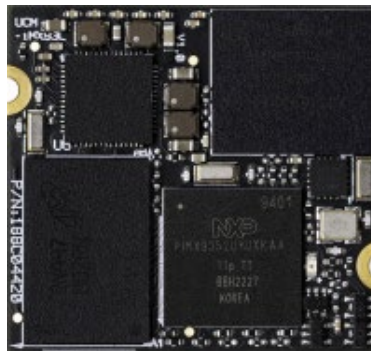


# System on Module

## UCM-iMX93L

Datasheet v1.0



**UCM-iMX93L is the very latest generation System on Module from NXP, delivered in an ultra-miniature form factor with energy flex architecture and state-of-the-art security to support energy-efficient edge computing.**

Optimised for industrial applications and an ideal solution for cost-sensitive systems such as Smart Home and Building Control, the UCM-iMX93L also features an integrated AI/ML Neural Processing Unit up to 0.5 TOPS for performing basic machine vision tasks at the edge of the network.

Measuring just 28 x 30 x 4mm, UCM-iMX93L 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
- Up to 2GB LPDDR4 and 64GB eMMC
- LVDS, MIPI-DSI, MIPI-CSI
- GbE, RGMII, PCIe, 2x USB, 2x CAN-FD, 7x UART
- 2 x SDIO, 7 x SPI, 6 x I2C, 65 x GPIO
- Operating temperature: -40°C to +85°C



## UCM-iMX93L

### 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	C1700D
	NXP i.MX9331, single-core ARM Cortex-A55, 1.7GHz	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	+
Touchscreen	Capacitive touch-screen support through SPI and I2C interfaces	+
Camera	MIPI-CSI, 2 data lanes	+
Digital Audio	Up-to 2x I2S / SAI	+
	S/PDIF input/output	+

### Network

Feature	Specification	Option
Ethernet	Gigabit Ethernet port (MAC+PHY)	+
	Secondary RGMII	+

## UCM-iMX93L

### I/O

Feature	Specification	Option
USB	2x USB2.0 dual-role ports	+
UART	Up to 7x UART	+
CAN bus	Up to 2x CAN-FD	+
SD/SDIO	2x SD/SDIO	+
SPI	Up to 7x SPI	+
I2C	Up to 6x I2C	+
ADC	Up to 4x general-purpose ADC channels	+
PWM	Up to 6x general-purpose PWM signals	+
GPIO	Up to 65x GPIO (multifunctional signals shared with other functions)	+

### System Logic and Debug

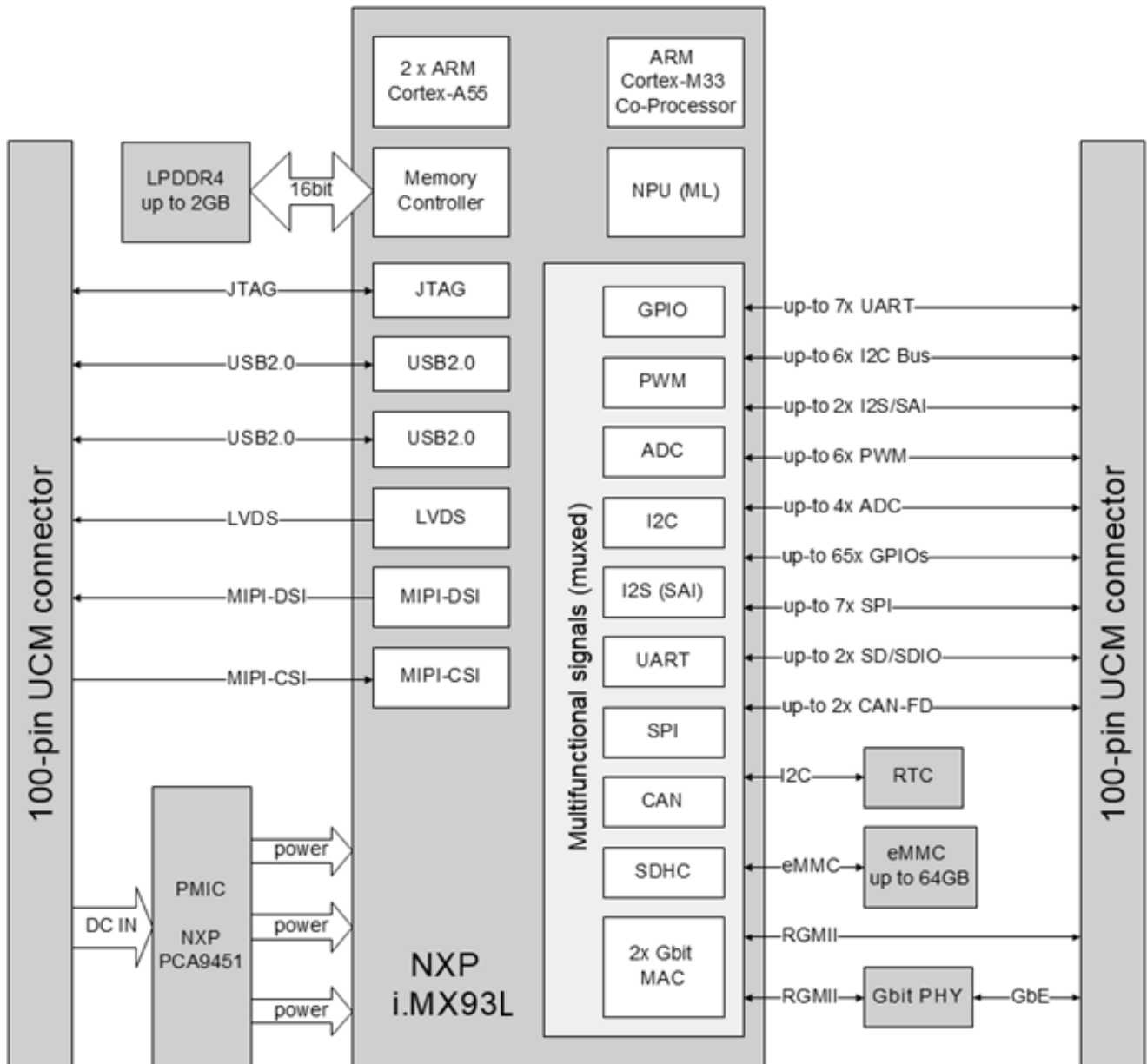
RTC	Real Time Clock, powered by external lithium battery	+
JTAG	JTAG debug interface	+

### Electrical, Mechanical and Environmental Specifications

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	28 x 30 x 4 mm
Weight	5 grams
Connectors	2 x 100-pin, 0.4mm pitch
MTTF	> 200,000 hours
Operating Temperature (case)	Commercial: 0°C to +70°C Extended: -20°C to +70°C Industrial: -40°C 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

# UCM-iMX93L

## Block Diagram



# UCM-iMX93L

## UCM-iMX93L Evaluation Kit

### Hardware

- UCM-iMX93L-C1700D-D2-N32-E-TIC
- SB-UCMIMX93 carrier board
- Optional 7" LVDS LCD with touch panel
- Optional: Quectel EG25G LTE cellular modem
- 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	25.01.24	New creation	