PRODUCT BRIEF

XILINX

Versal AI Edge Series

- 4X AI Performance/Watt vs. GPUs[1]
- Accelerates the Whole Application with the Highest Levels of Safety & Security
- World's Most Scalable and Adaptable Portfolio from Edge to Endpoint

OVERVIEW

The Versal™ AI Edge series delivers 4X AI performance/watt vs. leading GPUs for intelligence in automated driving, predictive factory and healthcare systems, multi-mission payloads in aerospace & defense, and a breadth of other applications. More than just AI, the Versal AI Edge series accelerates the whole application from sensor to AI to real-time control, all with the highest levels of safety and security to meet the stringent functional safety requirements in IEC 61508 and ISO 26262, among others.

As an adaptive compute acceleration platform (ACAP), the Versal AI Edge series allows developers to rapidly evolve their sensor fusion and AI algorithms while leveraging the world's most scalable device portfolio for diverse performance and power profiles from edge to endpoint.

HIGHLIGHTS

Architectural Innovation for Breakthrough AI Performance/Watt

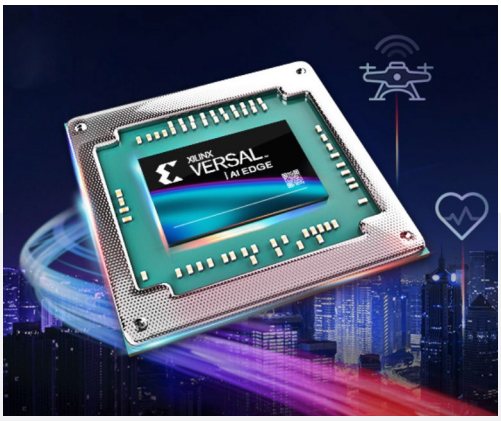
- Optimized AI Engines-ML deliver 4X performance/watt vs. GPUs
- Native support for diverse ML data types: INT8, INT4, BFLOAT16
- 4MB on-chip accelerator RAM extends memory hierarchy for AI performance

Accelerates the Whole Application w/the Highest Levels of Safety & Security

- Programmable I/O to integrate any sensor, any interface
- Adaptable Engines for sensor fusion and pre-processing
- Intelligent Engines for AI, vision processing, and radar & LiDAR processing
- Scalar Engines for embedded compute and real-time control
- Architected to meet IEC 61508 and ISO 26262 safety standards

World's Most Scalable and Adaptable Portfolio from Edge to Endpoint

- Broadest device selection to scale from edge sensor to CPU accelerator
- Design once and scale with same architecture, tools, and certifications
- Scale for varying levels of compute safety & security targets
- Hardware adaptable for custom AI, vision, and sensor strategies



TARGET APPLICATIONS

ADAS and Automated Drive

- Edge Sensor (e.g., radar, LiDAR, vision)
- Domain Controllers
- CPU Accelerator

Computer Vision

- Edge AI Box
- Machine Vision Camera
- Security Camera

Industrial

- Collaborative Robotics
- Converged Networking
- Industrial-Grade PC

Medical

- Ultrasound
- Endoscopy
- CT Scanner
- Surgical Robotic Systems

Aerospace and Defense

- Unmanned Aerial Vehicles
- MILCOM Radio

1: Versal AI Edge VE2802 ACAP vs. Jetson AGX Xavier (MAX N-Mode), ResNet50 224x224, batch=1

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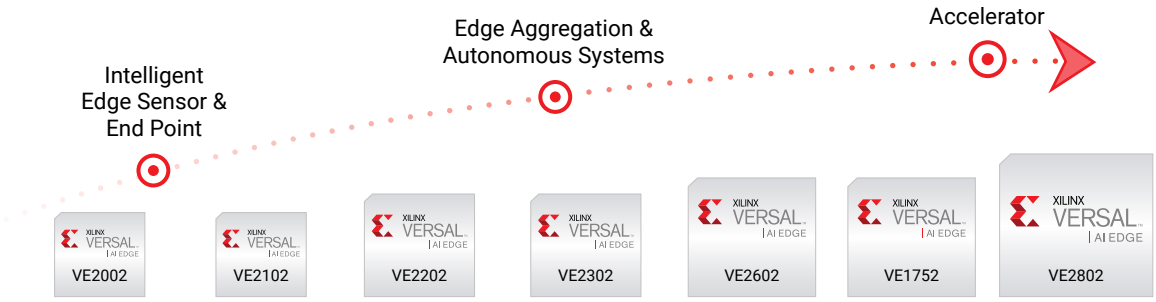
Adaptable. Intelligent.

FEATURES

FEATURES OVERVIEW	
Scalar Engines	> Up to 1.7GHz dual-core Arm® Cortex®-A72 application processor for Linux-class operating systems > Up to 750MHz dual-core Arm Cortex-R5F real-time processor with low latency and determinism > Embedded compute for complex algorithms and highest levels of functional safety (ASIL & SIL) > Platform management for quick boot, power & thermal management, and safety & security enclave
Adaptable Engines	> Scalable and adaptable sensor fusion for any combination of sensor or data types > Adaptable for any workload, including deterministic networking, motor control, and signal conditioning > Capable of over-the-air hardware updates to instantly update AI acceleration, sensor fusion algorithms, and more > Dynamic Function Exchange (DFx) to swap functionality in milliseconds, reducing device cost and system power
Intelligent Engines	> AI Engines-ML (AIE-MLs) for low power and low latency inference, with native support for INT8, INT4, BFLOAT16 > C-programmable for software developers and library-base design for data scientists > DSP Engines for diverse workloads including image signal processing, support for single-and half-precision floating point
Safety and Security	> Built to meet stringent safety and security standards including IEC 61508 and ISO 26262 > Security processing subsystem includes cryptographic acceleration, key management, and anti-tamper > Safety measures across the platform, including triple redundant platform management, system monitoring, and ECC
Accelerator RAM	> 4MB of on-chip memory for high bandwidth memory access from any engine > Optimizes AI performance by reducing the need for external memory > Extends the platform's adaptable memory hierarchy to optimize for system performance
Programmable I/O	> Hardened memory controller for DDR4-3200 and LPDDR4-4200 > Configure the same I/O for any sensor, network connectivity, or DDR interface > Native MIPI support to handle up to 8- megapixel resolutions and beyond—critical to Level-2 ADAS and above

World's Most Scalable Edge AI Platform



	VE2002	VE2102	VE2202	VE2302	VE2602	VE1752	VE2802
Total AI Compute (INT4)	14TOPS	22TOPS	47TOPS	67TOPS	256TOPS	166TOPS	479TOPS
Total AI Compute (INT8)	7TOPS	10TOPS	21TOPS	31TOPS	120TOPS	124TOPS	228TOPS
Adaptable Engines	20K LUTs	37K LUTs	105K LUTs	150K LUTs	375K LUTs	448K LUTs	520K LUTs
Total Memory	95Mb	103Mb	156Mb	172Mb	554Mb	253Mb	575Mb

TAKE THE NEXT STEP

For more information about the Xilinx® Versal AI Edge series, visit https://www.xilinx.com/versal-ai-edge.

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