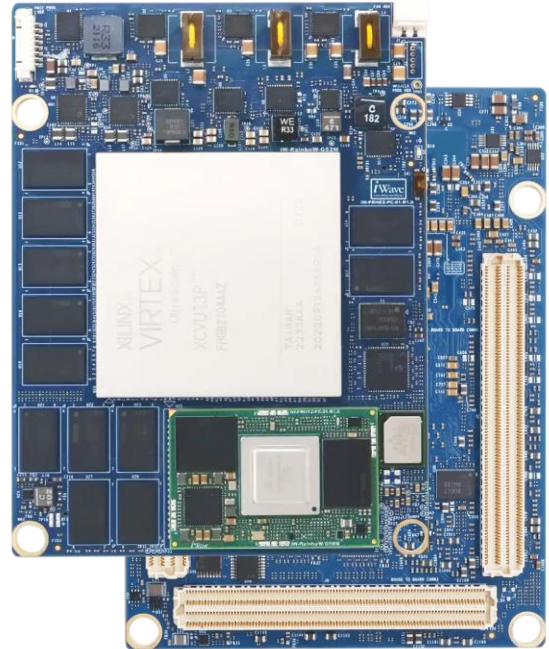


iW-RainboW-G52M

Virtex/Kintex UltraScale+ System on Module

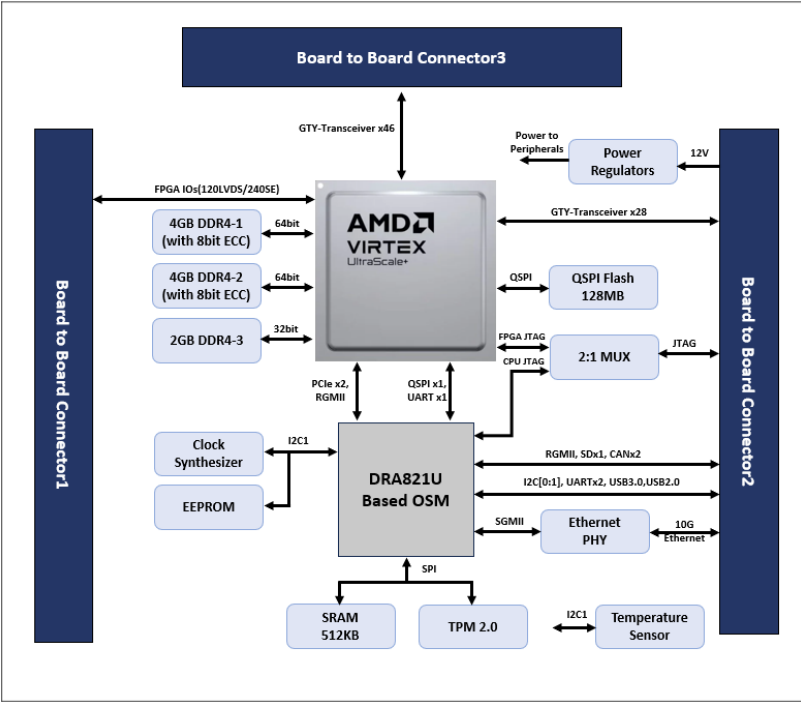
The Virtex/Kintex UltraScale+ System-on-Module features AMD's Virtex/Kintex UltraScale+ FPGA and DRA821 based OSM for configuration and control. The module supports Virtex UltraScale+ VU13P/ VU11P/ VU9P/ VU7P/ VU5P, Kintex UltraScale+ KU19P, Virtex UltraScale VU080/ VU095/ VU125/ VU160/ VU190 and Kintex UltraScale KU095/ KU115 FPGA SoC with B2104 package. The module comprises high-bandwidth DDR4 memory devices for both the FPGA and the processor. It brings out high-speed transceiver channels and high-performance I/Os through board-to-board connectors in a compact 90 mm × 120 mm form factor.



Highlights

- ❖ Virtex/Kintex UltraScale+ FPGA with B2104 package
- ❖ System Logic cells up to 3,780K Logic cells and up to 3,456K Configurable Logic Blocks
- ❖ Dual 64-bit Arm Cortex-A72 microprocessor at 2.0 GHz
- ❖ 4× Arm Cortex-R5F MCUs (up to 1.0GHz)
- ❖ Dual 4GB FPGA-DDR4 with ECC for FPGA (64bit + 8bit)
- ❖ 2GB DDR4 with ECC for FPGA (32bit+4bit)
- ❖ 32bit 2GB LPDDR4 for OSM
- ❖ Up to 76 GTY Transceiver and 240 FPGA I/Os
- ❖ Gen4 x8, Gen 3 x16 Integrated PCIe block and 100G Ethernet MAC cores
- ❖ Supports PCIe Gen3/ USB3.0/2.5G SGMII interfaces through SerDes
- ❖ Supports Low speed interfaces such as UART, CAN, SD, RGMII, JTAG and I2C
- ❖ 10+ Years long term support

Block Diagram



Technical Specifications

SoC/ FPGA	• AMD's Virtex/Kintex UltraScale+ FPGA with B2104 package • Compatible with VU13P/VU11P/VU9P/VU7P/VU5P/VU080/VU095/VU125/VU160/VU190/KU19P/KU095 and KU115 devices • System Logic cells up to 3,780K Logic cells and up to 3,456K Configurable Logic Blocks • Gen3 x16, Gen4x8 Integrated PCIe block • 100G Ethernet MAC cores for high-speed connectivity	FPGA to OSM Interfaces	• RGMII x1 • QSPI x1 • UART x1 • PCIe Gen3 x2
OSM	• Dual 64-bit Arm Cortex-A72 microprocessor at 2.0 GHz • 4x Arm Cortex-R5F MCUs (up to 1.0GHz) • High-speed SerDes(Pcie Gen3/USB3.0/2.5G SGMII) x 4	On SOM Features	• TPM2.0 module • 10G Ethernet PHY Transceiver • Temperature Sensor • Clock Synthesizer • Fan Header
Memory	For FPGA: • Dual 64bit, 4GB DDR4 with ECC • 32bit, 2GB DDR4 • 128MB QSPI Flash For OSM: • 32bit 2GB LPDDR4 • 16GB eMMC Flash • 512KB SRAM via OSM SPI • 2Kbit EEPROM	Board to Board Connector interfaces	From FPGA: • 76 GTY Transceiver channels up to 32Gbps • 120 LVDS/240SE FPGA Ios • FPGA JTAG x1 From OSM: • USB3.0 x1 • USB2.0 x1 • 10G Ethernet x1 • RGMII x1 • SD x1 • UART x2 • I2C x2 • CAN x2 • JTAG x1
		OS Support	Linux 6.1.80 and Vivado 2024 or above
		Operating Temp.	-40°C to +85°C
		Form Factor	90mm x 120mm (BRYN+)
		Power Input	12V input through B2B Connector
		Environment Spec.	REACH & RoHS3 Compliant

Product accessories



Thermal Solutions

For a High-Power System on Module such as the Virtex/Kintex UltraScale+ based SOM, thermal design is very important factor. iWave Supports Heat Sink Solutions for the SOM.

Applications

- **High-Performance Compute Acceleration**

Accelerates compute-intensive workloads through parallel processing and hardware offload for maximum performance and efficiency.

- **AI Inference and Machine Learning Acceleration**

Enables low-latency AI inference and scalable machine learning processing for real-time intelligent applications.

- **Advanced Network Processing and Offload**

Optimizes network throughput and reduces CPU load by offloading packet processing, security, and protocol handling tasks.

- **Next-Generation Wired Communication Systems**

Supports ultra-high-speed, low-latency data transmission for next-generation wired networking infrastructures.

- **5G Baseband and Wireless Infrastructure**

Delivers high-performance signal processing and scalability for 5G baseband units and wireless network deployments.

- **Radar and Electronic Sensing Solutions**

Enables real-time signal acquisition, processing, and analysis for advanced radar and electronic sensing applications.

- **Precision Test and Measurement Equipment**

Provides high-accuracy data capture and signal analysis for validation and performance verification systems.

- **Hardware Emulation and Rapid Prototyping**

Accelerates product development cycles by enabling fast hardware validation, system modeling, and functional prototyping.

A Global Leader in Embedded Systems Engineering and Solutions

Since 1999, we have pioneered leadership in embedded systems technology, establishing ourselves as a strategic embedded technology partner for advanced solutions. Our comprehensive portfolio encompasses ARM and FPGA System on Modules, COTS FPGA solutions, and ODM solutions which include Telematics, Gateways & HMI Solutions.

Beyond our robust product ecosystem, we provide comprehensive ODM support with specialized custom design and manufacturing capabilities, enabling customers to accelerate and optimize their product development roadmaps. With a strategic focus on industrial, automotive, medical, and avionics markets, we deliver innovative technology solutions to global clients.

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