

OSM iMX95

PRODUCT BRIEF



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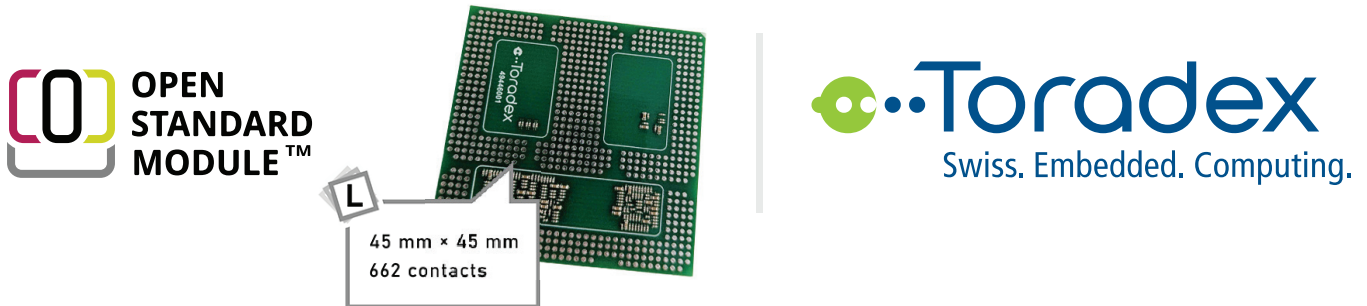


OSM iMX95 Product Brief

Toradex OSM - Compact, Solderable, High-Volume ready SoMs

The OSM Size-L form factor delivers a compact 45 x 45 mm footprint with a fully solderable, connector-less BGA interface. Designed to be completely machine-processable during soldering, assembly, and testing, OSM enables space-efficient designs, ideal for cost-optimized and high-volume products.

If your application demands miniaturization, long-term reliability, and a solderable SoM, OSM modules are a strong fit, enhanced by Toradex's high quality, industrial reliability, and comprehensive documentation and support.



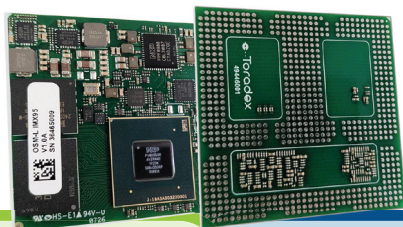
Is Solderable For You?

Selecting a solderable SoM is not only about product requirements, it also depends on your production capabilities. OSM modules are best suited for manufacturing lines equipped with automated SMT (Surface-Mount Technology) and reflow processes. If your factory supports these workflows, OSM provides an efficient, scalable integration path.

If your production process relies on manual assembly, requires easier handling during development, or benefits from a pluggable module for prototyping or field replacement; Verdin, Aquila or SMARC families might be a better fit.

Features / Form Factor	Toradex OSM Modules	Other Toradex Families
Form Factor	OSM Size-L	Verdin, Aquila or SMARC
Connector	Solderable	Board-to-board or Edge Connector
Manufacturing Process	SMT and reflow processes	Manual assembly
Ideal Project Sizes	High volume projects, 10k to 250k units per year	Market standard volume projects, 1k to 50k units per year
Industrial Ready	Industrial temperature, high reliability, security	

Toradex OSM Family



Solderable interface:

Eliminates connectors, enabling fully automated production.

Leverage Your Own Automated Line:

Uses existing soldering and inspection equipment for seamless integration.

Treat Soldering Like a Component:

Mounts directly to your PCB using standard SMT and reflow processes.

Industrial Ready

Designed and manufactured for high reliability in demanding environments

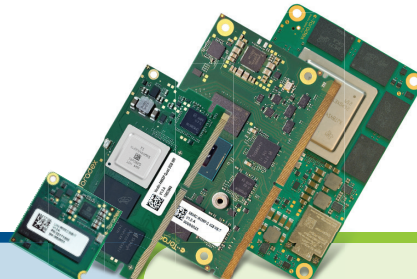
Secure By Design

Simplifies compliance with global Cyber security regulations, such as the EU CRA.

Seamless software integration:

Powered by Torizon OS and Torizon Cloud.

Other Toradex Families



Family pinout compatibility:

Scalable performance across the SoM family through pin compatibility.

Simpler manufacturing infrastructure :

Less demanding process control and complexity, reducing production costs.

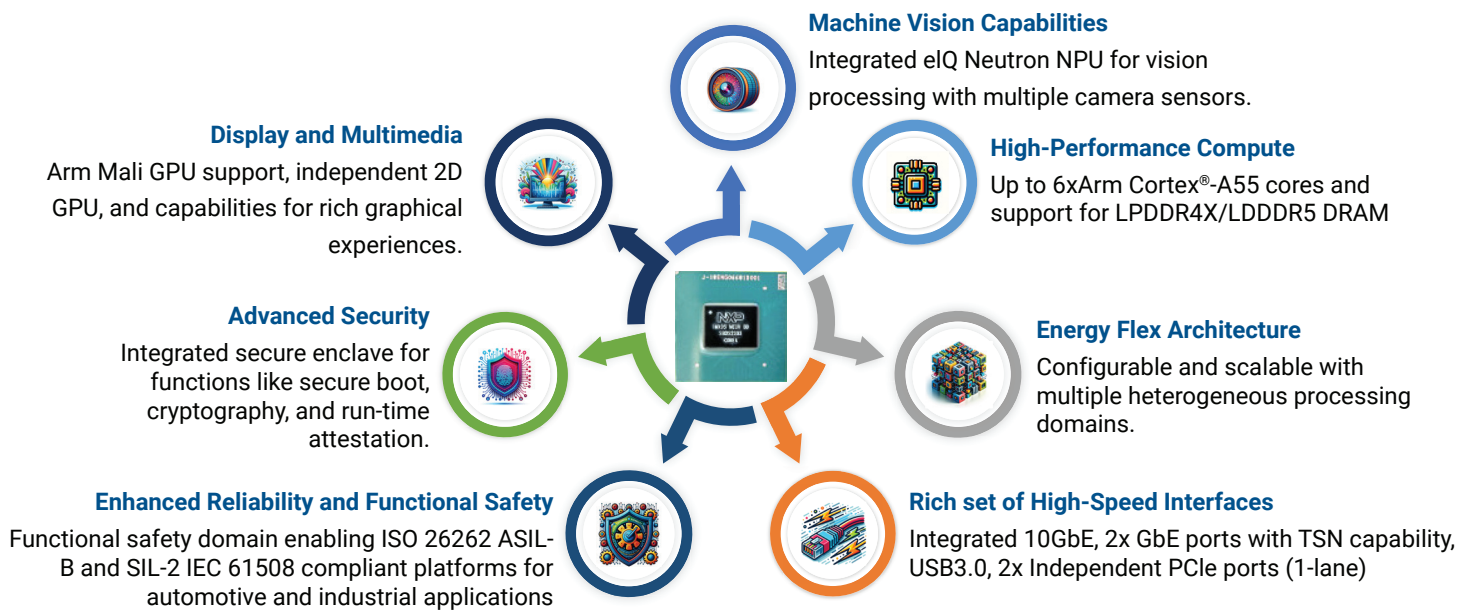
Flexible Prototyping:

Swap modules during development to test performance or configurations quickly.

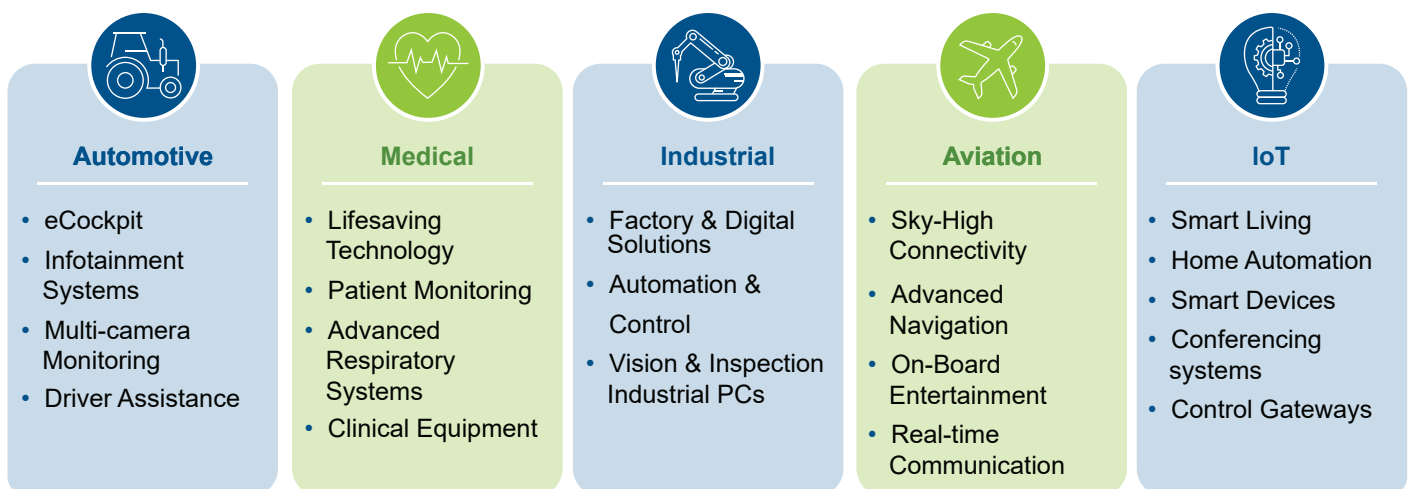
OSM iMX95 Product Brief

iMX95 SoC overview

The NXP i.MX 95 is a next-generation applications processor designed to power a wide range of intelligent edge applications. Combining up to six Arm Cortex-A55 cores, integrated machine learning acceleration with the eIQ Neutron NPU, and a robust multimedia pipeline, it delivers scalable performance, advanced graphics, and functional safety in a single industrial-grade platform. Built for demanding use cases, the i.MX 95 enables rich user experiences, vision-based AI, and secure, connected systems across diverse markets.



Designed to meet the complex demands of modern embedded systems, the i.MX 95 SoC supports diverse applications across multiple industries. From automotive eCockpit and advanced driver assistance systems, to smart medical devices, industrial automation, and high-performance IoT gateways — the i.MX 95 brings powerful processing, edge intelligence, and long-term reliability to market. Its modular architecture and scalability make it ideal for evolving product lines and mission-critical use cases.



OSM iMX95 Product Brief

Toradex iMX95 SoMs comparison

Toradex offers a versatile lineup of i.MX 95-based System on Modules (SoMs) to address a wide range of design requirements. Whether your priority is maximum performance and interface availability, a compact and cost-effective design, or adherence to industry standards like SMARC or OSM, there's an option tailored to your needs. The Aquila, Verdin, SMARC and OSM form factors provide flexibility in connectivity, mechanical layout, performance scalability and production requirements.

Features / SoMs	Aquila iMX95	Verdin iMX95	SMARC iMX95	OSM iMX95
Form Factor	Aquila	Verdin	SMARC	OSM Size-L
SoM Physical Size	85.0 × 55.0 mm	69.6 × 35.0 mm	82.0 × 50.0 mm	45.0 × 45.0 mm
SoM Connector	400 pin Board to Board	DDR4 SODIMM 260 pin Edge Connector	MXM 314 pin Edge Connector	662 BGA pins
Package Type	19 mm × 19 mm	15 mm × 15 mm	19 mm × 19 mm	19 mm × 19 mm
RAM Technology	LPDDR5 (6.4 GT/s)	LPDDR4x (4 GT/s)	LPDDR5 (6.4 GT/s)	LPDDR5 (6.4 GT/s)
GbE with onboard PHY	1x	1x	2x	-
ETH RGMII	1x	1x	-	2x
10GbE	Yes	No	Yes	Yes
PCIe Instances	2x	1x	2x	2x
Keywords	• High performance • Interface availability	• Low cost • Compact design	• SMARC 2.2 standard	• Solderable • High Volume
Recommend for	Manufacturers that... ... might need upwards scalability in performance (e.g., TI AM69) or a higher amount of interface availability.	Manufacturers that... ... might need downwards scalability in performance (e.g., NXP iMX8M Plus), a compact design, or lower costs.	Manufacturers that... ... have second sourcing as a hard requirement and need a standardized form factor for that.	Manufacturers that... ... needs automated SMT and reflow processes, for high-volume production and a reduced bill of material cost.

Each Toradex i.MX 95 SoM is strategically positioned within its own product family to offer clear scalability options. The **Aquila iMX95** is the entry-level option in the Aquila lineup, ideal for high-end designs needing strong performance and interface availability, with room to scale up later. The **Verdin iMX95** is the highest-performance Verdin module, bringing more power to a compact and cost-effective form factor. The **SMARC iMX95** follows the SMARC 2.2 standard, offering a standardized option for customers who need second sourcing and mechanical compatibility. The **OSM iMX95** is a solderable module optimized for fully automated SMT (Surface-Mount Technology) and reflow processes, enabling high-volume production with a reduced bill of material cost.

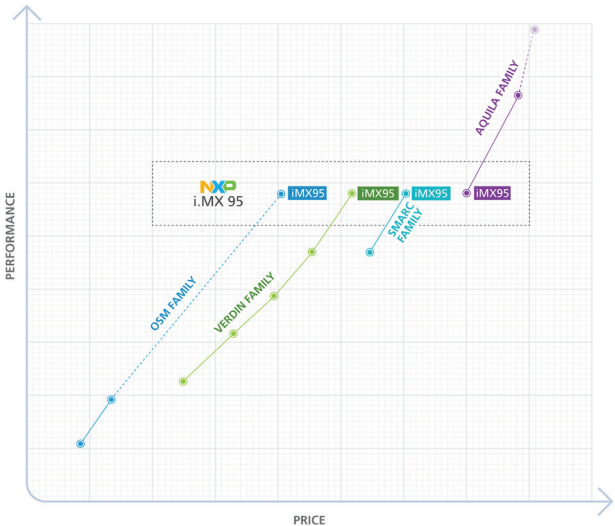
OSM iMX95 SoM

The OSM iMX95 is a ultra-compact, solderable System on Module (SoM) based on the OSM specification, designed for seamless integration into fully automated SMT manufacturing processes. By leveraging NXP's i.MX 95 applications processor, it enables high-performance embedded designs across a broad range of markets, including Industrial Automation, Medical, Transportation, Agriculture, Smart Cities, and Test and Measurement; specially in cost-sensitive, high-volume applications.

Optimized for direct board-to-board soldering, the OSM iMX95 eliminates the need for connectors, improving mechanical robustness while reducing BOM cost. It supports industrial and high-speed interfaces such as:

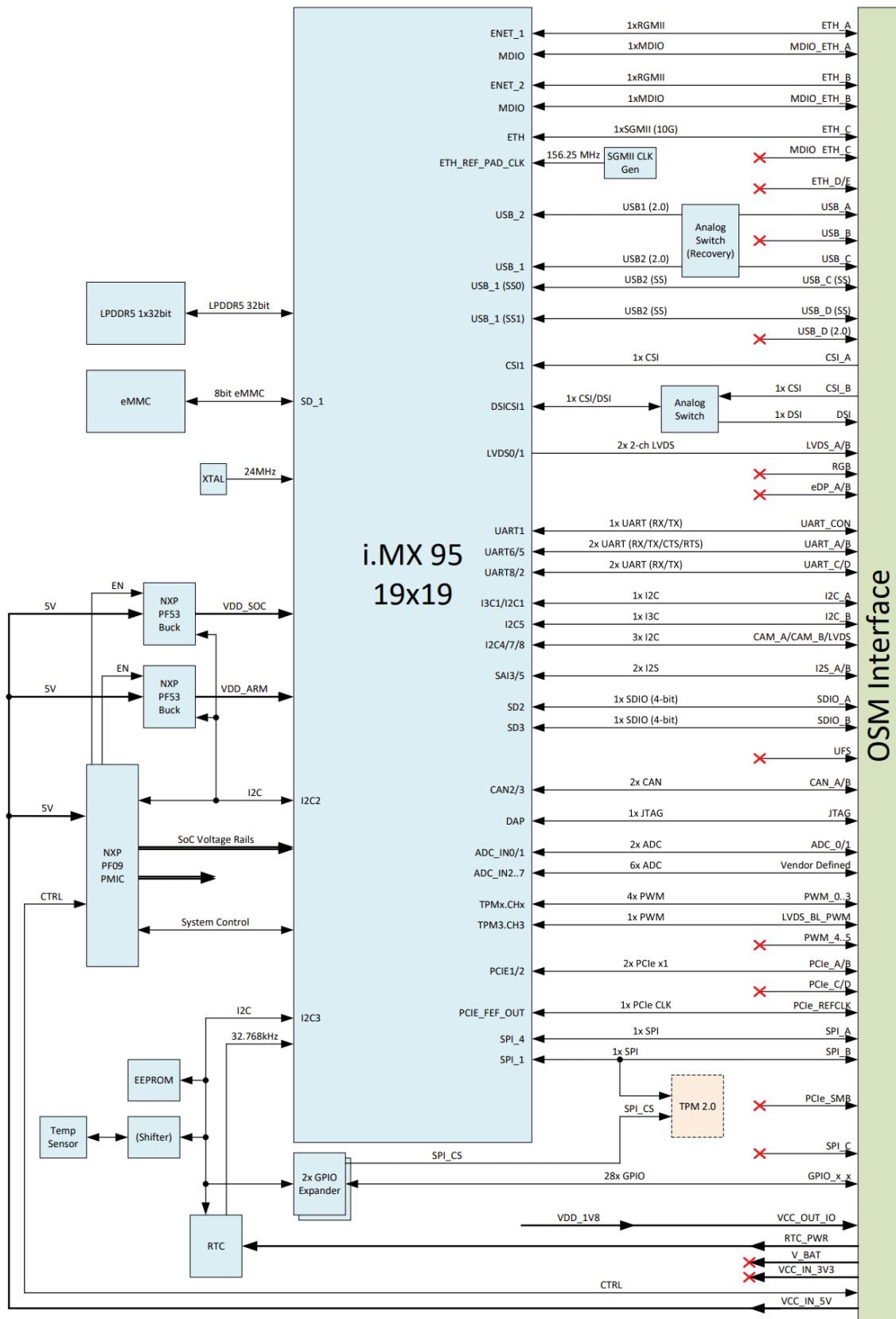
- GPIOs, I2C, I3C, SPI, USB, CAN FD, UART
- MIPI CSI for camera input
- LVDS and MIPI-DSI
- 2x PCIe Gen3 x1 for high-speed expansion
- 1x Gigabit Ethernet

In essence, the OSM iMX95 delivers a scalable and production-optimized platform, combining the performance of the i.MX 95 SoC with the manufacturing efficiency and reliability of a solderable OSM form factor.



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Block Diagram



Legend

- Dashed line. Assembly option.
- Blue line. Interface is available on the MSP pins.
- Red line. Interface is not available.

OSM iMX95 Product Brief

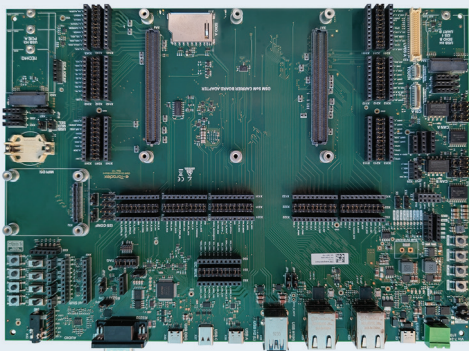
Interfaces Overview

The table below shows the interfaces that are supported on the OSM iMX95 module. Counts shown below are the “up to” numbers of each interface, they are subject to change given the individual SoM configuration.

For more information regarding Toradex OSM SoMs, see the [OSM Family webpage](#).

Features	Total (up to)
Analog	
Analog Input	8
Audio	
I2S	2
Camera	
MIPI CSI-2 (Quad-Lane)	2
Display	
LVDS (dual channel)	1
MIPI DSI-2 (Quad-Lane)	1
Low speed	
I2C	5
I3C	1 (alt)
SPI	2
UART	4
UART Console	1
PWM	5
CAN FD	2
JTAG	1
OSPI	1 (alt)
GPIO	32 (TBC)
Network	
RGMII	2
USX/S/GMII (for 2.5 and 10 Gb Ethernet)	1
Other	
PCIe Gen3	2
Storage	
SD/SDIO/MMC	2
USB	
USB 2.0 OTG	1
USB 3.1 OTG (SS Signals for USB 2.0 OTG)	1
USB 2.0 Host	1

OSM - Development and Evaluation



OSM Development Board

The OSM Development Board is a fully featured carrier board providing easy access to all features of the OSM family. The board exposes high-speed and peripheral interfaces including MIPI DSI (with HDMI and optional LVDS support via adapters), dual MIPI CSI camera inputs, 10 Gigabit Ethernet, CAN, RS232, RS485 and more.

OSM iMX95 Product Brief

Configuration Overview

The OSM iMX95 SoM is a SGET-compliant Open Standard Module (OSM) designed as a compact, solderable module ideally suited for high-volume and space-constrained applications. Powered by NXP’s i.MX 95 processor, it exposes high-speed interfaces such as PCIe, Ethernet, USB, and CAN FD, along with display and camera connectivity. This combination provides a robust and scalable platform for industrial, medical, and transportation systems.

The first configuration released is shown in the table below: OSM iMX95 Hexa 8GB IT.

Family	iMX95 Segment	A-Core Qty	RAM	eMCC	TPM	Temperature
OSMIMX95	9	6	-8G	-32G	-N	-IT

Additional configurations will be developed over time. In the meanwhile, the tables below summarizes the available configuration elements and how they can be combined. Use the "Configuration Inputs" tables to fill in the open fields from "NPI part number table" in order to build the desired configuration.

For additional specific requirements or tailored options, please, get in touch with us.

Note: The New Product Introduction (NPI) part number nomenclature shown below does not reflect volume or sellable part numbers from Toradex. They should only be used to communicate your desired configuration.

NPI part number table

Family	iMX95 Segment	A-Core Qty	RAM	eMCC	TPM	Temperature
OSMIMX95						

Configuration Inputs

iMX95 Segment	Description	A-Cores Qty	ISP	NPU	GPU	VPU	Display ¹
9	Full Featured	6 / 4	Yes	Yes	Yes	Yes	Yes
5	HMI	6 / 4		Yes	Yes	Yes	Yes
3	Compute	6 / 4		Yes			

1. The MIPI-DSI and LVDS interfaces are disabled. The display controller is enabled.

eMMC Capacity	
-4G	4 GB
-8G	8 GB
-16G	16 GB
-32G	32 GB
-64G	64 GB
-128G	128 GB
-256G	256 GB

Temperature	
-IT	Industrial (-40°C to 85°C)
-ET	Extended (-25°C to 85°C)
-CT	Commercial (0°C to 70°C)

TPM	
-T	TPM 2.0 assembled
-N	TPM 2.0 <u>not</u> assembled

RAM Density	
-2G	2 GB
-4G	4 GB
-8G	8 GB
-16G	16 GB

Contact us for more information, or visit our website product page: [OSM iMX95 product page](#).

OSM iMX95 Product Brief



Torizon is a ready-to-use Linux-based ecosystem that simplifies the development, management, and security of embedded devices. Built on a robust Linux foundation, it accelerates time-to-market with a production-grade software stack and no vendor lock-in.

Designed for reliability at scale, Torizon offers secure over-the-air updates, real-time capabilities, and streamlined device management throughout the product lifecycle. It empowers you to build, deploy, and maintain Linux devices with confidence.



Fast time-to-market
Ready-to-use
Linux distribution



Open Source
Based on open software,
no lock-in



Simple updates
Built-in, automotive-grade,
over-the-air update
capabilities



Real-time
Optimized real-time option



Secure
Frequent updates, accessible
security features



**Device
Monitoring**



**Subsystem
Updates**



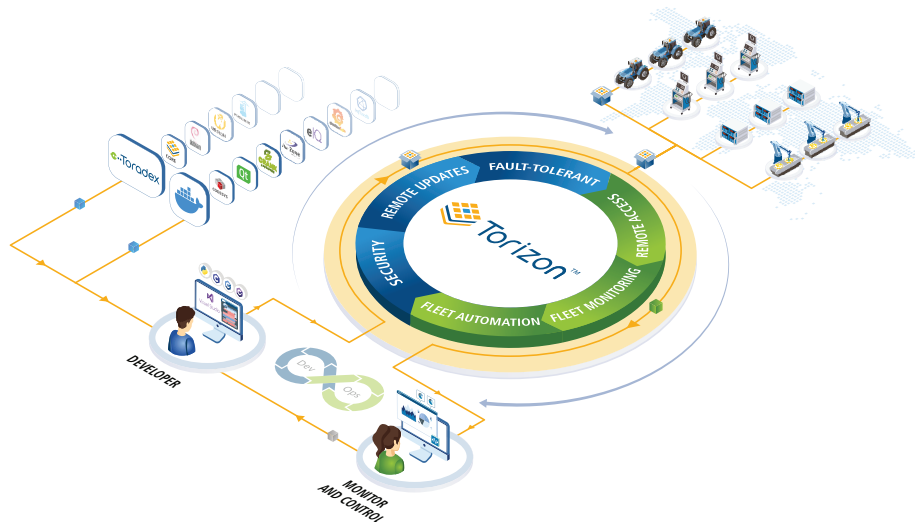
**Remote
Access**



**Remote
Updates**



**Secure
by Default**



To explore the full potential of the Torizon ecosystem, visit [Torizon.io](https://torizon.io)



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