



Press Release

Datacom VCSELS: TRUMPF achieves breakthrough in proprietary subwavelength surface grating technology

Demonstration of datacom VCSEL with subwavelength grating at TRUMPF, Booth 2000 at OFC in San Diego // Proprietary surface grating technology in development since 2006 for mass markets and currently implemented on tens of millions of VCSELS for various sensing applications // Grating technology identified as key enabler to improve polarization stability and signal performance in datacom VCSELS, paving the road towards 200G // Ground-signal-ground (GSG) pad layout for 100Gbps VCSEL

Ulm/San Diego, March 25, 2024 - TRUMPF Photonic Components, a global leader in VCSEL and photodiode solutions for data communication, announces a breakthrough with its proprietary subwavelength surface grating technology for datacom VCSELS. “We are excited to bring patented and proven subwavelength surface-grating technology from our sensing products to datacom VCSELS where it brings a competitive edge for our 100Gbps VCSEL with lower relative intensity noise and robust polarization stability. In addition, the GSG pad’s layout further enhances the performance due to less cross talk,” said Ralph Gudde, Vice President of Marketing and Sales at TRUMPF Photonic Components. “With the addition of these new technology tools, we are well equipped to take the lead in VCSELS with data rates of 100G and beyond.” The demonstration of the subwavelength grating on datacom VCSEL showed a stabilized polarization mode, a key benefit amongst many others. TRUMPF also announces their future release of the 100G VCSEL which, along with its many features, has a ground-signal-ground (GSG) pad layout to further enhance the performance. This advanced technology has proven itself, being the result of a long development process and having been demonstrated on many devices and in various applications.

Advanced optical data communication systems benefit from the high-speed data transmission which the VCSEL-based technology offers. For interconnect distances below 100 meters, VCSELS are the best solution in terms of power and cost. TRUMPF is offering both VCSELS and photodiodes as a matching pair solution, in singlets, 1x4 arrays and 1x12 arrays for 14G and 25G for the NRZ applications. The same is offered for 56G PAM4 applications. The VCSELS are specifically designed to meet the demands of data centers including for AI/ML, high-performance computing, and other bandwidth-intensive applications, as they deliver stable and reliable data transmission at high speeds.

Visit TRUMPF Photonic Components at OFC 2024, Booth 2000

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Picture 1: Data center

The TRUMPF VCSELs are specifically designed to meet the demands of data centers. © TRUMPF



Picture 2: Ralph Gudde, VP Marketing & Sales at TRUMPF Photonic Components © TRUMPF

About TRUMPF Photonic Components

TRUMPF Photonic Components is a global technology leader, supplying VCSEL and photodiode solutions for consumer electronics, datacom, industrial sensing and heating markets. More than two billion VCSEL chips and photodiodes have been shipped worldwide so far. The employees continue to drive the technological know-how established for over 20 years now in order to maintain its leadership position. The long-established technology was acquired by TRUMPF in 2019. The company has its headquarters in Ulm, Germany, with further sales locations in the Netherlands, China, Korea and the US.

TRUMPF Photonic Components belongs to the TRUMPF Group, a high-technology company that offers production solutions in the machine tool and laser sectors. TRUMPF is the world technological and market leader for machine tools used in flexible sheet metal processing, and also for industrial lasers and metal 3D



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printing. In 2022/23, the company employed some 18,400 people and generated sales of about 5.4 billion euros. With over 80 companies, the TRUMPF Group is represented in nearly every European country as well as in North America, South America and Asia. The company has production facilities in Germany, France, the United Kingdom, Italy, Austria, Switzerland, Poland, the Czech Republic, the United States, Mexico and China.

For more information about TRUMPF Photonic Components visit: www.trumpf.com/s/VCSEL-solutions

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