

### FD Series Crystal Clock Oscillator (XO) Legacy S1633 Series 5.0 x 3.2mm

# **3.3V CMOS Low Jitter XO**





5.0 x3.2mm Ceramic SMD

#### **Product Features**

- 1 to 133MHz Frequency Range
- <1 ps RMS jitter with fundamental or overtone design
- Low power standby mode
- Pb-free and RoHS/Green compliant

# **Product Description**

The FD Series 3.3V crystal clock oscillator 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 5.0 x 3.2mm surface-mount ceramic package.

# Applications

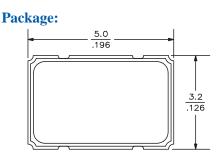
The FD Series is ideal for compact, highdensity applications requiring low jitter or tight stability, including:

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

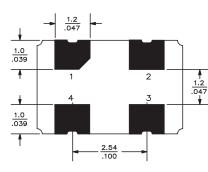
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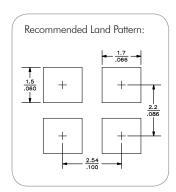
Enabling Serial Connectivity

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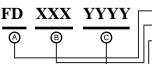




## **Pin Functions:**

Pin	Function			
1	OE Function			
2	Ground			
3	Clock Output			
4	V <sub>DD</sub>			

## **Part Ordering Information:**



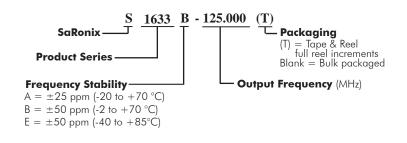
A: Product Family B: XXX = Frequency Code C: YYYY = Specification Code

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Following the above format, Saronix-eCera part numbers will be assigned upon confirmation of exact customer requirements.

## Legacy Ordering Information - For Reference Only:



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#### **Electrical Performance**

Parameter Min.		Тур.	Max.	Units	Notes	
Output Frequency		1		133	MHz	As specified
Supply Voltage		2.97	3.30	3.63	V	
Supply Current, Output Enabled				15	mA	1 to 50 MHz
				25		50 to 80 MHz
				45		80 to 133 MHz
Supply Current,	Standby Mode			10	μΑ	Output Hi-Z
Frequency Stabi	ility			±20 to ±50	ppm	See Note 1 below
Operating Temperature Range		-20		+70	°C	Commercial (standard)
		-40		+85		Industrial (standard)
Output Logic 0, V <sub>OL</sub>				10% V <sub>DD</sub>	V	
Output Logic 1, V <sub>OH</sub>		90% V <sub>DD</sub>			V	
Output Load				15	pF	See Note 2 below
Duty Cycle		45		55	%	Measured 50% V <sub>DD</sub>
	up to 40 MHz			7		Measured 20/80% of waveform
Rise and Fall Time	40 to 80 MHz			5	ns	
Time	80 to 133 MHz			2.5		
Jitter, Phase	1 to 133 MHz			1	ps RMS (1-o)	10kHz to 20 MHz frequency band
Jitter, Accumulated	up to 80 MHz			5	ma DMS (1 -)	20.000 adjacent periods
	80 to 133 MHz			3	ps RMS (1-σ)	
Jitter,	up to 80 MHz			50	na nlt nlt	
Total	80 to 133 MHz			30	ps pk-pk	100.000 random periods

#### Notes:

 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 othere than those listed, please contact sales.

#### **Output Enable / Disable Function**

Parameter	Min.	Тур.	Max.	Units	Notes
Input Voltage (pin 1), Output Enable	2.0			V	or open
Input Voltage (pin 1), Output Disable (low power standby)			0.5	V	Output is Hi-Z
Internal Pullup Resistance	50			kΩ	
Output Disable Delay			100	ns	
Output Enable Delay			10	ms	

#### **Absolute Maximum Ratings**

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

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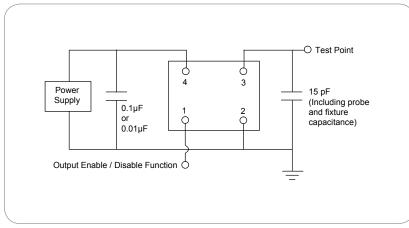


# 3.3V CMOS Low Jitter XO FD

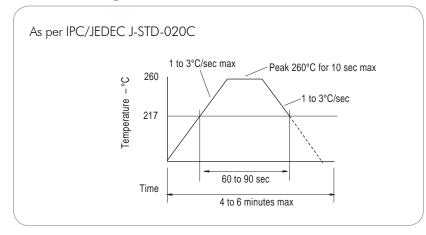
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#### **Test Circuit**



#### **Reflow Soldering Profile**



#### **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)

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