S32G2 SAFE AND SECURE VEHICLE NETWORK PROCESSOR

In Zone Controller Applications

OVERVIEW

As the number of services/ECUs within the vehicle continues to grow, OEMs are looking for more scalable and cost-efficient solutions to evolve the E/E architecture and meet future requirements for connected electric self-driving vehicles. This evolution can come via logical distribution of functions onto less diverse software/hardware platforms, and through physical changes to a zonal-based network.

Zonal architectures improve wire cost, weight and manufacturing. They enable efficient power and data distribution around the vehicle.

A key component in this architecture is the zone controller. These ECUs are responsible for connecting the high number of actuators and sensors to a central compute ECU and, depending on application distribution, can have a significant role in strategy within a zone.

The S32G2 family of devices provides a range of capabilities for not just central gateway and domain-based architectures. Through its high-compute, safety, security and networking capabilities it can meet the needs for zone controller applications:

- MPU+MCU architecture provides a mix of processing options for SOA/OTA functions and real-time applications
- Accelerators for Ethernet and legacy automotive protocol processing, including IP routing and CAN to Ethernet offload
- Up to ASIL D processing on both the real-time and application cores
- Secure boot/configuration, data authentication and IDPS capabilities
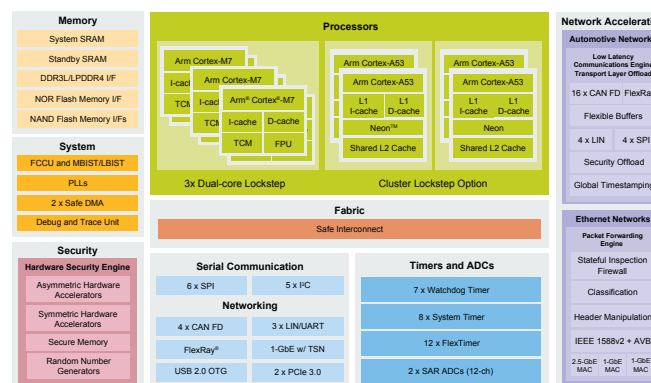
PROCESSOR FEATURES

- Range of compute/memory options across the family
  - Up to 4 x Arm® Cortex®-A53 (1 GHz) performance cores
  - Up to 3 x Cortex-M7 (400 MHz) safety cores
  - Up to 8 MB Internal SRAM with ECC
- Networking power
  - 20 x CAN/CAN FD interfaces
  - 4 x Ethernet interfaces up to 2.5 Gbit/s
  - 2 x PCI Express® Gen 3 interfaces
  - 7 x LIN and 2 x FlexRay™ interfaces
  - 10 x SPI and 5 x I²C interfaces
- Safety and security features
  - ASIL D Functional Safety support
  - Powerful hardware security engine (HSE-H)
  - Fault collection and control unit (FCCU)
- External memory features
  - DDR3L/LPDDR4 DRAM interface
  - eMMC/SDXC NAND flash interface
  - QuadSPI NOR flash interface with on-the-fly AES decryption
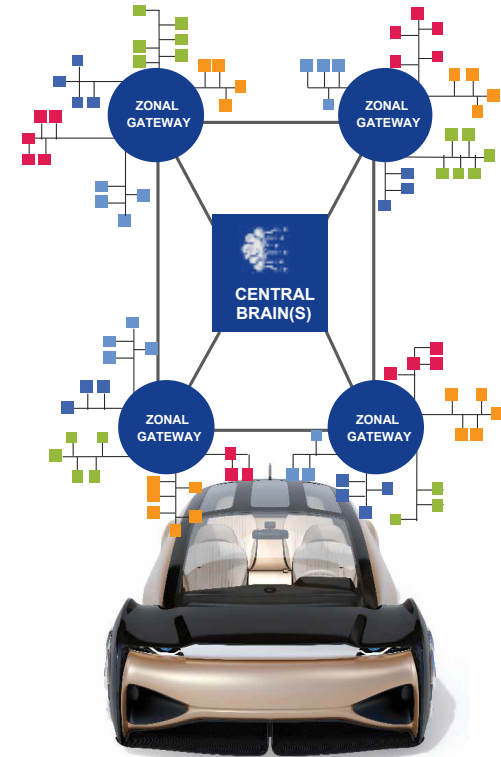
S32G2 BLOCK DIAGRAM (S32G274A)

ZONAL ARCHITECTURE

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