3.3V CMOS Low Jitter XO

FD



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

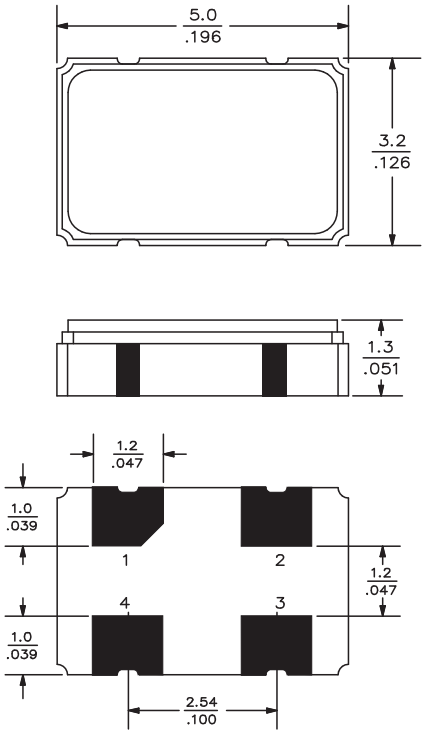
The FD Series 3.3V crystal clock oscillator achieves superb jitter and stability over a broad range of operating conditions and frequencies. The output clock signal, generated internally with a non-PLL oscillator design, is compatible with LVCMOS/LVTTL logic levels. The device, available on tape and reel, is contained in a 5.0 x 3.2mm surface-mount ceramic package.

Applications

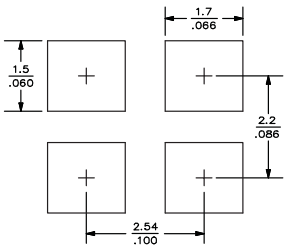
The FD Series is ideal for compact, high-density applications requiring low jitter or tight stability, including:

- 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

Package:



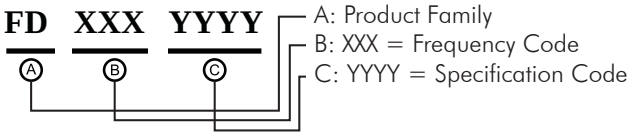
Recommended Land Pattern:



Pin Functions:

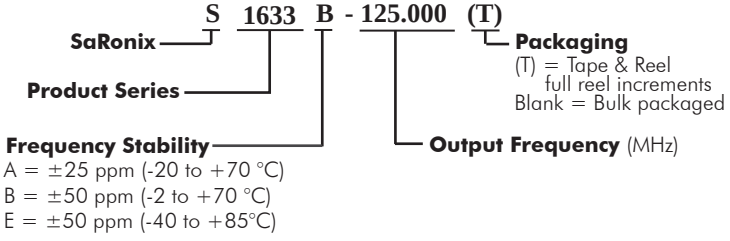
Pin	Function
1	OE Function
2	Ground
3	Clock Output
4	V_{DD}

Part Ordering Information:



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

Legacy Ordering Information - For Reference Only:



SaRonix-eCera™

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

Electrical Performance

Parameter		Min.	Typ.	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	µA	Output Hi-Z
Frequency Stability				±20 to ±50	ppm	See Note 1 below
Operating Temperature Range		-20		+70	°C	Commercial (standard)
		-40		+85		Industrial (standard)
Output Logic 0, V_{OL}				10% V_{DD}	V	
Output Logic 1, V_{OH}		90% V_{DD}			V	
Output Load				15	pF	See Note 2 below
Duty Cycle		45		55	%	Measured 50% V_{DD}
Rise and Fall Time	up to 40 MHz			7	ns	Measured 20/80% of waveform
	40 to 80 MHz			5		
	80 to 133 MHz			2.5		
Jitter, Phase	1 to 133 MHz			1	ps RMS (1-σ)	10kHz to 20 MHz frequency band
Jitter, Accumulated	up to 80 MHz			5	ps RMS (1-σ)	20.000 adjacent periods
	80 to 133 MHz			3		
Jitter, Total	up to 80 MHz			50	ps pk-pk	100.000 random periods
	80 to 133 MHz			30		

Notes:
1. 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 othere than those listed, please contact sales.

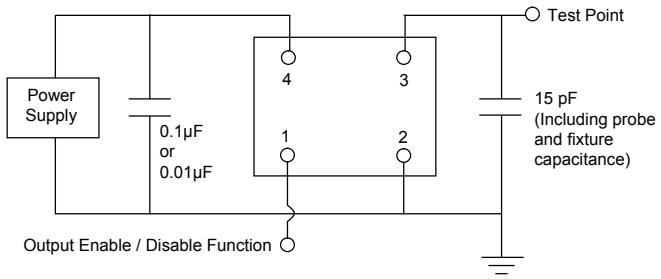
Output Enable / Disable Function

Parameter	Min.	Typ.	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

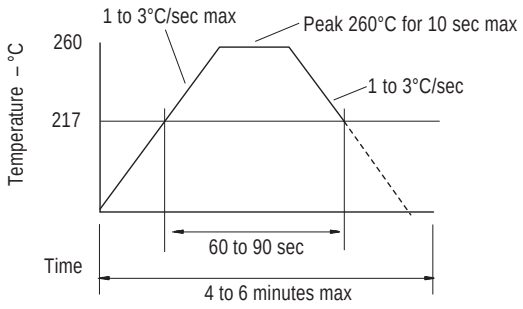
Parameter	Min.	Typ.	Max.	Units	Notes
Storage Temperature	-55		+125	°C	

Test Circuit



Reflow Soldering Profile

As per IPC/JEDEC J-STD-020C



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)

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Diodes Incorporated:

FD4000113 FD5400012 FD6660023 FD6660025 FD8000001 FDC500014W FD4800005 FD4800038 FD4800040 FD2500048 FD5000007 FD6660040 FD5000057 FD6500002 FD6600019 FDC500020 FDC500026W FD5000042 FD6600012 FD6600018 FDC500021 FD2700042Q FD5000045 FD5000046 FD6600009 FDA000018 FDA000020 FD5400002 FD5400019 FD6660026 FDC500001 FDC500049 FDF620003 FDA000033 FDC500008 FDC500037 FDC500047 FD1220022 FD3300017 FDC500035 FDC500044 FD3200011 FD4000007 FD5000068 FDA000008 FD5000051 FD6660012 FD7500018 FD6000023 FDA000027J FDA620010 FDF620004A FD5400005 FDC500005 FDD300004 FD0800022 FD1200042 FD2500095 FD2700047 FD6000013 FD6660004 FD6660029 FDC500031 FD1920010 FD2700037 FD1200033Q FD2450027 FDA620004 FD4000104