

- Reduced power consumption by uncooled operation -

Motivation

Electro absorption modulator integrated DFB laser diodes (EADFB LDs) have been used commercially as light sources for 10-Gb/s SMF 40- and 80-km applications. The power used by these optical transceivers is mainly consumed by their thermo electric coolers. To achieve low power consumption operation, we aimed at realizing an uncooled (thermo-electric-cooler free) EADFB LD.

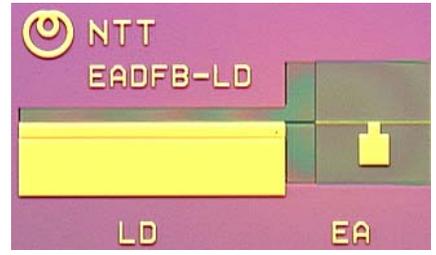
Originality

Commercially available EADFB LDs are fabricated with InGaAsP material, but we introduce InGaAlAs material because of its temperature tolerant characteristics. We realized an 80-km SMF transmission in a -25 to 100°C temperature range using InGaAlAs EADFB LDs.

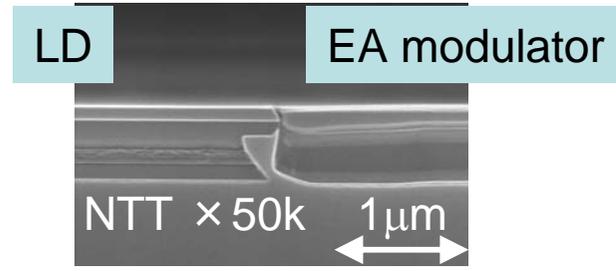
Impact

The power consumption of EADFB LDs can be reduced by a factor of 1/3 ~ 1/6 by realizing uncooled operation. This device can contribute to next generation optical network systems through its low power consumption and low cost.

InGaAlAs EADFB LD



BJ section



10-Gb/s eye diagrams

