

Chip-scale optical transceiver “Optical I/O core” for interconnections among boards and LSIs based on silicon photonics technology

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Abstract – We developed chip-scale optical transceiver, called “Optical I/O core,” based on silicon photonics technology. Optical I/O core has a small size of $5 \times 5 \text{ mm}^2$, a high capacity of $4 \times 25\text{Gbps}$ or $12 \times 25\text{Gbps}$, and wide temperature operation from -40 to $+85^\circ\text{C}$. This chip-scale optical transceiver is so small that they can be mounted around a LSI and can be connected among boards and LSIs. We demonstrated optical interconnection with 400Gbps among cassette type FPGA boards, on which optical I/O cores were mounted. These FPGA boards will be used as accelerators among CPUs for high performance computing.

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Bio –Takahiro Nakamura is currently a Chief Manager for the Photonics and Electronics Technology Research Association on a temporary basis and a project professor in the University of Tokyo. He is a member of the Institute of Electronics, Information and Communication Engineers of Japan. He received the B.E., M.E., and D.E. degrees in electrical engineering from Osaka University in 1986, 1988, and 2005, respectively. He joined NEC Corporation, Kawasaki, Japan in 1988, where he engaged in research and development on laser diodes and silicon photonics.