News Release

Furukawa Electric Develops Electro-Absorption Modulated Laser with Integrated Semiconductor Optical Amplifier

Realizes both low power consumption and high optical output power of 50 Gbaud, double the current output

OFC 2023, Booth 3229, San Diego, California, March 2, 2023 - Furukawa Electric Co., Ltd. (FEC) announces the development of a high optical output power 50 Gbaud electro-absorption modulated laser (EML) “FOL13EBxCS” with integrated semiconductor optical amplifier (SOA). By integrating a SOA into the EML, this new product realizes approximately double the optical output power at the same power consumption level compared to existing EML. Realizing both high optical output power and low power consumption, contributes to the establishment of optical communication networks that support the commercialization of 5G.

■ Background

The installation of 5G networks for mobile phones has resulted in more cloud services that operate at faster speeds and larger data volumes, and following increased data traffic at the network edge, the demand for signal light sources for short and medium-range distances is increasing. EML has excellent signal waveform and high-speed operating characteristics, and it is broadly used as a laser source for medium-range distances (10km) at speeds of 100Gbps and higher. In addition to addressing longer network distances and larger data volumes, along with the growing needs for higher optical output power, it is also necessary to limit power consumption.

■ Details

By integrating a SOA into the EML, this new product realizes approximately double the optical output power at the same power consumption level compared to existing EML. With the existing EML, optical output power is increased by increasing current flow to the laser, and as a result, power consumption increases in proportion to the increase in optical output power. By integrating a SOA that can increase optical output with high efficiency, the newly developed EML realizes both higher optical output power and low power consumption.

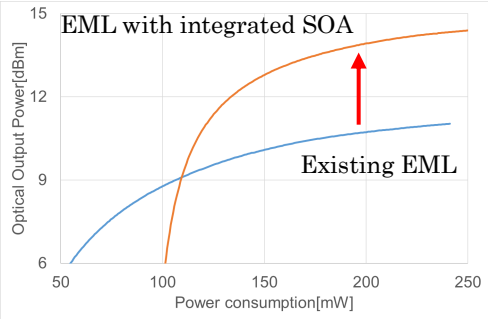

Fig. 1 Power consumption – optical output power characteristics

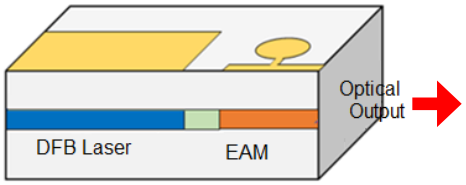

Fig. 2 Existing EML

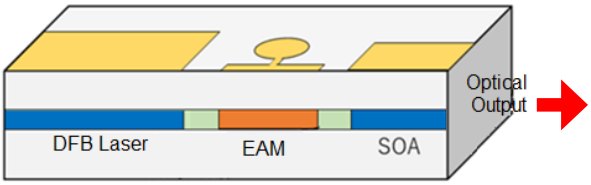

Fig. 3 EML with integrated SOA>

When using this product as part of a 100G-400G Ethernet and next-generation high speed PON system, it should be possible to extend the distance of metro access networks.

In addition to laser sources for long haul and metro networks (for medium and long distances), Furukawa offers a lineup of laser sources for a broad range of optical networks, including data center and access networks (for short and medium distances, including this product).

Main product specifications

Parameter	Specification value	Units	Conditions
Operating temperature	55	℃	
LD operating current	<80	mA	
SOA operating current	<80	mA	
EAM bias voltage	-1.5-0	V	50Gbps, NRZ
Extinction ratio	>4	dB	50Gbps, NRZ
Optical output power	>12	dBm	CW, EAM bias voltage = 0V
Wavelength	Support O-band and LAN-WDM		

Provided structure: Chip on Submount

Furukawa will exhibit this new product at OFC 2023, March 7-9, 2023, in San Diego at OFS booth 3229. Samples are currently available.

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Furukawa Electric Group's efforts toward the SDGs

Based on the "Sustainable Development Goals (SDGs)" adopted by the United Nations, Furukawa Electric Group has formulated the "Furukawa Electric Group Vision 2030" which sets forth the year 2030 as its target and is advancing efforts with the aim to "Build a sustainable world and make people's life safe, peaceful and rewarding, Furukawa Electric Group will create solutions for the new generation of global infrastructure combining information, energy, and mobility." Toward achieving our Vision 2030, we will take open, agile, and innovative approaches to promote ESG management that aims to increase corporate value over the medium to long term and will contribute to achieving the SDGs.

Furukawa Electric Group's efforts towards the SDGs
https://furukawaelectric.disclosure.site/ja/themes/182

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