

## Product Brief

# AURIX™ TC38xQP

High-performance chassis, powertrain, body 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, T38x offers 4 cores running at 300 MHz and up to 1.5 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 TC38x has 2 lock-stepped cores and 2 non lock-stepped cores, providing up to 1350 DMIPS in ASIL-D and 1350 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, 24 LINs, 6 QSPI and new high-speed communicating interfaces such as Gbit Ethernet, 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 communication, 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). The TC38x is upward compatible with the higher performance TC39x and downward compatible to TC37x, TC36x and TC33x. This product offers as well the capability to be coupled to either an ASIC or another TC38x 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

- > 4 TriCore™ running at 300 MHz with 2 additional checker cores delivering 2700 DMIPS
- > 10 MB flash and up to 1.5 MB SRAM
- > 1 Gbit Ethernet and 12 CAN FD
- > 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
- > Upward and downward scalable to the rest of AURIX™ TC3xx family
- > A/B swap software update over the air support
- > Easy migration from AURIX™ TC2xx thanks to high software and hardware compatibility

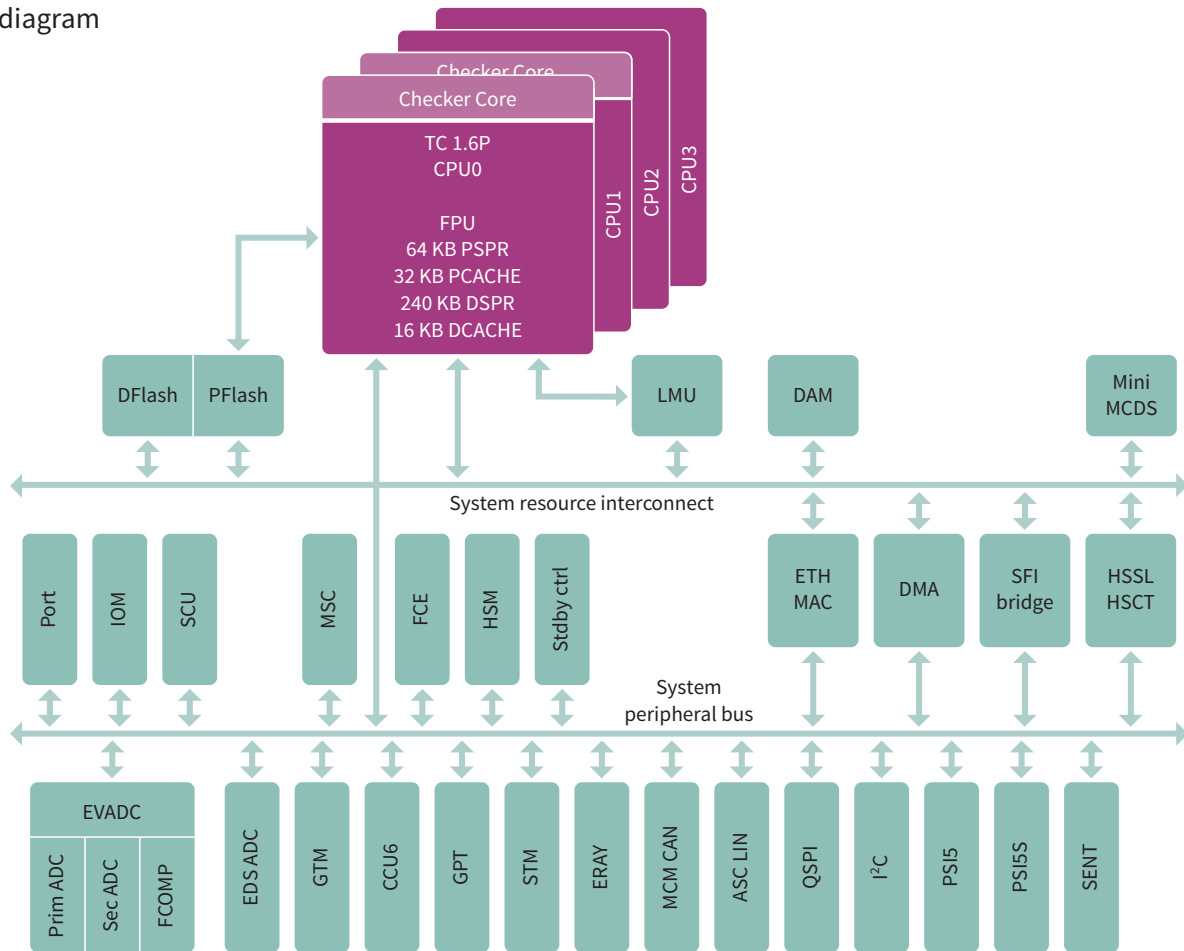
### Key applications

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

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## Block diagram



## Product table

Type	Description	Ordering code
SAK-TC387QP-160F300S	4x 300 MHz TriCore™, 10 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
SAK-TC389QP-160F300S	4x 300 MHz TriCore™, 10 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-516	on request
KIT_A2G_TC389_S_TRB	Eval board: 4x 300 MHz TriCore™, 10 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-516	on request
KIT_A2G_TC387_S_TRB	Eval board: 4x 300 MHz TriCore™, 10 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
KIT_A2G_TC387_TFT	Low cost kit: 4x 300 MHz TriCore™, 10 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request

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