Pletronics, Inc.

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LV/PE33/44/55J Series

156.25, 312.5 MHz

Ultra-Low Jitter Crystal Oscillator

Pioneering 800G/1.6Tbps Optical Communication

Overview

As the demand for high-speed data transmission continues to surge, the optical communication industry is in a constant race to develop faster, more efficient technologies. Among the latest innovations making waves is the 312.5 MHz ultra-low jitter crystal oscillator, designed specifically to cater to the needs of the burgeoning 800Gbps/1.6Tbps optical communication market. This breakthrough not only addresses the critical need for low jitter but also its low power consumption, making it a key component in next-generation optical networks.

The Imperative of Low Jitter in Optical Communication

In the realm of optical communication, jitter—the small, rapid variations in a waveform resulting from timing inaccuracies—can significantly impact performance. High jitter can cause data errors, reduce signal integrity, and ultimately compromise the efficiency of data transmission. Therefore, minimizing jitter is paramount for achieving the high-speed, high-reliability communication required by 800Gbps/1.6Tbps networks.

The Pletronics LV/PE33/44/55J series 312.5 MHz crystal oscillator excels in this regard, offering ultra-low jitter performance (27fs – Typical) that ensures data integrity and signal clarity even at the highest data rates. This is especially critical for 800G/1.6Tbps optical networks, which facilitate massive data throughput for applications such as data centers, and cloud computing. The LV/PE33/44/55J series 312.5M XO can support these enormous data rates without compromising on performance or reliability.

Emphasizing Low Power Consumption

In addition to performance, power efficiency is a critical consideration in modern optical communication systems. As data centers and network infrastructure continue to expand, so too does the need for energy-efficient components that can reduce operational costs and minimize environmental impact. The Pletronics LV/PE33/44/55J series 312.5M XO addresses this need with its low power consumption design. By leveraging cutting-edge materials and innovative design techniques, this oscillator operates at significantly lower power levels (39mA Max (LVDS), 70mA Max (LVPECL)) compared to traditional solutions. This not only reduces energy costs but also contributes to the overall sustainability of optical networks.

Conclusion

The Pletronics LV/PE33/44/55J series 312.5M XO represents a significant advancement in the field of optical communication. By delivering the precise timing accuracy required for 800G/1.6Tbps networks while maintaining low power consumption, it sets a new standard for performance and efficiency. As the optical communication industry continues to evolve, components like this oscillator will be crucial in enabling the next generation of high-speed, reliable, and energy-efficient data transmission.

Incorporating the 312.5 MHz ultra-low jitter crystal oscillator into your optical communication infrastructure is a strategic move towards future-proofing your network, ensuring it can handle the demands of tomorrow's data-driven world with unparalleled precision and efficiency.

Product Lineup

Frequency	Product Series	Stability	Operation Temperature	Vcc	Icc Max	RMS Jitter (12K – 20MHz) Typ	Package Size	Target Datarate Applications
312.5MHz	LV/PE33J	±20ppm ±25ppm ±50ppm	-10 ~ 70°C -20 ~ 70°C -40 ~ 85°C	2.5/3.3V	35mA (LVDS) 70mA (LVPECL)	31fs @ 2.5V 27fs @ 3.3V	2.5x2.0mm	800Gbps 1.6TGbps
	LV/PE44J	±20ppm ±25ppm ±50ppm	-10 ~ 70°C -20 ~ 70°C -40 ~ 85°C	2.5/3.3V	39mA (LVDS) 70mA (LVPECL)	31fs @ 2.5V 27fs @ 3.3V	3.2x2.5mm	800Gbps 1.6TGbps
	LV/PE55J	±20ppm ±25ppm ±50ppm	-10 ~ 70°C -20 ~ 70°C -40 ~ 85°C	2.5/3.3V	39mA (LVDS) 70mA (LVPECL)	31fs @ 2.5V 27fs @ 3.3V	5.0x3.2mm	800Gbps 1.6TGbps
156.25MHz	LV/PE33J	±20ppm ±25ppm ±50ppm	-10 ~ 70°C -20 ~ 70°C -40 ~ 85°C -40 ~ 105°C -40 ~ 125°C	*1.8/2.5/3.3V	35mA (LVDS) 66mA (LVPECL)	50fs	2.5x2.0mm	100Gbps 200Gbps 400Gbps 800Gbps
	LV/PE44J	±20ppm ±25ppm ±50ppm	-10 ~ 70°C -20 ~ 70°C -40 ~ 85°C -40 ~ 105°C -40 ~ 125°C	*1.8/2.5/3.3V	39mA (LVDS) 66mA (LVPECL)	50fs	3.2x2.5mm	100Gbps 200Gbps 400Gbps 800Gbps
	LV/PE55J	±20ppm ±25ppm ±50ppm	-10 ~ 70°C -20 ~ 70°C -40 ~ 85°C	*1.8/2.5/3.3V	39mA (LVDS) 60mA (LVPECL)	50fs	5.0x3.2mm	100Gbps 200Gbps 400Gbps 800Gbps

*Note: 1.8V Vcc Options for LVDS only.

Phase Noise Plot

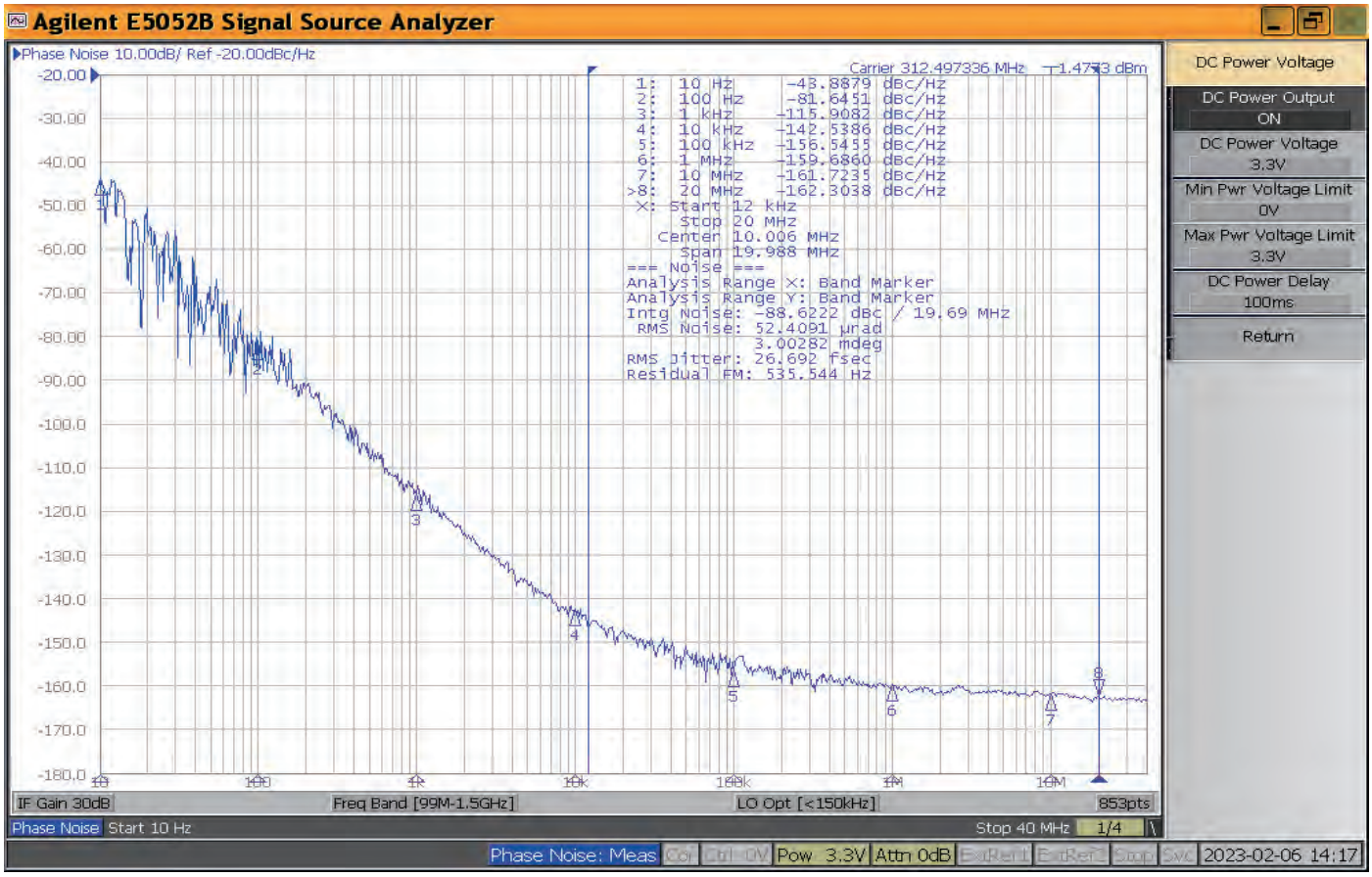

Figure 1: Phase Noise Plot at 312.5MHz LVPECL. RMS Jitter: 26.692fs