SYNOPSYS®
Predictable Success

Synopsys and ViXS

Complete DesignWare IP Solutions Enable ViXS to Achieve First Pass Silicon Success for Advanced Video Processing SoC

"The combination of ViXs' design expertise in high performance video ICs and Synopsys' unmatched quality and breadth of IP portfolio allowed us to show working samples to our customers within two weeks of receiving the chip back from the fab."

Kuldip Sahdra
Director of ASIC Engineering at ViXS

Business

ViXS is a fabless semiconductor company enabling advanced transcoding and video processing technologies for top-tier consumer electronic, PC, and set-top box companies.

Challenges

- Achieve time to market goals with an IP solution that would enable first pass silicon success
- Deliver first samples to customer on-time
- Implement a variety of interfaces such as SATA II, DDR2, USB 2.0 and dual Ethernet into a single chip

DesignWare® IP

- Complete IP solutions consisting of digital controllers, PHY and verification IP for DDR, SATA, PCI Express®, USB 2.0 and Ethernet
- DesignWare Library

Benefits

- Obtained broad portfolio of complete, interoperable IP solutions from a single vendor
- Achieved first-pass silicon success and ahead of schedule with proven, high quality IP
- Enabled ViXS to focus on their core competency in audio and video integrated circuit (IC) designs

Overview

ViXs develops advanced video transcoder and codecs for processing, managing, protecting and distributing high definition broadcast-quality video. ViXS supplies IC solutions to leading OEMs and ODMs for a variety of designs such as IPTV/cable set-top boxes (STB), multimedia PC boards, digital TVs, personal video recorders (PVRs), and Blu-ray DVD products. ViXS' products allow consumers to easily capture, process and distribute broadcast-quality video throughout the home and while on the go.

The XCode 3000™ series is ViXS' current generation of full production video processing chipsets. The advanced, full duplex MPEG4 AVC Transcoder/Encoder/Decoder System-on-a-Chips (SoC) has led the market by being the first – and only – single-chip hardware transcoder.

The XCode 3000 series has revolutionized the way consumers interact with video content allowing them to store, distribute and share broadcast-quality content both easily and efficiently. The chip offers HD MPEG2/AVC Encoding/Decoding for advanced PVR and STB designs and video capture.

Synopsys' clear expertise in the protocols enabled us to focus our resources on our specialty, which is high performance video-processing. Synopsys is well known for delivering high quality IP so we knew the integration risk would be low."

Kuldip Sahdra,
Director of ASIC Engineering, ViXS

Leading IP Features

ViXS was developing their next generation video processing chipset, which would not only implement the latest functionality but also incorporate a variety of standard interfaces such as DDR, SATA, USB 2.0, PCI Express and Ethernet. Faced with steep competition, time-to-market was critical. ViXS set out to acquire a 3rd party IP solution that would give them the best chance of achieving first pass silicon success for their design.

ViXS started the IP vendor selection process and after conducting technical due diligence, decided Synopsys DesignWare IP was the ideal solution. "Synopsys was able to provide us with complete IP solutions, consisting of digital controllers, PHY and verification IP for all the protocols we needed including DDR, SATA, USB 2.0, PCI Express and Ethernet." said Kuldip Sahdra.

The DesignWare IP was very competitive in area, power and feature set. Furthermore, since ViXS was also using Synopsys as the preferred tools vendor, so the adoption of DesignWare IP was a natural combination. By going with Synopsys, ViXS was able to save six months on their development schedule, allowing their customers to get products to market faster.

High Quality and Excellent Support

ViXS knew that Synopsys was an established provider and the DesignWare IP had been used in many designs with products shipping in volume. This gave them confidence the IP would be of high quality, function correctly and be interoperable with other devices in the market. Synopsys' active contribution to the industry standard organizations such as USB Implementers Forum (USB-IF), PCI Special Interest Group (PCI-SIG), SATA Interoperability Organization (SATA–IO), JEDEC, and IEEE not only gave ViXS assurance that the IP would be compliant to the standard specifications but also that Synopsys was a leader with deep technical expertise.

When ViXS had any issues, Synopsys' knowledgeable technical support team was there to provide answers in a timely manner and ViXS considered them experts in their areas.

ViXS was particularly impressed with the robustness of the high-speed PHYs, which helped them successfully characterize the PHY's performance in their chip and pass compliance testing. The on-chip diagnostics also enabled ViXS to quickly get from initial silicon to production, saving on expensive test equipment and enabling them to show working samples earlier to customers in the required timeframe.

The XCode 3000 series chipset successfully entered the market with wide customer adoption. ViXS is nearing completion on their next project, which also utilizes Synopsys' DesignWare IP.

The on-chip diagnostic capability of your SerDes PHYs was a big plus for us. We were able to quickly get from initial silicon to production test."

Kuldip Sahdra,
Director of ASIC Engineering, ViXS

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