STMicroelectronics introduces Stellar P6 automotive MCU for EV platform system integration

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- *Superior integration capabilities enabling the next generation of electrified drivetrains and domain-oriented, over-the-air updateable systems*
- *Industry's first to support new high-data-rate in-car communication protocol*
- *First qualifiable MCU of Stellar series to support automotive industry's transition to software-defined vehicles*

Geneva, September 1, 2022 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has unveiled new microcontrollers (MCUs) targeting the coming electrified drivetrains and domain-oriented, over-the-air updateable systems that are the foundation of the next generation of EVs. As the vehicles generate, process, and transfer large data flows, especially to support the next generation of EVs, ST's new Stellar P automotive MCUs are the industry's first qualifiable devices for model year 2024 vehicles to integrate the new CAN-XL in-car communication standard. This technology enables the new vehicle platforms to handle growing data flows so the car can operate at peak performance.

"The real-time, power-efficient Stellar P6 automotive microcontrollers combine advanced integration of motion-control and energy-management domains with actuation capabilities, ensuring a smooth shift from traditional ICEs/EVs to new drive-traction architectural patterns of software-defined vehicles," said Luca Rodeschini, Automotive and Discrete Vice President, Strategic Business Development and Automotive Processing and RF General Manager, STMicroelectronics. "*As the automotive industry begins work on new vehicle platforms for model-year 2024, ST is ready with the microcontrollers to support development and ease the transition to vehicle production."*

ST's Stellar family of automotive MCUs has been designed to support carmakers and Tier1s as they transition toward software-defined vehicles. Stellar now includes multiple series:

- Stellar E series assures fast real-time control and system miniaturization in power-conversion applications, maximizing the benefits of SiC and GaN power technology in EVs' on-board charging, DC-DC converters, and traction inverters, among other applications.
- Stellar G series MCUs act as a secure data HUB and real-time, safe aggregator of functions within the body domain primarily for zonal architectures.

This series implements best-in-class OTA updates, low-power modes, and data routing over a broad set of in-car communication protocols.

- The new Stellar P series of automotive MCUs offers qualifiable devices that combine advanced actuation capabilities with powerful function integration. Stellar P devices target the new drivetrain trends for electric vehicles and domain-oriented architectures, for the best real-time performance and energy management.

Samples of Stellar P6 are available now for model-year 2024 vehicles. Contact your local ST Sales office for pricing options and sample requests.

Additional information

Carmakers are transitioning to software-defined vehicles for their next-generation vehicle platforms to manage the complexity and performance of the new features they are adding to vehicles (electrification, advanced safety, assisted and automated driving). This transition requires top to bottom revamping of the car platform's architecture. The key changes include moving from many electrical control units (ECUs) that each manage a small subsystem to domain or zone controllers that combine multiple functions. These controllers must also manage the consolidation of software from across a range of vehicle systems. Safety and performance is assured by the new generation of automotive-grade MCUs like Stellar that enable greater processing performance and integration of key functionalities. In software-defined vehicles fully driven by electronics systems, Stellar delivers fully synchronized operations and secure over-the-air software upgrades of all systems for both maintenance and continued performance improvement.

Technical information

Manufactured in ST's own wafer fabs using power-efficient 28nm FD-SOI technology, the Stellar P6 embeds up to 20 Mbytes of Phase Change (non-volatile) Memory (PCM). Developed and tested according to stringent automotive requirements for high-temperature operation, radiation hardening, and data retention, ST's PCM also delivers faster access time through single-bit overwrite, a feature unavailable in Flash. In addition, over-the-air updates with no downtime leverage a game-changing mechanism that saves memory by dynamically allocating memory space to the new downloaded software image until it is validated. This happens while the rest of the memory continues to execute the running application in real-time.

ST's Stellar P6 MCUs contain up to six Arm® Cortex® R52 processor cores, some operating in lockstep and some in split-lock mode to provide

failsafe redundancy. These enable the new devices to deliver high performance, real-time determinism, and upgradeability for next-generation automotive drivetrains, electrification solutions, and domain-oriented systems. Stellar P6 manages hardware virtualization (sandboxing) using the Cortex-R52 features and firewalls to resource access. This simplifies the development and integration of multiple-source software on the same chip while ensuring safe isolation and performance.

State-of-the-art safety measures at all levels of the architecture ensure the most efficient implementation of ISO 26262 ASIL-D functions. In addition, the FD-SOI technology inherently offers a quasi-immunity to radiation and provides superior protection against system unavailability while ensuring compliance with the most stringent safety standards.

A fast hardware security module (HSM), extended with cryptographic engines operating in lockstep, supports secure ASIL D functions and enables enhanced EVITA full security capability. It also provides high-speed security cryptographic services and safe network authentication to further protect manufacturer firmware as well as end-users' data.

More information is available at www.st.com/stellar-p-automotive-mcus

About STMicroelectronics

At ST, we are 48,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and connectivity. ST is committed to becoming carbon neutral by 2027. Further information can be found at www.st.com.

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Attachments

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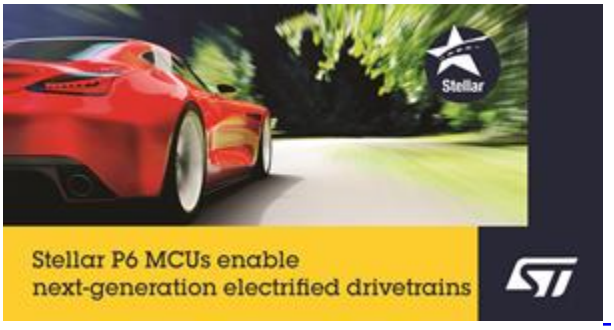

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