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Synopsys and eRide
eRide Achieves First-Pass Silicon Success for High-Sensitivity GPS SoC with DesignWare IP for the AMBA Interconnect

Using Synopsys' silicon-proven DesignWare IP for AMBA allowed us to accomplish a tremendous amount of work with minimal resources and achieve first-pass success. We would not have met our project schedule without it."

Thomas O'Connell
Senior Logic Designer, eRide

Business
eRide is a fabless semiconductor company that develops and markets high-sensitivity assisted GPS (A-GPS) solutions for location-based services and wireless devices.

Challenges
▶ Meet aggressive six month time-to-market window with a small engineering team
▶ Acquire an AMBA® IP solution that can easily be configured for the target application with no customization required
▶ Lower integration risk with an easy-to-use, silicon-proven IP solution

DesignWare IP Solution
▶ AMBA 2.0 On-Chip Bus IP and peripherals

Benefits
▶ Achieved first-pass silicon success with high-quality AMBA IP solution
▶ Met time-to-market window for complex design with a configurable and flexible IP solution
▶ Received excellent technical support, enabling valuable internal engineering resources to focus on product differentiation

Overview
eRide combines its GPS system expertise with radio frequency (RF) and digital semiconductor technology to offer end-to-end GPS solutions, including silicon chipsets, fully integrated modules, software plug-ins, aiding servers and a GPS Global Reference Network (GRN). eRide has the technology, team, and products to offer optimal solutions for use in a wide variety of platforms in the ever growing market for GPS position, location and navigation applications.

The Opus5SD chip is based on eRide's latest generation of GPS technology, defining satellite navigation to new performance heights. Engineered as a cost effective, highly integrated architecture, it provides unparalleled performance by combining a hardware measurement platform with powerful navigation software running on an embedded ARM9 microprocessor. The Opus5SD delivers fast and accurate positioning as well as velocity and timing data in challenging locations such as indoor environments and deep urban canyons. The high-performance Opus5SD is ideal for wireless applications and has advanced features for use in car navigation devices and fleet management.

> *"The DesignWare IP for AMBA was extremely configurable and we were able to integrate the IP into our SoC within a matter of weeks. We couldn't ask for much more from an IP solution."*

Thomas O'Connell, Senior Logic Designer, eRide

Leading DesignWare IP Solution

eRide's Opus5SD is a high sensitivity, single chip GPS/AGPS receiver module that delivers extremely low search power consumption. The chip integrates eRide's CMOS RF, DSP and embedded microprocessor sub-system in a small form factor. In order to accommodate the high-level of integration on a single chip, eRide required a proven AMBA IP solution that would enable them to focus their valuable engineering resources on product differentiation. With an aggressive six month time-to-market window, eRide quickly set out to evaluate third party AMBA IP offerings.

Synopsys' DesignWare® IP for the AMBA Interconnect was extremely competitive and met all of eRide's requirements. Synopsys offered a comprehensive and flexible IP solution that adheres to AMBA standard specification and enabled eRide to easily incorporate the necessary functionality into their design. The configurable architecture, combined with the Synopsys coreAssembler tool, significantly reduced the complexity of designing the Opus5SD AMBA-based subsystem, allowing eRide to integrate the DesignWare IP for AMBA within a matter of weeks. "Synopsys enabled us to accomplish a tremendous amount of work with a minimum amount of people," commented Thomas O'Connell, senior logic designer at eRide. "We didn't have to worry about the IP development, verification or integration effort, which was critical to helping us complete this project on schedule."

High-Quality IP and Excellent Support

As an established IP provider with a proven track-record of delivering high-quality products, eRide had confidence that the DesignWare IP for AMBA would work as expected. "The quality of the IP is excellent," said O'Connell. "There was a commonality in the way all of the serial protocol IP blocks were laid out, which made it extremely easy to configure and did not require any custom design."

Synopsys provided eRide with well-written product documentation which further helped ease their integration effort and ramp-up time. On the rare occasion that eRide needed assistance, Synopsys' support team and online infrastructure was there to provide timely and knowledgeable support. "Synopsys' technical support is the best we have seen from any IP provider," commented O'Connell. "They were extremely easy to work with and always brought in the right level of people to help us."

All of these factors contributed to enabling eRide to achieve first-pass silicon success and meet their time-to-market window for the Opus5SD chip. "Synopsys provided us with a very solid AMBA IP solution and there is no doubt that we will continue to use the DesignWare IP in our future designs," said O'Connell.

> *"The quality of the DesignWare IP for AMBA is excellent and the IP worked as expected with no issues. Furthermore, Synopsys' support team is the best we have seen from any IP provider.*

Thomas O'Connell, Senior Logic Designer, eRide

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