



Intel Agilex Embedded SOM (eSOM7-2F)

Features

- Agilex 7 F-series 24C package FPGA with 2x F-tiles
- Supported FPGAs: 027/022 and 014/012
- Two 400-pin high performance mezzanine connectors
- 32x FGT transceivers (32Gbps NRZ/58Gbps PAM4)
- Up to 80 1.2 SE or a combinations up to 24 differential I/O with support for 12 true LVDS I/O
- Integrated quad core ARM A53 processing complex with 4/8GB DDR4, 16/32GB eMMC or μ SD, GiGE Ethernet, SPI, I2C and UART interfaces
- Max10 Board Module Controller (BMC) controller for telemetry and board management

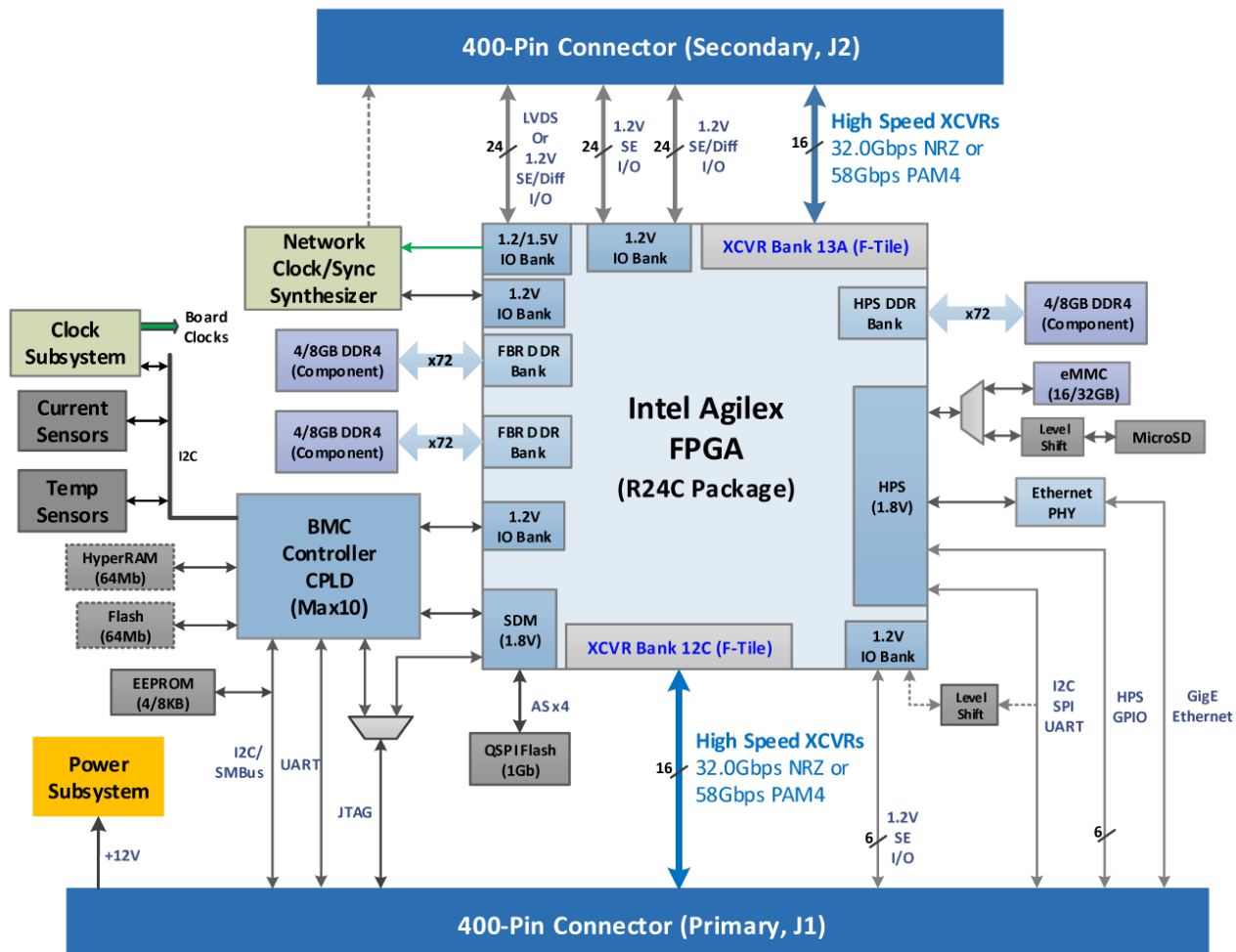
Target Markets

- 5G/ORAN and SATCOM wireless systems
- Embedded high performance edge AI/ML systems
- Signal processing and image processing
- 400/200G/100G/50G/40G/25G/10G networked signal processing devices and platforms



Ready-to-deploy SOM for high performance FPGA enabled embedded and Edge designs

Intel 10nm Agilex 7 Series FPGA based embedded SOM (eSOM™) module for embedded, edge processing, wireless communication and networking centric designs. Up to 1.2Tbps high speed transceivers bandwidth supporting up to 58Gbps PAM4 and x16 PCIe Gen 4 interfaces. Integrated quad-core 64-bit A53 ARM processor complex with network, control and storage peripherals.



Carrier module connections

- Primary Connector (J1)
 - F-Tile based Serdes interface, 16 NRZ (32Gbps) or 12 PAM4 (58.125Gbps) transceivers
 - HPS Interfaces: Ethernet (1000BASE-T/MDI), USB 2.0 host, UART, I2C and SPI
 - BMC interfaces: UART, I2C, board control I/O
 - JTAG interface
 - Single +12V power input to the module
- Secondary Connector (J2)
 - F-Tile based Serdes interface, 16 NRZ (32Gbps) or 12 PAM4 (58.125Gbps) transceivers
 - Fabric side true-differential (LVDS), 1.2V differential, 1.2V single ended GPIO for control, interface and clock management

Power Rails and cooling

- Single +12V power input from carrier module
- High performance power tree
- Up to 120A of core power rail

HPS interfaces

- 4/8GB DDR4 72-bit chip-down SDRAM
- 16/32GB onboard eMMC or μ SD debug slot
- 1000Base-T Ethernet, SPI, I2C and UART interfaces mapped to primary connector

FPGA fabric interfaces

- 2 banks of 4/8GB 72-bit chip-down SDRAM
- 2GB micron SDM QSPI flash for FPGA image
- I2C, SPI and UART interfaces to primary connector for carrier module

Debug and monitoring interfaces

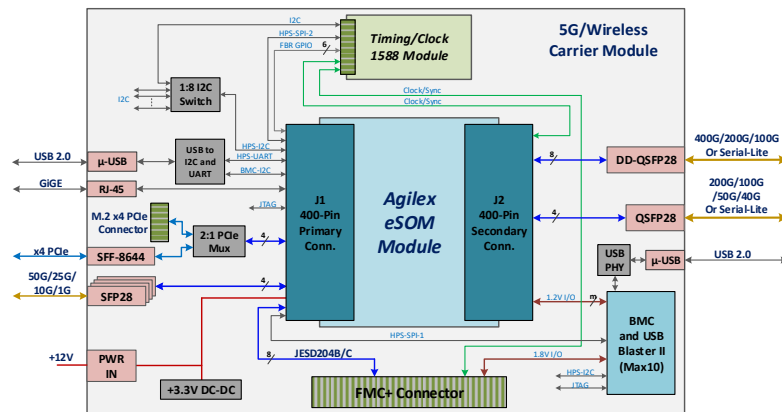
- JTAG interface from Carrier module
- UART console access to the HPS and BMC
- Extensive voltage, current and temperature telemetry support

BSP and design support

- Complete Linux BSP support package
- Comprehensive APIs for board management
- Quartus reference projects
- Carrier boards design guide for custom carrier designs

Low cost, quick turnaround customizations available!

FMC+ 5G/RAN Development Carrier Module for JESD204B/C RF transceivers



- x8 SERDES to the FMC+ connector for JESD204B/C or other network/video interface; up to 32.45Gbps
- Onboard control and I/O conditioning for interface to high performance FMC/FMC+ RF transceiver development boards from **ADI, MaxLinear and TI**
- 4 x SFP28 connectors for 10G/25G/50G Ethernet and eCPRI interface
- One QSFP28 4 QSFP28 connector for high performance networking up to 200G Ethernet
- One QSFP-DD connector for very high performance networking up to 400G Ethernet
- SFF-8644 connector for x4 Gen4 PCIe target
- Timing mezzanine module interface for 1588/PTP network synchronizer from Skyworks and Renesas
- 12V power from standard ATX PCIe connector

Links

<https://hiteksys.com/fpga-and-soc-development-boards/intel/agilex-esom>

Product Ordering Codes

AG-eSOM-1-B7x-02: AGF027 24C FPGA with 2x F tiles, integrated HPS, -2 core -2 XVR speed, 3 banks of 4GB DDR4 and 16GB eMMC

AG-eSOM-1-B3x-02: AGF014 24C FPGA with 2x F tiles, integrated HPS, -2 core -2 XVR speed, 3 banks of 4GB DDR4 and 16GB eMMC

Contact sales for other options, MOQ applies

For sales or more information:



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