Telemaco3P

Automotive Processor for Secure Telematics and Connectivity

The rising demand for data connectivity, cybersecurity and over-the-air updates of in-vehicle control units requires more processing power and uncompromised cybersecurity.

ST's Telemaco3P system-on-chip provides a cost-effective solution for ensuring a secure connection between the vehicle and the cloud. Its asymmetric multi-core architecture provides powerful application processors as well as an independent CAN control subsystem with optimized power management. Its ISO 26262 silicon design, its embedded Hardware Security Module and automotive-grade qualification up to 105 °C ambient temperature, make it the best candidate for implementing a wide range of secure telematics applications supporting high-throughput wireless connectivity and over-the-air firmware upgrades.
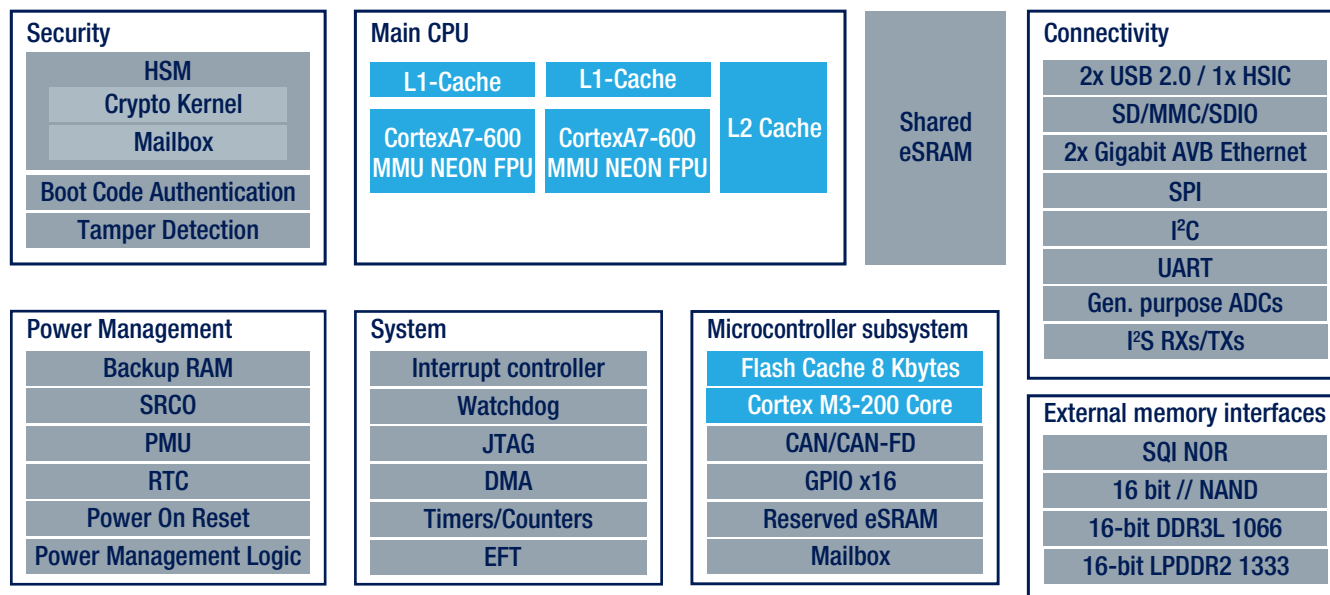
KEY FEATURES

- Single or dual ARM Cortex A7 at 600 MHz (up to 2400 DMIPS)
- Embedded HSM implementing SHE+ extended specification
- Independent and isolated CAN subsystem on embedded ARM Cortex M3 with reserved eSRAM, running its dedicated RTOS
- 2 Gigabit Ethernet with AVB
- Multiple USB 2.0, SD/SDIO, CAN/CAN-FD, SPI, I²C, UART
- ASIL-B eligible
- Operating temperature range: -40 to +105 °C
- Integrated power management logic
- Power consumption in Standby: 20 µA
- Wake-up time < 50 ms

SOFTWARE OFFERING
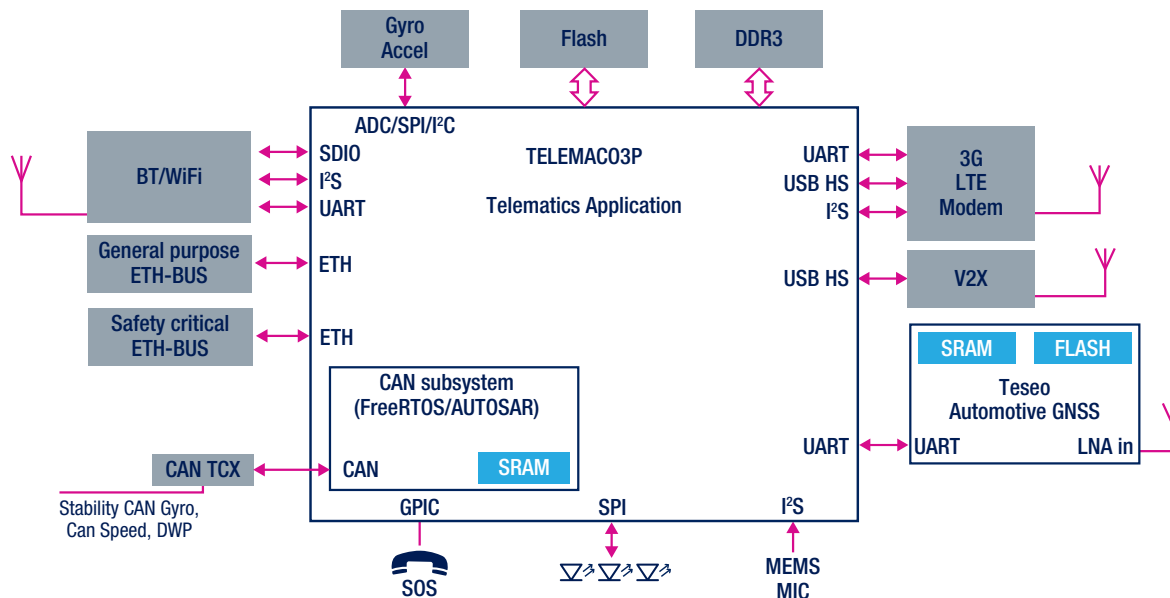
- OS kernel and BSP: Linux / QNX
- Standard Yocto tools
- Pre-integrated open-source & 3rd party middleware for easy implementation
- Distributed RPMsg framework for secure inter process communication
- Bootloader toolset for custom / smart boot implementations
- FreeRTOS kernel and MCAL for AUTOSAR 4.2 on Cortex M3
- 3rd party support of Adaptive AUTOSAR on Cortex A7 cluster

TELEMACO3P BLOCK DIAGRAM

Security
HSM
Crypto Kernel
Mailbox
Boot Code Authentication
Tamper Detection

Main CPU
L1-Cache	L1-Cache	
CortexA7-600 MMU NEON FPU	CortexA7-600 MMU NEON FPU	L2 Cache

Shared eSRAM

Connectivity
2x USB 2.0 / 1x HSIC
SD/MMC/SDIO
2x Gigabit AVB Ethernet
SPI
I²C
UART
Gen. purpose ADCs
I²S RXs/TXs

Power Management
Backup RAM
SRCO
PMU
RTC
Power On Reset
Power Management Logic

System
Interrupt controller
Watchdog
JTAG
DMA
Timers/Counters
EFT

Microcontroller subsystem
Flash Cache 8 Kbytes
Cortex M3-200 Core
CAN/CAN-FD
GPIO x16
Reserved eSRAM
Mailbox

External memory interfaces
SQI NOR
16 bit // NAND
16-bit DDR3L 1066
16-bit LPDDR2 1333

EXAMPLE SOLUTION

Part number	A7 cores	Memory Width
STA1375	1	16-bit
STA1385	2	16-bit

OPERATING CONDITIONS
- ARM_VDD: 1.14V to 1.26V
- VDD_IO_3V3: 3.3V ±10%
- VDD_IO_1V8: 1.8V ±10%
- VDDQ (DDR3): 1.35V ± 5%
- Operating temperature: -40/+105°C
- Automotive AEC-Q100 Grade 2 compliance

PACKAGE INFORMATION
- 361-ball LFBGA (16 x 16 x 1.7 mm) package with 0.8 mm pitch

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