Synopsys Introduces Starter Kit for DesignWare ARC EM Processors

Versatile Platform for Software Development Shortens Time-to-Market for Design Teams Using ARC EM Processor Cores

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

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Highlights:

- Starter kit enables "out-of-the box" software development, debugging and system analysis for ARC EM Family of embedded cores
- Includes four pre-installed FPGA images for the ARC EM4 and EM6 processors, enabling choice of configuration and rapid bring-up time
- Supports broad range of hardware extensions via Digilent Pmod Compatible connectors including sensors, actuators, displays and communications devices
- Power-efficient DesignWare ARC EM4 and ARC EM6 32-bit processor cores are optimized for cost-sensitive embedded applications

Synopsys, Inc. (Nasdaq: SNPS), a global leader providing software, IP and services used to accelerate innovation in chips and electronic systems, today announced availability of the DesignWare® ARC® EM Starter Kit for the ARC EM family of embedded processor cores. The DesignWare ARC EM4 and ARC EM6 processor cores are optimized for use in embedded and deeply embedded applications such as sensors, storage devices, appliances, consumer electronics, and battery-operated devices where high performance, small size and minimal power consumption are essential. The EM Starter Kit provides a platform for rapid software development and code porting, as well as software debugging and system analysis for the ARC EM processors. It is also used for application and product prototyping and demos. The kit is ready for use "out-of-the-box" and enables designers to immediately begin writing code for their design.

The ARC EM Starter Kit includes a base board and daughter card. The daughter card features a Xilinx Spartan®-6 LX45 FPGA, an on-board 125 MHz clock generator, 128 MB of DDR3 memory and 16 MB of flash memory. The flash memory supports the storage of application software and contains four pre-installed ARC EM processor core bit files that can be selected with a dual in-line package (DIP) switch. The base board allows multiple connectivity and configurable I/O options, making it easy to add circuitry and build subsystems around the EM processors. This quick and easy system configuration capability enables software development prior to final SoC hardware availability. Example code, peripheral drivers and an MQX RTOS binary are available for the kit. A Secure Digital (SD) card slot on the base board offers additional application software and data storage. The kit also includes a Digilent Pmod™ Compatible board featuring an I^2C 4-channel 12-bit A/D converter, an AC power adapter and a mini-USB cable.

"The combination of high performance, low power and small footprint of the DesignWare ARC EM4 processor made it ideally suited for our connectivity products," said Michael Mo, senior director of product marketing at Amlogic. "Synopsys' ARC EM Starter Kit offers a low-cost hardware platform that enables designers to quickly explore attributes of the EM cores and get an early start on the development of features that will differentiate their ARC-based designs."

The DesignWare ARC EM4 and EM6 processor cores are based on the ARCv2 instruction set architecture (ISA) and are characterized by their very small size and low power consumption, delivering up to twice the performance per milliwatt and per square millimeter as other processor cores in their class. Because of their performance efficiency, EM processors are often implemented alongside a high-performance CPU to offload tasks from the host processor and improve the overall efficiency of the chip. The cores are highly configurable so they can be optimized for each instance on a SoC, sharing a common programming model to simplify software development and task partitioning. The ARC EM4 core's small size (<10K gates) makes it ideal for applications such as sensors and actuators, deeply embedded processing and battery-operated products where power consumption and size must be kept to a minimum without compromising performance. The ARC EM6 processor core adds support for up to 32K of instruction and data cache. Both cores feature native ARM® AMBA® AHB™ and AHB-Lite™ interfaces, as well as BVCI interfaces to enable high system throughput. The ARC EM4 and EM6 processors deliver industry-leading performance efficiency of up to 1.71 DMIPS/MHz and can achieve speeds of over 800 MHz in a 28-nm process. The EM Family of processor cores is supported by a complete suite of development tools, including the ARC MetaWare Development Toolkit that generates highly efficient code ideal for deeply embedded applications, ARC simulators including nSIM and xCAM, and the ARChitect core configuration tool.

"With each new generation of electronic devices, we see demand for processors with greater performance with lower power coupled with narrowing time-to-market windows," said John Koeter, vice president of marketing for IP and systems at Synopsys. "The DesignWare ARC EM family offers customers doing embedded designs higher performance efficiency and more compact footprints than ever before. The EM Starter Kit makes it possible for them to start software development earlier so they can meet their design goals and still get their products to market quickly."

Availability and Resources
The DesignWare ARC EM Starter Kit, ARC EM4 and ARC EM6 processor cores and associated development tools are available now.

- Learn more about the DesignWare ARC EM Processors and Starter Kit:https://www.synopsys.com/arcemstarterkit
- Read the article: https://www.synopsys.com/Company/Publications/SynopsysInsight/Pages/Art10-arc-em-IssQ1-13.aspx?cmp=Insight-I1-2013-Art10

About DesignWare IP
Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare IP portfolio includes complete interface IP solutions consisting of controllers, PHY and verification IP for widely used protocols, analog IP, embedded memories, logic libraries, processor cores and subsystems. To support software development and hardware/software integration of the IP, Synopsys offers drivers, transaction-level models, and prototypes for many of its IP products. Synopsys' HAPS® FPGA-Based Prototyping Solution enables validation of the IP and the SoC in the system context. Synopsys' Virtualizer virtual prototyping tool set allows developers to start the development of software for the IP or the entire SoC significantly earlier compared to traditional methods. With a robust IP development methodology, extensive investment in quality, IP prototyping, software development and comprehensive technical support, Synopsys enables designers to accelerate time-to-market and reduce integration risk. For more information on DesignWare IP, visit: https://www.synopsys.com/designware.

About Synopsys
Synopsys, Inc. (Nasdaq:SNPS) accelerates innovation in the global electronics market. As a leader in electronic design automation (EDA) and semiconductor IP, its software, IP and services help engineers address their design, verification, system and manufacturing challenges. Since 1986, engineers around the world have been using Synopsys technology to design and create billions of chips and systems. Learn more at https://www.synopsys.com.

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