What's Hot in R&D
Telecommunications Network Technologies

10 G-class Communication LSI Design Technology

Overview

For next-generation communications systems, we are researching and developing LSI design technologies that enable frame processing at 10 Gbit/s. The high-speed communication LSI has to process two types of frames. One is a "user frame" that requires high-speed and continuous processing. The other is a "control signal" that does not have to be high-speed but must be able to handle different communication protocols. Our high-speed flexible LSI architecture accordingly uses software or hardware to process these frames. The main functions of the LSI were implemented in FPGAs\(^1\), and frame processing at 10 Gbit/s was confirmed.

Features

- The LSI architecture divides the received frames into a user frame and control signal, and it uses hardware to process the user frame and software to process the control signal. This simultaneously speeds up data processing and makes the protocol control more flexible.
- The frame separating and inserting circuits can pick out slow frames from fast frames and insert slow frames into fast frames precisely.
- The prototype system and communication-test environment have a communication capability of 10 Gbit/s.

Application scenarios

- LSIs for high-speed communications systems such as 10G-EPON\(^2\)
- LSIs for routers and other high-speed network equipment

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\(^1\) FPGA: Field Programmable Gate Array
\(^2\) 10G-EPON: 10-Gigabit Ethernet Passive Optical Network