AMD XILINX

CASE STUDY

Octavo Systems' SIP Delivers Performance and Flexibility of Xilinx MPSoC in Integrated Package

Company Combines Xilinx Zynq® UltraScale+™ with DDR Memory, Power Management, and other Components in Single BGA Package

AT A GLANCE:

Octavo Systems builds system-in-package (SiP) solutions that are used as building blocks in electronic design. The solutions simplify design processes and help designers bring their products to market faster and more cost-effectively by combining semiconductor components with active and passive components into complete systems. The company's mission is to improve the capability and value of its customers' electronic systems with its innovative, high-quality SIP solutions.

Industry: Semiconductor
Location: Austin, Texas
Established: 2013
Website: www.octavosystems.com

Figure 1 – Octavo Systems' OSDZU3 SIP

SUMMARY:

With Moore's Law reaching its physical limits, the focus of innovation in the semiconductor industry has shifted from largely performance, density, and cost improvements to device integration and the creation of heterogenous system-level components. And that's exactly what Octavo Systems does. With a goal to make technology accessible to more people, the company's state-of-the-art system-in-package (SiP) solutions are helping customers reduce the size and complexity of their products and bring them to market faster.

Recently looking to build a new family of SiP products that offers a good balance of performance, power, and price, the company turned to Xilinx's Zynq UltraScale+ MPSoC platform. The new OSDZU3 family of products significantly reduces product size and design-time requirements and offers new features that have enabled Octavo Systems to reach a broader customer base.

CHALLENGE:

Designing and integrating electronic systems can be very challenging. Most components are made by different manufacturers with different processes, and some are not even silicon based. System designers frequently run into issues trying to get processors to work with power management and memory devices, leading to multiple design iterations and delays. Octavo Systems' SiP devices help to remove such barriers by delivering an off-the-shelf solution with high levels of integration that is already done for the customer.

"We are trying to make technology accessible to a larger population," said Greg Sheridan, vice president of strategy and marketing at Octavo Systems. "Designing a system can be very challenging. We strive to make the process as simple as possible by removing the need for complex power generation or interfacing with the DDR. Customers can just put the SiP down and begin developing on it," he added.

SOLUTION:

Octavo Systems' SiP solutions are commonly used in industrial, military, and aerospace markets, and in other applications where design size and time-to-market matter. "We are typically used by system designers whose expertise is how to use the processor, rather than how to design it," said Gene Frantz, the company's co-founder.

"Our system-in-package devices significantly reduce the size of a system and the complexity normally found in designing them," Sheridan said. "We are the only ones offering this level of integration to the mass market."

Recently looking to build a new family of high-performance, low-cost SiP devices, the company chose to design with the Zynq UltraScale+ MPSoC family of products from Xilinx. "We wanted to add a product family with the performance level of the Xilinx ZU product family," Frantz said. "We also felt the ZU3 provided a good balance of performance, cost, and power that would be attractive to a large set of customers," Sheridan added.

Xilinx's Zynq UltraScale+ MPSoC devices provide 64-bit processor scalability while combining real-time control with soft and hard engines for graphics, video, waveform, and packet processing. Built on a common real-time processor and programmable logic equipped platform, the device is offered in distinct variants including dual application processor (CG) devices, and quad application processor and GPU (EG) devices, creating unlimited possibilities for applications such as 5G Wireless, next-generation ADAS, and industrial IoT.

RESULT:

The primary function of the OSDZU3 SiP solution is to provide designers with many microcontroller features that are easy to use, such as single-supply voltage and internal memory systems. It also slashes size requirements by more than 50%, and significantly reduces design times.

“We are still in the early stages of our SiP and are continually finding issues and opportunities for new features and improvements,” said Frantz.

“Xilinx adds a different level of capabilities to our portfolio, allowing us to provide integrated solutions to an even wider customer base,” Sheridan added. “We’ve enjoyed a very close and collaborative relationship with Xilinx. They really see the benefits of system-in-package technology and have made a significant effort to make sure that it is successful.”

ADDITIONAL RESOURCES: Learn More about Xilinx’s Zynq UltraScale+ MPSoC
Learn More About Octavo Systems’ OSDU3 SiP Solution

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