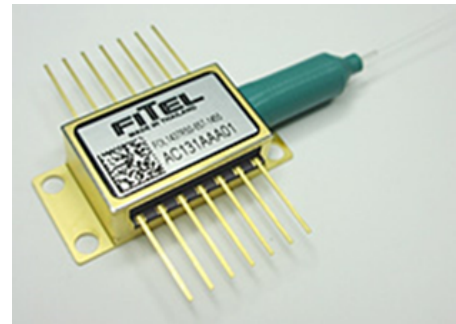


Furukawa Electric Develops New Pump Source FRSi4XX Series for Forward Raman Amplifiers

Achieves Higher Speeds and Long-Distance Transmission

OFC 2020, San Diego, California, March 9, 2020 - Furukawa Electric Co., Ltd. (FEC) announces it has developed FRSi4XX Series pump sources for forward Raman amplifiers that extend transmission distances in ultrahigh-speed optical fiber communications farther than conventional systems.

Proliferation of smartphones has led to a dramatic increase in communication traffic, including the expansion of wireless backbones, cloud computing, video streaming, and the penetration of social networks. To deal with this traffic explosion, improvement in optical signal-to-noise ratio (OSNR) is becoming an important factor in soon-to-be-deployed ultrahigh-speed optical fiber communications such as 400 Gbps and beyond. Existing erbium-doped fiber amplifiers (EDFA), which are widely used in current systems, do not have sufficient OSNR performance. Demand is increasing for Raman amplifiers due to their excellent noise characteristics. Forward Raman amplifiers, which make the most of the advantages of Raman amplification, are expected to be a technology necessary for increasing transmission distances.



In the past, only the backward Raman amplifier was used due to limitations of the noise characteristics of the pump source. Furukawa Electric's new FRSi4XX Series novel pump sources make it possible to realize forward Raman amplifiers and feature high output as well as excellent low-noise characteristics.

Product Description

The important characteristics of these products are high power output and low noise. Furukawa Electric achieved these characteristics by leveraging the design, manufacturing technology and high-precision packaging of its InP (Indium Phosphide) optical semiconductor chip. The result is a pump source with a high-output chip structure and high-efficiency coupling

technology. The optical output of 100 mW or more was achieved through an optimized heat dissipation design.

The FRSi4XX pump series reduces noise by about 20 dB/Hz compared with conventional pump sources for Raman amplifiers.

Combining the FRSi4XX Series with existing FOL1439 Series, yield pump sources especially well-suited to forward pumping Raman amplifiers.

As demand for ultrahigh-speed optical fiber communications continues to grow, FEC will further enhance the technology of this series and contribute to the construction of information and communications infrastructure in anticipation of the advancement of 5G. Sample shipments of the FRSi4XX Series are scheduled to begin in the second half of FY2020.

Main Product Specifications

Type name	FRSi4XX Series
Optical output (mW)	>100
Noise characteristic RIN (dB/Hz)	<-130 (up to 3 GHz)
Operating condition	EOL, Ts=25°C, Tc=70°C
Wavelength (nm)	1420 to 1500
Wavelength spectrum width (nm)	>25

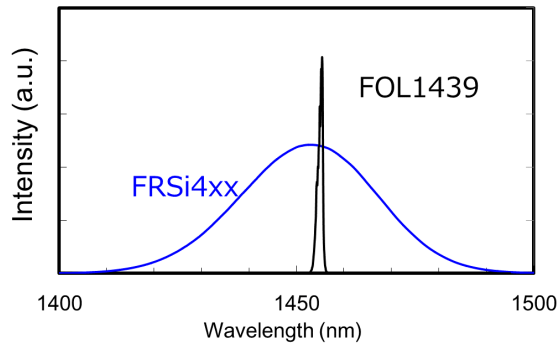


FIGURE 1: Spectral characteristic

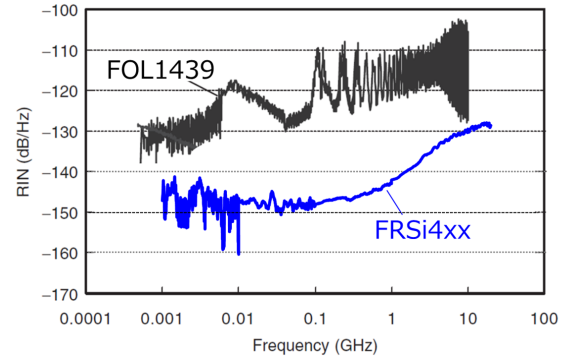


FIGURE 2: Noise characteristic

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, Morocco, and China.

About OFS

OFS is a world-leading designer, manufacturer and provider of optical fiber, fiber optic cable, connectivity, fiber-to-the-subscriber (FTTx) and specialty fiber optic products. We put our development and manufacturing resources to work creating solutions for applications in such areas as telecommunications, medicine, industrial automation, sensing, aerospace, defense and energy. We provide reliable, cost-effective fiber optic solutions that help our customers meet the needs of consumers and businesses today and into the future.

Headquartered in Norcross (near Atlanta) Georgia, U.S.A., OFS is a global provider with facilities in China, Denmark, Germany, Morocco, Russia and the United States. OFS is part of Furukawa Electric Company, a multi-billion-dollar leader in optical communications and is the authorized distributor of FEC's FITEL products in the Americas.

Please visit www.ofsoptics.com/.

###

PR Contact:

Sherry Salyer
OFS Public Relations
shsalyer@ofsoptics.com

Technical Contact:

Mariko Miyazawa
FEC
mariko.miyazawa@furukawaelectric.com