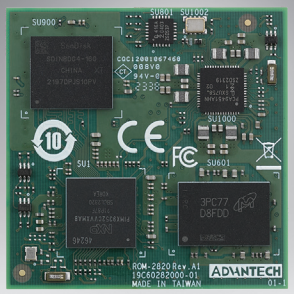
AOM-2521

NXP i.MX 95 Cortex®-A55 OSM 1.2 Computer-on-Module

Preliminary



OPEN STANDARD MODULE™

Features

- NXP Arm® Cortex®-A55 i.MX95 Six Cores up to 2.0 GHz
- 1 x Arm Cortex-M7 core & 1 x Cortex-M33 core
- Onboard LPDDR5 8 GB, 6400MT/s memory
- Neural network accelerator built-in
- 1 x 4 lane MIPI-DSI, 2 x single channel LVDS or 1 x dual channel LVDS
- 1 x USB 3.2, 2 x USB 2.0, 5 x UART, 5 x I²C, 7 x GPIO, 3 x PWM, 2 x CAN-FD
- Compact size form factor - OSM Size L (45 x 45 mm)
- Support Ycoto Linux

Introduction

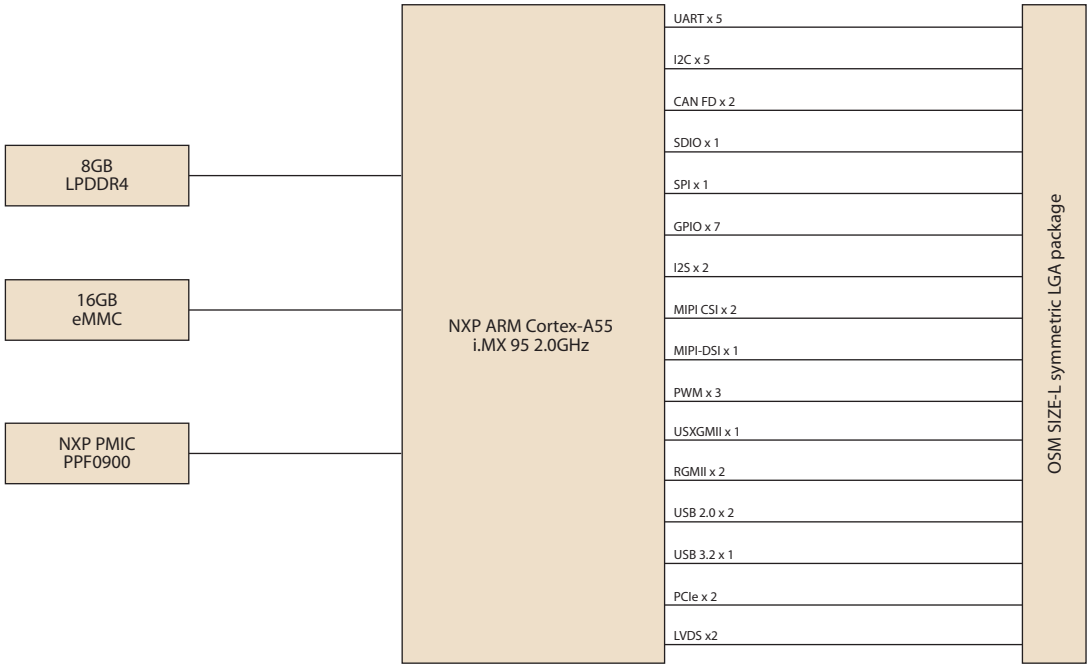
Advantech AOM-2521 OSM 1.2 Computer-on-Module is powered by NXP i.MX 95 SoC which includes Cortex-A55 Hex-core in combination with one Cortex- M7 & Cortex- M33 real time processor, and an added Neural Network accelerator and 2D/3D graphics engine. It provides USB2.0, Gigabit Ethernet, MIPI-CSI, I2C, SPI, GPIO, CAN-FD and MIPI DSI display for embedded applications.

AOM-2521 is paired with Advantech OSM carrier board for faster end product peripheral integration and time-to-market. The reference schematics and layout checklists documentations for carrier board development will be provided along with the open-sourced Linux BSP, test utilities, hardware design utilities and reference drivers.

Specifications

Form Factor		OSM 1.2
Processor System	CPU	NXP i.MX95 Cortex-A55 Six core (up to 2.0GHz)
	MCU	1 x Arm Cortex-M7 core & 1 x Cortex-M33 core
Memory	Technology	LPDDR5 6400MT/s
	Capacity	On-board 8GB LPDDR5
	Flash	16 GB eMMC NAND Flash for O.S. and 8 MB QSPI NOR Flash for board information
Graphics	LVDS/MIPI DSI	1 x 4 lane MIPI-DSI 1 x Dual channel LVDS
	HDMI	- (DSI to HDMI integrated on carrier board)
	Parallel RGB	-
	VGA	-
	Graphics Engine	2D/3D Graphic Acceleration supporting 1G Pixel/s, OpenVG 1.1, Open GL ES3.1, Vulkan, and Open CL 1.2 FP.
Ethernet	Chipset	1 x NXP i.MX95 integrated USXGMII, 2 x NXP i.MX95 integrated RGMII
	Speed	1 x 10 GbE, 2 x 10/100/1000 Mbps
RTC	RTC	External RTC
Security		NXP i.MX 95 integrated Trust Zone
I/O	PCIe	2 x PCIe 3.0
	SATA	-
	USB	1 x USB 3.2, 2 x USB 2.0
	Audio	1 x I²S
	SPDIF	-
	SDIO	1
	Serial Port	2 x 4-wire UART; 3 x 2-wire UART for debug console
	SPI	1
	CAN-FD	2
	GPIO	7
	QSPI	N/A
	I²C	5 (1 dedicated for MIPI CSI, 1 dedicated for LVDS)
	Camera Input	2 x 4-lane MIPI CSI (1 share with MIPI DSI by option)
	PWM	3
	Touch	-
Power	Power Supply Voltage	5V
	Power Consumption	TBD
Environment	Operating Temperature	0 ~ 60 °C/ -40 ~ 85 °C
	Operating Humidity	95% @ 40° C (non-condensing)
Mechanical	Dimensions (W x D)	45 x 45 mm
Operation System		Yocto Linux
Certifications		CE/FCC Class B

Block Diagram



Ordering Information

Part No.	CPU	Memory	Flash Memory	UART	LAN	USB	Size	Power input	Operating Temperature
AOM-2521B6-9590NA1	i.MX 95 Hex Core	8GB	16GB	5	3	3	45 x 45 mm	5V	-40 ~ 85 °C

Development Board

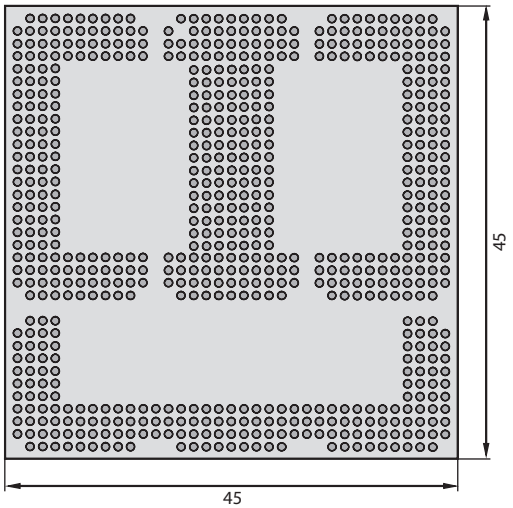
Part No.	Description
AOM-DK2521-01A1	AOM-2521 evaluation kit

Optional Accessories

Part No.	Description
1700021565-01	Debug port cable
1700023619-01	D-SUB 9P(F)/D-SUB 9P(F) RS232/RS485 100c
96PSA-A36W12W7-5	ADAPTER 100-240V 36W 12V 3A
1700001524	Power Cord 3P UL 10A 125V 180cm
170203183C	Power Cord 3P Europe (WS-010+WS-083) 183cm
1700019146	Power Cord CCC 3P 10A 250V 183cm
170203180A	Power Cord 3P UK 2.5A/3A 250V 1.83M
1700008921	Power Cord 3P PSE 183cm
SQF-ISDM1-16G-21C	SQF SD Card I-SD UHS-I MLC 16G (0~70°C)
SQF-ISDM1-16G-21E	SQF I-SD UHS-I MLC 16G (-40~85°C)

Dimensions

Unit: mm



Embedded Linux Support and Design-in Services

Hardware Certified Ubuntu and Yocto with Eco Partner Services

Linux is the most popular embedded OS for transportation, outdoor services, factory automation, and mission critical applications. Its open source and kernel reliability features ease security updates, and make it particularly adaptable to new AI and Edge computing technology. Advantech has cooperated with Canonical and other software partners to provide hardware certified Ubuntu image and Yocto BSP as Linux offerings. The Advantech, Embedded Linux, and Android Alliance (ELAA) delivers local software services and consultation.

Features

Certified OS and BSP

- Platform compatibility tests
- Preloaded functional driver and software stacks

Licensed Services

- License authorized Canonical delivers 10-years of bug fixes and security updates
- In-house bundled service

Numerous AI and Edge Resources

- Containerized technology for service provision and deployment
- AI resources from Caffe, TensorFlow, and mxnet

Local Partner Alliance

- Embedded Linux and Android Alliance (ELAA)

WISE-DeviceOn

Massive IoT Device Management Utility

IoT deployment and management typically involves numerous disparate devices installed on multiple sites. These devices require effective monitoring, managing, and tracking. Advantech's easy-to-use WISE-DeviceOn interface enables users to remotely monitor device health, troubleshoot problems, and send software/firmware updates over-the-air (OTA). In sum, DeviceOn empowers quick real-time responsiveness to emerging problems.

Features

Comprehensive Management	Remote Access	Efficient Operations
• Devices status • Peripherals/firmware • Open for extension	• Real-time monitoring • Remote controls • Troubleshooting	• Zero-touch on-boarding • OTA updates • Batch control

Product Highlights

SOM-6883
High-performance 11th Gen Intel® COMe Type 6 Module

MIO-5375
Compact 11th Gen Intel® Outdoor Focused 3.5" SBC

EPC-B5587
10th Gen Intel® Xeon® based Edge server

EPC-R3220
Arm based IoT Edge Gateway