Press release
Communiqué de presse
Comunicato stampa
新闻稿 / 新聞稿
プレスリリース
보도자료

T4672S

STMicroelectronics to enable higher-performance cloud optical interconnect in datacenters and AI clusters

- *New silicon photonics and next-gen BiCMOS proprietary technologies bring better performance to address the coming 800Gb/s and 1.6Tb/s optical interconnects.*

- *Developing a roadmap with partners across the value chain for higher energy efficiency pluggable optics and to address the next generation of AI clusters GPU interconnects.*

Geneva, Switzerland, February 20, 2025 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, is unveiling its next generation of proprietary technologies for higher-performing optical interconnect in datacenters and AI clusters. With the exponential growth of AI computing needs, challenges arise in performance and energy efficiency across computing, memory, power supply, and the interconnections linking them. ST is helping hyperscalers, and the leading optical module provider, overcome those challenges with new silicon photonics and next-gen BiCMOS technologies, scheduled to ramp up from the second half of 2025 for 800Gb/s and 1.6Tb/s optical modules.

At the heart of interconnections in a datacenter are thousands, or even hundreds of thousands, of optical transceivers. These devices convert optical into electrical signals and vice versa to allow data flow between graphics processing unit (GPU) computing resources, switches and storage. Inside these transceivers, ST's new, proprietary silicon photonics (SiPho) technology will bring customers the ability to integrate multiple complex components into one single chip, while ST's next-gen, proprietary BiCMOS technology brings ultra high-speed and low power optical connectivity, which are key to sustain the AI growth.

"*AI demand is accelerating the adoption of high-speed communication technology within the datacenter ecosystem. This is the right time for ST to introduce new power efficient silicon photonics technology and complementing it with a new generation of BiCMOS for our customers to design the next wave of optical interconnect products, which will enable 800Gbps/1.6Tbps solutions for the hyperscalers,*" said **Remi El-Ouazzane, President, Microcontrollers, Digital ICs and RF products Group at STMicroelectronics.** "*Both technologies will be manufactured on 300mm processes in Europe, bringing customers an independent high-volume supply for two key components of their optical module development strategy. Today's announcement represents the first step for our PIC product-family and, thanks to close collaboration with key partners across the entire value chain, our ambition is to become a key supplier of silicon photonics and BiCMOS wafers for the datacenter and AI cluster market, be it pluggable optics today or optical I/O tomorrow."*

"AWS is pleased to collaborate with STMicroelectronics to develop a new silicon photonics technology (SiPho), PIC100, that will enable interconnection between any workload including Artificial Intelligence (AI). AWS is working with STMicroelectronics based on their demonstrated capability to make PIC100 a leading SiPho technology for the optical and AI market. We are enthusiastic about the potential innovations this will unlock for SiPho," said **Nafea Bshara, Vice President and Distinguished Engineer at Amazon Web Services.**

"*The Pluggable Optics for Data Center Market is experiencing significant growth, valued at $7 billion in 2024,"* said **Dr. Vladimir Kozlov, CEO and Chief Analyst at LightCounting**. *"This market is expected to grow at a Compound Annual Growth Rate (CAGR) of 23% during 2025—2030 to exceed $24 billion at the end of this period. Market share of transceivers based on silicon photonics modulators will increase from 30% in 2024 to 60% by 2030."*

Additional information

ST's SiPho technology combined with the ST BiCMOS technology are a unique 300mm silicon platform to serve the optical market. Both technologies are being industrialized and will be manufactured in ST's Crolles (France/Europe) 300mm fab.

Additional technical information is available at ST.com on BiCMOS technology and Silicon Photonics.

You can also read our blogpost at https://blog.st.com/pic100/

About STMicroelectronics
At ST, we are over 50,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of cloud-connected autonomous things. We are committed to achieving our goal to become carbon neutral on scope 1 and 2 and partially scope 3 by 2027. Further information can be found at www.st.com.

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