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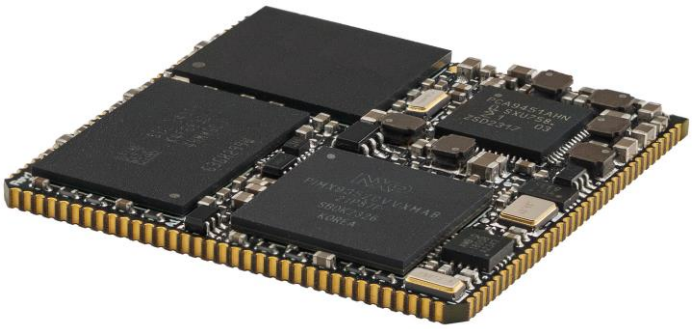
System on Module
MCM-iMX93

Datasheet v1.0



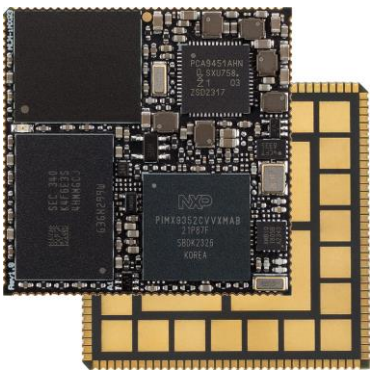
MCM-iMX93 is a Solder-Down System on Module from NXP, delivered in an ultra-miniature form factor optimised for shock and vibration resistance and ideal for space constrained applications.

i.MX93 processors offer fast and efficient basic ML inferencing along with a rich set of peripherals and high-performance application cores for automotive, industrial, and consumer IoT market segments. The i.MX93 processors are the first in the i.MX portfolio to integrate the scalable Arm® Cortex®-A55 core, bringing best-in-class performance and energy efficiency to Linux-based edge applications.

Measuring just 30 x 30 x 3mm, the MCM-iMX93 offers LVDS, MIPI-DSI and MIPI-CSI interfaces, capacitive touchscreen support, extensive I/O options and a wide operating temperature range of -40°C to +85°C.

Key Features:

- Dual-core ARM Cortex-A55 CPU, 1.7GHz
- Integrated AI/ML Neural Processing Unit
- Real-time ARM Cortex-M33 co-processor, 250Mhz
- Up to 2GB LPDDR4 and 64GB eMMC
- LVDS, MIPI-DSI, MIPI-CSI
- 2 x GbE / RGMII , 2x USB 2.0, 2x CAN, 8x UART
- Operating temperature: -40°C to +85°C



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MCM-iMX93

CPU Core, Memory & Storage

Note:

- "Option" column specifies the configuration code required to have the particular feature.
- "+" means that the feature is always available

Feature	Specification	Option
CPU	NXP i.MX9352, dual-core ARM Cortex-A55, 1.7GHz, with NPU	C1700D
	NXP i.MX9331, single-core ARM Cortex-A55, 1.7GHz, no NPU	C1700S
NPU	AI/ML Neural Processing Unit, up to 0.5 TOPS Arm® Ethos™ U-65 microNPU	C1700D
Real-Time Coprocessor	ARM Cortex-M33, 250Mhz	+
RAM	512MB – 2GB, LPDDR4	D
Storage	eMMC flash, 8GB – 64GB	N

Display, Camera & Audio

Display	MIPI-DSI, 4 data lanes, up to 1080p60	+
	LVDS, 4 lanes up to 1366x768 p60	+
	Parallel RGB 24-bit, up to 1366 x 768 p60	+
Touchscreen	Capacitive touch-screen support through SPI and I2C interfaces	+
Camera	MIPI-CSI, 2 data lanes	+
Digital Audio	Up-to 3x I2S / SAI	+
	S/PDIF input/output	+

Network

Feature	Specification	Option
Ethernet	2 x Gigabit RGMII	+

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I/O

Feature	Specification	Option
USB	2x USB2.0 dual-role ports	+
UART	Up to 8x UART	+
CAN bus	Up to 2x CAN-FD	+
SD/SDIO	2x SD/SDIO	+
SPI	Up to 8x SPI	+
I2C	Up to 6x I2C	+
I3C	1 x I3C	+
ADC	4x general-purpose ADC channels	+
PWM	Up to 6x general-purpose PWM signals	+
GPIO	Up to 80x GPIO	+

System Logic and Debug

Feature	Specification	Option
RTC	Real-time Clock, powered by an external lithium battery	+
JTAG	JTAG debug interface	+

Electrical, Mechanical and Environmental Specifications

Feature	Specification
Supply Voltage	3.45V to 5.5V
Digital I/O Voltage	3.3V/1.8V
Power Consumption	0.5 – 2.5W depending on system load and board configuration
Dimensions	30 x 30 x 3 mm
Weight	5 grams
Package	140-pin, 0.8mm pitch QFN
MTTF	> 200,000 hours
Operating Temperature (case)	Commercial: 0°C to +70°C Extended: -20° to 70° C Industrial: -40° to 85° C
Storage Temperature	-40°C to +85°C
Relative Humidity	10% to 90% (operation) 05% to 95% (storage)
Shock	50G / 20 ms
Vibration	20G / 0 - 600 Hz

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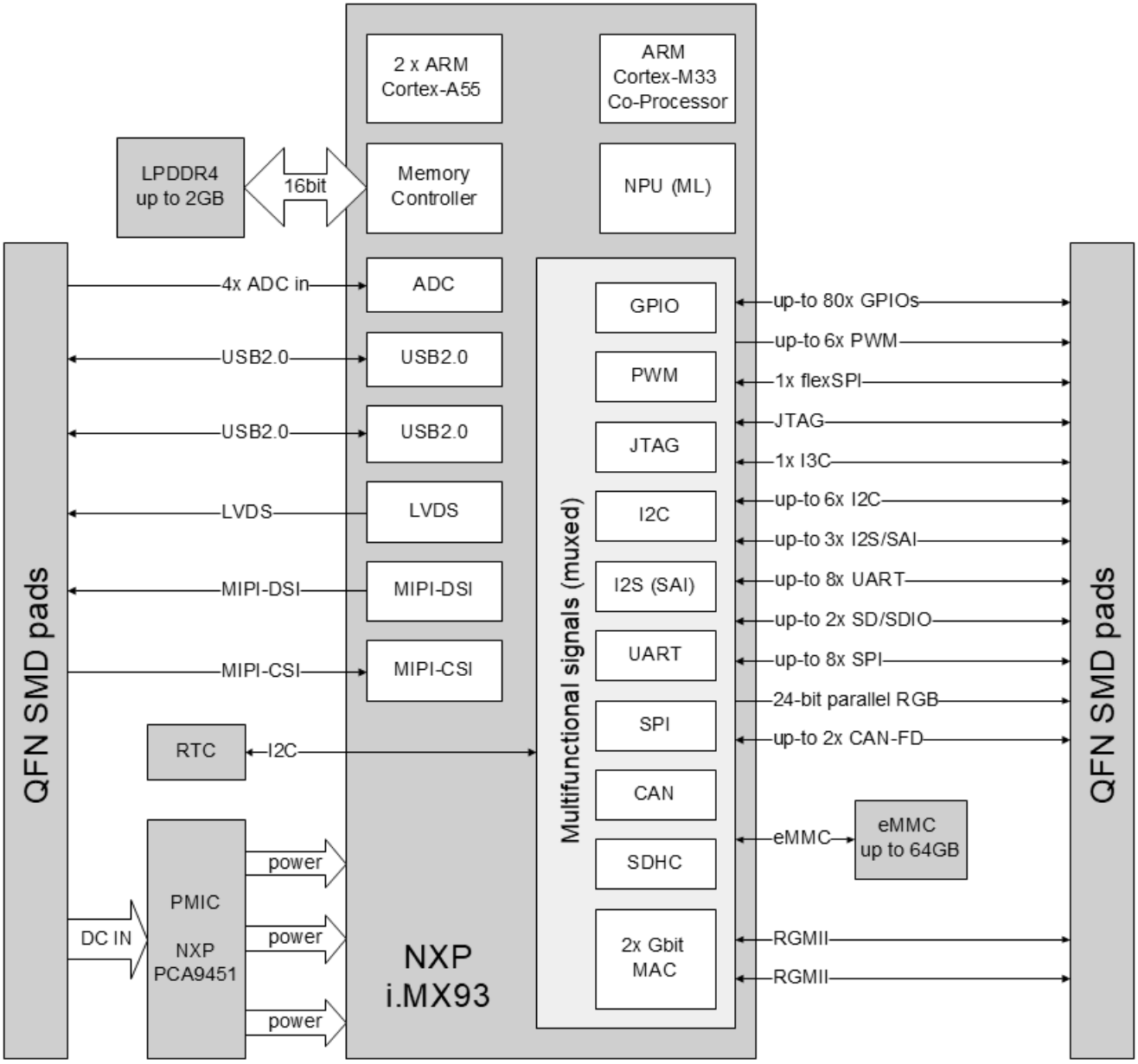
Block Diagram



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MCM-iMX93

MCM-iMX93 Evaluation Kit

Hardware

- MCM-iMX93-C1700D-D2-N32 SOM assembled on SB-MCMIMX93 carrier board
- Optional: 7" LVDS LCD with touch panel
- Optional: Quectel EG25G LTE cellular modem
- WiFi antennas and cables
- Cables and adapters
- 12V power supply

Technical Support

- Technical support for 12 months.
- Schematics review of the customer's carrier board design.
- LCD panel compatibility verification and driver adaptation service.
- 45-day trial period. Eval Kit will be accepted for refund if the user finds the product not suitable for their needs.

Rev no.	Rev date.	Contents	Page
v1.0	18.07.24	New creation	

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