

Synopsys and SunplusIT

SunplusIT Achieves First-Pass Silicon Success for Webcam SoC with DesignWare USB 3.0 PHY & Controller IP



Our customers requested that we move quickly to upgrade our webcams to the USB 3.0 specification, so we needed reliable USB 3.0 IP. By using DesignWare USB 3.0 IP, our silicon rollout went exactly as planned.”

G.T. Hsiao

R&D Manager, SunplusIT

Business

Sunplus Innovation Technology (SunplusIT) researches, develops, manufactures and markets microcontrollers and SoCs with embedded software solutions targeting human interface devices, external PC drives, PC cameras, and the industrial control market. SunplusIT is committed to bringing comfort, convenience, and happiness to our end customers, fulfilling the company vision of “Technology for Easy Living.”

Challenges

- ▶ Maintain technology leadership when deploying the next generation of products
- ▶ Meet customers’ high USB performance criteria
- ▶ Obtain proven, standards-compliant USB 3.0 IP in required process node

Synopsys Solution

- ▶ DesignWare® USB 3.0 PHY and Controller IP

Benefits

- ▶ Achieved first-pass silicon success with proven IP
- ▶ Met customers’ requirements for 5 Gbps USB 3.0 throughput
- ▶ Simplified product deployment by using industry-standard USB video class drivers, which eliminated the need to write proprietary drivers

Overview

SunplusIT, a technology leader in PC webcams, had successfully deployed USB 2.0 webcams in multiple brand-name products. Due to this success, the company was approached to develop a USB 3.0 webcam, the SPCA2100A, which takes advantage of the 5 Gbps speeds that the USB 3.0 specification defines. To accelerate and simplify product development, SunplusIT required third-party PHY and controller IP that was certified by the USB-IF, PHY IP that was available on their required process node, and controllers that were compatible with USB video class drivers. It was critical for SunplusIT to maintain their industry leadership and focus on their core competencies instead of focusing on developing and integrating the USB 3.0 IP.

To support these goals, SunplusIT required a reliable solution that would minimize integration effort and function as required in their complex webcam SoC. Only DesignWare USB 3.0 PHY and controller IP met their need for high-quality, certified USB IP.



Maintaining technology leadership with our new generation of PC webcams required reliable, high-quality USB 3.0 IP. After our excellent experiences using DesignWare USB 2.0 IP, we knew that we would go back to Synopsys for USB 3.0 IP. Our first-silicon success demonstrates that we made the right choice.”

G.T. Hsiao

R&D Manager, SunplusIT

High-Quality DesignWare IP

SunplusIT needed to maintain its technology leadership and differentiate itself by offering USB 3.0 speeds in its PC webcam. They required an IP vendor that they could trust to deliver easy-to-integrate products that would work together seamlessly.

“Minimizing risk to ensure first-pass silicon success was necessary when choosing our third-party IP vendor,” said G.T. Hsiao, R&D Manager, SunplusIT. “Our prior high-volume production experiences with Synopsys USB IP demonstrated that the IP is very robust and offers excellent quality, which lead us to select it again for our latest project. Using Synopsys for both the USB PHY and controller in our SPCA2100A webcam was a key way that we reduced risk.”

Comprehensive Solution

SunplusIT faced SoC design challenges to achieve faster processing for a complicated SoC architecture in a small footprint. Using a comprehensive USB IP solution in a proven subsystem, including both PHY and controller IP, was paramount.

“Integrating both USB PHY and controller IP that were proven to work together was critical to our project’s success,” said Hsiao. “Our decision to use both DesignWare USB 3.0 PHY and Controller IP helped simplify the SoC design and integration. We look forward to using DesignWare IP our next projects, as well.”

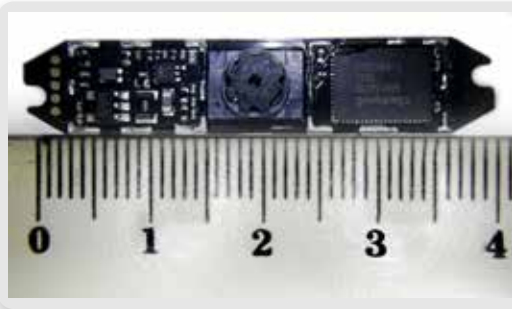


Figure 1: SunplusIT SPCA2100A Webcam with DesignWare USB 3.0 PHY and Controller