iWave
Embedding Intelligence

iWave's Arria 10 SoC System on Module is based on the Arria 10 SX family device with F34 package. The module is equipped with 32-bit DDR4 PS memory support for HPS with ECC and 64-bit DDR4 support for FPGA. All of the IOs and high speed transceiver blocks will be available on the SOM board to board connectors.

APPLICATIONS: Test and measurement equipment, Control and intelligence equipment, diagnostic medical imaging equipment, Wireless infrastructure equipment, Compute and storage equipment, Broadcast and distribution equipment.

iW-RainboW-G24M

HIGHLIGHTS

Arria10 SOC & FPGA device compatibility

- SX270, SX320, SX480, SX570, Sx660
- GX270, GX320, GX480, GX570, Gx660

4GB DDR4 for FPGA

24 high speed transceivers @ 17.4Gbps

48/96 LVDS from BANK 3B & 3C

93 SE from BANK 2A & 3A

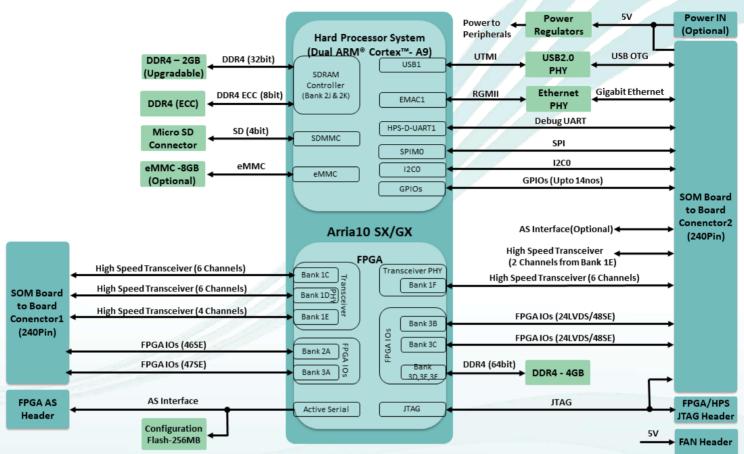Industrial grade availability

10+ Years availability

SPECIFICATIONS

SOC: Arria10 SoC/FPGA	Dual 240 Pin Board to Board Connector:
Dual Core, Cortex - A9 CPU @ 1.5GHz	**Arria10 SoC HPS IO interfaces:**
SX480 (10AS048) FPGA Fabric	Gigabit Ethernet x 1 Port
Memory	USB 2.0 OTG x 1 Port
2GB DDR4 with ECC for HPS	SD (4bit) x 1 Port (optional)
4GB DDR4 for FPGA	SPI x 1 Port
Micro SD for HPS boot	I2C x 1 Port
8GB eMMC Flash for HPS boot (Optional)	HPS Dedicated UART Console
QSPI Flash for FPGA	GPIOs-14 Nos
Communication:	**Arria10 SoC FPGA IO interfaces:**
10/100/100 Ethernet PHY For HPS	24 high - speed transceivers
USB2.0 transceiver for HPS	48/96 LVDS from BANK 3B & 3C
Power Supply:	93 SE from BANK 2A & 3A
5V through SOM B2B connector 2	**Headers:** HPS/FPGA JTAG, FPGA AS headers
Temperature support:	**OS Support**: Linux 4.9.78
-40°C to +85°C Industrial	**Form Factor**: 95mm x 75mm

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intel | FPGA Design Solutions Network — Platinum

Arria 10 SoC SOM - BLOCK DIAGRAM

Block diagram labels:

Power to Peripherals · Power Regulators · 5V · Power IN (Optional)

Hard Processor System (Dual ARM® Cortex™- A9)

DDR4 – 2GB (Upgradable) — DDR4 (32bit) — SDRAM Controller (Bank 2J & 2K)
DDR4 (ECC) — DDR4 ECC (8bit)
Micro SD Connector — SD (4bit) — SDMMC
eMMC -8GB (Optional) — eMMC — eMMC

USB1 — UTMI — USB2.0 PHY — USB OTG
EMAC1 — RGMII — Ethernet PHY — Gigabit Ethernet
HPS-D-UART1 — Debug UART
SPIM0 — SPI
I2C0 — I2C0
GPIOs — GPIOs (Upto 14nos)

SOM Board to Board Conenctor2 (240Pin)

Arria10 SX/GX — FPGA

AS Interface(Optional)
High Speed Transceiver (2 Channels from Bank 1E)

Bank 1C — High Speed Transceiver (6 Channels)
Bank 1D — High Speed Transceiver (6 Channels)
Bank 1E — High Speed Transceiver (4 Channels)
Transceiver PHY — Bank 1F — High Speed Transceiver (6 Channels)

SOM Board to Board Conenctor1 (240Pin)

Bank 3B — FPGA IOs (24LVDS/48SE)
Bank 3C — FPGA IOs (24LVDS/48SE)
Bank 2A — FPGA IOs (46SE)
Bank 3A — FPGA IOs (47SE)
Bank 3D,3E,3F — DDR4 (64bit) — DDR4 - 4GB

FPGA AS Header — AS Interface — Active Serial
JTAG — JTAG — FPGA/HPS JTAG Header
Configuration Flash-256MB
5V — FAN Header

Note:
- HPS (Hard Processing System) is supported only in Arria10 SoC family (SX) devices.
- All IOs in SOM Expansion connectors are 1.8V tolerant IOs. Bank 3B,3C,3A supports variable IO level setting from PMIC (1.8V,1.5V, 1.35V,1.2V).
- Each FPGA IO Bank (2A,3A,3B,3C) which goes to Expansion connectors support two General Purpose Clock Input (1 in 2A) & two General Purpose Clock Output (LVDS/SE)
- Since 3D,3E & 3F banks are available only in some version of Arria10 parts, FPGA DDR4 (64bit) can be supported only where these banks supported devices are used.

OS SUPPORT
Linux 4.9.78

DELIVERABLES
Arria 10 SoC SOM
Board Support Package
User Manual

OPTIONAL KITS/Modules
Arria 10 SoC Development Kit

CUSTOM DEVELOPMENT
BSP Development/OS Porting
Custom SOM/Carrier Development
Custom Application/GUI Development
Design Review and Support

iWave Systems Technologies, established in 1999, focuses on Product Engineering Services involving Embedded Hardware, Software & FPGA. The company designs and develops cutting edge products and solutions. iWave has been an innovator in the development of highly integrated, high performance, low power and low cost System On Modules and Development Platforms. iWave's expertise has brought out multiple SOMs based on ARM NXP, Intel Atom, Marvell and TI Processors.

iWave System has won the confidence of its customers over the years by being a reliable partner in developing innovative products. Our engineers combine outstanding System design experience to deliver Quality Solutions. iWave specializes across Industrial, Automotive and Medical domains. We support our customers by being time efficient, which in turn helps our customers accelerate time to market their products. iWave is a Windows embedded Silver partner and a winner of the Partner Excellence Award.

Optional items not included in the standard deliverables.

Note: iWave reserves the right to change these specifications without notice as part of iWave's continuous effort to meet the best in breed specification. The registered trademarks are proprietary of their respective owners.

Ordering the Arria 10 SoC SOM
The SOM Module can be ordered online from the iWave Website
http://www.iwavesystems.com/webforms

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