NXP Extends S32 Automotive Platform with S32Z and S32E Real-Time Processor Families for New Software-Defined Vehicles

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- New class of processors with critical deterministic behavior of safe MCUs, but with unparalleled combination of gigahertz speed, multi-application isolation and memory expansion capabilities
- Ideal for safe integration of cross-domain vehicle functions for software-defined vehicles
- Scalable, 16nm S32Z and S32E processor families with a roadmap to 5nm solutions

NUREMBERG, Germany, June 21, 2022 (GLOBE NEWSWIRE) -- **embedded world** -- NXP Semiconductors N.V. (NASDAQ: NXPI) has announced two new processor families that extend the benefits of NXP's innovative S32 automotive platform with safe, high-performance real-time processing. The S32Z and S32E processor families help enable the automotive industry to accelerate the integration of diverse real-time applications for domain and zonal control, safety processing and vehicle electrification that are critical to the next generation of safer and more efficient vehicles. The S32Z processors are ideal for safety processing and domain and zonal control, while the S32E processors are ideal for electric vehicle (xEV) control and smart actuation. The software-compatible S32Z and S32E processors help enable software-defined vehicles, reduce software integration complexity and enhance security and safety.

The automotive industry's evolution to domain and zonal architectures is attractive to carmakers, enabling them to optimize wiring harnesses, reduce cost and weight and implement a more scalable and cost-effective, software-centric approach for developing and updating intelligent vehicles. This massive transformation requires new processors that offer higher performance, application isolation and memory expansion capabilities to support software-defined vehicles and future innovations.

To design real-time processors with the performance and deterministic behaviors required for the next-generation of software-defined vehicles requires deep collaboration across the automotive ecosystem. Robert Bosch GmbH was a key partner in the rigorous process.

"We collaborated closely with NXP on the two new processor families," said Axel Aue, VP of Engineering at Bosch. "The S32Z and S32E processors offer a performance increase of a factor of 2 compared to embedded NVM MCUs, key integration platform features and scalable memory with LPDDR4 DRAM and flash. It's also ideal for embedded integration and allows the consolidation and isolation of vehicle functions with very high performance that previously required multiple MCUs."

NXP's S32Z and S32E processors offer capabilities beyond today's automotive microcontrollers with eight Arm ® Cortex®-R52 processors cores with split-lock support that operate at up to 1 GHz to address the challenges of safely integrating deterministic, high-performance real-time applications. The processors isolate independent real-time applications with "core-to-pin" hardware virtualization and resource firewalls for freedom of interference. The processors are available with up to 64 MB of integrated flash memory for large, zero-downtime over-the-air (OTA) updates and support LPDDR4 DRAM and flash expansion memory with execute-in-place (XiP) mode for large applications and AUTOSAR® Adaptive applications. A communications accelerator (FlexLLCE) supporting 24 CAN interfaces, along with a Gigabit Ethernet switch supporting Time-Sensitive Networking (TSN), provides vehicle data seamlessly to "virtual ECUs" to improve efficiency and streamline software development. A hardware security engine (HSE) supports secure boot, accelerated security services and key management. The S32Z and S32E processors are certified to ISO/SAE 21434 for cybersecurity and ISO 26262 for ASIL D functional safety.

The S32E processors add smart actuation capabilities, specifically in the form of advanced timers and high-resolution analog-to-digital converters and 5V analog and I/Os, for xEV integration applications with direct-drive motor control.

The versatility and benefits of the S32Z and S32E processors are enabling leading global OEMs and tier ones to develop a wide range of new vehicle architectures with diverse real-time processing needs.

"The new S32Z and S32E processors place NXP in a leadership position for safe, high-performance real-time processing and complement our other S32 automotive processors to support customers' diverse, end-to-end domain and zonal vehicle architectures," said Ray Cornyn, SVP/GM of Vehicle Control and Networking Solutions at NXP. "We offer our customers a scalable, compatible real-time roadmap that extends to 5nm technology to design the consolidated and software-defined vehicles of the future."

S32Z and S32E System Support

NXP offers system support for S32Z and S32E processors to accelerate customer designs including the co-developed FS86 ASIL D safety system basis chip (SBC) and PF5030 power management IC (PMIC) with enhanced safety features and in-vehicle networking support with Ethernet switches and PHYs and CAN transceivers, along with other analog companion chips such as the GD3160 IGBT/SiC high-voltage inverter gate driver and MC3377x battery cell controllers.

Availability and Enablement

S32Z280 and S32E288 are the first two devices sampling now to lead customers. Silicon evaluation, software development and rapid prototyping can be accelerated using the GreenVIP Vehicle Integration Platform software with the GreenBox 3 development platform, supported by a wide range of software and tools and a strong partner ecosystem.

NXP will present a technical paper on “Key Technologies for Enablement of Multi-Core, Real-Time Domain Controllers” and showcase the S32E processor in action with a “Safe Multi-ECU Integration” demonstration focused on multi-core performance and fault-tolerance at embedded world 2022 in Nuremburg at Booth #4A-222.

To learn more, visit: nxp.com/S32Z-E

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