Synopsys Simplifies Automotive SoC Development with New ARC Functional Safety Processor IP

Expanded Portfolio of ISO 26262 ASIL B and ASIL D Compliant DesignWare ARC Processors Accelerate Safety Certification of ADAS, Radar/LiDAR, and Automotive Sensor SoCs

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Highlights:

- New Synopsys DesignWare ARC EM22FS, HS4xFS, and EV7xFS processors support ASIL B and ASIL D safety levels to simplify safety-critical automotive SoC development and accelerate ISO 26262 qualification
- Software test libraries complement integrated hardware safety features to achieve ASIL B compliance where hardware redundancy is not required
- ASIL D certified MetaWare and MetaWare EV compilers ease development of ISO 26262 compliant code on Synopsys ARC EM22FS, HS4xFS, and EV7xFS processors

Synopsys, Inc. (Nasdaq: SNPS) today announced new functional safety (FS) derivatives of its popular DesignWare® ARC® processor IP to simplify and accelerate the development of automotive system-on-chips (SoCs). The safety-enhanced processor portfolio, which includes the Synopsys DesignWare ARC EM22FS, HS4xFS, and EV7xFS processors, covers a broad range of automotive use cases from ultra-low power control modules to artificial intelligence (AI)-based vision processing. The Synopsys ARC "FS" cores integrate hardware safety features, such as redundant processors, error-correcting code (ECC), parity protection, safety monitors, and user-programmable windowed watchdog timers, to detect system errors. Comprehensive documentation related to safety, including enhanced-safety manuals, FMEDA, and DFMEA reports accelerate SoC-level functional safety assessments. In addition, the Synopsys DesignWare ARC MetaWare Development Toolkit for Safety (EM22FS, HS4xFS) and MetaWare EV Development Toolkit for Safety (EV7xFS) help simplify the development of ISO 26262-compliant software.

The Synopsys DesignWare ARC EM22FS processor provides ultra-low power, dual-core lockstep functionality for ASIL D safety requirements in applications such as automotive sensors, braking and steering systems, and keyless entry. For use cases with ASIL B requirements (i.e., non-lockstep), the processor can be configured with the two cores operating independently. The Synopsys DesignWare ARC HS4xFS processors support single-, dual-, and quad-core implementations to enable high-performance safety applications, such as vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) networking, and electric vehicle battery charging. In addition, the ARC EM22FS and HS4xFS processors can function as ASIL D compliant SoC-level safety managers with tight integration to Synopsys test solutions, including DesignWare STAR® Memory System, STAR Hierarchical System, STAR ECC, and TestMAX XLBIST, to provide a comprehensive functional safety test solution. The processors are supported by the Synopsys DesignWare ARC MetaWare Development Toolkit for Safety, a complete solution for developing, debugging and optimizing embedded software targeted for automotive applications. Included in the toolkit is an ASIL D certified compiler and collateral related to safety, including a safety manual and safety guide, to help developers of safety-critical systems fulfill the requirements of the ISO 26262 standard and prepare for compliance testing.

The Synopsys DesignWare ARC EV7xFS Embedded Vision Processors, which combine a multicore vision CPU with a high-performance deep neural network (DNN) engine, integrate safety-critical hardware features to help meet ASIL B and D requirements for vision, radar, and LiDAR for ADAS applications and level 3+

autonomous vehicles. To provide greater flexibility to automotive design teams that address evolving requirements, the EV7xFS offers a "hybrid" option that enables users to select safety levels up to ASIL D in software, post-silicon. The EV7xFS processors are supported by the ARC MetaWare EV Development Toolkit for Safety.

"The use of embedded processors in automobiles is growing rapidly, and achieving functional safety certification of these processor-based systems is essential for automotive designers," said John Koeter, vice president of marketing for IP at Synopsys. "By providing a broad portfolio of ASIL compliant processor IP and software development tools, Synopsys helps designers accelerate the development and qualification of their safety-critical automotive SoCs."

ARC Processor Summit 2019
Join Synopsys at the ARC Processor Summit to learn more about ARC Functional Safety Processors and the ARC Processor portfolio:

- ARC Processor Summit Silicon Valley: Sept. 19, 2019, Santa Clara
- AIoT Summit Taiwan: Oct. 16, 2019, Hsinchu
- ARC Processor Summit China: Nov. 13, 2019, Beijing
- ARC Processor Summit Japan: Nov. 19, 2019, Tokyo

Availability and Resources

- The DesignWare ARC EM22FS Processor is scheduled to be available in Q4 2019
- The DesignWare ARC HS4xFS Processors are scheduled to be available in Q1 2020
- The DesignWare ARC EV7xFS Processors are scheduled to be available in Q2 2020
- ASIL D compliant STAR Memory System, STAR Hierarchical System, STAR ECC, and TestMAX XLBIST are available now
- Learn more about functional safety test for SoCs: Addressing Functional Safety in SoCs with Test Solutions

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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