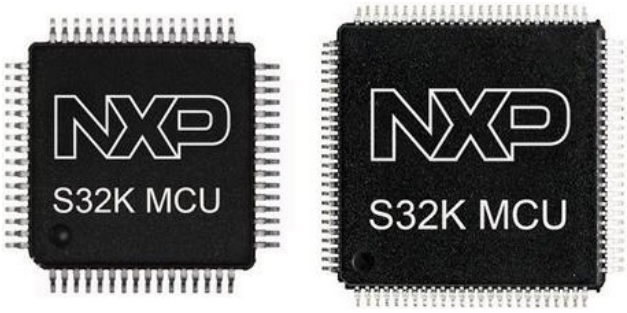
CAN Newsletter Online

MICRO-CONTROLLER

Platform for automotive ECUs

NXP has launched the S32K1 ARM-based MCU family. All members provide ISO CAN FD connectivity and are supported by a software suite.



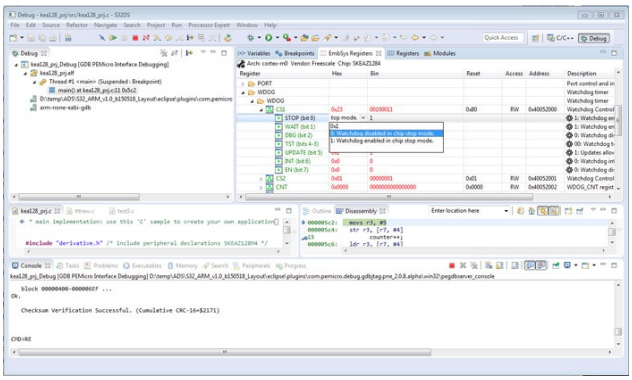
The MCUs with low-power capability are designed to support safety and security functionality (Photo: NXP)

The launched S32K1 family comes with a suite of automotive grade tools and software supporting safety and security applications. According to the supplier this reduces development effort and time-to-market in a broad range of automotive applications: “With 10 of the top 15 car manufacturers already using S32K in next-generation vehicles, this platform sets the future direction of automotive ECU development.” The traditional approach for software development has been to rely on Autosar for automotive-grade drivers. However, not all applications require it. The alternative route is self-development, which is labor-intensive, adds qualification requirements and diverts critical resources. As ECU complexity increases, maintaining high-quality software, and meeting time-to-market requirements can be achieved through use of mature, validated sub-system components.

NXP is utilizing its 15+ years of experience in delivering automotive-grade software to minimize development complexity for a broad range of customers regardless of their development approach. In applications where the use of Autosar is not mandated, NXP is providing an alternative, turn-key option for self-development with a free-of-charge, pre-qualified, automotive-grade software development kit (SDK) that enables rapid prototyping with simple drag and drop functionality. It includes:

- Misra and Spice level 3 compliant low-level drivers (LLDs) for all peripherals including CAN FD
- Optional application-specific middleware for LIN, NFC and touch sensing
- FreeRTOS operating system
- Drivers for complementary NXP ICs for faster application bring-up and production readiness e.g. system basis chip (SBC) drivers
- Documented source code and out-of-the-box examples eliminating the need for device documentation during application bring-up

The SDK is pre-installed in NXP’s S32 Design Studio (DS), an Eclipse-based integrated development environment (IDE) supporting multiple compiler and debugger options. For Autosar applications, NXP standard MCAL and OS (operation system) support has been expanded with Complex Device Drivers (CDD) and an S32K starter kit from Arcorre, This starter kit is available free of charge for evaluation.



The S32 Design Studio is an Eclipse-based IDE supporting multiple compiler and debugger options (Photo: NXP)

With ISO CAN FD

Unlike existing solutions that require multiple MCU platforms to cover a similar range, the initial S32K1 family will span 128 KiB to 2 MiB of flash memory. All family members include ISO CAN FD, CSEc hardware security, ASIL-B support, and a low-power mode. Non-ISO CAN FD interfaces (still offered by other chipmakers) are not compatible to ISO CAN FD, therefore CiA doesn’t recommend them for new designs.

“S32K marks an inflection point in NXP’s automotive MCU strategy,” said Manuel Alves from NXP. “We are transitioning from multiple proprietary architectures to a continuous ARM Cortex MCU portfolio combining future-proof hardware with software differentiation.” S32K144 samples and a development board are now available with production scheduled for the second quarter of 2017. S32K MCUs are included in NXP’s Product Longevity Program, which assures supply for a minimum of 15 years. “The S32K’s software and tool support from NXP and multiple ARM ecosystem partners, enables fast time-to-market for developers of all experience levels,” stated Paul Lee from NXP. “Furthermore, the significant investment in automotive-grade software sets a new standard for an MCU supplier.”

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