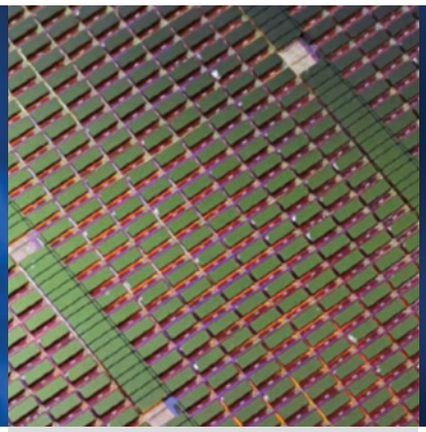
Pearl Semiconductor



PR21X

SingleDie™ MEMS-Based Low Noise XO/VCXO Family

Key Features

XO, VCXO & DCXO Modes

Family of Products

- Single
- Dual
- Quad
- Any-Rate (I2C)

Any-Rate Programmable Frequency

- 1 to 1000 MHz

Very-Low Jitter

- Sub-350 fs Typ RMS (12kHz - 20MHz)

Different Packages

- Plastic
- Ceramic
- **Chiplet**

Extended Operating Temperature

- -40 - +125 °C

Tight Temperature Stability Option

- ±15 ppm (-40 - +125 °C)

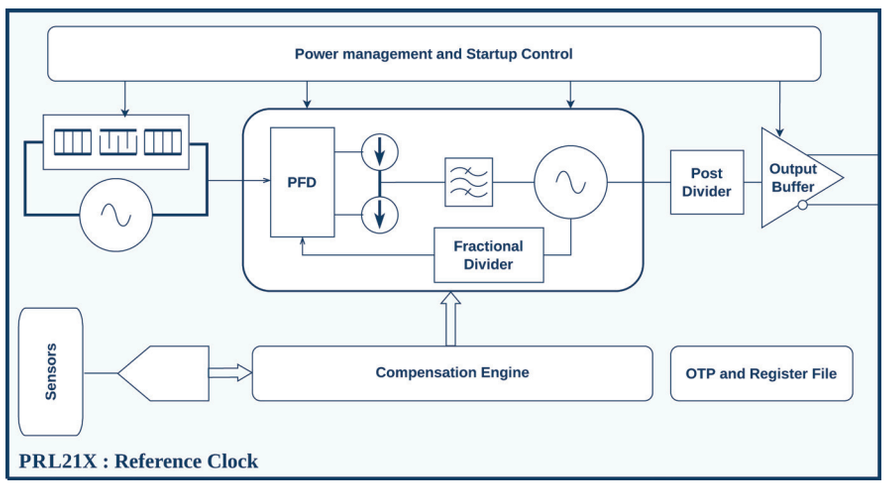
Different Supply Voltages

- 3.3V
- 2.5V
- 1.8V
- Auto Detect

Different O/P Formats

- CMOS (Differnetial & Single Ended)
- LVDS
- CML
- LVPECL
- HCSL

PRL21X is a **SingleDie™** SAW MEMS-based low noise programmable any-rate family of XOs and VCXOs. **SingleDie™** is a novel true single-die technology that has both the SAW MEMS resonator and CMOS circuitry on the same die.
Pearl utilized the **SingleDie™** technology to build **PRL21X** benefiting from the intrinsic advantages of a monolithic MEMS technology including zero thermal latency and high shock and vibration Resistance.



PRL21X : Reference Clock

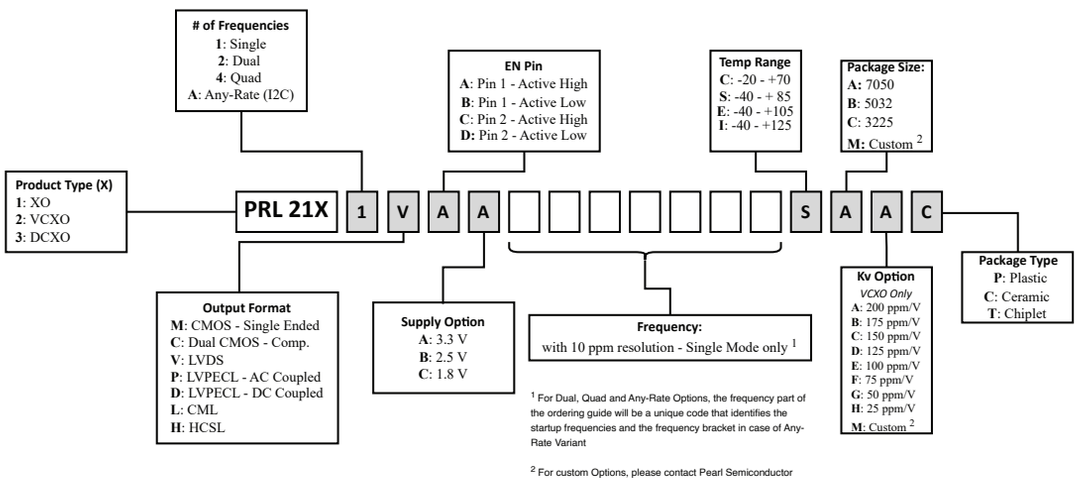
PRL21X supports XO, VCXO and DCXO modes, Single, Dual, Quad and Any-Rate (I2C) configurations while exhibiting low phase noise with a typical integrated RMS Jitter of 350 fs for any frequency up to 1 GHz.

PRL21X has a novel temperature compensation engine with an integrated temperature sensor with zero thermal latency relative to the resonator. Frequency stability across an extended operating temperature range from -40 °C up to +125 °C is ±15 ppm.

PRL21X can be used in a vast range of applications including PCIe®, Networking, Industrial and Automotive applications.

Ordering Guide

PRL21X family comes with a vast programmability making it able to generate 100's of different part numbers. Customers can customize the part number using **PRL21X** ordering guide.



[1] For Dual, Quad and Any-Rate Options, the frequency part of the ordering guide will be a unique code that identifies the startup frequencies and the frequency bracket in case of Any-Rate Variant

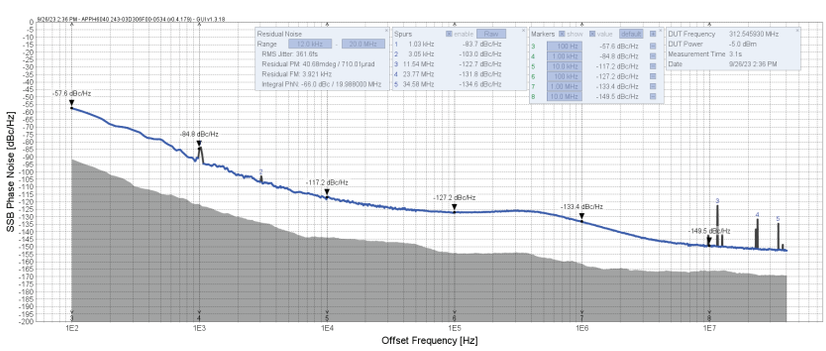
[2] For custom Options, please contact Pearl Semiconductor

Chiplet Option

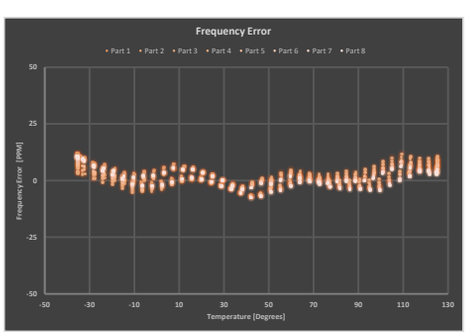
PRL21X comes also in an optional Chiplet die form with bumps that may be flip-chip soldered alongside other chiplets and devices on a substrate in a System in Package (SiP). This is a unique first in the market offering of a programmable Reference Clock chiplet integrated inside the SiP. Typically may be used in AI modules with demanding timing solutions for data computation and communication with many benefits:

- Efficient placement of the Reference Clock(s) resulting in shorter routing and higher frequency clocks and data rates.
- Saving two pins on the SiP package compared to an externally connected packaged reference clock on the board.
- Higher security level as the system clock is not accessible to be glitched or hacked disturbing any data processing or communication.
- Programmability of the clock(s) during operation allowing different modes of operation and saving power

Superior Performance



Fout = 312.5 MHz - LVDS O/P - Integrated Jitter = 361 fs



Freq Stability = ±15 ppm from -40 to +125 °C

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