

Synopsys and Kawasaki Microelectronics

K-Micro Meets High-Performance Requirements for Home Networking SoCs with DesignWare Data Converter IP



We needed an IP vendor who understood the IP business, had technical expertise and would be there to support our product roadmaps as we migrated to different process technologies. Synopsys was our choice.”

K-micro
Tommy Aizawa

Vice President for Strategic Marketing, Kawasaki Microelectronics

Business

Kawasaki Microelectronics's (K-Micro) innovative ASIC technologies and world-class design support are used in the consumer electronics, computer, office-automation, networking and storage markets.

Challenges

- ▶ Achieve critical performance, area and power requirements
- ▶ Meet time-to-market-window with a high-quality data converter IP solution
- ▶ Select an established IP vendor who would be there to support future evolutions of the product

DesignWare IP Solutions

- ▶ Pipeline Analog-to-Digital Converters
- ▶ Current Steering Digital-to-Analog Converters

Benefits

- ▶ Met 12-bit, 160 MSPS high-performance requirement
- ▶ Achieved first-pass silicon success
- ▶ Received excellent and timely support from an experienced IP engineering team

Overview

The rapid worldwide proliferation of personal computers, home networked internet systems, advancements in communications technology, and progress in the development of smart devices have increasingly impacted the last few hundred feet of any consumer-related network.

Distributing entertainment data over existing coax cable, phone lines and power lines has become the center piece of the home networking evolution. Various home networking technologies enable service providers to address the growing demand for new multimedia services such as internet protocol television (IPTV), voice-over IP (VoIP) and gaming to the home and small offices, with guaranteed quality-of-service over the existing wiring.

K-Micro offers both standard and semi-custom Analog Front-End (AFE) chips that enable designers to fully define a device that meets all their requirements. K-Micro's extensive experience designing AFE's for home networks has enabled them to develop a comprehensive, multi-protocol product offering that covers virtually all applications.



When we evaluate a vendor on quality, it is in terms of not only the IP but also the quality of the support team. Synopsys offered a high-quality IP solution and their support is far better than any other IP provider.”

Tommy Aizawa, Vice President of Strategic Marketing, K-Micro

Leading DesignWare IP Solution

K-Micro’s high-performance home networking AFE SoCs are targeted at phone line, cable and powerline applications. The SoCs support the latest networking standards including HomePNA, which distributes entertainment and triple-play data over coax cables and phone wires with data rates up to 320 Mbps, High-Definition Power Line Communication (HD-PLC) which transmits digital information over power lines targeting data rates of up to 190 Mbps; and G.HN, the next generation home network technology standard that supports networking over power lines, phone lines and coax cables with data rates up to 1 Gbps.

To help meet their time-to-market window and focus their engineering resources on the differentiating elements of their AFE SoCs, K-Micro decided to outsource their data converter IP needs for two of their projects. When K-Micro set out to evaluate IP providers, they focused on risk management and looked for a vendor who was established in the IP business and had a proven track record of technical expertise. Mr. Tommy Aizawa, vice president of strategic marketing at K-Micro commented, “We are extremely committed to this SoC product line and wanted an IP solution and a provider that would be there to support its evolution.”

After looking at all the key factors including industry leadership, IP quality, features and support, Synopsys was the clear choice. In addition to the above criteria, Synopsys provided a data converter IP solution that met K-Micro’s area, power and performance requirements. In fact, Synopsys was the only IP provider at the time that provided a solution which supported a 12-bit data converter sampling speed of 160 MSPS.

“Meeting our high-performance goal was key to the success of this project. Synopsys’ Data Converter IP is the only solution that met our 12-bit, 160 MSPS performance requirement.

Tommy Aizawa, Vice President of Strategic Marketing, K-Micro

High-Quality IP and Excellent Support

The decision to buy high-quality data converter IP from Synopsys versus developing it internally was a key element to helping K-Micro meet their aggressive project schedule and achieve first-pass silicon success. K-Micro did a thorough evaluation process before selecting Synopsys which included checking customer references and validating the track record of the IP in terms of being silicon-proven in SoC designs. “The quality of the DesignWare® Data Converter IP is excellent, just as we would expect from Synopsys,” said Mr. Aizawa.

K-Micro successfully integrated the DesignWare Data Converter IP into two digital SoCs in a matter of weeks. Furthermore, by working with the same vendor for both chips, K-Micro was able to leverage the design experience from the first chip into the second. When asked about Synopsys’ technical support, K-Micro commented, “Synopsys’ support team was always there to provide timely and knowledgeable support, which was extremely important to us.”

With the completion of two home networking AFE SoCs, K-Micro has already started development of their next-generation product which also incorporates Synopsys’ DesignWare Data Converter IP. “Clearly we are in the home networking market for the long term and will continue to support the latest standards as they evolve. By going with Synopsys, we have selected a trusted IP provider who will be there for us, providing high-quality IP solutions and support that we can rely on,” said Mr. Aizawa.



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