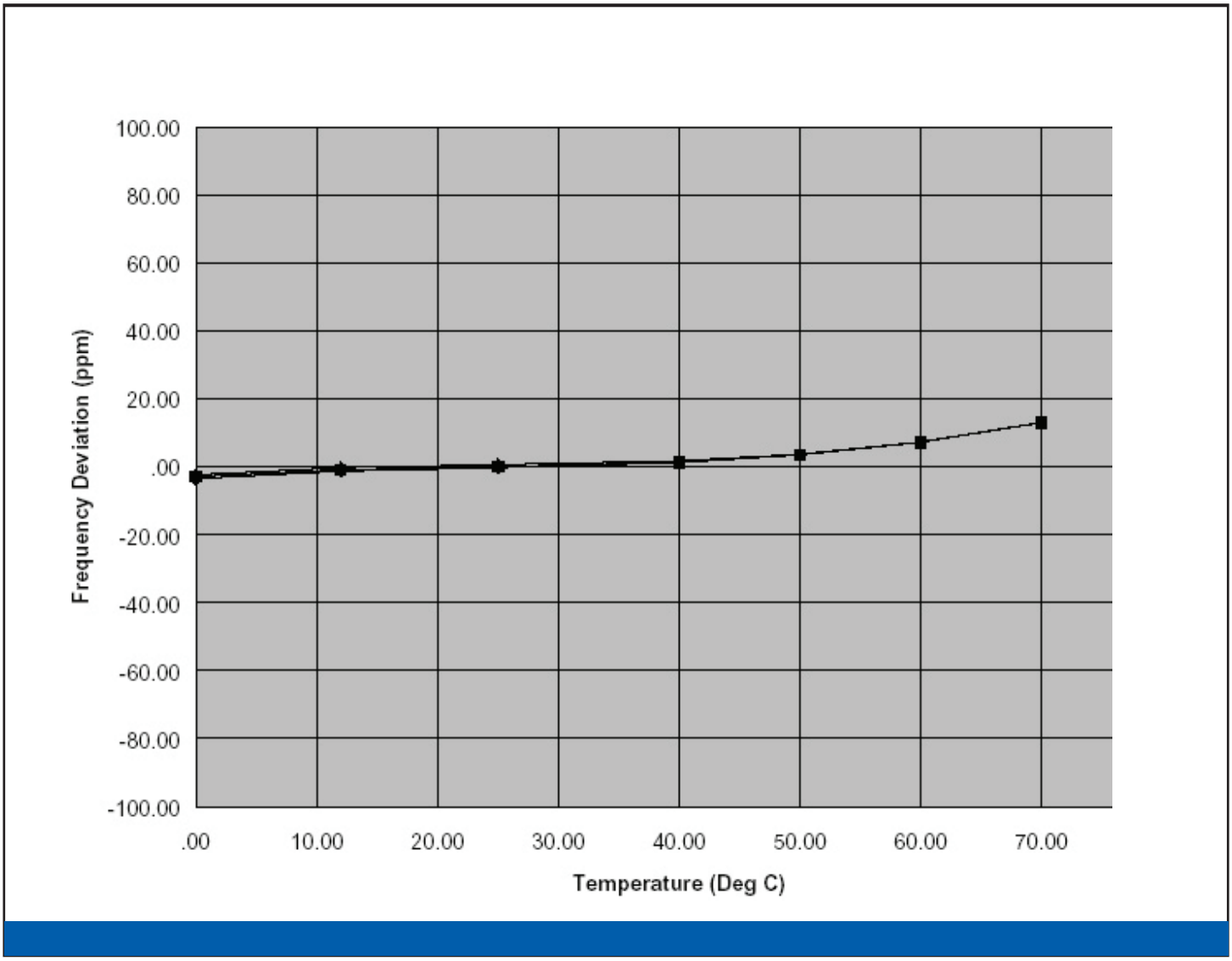
Parameter		Min.	Typ.	Max.	Units	Notes
Output frequency		1.544		106.25	MHz	As specified
Supply voltage		+4.5	+5.0	+5.5	V	
Supply current, output enabled				27	mA	1.544 to 32 MHz
				50		>32 to 50 MHz
				65		>50 to 106.25 MHz
Frequency stability				±20 to ±50	ppM	See Note 1 below
Operating temperature		-40		+85	°C	As specified
Output logic 0, VOL				10% V_{DD}	V	HCMOS
				+0.4	V	TTL
Output logic 1, VOH		90% V_{DD}			V	HCMOS
		+3.9			V	TTL
Output load				50	pF	HCMOS up to <50 MHz
				30	pF	HCMOS 50 to <70 MHz
				15	pF	HCMOS 70 to 106.25 MHz
				10	TTL	TTL
Duty cycle	1.544 to 80 MHz	45		55	%	-40 to +85°C measured 50%VDD
	>80 to 106.25 MHz	45		55	%	-10 to +70°C measured 50%VDD
		40		60	%	-40 to +85°C measured 50%VDD
	1.544 to 106.25 MHz	40		60	%	-40 to +85°C measured 1.5V
Rise and fall time	1.544 up to <50 MHz			8	ns	measured 20/80% of waveform
	50 to <70 MHz			5	ns	
	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	

Notes:
1. 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.
2. For specifications other than those listed, please contact sales.

Output Enable / Disable Function

Parameter	Min.	Typ.	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	

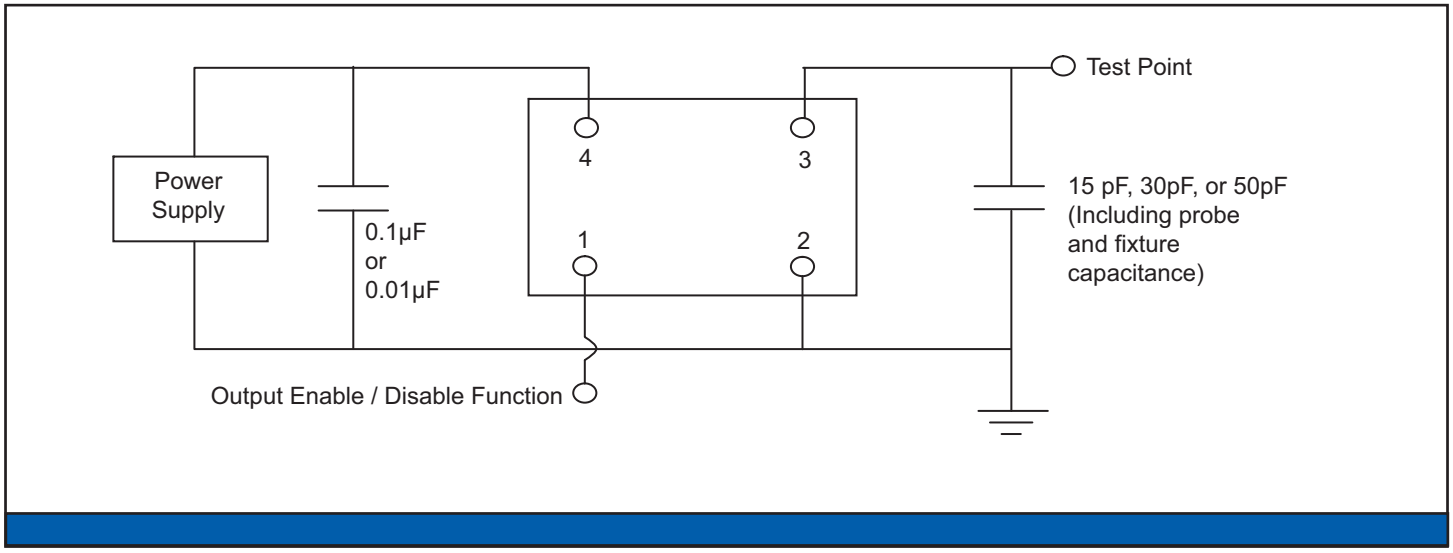
Typical Frequency Stability



Absolute Maximum Ratings

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

Test Circuit

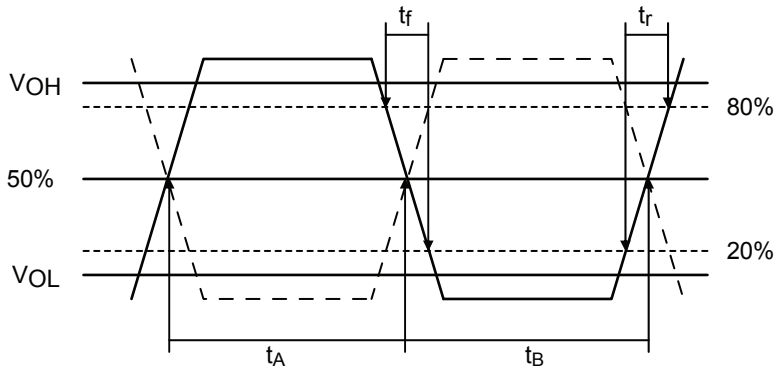


Reliability Test Ratings

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 ($R_1 = 2x10^{-8}$ 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)

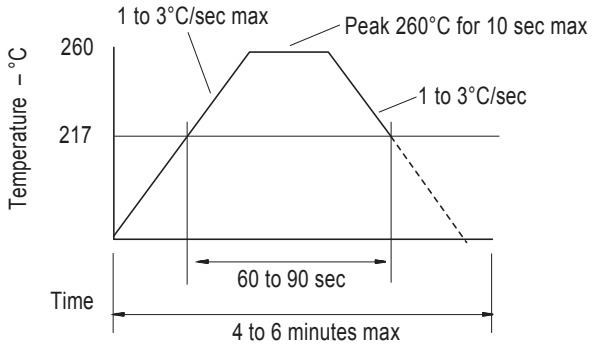
Output Waveform



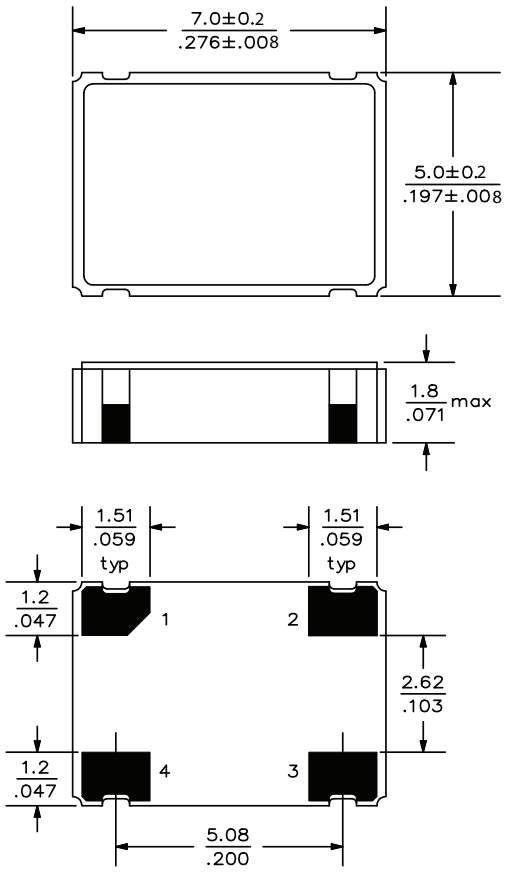
Duty cycle = 100% × (t_A) / (t_A + t_B)

Reflow Soldering Profile

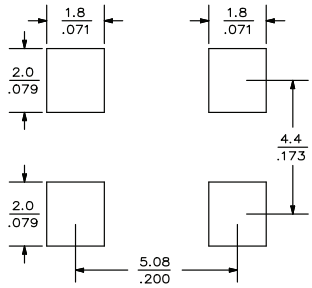
As per IPC/JEDEC J-STD-020C



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.