Broadcom Extends 200G/lane DSP PHY Leadership for Next-Generation AI Infrastructure

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Sian3: State-of-the-art 3nm DSP PHY delivers industry's lowest power consumption with enhanced performance for 800G and 1.6T optical transceivers over SMF

Sian2M: Industry's first 200G/lane DSP with integrated VCSEL drivers enables low-power short-reach MMF links in AI clusters

PALO ALTO, Calif., March 25, 2025 (GLOBE NEWSWIRE) -- Broadcom Inc. (NASDAQ: AVGO) today announced the expansion of its industry-leading 200G/lane DSP PHY portfolio with the introduction of Sian3 and Sian2M, purpose-built for the demanding connectivity requirements of AI/ML clusters. These innovations address the critical need for optimized power across both single-mode fiber (SMF) and short-reach multi-mode fiber (MMF) links in 800G and 1.6T optical transceiver applications.

The rapid growth of AI workloads is driving demand for increased bandwidth and interconnect density in AI clusters. Optical interconnect power is a major factor limiting cluster scalability. Broadcom's new Sian3 and Sian2M DSPs, along with its comprehensive portfolio of 200G/lane lasers, provide unprecedented levels of power efficiency and cost optimization for next-generation AI infrastructure.

Sian3, a state-of-the-art 3nm 200G/lane PAM4 DSP PHY, delivers the industry's lowest power consumption for 800G and 1.6T optical transceivers utilizing SMF. Sian3 builds upon the success of Broadcom's Sian2 DSP, enabling over 20% power reduction for both EML and SiP based 1.6T modules.

Sian2M offers a specialized, optimized solution for 800G and 1.6T short-reach MMF links within AI clusters. By integrating VCSEL drivers and leveraging Broadcom's market-proven 200G VCSEL technology, Sian2M unlocks new levels of performance and efficiency for short-reach connectivity. This technology builds on Broadcom's established track record in optical interconnects, having successfully deployed over 50 million channels of 100G VCSELs in AI networks.

Broadcom's Sian3 and Sian2M DSP PHYs, developed in conjunction with its portfolio of 200G/lane EML and CWL lasers and its market-proven VCSELs, empower module developers to rapidly address the growing demand for 200G optics in AI. Broadcom's 200G EML and PD are already shipping in volume, delivering the quality, reliability, and performance required for AI optical interconnects.

"Broadcom's Sian family of DSP PHYs is foundational to the low-power, high-bandwidth optical connectivity needed for AI/ML clusters," said Vijay Janapaty, vice president and general manager of the Physical Layer Products Division at Broadcom. "Our new 3nm Sian3 delivers over 20% power reduction for 1.6T optical modules, while Sian2M with integrated VCSEL drivers and 200G VCSELs brings cost and power efficiency to short-reach links. These innovations enable our customers to scale AI clusters to meet the demands of growing AI workloads."

"According to our recent report Markets for PAM4 and Coherent DSPs, AI-infrastructure build outs are driving massive growth in PAM4 DSP shipments," said Bob Wheeler, Analyst at Large, LightCounting. "By 2028, we expect 1.6T optical transceivers will consume more than $1 billion worth of PAM4 DSPs, as next-generation 102T switch systems transition to 200G serdes."

Solution Highlights

Sian3 DSP

- Low power 3nm 200G/lane DSP for sub-13W 800G and sub-23W 1.6T transceivers
- 1.6T retimer PHY (BCM83628) and 800G gearbox PHY (BCM83820) options available
- Supports 212.5-Gb/s and 226.875-Gb/s data rates for InfiniBand and Ethernet
- Multiple FEC options, including Bypass, Segmented, and Concatenated FEC
- IEEE 802.3dj D1.3 compliant
- Integrated low-swing and high-swing laser drivers for SiP and EML modules
- Sub-75ns roundtrip latency for AI/ML
- Client-side SERDES supporting long-reach (LR) applications
- Crossbar support on client and line side

Sian2M DSP

- Low power 5nm 200G/lane DSP for sub-25W 1.6T SR8 transceivers
- 800G retimer PHY (BCM85834) supporting both 800G and 1.6T pluggable modules
- Multiple FEC options, including Bypass and Segmented FEC
- Integrated VCSEL driver
- Crossbar support

200G/lane Lasers

- Industry’s first 200G VCSEL, supporting the planned IEEE 802.3dj standards
- Broadcom VCSEL technology with >5 trillion field device hours and <1 FIT failure rate
- 200G EML in production, with millions of units shipped

"As the demand for high-speed, energy-efficient connectivity continues to rise, integrating Broadcom’s Sian3 and Sian2M into our transceivers allows us to deliver industry-leading performance with significant cost and power savings,” said Richard Huang, CEO, Eoptolink Technology. “By combining these advanced DSPs with our own engineering expertise, we are driving innovation across the ecosystem—enabling scalable, high-density optical connectivity that meets the evolving demands of next-generation AI infrastructure while lowering total cost of ownership.”

Availability

Broadcom is sampling Sian3 (BCM83628 and BCM83820) and Sian2M (BCM85834) to early access customers and partners, with Sian3 production ramping in Q3 2025. Contact your local Broadcom sales representative for samples and pricing.

About Broadcom

Broadcom Inc. (NASDAQ: AVGO) is a global technology leader that designs, develops, and supplies a broad range of semiconductor, enterprise software and security solutions. Broadcom's category-leading product portfolio serves critical markets including cloud, data center, networking, broadband, wireless, storage, industrial, and enterprise software. Our solutions include service provider and enterprise networking and storage, mobile device and broadband connectivity, mainframe, cybersecurity, and private and hybrid cloud infrastructure. Broadcom is a Delaware corporation headquartered in Palo Alto, CA. For more information, go to www.broadcom.com.

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