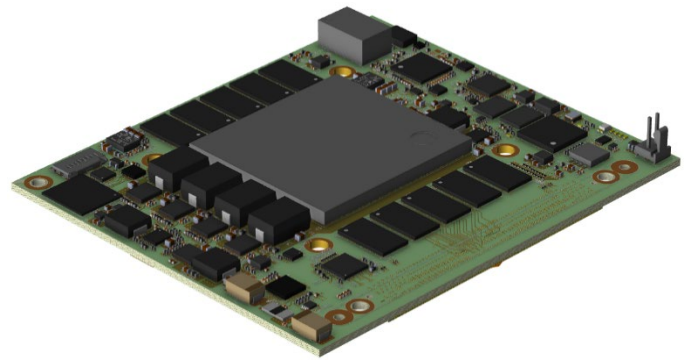




# Intel Agilex Compact Embedded SOM (eSOM7C-xF)

## Features

- Agilex 7 F-series 24C package FPGA with 2x F-tiles
- Supports entire available density in the package:  
**027/022, 023/019, 014/012 and 008/006**
- One 400-pin high performance mezzanine connector
- 32 FGT transceivers (32.45Gbps NRZ/58Gbps PAM4)
- Up to 42 SE 1.2V and 12 true-diff LVDS I/Os
- Integrated quad core ARM A53 processing complex with Ethernet, UART, SPI, I2C interfaces and I/Os
- Integrated Skyworks Si1518 timing synchronizer based PTP/1588 with JESD clocking support
- Max10 Board Module Controller (BMC)
- **Industrial temp design, -40C to 85C**
- Compact 110mm x 95mm form factor

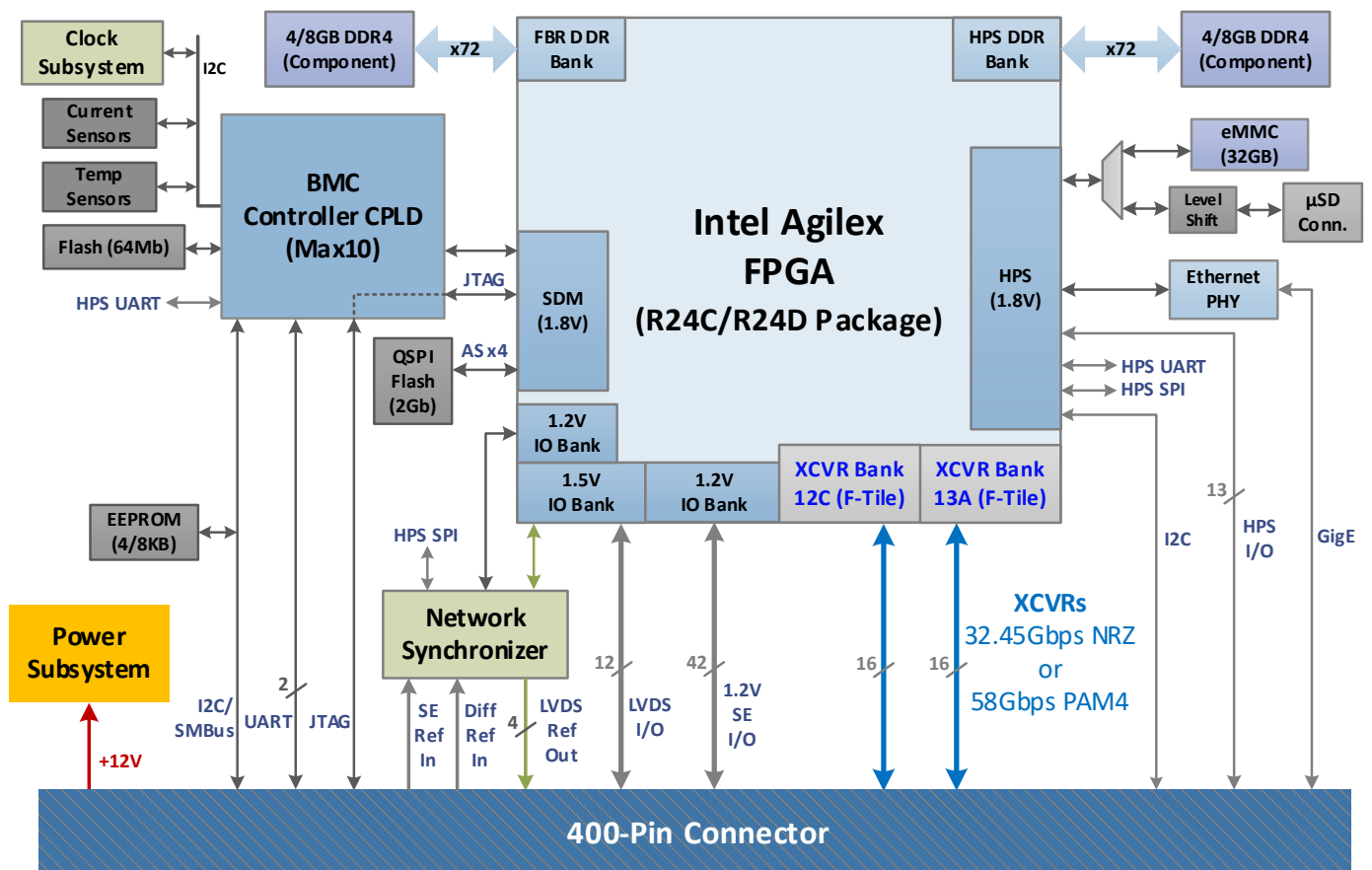


## Ready-to-Deploy SOM for high performance FPGA enabled embedded and Edge designs

Intel 10nm Agilex 7 Series FPGA based compact 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. Flexible clocking with integrated network synchronizer.

## 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



## Carrier module connections

- F-Tile based Serdes interface, 32 NRZ (32Gbps) with up to 24 PAM4 (58.125Gbps) transceivers
- Up to 42 SE fabric 1.2V single ended I/Os
- 12 fabric true-differential (LVDS) signals
- Reference clock inputs and outputs from on-board Skyworks Si5518 network synchronizer
- HPS Interfaces: Ethernet (1000BASE-T/MDI), UART, I2C, SPI and 13 configureable I/O
- BMC interfaces: UART, I2C, board and carrier management I/Os
- JTAG debug interface

## HPS interfaces

- 4/8GB DDR4 72-bit chip-down SDRAM
- 32GB onboard eMMC and  $\mu$ SD debug slot
- 1000Base-T Ethernet and I2C interfaces to
- Additional SPI, I2C and USB 2.0 (via PHY on carrier module)

## FPGA fabric interfaces

- One bank of 4/8GB 72-bit chip-down DDR4
- 2Gb micron SDM QSPI flash for FPGA image

## Clocking and Synchronization

- Flexible low phase noise on-board clocking via TI clock synthesizer
- Integrated

## Power Rails and cooling

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

## Debug and monitoring interfaces

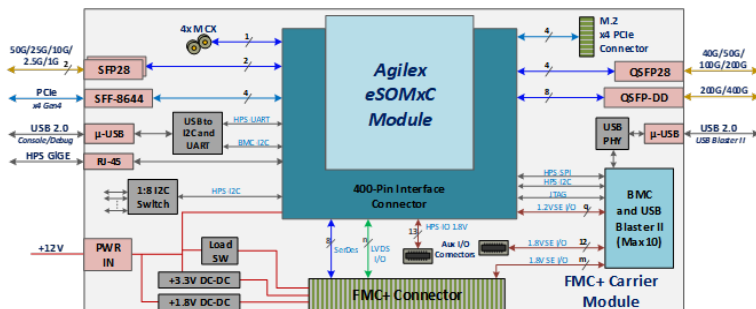
- JTAG interface from Carrier module
- UART console access to the HPS and BMC
- I2C monitor access to BMC
- Extensive voltage, current and temperature telemetry support

## 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 and TI**
- 2 x SFP28 connectors for 10G/25G/50G Ethernet and eCPRI interface
- 1 Serdes lane routed to MCX connectors
- One QSFP28 connector; up to 200G Ethernet
- One QSFP-DD connector; up to 400G Ethernet
- SFF-8644 connector for x4 Gen4 PCIe target
- M.2 connector for x4 Gen4 PCIe root port
- 1000Base-T Ethernet HPS Ethernet and USB console interface
- USB interface for integrated USB-Blaster II
- 20-pin connectors for HPS and fabric I/O signals
- Reference clock input and output interfaces
- 12V power from standard ATX PCIe connector

## Links

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

## Product Ordering Codes

**AG-eSOM7C-1-B7x-05:** AGF027 24C FPGA with 2x F tiles, integrated HPS, -2 core -2 XVR speed, 2 banks of 4GB DDR4 and 32GB eMMC, network sync support

**AG-eSOM7C-1-B1x-05:** AGF008 24C FPGA with 2x F tiles, integrated HPS, -2 core -2 XVR speed, 2 banks of 4GB DDR4 and 32GB eMMC, network sync support

Contact sales for other configurations, MOQ applies

## For sales or more information:



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