Synopsys Expands DesignWare MIPI IP Portfolio with Silicon-Proven, Integrated C-PHY/D-PHY IP Solution in FinFET Processes

DesignWare PHY and Controllers Operate at Up to 24 Gb/s for High-Performance Imaging and Automotive SoCs

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Highlights:

- DesignWare MIPI C-PHY/D-PHY IP interoperates with Synopsys' MIPI CSI-2, DSI/DSI-2, D-PHY, and verification IP for a complete camera and display IP solution
- The C-PHY/D-PHY delivers less than 1.3pJ/bit, operating at 24 Gb/s, for optimal energy consumption in high-resolution imaging devices
- DesignWare DSI/DSI-2 and CSI-2 Controllers support the 16- and 32-bit PHY Protocol Interface (PPI) to enable high throughput C-PHY/D-PHY connectivity
- The C-PHY/D-PHY IP and ASIL B Ready ISO 26262 certified MIPI controllers meet the safety and reliability requirements of automotive applications

Synopsys, Inc. (Nasdaq: SNPS) today announced it is expanding its MIPI camera and display IP portfolio with the DesignWare® MIPI C-PHY^{SM}/D-PHY^{SM} IP for a range of FinFET processes. The silicon-proven C-PHY/D-PHY IP is compliant with the MIPI C-PHY v1.2 and D-PHY v2.1 specifications for a low-risk solution targeting high-resolution imaging and display SoCs. In addition, the C-PHY/D-PHY meets the stringent functional safety and reliability requirements of automotive ADAS and infotainment applications. The DesignWare MIPI C-PHY/D-PHY IP combined with DesignWare MIPI DSI/DSI-2^{SM} and MIPI CSI-2^{SM} controllers provide a complete solution that eases connectivity to a variety of advanced image sensors and displays.

"For our latest 3D camera with intelligent computing, Synopsys' DesignWare MIPI IP delivered the required low-power consumption, small silicon footprint, and real-time connectivity," said Xiaolu Mei, co-founder and VP of R&D at Orbbec. "We integrated the IP in two weeks and achieved first-pass silicon success, all while meeting our design goals. We will continue our successful collaboration with Synopsys and are considering using Synopsys' DesignWare C-PHY/D-PHY IP in our future designs."

DesignWare C-PHY/D-PHY addresses energy requirements by supporting low-power state modes and delivering below 1.3pJ/bit at 24 Gb/s. The IP enables 4K and beyond displays and 100-megapixel cameras with support for up to 4.5 Gb/s per lane maximum speed in D-PHY configuration and 3.5 Gs/s per trio in C-PHY configuration. To improve system test and debug efficiency, the IP offers comprehensive built-in test capabilities, including pattern generator, logic analyzer, and loopback modes covering all circuits. The high-performance, low-power DesignWare MIPI C-PHY/D-PHY IP interoperates with Synopsys' MIPI DSI/DSI-2 and CSI-2 controllers, which support key features of the latest MIPI display and camera specifications including wider PHY protocol interface (PPI), multiple virtual channels, advanced RAW data types and display command set.

"As a board member with leadership roles on several MIPI working groups, Synopsys continues to help drive the development and adoption of MIPI interfaces in the industry," said Joel Huloux, chairman of MIPI Alliance. "The availability of MIPI C-PHY/D-PHY IP in advanced FinFET processes is another testament to Synopsys' commitment in providing MIPI IP that designers can integrate into their SoCs today."

"MIPI C-PHY/D-PHY IP delivers extremely fast connectivity in mobile and automotive applications with advanced image sensors and displays," said John Koeter, senior vice president of marketing and strategy for IP at Synopsys. "The silicon-proven C-PHY/D-PHY IP expands Synopsys' broad MIPI IP offering, enabling designers to deploy the latest MIPI interfaces in their SoCs with less risk."

Availability and Resources

The DesignWare C-PHY/D-PHY IP in 7-nm and 12-nm processes are available now. The PHY in 16-nm, 6-nm, and 5-nm processes is scheduled to be available in the third quarter of 2020. The DesignWare CSI-2, DSI/DSI-2, and MIPI I3C® Controllers, and D-PHY are available now.

For more information

- Visit the DesignWare MIPI IP web page
- Visit the DesignWare MIPI C-PHY/D-PHY IP web page

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 enable designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit http://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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