

3.3V CMOS Low Jitter XO

FD



5.0 x 3.2mm 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

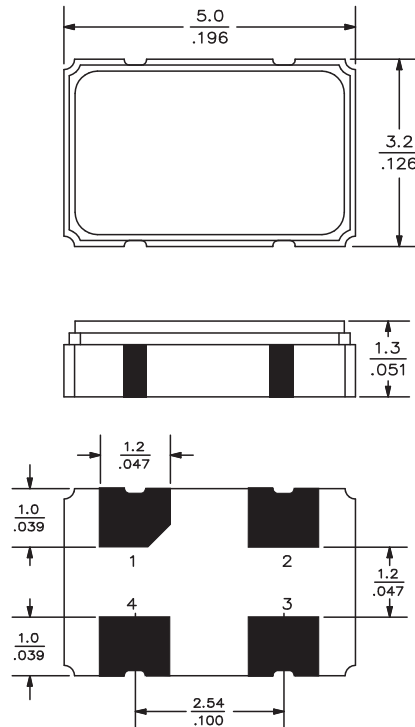
The FD Series 3.3V crystal clock oscillator achieves superb jitter and stability over a broad range of operating conditions and frequencies. The output clock signal, generated internally with a non-PLL oscillator design, is compatible with LVCMOS/LVTTL logic levels. The device, available on tape and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

Applications

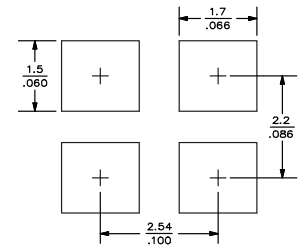
The FD Series is ideal for compact, high-density applications requiring low jitter or tight stability, including:

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

Package:



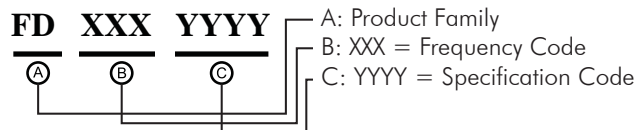
Recommended Land Pattern:



Pin Functions:

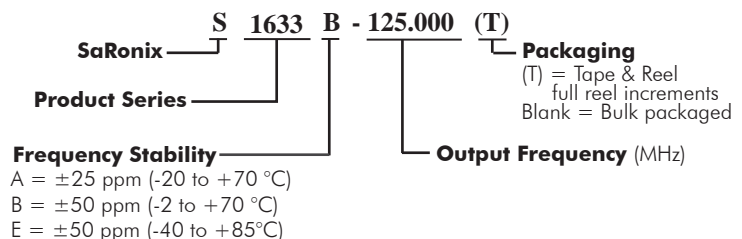
| Pin | Function |
|-----|-----------------|
| 1 | OE Function |
| 2 | Ground |
| 3 | Clock Output |
| 4 | V _{DD} |

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:



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:

- 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.

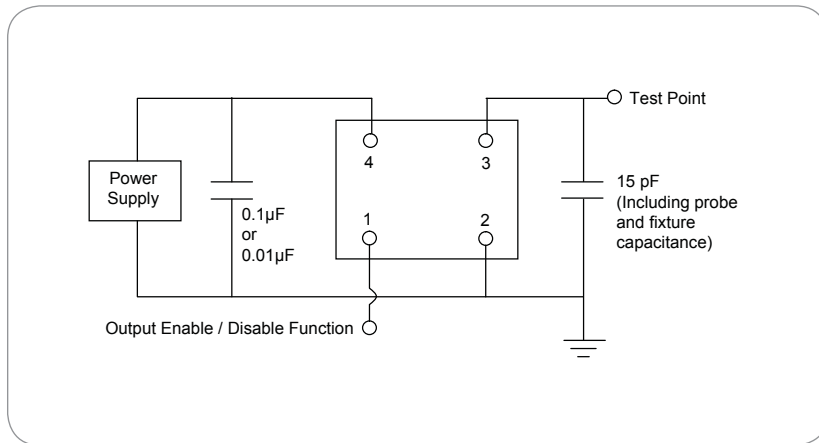
Output Enable / Disable Function

| 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 | |

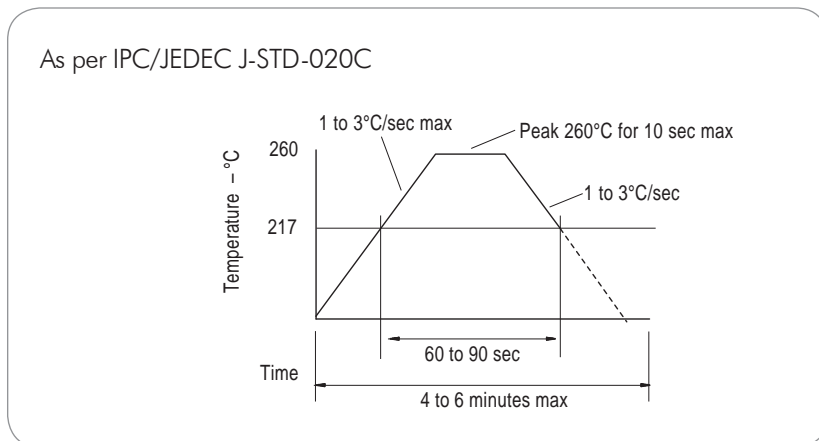
Absolute Maximum Ratings

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

Test Circuit



Reflow Soldering Profile



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 ($R_1 = 2 \times 10^{-8}$ 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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