

Synopsys and Silicon Integrated Systems

SiS Meets High-Performance, Low-Power Goals for HDTV Chipset with DesignWare Video AFE and Audio IP



Synopsys' silicon-proven DesignWare Video AFE and Audio IP enabled us to meet our aggressive SoC performance targets while reducing the power dissipation of our HDTV chipset."



Nelson Lee

Vice President of Sales and Marketing, Silicon Integrated Systems

Business

Silicon Integrated Systems Corporation (SiS) is a worldwide leader in the development of leading-edge logic products, including core logic, multimedia, communications and embedded systems, as well as DRAM modules.

Challenges

- ▶ Obtain performance level necessary for high-quality video imaging and audio experience while meeting power and area constraints
- ▶ Meet aggressive time-to-market-window with proven video analog front-end (AFE) and audio IP solutions
- ▶ Select established analog IP vendor with demonstrated application expertise to ensure compatibility with end-equipment already in the market

DesignWare IP Solution

- ▶ 8-bit, 165 Ms/s Video AFE IP
- ▶ 24-bit, 96 dB Audio IP Codec

Benefits

- ▶ Acquired a silicon-proven solution that met performance, power and size requirements
- ▶ Achieved first-pass silicon success and met time-to-market window
- ▶ Received excellent technical support from an experienced engineering team that helped ease the integration process

Overview

SiS is a worldwide leader in the design and production of integrated circuits (ICs).

The company devotes its effort to developing cutting-edge system-on-chip (SoC) solutions to meet various applications for the digital era. Its products have been widely applied in touch and tablet devices, HDTV, internet TV, portable consumer electronics, personal computers and customized SoC design services.

With a strong emphasis on sustainable development, SiS focuses on green technology innovation in its research and development of core logic products to fulfill its vision of supporting the ever-increasing demands of digital life.



Synopsys' expertise in analog design and the relevant video and audio standards helped ensure our design was compatible with existing digital TVs and other video equipment in the market."

Nelson Lee

Vice President of Sales and Marketing, Silicon Integrated Systems

Leading DesignWare IP Solution

SiS set ambitious goals for one of their new HDTV processor designs: it should produce very high quality video and an amazing audio experience while meeting aggressive power and cost criteria. In addition, to ensure adoption by major TV manufacturers for their Pan-European HDTV platforms, the SiS design had to support various levels of sophisticated middleware including DVB common interface (CI) stack, Sunrise DVB-T and Voyager MHEG-5.

To meet their objectives, SiS had to find an IP provider that could provide video and audio IP to support all of their required functionality with demonstrated application expertise to ensure compatibility with end-equipment already available in the market. To mitigate project risks, the IP provider had to have a proven track record of delivering on time and supporting customers through tapeout. After evaluating several IP vendors, SiS selected Synopsys' DesignWare® Video AFE and Audio IP solutions.

SiS chose Synopsys' DesignWare 8-bit Video AFE IP, which incorporates a high-performance triple analog-to-digital converter (ADC) with a 170 Ms/s sampling rate to deliver high-quality video images. SiS also chose the compact and low-power DesignWare 24-bit, 96 dB Hi-Fi Audio IP codec for the high-quality audio reproduction it would deliver. Because of Synopsys' expertise in analog design and video standards, its robust IP products quickly passed extensive testing for compatibility with existing video equipment in the market, such as digital TVs (DTV) and Digital Video Recorders (DVRs).

High-Quality IP and Excellent Support

Synopsys' high-quality, silicon-proven DesignWare IP helped SiS ensure their design would work right the first time. "We had confidence that Synopsys' video and audio IP would function as expected, and that trust turned out to be well placed", said Nelson Lee, Vice President of Sales and Marketing at SiS. "By relying on proven DesignWare analog IP, we were able to focus our resources on other key engineering activities that ultimately enabled us to achieve first-pass silicon success on schedule."

SiS was particularly impressed with the responsiveness of Synopsys' support team. Technical questions and issues were quickly and competently addressed throughout SiS' product development cycle, reducing integration risk. "Every time we needed assistance, the Synopsys technical team was always there to provide timely and knowledgeable support that was better than what we had experienced from other IP providers", said Nelson Lee, Vice President of Sales and Marketing at SiS. In addition, having Synopsys' support staff local to SiS' research and development (R&D) activity proved beneficial to the project team because of the common language and time zone.

As a result of this successful project, SiS has selected Synopsys as their Audio IP provider for their next-generation HDTV designs.

"Synopsys' high-quality technical support and documentation eased our chip integration and system testing, and was key to helping ensure the success of our SoC."



Nelson Lee

Vice President of Sales and Marketing, Silicon Integrated Systems



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