

iW-RainboW- G51M

Agilex 7 (R24C) SoC FPGA System on Module

The Agilex 7 R24C SoC FPGA-based System on Module (SOM) features the Agilex F-Series R24C package family, including AGF 006, AG 008, AGF 012, AGF 014, AGF 019, AGF 022, AGF 023, and AGF 027. It incorporates a Hard Processor System (HPS) powered by a quad-core 64-bit ARM Cortex-A53, operating at speeds of up to 1.4GHz.

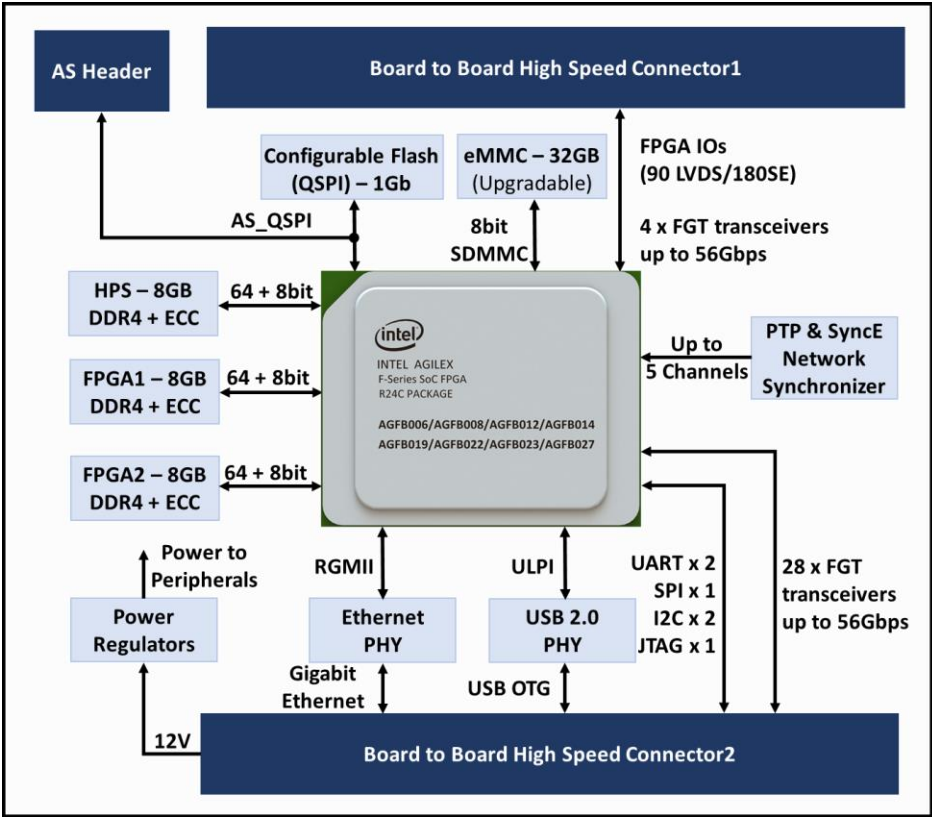
The Agilex 7 R24C SOM is equipped with 8GB DDR4 with ECC for the HPS (64-bit + 8-bit) and an additional 8GB DDR4 with ECC for the FPGA (64-bit + 8-bit). It also includes 2 x 144MB QDR-IV memory for the FPGA (18-bit), along with essential peripherals such as a USB 2.0 PHY, Gigabit Ethernet PHY, eMMC, and QSPI. Additionally, the SOM supports 32 FGT transceivers, delivering speeds of up to 32Gbps in NZR mode and up to 58Gbps in PAM4 mode.



Highlights

- ❖ Agilex™ 7 F-Series from AGF 006 to AGF 027
- ❖ 8GB DDR4 with ECC for HPS (64bit + 8bit)
- ❖ R24C Package With 2 x F-Tile
- ❖ 8GB DDR4 with ECC for FPGA (64bit + 8bit)
- ❖ 2 x 144Mb QDR-IV for FPGA & up to 75LVDS/150SE FPGA IOs

Block Diagram



Technical Specifications

SoC	- R24C Family devices - AGF 006, AG 008, AGF 012, AGF 014, AGF 019, AGF 022, AGF 023, AGF 027 - Quad-core 64-bit ARM Cortex-A53 up to 1.4GHz	Board to Board Connector interfaces	- RGMII x 1 - Debug UART x 1 - SD x 1 (Optional) - I2C x 1 - Data UART x 1 From SDM (Secure Device Manager) - JTAG x 1 - AS x 1 (Active Serial x4) From HPS to FPGA - Gigabit Ethernet x 1 (through On-SOM Gigabit Ethernet PHY) From FPGA 32 x FGT transceivers up to 58Gbps - FPGA IOs (Up to 75LVDS/150SE)
Memory & Storage	32GB eMMC (Exp. up to 128GB) 8GB DDR4 with ECC for HPS (64bit + 8bit) 8GB DDR4 with ECC for FPGA (64bit + 8bit) 2 x 144MB QDR-IV for FPGA (18Bit) 1Gb QSPI Configuration flash (Exp.) 4Kb EEPROM	Operating System	Linux BSP 5.15.9 / Quartus 23.1
On SOM Features	- SGMII Ethernet PHY Transceiver - USB2.0 ULPI Transceiver - Temperature sensor - FAN Header	Operating Temp.	-40°C to +85°C (Industrial Grade)
Board to Board Connector interfaces	From HPS (Hard Processor System) USB2.0 OTG x 1 (through On-SOM USB2.0 transceiver)	Form Factor	110mm x 75mm
		Power Input	5V through B2B Connector
		Environment Spec.	REACH & RoHS3 Compliant

Ordering Information

iW-G51M-FB14-4E008G-E032G-BIC	AGFB014R24C2I2V Agilex 7 R24C SOC SOM with 8GB HPS DDR4 with ECC, 8GB FPGA DDR4 with ECC, Dual 144Mb FPGA QDR-IV, 32GB eMMC SOM, Industrial
iW-G51M-FB14-4E008G-E032G-BID	AGFB014R24C2I2V Agilex 7 R24C SOC SOM with 8GB HPS DDR4 with ECC, 8GB FPGA DDR4 with ECC, 32GB eMMC SOM, Industrial (No FPGA QDR-IV support)
iW-G51M-FB27-4E008G-E032G-BIC	AGFB027R24C2I2V Agilex 7 R24C SOC SOM with 8GB HPS DDR4 with ECC, 8GB FPGA DDR4 with ECC, Dual 144Mb FPGA QDR-IV, 32GB eMMC SOM, Industrial
iW-G51M-FB27-4E008G-E032G-BID	AGFB027R24C2I2V Agilex 7 R24C SOC SOM with 8GB HPS DDR4 with ECC, 8GB FPGA DDR4 with ECC, 32GB eMMC SOM, Industrial (No FPGA QDR-IV support)
iW-G51M-FB06-4E008G-E032G-BID	AGFB006R24D2I2V Agilex 7 R24C SOC SOM with 8GB HPS DDR4 with ECC, 32GB eMMC SOM, Industrial (No FPGA QDR-IV support)

Product accessories



Development Kit

Agilex 7 (R24C) SoC FPGA Devkit offers high-speed connectivity with Ethernet, USB, SD, and expansion options like FMC, FMC+, QSFP+, SFP+ and RTC Coil Cell holder



Thermal Solutions

For any highly integrated System on Modules, thermal design is very important factor. iWave Supports Fan Sink solution for Agilex R24C SoC FPGA SOM.

Applications

- Industrial
- Broadcast & Medical
- Test & Measurement
- Aerospace & Defence
- Wirelines, Wireless Communications

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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