



5 REASONS TO CHOOSE AMD ADAPTIVE SoCs AS A SINGLE-CHIP SOLUTION

The AMD Zynq™ 7000, Zynq UltraScale+™, and Versal™ adaptive SoC portfolios deliver enhanced system-level performance, robust security, and functional safety, all within a single-chip solution. Zynq 7000 and Zynq UltraScale+ adaptive SoCs combine embedded CPUs with programmable logic to deliver strong performance for cost-optimized applications. For applications that require higher performance, the Versal adaptive SoC portfolio offers additional compute engines, including AI Engines and more powerful Arm® processors, augmented with a programmable network on chip (NoC) and expansive hard IP.

Discover how these solutions surpass multi-chip alternatives in functional safety, security, and system-level performance. Simplify your system design and accelerate time to market with AMD adaptive SoCs.

1

DELIVER SUPERIOR SYSTEM-LEVEL PERFORMANCE

Achieve lower latency for highly deterministic applications

Minimize communication latency between processing domains to maximize system-level performance within a single-chip solution. The streamlined integration between the processing system and programmable logic enables seamless communication and a boost in overall system performance. This integrated approach helps save power and I/O pins and minimizes form factor—while providing increased bandwidth and flexibility.

Additionally, Versal AI Engines maximize performance for signal processing and edge AI applications.



LOOKING TO ADD A SMALL AMOUNT OF SCALAR COMPUTE TO AN FPGA?



Check out the AMD [MicroBlaze™ V](#) soft core processor that can be deployed on any FPGA and adaptive SoC supported in the AMD Vivado™ Design Suite.

2

MAXIMIZE SECURITY WITH ON-CHIP DATA HANDLING

Keep your data secure by keeping it on-chip

By managing data entirely on-chip, you can minimize the vulnerabilities associated with transferring information off-chip. Storing application data in on-chip memory helps improve device security because data doesn't traverse into external DDR memory, helping to reduce data exposure to potential threats.



CONCERNED ABOUT BITSTREAM SECURITY?

AMD delivers secure boot capabilities on AMD Zynq UltraScale+, Spartan™ UltraScale+, and Versal devices to ensure authenticity of device firmware at boot.

3

SIMPLIFY FUNCTIONAL SAFETY

Benefit from safety-certified design flows for software and silicon

An adaptive SoC inherently offers enhanced functional safety integrity level (SIL) compliance, featuring embedded CPU cores with lock-step capabilities to prevent errors. Triple modular redundancy (TMR) further enhances reliability, ensuring your system operates flawlessly.



NEED TO MEET ADVANCED SAFETY STANDARDS IN YOUR AUTOMOTIVE DESIGN?

The automotive-grade AMD Zynq UltraScale+ XA MPSoC family is qualified according to AEC-Q100 test specifications and supports up to ISO26262 ASIL C operation. For applications with the strictest safety needs, Versal AI Edge Series Gen 2 adaptive SoCs are designed to meet ASIL D operating requirements.

4

OPTIMIZE THE ENTIRE APPLICATION

Choose the right engine for the right task

Single-chip solutions allow you to easily leverage multiple processing resources, such as Arm Cortex® APUs, Arm Cortex RPU, Arm Mali™ GPUs, Versal AI Engines, soft MicroBlaze V processors, and the programmable logic, enabling optimal partitioning of functions across an entire application.



LOOKING FOR MORE SPECIALIZED APPLICATION ACCELERATION?

Several Zynq and Versal adaptive SoCs also include dedicated hard IP for video encoding, image processing, Ethernet communication, and more—delivering strong performance per watt for common use cases.

5

ACCELERATE TIME TO MARKET WITH SIMPLIFIED DESIGN PROCESSES

Streamline your workflow with a unified toolset

Adopting one set of tools simplifies the creation and integration of designs, speeding up the time to market. With support from AMD, you avoid the complexity of dealing with multiple toolchains, chips, power sequencing, and differing technical support.



NEED TO GET TO MARKET EVEN FASTER?

AMD offers an extensive catalog of IP—many of which are free—to expedite your development process. Work with AMD partners for additional design support and reference designs.

FAST TIME TO MARKET WITH INTEGRATED SINGLE-CHIP SOLUTIONS

Learn more about how [Zynq 7000](#), [Zynq UltraScale+](#), and [Versal](#) devices can help you balance performance, productivity, security, and cost, while reducing time to market. Design confidently with AMD 7 Series devices to 2040 and UltraScale+ and Versal devices to 2045 (excluding HBM devices).