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News Release

FURUKAWA ELECTRIC ANNOUNCES SAMPLING OF MICRO ITLA FOR 100 GB/S OPTICAL COHERENT TRANSMISSION

OFC/NFOEC 2013, Booth #2627, Anaheim, California, March 18, 2013 - Furukawa Electric Company, Ltd. has developed a micro Integrable Tunable Laser Assembly (ITLA), a key component in ultrahigh-speed optical digital coherent transmission devices operating at 100 gigabits per second (Gb/s). This transmission device is now being introduced globally with initial sampling of the micro ITLA. In addition to meeting the industries' demand for much lower power consumption and high optical output, Furukawa has also developed a new wave length tunable laser chip that enables an additional 20% reduction in power consumption. When used in combination with the micro ITLA, it further reduces power consumption by 40% against conventional products and nearly doubles the optical output when compared with micro ITLA. These benefits along with the acceptance of the Optical Internetworking Forum (OIF) to standardize the ITLA specification make the micro ITLAs an attractive choice for optical communication devices. The new wave length tunable laser chips are planned to be mounted on the micro ITLA devices beginning in early 2014.

Presently, global network traffic continues to grow at a phenomenal rate in both terrestrial and wireless networks. With smartphones now a ubiquitous tool for consumers and business users, acceptance of cloud computing, data center connectivity and mass video distribution, the telecommunications industry is presently accelerating the deployment of 100 Gb/s transmission systems for high capacity. The industry has converged on optical digital coherent technology in transmission systems, which involves the use of optical phases (wave conditions) resistant to signal deterioration and impervious to the effects of noise.

Furukawa has already commercialized high-output and narrow-line-width ITLAs that exhibit excellent properties for signal lights from the optical digital



Figure 1: Conventional (top) and micro ITLA (bottom) comparison

coherent system (Note 1) and for local oscillator (Note 2). Since the industry continues to demand higher capacity, the specifications for small and low power-consumption ITLAs have now been accepted and standardized by the OIF (Note 3).

The micro ITLA is a light source that has been made smaller, consuming less electricity while retaining the same specifications of conventional ITLAs that the industry is used to. These specifications include communications protocol and optical-electric properties.

Using its innovative history and manufacturing prowess, Furukawa has developed technologies for assembling and fixing high-accuracy optical components for manufacturing micro ITLAs (half the size or less compared to conventional ITLAs, 45 x 20 mm). A small package module has been developed by harnessing these technologies. Furukawa's expertise in laser driver circuits and digital circuits has also been exercised to reduce the form factor.

The new wave length tunable laser chips from Furukawa can reduce power consumption by 20% from 5 W to 4 W. Currently available conventional lasers use GaInAsP crystals as active layers of the lasers. However, the optical output is reduced significantly at higher temperatures requiring cooling operation below room temperature. Furukawa's new wave length tunable laser chips use AlGaInAs crystals (Note 4) for the light-emitting layer. By using this material, Furukawa has achieved better control of the optical output at higher temperatures improving it to 16 dBm or higher compared with 13.5dBm of conventional GaInAsP products. In addition, new wavelength tunable laser chips also increases the operating temperature by 15 degrees Celsius higher than conventional products, thus reducing the power consumption on the TEC (Note 5) and even lower when used on the micro ITLA (up to 40% compared to conventional products).

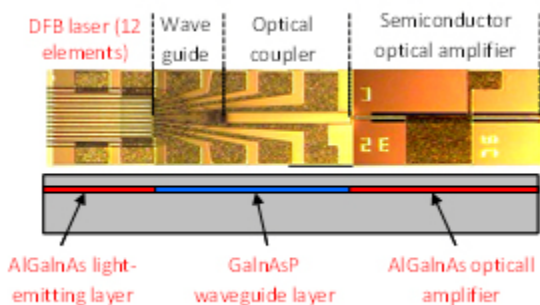


Figure 2: Picture of the semiconductor lasers and the schematic cross-section diagram

The new micro ITLA product will be exhibited at OFC/NFOEC 2013, scheduled to be held from March 19 in Anaheim, California, United States. A paper on the new wave length

tunable laser chips will also be presented at the IEICE General Conference 2013, which will be held in Gifu, Japan from March 19.

Technical Specifications

Item	Specifications of micro ITLAs	Specifications of conventional ITLAs
Wave length variable width	1528 – 1564 nm (C-band) 1570 – 1607 nm (L-band)	1528 – 1564 nm (C-band) 1570 – 1607 nm (L-band)
Optical output	13.5 dBm (1 st release) 16 dBm (with new chip)	13.5 dBm or greater
Line width	< 500 kHz	< 500 kHz
Side mode suppression ratio	> 40dB	> 40dB
Average relative intensity noise	< -140 dB/Hz	< -140 dB/Hz
Wave length stability	< ±2.5 GHz	< ±2.5 GHz
Power consumption	5 W	6.5 W
Size	45 x 20 x 7.5 mm	74 x 30.5 x 10.5 mm

Glossary

Note 1: Optical digital coherent system – Involving the use of digital signal processing to detect optical phase information from transmitted data, the system is capable of transmitting a large volume of information within a narrow bandwidth.

Note 2: Local oscillator – In the optical digital coherent system of transmission, this kind of light is locally used to facilitate interference with signal lights to obtain phase information from the transmitted data. This requires a narrow line width.

Note 3: OIF – Optical Internetworking Forum is an industry group that endorses the standardization of optical network devices and their optical components.

Note 4: AlGaInAs – This material makes it possible to create lasers that control the lowering of output even at high temperatures, compared to the conventional GaInAsP. As it contains Al which is oxidized readily, it is generally considered difficult to apply AlGaInAs to integrated-type optical elements that are produced through complicated processes.

Note 5: TEC – Thermoelectric Cooling Module – This module carries out heat generation and heat absorption by passing a current to the portion connecting two thermal electronic materials. It is used for adjusting the temperature of the laser chips in this product.

About Furukawa Electric Company, Ltd.

Furukawa Electric Co. Ltd. (www.furukawa.co.jp/english) is an \$11 billion global leader in the design, manufacture and supply of fiber optic products, network products, electronics components, power cables, nonferrous metals, and other advanced technology products. Headquartered in Tokyo, Japan, Furukawa operates production facilities on five continents around the globe, including OFS in the USA, Europe and China.

About OFS

OFS is a world-leading designer, manufacturer and provider of optical fiber, optical fiber cable, connectivity, FTTx and specialty photonics solutions. Our marketing, sales, manufacturing and research teams provide forward-looking, innovative products and solutions in areas including Telecommunications, Medicine, Industrial Automation, Sensing, Government, Aerospace and Defense applications. We provide reliable, cost effective optical solutions to enable our customers to meet the needs of today's and tomorrow's digital and energy consumers and businesses.

OFS' corporate lineage dates back to 1876 and includes technology powerhouses such as AT&T and Lucent Technologies. Today, OFS is owned by Furukawa Electric, a multi-billion dollar global leader in optical communications.

For more information, please visit www.ofsoptics.com.

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