Product Brief

AURIX™ TC3Ex

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 microcontrol-ler. In terms of performance, T3Ex 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 TC3Ex has 2 lock-stepped cores and 2 non lock-stepped cores, providing up to 1350 DMIPS in ASIL-D and 2700 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 up to 20 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 AURIXTM 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. The TC3Ex is upward compatible with the higher performance TC39x and downward compatible to TC38x, TC37x, TC36x and TC33x. This product offers as well the capability to be coupled to either and ASIC or another TC3Ex 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
> up to 12 MB flash and up to 1.5 MB SRAM
> 1 Gbit Ethernet and up to 20 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
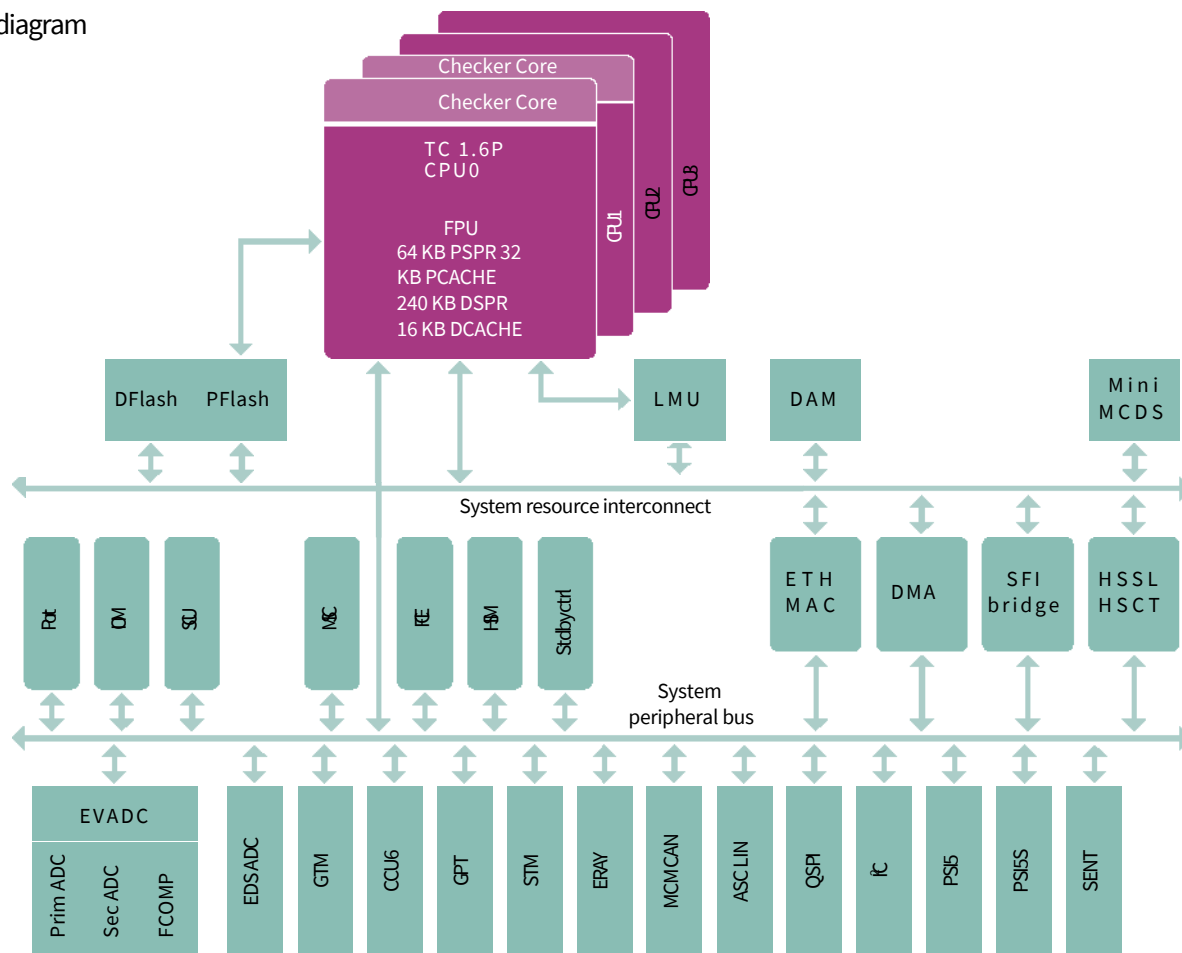> Easy migration from AURIX™ TC2xx thanks to high software and hardware compatibility

Key applications

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

www.infineon.com/aurixtc3ex

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Block diagram

Checker Core

Checker Core

TC 1.6P
CPU0

FPU
64 KB PSPR 32
KB PCACHE
240 KB DSPR
16 KB DCACHE

CPU1 CPU2 CPU3

DFlash PFlash

LMU   DAM   Mini MCDS

System resource internnect

Pdt DMA SCU   MC   FCE HSM Stdbyctrl

ETH MAC   DMA   SFI bridge   HSSL HSCT

System peripheral bus

EVADC
Prim ADC Sec ADC FCOMP

EDSADC GTM CCU6 GPT STM ERAY MCMCAN ASC LIN QSPI I²C PSI5 PSI5S SENT

Product table

Type	Description	Ordering code
SAK-TC3E7QF-192F300S	4x 300 MHz TriCoreTM, 12 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 12 CAN FD, eVita Full HSM, LFBGA-292	on request
SAK-TC3E7QX-192F300S	4x 300 MHz TriCoreTM, 12 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 20 CAN FD, eVita Full HSM, LFBGA-292	on request
SAK-TC3E7QG-160F300S	4x 300 MHz TriCoreTM, 10 MB Flash, 1.5 MB SRAM, 1 Gbit/s Ethernet, 20 CAN FD, eVita Full HSM, LFBGA-292	on request

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Additional information
For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings
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