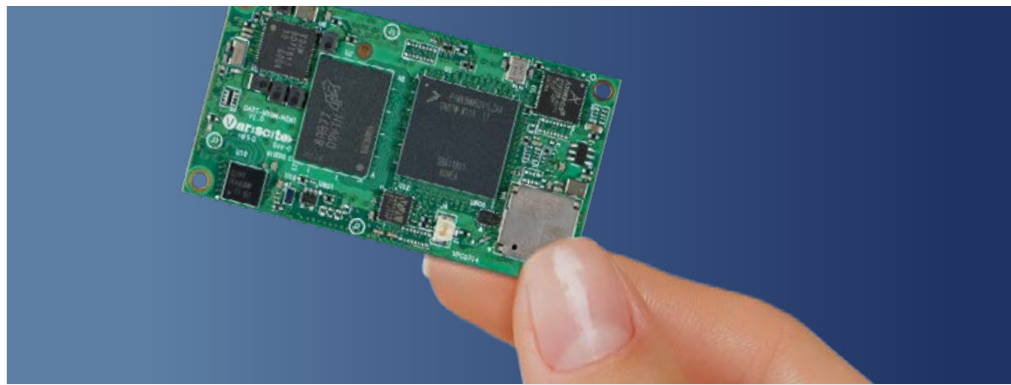




Your Vision, Our Solutions



Product Catalog ► 2023



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ABOUT VARISCITE

For the past 20 years Variscite has taken a leading market position in the design and manufacture of System on Modules (SoM). The company is recognized as a trusted provider of development and production services for a variety of embedded platforms, with turn-key manufacturing services that transform clients' visions into successful products.

Variscite takes a complete solution approach from customized product development to hardware and software design and manufacture.

Throughout the product life cycle expertise, innovation and a commitment to excellence are the values that pave our roadmap and convey the methodology behind every Variscite decision.

Variscite high performance, low cost flexible solutions have been successfully applied throughout a wide variety of industries ranging from medical, agriculture, automation, control systems and multimedia to name just a few.



“

Using the Variscite System on Module we have dramatically speeded up our development process.

Variscite SoM is a quality product we can rely on that has undoubtedly contributed to the success of our products.

Ken Austin, Austin Design

”

VARISCITE SERVICES

Services that complete the puzzle



Variscite provides design, development and manufacturing services for a variety of embedded platforms, supported by numerous operating systems. Variscite customers stay ahead of the pack and eliminate time-

consuming processes, by leveraging Variscite's rich experience in embedded solution development. Variscite engineering experts escort your product from conception, to delivery and beyond.

Software Design Services

Variscite embedded software experts have significant experience in Board Support Package (BSP) development for various real-time and embedded operating systems, focusing on NXP's i.MX SoC. Variscite engineers create BSPs and implement device drivers for standard and custom development boards. The company's custom board support packages enable customers to rapidly deploy an operating system and fully utilize the features of the underlying hardware platform. BSPs are configured to support the desired peripherals, operating system features, file systems, and memory types. The Variscite team brings extensive knowledge of the various operating systems including Linux (multiple distributions) and Android.

Board Design Services

Variscite provides development and consulting services on a variety of embedded platforms with the support of various operating systems.

Variscite board design services include:

- Analog design
- Digital design
- Power design
- Simulation
- Board bring up, testing and validation

VARISCITE SOLUTIONS

Your vision our solutions



Variscite fully integrated systems provide the critical components to optimize your product design, development and manufacture.

Variscite expert-developed complete solutions deliver core technology capabilities for a broad range of applications.

Medical



Life saving and health-impacting equipment demands a development and manufacturing life cycle that ensures absolute reliability and uncompromising quality.

Variscite appreciates that while meeting exacting regulatory standards, development cost and time savings are also more critical than ever to justify economies of scale and demonstrate financial and operational benefits.

Agriculture



Variscite solutions for agriculture meet the demands of extreme weather conditions, as well as provide safe, effective and environmentally-friendly cutting edge technologies.

From breeding, biotechnology, nanotechnologies to ensuring food safety throughout the supply chain, Variscite helps achieve maximum production capabilities, whilst still satisfying worldwide legislations.

Automotive



Variscite solutions for the automotive industry accommodate extreme temperatures of -40 to 85 degrees Celsius, as well as sustain intensive vibration and shock testing procedures.

Full integration with the car network is achieved via full CAN bus connectivity. Incorporating full fleet management systems, Variscite designs comprise navigation capabilities, cellular communication, GPS navigation and more.

Control Systems



Variscite solutions for control systems offer advanced scalable technologies with CAN bus connectivity, allowing integration with all system components.

Multi-operational systems with broad connectivity are engineered to meet exacting specifications and combine function with reliability, whether sustaining extreme temperatures, supporting router or multi-image technologies or software to combat cyber risks.

Multimedia



Sophisticated features make Variscite tailored solutions ideal for use with video and audio multimedia solutions including surveillance, security, Set-Top boxes, DVRs, home automation and video streaming.

Variscite devices have HD video playback and capture capabilities, as well as full integration with camera sensors. Variscite solutions reflect the latest features regarding computing power and functionality, ensuring you always have the technical advantage.

“

We approached Variscite with a very complex application that had to meet strict FDA requirements and a tight manufacturing deadline. We wanted the latest CPU model and chipset technology within a customized embedded development solution.

Variscite met the challenge with their VAR-SOM-OM37 System on Module which provided everything we needed and more.

Tzachi Geva, Oridion Medical

”

VARISCITE PRODUCTS

Your product starts here



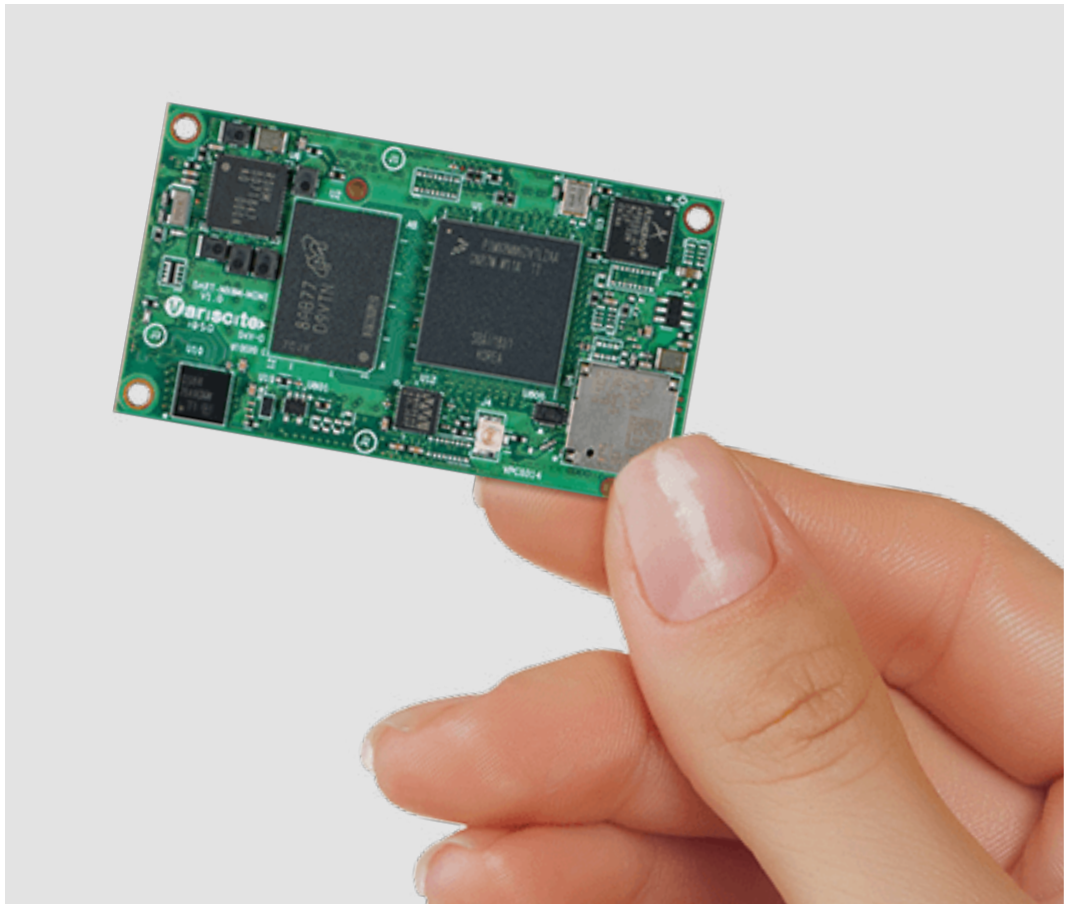
At Variscite your product vision becomes an affordable and immediate reality with our custom-engineered System on Modules, Single Board Computers and Evaluation Kits. Variscite's quality System on Modules serve as building blocks for your product, easily integrating into any embedded platform.

With an extensive range of possible interfaces and communication protocols, Variscite System on Modules are ready to run any embedded operating system such as Linux and Android. Despite flexible design, Variscite still delivers off-the-shelf advantages including fast time-to-market, cost savings and proven software support.

SYSTEM ON MODULES

Advantages of using Variscite System on Modules (SoM)

- **Faster time-to-market** by integrating complete computing solutions to streamline the design, development and manufacturing cycle
- **Reduced risk** by incorporating proven solutions designed by experts and applied in numerous applications worldwide
- **Time and resource savings** with off-the-shelf System on Modules. Variscite solutions apply quality materials in the most efficient and cost-effective manner, helping your products stay on target and within budget.
- **Cutting edge technology** with sophisticated hardware and software features so you stay ahead of the competition with the most relevant market offerings
- **Complete and flexible solutions** to suit any architecture and meet any safety regulations or market demands your product faces
- **Manufacturing support** with extensive QA procedures, tailored configurations and long-term part availability
- **Easy upgrade/downgrade path** with measurable savings in cost, time-to-market and reduced manufacturing risks.



VARISCITE PIN2PIN SYSTEM ON MODULE FAMILIES

Two highly scalable product families based on NXP processors

The VAR-SOM and DART Pin2Pin product families offer Variscite's customers significant long-term advantages:

- **Scalability:** Your end product can be easily scaled to a higher or lower performance platform at all stages while keeping the same carrier board design for the different platforms.
- **Optimized cost/performance:** With a full span of performance, feature-set, and cost, you can easily optimize your end product cost/performance by adjusting the platform to your actual needs.
- **Ease of development and integration:** Develop a single custom carrier board to support different pin-compatible SoM solutions, reduce development time, cost, and risk.
- **Lifetime extension:** Upgrade your products with a newer solution with an extended lifetime availability..

VAR-SOM Pin2Pin Family

An extensive product family supporting a wide range of solutions from low-power and cost-sensitive entry point System on Modules, up to impressive power and multimedia performance solutions.

Mechanical specifications: 68mm width, based on 200pin SO-DIMM edge connector.

** The Pin2Pin compatibility depends on pinmux options; please verify the detailed pinout table in the related SoM to confirm compatibility is maintained in your specific design.



VAR-SOM-MX8M-PLUS
NXP i.MX8M Plus
4x 1.8GHz Cortex-A53



VAR-SOM-MX8M-MINI
NXP i.MX8M Mini
4x 1.8GHz Cortex-A53



VAR-SOM-MX8M-NANO
NXP i.MX8M Nano
4x 1.5GHz Cortex-A53



VAR-SOM-MX8
NXP i.MX8 2x 1.8GHz
Cortex-A72 + 4x 1.2GHz Cortex-A53



VAR-SOM-MX8X
NXP i.MX8X
4x 1.2GHz Cortex-A35



VAR-SOM-MX6
NXP i.MX6
4x 1.2GHz Cortex-A9



VAR-SOM-SOLO/DUAL
NXP i.MX6
2x 1GHz Cortex-A9



VAR-SOM-6UL
NXP i.MX6 UL/ULL/ULZ
900MHz Cortex-A7

DART Pin2Pin Family

Packed in a tiny 55 x 30mm package, the DART product family provides a range of costs/performance solutions, all in a small form factor.

Mechanical specifications: 55 x 30mm, based on three 90 pins board-to-board connectors.

** The Pin2Pin compatibility depends on pinmux options; please verify the detailed pinout table in the related SoM to confirm compatibility is maintained in your specific design.



DART-MX8M-PLUS
NXP i.MX8M Plus
4x 1.8GHz Cortex-A53



DART-MX8M-MINI
NXP i.MX8M Mini
4x 1.8GHz Cortex-A53



DART-MX8M
NXP i.MX8M
4x 1.5GHz Cortex-A53

	VAR-SOM-MX93	VAR-SOM-AM62
CPU		
CPU Name	NXP i.MX93	Texas Instruments AM62x
CPU Type	Cortex™-A55	Cortex™-A53
CPU Cores	2 Cores	4 Cores
CPU Clock (Max)	Up to 1.7GHz	Up to 1.4GHz
Real-time co-processor	250MHz Cortex-M33	400MHz Cortex-M4F and 333 MHz PRU (Programmable Realtime Unit)
Integer performance (DMIPS)	Up to 9,010	Up to 12,880
Pin Compatible		
Pin2Pin Family	VAR-SOM Pin2Pin Family	VAR-SOM Pin2Pin Family
Memory		
RAM	512MB – 2GB LPDDR4	512MB – 2GB DDR4
Flash	8 – 128 GB	8 – 128 GB
Multimedia		
GPU	2D pixel acceleration engine (PxP)	Imagination AXE-1-16M
Video Acceleration	-	-
AI/ML	Neural processing unit (NPU) up to 0.5 TOPS	-
Camera Interfaces	MIPI-CSI2, ISI (Parallel)	MIPI-CSI2
HDMI in	-	-
Display		
HDMI	-	-
RGB	1366x768p60 or 1280x800p60	-
DSI	MIPI-DSI 1920x1200 24-bit	-
LVDS	1366x768p60 or 1280x800p60	Dual 1920x1080 24-bit
Touch controller	Resistive, Capacitive	Resistive, Capacitive
Other	-	-
Audio		
Headphone driver	Yes	Yes
Microphone	Digital, Analog (stereo)	Digital, Analog (stereo)
Digital audio	3 x I2S(SAI), S/PDIF, RX TX, PDM 4CH	3 x I2S(McASP)
Line In/Out	Yes	Yes
Networking		
Ethernet	2x 10/100/1000 Mbps	2x 10/100/1000 Mbps
Wi-Fi	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE5.2	BT/BLE5.2
Connectivity		
SD / MMC	x1	x1
USB Host / Device	USB2.0: 2x OTG	USB2.0: 2x OTG
UART	x4, up to 5 Mbps	x9, up to 3.6 Mbps
I2C	x5	x5
SPI	x3	x5
RTC	On carrier	On carrier
PCI-Express	-	-
S-ATA	-	-
CAN Bus	x2	x3
Extrenal Bus	-	-
OS Support		
Operation system	Linux, FreeRTOS	Linux, Android, FreeRTOS
Mechanical Specs.		
Dimensions (WxL)	67.8 x 33mm	67.8 x 33mm
Connector type	SO-DIMM200 edge connector Belongs to VAR-SOM Pin2Pin family	SO-DIMM200 edge connector Belongs to VAR-SOM Pin2Pin family
Electronic Specs.		
Supply voltage	3.3V or 3.4-5V	3.3V
Digital I/O voltage	3.3V/1.8V	3.3V
Temperature Grades		
Commercial temperature	0 to 70°C	0 to 85°C
Extended temperature	-25 to 85°C	0 to 85°C
Industrial temperature	-40 to 85°C	-40 to 85°C

	DART-MX8M-PLUS	DART-MX8M-MINI	DART-MX8M
CPU			
CPU Name	NXP i.MX 8M Plus	NXP i.MX 8M Mini	NXP i.MX 8M
CPU Type	Cortex™-A53	Cortex™-A53	Cortex™-A53
CPU Cores	4 Cores	4 Cores	4 Cores
CPU Clock (Max)	Up to 1.8GHz	Up to 1.8GHz	Up to 1.5GHz
Real-time co-processor	800MHz Cortex™-M7	400MHz Cortex™-M4	266MHz Cortex™-M4
Integer performance (DMIPS)	Up to 16,560	Up to 16,560	Up to 13,800
Pin Compatible			
Pin2Pin Family	DART Pin2Pin Family	DART Pin2Pin Family	DART Pin2Pin Family
Memory			
RAM	1 – 8 GB LPDDR4	1 – 4 GB LPDDR4	1 – 4 GB LPDDR4
Flash	8-128 GB eMMC	8 – 128 GB eMMC	4 – 128 GB eMMC
Multimedia			
GPU	GC7000UL/GC520L	Vivante GC328/GC Nano	Vivante GC7000Lite
Video Acceleration	1080p60 HEVC H.265/ H.264/ VP9/ VP8 Decoder, 1080p60 H.265/H.264 Encoder	1080p60 HEVC H.265/H.264/VP9/ VP8 Decode, 1080p60 H.264/VP8 Encode	4K H.265/H.264/VP9 Decode plus HDR
AI/ML	Neural processing unit (NPU) up to 2.3 TOPS	-	-
Camera Interfaces	2x MIPI-CSI2	MIPI-CSI	2x MIPI-CSI
HDMI in	-	-	-
Display			
HDMI	V2.0a up to 2Kp60	-	V2.0a up to 4Kp60
RGB	-	-	-
DSI	MIPI-DSI 1920x1080 24-bit	MIPI-DSI 1920x1080 24-bit	MIPI-DSI 1920x1080 24-bit
LVDS	Dual 1920x1080 24-bit	Dual 1920x1080 24-bit	Dual 1920x1080 24-bit
Touch controller	Resistive, Capacitive	Resistive, Capacitive	Resistive, Capacitive
Other	-	-	eDP1.4/DP1.3 up to 4Kp60
Audio			
Headphone driver	Yes	Yes	Yes
Microphone	Digital, Analog (stereo)	Digital, Analog (stereo)	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF, PDM 8CH	5 x I2S(SAI), S/PDIF, PDM	5 x I2S(SAI), S/PDIF
Line In/Out	Yes	Yes	Yes
Networking			
Ethernet	2x 10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
Wi-Fi	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n	Certified dual-band 802.11 ac/a/b/g/n	Certified dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE5.2	BT/BLE5.2	BT/BLE5.2
Connectivity			
SD / MMC	x1	x1	x1
USB Host / Device	USB 3.0/2.0 2x OTG	USB2.0: 2x OTG	USB 3.0/2.0: 2x OTG
UART	x4, up to 5 Mbps	x4, up to 4 Mbps	x4, up to 4 Mbps
I2C	x5	x3	x3
SPI	x3	x3	x3
RTC	On carrier	On carrier	On carrier
PCI-Express	Gen 3.0	Gen 2.0	2x Gen 2.0
S-ATA	-	-	-
CAN Bus	x2	-	-
OS Support			
Operation system	Linux, Android, FreeRTOS	Linux, Android, FreeRTOS	Linux, Android, FreeRTOS
Mechanical Specs.			
Dimensions (WxL)	55.0 x 30.0 mm	55.0 x 30.0 mm	55.0 x 30.0 mm
Connector type	3 x 90 pin board-to-board connectors. Belongs to DART Pin2Pin family	3 x 90 pin board-to-board connectors. Belongs to DART Pin2Pin family	3 x 90 pin board-to-board connectors. Belongs to DART Pin2Pin family
Electronic Specs.			
Supply voltage	3.4V – 5V	3.5V – 5V	3.4V – 4.5V
Digital I/O voltage	3.3V/1.8V	3.3 V/1.8V	3.3 V/1.8V
Temperature Grades			
Commercial temperature	0 to 70°C	0 to 70°C	0 to 70°C
Extended temperature	-25 to 85°C	-25 to 85°C	-25 to 85°C
Industrial temperature	-40 to 85°C	-40 to 85°C	-40 to 85°C

	VAR-SOM-MX8M-PLUS	VAR-SOM-MX8M-MINI	VAR-SOM-MX8M-NANO
CPU			
CPU Name	NXP i.MX 8M Plus	NXP i.MX 8M Mini	NXP i.MX 8M Nano
CPU Type	Cortex™-A53	Cortex™-A53	Cortex™-A53
CPU Cores	4 Cores	4 Cores	1-4 Cores
CPU Clock (Max)	Up to 1.8GHz	Up to 1.8GHz	Up to 1.5GHz
Real-time co-processor	800MHz Cortex™-M7	400MHz Cortex™-M4	650MHz Cortex™-M7
Integer performance (DMIPS)	Up to 16,560	Up to 16,560	Up to 13,800
Pin Compatible			
Pin2Pin Family	VAR-SOM Pin2Pin Family	VAR-SOM Pin2Pin Family	VAR-SOM Pin2Pin Family
Memory			
RAM	1 – 8 GB LPDDR4	1 – 4 GB DDR4	512MB – 2GB DDR4
Flash	8 – 128 GB	8 – 128 GB	Up to 512 MB NAND / 128 GB eMMC
Multimedia			
GPU	GC7000UL/GC520L	Vivante GC328/GC Nano	Vivante GC7000UL
Video Acceleration	1080p60 HEVC H.265/ H.264/ VP9/ VP8 Decoder, 1080p60 H.265/H.264 Encoder	1080p60 HEVC H.265/H.264/VP9/ VP8 Decode, 1080p60 H.264/VP8 Encode	-
AI/ML	Neural processing unit (NPU) up to 2.3 TOPS	-	-
Camera Interfaces	2x MIPI CSI2	MIPI-CSI2	MIPI-CSI2
HDMI in	-	-	-
Display			
HDMI	V2.0a up to 2Kp60	-	-
RGB	-	-	-
DSI	MIPI-DSI 1920x1080 24-bit	MIPI-DSI 1920x1080 24-bit	MIPI-DSI 1920x1080 24-bit
LVDS	Dual Flatlink 1920x1080 24-bit	Dual Flatlink 1920x1080 24-bit	Dual Flatlink 1920x1080 24-bit
Touch controller	Resistive, Capacitive	Resistive, Capacitive	Resistive, Capacitive
Other	-	-	-
Audio			
Headphone driver	Yes	Yes	Yes
Microphone	Digital, Analog (stereo)	Digital, Analog (stereo)	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF, PDM 8CH	5 x I2S(SAI), S/PDIF, PDM 4CH	5 x I2S(SAI), S/PDIF, PDM 8CH
Line In/Out	Yes	Yes	Yes
Networking			
Ethernet	2x 10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
Wi-Fi	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n	Certified dual-band 802.11 ac/a/b/g/n	Certified dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE5.2	BT/BLE5.2	BT/BLE5.2
Connectivity			
SD / MMC	x1	x1	x1
USB Host / Device	USB 3.0/2.0: 2x OTG	USB2.0: 2x OTG	USB2.0: 1x OTG
UART	x4, up to 5 Mbps	x4, up to 4 Mbps	x4, up to 4 Mbps
I2C	x5	x3	x4
SPI	x3	x3	x3
RTC	On carrier	On carrier	On carrier
PCI-Express	Gen 3.0	Gen 2.0	-
S-ATA	-	-	-
CAN Bus	x2	x1	x1
OS Support			
Operation system	Linux, Android, FreeRTOS	Linux, Android, FreeRTOS	Linux, Android, FreeRTOS
Mechanical Specs.			
Dimensions (WxL)	67.8 x 33.0 mm	67.8 x 33.0 mm	67.8 x 33.0 mm
Connector type	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family
Electronic Specs.			
Supply voltage	3.3 V	3.3 V	3.3 V
Digital I/O voltage	3.3 V	3.3 V	3.3 V
Temperature Grades			
Commercial temperature	0 to 70°C	0 to 70°C	0 to 70°C
Extended temperature	-25 to 85°C	0 to 85°C	0 to 85°C
Industrial temperature	-40 to 85°C	-40 to 85°C	-40 to 85°C

	VAR-SOM-MX7	VAR-SOM-6UL	DART-6UL
CPU			
CPU Name	NXP i.MX7	NXP i.MX6 UltraLite / i.MX6 ULL / i.MX 6ULZ	NXP i.MX6 UltraLite / i.MX 6ULL / i.MX 6ULZ
CPU Type	Cortex™-A7	Cortex™-A7	Cortex™-A7
CPU Cores	2 Cores	1 Core	1 Core
CPU Clock (Max)	1GHz	900MHz	900MHz
Real-time co-processor	200MHz Cortex™-M4	-	-
Integer performance (DMIPS)	Up to 3,800	Up to 1,710	Up to 1,710
Pin Compatible			
Pin2Pin Family	-	VAR-SOM Pin2Pin Family	-
Memory			
RAM	256 – 2048 MB DDR3L	128 – 1024 MB DDR3L	128 – 1024 MB DDR3L
Flash	Up to 512 MB NAND / 128 GB eMMC	Up to 512 MB NAND / 128 GB eMMC	Up to 512 MB NAND / 128 GB eMMC
Multimedia			
GPU	2D pixel acceleration engine (PxP)	2D pixel acceleration engine (PxP)	2D pixel acceleration engine (PxP)
Video Acceleration	-	-	-
AI/ML	-	-	-
Camera Interfaces	1x CSI, 1x CPI	1x CPI	1x CPI
HDMI in	-	24bit	-
Display			
HDMI	-	-	-
RGB	1920x1080 24-bit	1366 x 768 24-bit	1366x768 24-bit
DSI	1400x1050 24-bit	-	-
LVDS	-	1366 x 768 18-bit	-
Touch controller	Resistive, Capacitive	Resistive, Capacitive	Resistive, Capacitive
Other	EPDC	-	-
Audio			
Headphone driver	Yes	Yes	Yes
Microphone	Analog	Analog	Analog
Digital audio	SAI/MQS(AUDMUX)	SSI(AUDMUX), S/PDIF	SSI(AUDMUX), S/PDIF
Line In/Out	Yes	Yes	Yes
Networking			
Ethernet	2x 10/100/1000 Mbps	2x 10/100 Mbps	2x 10/100 Mbps
Wi-Fi	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE5.2	BT/BLE5.2	BT/BLE5.2
Connectivity			
SD / MMC	x1	x1	x1
USB Host / Device	USB 2.0: 1x Host, 1x OTG	USB 2.0: 1x Host, 1x OTG	USB 2.0: 1x Host, 1x OTG
UART	x7, up to 4 Mbps	x8, up to 5 Mbps	x8, up to 5 Mbps
I2C	x4	x4	x4
SPI	x4	x4	x4
RTC	On carrier	On carrier	On carrier
PCI-Express	Gen 2.0	-	-
S-ATA	-	-	-
CAN Bus	x2	x2	x2
OS Support			
Operation system	Linux	Linux	Linux
Mechanical Specs.			
Dimensions (WxL)	67.8 x 38.6 mm	67.6 x 33.0 mm	50.0 x 25.0 mm
Connector type	204 pin SO-DIMM connector	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family	2x 90pin board-to-board connectors
Electronic Specs.			
Supply voltage	3.3 V	3.3 V	3.3 V
Digital I/O voltage	3.3 V	3.3 V	3.3 V
Temperature Grades			
Commercial temperature	0 to 70°C	0 to 70°C	0 to 70°C
Extended temperature	-	-	-
Industrial temperature	-20 to 85°C	-40 to 85°C	-40 to 85°C

	SPEAR-MX8	VAR-SOM-MX8	VAR-SOM-MX8X
CPU			
CPU Name	NXP i.MX 8QuadMax / 8QuadPlus	NXP i.MX 8QuadMax / 8QuadPlus	NXP i.MX 8QuadXPlus / 8DualXPlus / 8DualX
CPU Type	2x Cortex™-A72 + 4x Cortex™-A53	2x Cortex™-A72 + 4x Cortex™-A53	4x Cortex™-A35
CPU Cores	5-6 Cores	5-6 Cores	2-4 Cores
CPU Clock (Max)	1.6GHz Cortex™-A72, 1.2GHz Cortex™-A53	1.6GHz Cortex™-A72, 1.2GHz Cortex™-A53	1.2GHz Cortex™-A35
Real-time co-processor	2x 266MHz Cortex™-M4F	2x 266MHz Cortex™-M4F	264MHz Cortex™-M4F
Integer performance (DMIPS)	Up to 28,650	Up to 28,650	Up to 8,540
Pin Compatible			
Pin2Pin Family	-	VAR-SOM Pin2Pin Family	VAR-SOM Pin2Pin Family
Memory			
RAM	2 – 8 GB LPDDR4	2 – 8 GB LPDDR4	1 – 4 GB LPDDR4
Flash	4 – 128 GB eMMC	4 – 128 GB eMMC	4 – 128 GB eMMC
Multimedia			
GPU	Vivante GC7000VX	Vivante GC7000VX	Vivante GC7000Lite
Video Acceleration	4K H.265/H.264 Decode, 1080p60 h.264 Encode	4K H.265/H.264 Decode, 1080p60 H.264 Encode	Up to 4Kp30 H.265* or 4Kp30 H.264 Decode; 1080p30 H.264 Encode
Camera Interfaces	2x MIPI-CSI2	2x MIPI-CSI2	1x MIPI-CSI2, 1x parallel CSI
HDMI in	1x HDMI 1.4	-	-
Display			
HDMI	V2.0a up to 4Kp60	V2.0a up to 4Kp60	-
RGB	-	-	24-bit parallel LCD up to 720p60
DSI	MIPI-DSI 1920x1080 24-bit	MIPI-DSI 1920x1080 24-bit	MIPI-DSI 1920x1200 24-bit
LVDS	Dual 1920x1080 24-bit	Dual 1920x1080 24-bit	Dual 1920x1080 24-bit
Touch controller	Resistive, Capacitive	Resistive, Capacitive	Resistive, Capacitive
Other	eDP1.4/DP1.3 up to 4Kp60	eDP1.4/DP1.3 up to 4Kp60	-
Audio			
Headphone driver	Yes	Yes	Yes
Microphone	Digital, Analog (stereo)	Digital, Analog (stereo)	Digital, Analog (stereo)
Digital audio	I2S(SAI), S/PDIF	I2S(SAI)	ESAI, 4x I2S(SAI), S/PDIF
Line In/Out	Yes	Yes	Yes
Networking			
Ethernet	10/100/1000 Mbps + 10/100/1000 RGMII	10/100/1000 Mbps + 10/100/1000 RGMII	10/100/1000 Mbps + 10/100/1000 RGMII
Wi-Fi	Certified dual-band 802.11 ac/a/b/g/n	Certified dual-band 802.11 ac/a/b/g/n	Certified dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE5.2	BT/BLE5.2	BT/BLE5.2
Connectivity			
SD / MMC	x1	x1	x1
USB Host / Device	USB 3.0: 1x OTG, USB 2.0: 1x OTG, 1x Host plus HSIC port	USB 3.0/2.0: 1x OTG, USB 2.0: 1x Host	USB 3.0/2.0: 1x OTG, USB 2.0: 1x Host/Device
UART	x5, up to 4 Mbps	x5, up to 4 Mbps	x6, up to 4 Mbps
I2C	x4	x4	x6
SPI	x4	x4	x4
RTC	On carrier	On carrier	On carrier
PCI-Express	2x Gen 3.0	Gen 3.0	Gen 3.0
S-ATA	S-ATA 3	-	-
CAN Bus	x3	x2	x3
OS Support			
Operation system	Linux, Android, FreeRTOS	Linux, Android, FreeRTOS	Linux, Android, FreeRTOS
Mechanical Specs.			
Dimensions (WxL)	68.0 x 55.0 mm	67.6 x 51.6 mm	67.6 x 51.6 mm
Connector type	4 x 90pin board-to-board connectors	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family
Electronic Specs.			
Supply voltage	3.4V-4.5V	3.3 V	3.3 V
Digital I/O voltage	3.3 V	3.3 V	3.3 V
Temperature Grades			
Commercial temperature	-	-	-
Extended temperature	-25 to 85°C	-25 to 85°C	-25 to 85°C
Industrial temperature	-40 to 85°C	-40 to 85°C	-40 to 85°C

	VAR-SOM-MX6	VAR-SOM-SOLO/DUAL
CPU		
CPU Name	NXP i.MX6	NXP i.MX6
CPU Type	Cortex™-A9 MPCore™	Cortex™-A9 MPCore™
CPU Cores	1-4 Cores	1-2 Cores
CPU Clock (Max)	1.2GHz	1GHz
Real-time co-processor	-	-
Integer performance (DMIPS)	Up to 12,000	Up to 5,000
Pin Compatible		
Pin2Pin Family	VAR-SOM Pin2Pin Family	VAR-SOM Pin2Pin Family
Memory		
RAM	256 – 4096 MB DDR3	256 – 1024 MB DDR3
Flash	Up to 512 MB NAND / 128 GB eMMC	Up to 512 MB NAND / 128 GB eMMC
Multimedia		
GPU	Vivante™ GC2000	Vivante™ GC880+GC320
Video Acceleration	1080p60 H.264 Decode, 1080p30 H.264 Encode	1080p30 H.264 Decode 1080p30 H.264 Encode
Camera Interfaces	1x CSI, 1x CPI	1x CSI, 1x CPI
HDMI in	-	-
Display		
HDMI	V1.4 1920x1080	V1.4 1920x1080
RGB	-	-
DSI	1280x720 24-bit	1280x720 24-bit
LVDS	Dual 1920x1200 24-bit	Dual 1366x768 24-bit
Touch controller	Resistive, Capacitive	Resistive, Capacitive
Other	-	-
Audio		
Headphone driver	Yes	Yes
Microphone	Digital	Digital
Digital audio	S/PDIF	S/PDIF
Line In/Out	Yes	Yes
Networking		
Ethernet	10/100/1000 Mbps	10/100/1000 Mbps
Wi-Fi	Wi-Fi 802.11 b/g/n or Wi-Fi 802.11 a/b/g/n with MIMO	Wi-Fi 802.11 b/g/n or Wi-Fi 802.11 a/b/g/n with MIMO
Bluetooth	BT/BLE5.1 + CSA2 support	BT/BLE5.1 + CSA2 support
Connectivity		
SD / MMC	x1	x1
USB Host / Device	USB 2.0: 1x Host, 1x OTG	USB 2.0: 1x Host, 1x OTG
UART	x5, up to 5 Mbps	x5, up to 5 Mbps
I2C	x3	x3
SPI	x3	x3
RTC	On carrier	On carrier
PCI-Express	Gen 2.0	Gen 2.0
S-ATA	SATA 2	-
CAN Bus	x2	x2
Extrenal Bus	EIM	-
OS Support		
Operation system	Linux, Android	Linux, Android
Mechanical Specs.		
Dimensions (WxL)	67.8 x 51.5 mm	67.8 x 33.0 mm
Connector type	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family	SO-DIMM200 edge connector. Belongs to VAR-SOM Pin2Pin family
Electronic Specs.		
Supply voltage	3.3 V	3.3 V
Digital I/O voltage	3.3 V	3.3 V
Temperature Grades		
Commercial temperature	0 to 70°C	0 to 70°C
Extended temperature	-20 to 70°C	-20 to 70°C
Industrial temperature	-40 to 85°C	-40 to 85°C

VAR-SOM-MX93



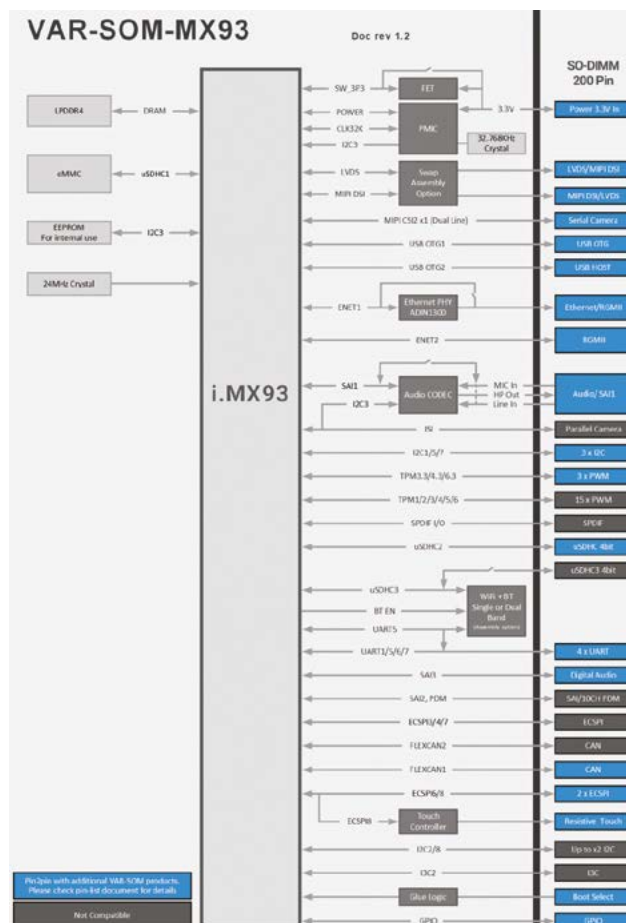
Energy-efficient SoM with integrated Machine Learning capabilities

The VAR-SOM-MX93 System on Module runs on a 1.7GHz Dual Cortex™-A55 NXP iMX93 processor and 250MHz Cortex-M33 real-time processor. It offers a dedicated NPU 0.5 TOPS, built-in security features and energy flex architecture. The Som is pin compatible with the VAR-SOM Pin2Pin family. It provides audio in/out, camera inputs, certified dual-band Wi-Fi, BT/BLE, 2x USB, and several display outputs along with a dual CAN bus, dual GbE, and industrial temperature grade.

Key features include:

- Size: 67.8 x 33mm
- AI/ML acceleration 0.5 TOPS
- 2x 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- 2x USB2.0, 2x GbE
- 2D pixel acceleration engine (PxP)
- Up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX93
Processor core	Dual Cortex™-A53
MPU speed (MHz)	250
MIPS	Up to 9,010
2D/3D graphic accelerator	2D pixel acceleration engine (PxP)
Video acceleration (encoding/decoding)	-
RAM	Up to 2GB LPDDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	-
Display interfaces	LVDS, DSI, Parallel RGB
SD/MMC	1
USB 2.0/3.0 Host	-
USB 2.0/3.0 OTG	2
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE5.2
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	3 x I2S(SAI), S/PDIF, RX TX, PDM 4CH
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	MIPI-CSI2, ISI (Parallel)
PCI-E	-
Serial UART ports	4
Other interfaces	SD/MMC, UART, I2C, SPI, PWM, GPIO, JTAG, timers, ADC
OS Support	
Feature	Details
Linux	Supported
Android	-
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.3V or 3.4-5V
Digital I/O voltage	3.3V/1.8V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 33mm

VAR-SOM-AM62



Cost-effective SoM with high-performance CPU and reduced power consumption

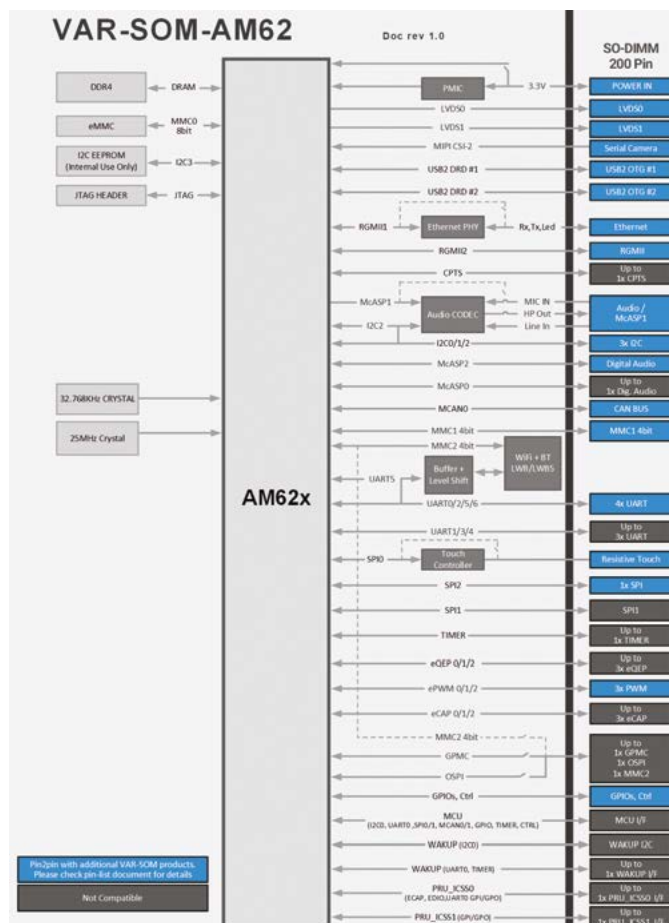
Powered by 1.4GHz Quad Cortex™-A53 TI AM625x with 400MHz Cortex-M4F and 333MHz PRU real-time co-processors, the SoM provides an ideal solution for industrial embedded products and power-sensitive edge devices.

This platform offers wide connectivity options: certified single or dual-band WiFi, BT/BLE5.2, 3x CAN Bus, dual GbE, audio, camera in and dual USB.

Key features include:

- Size: 67.8 x 33mm
- 400MHz Cortex-M4F and 333MHz PRU
- 2x 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- 2x USB2.0, 2x GbE
- Imagination AXE-1-16M
- Up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	Texas Instruments AM62x
Processor core	Up to Quad Cortex™-A53
MPU speed (MHz)	400
MIPS	Up to 12,880
2D/3D graphic accelerator	Imagination AXE-1-16M
Video acceleration (encoding/decoding)	-
RAM	Up to 4GB DDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	-
Display interfaces	Dual LVDS display
SD/MMC	1
USB 2.0/3.0 Host	-
USB 2.0/3.0 OTG	2
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	Certified single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	BT/BLE 5.2
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	3 x I2S(McASP)
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	MIPI CSI2
PCI-E	-
Serial UART ports	9
Other interfaces	SD/MMC, UART, I2C, SPI, eQSPI, ePWM, GPIO, JTAG, eCAP, CAN-FD
OS Support	
Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 33.0 mm

VAR-SOM-MX8M-PLUS



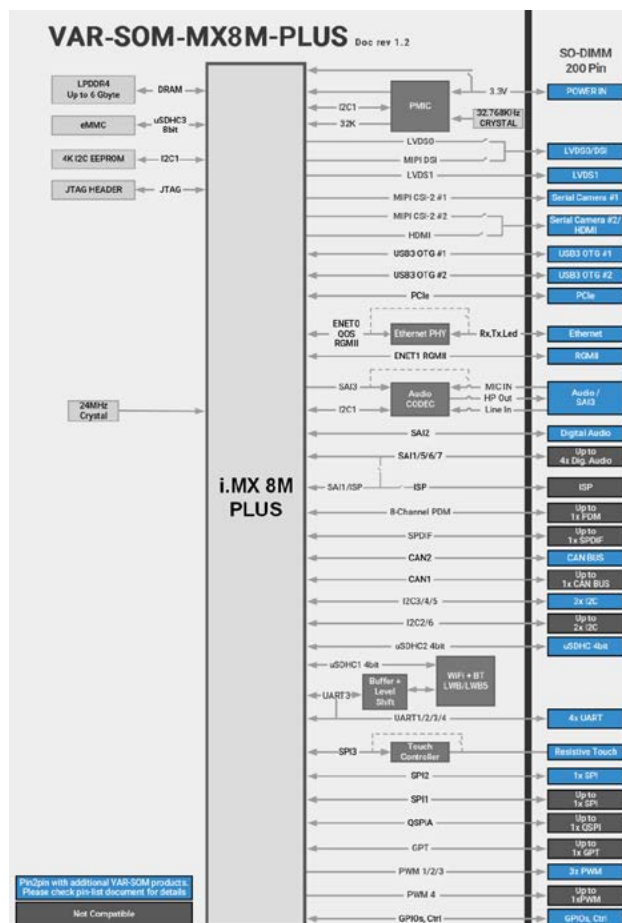
The new generation of
System on Module with
dedicated AI/ML capabilities

The VAR-SOM-MX8M-PLUS System on Module is based on a 1.8GHz Quad Cortex™-A53 NXP's iMX8M Plus processor with 800MHz Cortex™-M7 Real-time co-processor. A new generation of processors that combine integrated Artificial Intelligence (AI) / Machine Learning (ML) capabilities with advanced multimedia features. The SoM includes a dedicated Neural Processing Unit (NPU), an intelligent vision system based on an Image Signal Processor (ISP) and dual camera inputs, as well as advanced multimedia and connectivity features.

Key features include:

- Size: 67.8 x 33.0mm
- 1080p H265/H264 encode/decode, AI/ML acceleration, HD 2D/3D GPU
- 2x 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- AI/ML NPU acceleration 2.3 TOPS
- GC7000UL/ GC520L
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX8M Plus
Processor core	Quad-core Cortex™-A53
Real-time co-processor	800MHz Cortex-M7
MIPS	Up to 16,560
2D/3D graphic accelerator	GC7000UL/ GC520L
Video acceleration (encoding/decoding)	1080p60 H.265/ H.264/ VP9/ VP8 Decoder, 1080p60 H.265/ H.264 Encoder
RAM	Up to 8GB LPDDR4
Storage	Up to 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	Up to 4K
Display interfaces	Dual LVDS display, HDMI, DSI
SD/MMC	1
USB 2.0/3.0 Host	-
USB 2.0/3.0 OTG	2
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF RX TX, PDM 8CH
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	2x MIPI CSI2
PCI-E	Gen 3.0
Serial UART ports	4
Other interfaces	SD/MMC, UART, I2C, SPI, QSPI, PWM, GPIO, JTAG, timers

OS Support

Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported

Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 33.0 mm

DART-MX8M-PLUS



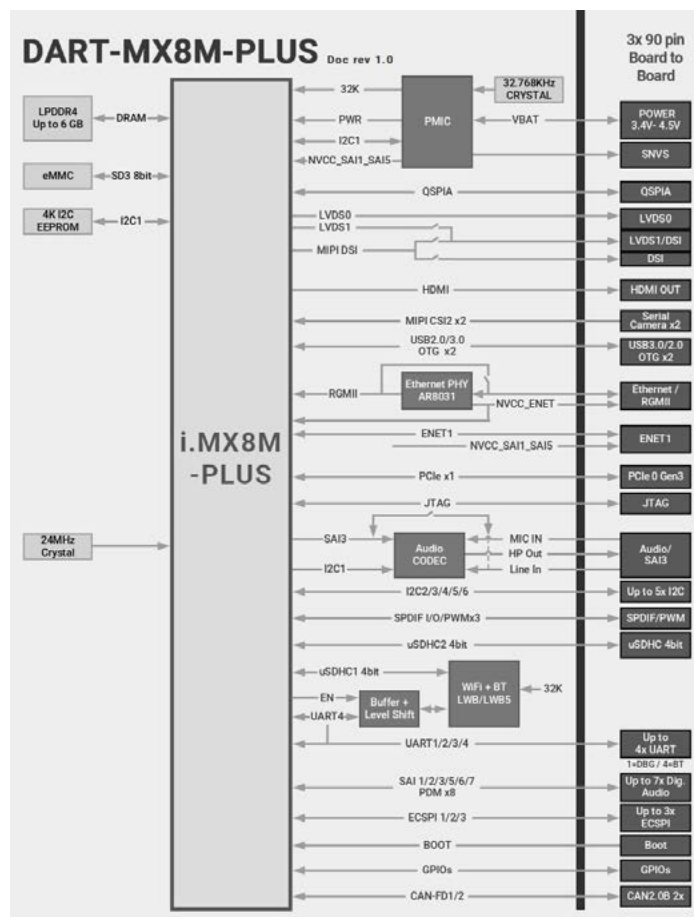
The future of smart embedded systems with AI/ML capabilities

The DART-MX8M-PLUS is based on a 1.8GHz Quad Cortex™-A53 NXP i.MX 8M Plus processor with 800MHz Cortex™-M7 Real-time co-processor. This is the first i.MX processor with an Artificial Intelligence and Machine Learning accelerators, featuring an integrated Neural Processing Unit (NPU) and an intelligent vision processing system based on Image Signal Processor (ISP) and camera interfaces. The SoM includes advanced multimedia features ,such as: H.265/264 HD video encode and decode engines, advanced 2D/3D graphic acceleration, HDMI, LVDS, MIPI-DSI display, 2x CAN-FD, and dual cameras inputs.

Key features include:

- Size: 55.0 x 30.0mm
- 1080p H265/H264 encode/decode, AI/ML acceleration, HD 2D/3D GPU
- 2x 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- GC7000UL/ GC520L
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- DART Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX8M Plus
Processor core	Quad-core Cortex™-A53
Real-time co-processor	800MHz Cortex™-M7
MIPS	Up to 16,560
2D/3D graphic accelerator	GC7000UL/ GC520L
Video acceleration (encoding/decoding)	1080p60 H.265 / H.264 VP9 / VP8 Decode, 1080p60 H.265 / H.264 Encode
RAM	Up to 8GB LPDDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	Up to 4K
Display interfaces	Dual LVDS display, HDMI, DSI
SD/MMC	1
USB 2.0 Host	-
USB 3.0/2.0 OTG	2
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, Line-in
Microphone	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF RX TX, PDM 8CH
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	2x MIPI CSI2
S-ATA	-
PCI-E	Gen 3.0
Serial UART ports	4
Other interfaces	I2C, QSPI/SPI, PWM, JTAG, UART, SD/MMC, GPIO, timers
OS Support	
Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.4V- 5V
Digital I/O voltage	3.3V/1.8V
SoM Interface	3 x 90pin board to board connectors
Dimensions (W x L)	55.0 x 30.0 mm

VAR-SOM-MX8M-MINI



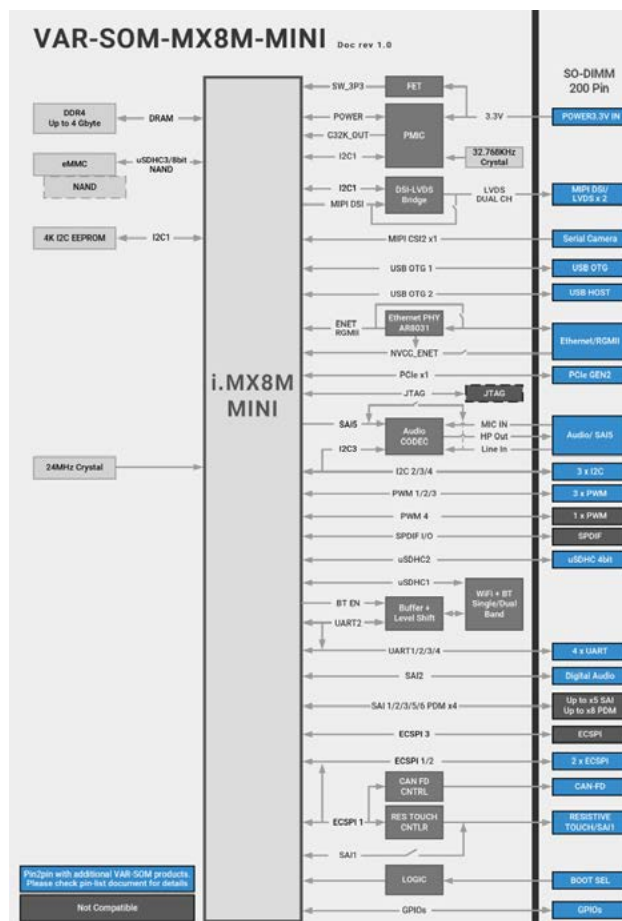
Low-power and cost-optimized solution with ultimate scalability

The VAR-SOM-MX8M-MINI Based on NXP's i.MX 8M Mini with up to 1.8GHz Quad-core ARM Cortex-A53 plus 400MHz Cortex-M4 real-time processor and up to 4 GB DDR4. The VAR-SOM-MX8M-MINI offers a low-power and cost-optimized solution with ultimate scalability options to suit a wide range of applications and cost requirements. This popular platform supports a variety of interfaces including certified single band 802.11b/g/n as well as dual-band 802.11ac/a/b/g/n option, 4.2 BT/BLE, Gigabit Ethernet, CAN bus, dual USB2.0 and LVDS. Additionally, the SoM provides an integrated HW engines supporting 1080p video encoding/decoding, 2D and 3D GPU, HQ audio all in a full industrial range of -40 to 85°C.

Key features include:

- Size: 67.8 x 33.0mm
- 1080p60 encode, decode and display, HQ audio, HD GPU
- 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- Vivante GC320/GC Nano
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX8M Mini
Processor core	Quad-core Cortex™-A53
Real-time co-processor	400MHz Cortex™-M4
MIPS	Up to 16,560
2D/3D graphic accelerator	Vivante GC328/GC Nano
Video acceleration (encoding/decoding)	1080p60 H.265/H.264/VP9 Decode, 1080p60 H.264/VP8 Encode
RAM	Up to 4GB DDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	24bits LVDS, HDMI: 1080p
Display interfaces	DSI, dual LVDS
SD/MMC	1
USB 2.0/3.0 Host	-
USB 2.0 OTG	2
Ethernet	10/100/1000 Mbps
Wi-Fi	Single band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF, PDM 4CH
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	MIPI-CSI2
PCI-E	Gen 2.0
Serial UART ports	4
Other interfaces	CAN Bus, I2C, QSPI, SPI, PWM, JTAG, UART, SD/MMC, GPIO, timers
OS Support	
Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 33.0 mm

DART-MX8M-MINI



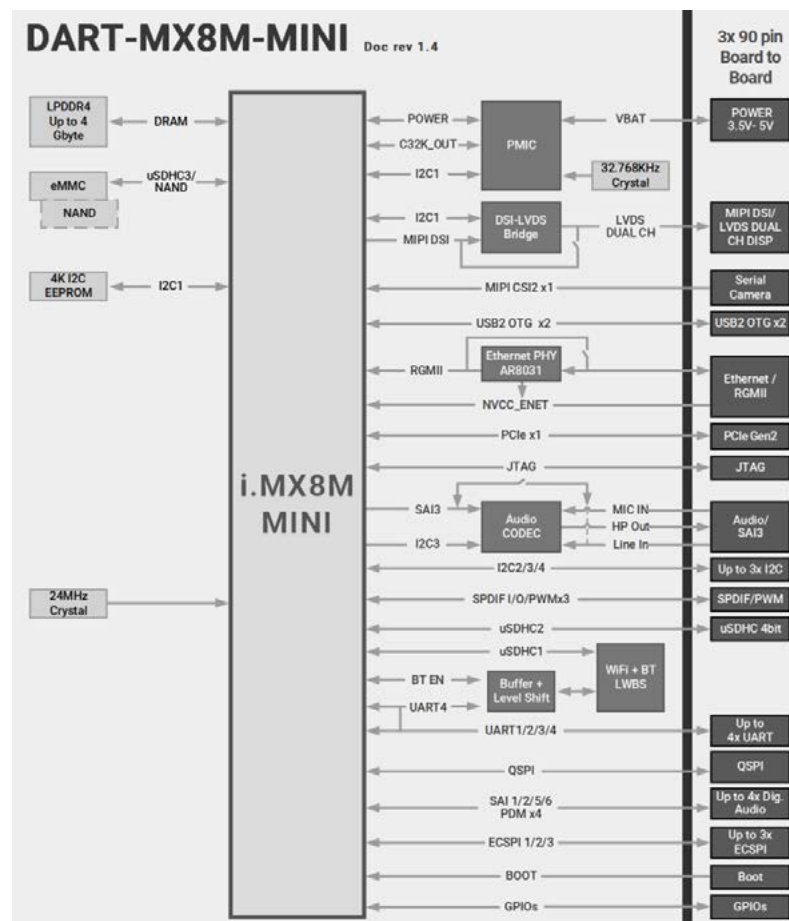
Cost-optimized System on Module

The DART-MX8M-MINI, 55 x 30mm, System on Module powered by NXP's i.MX8M Mini with up to 1.8GHz Quad-core ARM Cortex-A53 plus 400MHz Cortex-M4 real-time processor. Leveraging advanced low power silicon process technology to provide optimized power consumption while maintaining a high-performance bar. The SoM offers integrated 1080p video encode and decode acceleration support, 2D and 3D graphics, HQ audio and a wide range of connectivity options such as certified Wi-Fi/BT, Ethernet and USB.

Key features include:

- Size: 55.0 x 30.0mm
- 1080p60 encode, decode and display, HQ audio, HD GPU
- 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- Vivante GC320/GC Nano
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- DART Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX8M Mini
Processor core	Quad-core Cortex™-A53
Real-time co-processor	400MHz Cortex™-M4
MIPS	Up to 16,560
2D/3D graphic accelerator	Vivante GC328/GC Nano
Video acceleration (encoding/decoding)	1080p60 H.265/H.264/VP9 Decode, 1080p60 H.264/VP8 Encode
RAM	1 – 4 GB LPDDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	24 bit LVDS, HDMI: 1080p
Display interfaces	DSI, LVDS
SD/MMC	1
USB 2.0 Host	-
USB 2.0 OTG	2
Ethernet	10/100/1000 Mbps
Wi-Fi	802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, Line-in
Microphone	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF, PDM
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	MIPI-CSI2
S-ATA	-
PCI-E	Gen 2.0
Serial UART ports	4
Other interfaces	I2C, QSPI, SPI, PWM, JTAG, UART, SD/MMC, GPIO, timers
OS Support	
Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.5 – 5 V
Digital I/O voltage	3.3V/1.8V
SoM Interface	3 x 90pin board to board connectors
Dimensions (W x L)	55.0 x 30.0 mm

VAR-SOM-MX8M-NANO



Cost-optimized System on Module

The VAR-SOM-MX8M-NANO is a cost-optimized System on Module based on NXP's i.MX 8M Nano, 1.5GHz Quad-core Cortex-A53 plus 650MHz Cortex-M7.

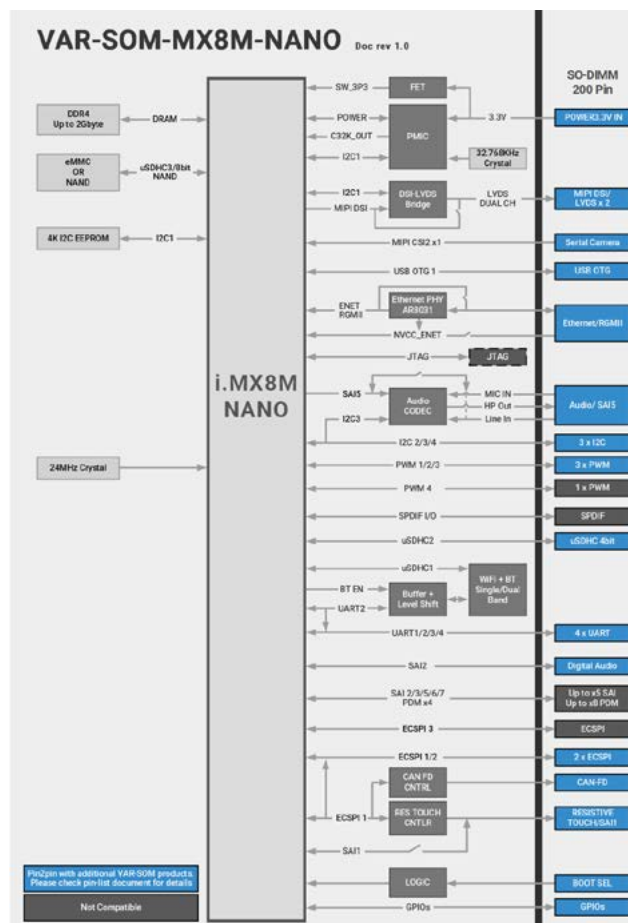
The SoM offers an ideal solution for cost-sensitive designs that require power-efficiency and high-performance graphics as well as for general-purpose applications.

This popular platform supports a variety of interfaces including certified single-band 802.11b/g/n as well as dual-band 802.11ac/a/b/g/n option, 4.2 BT/BLE, Gigabit Ethernet, CAN/CAN-FD, USB2.0 and LVDS.

Key features include:

- Size: 67.8 x 33.0mm
- 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- GC7000Lite High Performance 2D/3D GPU
- 2GB RAM, 512MB NAND, 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX8M Nano
Processor core	Quad-core Cortex™-A53
Real-time co-processor	650MHz Cortex™-M7
MIPS	Up to 13,800
2D/3D graphic accelerator	Vivante GC7000UL
Video acceleration (encoding/decoding)	-
RAM	512MB – 2GB DDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	24bits LVDS HDMI: 1080p
Display interfaces	DSI, dual Flatlink LVDS
SD/MMC	1
USB 2.0/3.0 Host	-
USB 2.0 OTG	1
Ethernet	10/100/1000 Mbps
Wi-Fi	Single band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	5 x I2S(SAI), S/PDIF, PDM 8CH
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	MIPI-CSI2
Serial UART ports	4
Other interfaces	CAN/CAN-FD, I2C, SPI, PWM, JTAG, UART, SD/MMC, GPIO, timers
OS Support	
Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 33.0 mm

VAR-SOM-MX8X



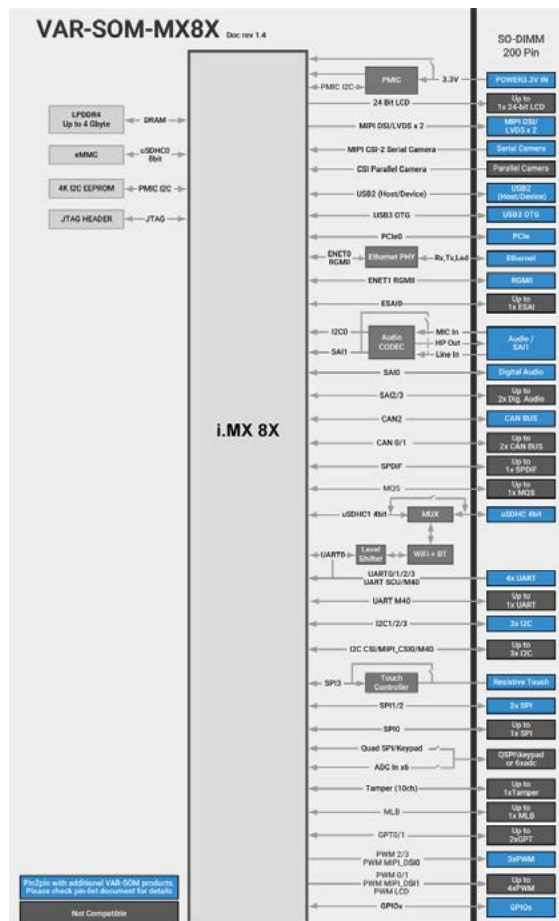
**Maximized safety and reliability
in a power-optimized design**

The VAR-SOM-MX8X supports NXP's i.MX 8X Quad 1.2GHz Cortex™-A35 processor plus Cortex-M4F realtime co-processor and offers built-in safety features, highly integrated multimedia support and efficient power/performance architecture. This highly integrated SoM is designed to support a wide range of high-reliability, power-efficient applications, from industrial automation & control to defense, medical, telematics, building control, failover displays/HMI and robotics. The SoM multimedia features and interfaces options include Vivante GC7000Lite GPU for 2D and 3D graphics acceleration, 4K H.265 Decode, 1080p H.264 Encode/Decode, Camera Interfaces, DSI / LVDS, Parallel LCD, dual GbE, certified Wi-Fi/BT, CAN/CAN-FD, USB3 and serial interfaces.

Key features include:

- Size: 67.6 x 51.6mm
- 4 x 1.2GHz ARM Cortex™-A35
- 4K H.265 Decode, 1080p H.264 Encode/Decode
- 2x 10/100/1000 Mbps
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- GC7000Lite high performance GPU
- up to 4GB LPDDR4 memory, up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX 8X
Processor core	Quad Cortex™-A35
Real-time co-processor	266MHz Cortex™-M4F
MIPS	Up to 8,540
2D/3D graphic accelerator	Vivante GC7000Lite
Video acceleration (encoding/decoding)	Up to 4Kp30 H.265* or 4Kp30 H.264 Decode; 1080p30 H.264 Encode
RAM	1 – 4GB LPDDR4
Storage	Up to 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	24bits parallel RGB / 24bits LVDS, up to WUXGA (1920 x1200)
Display interfaces	DSI, dual LVDS display
SD/MMC	1
USB 2.0 Host	1
USB 2.0/3.0 OTG	1
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	ESAI, 4x I2S(SAI), S/PDIF
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	1x MIPI-CSI2, 1x parallel CSI 8/10-bit
S-ATA	-
PCI-E	Gen 3.0
Serial UART ports	6
Other interfaces	I2C, SPI, PWM, JTAG, UART, SD/MMC, GPIO, timers, keypad, QSPI

OS Support

Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported

Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.6 x 51.6 mm

VAR-SOM-MX8



Advanced processing power and high-end multimedia

The VAR-SOM-MX8 Based on NXP i.MX 8QuadMax, Dual 1.6GHz ARM Cortex-A72, Quad 1.2GHz Cortex-A53 and 2x 266MHz real-time Cortex-M4F co-processor.

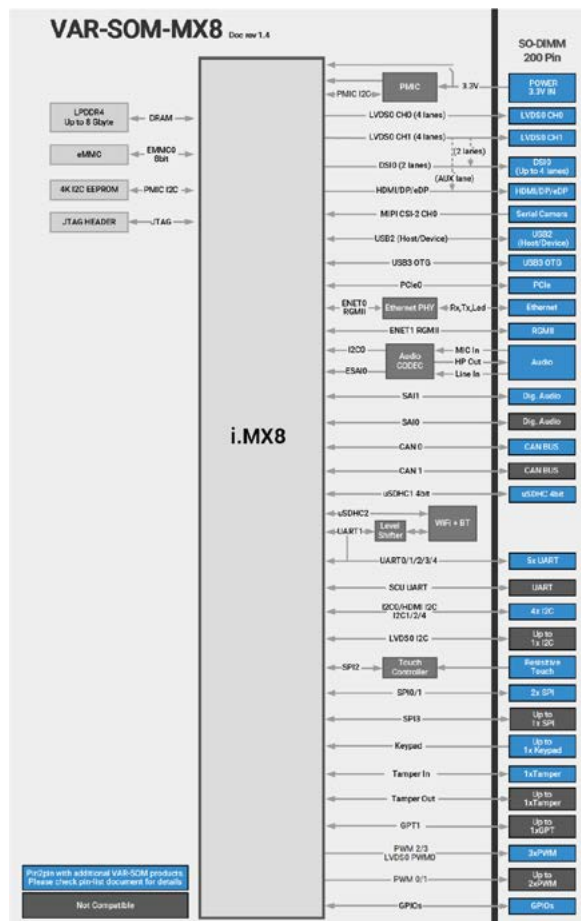
An impressive multimedia performance spec encompasses UltraHD 4K video and display support, high-quality audio, a high performance 2D/3D graphics acceleration and camera inputs.

The SoM includes a variety of interfaces and connectivity options: Certified dual-band Wi-Fi 802.11ac/a/b/g/n, BT/BLE, dual GbE, dual USB3, PCIe, CAN FD, SPI and UART.

Key features include:

- Size: 67.6 x 51.6mm
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- Vivante GC7000VX high performance GPU
- 10/100/1000 Mbps + 10/100/1000 RGMII
- DSI, dual LVDS display, HDMI / DP / eDP
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX 8QuadMax
Processor core	2x Cortex™-A72 + 4x Cortex™-A53
Real-time co-processor	2x 266MHz Cortex™-M4F
MIPS	Up to 28,650
2D/3D graphic accelerator	Vivante GC7000VX
Video acceleration (encoding/decoding)	4K H.265/H.264 Decode, 1080p60 H.264 Encode
RAM	2 – 8 GB LPDDR4
Storage	Up to 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	Up to 4K
Display interfaces	DSI, dual LVDS display, HDMI / DP / eDP
SD/MMC	1
USB 2.0/ Host	1
USB 2.0/3.0 OTG	1
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	I2S(SAI)
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On Carrier
Camera interface	2x MIPI CSI2
PCI-E	Gen 3.0
Serial UART ports	5
Other interfaces	CAN, I2C, SPI, PWM, JTAG, UART, SD/MMC, GPIO, timers

OS Support

Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported

Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.6 x 51.6 mm

SPEAR-MX8



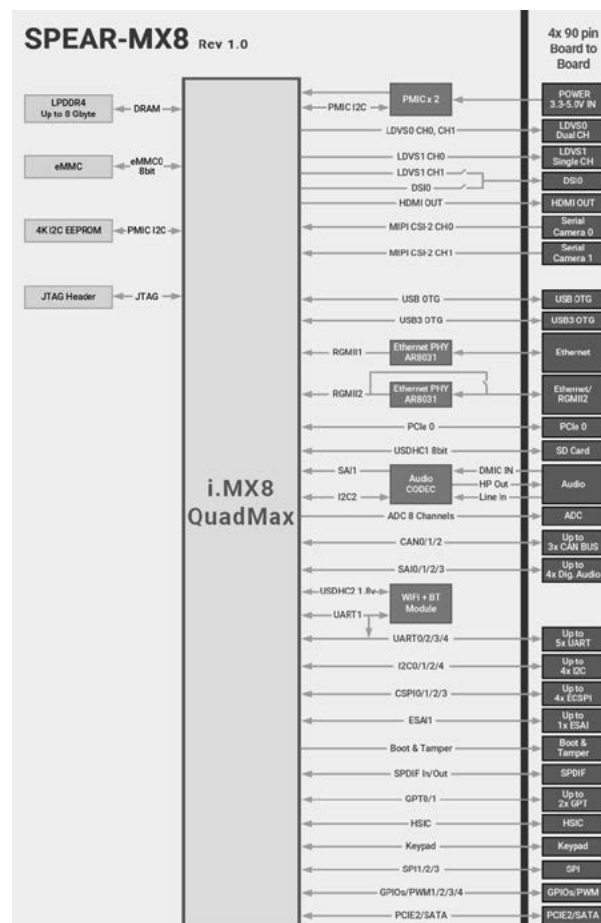
The SPEAR-MX8 Challenges the market's Multimedia Performance

The SPEAR-MX8, a highly scalable SoM, based on i.MX8QuadMax Dual 1.6GHz Cortex-A72, Quad 1.2GHz Cortex-A53 and 2x 266MHz Real-time Cortex-M4F co-processor. The SoM carries an impressive multimedia performance spec encompasses UltraHD 4K video and display support, high-quality audio, a high performance 2D/3D graphics acceleration and camera/HDMI inputs. An ideal solution for embedded products requiring advanced performance processing, high-end graphic, UltraHD video capabilities and a variety of highspeed interfaces and connectivity options.

Key features include:

- Vivante GC7000VX high performance GPU
- 4K video decode, FHD video encode
- UltraHD 4K Display: HDMI 2.0, LVDS, DSI, eDP
- 2 x Gigabit Ethernet
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- HDMI in, dual CSI, Audio in/out
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX 8QuadMax / 8QuadPlus
Processor core	up to 2x Cortex™-A72 + 4x Cortex™-A53
Real-time co-processor	2x 266MHz Cortex™-M4F
MIPS	Up to 28,650
2D/3D graphic accelerator	Vivante GC7000VX
Video acceleration (encoding/decoding)	4K H.265/H.264 Decode, 1080p60 h.264 Encode
RAM	Up to 8GB LPDDR4
Storage	Up to 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	Up to 4K
Display interfaces	eDP/DP, HDMI, MIPI-DSI, LVDS
SD/MMC	1
USB 2.0/3.0 Host	1 plus HSIC port
USB 2.0/3.0 OTG	2
Ethernet	2x 10/100/1000 Mbps
Wi-Fi	802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in
Microphone	Digital, Analog (stereo)
Digital audio	I2S(SAI), S/PDIF
Touch screen controller	4 wire resistive touch panel
RTC	On Carrier
Camera interface	2x MIPI-CSI2
HDMI in	1x HDMI 1.4
S-ATA	S-ATA 3
PCI-E	2x Gen 3.0
Serial UART ports	5
Other interfaces	4 x I2C, 4 x SPI, GPIOs, JTAG
OS Support	
Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.4 – 4.5 V
Digital I/O voltage	3.3 V
SoM Interface	4 x 90pin board to board connectors
Dimensions (W x L)	68.0 x 55.0 mm

DART-MX8M



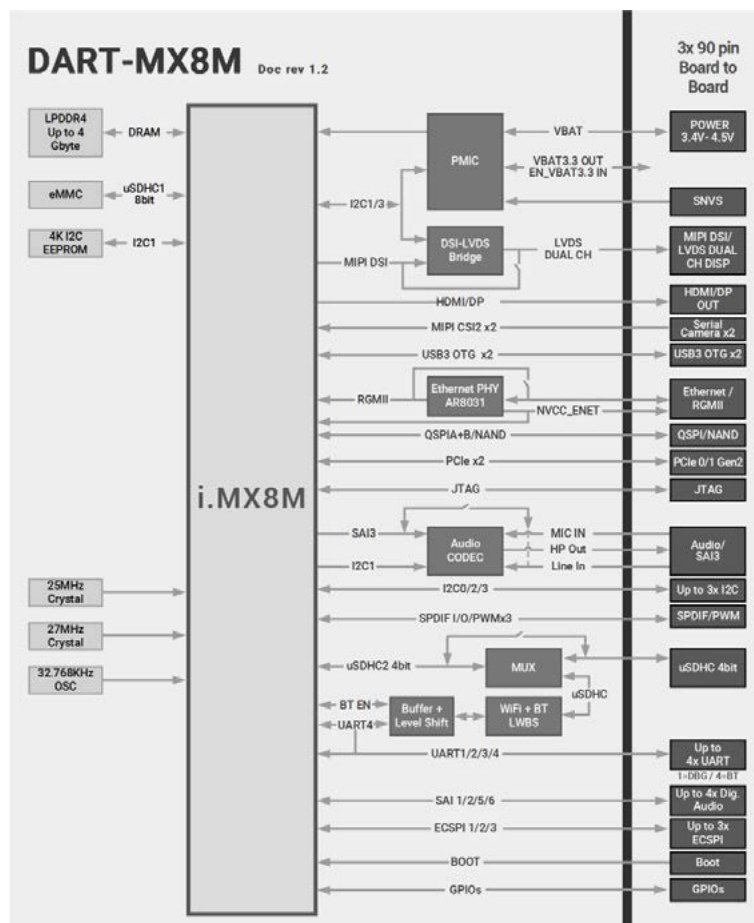
Miniature SoM with ultra-multimedia performance

The DART-MX8M, measuring only 55 x 30 mm, is based on NXP i.MX8M family and carries Quad 1.5GHz ARM Cortex-A53 plus 266MHz Cortex-M4. The SoM offers an ideal solution for embedded systems that require high-end multimedia applications in a small form factor, as well as portable and battery operated products, and provides a variety of interfaces and connectivity options alongside high multimedia performance spec including 4K video HEVC/H265/H264/VP9 decode with HDR, high-quality audio, 4K display support and 2D/3D graphics acceleration.

Key features include:

- Size: 55.0 x 30.0mm
- UltraHD 4K Display: HDMI 2.0, LVDS, DSI, eDP
- 4K video decode with HDR and HQ audio in/out
- Gigabit Ethernet and USB3
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- Vivante GC7000Lite 2D/3D accelerator
- up to 128GB eMMC
- -40 to 85°C Industrial temperature range
- DART Pin2Pin family

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX8M
Processor core	Dual/Quad-core Cortex™-A53
Real-time co-processor	266MHz Cortex™-M4
MIPS	Up to 13,800
2D/3D graphic accelerator	Vivante GC7000Lite
Video acceleration (encoding/decoding)	Up to 4K HEVC/H265, H264, VP9 Decode plus HDR
RAM	Up to 4GB LPDDR4
Storage	Up to 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	Up to 4K
Display interfaces	eDP/DP, HDMI, MIPI-DSI, LVDS
SD/MMC	1
USB 2.0/3.0 Host	-
USB 2.0/3.0 OTG	2
Ethernet	10/100/1000 Mbps
Wi-Fi	802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, Line-in
Microphone	Digital, Analog (stereo)
Digital audio	I2S(SAI), S/PDIF
Touch screen controller	4 wire resistive touch panel
RTC	On Carrier
Camera interface	2x MIPI-CSI
S-ATA	-
PCI-E	2x Gen 2.0
Serial UART ports	4
Other interfaces	3 x I2C, 3 x SPI, GPIOs, JTAG

OS Support

Feature	Details
Linux	Supported
Android	Supported
FreeRTOS	Supported

Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.4 – 4.5 V
Digital I/O voltage	3.3 V/1.8V
SoM Interface	3 x 90pin board to board connectors
Dimensions (W x L)	55.0 x 30.0 mm

VAR-SOM-6UL



Low power, optimized cost

The VAR-SOM-6UL is highly flexible System-on-Module (SoM) based on NXP i.MX 6UltraLite / i.MX 6ULL / i.MX 6ULZ ARM Cortex-A7 processor, up to 900MHz CPU Clock.

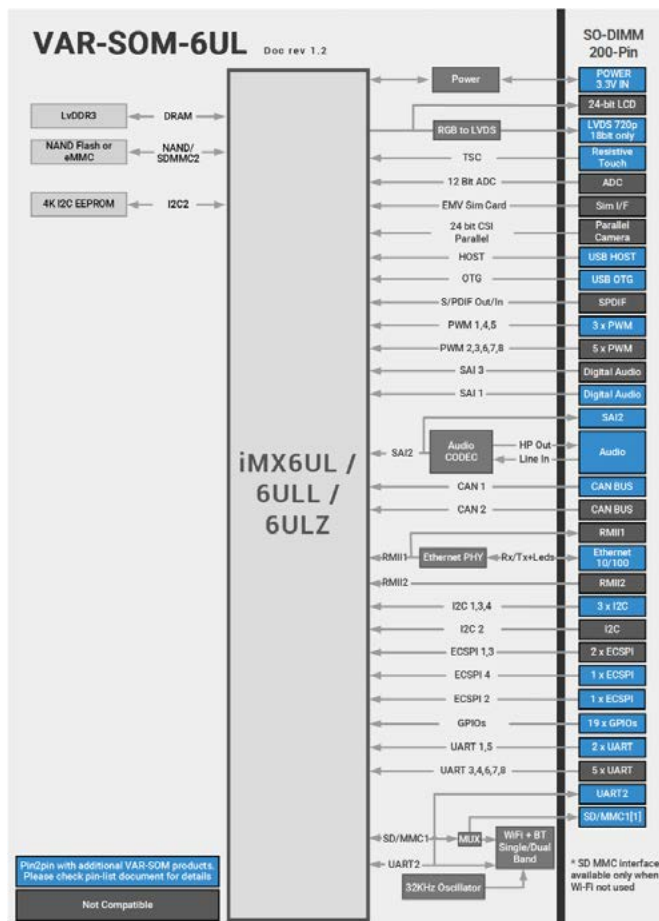
The VAR-SOM-6UL provides a variety of interfaces and connectivity options including certified single-band 802.11b/g/n or dual-band Wi-Fi 802.11ac/a/b/g/n, Bluetooth/BLE, dual Ethernet, dual USB, audio, camera in, parallel RGB and LVDS display with touch panel and serial interfaces.

The system supports industrial temperature grades -40 to 85°C and long longevity commitment targeting embedded products in various industrial segments and applications.

Key features include:

- Size: 67.6 x 33.0mm
- Up to 512MB DDR3L, 512MB NAND / 128GB eMMC
- 2D pixel acceleration engine (PxP)
- 2x 10/100Mbps Ethernet
- Built-in Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- Integrated security features
- -40 to 85°C Industrial temperature range
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX6 UltraLite / i.MX 6ULL / i.MX 6ULZ
Processor core	Single-core ARM Cortex-A7
Real-time co-processor	900MHz
MIPS	Up to 1,710
2D/3D graphic accelerator	2D pixel acceleration engine (PxP)
Video acceleration (encoding/decoding)	-
RAM	128 – 512 MB DDR3L (OPT:1024MB)
Storage	Up to 512MB NAND or 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	24bits parallel RGB / 18bits LVDS up to WXGA (1366 x 768)
Display interfaces	RGB
SD/MMC	1
USB 2.0 Host	1
USB 2.0 OTG	1
Ethernet	10/1000 Mbps + 10/100/1000 RGMII
Wi-Fi	single-band 802.11 b/g/n or dual-band 802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-in, ESAI
Microphone	Analog (Stereo)
Digital audio	SSI(AUDMUX), S/PDIF
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	On carrier
Camera interface	Parallel input
S-ATA	-
PCI-E	-
Serial UART ports	8
Other interfaces	Dual CAN, I2C, SPI, PWM, JTAG, UART, SD/MMC
OS Support	
Feature	Details
Linux	Supported
Android	-
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage 1.8 V	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.6 x 33.0 mm

DART-6UL



Optimizing Power, Size and Cost

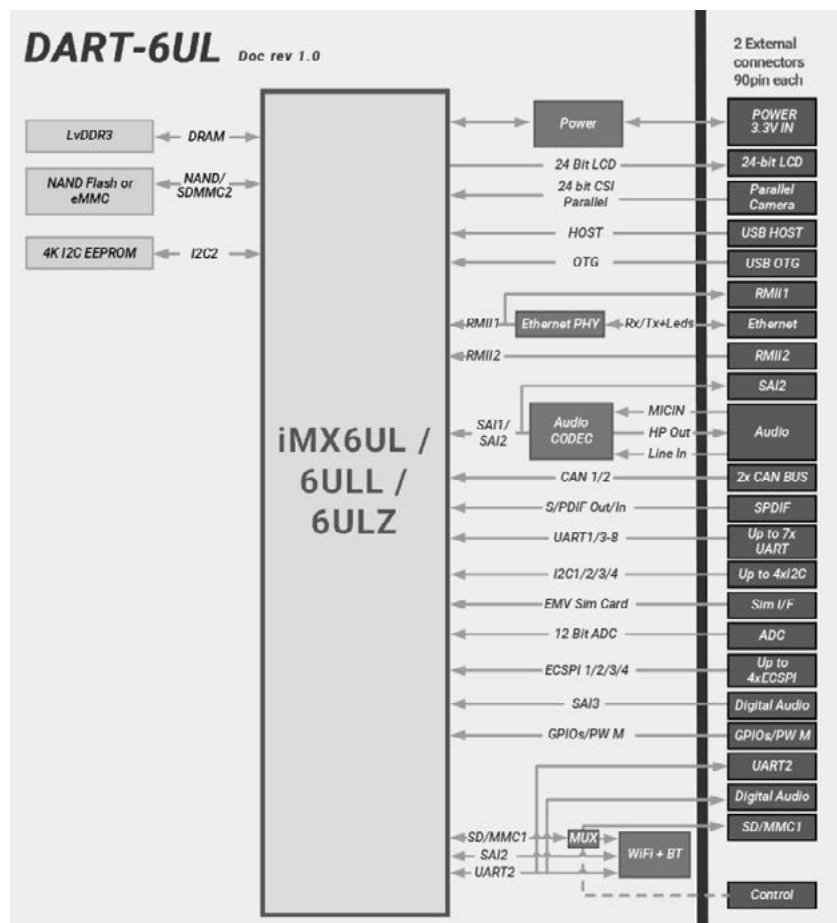
The DART-6UL, measuring only 55 x 25mm, is a highly flexible System-on-Module (SoM) based on NXP's i.MX 6UltraLite / 6ULL family and carries up to 900MHz ARM Cortex-A7 processor.

A versatile platform, the DART-6UL provides a variety of interfaces and connectivity options – all packaged at an optimized power, size and cost. This superior price / performance offering is ideal for fast emerging applications such as Internet-of-Things (IoT), as well as other portable and battery operated embedded systems.

Key features include:

- NXP i.MX 6UltraLite / 6ULL up to 900MHz ARM Cortex-A7 with optional security features
- Up to 512MB DDR3L and 512MB NAND / 128GB eMMC
- Certified Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- Dual 10/100Mbps Ethernet
- Dual USB
- Small size: 55 x 25mm
- Low power consumption

Block Diagram



Specifications

Core	
Feature	Details
Processor	NXP i.MX6 UltraLite / i.MX 6ULL / i.MX 6ULZ
Processor core	Single-core ARM Cortex-A7
Real-time co-processor	900MHz
MIPS	Up to 1,320
2D/3D graphic accelerator	PxP 2D Pixel acceleration engine
Video acceleration (encoding/decoding)	Software decode/encode
RAM	128 - 512MB DDR3L
Storage	Up to 512MB SLC NAND or 128GB eMMC
Peripherals	
Feature	Details
Display controller resolution	LCD: WXGA (1366 x 768), 24-bit
Display interfaces	RGB (no ULZ)
SD/MMC	1
USB 2.0 host	1
USB OTG	1
Ethernet	2 x 10/100Mbps (no ULZ)
Wi-Fi	802.11 ac/a/b/g/n (no ULZ)
Bluetooth	5.2 / BLE
Audio	Headphone out, line-In, ESAI
Microphone	Analog (Stereo)
Digital audio	SSI(AUDMUX)/S/PDIF
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	on Carrier
Camera interface	Parallel (no ULZ)
Local bus	-
S-ATA	-
PCI-E	-
Serial UART ports	7
Other interfaces	Dual CAN, I2C, SPI, PWM, JTAG, ADC
OS Support	
Feature	Details
Linux	Supported
Android	-
Mechanical & Electronic Specifications	
Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	2 x 90pin board-to-board
Dimensions (W x L)	50.0 x 25.0 mm

VAR-SOM-MX7



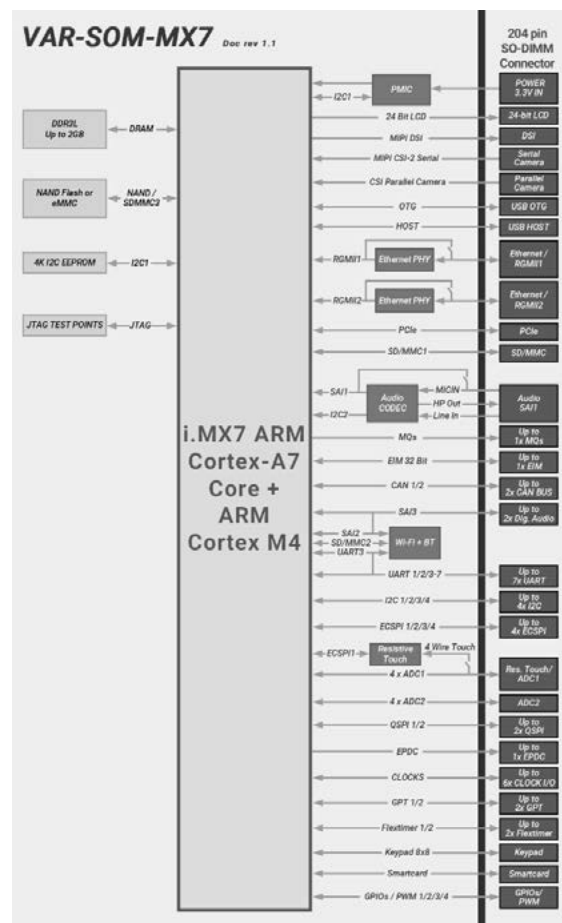
Advanced application processor with realtime co-processor

A highly flexible System-on-Module based on NXP's i.MX 7 family and carries a dual 1GHz ARM Cortex-A7 processor alongside real-time 200MHz ARM Cortex-M4 co-processor. A versatile platform, the VAR-SOM-MX7 provides a variety of interfaces and connectivity options – all packaged at an optimized power, size and cost. The VAR-SOM-MX7 is ideal for products and applications requiring real-time low-power processing combined with high performance application processor for optimizing performance and power consumption.

Key features include:

- NXP i.MX 7 dual 1.0GHz Cortex-A7
- Real-time 200MHz Cortex-M4 co-processor
- Dual Gigabit Ethernet
- Certified Wi-Fi 802.11 ac/a/b/g/n + BT5.2/BLE
- PCI-Express 2.0, USB
- Camera inputs

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX 7
Processor core	Dual Cortex-A7
Real-time coprocessor	200MHz Cortex-M4
MIPS	Up to 3,800
2D/3D graphic accelerator	PxP pixel acceleration
Video acceleration (encoding/decoding)	-
RAM	Up to 2048MB DDR3L
Storage	Up to 512MB SLC NAND or 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	24bits parallel RGB, HDMI: 1080p
Display interfaces	RGB, MIPI-DSI, EPD
SD/MMC	1
USB 2.0 host	1
USB OTG	1
Ethernet	2x10/100/1000 Mbps
Wi-Fi	802.11 ac/a/b/g/n
Bluetooth	5.2 / BLE
Audio	Headphone out, line-In
Microphone	Analog
Digital audio	SAI/MQS
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	on Carrier
Camera interface	MIPI-CSI2 / Parallel
Local bus	32-bit parallel
S-ATA	-
PCI-E	PCIe 2.0 x 1
Serial UART ports	up to 7
Other interfaces	Dual CAN, I2C, SPI, PWM, JTAG, keypad

OS Support

Feature	Details
Linux	Supported
Android	-

Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 204 PIN
Dimensions (W x L)	67.8 x 36.8 mm

VAR-SOM-MX6



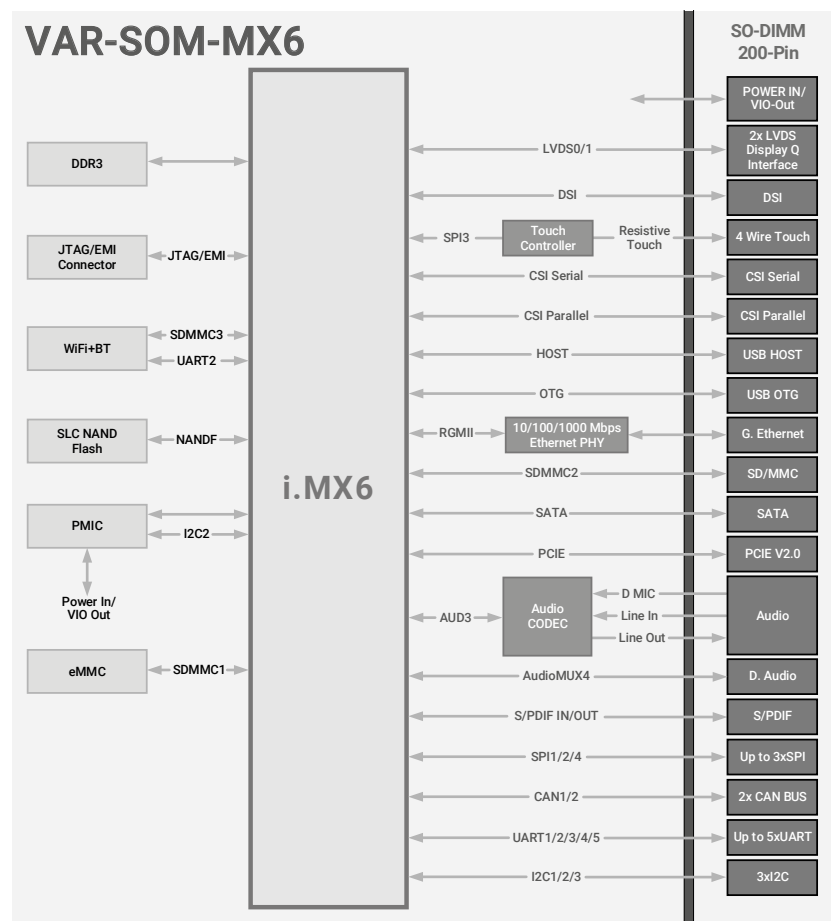
Design without boundaries

Supporting the NXP i.MX 6 1.2GHz QuadPlus/Quad/Dual/DualLite/Solo Cortex-A9 processor, the impressive scalability of the VAR-SOM-MX6 satisfies the needs of the most demanding future application requirements. The VAR-SOM-MX6 removes the need for lengthy and costly redesign to support different market options. The four CPU assembly options can accommodate broader connectivity, faster processing power, enhanced algorithms or improved graphics and video performance to name a few.

Key features include:

- Full HD 1080p video encoding/decoding capability
- Vivante GPU providing 2D/3D acceleration (note: in QuadPlus 50% enhanced performance)
- Gigabit Ethernet
- Built-in Wi-Fi 802.11 a/b/g/n with MIMO + BT5.1/BLE
- PCI-Express 2.0, S-ATA 3.0
- up to 128GB eMMC
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX 6
Processor core	QuadPlus/Quad/Dual/DualLite/Solo-core ARM Cortex-A9
MPU speed (MHz)	1,200
MIPS	Up to 12,000
2D/3D graphic accelerator	Vivante 2D/3D (note: in QuadPlus 50% enhancement)
Video acceleration (encoding/decoding)	1080p60 Decode, 1080p30 Encode
RAM	Up to 2048 MB DDR3 1066 MHz
Storage	Up to 1024 MB SLC NAND up to 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	LCD: WUXGA(1920 x 1200), HDMI: 1080p
Display interfaces	2 x LVDS, HDMI 1.4, MIPI-DSI
SD/MMC	2
USB 2.0 host	1
USB OTG	1
Ethernet	10/100/1000 Mbps
Wi-Fi	802.11 a/b/g/n with optional MIMO
Bluetooth	5.1 / BLE
Audio	Headphone out, line-In
Microphone	Digital (Stereo)
Digital audio	SSI(AUDMUX, /S/PDIF
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	on Carrier
Camera interface	MIPI CSI-2/ 2x Parallel
Local bus	EIM Up to 133Mhz Clock
S-ATA	+
PCI-E	PCIe 2.0 x 1
Serial UART ports	5
Other interfaces	Dual CAN, I2C, SPI, PWM, JTAG, keypad

OS Support

Feature	Details
Linux	Supported
Android	Supported

Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 51.7 mm

VAR-SOM-SOLO/DUAL



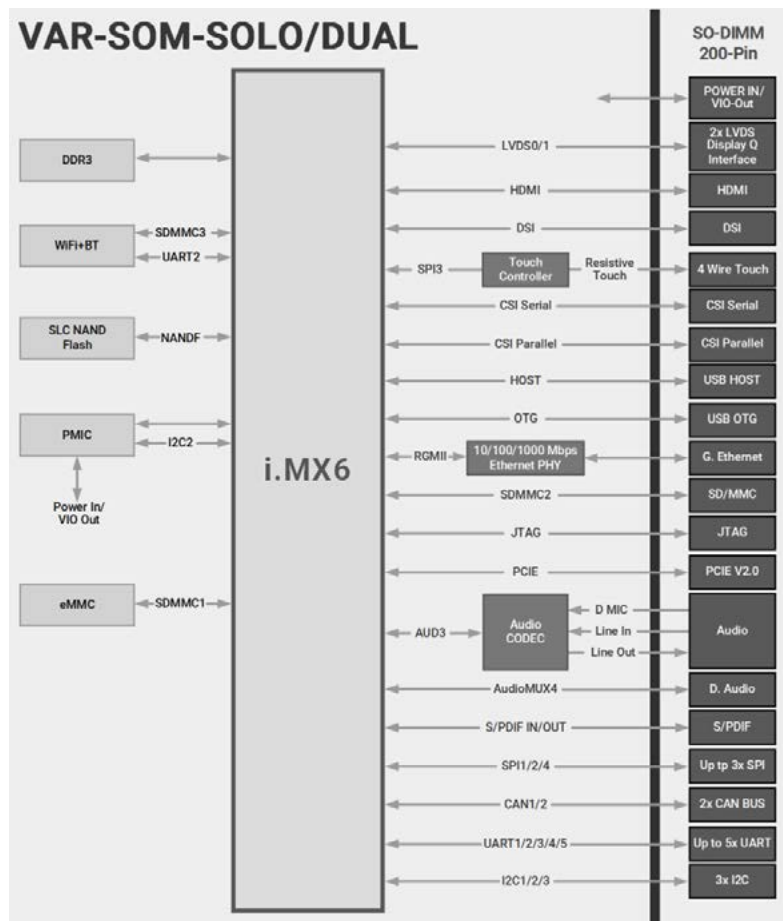
**Enhance your product,
reduce your costs**

Staying on-trend with the market's shift towards a cost-effective highly integrated off-the-shelf solution, the VAR-SOM-SOLO/DUAL with its i.MX6 1.0GHz single and dual lite Cortex-A9 levels the playing ground for a broad spectrum of embedded products. Bringing all the benefits of the successful VAR-SOM-MX6, the VAR-SOM-SOLO carries much smaller dimensions and a slim lined price-point.

Key features include:

- NXP i.MX6 1.0GHz single and dual lite Cortex-A9
- Full HD 1080p video encoding/decoding capability
- Vivante GPU providing 2D/3D acceleration
- Gigabit Ethernet
- Built-in Wi-Fi 802.11 a/b/g/n with MIMO + BT5.1/BLE
- PCI-Express 2.0, USB
- up to 128GB eMMC
- VAR-SOM Pin2Pin family

Block Diagram



Specifications

Core

Feature	Details
Processor	NXP i.MX 6
Processor core	Single and Dual lite core ARM Cortex-A9
MPU speed (MHz)	1,000
MIPS	Up to 5,000
2D/3D graphic accelerator	Vivante 2D/3D acceleration
Video acceleration (encoding/decoding)	1080p30 decode, 1080p30 encode
RAM	1024 MB DDR3 1066 MHz
Storage	512 MB SLC NAND up to 128GB eMMC

Peripherals

Feature	Details
Display controller resolution	24 bit LVDS, HDMI: 1080P
Display interfaces	2 x LVDS, HDMI 1.4, MIPI-DSI
SD/MMC	1
USB 2.0 host	1
USB OTG	1
Ethernet	10/100/1000 Mbps
Wi-Fi	802.11 a/b/g/n with optional MIMO
Bluetooth	5.1 / BLE
Audio	Headphone out, line-In
Microphone	Digital (Stereo)
Digital audio	SSI(AUDMUX)/SPDIF
Touch screen controller	Supporting 4-wire resistive touch panels
RTC	on Carrier
Camera interface	MIPI-CS12 / Parallel
Local bus	-
S-ATA	-
PCI-E	PCIe 2.0 x 1
Serial UART ports	5
Other interfaces	Dual CAN, I2C, SPI, PWM, JTAG, keypad

OS Support

Feature	Details
Linux	Supported
Android	Supported

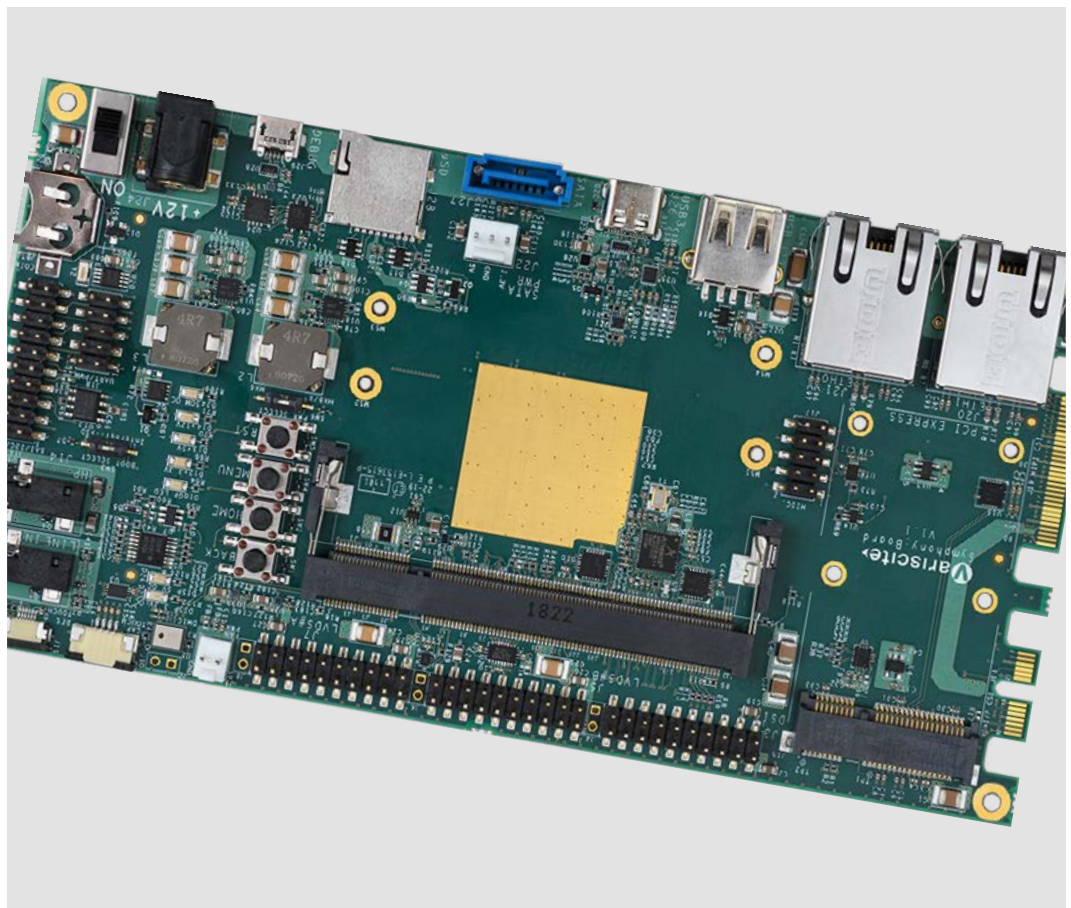
Mechanical & Electronic Specifications

Feature	Details
Supply voltage single	3.3 V
Digital I/O voltage	3.3 V
SoM Interface	SO-DIMM 200 PIN
Dimensions (W x L)	67.8 x 33.0 mm

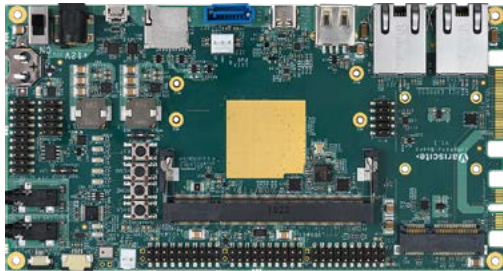
SINGLE BOARD COMPUTERS

Advantages of using Variscite Single Board Computers

- **Serving** as both a complete development kit and an end-product
- **Advanced features** and broad connectivity options, allow full customization according to the price/performance targets of the client's product
- **Convenience** for embedded system manufacturers, whilst incorporating the latest in computing trends
- **Speeding up** time-to-market by jump starting product development for simple or more complex applications



Symphony-Board



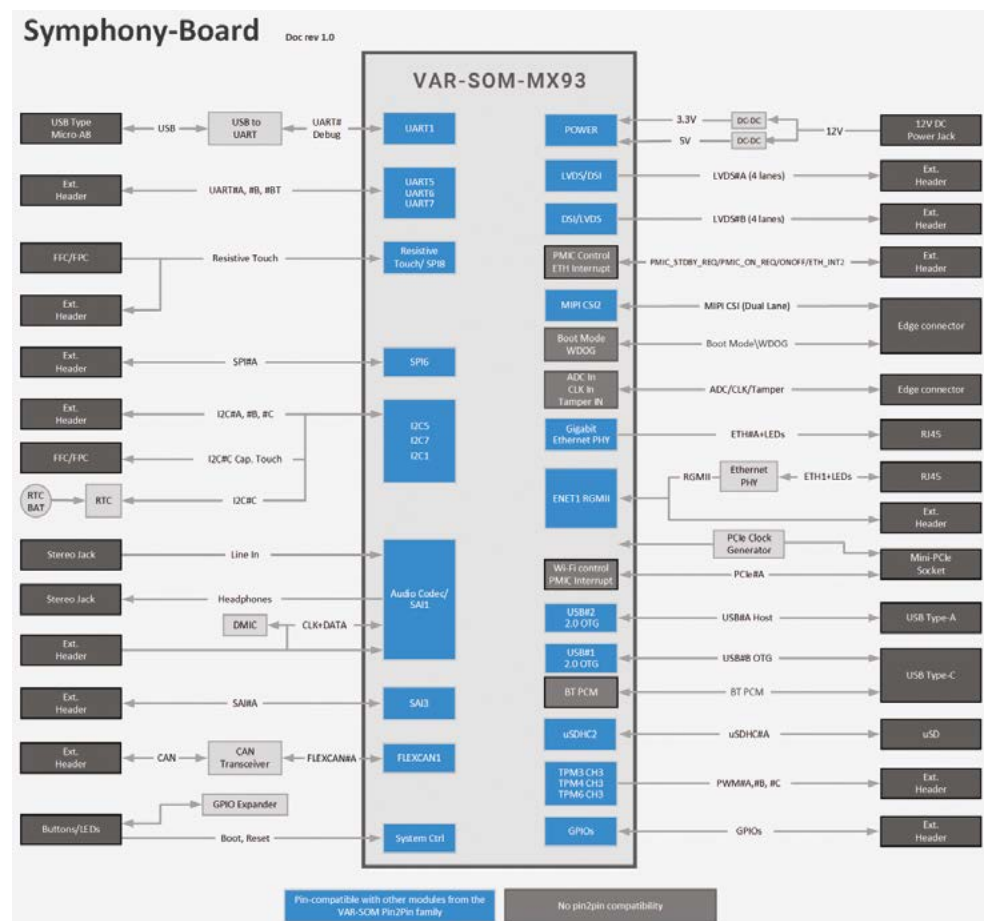
Symphony-Board - Supporting the VAR-SOM-MX93, VAR-SOM-AM62, VAR-SOM-MX8, VAR-SOM-MX8X, VAR-SOM-MX8M-MINI, VAR-SOM-MX8M-PLUS, VAR-SOM-MX8M-NANO, VAR-SOM-MX6 or VAR-SOM-6UL.

The Symphony-Board ensures a scalable and simplified development and reference board.

Features:

- 2x PCI-Express 2.0
- Displays: DSI, LVDS display, HDMI, DisplayPort
- Audio: Headphone, Line-in, Digital mic
- Touch panel interface
- 10/100/1000Mbps Ethernet RJ45
- 5x USB 3.0/2.0 ports
- SD/SDIO/MMC card socket
- 2x MIPI CSI serial
- SPI, SPDIF, GPIO
- UART, I2C
- 5V DC input

Block Diagram



Specifications

Feature	Details
SoM interface	SO-DIMM200 Supporting the VAR-SOM-MX93, VAR-SOM-AM62, VAR-SOM-MX8, VAR-SOM-MX8X, VAR-SOM-MX8M-MINI, VAR-SOM-MX8M-PLUS, VAR-SOM-MX8M-NANO or VAR-SOM-MX6
Display	2x 18-bit LVDS Interface supporting Variscite's 7" TFT capacitive touch LCD
	HDMI 2.0a
	Display Port 1.3/ eDP 1.4
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC)
	Capacitive touch panel (6-pin FFC/FPC)
PCI-Express	mini-PCIe connector
RTC backup battery	Yes
Audio	3.5mm Headphones jack
	3.5mm Line in jack
Digital Audio	Header SPDIF Out
	SAI1, SAI2 & SAI3 Out
USB	USB3.0/2.0 OTG Type C connector
	USB2.0 Host Type A connector
Ethernet	10/100/1000 Mbps; RJ45 connector
SD/MMC	SD card socket
RS232	USB-SERIAL bridge, Micro USB type AB
	FTDI Header (Debug)
	Header
Expansion Connectors	CAN Bus
	QSPI
	SD/MMC interface
	SPI, I2C, UART, RS232
	GPIOs
	SPDIF, SAI
	JTAG
	PWM
	Digital microphone
	Serial interface – Dual MIPI CSI x4 lanes each.
Power	5V DC input, 2.5 mm DC jack
Dimensions	15 cm x 9 cm x 2.9 cm

Concerto-board



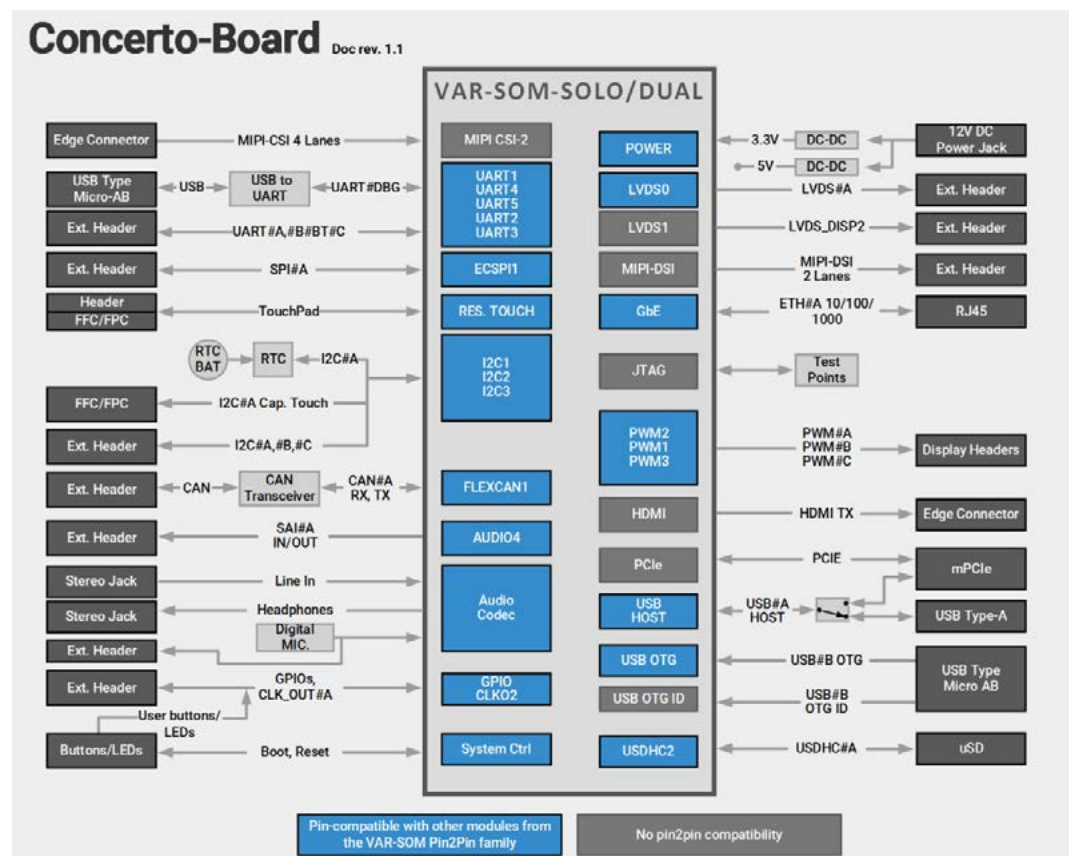
Concerto-Board - Supporting VAR-SOM-6UL or VAR-SOM-SOLO/DUAL.

The Concerto-Board ensures a scalable and simplified development and reference board to achieve a short time-to-market for customer's designs and end-products.

Features:

- 2x PCI-Express 2.0
- Displays: DSI, LVDS display, HDMI, DisplayPort
- Audio: Headphone, Line-in, Digital mic
- Touch panel interface
- 1x 10/100 + 1x 10/100/1000 Mbps, RJ45
- 5x USB 3.0/2.0 ports
- SD/SDIO/MMC card socket
- 2x MIPI CSI serial
- SPI, SPDIF, GPIO
- UART, I2C
- 12V DC input

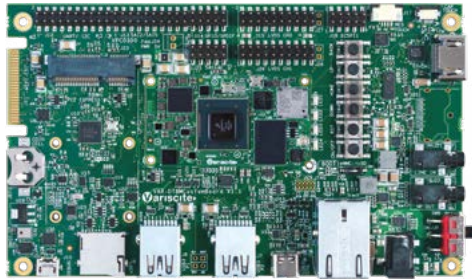
Block Diagram



Specifications

Feature	Details
SoM interface	SO-DIMM200 Supporting VAR-SOM-6UL or VAR-SOM-SOLO/DUAL
Display	18 bit LVDS Interface supporting Variscite's 7" TFT capacitive touch LCD
	HDMI 2.0a
	Display Port 1.3
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC)
	Capacitive touch panel (6-pin FFC/FPC)
PCI-Express	mini-PCIe connector x2
RTC backup battery	CR1225 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector
	Line-in, 3.5 mm connector
Digital Audio	Header SPDIF Out
	SAI1, SAI2 & SAI5 Out
USB	USB2.0 OTG Type AB connector
	USB2.0 Host Type A connector
Ethernet	1x 10/100 + 1x 10/100/1000 Mbps, RJ45
SD/MMC	SD card socket
RS232	USB-SERIAL bridge, Micro USB type AB
	FTDI Header (Debug)
	Header
Expansion Connectors	CAN Bus
	QSPI
	SD/MMC interface
	SPI, I2C, UART, RS232
	GPIOs
	SPDIF, SAI
	JTAG
	PWM
	Digital microphone
	Serial interface – Dual MIPI CSI x4 lanes each.
Power	12V DC input, 2.5 mm DC jack
Dimensions	16.99 cm x 8.96 cm x 1.6 cm

VAR-DT8MCustomBoard



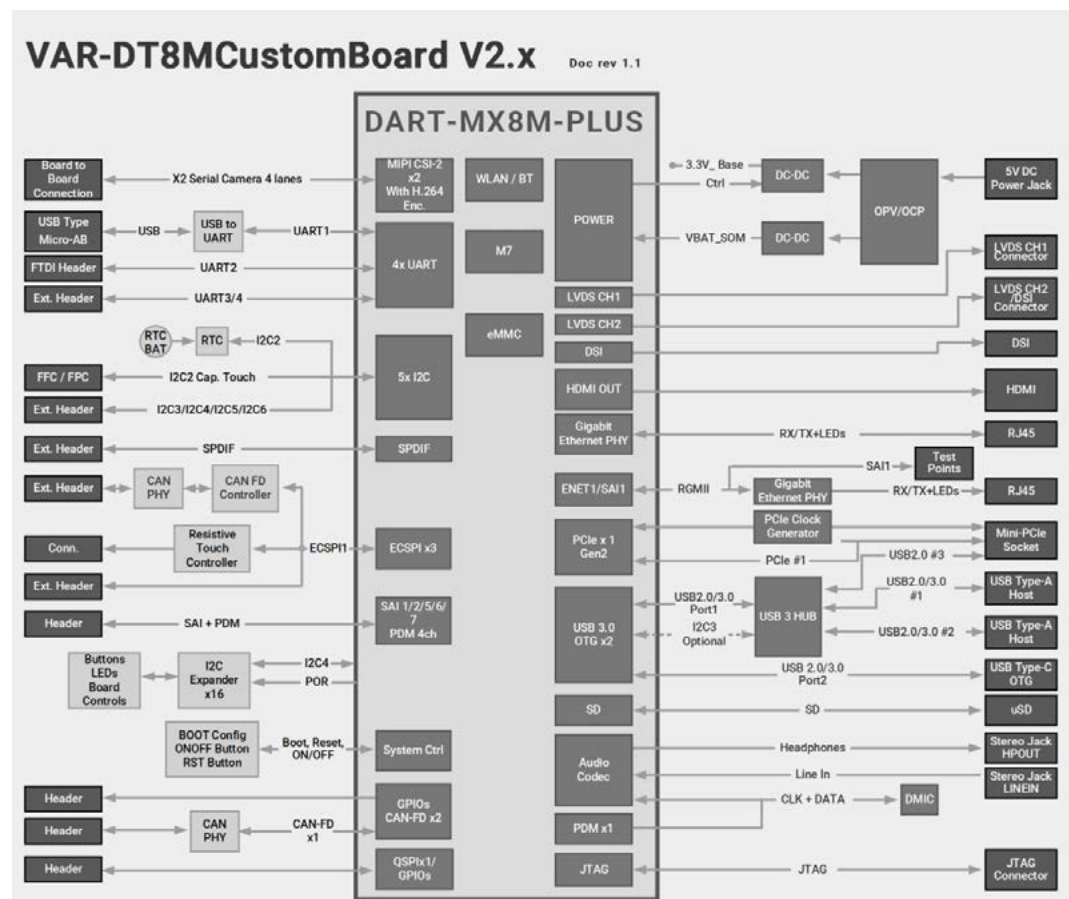
VAR-DT8MCustomBoard - Supporting DART-MX8M, DART-MX8M-MINI or DART-MX8M-PLUS

The VAR-DT8MCustomBoard completes an attractive full reference kit, which can be used for customers' evaluation, development and end-product mass production.

Features:

- 2x PCI-Express 2.0
- Displays: DSI, LVDS display, HDMI, DisplayPort
- Audio: Headphone, Line-in, Digital mic
- Touch panel interface
- 10/100/1000Mbps Ethernet RJ45
- 5x USB 3.0/2.0 ports
- SD/SDIO/MMC card socket
- 2x MIPI CSI serial
- SPI, SPDIF, GPIO
- UART, I2C
- 5V DC input

Block Diagram



Specifications

Feature	Details
SoM interface	3x 90pin board to board connectors Supporting the DART-MX8M, DART-MX8M-MINI, DART-MX8M-PLUS
Display	18 bit LVDS Interface supporting Variscite's 7" TFT capacitive touch LCD HDMI 2.0a Display Port 1.3
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC) Capacitive touch panel (6-pin FFC/FPC)
PCI-Express	mini-PCIe connector x2
RTC backup battery	CR1225 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector Line-in, 3.5 mm connector
Digital Audio	Header SPDIF Out SAI1, SAI2 & SAI5 Out
USB	USB3.0 OTG Type C connector USB3.0 Host Type A connector x 2
Ethernet	10/100/1000 Mbps; RJ45 connector
SD/MMC	SD card socket
RS232	USB-SERIAL bridge, Micro USB type AB FTDI Header (Debug) Header
Expansion Connectors	Local Bus Interface QSPI SD/MMC interface SPI, I2C, UART, RS232 GPIOs SPDIF, SAI JTAG PWM Digital microphone Serial interface – Dual MIPI CSI x4 lanes each.
Power	5V DC input, 2.5 mm DC jack
Dimensions	15 x 9 cm

VAR-SP8CustomBoard



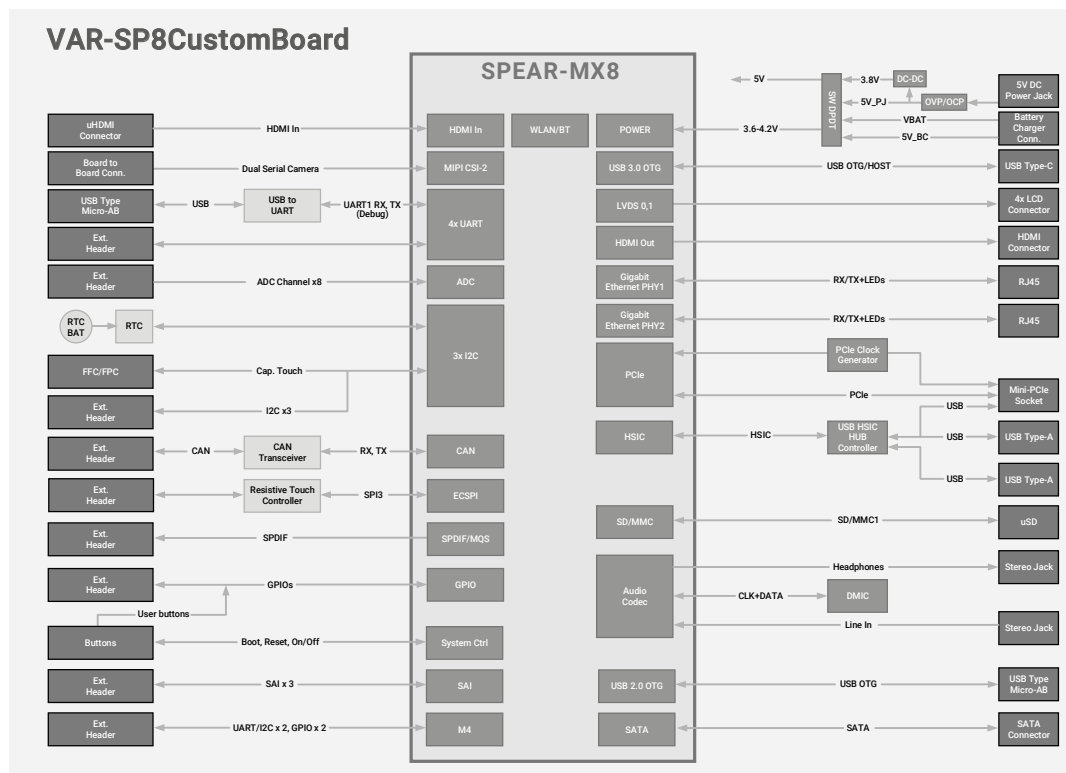
VAR-SP8CustomBoard - Supporting SPEAR-MX8

The VAR-DVK-SP8 allows full performance and capability evaluation, serving as an evaluation, development and production platform for hardware and software teams.

Features:

- 2x PCI-Express 2.0
- Displays: DSI, Dual LVDS display, HDMI, DisplayPort
- Audio: Headphone, Line-in, Digital mic
- Touch panel interface
- Dual 10/100/1000Mbps Ethernet RJ45
- 4x USB 3.0/2.0 ports
- SD/SDIO/MMC card socket
- 2x MIPI CSI serial
- SPI, SPDIF, GPIO
- UART, I2C
- 5V DC input

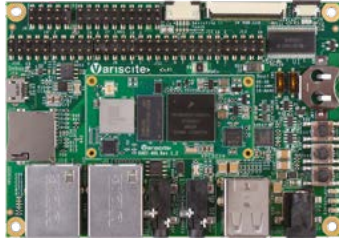
Block Diagram



Specifications

Feature	Details
SoM interface	4x 90pin board to board connectors
Display	24 bit Dual LVDS Interface supporting Variscite's 7" TFT capacitive touch LCD
	HDMI 2.0a
	Display Port 1.3
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC)
	Capacitive touch panel (6-pin FFC/FPC)
PCI-Express	mini-PCIe connector
RTC backup battery	CR1225 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector
	Line-in, 3.5 mm connector
Digital Audio	Header SPDIF Out
	3x SAI
USB	USB3.0 OTG Type C connector
	USB2.0 Host Type A connector x 2
Ethernet	2x 10/100/1000 Mbps; RJ45 connector
SD/MMC	SD card socket
RS232	USB-SERIAL bridge, Micro USB type AB
	FTDI Header (Debug)
HDMI in	1x Micro HDMI
S-ATA	S-ATA
Expansion Connectors	CAN Bus
	SD/MMC interface
	SPI, 12C, UART, RS485
	GPIOs
	SPDIF, SAI
	JTAG
	PWM
	Digital microphone
	Serial interface – Dual MIPI CSI x4 lanes each.
Power	5V DC input, 2.5 mm DC jack
Dimensions	12 x 17cm

VAR-6ULCustomBoard



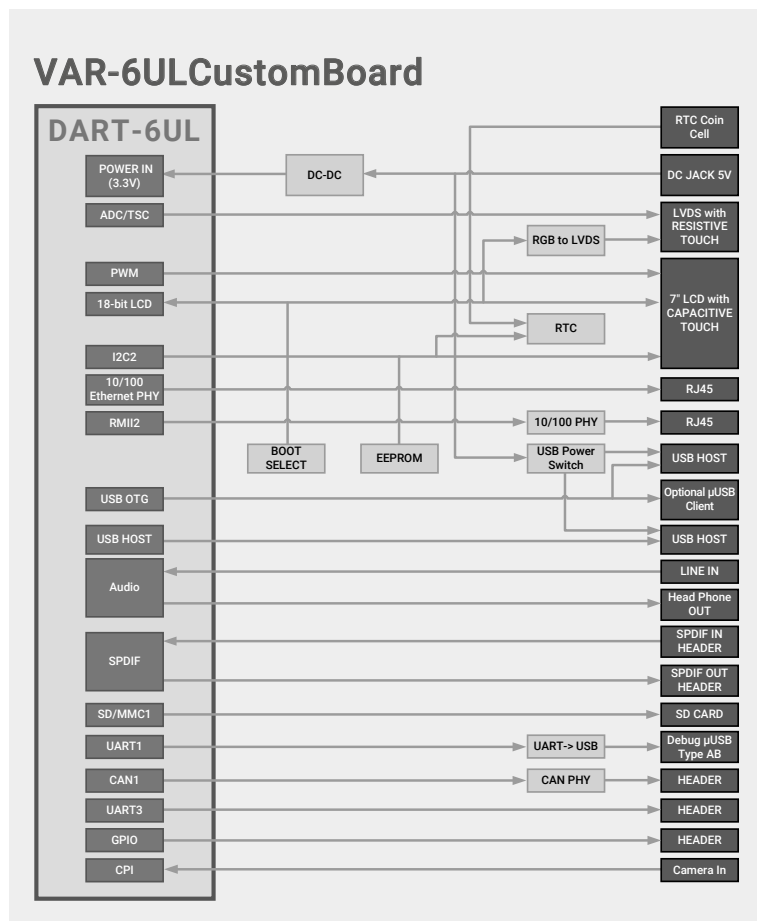
VAR-6ULCustomBoard - Supporting DART-6UL

The VAR-6ULCustomBoard ensures a scalable and simplified development and reference board to achieve a short time-to-market for customer's designs and end-products.

Features:

- Display RGB, LVDS
- Capacitive and resistive touch panel
- Audio: Line in, headphone
- Dual 10/100Mbps Ethernet RJ-45
- uSD Card
- UART, RS232, PWM, SPI, I2C, CAN bus
- USB: Host, OTG
- RTC backup battery
- 5V DC input

Block Diagram



Specifications

Feature	Details
SoM interface	2 x 90pins board-to-board supporting the DART-6UL
Display	3-pair 18-bit LVDS header 24-bit RGB
Touch panel	4-wire resistive touch panel Capacitive touch panel (6-pin FFC/FPC)
Camera input	Parallel Camera (header)
RTC backup battery	CR1125 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector Line-in, 3.5 mm connector digital audio (header)
USB	1 x USB 2.0 host; USB type-A connector 1 x USB OTG; USB-mini AB connector
Ethernet	2 x 10/100 Mbps; RJ-45 connector
SD/MMC	uSD card socket
Debug	Micro USB JTAG (header)
Additional Expansion Connectors	SPI, I2C CAN Bus UART, RS232 Digital audio PWM/ADC
Power	5 V DC input, 2.5 mm DC jack
Dimensions	7 x 10 cm

VAR-MX7CustomBoard



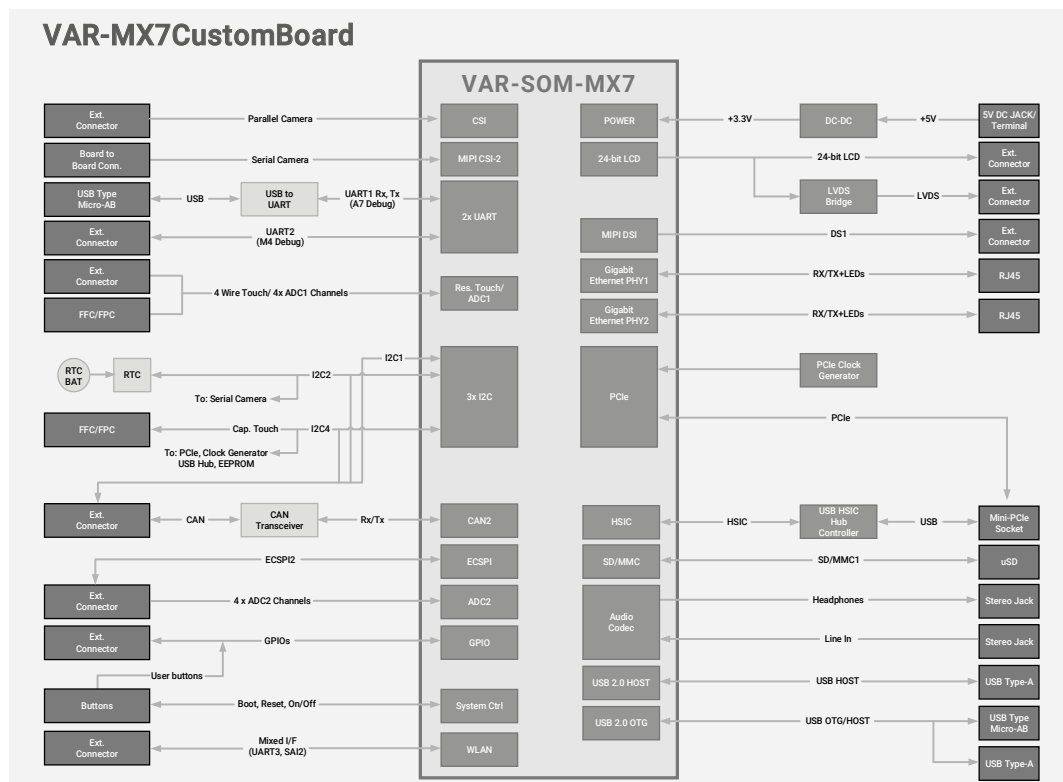
VAR-MX7CustomBoard - Supporting VAR-SOM-MX7

The VAR-MX7CustomBoard ensures scalable and simplified development to achieve a short-time to market for current innovations. Moreover, it can be used as a carrier board for mass production of customers' end-products.

Features:

- Display: LVDS, RGB, DSI
- Capacitive and resistive touch panel
- Serial/parallel camera input
- Audio: Line in, SAI/MQS, headphone out
- PCIe
- uSD Card
- CAN, UART, RS232, PWM
- USB: Host, OTG
- Dual GbE RJ-45 connector
- 5V DC input

Block Diagram



Specifications

Feature	Details
SoM interface	SODIMM 204 supporting the VAR-SOM-MX7
Display	3-pair 18-bit LVDS header
	24-bit RGB
	DSI
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC)
	Capacitive touch panel (6-pin FFC/FPC)
Camera input	Serial Camera (MIPI CSI)
	Parallel Camera (header)
RTC backup battery	CR1125 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector
	Line-in, 3.5 mm connector
	SAI/MQS
USB	1 x USB 2.0 host; USB type-A connector
	1 x USB OTG; USB-mini AB connector
Ethernet	Dual 10/100/1000 Mbps; RJ-45 connector
SD/MMC	uSD card socket
Debug	Micro USB
	JTAG (header)
Additional Expansion Connectors	SPI, I2C
	CAN Bus
	UART, RS232
	MQS audio
	PWM, ADC
Power	5 V DC input, 2.5 mm DC jack
Dimensions	8.7 x 14.8 cm

VAR-MX6CustomBoard



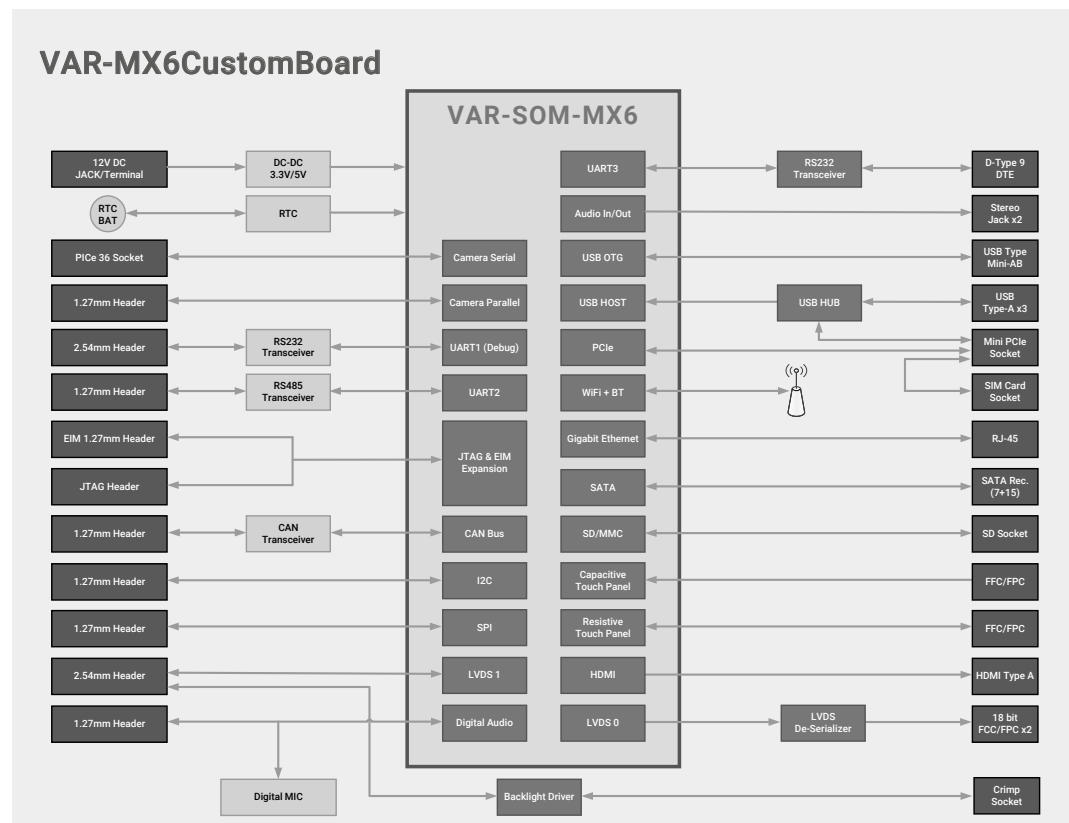
VAR-MX6CustomBoard - Supporting VAR-SOM-MX6

The VAR-MX6CustomBoard not only ensures scalable and simplified development to achieve a short-time to market for current innovations, but also accommodates potential R&D directions and marketing opportunities.

Features:

- PCI-Express 2.0
- S-ATA II
- Displays: 18-bit RGB interface, HDMI
- Audio: Headphone out, digital microphone
- Touch panel interface
- 10/100/1000 Mbps Ethernet; RJ-45 connector
- Dual CAN Bus
- SD Card
- Camera interface
- USB 2.0: Host, OTG
- JTAG
- GPMC
- 7.5V -14V DC Input

Block Diagram



Specifications

Feature	Details
SoM interface	SODIMM 200 supporting the VAR-SOM-MX6
Display	18-bit RGB parallel display interface (2 x 40-pin FFC/FPC connector for 7" LCD)
	4-pair 24-bit LVDS header
	HDMI 1.4
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC)
	Capacitive touch panel, (10-pin FFC/FPC)
S-ATA	7 + 15, female connector
PCI-Express	mini-PCIe connector
SIM Card	Supporting mini-PCIe modem
RTC backup battery	CR1125 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector
	Line-in, 3.5 mm connector
Digital Audio Header	SPDIF In/Out
	SSI(AUDMUX)
USB	3 x USB 2.0 host; USB type-A connector
	1 x USB OTG; USB-mini AB connector
Ethernet	10/100/1000 Mbps; RJ-45 connector
SD/MMC	SD card socket
RS232	DB-9 male (DTE)
	IDC 10 header (Debug)
Expansion Connectors	Local Bus Interface
	Backlight driver
	SD/MMC interface
	SPI, I2C, UART
	CAN Bus
	RS-485
	JTAG
	Parallel camera interface
	Serial camera (fits to VAR-EXT-CB402 sensor board)
Power	7.5 V to 14 V DC input, 2.5 mm DC jack
Dimensions	12 x 10.5 cm

VAR-SOLOCustomBoard



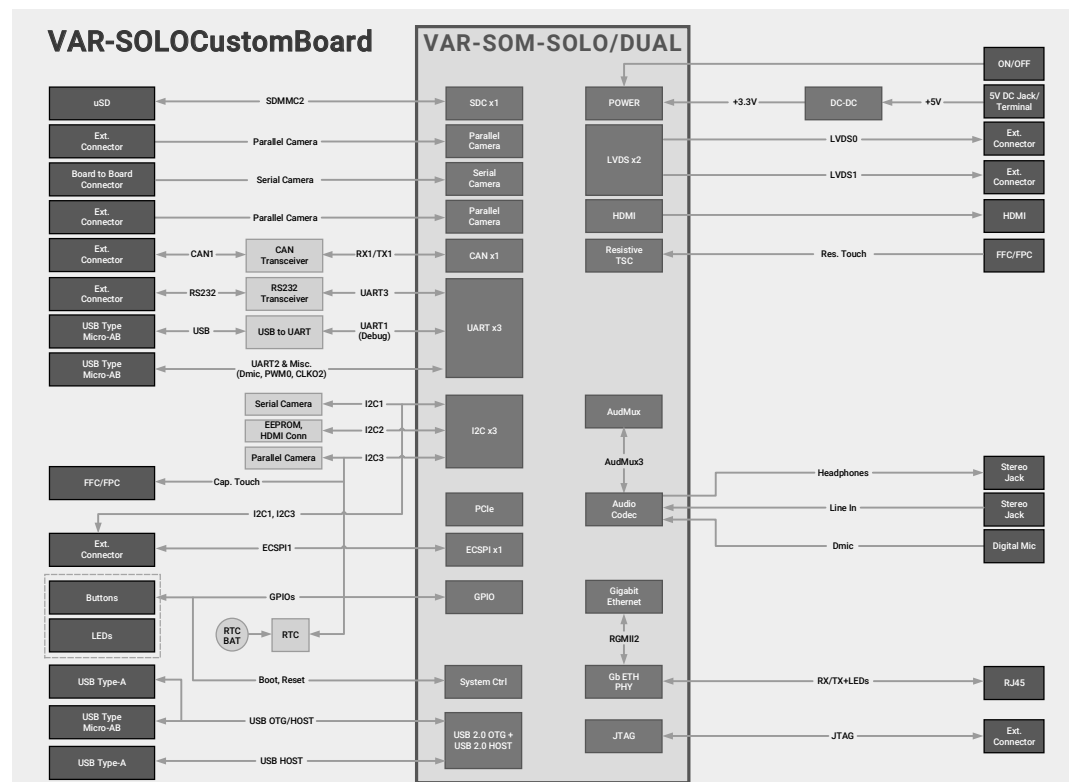
VAR-SOLOCustomBoard - Supporting VAR-SOM-SOLO/DUAL

The VAR-SOLOCustomBoard ensures scalable and simplified development to achieve a short-time to market for current innovations. Moreover, it can be used as a carrier board for mass production of customers' end-products.

Features:

- Display: Dual LVDS, HDMI 1.4
- Capacitive and resistive touch panel
- Serial/parallel camera input
- Audio: Line in, digital microphone, headphone out
- Dual CAN Bus
- uSD Card
- UART, RS232, PWM
- USB: Host, OTG
- 10/100/1000 Mbps Ethernet; RJ-45 connector
- 5V DC input

Block Diagram



Specifications

Feature	Details
SoM interface	SODIMM 200 supporting the VAR-SOM-SOLO/DUAL
Display	3-pair 18-bit LVDS header
	4-pair 24-bit LVDS header
	HDMI 1.4
Touch panel	4-wire resistive touch panel (4-pin FFC/FPC)
	Capacitive touch panel (6-pin FFC/FPC)
Camera input	Serial Camera (MIPI CSI)
	Parallel Camera (header)
RTC backup battery	CR1125 coin battery socket
Audio	Headphone-out jack, 3.5 mm connector
	Line-in, 3.5 mm connector
	Digital microphone
USB	1 x USB 2.0 host; USB type-A connector
	1 x USB OTG; USB-mini AB connector
Ethernet	10/100/1000 Mbps; RJ-45 connector
SD/MMC	uSD card socket
Debug	Micro USB
	JTAG (header)
Additional Expansion Connectors	SPI, I2C
	CAN Bus
	UART, RS232
	Digital microphone
	PWM
Power	5 V DC input, 2.5 mm DC jack
Dimensions	8.7 x 11.7 cm

EVALUATION KITS

Complementing the Variscite System on Module range

- **Combines** System on Module and CustomBoard technology
- **Allows** you to fully evaluate Variscite System on Module performance and capabilities
- **Serves** as a development platform for both your hardware and software teams





VAR-DVK-MX93

Supporting the VAR-SOM-MX93

- Symphony-Board populated with the VAR-SOM-MX93
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-AM62

Supporting the VAR-SOM-AM62

- Symphony-Board populated with the VAR-SOM-AM62
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX8M-PLUS

Supporting the VAR-SOM-MX8M-PLUS

- Symphony-Board populated with VAR-SOM-MX8M-PLUS
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-DT8M-PLUS

Supporting the DART-MX8M-PLUS

- VAR-DT8MCustomBoard populated with DART-MX8M-PLUS
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX8M-MINI

Supporting the VAR-SOM-MX8M-MINI

- Symphony-Board populated with the VAR-SOM-MX8M-MINI
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-DT8M-MINI

Supporting the DART-MX8M-MINI

- VAR-DT8MCustomBoard populated with the DART-MX8M-MINI
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX8M-NANO

Supporting the VAR-SOM-MX8M-NANO

- Symphony-Board populated with the VAR-SOM-MX8M-NANO
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX8X

Supporting the VAR-SOM-MX8X

- Symphony-Board populated with the VAR-SOM-MX8X
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX8

Supporting the VAR-SOM-MX8

- Symphony-Board populated with VAR-SOM-MX8
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-SP8

Supporting the SPEAR-MX8

- VAR-SP8CustomBoard populated with the SPEAR-MX8
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-DT8M

Supporting the DART-MX8M

- VAR-DT8MCustomBoard populated with the DART-MX8M
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-6UL

Supporting the DART-6UL

- VAR-6ULCustomBoard populated with the DART-6UL
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX7

Supporting VAR-SOM-MX7

- VAR-MX7CustomBoard populated with VAR-SOM-MX7
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-MX6

Supporting the VAR-SOM-MX6

- VAR-MX6CustomBoard populated with VAR-SOM-MX6
- Two display options:
 - 7" LCD + resistive touch panel;
 - 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package



VAR-DVK-SOLO/DUAL

Supporting VAR-SOM-SOLO/DUAL

- VAR-SOLOCustomBoard populated with VAR-SOM-SOLO/DUAL
- 7" LCD + capacitive touch panel
- Power supply and communication cables
- Documentation and design package

ACCESSORIES



Camera Modules

Camera Boards allow developers to leverage Variscite modules' advanced multimedia features.



Displays

Variscite offers several displays and extension boards to allow our customers to easily connect a variety of display options and touch panels to our evaluation kits.



Power Supplies

Variscite's power supplies supporting EU / AC compatibility.



Antennas

2.4 GHz / 5.5 GHz Dipole 2 dBi antenna with U.FL adaptor for reverse polarity SMA.



Heat Plates

Variscite's heat plates allow regulation of the device's temperature at optimal levels. The kit includes a heat plate, thermal pad, screws and nuts.



