

Synopsys and KeyEye Communications

DesignWare PHY IP Saves Two Man Years of Engineering Effort for 10GBASE-T Copper Transceiver



“Faced with a critical time to market window, we turned to Synopsys because they provided a XAUI PHY that had the best feature set compared to other vendors, was silicon proven and well established in the market.”

—Mike McConnell, Co-Founder, KeyEye Communications

Business

KeyEye Communications is a fabless semiconductor company enabling high performance connectivity solutions over structured copper twisted pair cabling between networking, computing and storage equipment.

Challenge

- Obtaining a high quality, compliant XAUI PHY IP with the right feature set and process technology
- Maximize engineering resources

Solution

- DesignWare® Mixed-Signal PHY IP for XAUI on 90nm process technology

Benefits

- Saved two man years of engineering effort
- Achieved first pass silicon success
- Met 10G high performance goals
- Received excellent documentation and technical support

Overview

KeyEye's 10Gbps Ethernet transceivers (PHYs) deliver the lowest power, lowest cost and most reliable 10GBASE-T connectivity over typical data center cable reaches. KeyEye Communications' Ethernet PHY solutions enable network managers to scale their network infrastructure to 10G by leveraging the traditional value of Ethernet copper twisted pair cabling to achieve low cost, high port density and low power.

The innovative new 10GBASE-T Ethernet transceiver single chip mixed signal solutions comply with and are optimized for the short reach provision of the 802.3an standard. KeyEye Communications products are less than half the cost, power and board area of first generation 10GBASE-T solutions on similar process technology nodes. KeyEye has extensive knowledge in all aspects of 10Gbps design including PCB layout design, host system chip to chip interfaces, connector and cable modeling, transformer and power regulation design.

“The DesignWare PHY IP is of very high quality and exercised all the parameters of the XAUI interface flawlessly with first pass silicon success. Furthermore, we were extremely pleased with the well organized documentation and the deep technical knowledge of the support team.”

- Mike McConnell, Co-Founder, KeyEye Communications

Leading IP Features

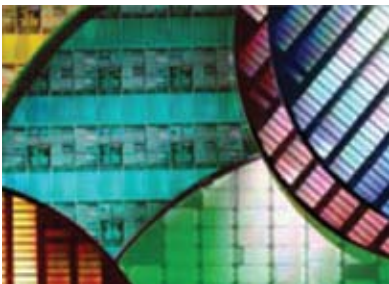
KeyEye Communications was developing their next generation 10GBASE-T copper transceiver which required a XAUI interface. Using their internally developed XAUI PHY would require spending valuable resources on implementing additional features and porting it to a new process technology. Faced with a specific time to market window, KeyEye decided to focus their engineering efforts on differentiating the product and purchase the XAUI PHY IP from a third party provider. They selected Synopsys' DesignWare IP.

Low power was a key differentiator for KeyEye and Synopsys provided a XAUI PHY that was lower in power compared to other competitive solutions. In addition, not only was the Synopsys DesignWare IP fully compliant to the specification but it also provided additional functionality that was beyond the minimum feature set required, which was a key differentiator for KeyEye. Synopsys provided KeyEye with a high performance XAUI PHY that had high receive side sensitivity, high yield and low bit error rate. By implementing the XAUI PHY IP from Synopsys, KeyEye estimated that they were able to save up to two man years of effort versus modifying their internally developed IP.

High Quality and Excellent Support

High quality and risk reduction were key deciding factors for KeyEye. They knew Synopsys was an established IP provider and with a track record of successful tape-outs, they had trust in the IP. KeyEye was able to integrate the IP with no issues and achieved first pass silicon success. “We had complete confidence in the DesignWare PHY IP and it functioned precisely the way we expected,” said Mike McConnell. KeyEye was also very impressed with the quality of the documentation and the support that he received from Synopsys. In the few times that KeyEye needed support, Synopsys' knowledgeable technical support team was always there to provide timely responses. “With other IP providers in the past, it was very rare to have someone who was able to answer the technical questions due to their lack of expertise. This was not the case with Synopsys,” said Mike McConnell.

With several generations of the 10GBASE-T copper transceiver to come, KeyEye will undoubtedly continue to use the Synopsys DesignWare PHY IP. Mike commented, “We have a good, solid core and are 100% delighted! It worked out exceptionally well for us.”



“The high performance DesignWare XAUI PHY IP was compliant to the specification and functioned exactly the way it was intended. We were very pleased with the level of receiver tolerance and low bit error rate.”

- Mike McConnell, Co-Founder, KeyEye Communications

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