



## Oclaro's New 400G QSFP56-DD Delivers 400 Percent Increase in Bandwidth and Faceplate Density

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### Utilizes Oclaro's Leading 100 Gbps Per Lambda Laser Technology to Achieve Superior Performance, Quality and Reliability

SAN JOSE, Calif., March 9, 2018 /PRNewswire/ -- [Oclaro, Inc.](#) (NASDAQ: OCLR), a leading provider and innovator of optical communications solutions, today announced it is integrating its leading 400 Gbps technology into the QSFP-DD high-density transceiver form factor. This new 400 Gbps (4x100G PAM4) QSFP56-DD module will enable 36 ports of 400 Gbps per 1RU, representing a 400 percent increase in bandwidth and faceplate density compared to similar-sized 100 Gbps QSFP28 transceivers. Oclaro will be showcasing its 400 Gbps QSFP56-DD FR4 technology at the upcoming OFC show, booth #2812, on March 11-15 in San Diego.

The data center market is in constant demand for greater bandwidth to support existing and emerging applications such as streaming video, cloud services, and the Internet of Things. Data center traffic is projected to grow at a compound annual growth rate (CAGR) of 27%, reaching 19.5 ZB per year in 2021. Thus, the move to 400 Gbps optical interconnects is critical, but it must be done cost effectively and with power efficiency. The best way to accomplish this is by maximizing the data rate of each individual laser, which is the proven way to minimize cost and power consumption. Oclaro's QSFP56-DD optical transceiver contains four lasers operating at 100 Gbps each and uses PAM4 modulation to realize an aggregate data rate of 400 Gbps.

"We will deliver unprecedented bandwidth and performance in the 400 Gbps QSFP56-DD by leveraging Oclaro's world-class integrated indium phosphide (InP) technology and our leading 100 Gbps PAM4 EML lasers," said Walter Jankovic, President of Oclaro's Optical Connectivity Business Unit. "This will be the highest-density 400 Gbps transceiver that has ever been introduced for Ethernet switch architectures and is the missing link in the ecosystem to fully utilize a new generation of switching ASICs capable of 14Tbps or more."

"The growth of traffic for data center operators and service providers will demand the adoption of 400G optical interfaces in next-generation networking equipment," said Bill Gartner, Vice President & General Manager, Cisco. "The QSFP-DD pluggable optical module form factor provides the highest density while leveraging the industry's infrastructure that has made QSFP the de facto standard at 40G and 100G. In addition, QSFP-DD provides backward compatibility to lower-speed QSFP form factors providing customers maximum flexibility as they migrate their networks to higher speeds. Cisco considers Oclaro's support of the QSFP-DD as another step towards broad market adoption of this form factor."

"The increased bandwidth capability of the 400G QSFP56-DD module represents a much needed innovation," said Vladimir Kozlov, Founder and CEO of LightCounting. "With the availability of these modules, data centers will be able to achieve breakthrough switching capability that will drive their future growth. LightCounting forecasts that sales of 400GbE transceivers will reach \$300 million in 2019 and close to \$2 billion by 2022."

#### About the 400 Gbps QSFP56-DD Module

The Oclaro 400 Gbps QSFP56-DD FR4 module offers superior optical performance, quality and reliability through the use of Oclaro's leading 100 Gbps PAM4 (53 GBaud) lasers that enable 4x100G PAM4 solutions. This module is compliant to 53.125 GBd PAM4 x 4 wavelength 400G-FR4 optical interface, the 26.5625 GBd PAM4 x 8 lane 400GAUI-8 electrical interface, and the QSFP-DD MSA form factor specifications. Additional features include the following:

- Transmission distance of up to 2 km, which supports 95 percent of the links in data centers
- Compact size that enables as many as 36 ports in 1RU
- Hot pluggability to allow installation or removal without powering down entire switches or line cards
- Field pluggability to enable a "pay as you grow" approach to capacity increase

Oclaro expects to begin sampling 400G QSFP56-DD modules in calendar Q3 2018.

#### About Oclaro

Oclaro, Inc. (NASDAQ: OCLR), is a leader in optical components and modules for the long-haul, metro and data center markets. Leveraging more than three decades of innovation in laser technology and photonics integration, Oclaro provides differentiated solutions for optical networks and high-speed interconnects driving the next wave of streaming video, cloud computing, application virtualization, and other bandwidth-intensive applications. For more information, visit [www.oclaro.com](http://www.oclaro.com) or follow on Twitter at @OclaroInc.

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