

# Skorpios to Demonstrate 3.2 Tb/s Co-Packaged Optics at OFC

*3.2Tb/s Transceiver HPICs Integrates All Necessary Opto-Electronic Functionality to Transmit and Receive 32 Channels of 100G PAM-4 on 8 Fibers*

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Technologies, Inc., an integrated silicon

photonics company, will conduct a live demonstration of its 3.2Tb/s Integrated Transceiver for Co-Packaged Optics (CPO) and Near Package Optics (NPO) applications. This first-generation device incorporates all optical functions to generate and receive 32 independent 100Gb/s PAM-4 channels multiplexed onto 8 fibers utilizing the standard CWDM wavelengths. Skorpios' solution



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*David Huff, SVP of Sales and Marketing for Skorpios Technologies*



for CPO/NPO is fiber efficient, physically compact, and inherently reliable. Come see the live demo at Skorpios' booth 4941 at OFC 2023. Skorpios will also be presenting a technical paper entitled "3.2Tb/s Heterogeneous Photonic Integrated Circuit Chip in a Co-Packaged Optics Configuration" by Damien Lambert, CTO of Skorpios Technologies, during OFC Session W3D.

The SKRP9101 3.2T 8xFR4 TX/RX Heterogeneous Photonic Integrated Circuit (HPIC) is the world's only single-chip device able to transmit and receive thirty-two 100Gb/s IEEE 802.3 FR4-compliant optical PAM-4 signals. Sixteen on-chip

lasers, each with a redundant backup, operating in standby mode, provide optical power so the HPIC requires no external lasers fiber coupled to the device. The addition of the redundant lasers enables ultra-high reliability, beyond the 40-year time to 0.25% cumulative failure previously demonstrated for the Skorpios integrated lasers. Given the scalability of the Skorpios Tru-SiPh™ platform, the addition of the 16 redundant lasers results in only a slight increase in power for the significant increase in product lifetime ensured by the redundancy. The inherent low-thermal impedance of the Tru-SiPh™ platform also enables high performance (FR4 compliant optical interfaces) at high operating temperatures. Additionally, there are 32 modulators, 32 Semiconductor Optical Amplifiers (SOAs), and 32 PIN Diode receivers. Finally, the uncooled HPIC multiplexes the 32 PAM4 optical signals into 8 single-mode fibers, each with four

wavelengths using 1310 nm CWDM, and demuxes eight received FR4 signals to 100Gb/s receivers. This greatly reduces the number of fibers required to provide optical interfaces on next generation [ethernet](#) switches and High-Performance Computing clusters, thereby reducing manufacturing costs and increasing reliability.

The SKRP9501 3.2T Optical Engine combines four 800G DSP chips, eight 4-channel TIAs and control electronics on a single LTCC MCM. Attached through a cLGA (compact Land Grid Array), the current devices are sized to fit with existing DSP technology. Next generations of the device will be smaller to support OIF 2021.131.13 dimensions. Upgraded versions (SKRP9201 HPIC and SKRP9601 Engine) supporting 200Gb/s per lane will be available in late 2023 to support 6.4Tb/s transmission. This device will support a beachfront bandwidth of 6.4Tb/s for every 20mm, sufficient to support 102.4 Tb/s switches.

“As switch speeds continue to increase, the power and cost of disaggregated switch interfaces and faceplate optics will be a growing problem,” said David Huff, SVP of Sales and Marketing for Skorpion. “CPO/NPO solutions will reduce the number of high-speed electrical interfaces, reducing power and cost. The unprecedented integration enabled by the Skorpion Tru-SiPh™ platform, including on-chip redundant lasers, provides an unparalleled solution for switch manufacturers.”

About Skorpion Technologies, Inc.

Skorpion is a semiconductor company delivering highly integrated products based upon its proprietary, wafer-scale, heterogeneous integration process. This novel process leverages the existing silicon manufacturing ecosystem to enable high bandwidth interconnectivity at mature CMOS manufacturing costs. Skorpion’s unique platform can be used to address a wide range of applications: high speed video, data and voice communications for networking, cloud computing, consumer, medical, and more. For more information, visit [www.skorpioninc.com](http://www.skorpioninc.com) or follow us on LinkedIn @Skorpion Technologies and Twitter @Trusiph.

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