

Product Brief

AURIX™ TC39xXX/TC39xXP

High-performance chassis, powertrain, connectivity and autonomous driving microcontroller

Infineon releases its second generation AURIX™ microcontroller in embedded flash 40 nm technology. It comes back with an increase in performance, memory sizes, connectivity and more scalability to address the new automotive trends and challenges. This family has more than 20 products to provide the most scalable portfolio of safety microcontroller. In terms of performance, the highest end product (TC39x) offers 6 cores running at 300 MHz and up to 6.9 MBytes embedded RAM, and consuming below 2 W. Its mirrored embedded flash banks offers A/B swap capabilities.

Safety is the core know-how of Infineon, and all products provide safety mechanism (including but not limited to lock-step cores, LBIST, ECC RAM) to ensure a safety platform supporting ASIL-D ISO 26262. The TC39x has 4 lock-stepped cores and 2 non lock-stepped cores, providing up to 2700 DMIPS in ASIL-D and 1300 DMIPS in ASIL-B.

In terms of security, this product has an HSM compliant eVita full, ensuring the implementation of future proofed security measure. On top of this, it offers extensive connectivity with 12 CAN FD, 4 channels FlexRay, 12 LINs, 6 QSPI and new high-speed communicating interfaces such as Gbit Ethernet and eMMC, which are critical to address new domain control and connected gateway ECUs.

The AURIX™ TC3xx family features a dedicated 8-bit standby mode controller, with its own voltage domain to, not only support low power modes, but also to perform certain operations such as analog measurements, CAN and LIN communications, RTC and basic processing while the rest of microcontroller is in standby.

Finally to ensure the 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-516). With this approach, customers can develop on this TC39x for high end application and build a complete portfolio ECU with lower end AURIX™ TC3xx products, with optimized go to market and development cost. This product offers as well the capability to be coupled to either and ASIC or another TC39x through a dedicated high-speed interface (HSSL) in order to increase the performances of the ECU. The HSSL is an LVDS based interconnection with low latency and speed up to 320 Mbit/s.

Key features

- > 6 TriCore™ running at 300 MHz with 4 additional checker cores delivering 4000 DMIPS
- > 16 MB flash and up to 6.9 MB SRAM
- > 1 Gbit Ethernet and 12 CAN FD
- > 1x eMMC/SDIO
- > ISO 26262 ASIL-D support
- > eVita Full HSM (ECC256 and SHA2)
- > Standby mode controller
- > AUTOSAR 4.2 support
- > 165°C junction temperature

Key benefits

- > Best-in-class performance enabling ASIL-D designs
- > Downward scalable to lower cost AURIX™ TC3xx microcontrollers
- > A/B swap software update over the air support
- > Easy migration from AURIX™ first generation thanks to the software and hardware compatibility

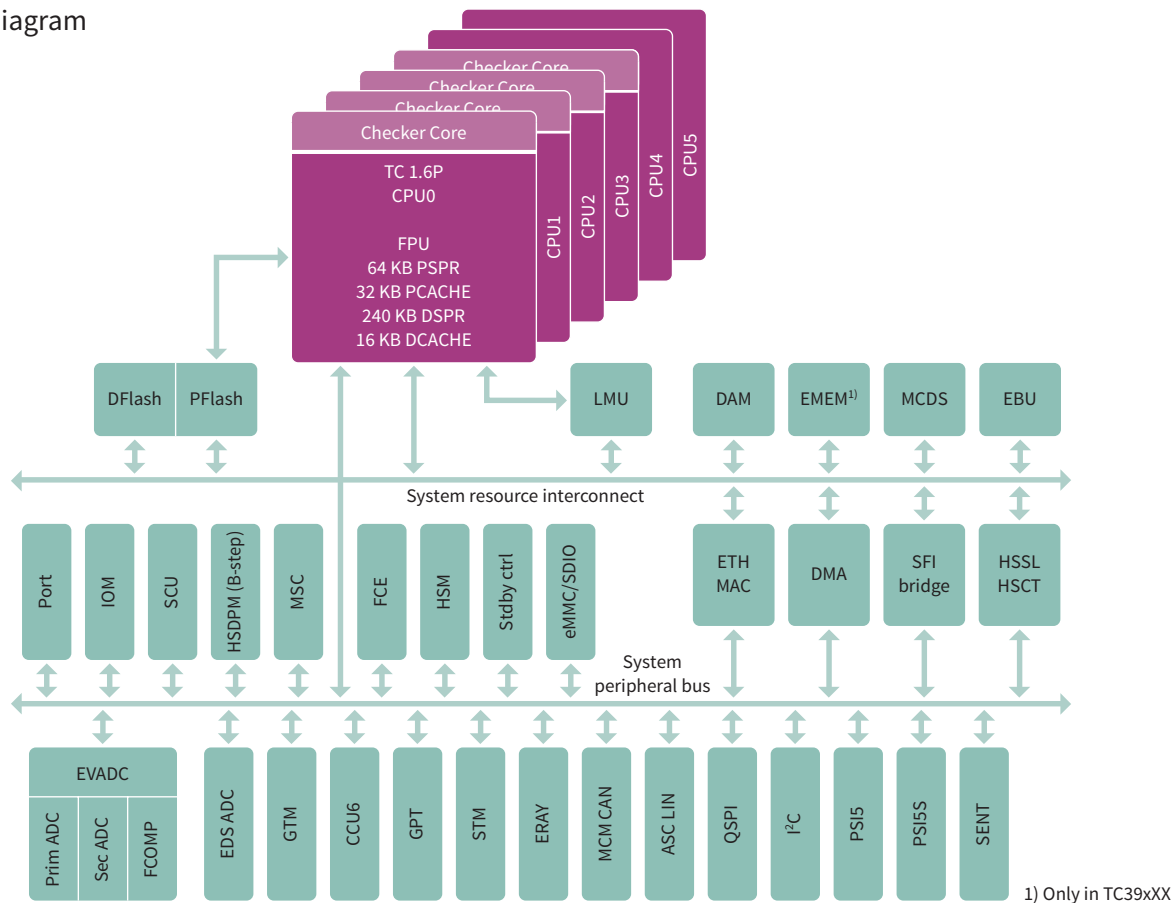
Key applications

- > Domain controllers
- > Sensor fusion and autonomous driving computers
- > Powertrain
- > High end gateways and body domain controllers

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Block diagram



Product table

Type	Description	Ordering code
SAK-TC397XX-256F300S	6x 300 MHz TriCore™, 16 MB Flash, 6.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
SAK-TC397XP-256F300S	6x 300 MHz TriCore™, 16 MB Flash, 2.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
SAK-TC399XX-256F300S	6x 300 MHz TriCore™, 16 MB Flash, 6.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-516	on request
SAK-TC399XP-256F300S	6x 300 MHz TriCore™, 16 MB Flash, 2.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-516	on request
KIT_A2G_TC397_S_TRB	Eval board: 6x 300 MHz TriCore™, 16 MB Flash, 6.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
KIT_A2G_TC397_TFT	Low cost kit: 6x 300 MHz TriCore™, 16 MB Flash, 2.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
KIT_A2G_TC399_S_TRB	Eval board: 6x 300 MHz TriCore™, 16 MB Flash, 6.9 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-516	on request

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