

eBook

Arm System on Modules from iWave

Powering Industrial, Automotive &
Edge AI Applications



Arm SoMs Applications

Industrial

Smart Home
HMI & PLCs
Factory Automation



Automotive

Telematics Control Unit
ADAS
V2X systems



Medical

Patient monitoring
Diagnostic & imaging systems



AI & Vision

Smart Surveillance & Video Analytics
Industrial Machine Vision
Retail & Smart City Solutions



Arm System on Modules

What & Why ?



Core Components

- Arm® Cortex-A based Application Processors
- Support for NXP, TI, STMicroelectronics, Renesas, MediaTek SoCs
- Up to 8-core Cortex-A CPUs (Cortex-A53/A55/A72)
- Cortex-M / Cortex-R cores for real-time & safety tasks
- Integrated GPU, ISP, DSP, and AI/NPU accelerators (SoC dependent)

Memory & Storage

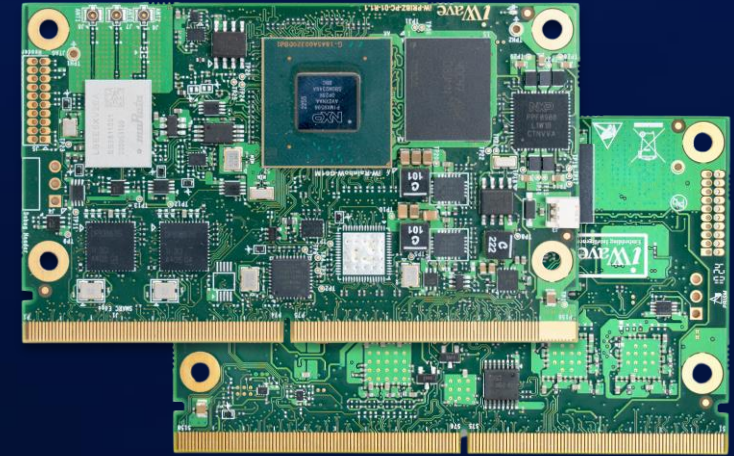
- Up to 16GB DDR4 / LPDDR4 / LPDDR4X RAM
- Optional ECC memory support (SoC dependent)
- Up to 128GB eMMC Flash
- QSPI / OSPI NOR Flash up to 256MB
- EEPROM for board configuration and calibration

Connectivity

- High-density Board-to-Board connectors
- PCIe Gen2 / Gen3 (up to x4)
- Up to 2 × Gigabit Ethernet
- USB 2.0 / 3.0 / 3.1
- CAN / CAN-FD
- UART, SPI, I2C, SDIO
- Wi-Fi & BLE options via expansion modules

Other Interfaces

- MIPI-CSI camera interfaces (up to 4 lanes per port)
- MIPI-DSI/HDMI/LVDS display interfaces
- Hardware H.264 / H.265 video encode & decode
- Integrated AI / NPU acceleration up to multi-TOPS performance
- Optimized for edge AI and vision processing



Power & Thermal

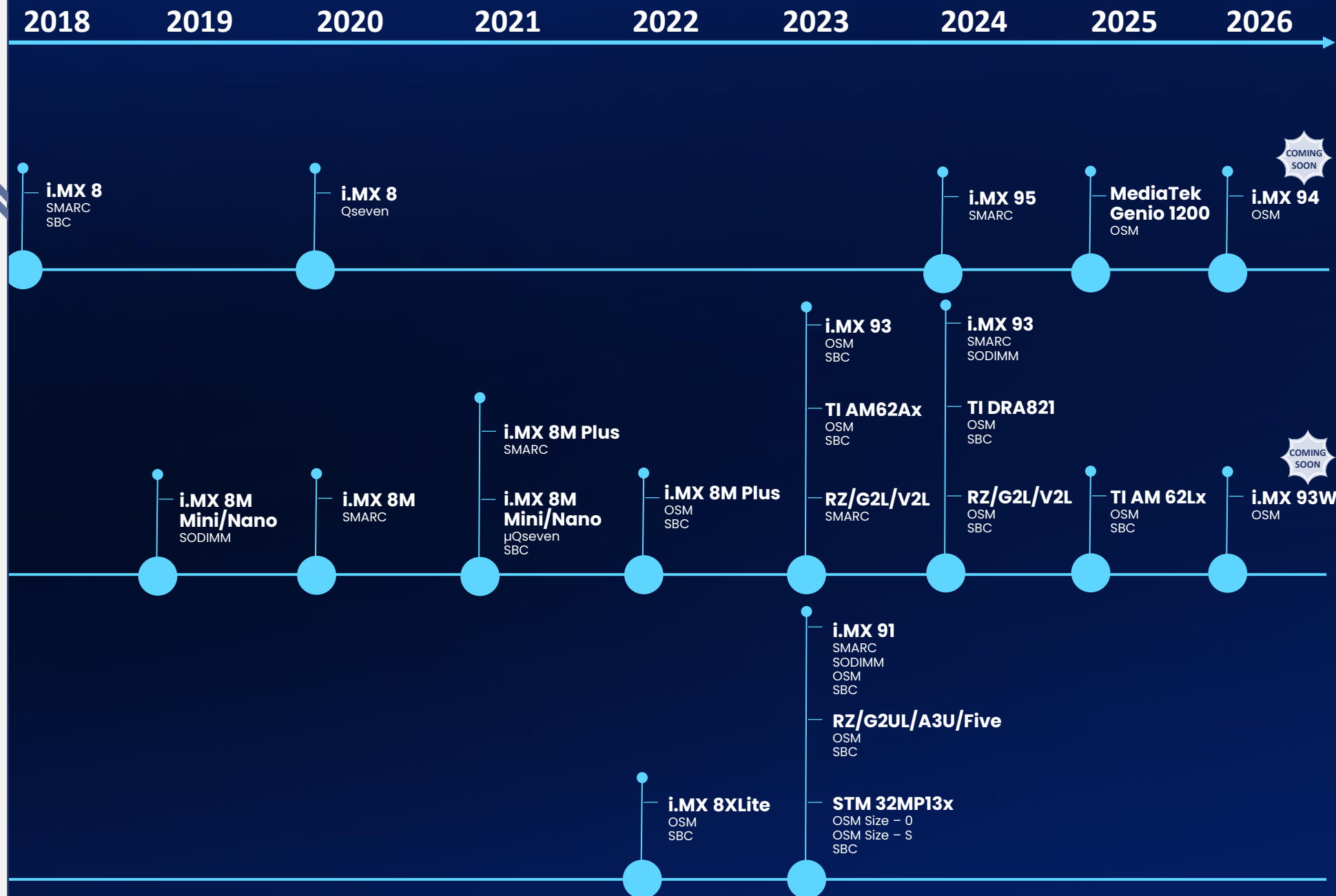
- On-module power management and sequencing
- Optimized low-power architecture
- Industrial-grade components
- Support for heat spreaders and thermal solutions
- Extended temperature operation (SoC dependent)

Software Support

- Yocto-based Linux BSPs
- Android, QNX support
- RTOS support for real-time cores
- Secure boot, TrustZone®, and OTA support
- Long-term BSP maintenance

Arm Product Roadmap

Performance



Arm Boards & Solutions



System on Modules

An extensive portfolio of Arm-based System on Modules built on leading SoCs from NXP, TI, ST, Renesas & MediaTek, ensuring the right product fit for diverse embedded applications.

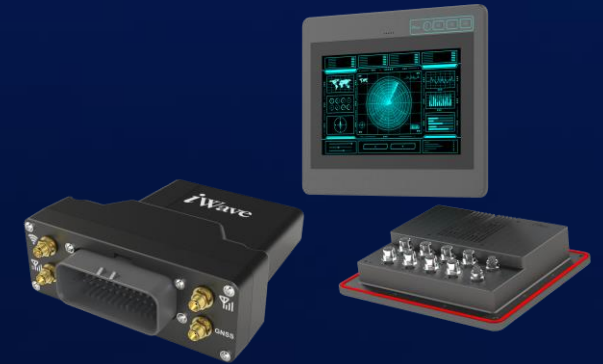
The Arm SoMs are pre-qualified, validated & production-ready, enabling faster product development with reduced design risk.



Development Platforms

Comprehensive evaluation & development platforms featuring SoM + carrier board solutions for rapid prototyping and software bring-up.

These platforms enable customers to evaluate performance, interfaces, multimedia, and AI capabilities & accelerate transition from concept to production.



Solutions

iWave's Arm-based solutions enable reliable telematics and HMI systems with rich connectivity, display support, and long-term availability, backed by production-ready hardware and BSP support.

Arm System on Module Portfolio

iG-G61M



i.MX 95
SMARC

COMING
SOON

iG-G85M



i.MX 94
OSM

COMING
SOON

iG-G50M



i.MX 93W
OSM

iG-G50M



i.MX 93
OSM | SMARC | SODIMM

iG-G50M



i.MX 91
OSM | SMARC | SODIMM

iG-G40M



i.MX 8M Plus
OSM | SMARC | SBC

iG-G46M



i.MX 8X Lite
OSM | SBC

iG-G34/37M



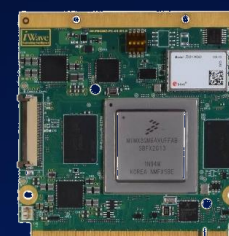
i.MX 8M Mini/Nano
SODIMM | Qseven | SBC

iG-G33M



i.MX 8M
SMARC

iG-G27M



i.MX 8QM/QP
SMARC | Qseven | SBC

iG-G15M



i.MX 6/i.MX 6ULL
SODIMM | Qseven | SBC

Arm System on Module Portfolio



iG-G70M



MediaTek Genio 1200
OSM

iG-G54M



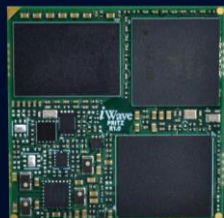
STM32MP135
OSM | SBC

iG-G54M



STM32MP133
OSM | SBC

iG-G69M



TI AM62Lx
OSM | SBC

iG-G55M



TI AM62Ax
OSM | SBC

iG-G59M



TI DRA821UX
OSM | SBC

iG-G53M



RZ/G2UL/A3UL/Five
OSM | SBC

iG-G56M



RZ/G2L
OSM | SMARC | SBC

iG-G56M



RZ/V2L
OSM | SMARC | SBC

Unique Features of Arm SoM

iWave delivers reliable and scalable Arm SoM platforms engineered for industrial, automotive, and edge AI systems.

Industry-Ready Hardware Design

- ✓ On-module power management and sequencing
- ✓ Optimized DDR and high-speed interface design
- ✓ Industrial-grade component selection
- ✓ Simplifies carrier board design for industrial products

Robust Software & BSP Enablement

- ✓ Yocto-based Linux BSPs
- ✓ RTOS support for real-time and control applications
- ✓ Secure boot and TrustZone® for device security
- ✓ Long-term BSP maintenance aligned with product lifecycle

Reliability & Product Longevity

- ✓ Designed for continuous operation & harsh environments
- ✓ Industrial temperature support
- ✓ Long-term availability and lifecycle management
- ✓ Qualified & validated platforms for production deployment

Scalability Across Industrial Product Lines

- ✓ Multiple Arm SoM portfolio across performance tiers
- ✓ Pin-compatible and form-factor-compatible options
- ✓ Scalable performance without carrier redesign
- ✓ Enables smooth product upgrades and roadmap alignment

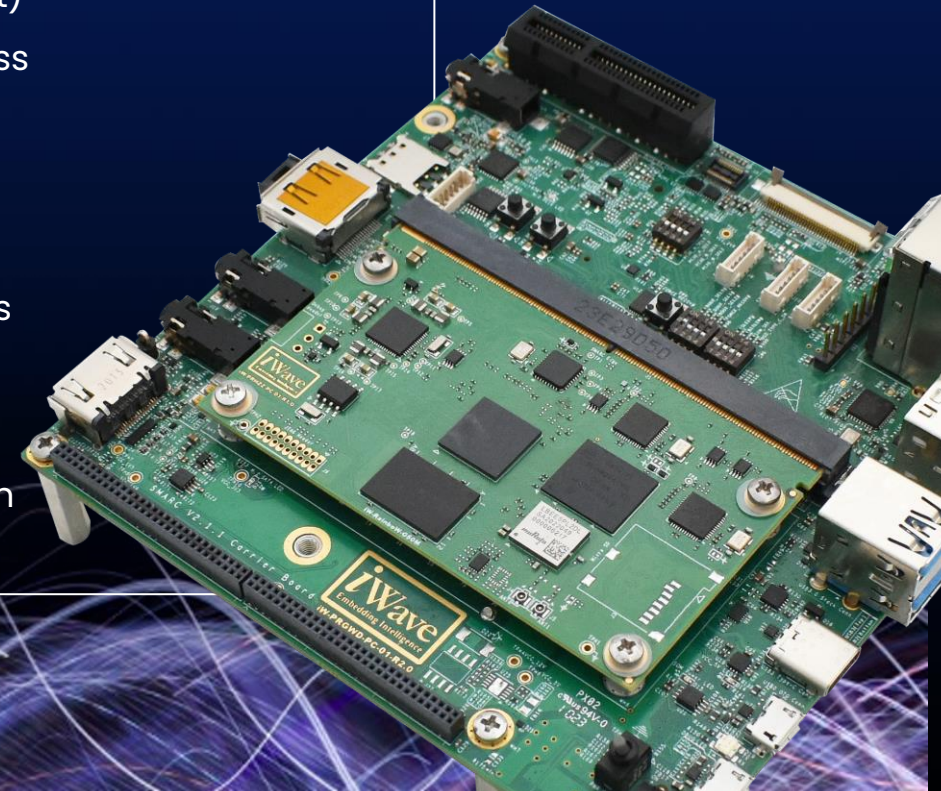
Software Features

- Yocto-based Linux BSPs for Arm SoMs enabling seamless system bring-up and application development
- Support for multiple Yocto releases aligned with long-term product lifecycle requirements
- Android support on selected Arm platforms for HMI and multimedia applications
- RTOS support for Cortex-M / Cortex-R cores enabling real-time and control-oriented workloads
- Pre-validated device drivers for key peripherals including Ethernet, USB, PCIe, CAN, and display interfaces
- Secure boot and TrustZone® support for industrial and connected devices
- Comprehensive software documentation, build scripts, and reference images
- Long-term BSP maintenance and support provided by iWave

Evaluation Platform

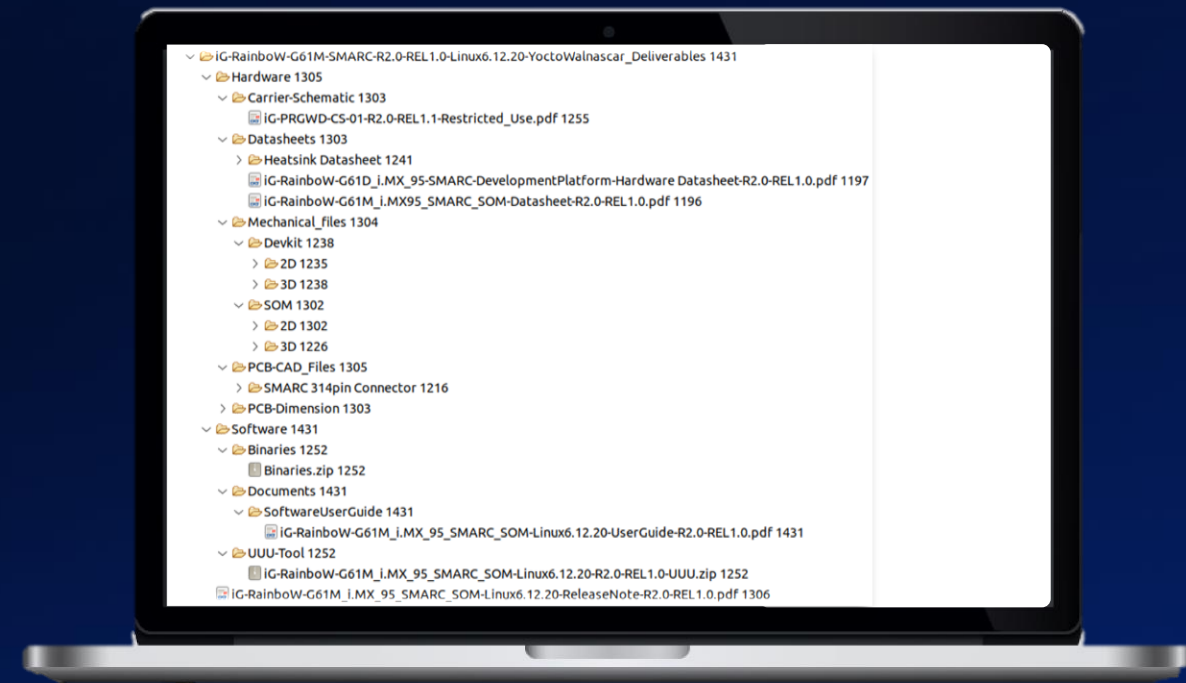
Unified evaluation platform for multiple iWave ARM SoMs

- Eliminates the need for separate EVKs per Form Factor
- Production-oriented carrier design for early validation
- Gigabit Ethernet (single/Dual) support
- USB 3.0 and USB 2.0 Host & OTG interfaces
- PCIe Gen2/Gen3 expansion (x1/x2/x4, SoC dependent)
- M.2/SATA storage support for high-speed data access
- HDMI/DisplayPort/LVDS display interfaces
- MIPI-DSI display support (SoC dependent)
- MIPI-CSI camera interfaces for vision applications
- CAN/CAN-FD for automotive and industrial use cases
- Standard UART, I²C, SPI, and GPIO expansion headers
- Yocto-based Linux BSP with verified drivers
- Designed for rapid prototyping and smooth transition to production



Deliverables

- **iWave BSP build tool is provided to automate the Yocto build process.**
 - GUI interface support
 - One click Initializing the host environment
 - Option to select different Arm SoC
- BSP upgraded periodically
- Dedicated support channel



Case Study

X-Ray Machine i.MX 8QM SMARC System on Module

Customer Background

A leading company specializes in manufacturing of Medical Equipment.

iWave Scope of Work

iWave delivered a i.MX 8QuadMax SoM integrates multiple Arm processor cores with high-speed connectivity including Gigabit Ethernet, USB 3.0, SATA 3.0, and rich GPIO interfaces.

Designed for vision-intensive applications, it supports multiple sensor configurations and high-speed interfaces for efficient data acquisition and processing. The platform enables accurate handling of high-speed signals while offering fast boot times

Case Study

Heart Pump Simulator i.MX 8QM SMARC System on Module

Customer Background

A leading supplier of Medical Diagnostic Equipment

iWave Scope of Work

iWave's i.MX 8QuadMax SoM is built on a high-performance multicore Arm architecture featuring Cortex-A72 and Cortex-A53 processors, along with dual Cortex-M4 cores for real-time control.

The platform enables seamless integration with sensors, actuators, and system components such as heart pump mechanisms, while offering user-friendly interfaces for monitoring and controlling simulation parameters. With significant computational capability, it efficiently handles complex algorithms and real-time data processing for demanding embedded and medical applications.

Case Study

Medical Device i.MX 8M Mini PICO ITX Single Board Computer

Customer Background

An US based company, the leader in the biophysical therapeutic effects of non-thermal pulsed electromagnetic energy in medicine.

iWave Scope of Work

iWave's i.MX 8M Mini PICO-ITX SBC is designed to meet application requirements for processing performance, memory capacity, connectivity, and commercial-grade temperature support.

It enables seamless integration of imaging and other medical sensors used in tissue treatment applications, and comes with a ported Linux operating system to support rapid development, system bring-up, and application deployment.

Case Study

Drones MediaTek Genio 1200 OSM System on Module

Customer Background

A leading company that specializes in designing and manufacturing high-precision stabilizers for aerial imaging systems. Their solutions are widely used in applications such as mapping, inspection, agriculture, and cinematography.

iWave Scope of Work

iWave developed a custom OSM SoM based on the Genio 1200 SoC with signal integrity validation. The solution supports dual 4K displays, multi-camera inputs, and integrated AI acceleration for edge AI applications.

iWave also provided engineering samples, pre-production support, white-label manufacturing, and end-to-end production and supply chain management.



Resources

Technical Articles

- [Article – Intelligent Traffic Management with MediaTek Genio 1200 SoM Powered Edge AI Gateways](#)
- [Article – ARA-2 Edge AI Acceleration on i.MX95 SMARC Platform](#)
- [Article – TLS-Encrypted Ethernet Communication for Secure Data Transmission on i.MX8MP](#)
- [Article – Unlocking Android Innovation on NXP i.MX93](#)
- [Article – Accelerate Edge Intelligence on i.MX93 System on Modules](#)
- [Article – i.MX 93 System on Module: A Building Block for Gateways & HMI Solutions](#)
- [Article – Open Standard Module \(OSM\): A Next-Gen Standard for System-on-Modules](#)
- [Article – Multi-Display Mirroring made Easy with Weston Clone Mode on i.MX 8M Plus System on Module](#)
- [Article – iWave now supports NXP's Official Debian 12 Release on i.MX System on Modules](#)
- [Article – Smarter Factories: Revolutionizing Vision Inspection with the iWave Genio 1200 \(MediaTek MT8395\) OSM](#)
- [Article – Custom i.MX Powered Boards and Solutions in just 8 Weeks](#)
- [Article – Zephyr OS on NXP Platforms: Powering Real-Time, Scalable Embedded Systems](#)
- [Article – Enabling Zigbee Connectivity on i.MX 93 System on Module from iWave](#)
- [Article – Enabling Jailhouse on NXP SoM from iWave for Real-Time Embedded Systems](#)
- [Article – i.MX 93 System on Module: IoT Ready with Thread Protocol](#)
- [Article – Enabling Native RTOS on Cortex-A for Real-Time Edge Performance](#)
- [Article – DRP-AI Accelerator on RZ/V2L System on Module Enabling Efficient AI Processing on the Edge](#)

Videos

- [Video – iWave Launches i.MX 95 SMARC System on Module](#)
- [Video – Explore the i.MX 93 SoMs in OSM, SMARC & SODIMM Form Factors#iwave #som #nxp #osm #embedded](#)
- [Video – Discover iWave's i.MX 9 Product Portfolio](#)
- [Video – Enabling Edge Intelligence with LVGL Graphics and DMS on i.MX 95 & i.MX 93 Platforms | iWave](#)
- [Demo Video – Multi-Display Mirroring made Easy with Weston Clone Mode on i.MX 8M Plus System on Module](#)
- [Video – iWave's i.MX 8M Plus SoM & SBC: Versatile Solutions for Advanced Embedded Applications](#)

Thank You

We are here to

Accelerate Embedded Innovation

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INDIA | USA | GERMANY | EUROPE | TAIWAN | KOREA | JAPAN | DUBAI