

iW-RainboW- G43M

Agilex 7 (R31A/R31B/R31C) SoC FPGA System on Module

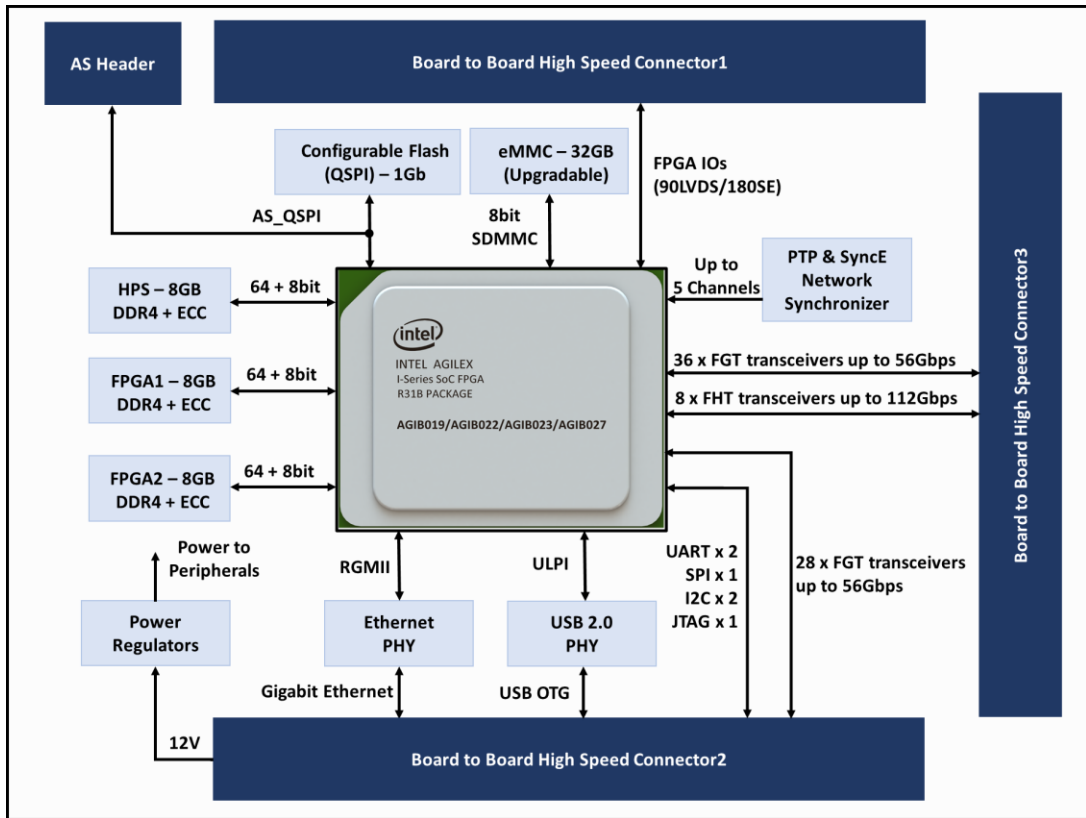
Agilex 7 R31A/R31B/R31C SoC FPGA-based System on Module (SOM) features advanced capabilities designed for high-performance applications. The R31A family includes AGI 022 & AGI 027, R31B family includes AGI 019, AGI 023, AGI 022, AGI 027, AGI 041 devices, while the R31C family comprises AGF 019, AGF 023, AGF 022, and AGF 027 devices. It supports a Hard Processor System (HPS) with a Quad-core 64-bit ARM Cortex-A53 processor running at up to 1.4GHz. The SOM is equipped with 8GB DDR4 with ECC for HPS (64-bit + 8-bit) and 2 x 8GB DDR4 modules with ECC for FPGA (64-bit + 8-bit). Additional integrated features include a USB 2.0 PHY, Gigabit Ethernet PHY, eMMC, and QSPI, along with on-SOM PTP & SyncE network synchronizers. For high-speed connectivity, the SOM supports 64 FGT transceivers with speeds of up to 58Gbps and 8 FHT transceivers reaching up to 112Gbps.



Highlights

- ❖ Agilex™ 7 SoC FPGA (R31A/R31B/R31C Package)
- ❖ 8GB DDR4 with ECC for HPS (64bit + 8bit)
- ❖ 2 x 8GB DDR4 with ECC for FPGA (64bit + 8bit)
- ❖ PCIe Gen5 x16, On SOM PTP & SyncE Network Synchronizers
- ❖ 64 x FGT Transceivers up to 58Gbps, 8 x FHT Transceivers up to 112Gbps & up to 126LVDS/252SE FPGA IOs

Block Diagram



Technical Specifications

SoC	- R31A Family - AGI 022 & 027 - R31B Family - AGI 019, 023, 022 & 027 - R31C Family - AGF 019, 023, 022 & 027 - Quad-core 64-bit ARM Cortex-A53
Memory & Storage	8GB DDR4 with ECC for HPS (64bit + 8bit) 2 x 8GB DDR4 with ECC for FPGA (64bit + 8bit) 32GB eMMC (Expandable up to 128GB) 1Gb Configuration Flash
Board to Board Connector interfaces 1	From FPGA 4 x GTS transceivers up to 28.1 Gbps (Channel 3 is Optional) - FPGA HSIO 48 LVDS/96SE IOs and 52 HVIOS
Board to Board Connector interfaces 2	From HPS (Hard Processor System) RGMII, USB2.0 OTG, Debug UART x 1

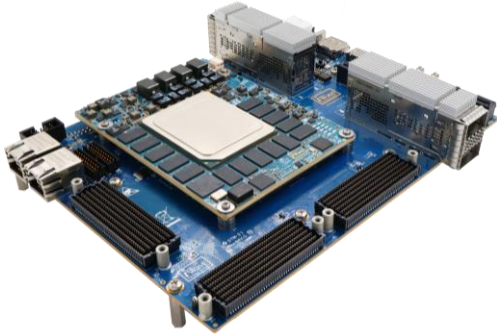
Board to Board Connector interfaces 2	- I2C, Data UART, Optional SD x 1 From FPGA 4x FGT transceivers up to 32Gbps 12x FGT transceivers up to 32GNRZ - PCIe Gen5 x16 (R31A) 4x FGT transceivers up to 32Gbps 8 x FGT transceivers up to 32GNRZ From Secure Device Manager (SDM) - JTAG, Optional AS/ AVST x 1 From HPS to FPGA - SPI, I2C x 1
Board to Board Connector interfaces 3	From FPGA 8 x FHT transceivers up to 112Gbps 8 x FGT transceivers up to 32Gbps 28 x FGT transceivers up to 32GNRZ
Operating System	Linux BSP for ARM Cortex CPU
Operating Temp.	-40°C to +85°C (Industrial Grade)
Form Factor	120mm X 90MM (BRYN+)
Power Input	12V through B2B Connector

Ordering Information

iW-G43M-AI27-4E008G-E0032G-BEA

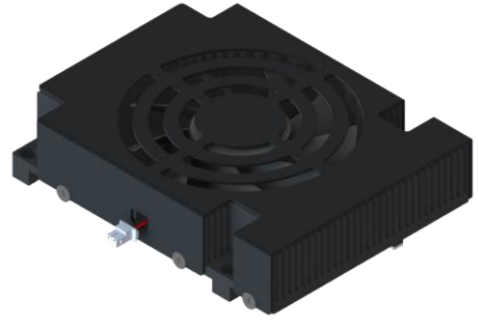
AGIB027 (-1 speed) R31B Agilex 7 7 SOC SOM with 8GB HPS DDR4,
Dual 8GB FPGA DDR4, 32GB eMMC SOM, Extended

Product accessories



Development Kit

Agilex 7 (R31A/R31B/R31C) SoC FPGA Devkit offers high-speed connectivity with Ethernet, PCIe, USB, HDMI, SDI, and expansion options like FMC+, QSFP+, and PMOD.



Thermal Solutions

For any highly integrated System On Modules, thermal design is very important factor. iWave Supports Fan Sink solution for Agilex 7 SoC FPGA SOM.

Applications

Industrial

Ideal for Industrial Motor Control, enabling precise real-time processing, high-speed communication, and efficient power management.

Broadcast & Medical

Supports high-speed video processing, imaging, and signal management for advanced broadcast and medical applications.

Test & Measurement

Delivers high-precision data acquisition, signal processing, and analysis for validation and performance testing.

Aerospace & Defence

Provides secure, high-performance processing and ruggedized solutions for mission-critical aerospace and defense systems.

Wirelines, Wireless Communications

Enables high-bandwidth connectivity and efficient data transmission across wired and wireless communication networks.

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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