



**Reliable and Easy-to-use
Embedded Solutions**



PLATINUM
PARTNER



**EMBEDDED
COMPUTING
MADE EASY**



WITH YOU TODAY...



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WE'RE LOCATED IN LUCERNE, SWITZERLAND

WHAT WE'LL COVER TODAY...

- Introduction to Toradex
- Products
- Software
- Support
- Success stories



TORADEX IN A NUTSHELL



FOUNDED
2003

ACTIVE CUSTOMERS
3000+

EMPLOYEES
150+

GLOBAL OFFICES
7

PROVEN PARTNERS
70+



FOUR MILLION MODULES DEPLOYED

GLOBAL PRESENCE CLOSE TO YOU

 **Toradex**
Swiss. Embedded. Computing.



GLOBAL WAREHOUSES AND SUPPORT

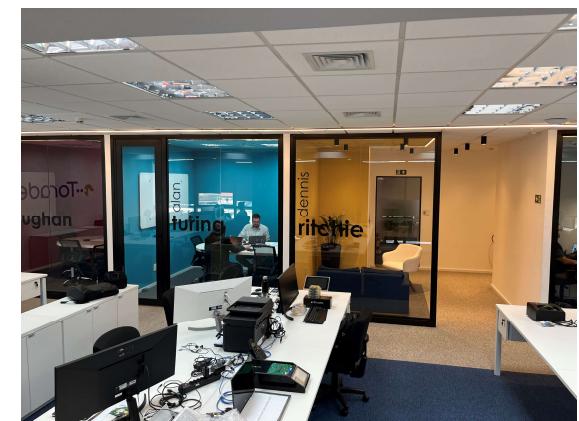
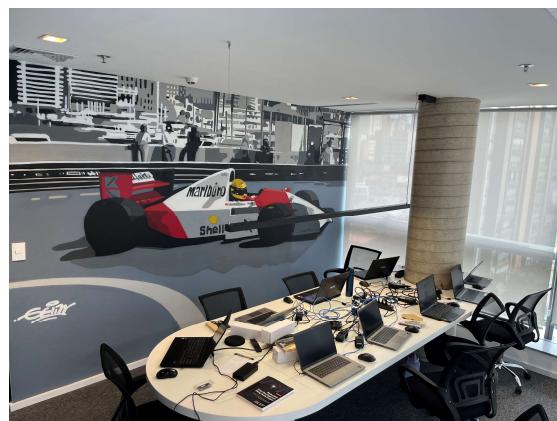
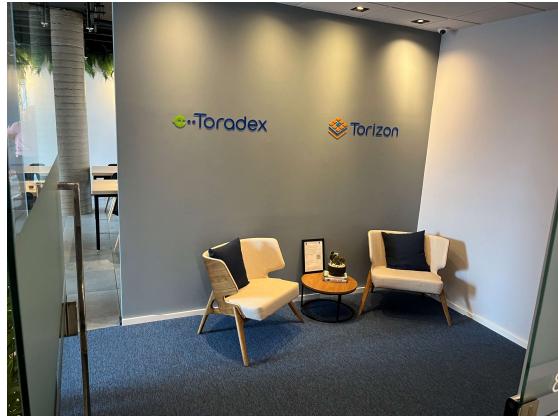


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BRAZIL OFFICE – CAMPINAS-SP

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TYPICAL APPLICATIONS

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TOP MARKETS

- Industrial Automation
- Healthcare
- Transportation
- Precision Agriculture
- Test & Measurement
- Smart City
- Retail



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WHAT WE DO

 **Toradex**
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Arm® System on Modules
Reliable
Long-Term Maintenance
Scalable
From Stock

 **Torizon™**



Production-Ready Software
Yocto-Based Linux
Windows Embedded Compact
Development Tools
Long-Term Maintenance

 **Toradex**
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Ease-of-Use
Support
Ecosystem



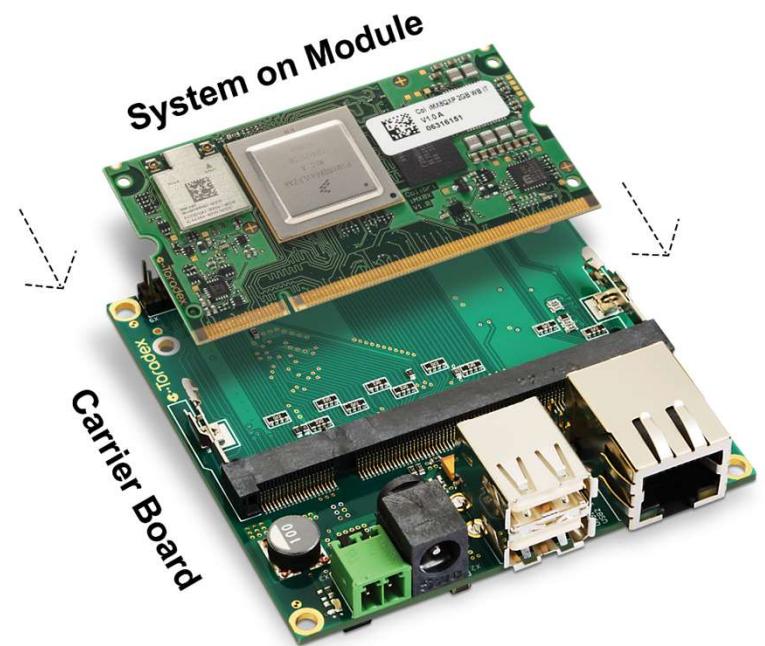
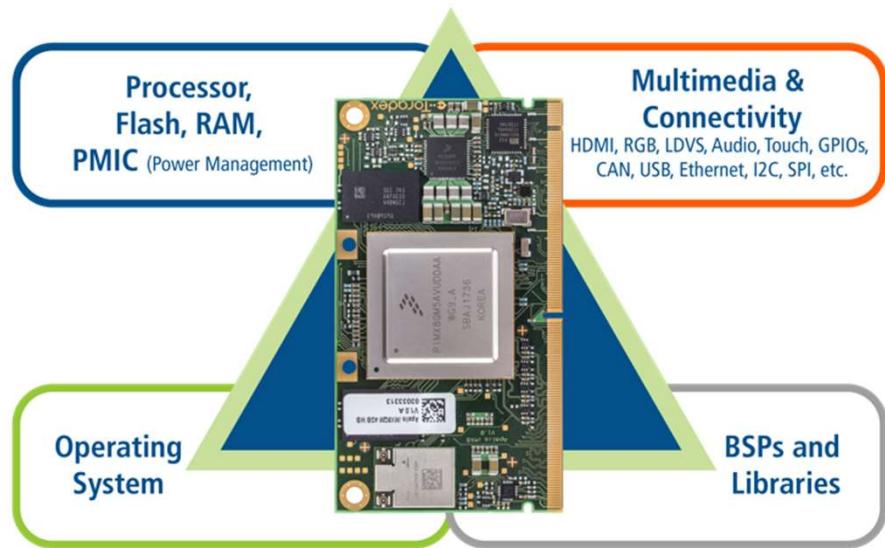
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RELIABLE AND EASY-TO-USE EMBEDDED
SOLUTIONS FOR YOU

THE BASICS: WHAT IS A SoM?

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WHY TORADEX

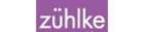
- Robust Quality
- Platform Scalability
- Product Lifetime and Maintenance
- 2 years warranty
- Supreme Performance
- Ease-of-Use
- Extensive Support Resources
- Free Industry-Leading Technical Support
- Key Partner Network

<https://www.toradex.com/how-to-choose-system-computer-on-module-partner>



BROAD PARTNER ECOSYSTEM

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SemsoTec										...and more



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PROVEN PARTNERS, RECOMMENDED BY TORADEX

WHY TORADEX COMPUTER MODULES?



Faster
Time-to-Market



Lower
Development Risks



Hardware and Software
from One Hand



Highly Optimized
BSP/Torizon



Better price due to
economies of scale

Better price due to
simplified carrier
boards



Direct & Global
Supply Chain



Simple Upgrade
Path



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TORADEX'S QUALITY AND RELIABILITY



Reliability
by Design



Dependable
in Extreme
Temperatures



Shock and
Vibration Tested



EMI/EMC



Fully-Functional
Testing and
Traceability



ISO 9001



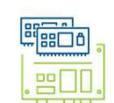
Software
Quality



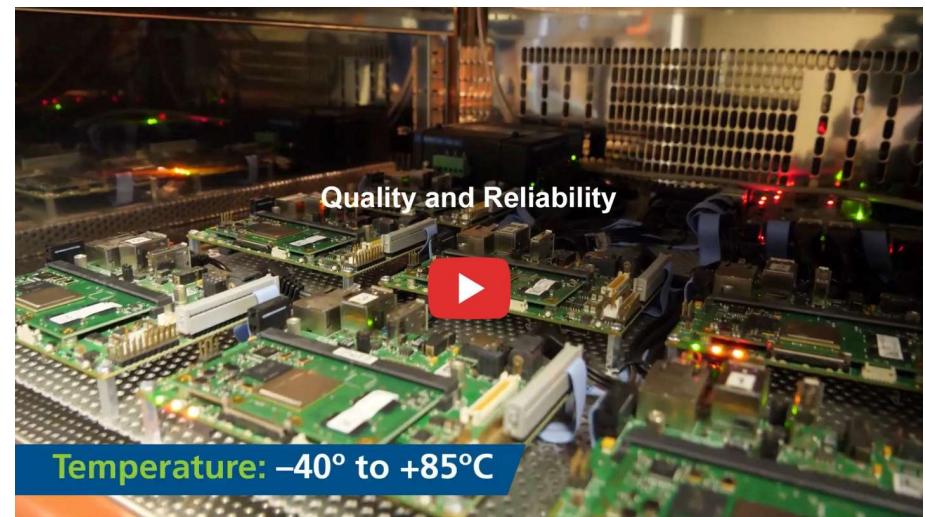
Standardized
Product
Variants



Long-Term
Availability



Scalability



<https://www.toradex.com/quality-and-reliability>



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TORADEX PRODUCT FAMILIES



Three complementary, pin-compatible product families targeting industrial applications

- 10+ years of product availability
- Shock and vibration-resistant form factors
- Proven success across thousands of customer projects



Apalis

- Targeting high-performance applications
- Additional high-speed interface support: PCIe, GbE, SATA, USB 3.0, HDMI, CSI, etc.
- Advanced multimedia support with various display and camera interfaces and 3D GPUs
- Wi-Fi and BT options are on Toradex's roadmap



Verdin

- Small and Ruggedized form factor
- Power-efficient and future-proof
- Full system power management
- Thermal solution ready
- Direct Breakout™



Colibri

- Small, cost-effective, standard embedded interfaces
- Wi-Fi and BT available on the latest modules
- Available with more than 10 different SoCs



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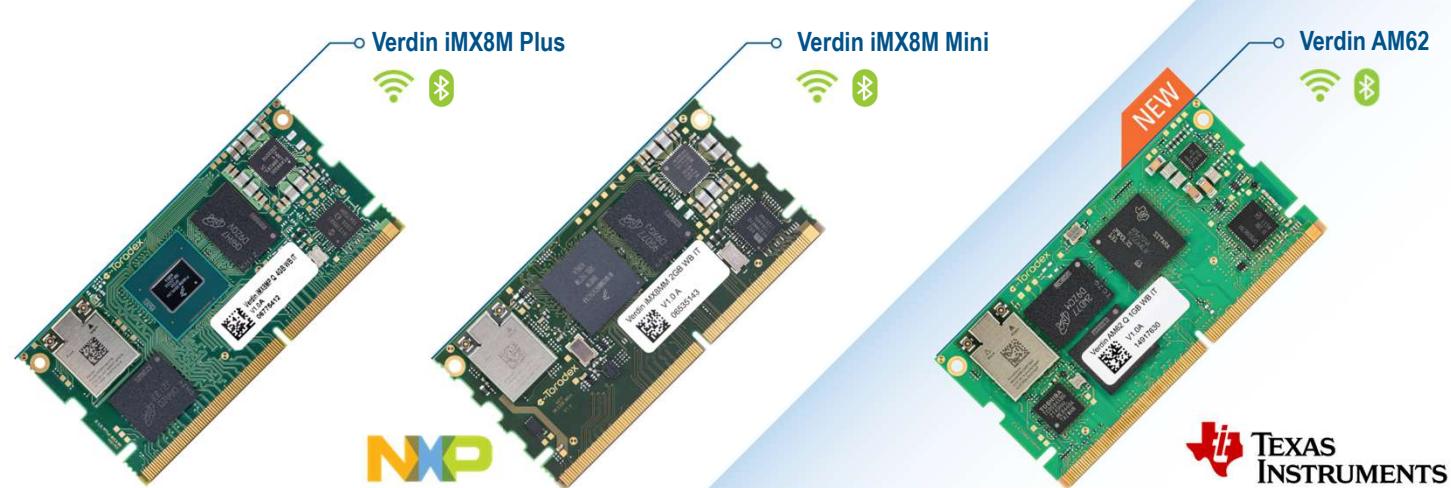
VERDIN FAMILY



Toradex
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- A new SoM family for the new decade
- Upgrading Colibri with modern high-speed interfaces such as Gigabit Ethernet, PCIe, USB 3.0, MIPI-CSI...
- Heterogeneous Multi-processing
- 69.6 x 35 mm, 260-pin SO-DIMM DDR4

- Wide Input Voltage Range from 3.3 V to 5.5 V
 - Runs directly from a single-cell Li-ion battery
 - Runs from 3.3 V or 5 V supply voltage, ideal for USB-powered applications
- Focused on low power consumption
- Future-proof 1.8V IO voltage



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<https://www.toradex.com/pt-br/computer-on-modules/verdin-arm-family>

PRODUCT PORTFOLIO

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 **Torizon™**



 **TEXAS INSTRUMENTS**

 **FreeRTOS**



 **NXP**

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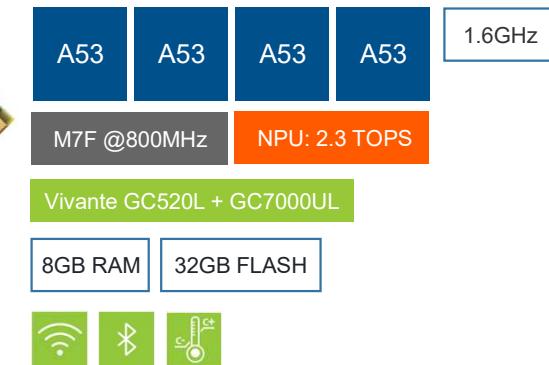


VERDIN iMX8M PLUS OVERVIEW

- Based on NXP i.MX 8M Plus SoC
 - Up to 4x Cortex-A53 @ up to 1.6GHz
 - Cortex-M7 @ 800MHz
- Up to 8GB RAM and 32GB eMMC Flash
- Optional dual-band 802.11ac 2x2 Wi-Fi with Bluetooth 5
- NPU (Neural Processing Unit)
- ISP (Image Signal Processor)
- 2x GigE, 2x MIPI-CSI, PCIe, USB 3.0, 2x CAN FD, etc.
- -40° to +85° C
- Available until **2036+**



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<https://www.toradex.com/computer-on-modules/verdin-arm-family/nxp-imx-8m-plus>



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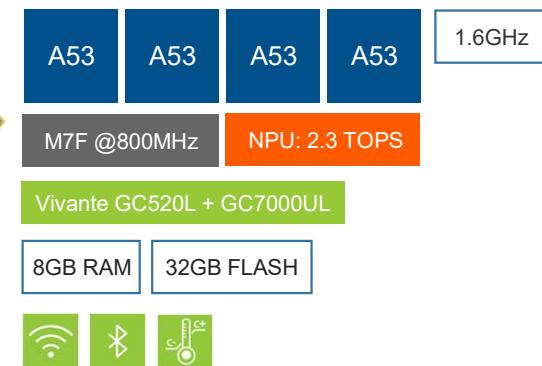


VERDIN iMX8M PLUS NXP i.MX 8M PLUS

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NXP i.MX 8M Plus

- Large ecosystem including cameras and machine learning frameworks
- Dedicated neural network processor, ideal for machine learning applications (NPU)
- Image/video processing applications (GPU)
- Applications that require real-time with good performance (cortex-M7)



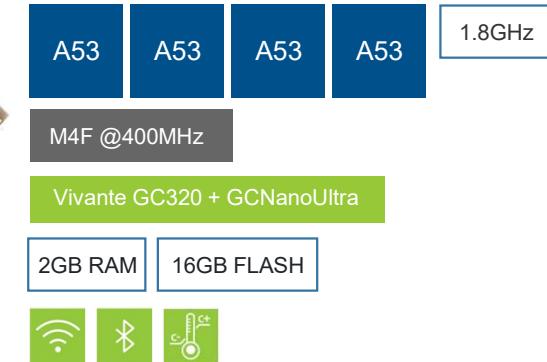
<https://www.toradex.com/computer-on-modules/verdin-arm-family/nxp-imx-8m-plus>

VERDIN iMX8M MINI NXP i.MX 8M MINI

- NXP i.MX 8M Mini
 - Up to 4 Cortex-A53 @ up to 1.8GHz
 - Cortex-M4 @ up to 400MHz
- Up to 2GB RAM and 16 GB eMMC Flash
- Optional Dual-band 802.11ac 2x2 Wi-Fi with Bluetooth 5
- PCIe, MIPI-CSI, CAN FD, ADC, etc.
- Hardware-based Security
 - Supported by SoC
 - Optional TPM 2.0
- -40° to +85°C Temp. option
- Product availability until **2035+**



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 **Torizon™**



<https://www.toradex.com/computer-on-modules/verdin-arm-family/nxp-imx-8m-mini-nano>



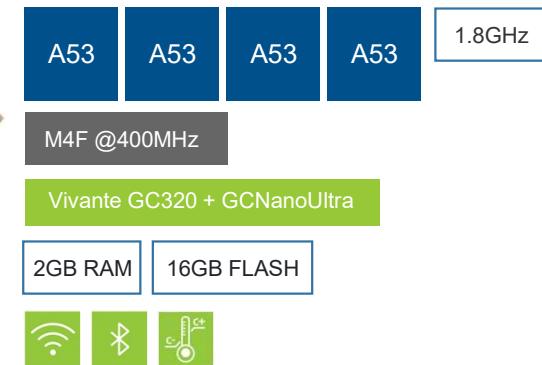
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VERDIN iMX8M MINI NXP i.MX 8M MINI



- Applications that require good cost-benefit
- Possibility of using real-time
- Same interfaces as MPlus (except HDMI)
- Graphic applications



<https://www.toradex.com/computer-on-modules/verdin-arm-family/nxp-imx-8m-mini-nano>



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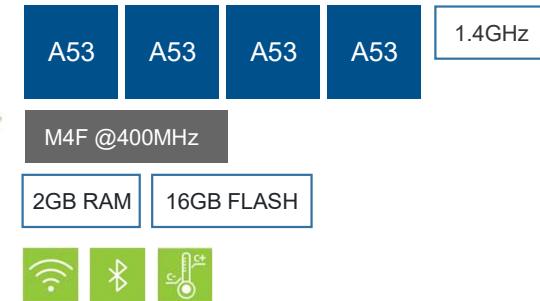


VERDIN AM62 OVERVIEW

NEW

- Texas Instruments TI AM62x Sitara™
 - Up to 4 Cortex-A53 @ up to 1.4GHz
 - Cortex-M4 @ up to 400MHz
- Up to 2GB LPDDR4 (16 Bit) and 16GB eMMC
- Optional Dual-Band 2.4/5 GHz 1x1 Wi-Fi 4 (802.11n) + Bluetooth 5.2
- PCIe, MIPI-CSI, CAN FD, ADC, etc.
- Hardware-based Security
 - Supported by SoC
 - Optional TPM 2.0
- -40° to +85°C Temp. option
- Product availability until 2033+

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 **TEXAS INSTRUMENTS**

 **yocto** · **PROJECT**

 **Torizon**™



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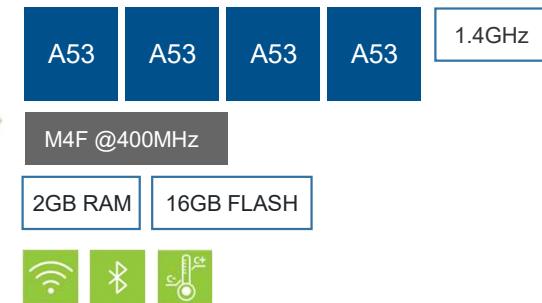
<https://www.toradex.com/computer-on-modules/verdin-arm-family/ti-am62>

VERDIN AM62 OVERVIEW

NEW



- An entry point to the Verdin ecosystem with the lowest total cost of ownership
- More cost-sensitive applications
- Low-power modes for power-constrained applications
- Graphic applications
- Hardware-based security for secure boot and cryptographic acceleration



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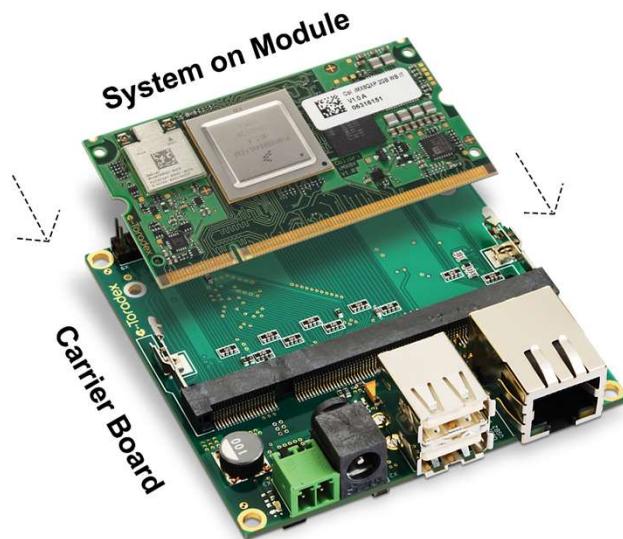


<https://www.toradex.com/computer-on-modules/verdin-arm-family/ti-am62>

CARRIER BOARDS



- Carrier Boards
 - Development
 - Production / Volume



Design Resources

Dahlia Carrier Board Design Data V1.1

- Dahlia Carrier Board Altium Project (Altium Designer Release 10)
- Dahlia Carrier Board Board PDF Schematics
- Dahlia Carrier Board Assembly Drawing
- Dahlia Carrier Board Board Bill of Materials (BOM)

<https://developer.toradex.com/hardware/>



Altium



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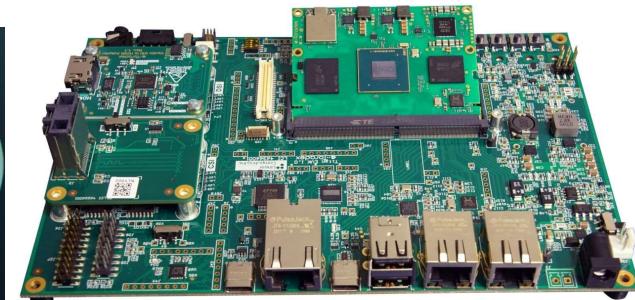


WHAT'S COMING...

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i.MX 95 Verdin Evaluation Kit

- Previous Features:
 - 6x Arm Cortex™-A55 / 1x Arm Cortex™-M7 / 1x Arm Cortex™-M33
 - RAM: Up to 16GB LPDDR5 (32-bit)
 - Flash: Up to 128GB eMMC
 - Ethernet: 1x 10 Gigabit / 1x 1000BASE-T Automotive Ethernet / 1x Gigabit with TSN
 - And more...



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<https://www.toradex.com/computer-on-modules/verdin-arm-family/nxp-imx95-evaluation-kit>

WHAT'S COMING...



i.MX 95 Verdin Evaluation Kit

A promotional image for the NXP i.MX 95 Verdin Evaluation Kit. It features a close-up of the i.MX 95 processor chip with a green and yellow gradient heat spreader. To the right is a green printed circuit board (PCB) with various components and connectors. The background is dark with blurred computer monitors. At the top, text reads "Get Ahead with Early Access to the NXP i.MX 95 Verdin Evaluation Kit - Learn How!". Below the chip is a QR code. At the bottom, there are links for "Assistir no YouTube".

Webinar
Get Ahead with Early Access to the NXP® i.MX 95 Verdin Evaluation Kit - Learn How!
Date: January 17, 2024
All Webinars

<https://www.youtube.com/watch?v=OR9krYwbFXQ>



OUR SOFTWARE



**Simplifying the Development
and Operation of Linux IoT
Devices**



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Simplifying the Development and
Operation of Linux IoT Devices

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Easy-to-use Industrial
Linux Software Platform

 **Toradex**
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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



Secure

Frequent updates, accessible
security features



Real-time

Optimized real-time option



Visual Studio



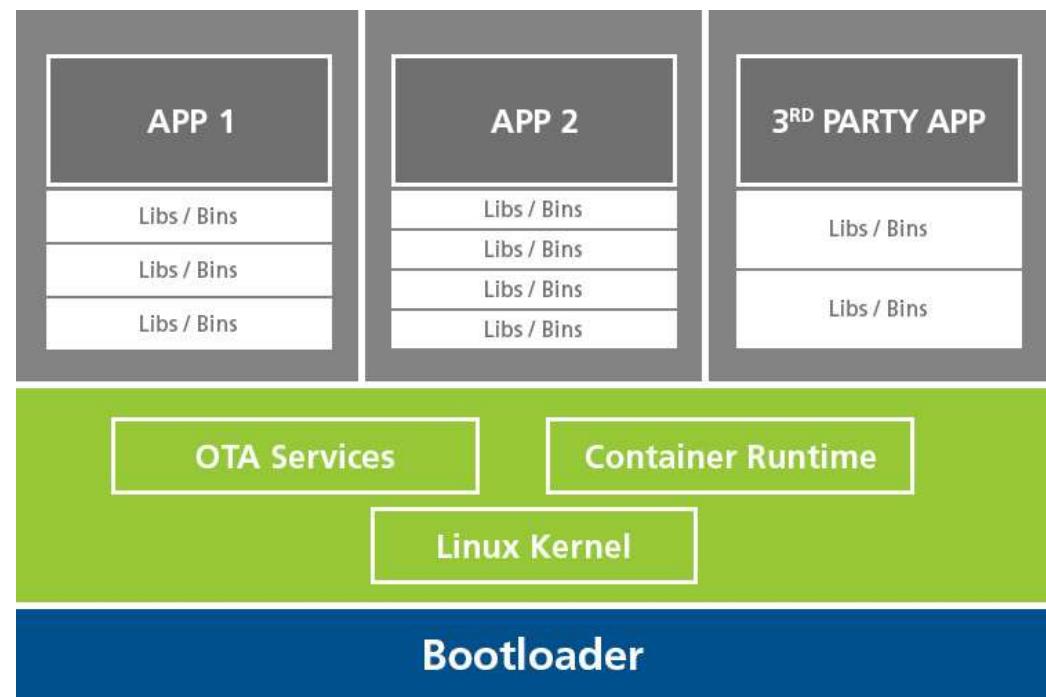
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TORIZON OS ARCHITECTURE



- Built with OpenEmbedded / **Yocto**
- Optional **Docker** container runtime
- Support for **Mainline** and **Downstream Kernels**
- Based on **Linux microPlatform**
- **Small resource footprint** compared to virtual machines
- Access to **hardware acceleration**





Highly Productive Modern Software Development



Visual Studio

Supported
Languages



Supported
Languages



python™



Extensive Software Container Ecosystem



docker hub



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Simplifying the Development and
Operation of Linux IoT Devices

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OTA (OVER-THE-AIR)

Secure and Reliable Over-The-Air Updates



Power-cut tolerance



Automotive security



Integrated and verified
with Toradex SoMs



All SW layers updatable
(bootloader, OS, applications)



Device manager



Based on open
technologies



TECHNICAL SUPPORT CHANNELS



DEVELOPER CENTER

800+ articles
Updated daily
Step-by-step
Design Guides



WEBINARS

100+ hours
In-depth
Live Q&A



TORADEX COMMUNITY

24/7
Focused
Extensive



PHONE SUPPORT

Local
Professional
Fast



EMAIL SUPPORT

Confidential
Personal



BLOG

Key insights
Partners
Cutting-edge



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SUCCESS STORIES

- Industrial Automation
- Healthcare
- Transportation
- Precision Agriculture
- Test & Measurement
- Smart City
- Retail



700+

Projects Completed



1300+

Projects in Development



17 +

Years of Experience

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THANK YOU
FOR YOUR INTEREST

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