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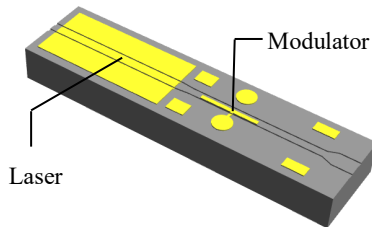
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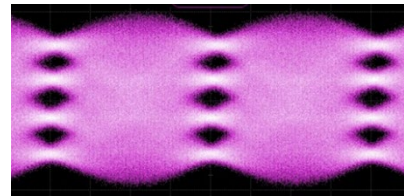
prd.gnews@nk.MitsubishiElectric.co.jp
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Mitsubishi Electric Develops 200Gbps (112Gbaud PAM4) EML Chip Supporting Four CWDM Signals

Will enable data centers to realize up to 800Gbps/1.6Tbps



Chip (rendition)



112Gbaud PAM4 eye diagram
(back-to-back, Vpp=1.2V)

TOKYO, March 2, 2023 – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today that it has developed a 200Gbps (112Gbaud four-level pulse-amplitude modulation (PAM4)) electro-absorption modulator laser diode (EML) chip that doubles the speed of the company's existing 100Gbps EML chip thanks to a proprietary hybrid waveguide structure. Support for coarse wavelength division multiplexing (CWDM) of four wavelengths realizes 800Gbps transmission using four chips or 1.6Tbps using eight chips.

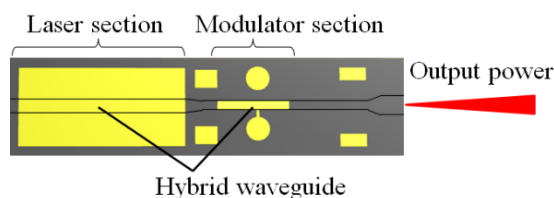
The greatly improved performance is expected to raise the transmission speed of optical transceivers used in data centers to respond to mushrooming data-traffic demand due to the rapid growth of video distribution services and cloud computing.

Mitsubishi Electric will present its new chip at the Optical Fiber Communication Conference and Exhibition (OFC) 2023 in San Diego, USA this March 5–9.

Product Features

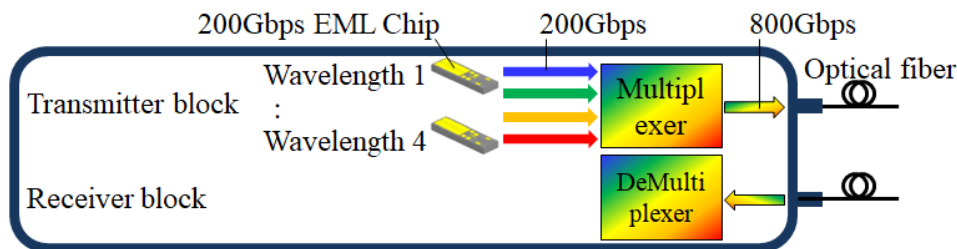
1) *Improved operational speed, extinction ratio and optical output due to unique structure*

- High-speed operation of up to 200Gbps, high extinction ratio and high output power are achieved with Mitsubishi Electric's unique hybrid waveguide structure, which combines a buried heterostructure laser diode for high optical-output power and a high-mesa waveguide electro absorption modulator.



2) **4-wavelength support for increased transmission speed reduces optical fiber needs**

- The new chip supports four CWDM wavelengths—1271, 1291, 1311 and 1331nm—similar to the company’s existing 100Gbps products, allowing optical signals of different wavelengths to be multiplexed in a single optical fiber, thereby reducing the number of fibers required.
- Four chips in one transceiver can achieve 800Gbps and eight chips can achieve 1.6Tbps.



Example of 800Gbps optical transceiver configuration

Main Specifications

Wavelengths	1271, 1291, 1311 and 1331 nm
Operating temperature range	55°C
Bit rate	200Gbps (112Gbaud PAM4)
Optical modulation amplitude	More than 5 dBm
Extinction ratio	More than 3.5dB

Future Developments

Mitsubishi Electric is targeting mass production of the chip from 2024. The company is also considering expanding support to eight wavelengths for compatibility with additional transmission methods.

Environmental Awareness

This product is compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive 2011/65/EU and (EU) 2015/863.

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About Mitsubishi Electric Corporation

With more than 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its “Changes for the Better.” The company recorded a revenue of 4,476.7 billion yen (U.S.\$ 36.7 billion*) in the fiscal year ended March 31, 2022. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥122=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2022