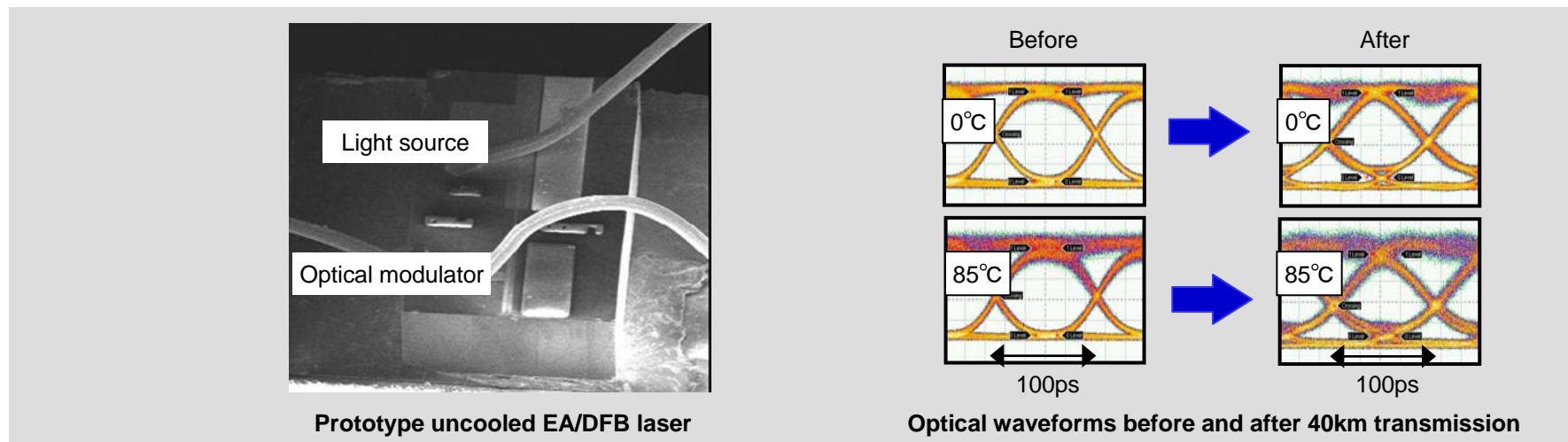


2005/7/14 Release

Low-power-consumption semiconductor laser diode for 10Gbps metropolitan area optical transmission - 40km un-cooled fiber transmission achieved within 0°C -85°C range -



Hitachi, Ltd. and Opnext Japan, Inc., have succeeded in the development of a new semiconductor laser diode for use as a light source in 10Gbps wide-area and metropolitan-area networks. The new laser diode monolithically integrates a distributed feedback laser and an electroabsorption optical modulator which produces optical signals, on a device measuring 0.75mm x 0.3mm, and can be operated in a wide temperature range from 0°C to 85 °C without temperature control. InGaAlAs, a temperature tolerant material, was adapted for the optical modulator, and a new multistep monolithic integration technique was developed to minimize the optical loss between the laser light source and the optical modulator. Both 40km normal fiber transmission and 10Gbps high-speed operation were achieved within a wide operating temperature range of 0°C to 85°C without temperature control. This result will expand the application of low-power-consumption optical transceivers, until now used only in limited distances, to wide-area and metropolitan-area networks.