PRODUCT BRIEF

AURIX™ TC49x

High-performance microcontroller for xEV-integration platforms and high-end Engine Management

Infineon releases its third generation AURIX™ TC4x microcontroller. It comes with an increase in performance, memory sizes, connectivity and scalability to address latest automotive trends and challenges. In terms of performance, the TC49x offers 5 cores at 400 MHz, up to 20 MB of Flash memory and a rich ADC & timer set up.

For xEV integration scenarios, like Inverter, Power Conversion (DCDC, OBC) and Battery Management, the TC49x offers high performance with dedicated cores, low-latency interface, High-Resolution-PWM and Fast Comparator. In addition, the TC49x implements the Parallel Processing Unit (PPU) with private scalar core and 256bit wide vector unit. The PPU empowers neural network-based functions, like motor position sensing, health observing, temperature estimation and model-predictive control to enable cost-saving on system level and further efficiency improvements for electrified cars.

In addition, the TC49x is the only device of the TC4x family to cover engine management systems. The TC49x offers enhanced peripherals and a rich number of ADC & timers for high-end engine management and is prepared for further changes of legislation.

The cutting-edge security module CSRM (Cybersecurity Realtime Module) with 10x performance vs. TC3x HSM protects with future post-quantum cryptography and covers the security needs of the future. TC49x also offers native support for virtualization via hypervisor which enables software development with ensured freedom from interference.
The optimized architecture with accelerators enables high throughput without main cores intervention through the Data Routing Engine (DRE) and Ethernet bridges for efficient data routing. TC49x also features a de-centralized security concept with Crypto Satellites (CSS) for offloading main security module.

To address the need for high-speed communication & new interfaces, TC49x features a rich connectivity set including 1Gbit Ethernet, 100 MB Ethernet and 10baseT1S, 16 CAN nodes, 2x CAN-XL, among others.
Finally, to ensure scalability, the whole family shares its core architecture (TriCore™ based), allowing a maximum of software re-use, but also offers pin compatibility on two main packages (BGA-292 and BGA-436). With this approach, customers can develop on the TC49x for high-end applications and build a complete portfolio ECU with lower-end devices.

Target applications:
- Integration ECUs for xEV (x-in-1)
- High-end Engine Management

Key features

Safety & Security:
- Safety architecture is compliant to **ISO 26262** (ASIL-D support)
- Cyber Security architecture is compliant to **ISO/SAE 21434** and supports post-quantum cryptography

Key Figures:
- 5 lockstep TriCore™ running at 400 MHz with 1 additional TriCore™ dedicated for security
- 20 MB embedded flash + 1 MB for security and up to 6.1 MB SRAM
- High-speed communication interfaces with 1x1Gb Ethernet, 3x10/100 Mb Ethernet 2x10baseT1S and 2xCAN-XL
- Above EVITA Full CSRM
- AUTOSAR support

Accelerators
- Parallel Processing Unit (PPU)
- Data Routing Engine
- Converter DSP (CDSP)

Key benefits

- **Strong ASIL-D performance** with 4 lockstep CPUs
- PPU 256 bit enables innovation
- Future-proven cybersecurity cluster, ISO21434 compliant, post-quantum ready and solve performance bottlenecks
- Strong SW partner ecosystem





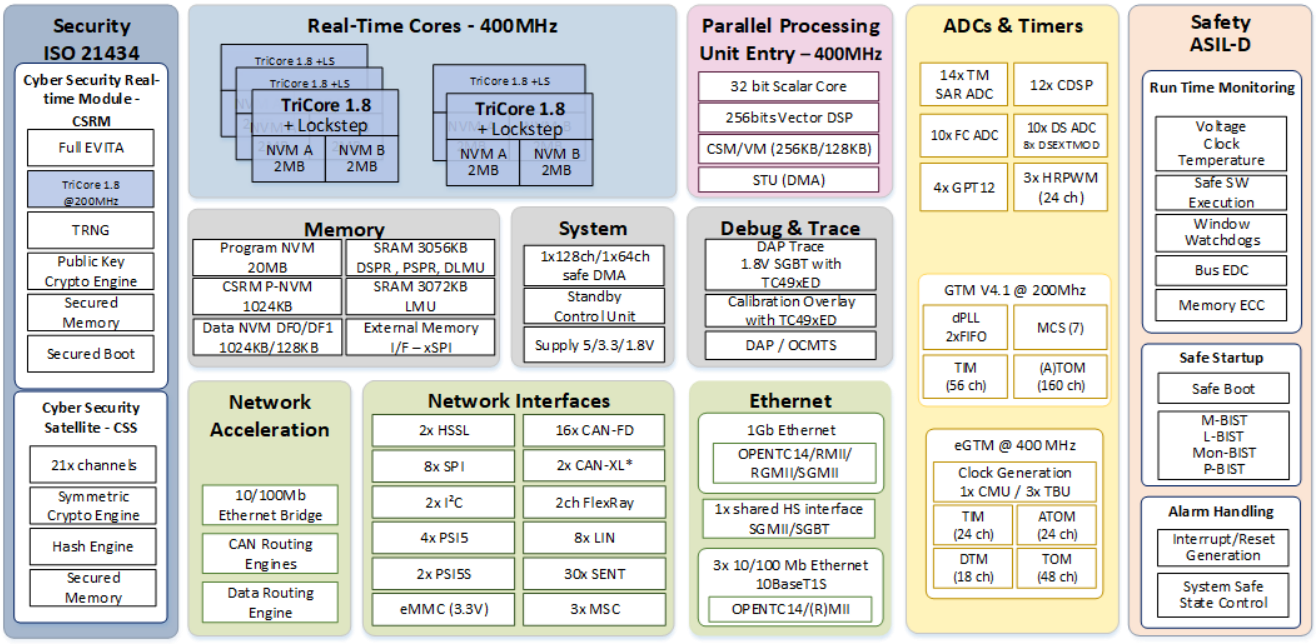
PRODUCT BRIEF

AURIX™ TC4x product family

TC4x will be the most comprehensive AURIX™ portfolio, featuring more ASIL-D performance, more security and connectivity features and new SW development methods.

Infineon provides high-quality automotive microcontrollers along with operational excellence, premium sales and application support worldwide.

TC49xN Block Diagram for Standard Packages (BGA 436/292)



Product tables

Sales Name	SP number	Description
SAK-TC499PP-20MF400MS	SP006146839	400 MHz, 20 MB, BGA-436, STD, OM, -40/125°C, PPU M
SAK-TC497PP-20MF400MS	SP006146841	400 MHz, 20 MB, BGA-292, STD, OM, -40/125°C, PPU M

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