

A secure and versatile NXP i.MX 93 based OSM-MF SOM: Display, Camera, Industrial Peripherals, Power Efficient, and optional Wi-Fi 6 and Bluetooth 5.4

(Offered with NXP IW611 Wi-Fi 6 and Bluetooth 5.4 – or choose from our broad wireless options!)

Our new Nitrogen iMX93 OSM-MF family is powered by NXP's i.MX 93 processor family, NXP's PCA9451A PMIC, our Sona NX611 (NXP IW611) Wi-Fi 6 and Bluetooth 5.4 wireless module, LPDDR4 RAM, and eMMC storage. The Nitrogen iMX93 OSM-MF is designed to meet the processing and connectivity needs of commercial, industrial, and medical products. Our flexible production options allow you to choose the RAM, eMMC storage, and Sona Wi-Fi and Bluetooth connectivity that is most optimized for your product. All Nitrogen iMX93 OSM-MF modules come with our industry leading software and integration support.

- **Powerful Multiprocessing:** Up to 1.7 GHz dual-core Cortex-A55 MPU and 250 MHz Cortex-M33 MCU allow you to run Linux and an RTOS on dedicated, hardware-firewalled subsystems.
- **Display:** Supports MIPI-DSI or LVDS displays at up to 1920x1200 @ 60 fps
- **Camera Support:** 1x 2-lane MIPI-CSI, single camera source up to 1080p60
- **AI:** High-performance edge AI via an integrated Arm Ethos™-U65 microNPU, delivering up to 0.5 TOPS.
- **Offered with Sona NX611 Wi-Fi 6 and Bluetooth 5.4:** Optional wireless based on NXP IW611. Additionally, choose from our Sona TI351, Sona IF513, and Sona IF573.
- **High Speed Interfaces:** Dual USB 2.0 (480 Mbps) and dual Gb Ethernet (1 Gbps)
- **Industrial Interfaces:** UART, SDIO, SPI, I2C, CAN-FD, GPIO, and more
- **Software / Board Support:** Yocto Linux/Buildroot Linux/Debian for Cortex-A55
- **Secure and Encrypted Boot, Secure Enclave, and Secure File Storage:** Robust, secure, and encrypted boot mechanisms built on NXP's EdgeLock® Secure Enclave. Only trusted software boots on your device. Store and use keys, certificates, and credentials in a run-time isolated trusted environment.
- **OSM-MF v1.2 Standard Form Factor:** 45mm x 30mm OSM-MF solder down form factor ensures one carrier design can support multiple processor, memory, and wireless configurations.
- **Hardware Upgrade Roadmap:** Build a product design that can easily be upgraded to the latest processors and wireless options as future Ezurio SOMs based on the OSM standard are released.
- **Advanced Common Carrier/Development Board:** Display, camera, audio, Ethernet, USB, PCI-Express, CAN, I2C, SPI, UART, power measurement, and more. Use in development and as reference designs for your carrier board design.



Choose the Options That Fit Your Project Needs

Temperature Range: Choose our industrial temperature models for harsh environments or our commercial temperature models for cost optimization

Memory: Choose the LPDDR4 DRAM and onboard eMMC storage sizes that best fit your design's cost and performance.

Wi-Fi and Bluetooth: Select from our line of Sona wireless modules featuring dual band Wi-Fi 6, tri-band Wi-Fi 6E, up to Bluetooth 6.0, and multiple antenna configurations.

Carrier Board Customization: Use our reference carrier board to accelerate your design or we can create a fully custom board solution for your project

Long Term Software Support: Choose from Yocto Linux, Buildroot Linux, Debian for the Cortex-A55. Optional **Security BSP Releases** deliver LTS Linux kernel, Yocto, and Buildroot releases outside our normal cycle to address CVEs, keeping your SBOMs up to date with the latest security fixes.

Device Security: Our optional **Chain of Trust** capability, built on EZ BSP and the NXP EdgeLock Secure Enclave, adds a **Secure Device Framework**, **Production-Grade Image Signing**, and **Manufacturing Provisioning** – including secure / encrypted boot, secure programming of the hardware root of trust and device image, secure generation and provisioning of device-specific keys and certificates, and a secure signing service for new firmware and certificates.

Key Features



Graphics, Displays, and Cameras

Supports MIPI-DSI or LVDS displays up to 1920x1200, camera support up to 1080p60



Broad Selection of Peripherals

USB 2.0, Gigabit Ethernet, and TSN, CAN-FD, UART, I2C, SPI, SDIO 3.0/eMMC 5.1 up to UHS-1, GPIOs, ADCs



OSM-MF v1.2 Compatible

Built in the size optimized 45x30mm OSM Size-MF form factor and pin-compatible with our full range of OSM-MF modules



Robust Software and Board Support

Choose from Yocto Linux, Buildroot Linux, or Debian for Cortex-A55



Secure Enclave and Secure Boot

Secure boot and secure file storage come pre-integrated in our Yocto and Buildroot Linux BSPs, using the EdgeLock Secure Enclave to protect passwords, certificates, and application data.



Choose your Sona Wi-Fi and Bluetooth Module

Select from our line of Wi-Fi 6 and Wi-Fi 6E modules that include up to Bluetooth 6.0 and global radio certifications



Personal Support from Design to Manufacture

Our industry-renowned support and field application engineering team is passionate about helping you speed your design to market.

Application Areas



Smart Building Control, HVAC



Energy Meters, Energy Storage
Smart Electrical Panels



Test and Measurement
Equipment



Smart City



Commercial Food and Beverage
Equipment



Medical Devices

Specifications

Category	Feature	Specification
Processors	Applications Processor	2x Cortex-A55 core @ up to 1.7 GHz
	Applications Microcontroller	1x Cortex®-M33 core @ 250 MHz
	Graphics Engine	2D Engine
	AI	Arm Ethos™-U65 microNPU Neural Processing Unit (NPU) with up to 0.5 TOPS
Security	Hardware Root of Trust	EdgeLock® Secure Enclave
Memory	RAM	512MB, 1GB, and 2GB LPDDR4 (2GB LPDDR4 default)
	Storage	16GB to 128 GB eMMC (16GB eMMC default)
Graphics and Video	Display Interfaces	1x MIPI DSI, up to 1920x1200 @ 60 fps
		1x LVDS (Single Link), up to 1366x768 @ 60 fps or 1280x800 @ 60 fps
Vision	Camera	1x 2-lane MIPI CSI, single source up to 1080p60
Audio	Audio Interfaces	1x I2S
Peripherals Interfaces		2x USB 2.0 (480 Mbps)
		2x Gigabit Ethernet with Energy Efficient Ethernet, IEEE® 1588, and TSN
		2x CAN-FD
		2x 4-wire UART
		2x 2-wire UART
		3x I2C**
		1x SPI
		1x 4-bit SDIO 3.0/eMMC 5.1 up to UHS-1
		3x PWM
		32x GPIO
		4x ADC**
		Sona NX611
		Sona IF513
		Sona IF573
		Sona TI351
Power	Supply Voltage	5V
Physical	Dimensions	OSM-MF v1.2 Standard – 45mm x 30mm
Environmental	Temperature Range	0°C to +70°C (Commercial) and -40° to +85 °C (Industrial)
	Lead Free	Lead-free and RoHS-compliant

**The additional Interfaces beyond OSM-MF v1.2 spec are available on OSM's GPIO pins

Ordering Information

Part	Description
Evaluation Kits	
EZOMI-935-0216-00158-2-K2	Nitrogen iMX93 OSM-MF Evaluation Kit: 7 in Display / Eval Board / HDMI Adapter / SOM on Adapter / i.MX 935 / 2GB RAM / 16GB eMMC / NX611 Wi-Fi-BT / Accessories
EZOMI-935-0216-00158-2-KC	Nitrogen iMX93 OSM-MF Evaluation Kit: 7 in Display / 8.3MP Camera / Eval Board / HDMI Adapter / SOM on Adapter / i.MX 935 / 2GB RAM / 16GB eMMC / NX611 Wi-Fi-BT / Accessories
EZCBC-000-0000-00000-2-K2	OSM Evaluation Kit: Eval Board / HDMI Adapters / Antennas / Accessories / SOM sold separately
Boards for Evaluation Kits	
EZOMI-935-0216-00000-2-IK	Nitrogen iMX93 OSM-MF SOM on Adapter: i.MX 935 / 2GB RAM / 16GB eMMC / Without Wireless / For Use with OSM Evaluation Kit
EZOMI-935-0216-00158-2-IK	Nitrogen iMX93 OSM-MF SOM on Adapter: i.MX 935 / 2GB RAM / 16GB eMMC / NX611 Wi-Fi-BT / For Use with OSM Evaluation Kit
EZOMI-935-0216-00184-2-IK	Nitrogen iMX93 OSM-MF SOM on Adapter: i.MX 935 / 2GB RAM / 16GB eMMC / IF513 Wi-Fi-BT / For Use with OSM Evaluation Kit
Distribution-stocked super set variants for evaluation and prototyping	
EZOMI-935-0216-00000-2C	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Without Wireless / -40 to +85°C / Cut Tape
EZOMI-935-0216-00158-2C	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona NX611 1MHF4L / -40 to +85°C / Cut Tape
EZOMI-935-0216-00184-2C	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona IF513 1MHF4L / -40 to +85°C / Cut Tape
OSM Boards (iMX 93)	
<i>Without Wireless</i>	
EZOMC-935-0116-00000-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Without Wireless / 0 to +70°C / Tape and Reel
EZOMI-935-0116-00000-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Without Wireless / -40 to +85°C / Tape and Reel
EZOMC-935-0216-00000-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Without Wireless / 0 to +70°C / Tape and Reel
EZOMI-935-0216-00000-2C	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Without Wireless / -40 to +85°C / Cut Tape
EZOMI-935-0216-00000-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Without Wireless / -40 to +85°C / Tape and Reel

Part	Description
<i>With Sona NX611</i>	
EZOMC-935-0116-00158-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona NX611 1MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0116-00158-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona NX611 1MHF4L / -40 to +85°C / Tape and Reel
EZOMC-935-0216-00158-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona NX611 1MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0216-00158-2C	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona NX611 1MHF4L / -40 to +85°C / Cut Tape
EZOMI-935-0216-00158-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona NX611 1MHF4L / -40 to +85°C / Tape and Reel
<i>With Sona IF513</i>	
EZOMC-935-0116-00184-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona IF513 1MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0116-00184-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona IF513 1MHF4L / -40 to +85°C / Tape and Reel
EZOMC-935-0216-00184-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona IF513 1MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0216-00184-2C	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona IF513 1MHF4L / -40 to +85°C / Cut Tape
EZOMI-935-0216-00184-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona IF513 1MHF4L / -40 to +85°C / Tape and Reel
<i>With Sona IF573</i>	
EZOMC-935-0116-00117-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona IF573 3MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0116-00117-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona IF573 3MHF4L / -40 to +85°C / Tape and Reel
EZOMC-935-0216-00117-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona IF573 3MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0216-00117-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona IF573 3MHF4L / -40 to +85°C / Tape and Reel
<i>With Sona TI351</i>	
EZOMC-935-0116-00199-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona TI351 1MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0116-00199-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 1GB / 16GB eMMC / Sona TI351 1MHF4L / -40 to +85°C / Tape and Reel
EZOMC-935-0216-00199-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona TI351 1MHF4L / 0 to +70°C / Tape and Reel
EZOMI-935-0216-00199-2R	Nitrogen iMX93 OSM-MF: i.MX 935 / 2 A55 / 2GB / 16GB eMMC / Sona TI351 1MHF4L / -40 to +85°C / Tape and Reel