DSP Group Selects Synopsys' ARC EM Processor IP for Adaptive Processing Smart Codecs

Integration of DSP-Enhanced ARC Processor Enables Deployment of Advanced Sound Processing Features in Next-Generation Headsets

Disclaimer: GlobalFoundries acquired the Synopsys Processor Solutions business on June 1, 2026. Clickhere to learn more.

MOUNTAIN VIEW, Calif., Sept. 10, 2020 /PRNewswire/ --

Highlights:

- DSP Group selected the DesignWare ARC EM5D processor for its combined high-efficiency control and signal processing capabilities
- DSP Group's DBMC2-TWS integrates powerful hybrid ANC processing with advanced audio features in a single, compact, low-power device
- Scalable family of DSP-enhanced ARC EM processors can be tailored for the optimal balance of performance, power consumption, and area

Synopsys, Inc. (Nasdaq: SNPS) today announced that DSP Group, Inc., a leading global provider of wireless and voice-processing chipset solutions for converged communications, selected Synopsys DesignWare® ARC® EM5D Processor IP for its high-efficiency control and signal processing capabilities to enable development of its DBMC2-TWS advanced adaptive processing audio codec for true wireless stereo (TWS) headsets. To dynamically configure settings and filter parameters on-the-fly, the DBMC2-TWS integrates an ARC EM5D processor, abundant internal memory and numerous digital interfaces.

The processing capabilities of the ARC EM5D enable the deployment of advanced sound processing features, such as adaptive active noise cancellation (ANC), user ear placement characterization, and smart ambient awareness control. This allows the headset to autonomously respond to changes in product fit or the ambient sound conditions. DSP Group also leveraged the DesignWare ARC MetaWare Development Toolkit to ease digital signal processing (DSP) software development for its audio and voice processing SoC.

"DSP Group is dedicated to the design of SoCs and supporting algorithms that enable the unification of voice, audio, video, and data connectivity for mobile, enterprise, consumer, and IoT devices," said Dotan Sokolov, CVP, Head of R&D at DSP Group. "In the case of our DBMC2-TWS solution, the scalability and efficiency of Synopsys' DSP-enhanced ARC EM processors give us the flexibility to meet extreme power, size, and performance demands, while also providing the cutting-edge features and capabilities required to stay ahead of the competition in an exciting hearables market that is expanding rapidly."

The DSP-enhanced ARC EM processor family, which includes the EM5D, EM7D, EM9D, and EM11D processors, implements a scalable pipeline that offers an optimal balance of performance, power consumption and size for a range of control and DSP applications. Like all ARC processors, the DSP-enhanced EM processors are highly configurable so that each instance can be tailored to achieve the optimum balance of DSP and RISC performance. ARC Processor EXtension (APEX) technology offers designers the ability to create user-defined instructions, enabling the integration of custom hardware accelerators that improve application-specific performance while reducing power consumption and memory footprint. The DSP-enhanced ARC EM processors are supported by the DesignWare ARC MetaWare Development Toolkit, a complete suite of tools for developing, debugging and optimizing software targeted for ARC processors, which includes an enhanced C/C++ compiler supporting the 150+DSP instructions available for efficient algorithm development.

"Next-generation voice and audio processing applications require the lowest power consumption to be competitive in the market," said John Koeter, senior vice president of marketing and strategy for IP at Synopsys. "Synopsys' DSP-enhanced DesignWare ARC EM Processors deliver highly efficient processing with increased bandwidth for control and DSP tasks, enabling companies like DSP Group to extend the battery life and deliver differentiated functionality in their products."

Availability and Resources

- The DesignWare ARC EM5D Processor is available now.

About DesignWare IP

Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare IP portfolio includes logic libraries, embedded memories, embedded test, analog IP, wired and wireless interface IP, security IP,

embedded processors and subsystems. To accelerate prototyping, software development and integration of IP into SoCs, Synopsys IP Accelerated initiative offers IP prototyping kits, IP software development kits and IP subsystems. Synopsys extensive investment in IP quality, comprehensive technical support and robust IP development methodology enables designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit www.synopsys.com/designware.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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