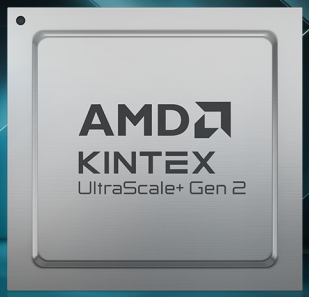
PRODUCT BRIEF

AMD KINTEX™ ULTRASCALE+™ GEN 2 FPGAs

SCALE BEYOND YOUR COMPETITION

AMD
together we advance_



OVERVIEW

AMD Kintex™ UltraScale+™ Gen 2 FPGAs enable developers in Pro AV, broadcast, healthcare, machine vision, robotics, and test & measurement, to build systems that perform reliably under increasing bandwidth, resolution, and latency demands. These devices give customers the ability to move data fast, process complex signals with deterministic behavior, and maintain system stability across multi-year product lifecycles.

By modernizing connectivity, supporting the latest memory interfaces with increased bandwidth, and enhancing security features, Kintex UltraScale+ Gen 2 FPGAs provide a platform that supports real-time decision making, deep imaging workflows, and scalable multi-stream 4K and 8K video with consistent performance. Customers can gain predictable operation, low power profiles, and a long-term foundation for expanding embedded and AV workflows across design generations. Supported by AMD Vivado™ design tools, Kintex UltraScale+ Gen 2 FPGAs offer a proven solution for your next project.

HIGHLIGHTS

PERFORMANCE ENHANCEMENTS FOR HIGH-BANDWIDTH, REAL-TIME APPLICATIONS

- Scales 4K/8K and high-channel-count pipelines through high memory bandwidth, PCIe® Gen4 x8 connectivity, 100 Gb/s Ethernet, and dense signal processing
- Enhance ultrasound image clarity and diagnostic confidence through expanding transducer channels, enhanced DSP capability, and increased on-chip memory
- Elevate machine vision responsiveness for real-time inspection and control through deterministic fabric operation and high-throughput data movement
- Drive down latency in robotics and media workflows with 32 Gb/s transceivers and next-generation memory interfaces

LOCALIZED INTELLIGENCE

- Accelerate local decision-making with high DSP throughput and ample memory bandwidth
- Sharpen localized system responsiveness through efficient on-device processing paths that eliminate or reduce the need for cloud compute
- Keep pace with evolving workloads through flexible programmable logic and reconfigurable, hardware-based processing pipelines implemented in the FPGA fabric

DESIGN CONTINUITY & LIFECYCLE ASSURANCE

- Lower redesign and certification overhead for existing Kintex family customers with long-term device availability and a stable development foundation
- Safeguard system integrity and IP through authenticated, secure device operation with Post-Quantum Cryptography (PQC)
- Streamline migration and ongoing maintenance with established tool flows and reusable design assets
- Boost reliability across deployments through efficient thermal mitigation and robust lifecycle security controls

KEY APPLICATIONS

PRO AV & BROADCAST

- Video Capture & Playback Cards
- 4K/8K AV-over-IP
- Video Switching
- Pro Cameras
- Live Production
- Remote/Cloud AV

HEALTHCARE

- Ultrasound
- Endoscopy
- CT/MRI
- Machine Vision
- Surgical Robotics

INDUSTRIAL AND EMBEDDED

- Factory Automation
- High-Speed Inspection
- Data Acquisition
- Edge Appliances

TEST AND MEASUREMENT

- Memory Testers
- SoC Testers
- Benchtop Instrumentation

FEATURES

FEATURE	HIGHLIGHTS
PROVEN KINTEX ULTRASCALE+ ARCHITECTURE	• Migrate existing IP and validated algorithms from previous Kintex FPGAs • Achieve high throughput and performance while also enhancing security • Reduce risk and speed time to market with proven toolchains • Footprint migration compatible with the XCSU200P in SBVF900 package
PCI EXPRESS® GEN4 SUPPORT	• Gen4 compliant integrated block with 8-lane support • 3 blocks allow 3 simultaneous interfaces totaling 320 Gb/s bandwidth • DMA IP simplifies interfacing
HIGH-PERFORMANCE AND HIGH QUANTITY I/O	• Up to 516 total I/O with 396 XP5IO operating at 1800 Mb/s LVDS • XP5IO enables 4266 Mb/s memory and 3200 Mb/s MIPI D-PHY interfaces • High density I/O (HDIO) provides flexibility with support up to 3.3V
INTEGRATED MEMORY CONTROLLERS	• Supports 32-bit LPDDR4X, LPDDR5, and LPDDR5X • Up to six 4266 Mb/s controllers with total aggregate bandwidth of 819.2 Gb/s
EMBEDDED RAM RESOURCES	• Up to 51 Mb on-chip memory enables high-performing local intelligence • UltraRAM (27.0 Mb) for deep packet and video line buffering • Block RAM (18.1 Mb) for efficient, multiport storage and buffering
STATE-OF-THE-ART SECURITY FEATURES	• Post-Quantum Cryptography (PQC) with NIST-approved algorithms and AES-GCM for secure configuration • Each device uniquely identifiable through Physical Unclonable Function (PUF) • True Random Number Generator (TRNG), for robust and reliable encryption • Designed to support CNSA 2.0
INTEGRATED 100G ETHERNET MAC/PCS	• Two integrated 100 Gb/s Ethernet Media Access Controller (MAC) and Physical Coding Sublayer (PCS) core for high-performance applications • Optional built-in RS-FEC • Stream up to sixteen 12G-SDI channels per device
HIGH-PERFORMANCE TRANSCEIVERS	• GTY transceivers supporting up to 32.75 Gb/s • Up to 24 transceivers provides up to 768 Gb/s Rx/Tx bandwidth • Single oscillator for fabric and SerDes eliminates extra clocking components
HIGH-RESOLUTION IMAGING INTERFACES	• MIPI with built-in D-PHY supports up to 3200 Mb/s • Support for image resolutions up to 32 MP • Up to 4-lane MIPI channels supported • Capable of enabling SLVS-EC support
DSP RESOURCES	• Up to 3.3 TeraMACs of bandwidth at 891 MHz operation • Double-precision floating point using reduced resources • Complex fixed-point arithmetic using reduced resources

Scalability across the AMD FPGA Portfolio enables design reuse from project to project.

	AMD KINTEX 7	AMD SPARTAN ULTRASCALE+	AMD KINTEX ULTRASCALE+	AMD KINTEX ULTRASCALE+ GEN 2
MAX FABRIC (LUTs)	299K	100K	842K	225K
MAX MEMORY BANDWIDTH	DDR3 @ 119 Gb/s (soft)	LPDDR5X @ 273 Gb/s (hard)	DDR4 @ 154 Gb/s (soft)	LPDDR5X @ 819 Gb/s (hard)
HIGH-PERFORMANCE I/O	0-150 @ 1600 Mb/s	52- 104 @ 1600 Mb/s | 0-132 @ 1800 Mb/s	208-572 @ 1600 Mb/s	198-396 @ 1800 Mb/s
MAX PCIE	Gen2x8	Gen4x8	5x Gen3x16	2x Gen4x8 + 1x Gen4x4

NEXT STEPS

- For more information on AMD Kintex UltraScale+ Gen 2 FPGAs, visit **www.amd.com/kintex-ultrascale-plus-gen2**
- For more information on the AMD FPGA Portfolio, visit **www.amd.com/en/products/adaptive-socs-and-fpgas/fpga.html**
- To contact your local AMD sales representative, visit **www.amd.com/en/forms/product-inquiry/adaptive-socs-and-fpgas.html**