SMART CHARGING AND VEHICLE-TO-GRID (V2G) SUPPORT ON S32G2 PROCESSORS

OVERVIEW
Smart charging enables a bidirectional charging infrastructure consisting of electric vehicles, charging stations and charging operators. Data communications between the interfaces are on a secure channel. ISO 15118, the standard for communication between electric vehicles (EVs) and charging stations, allows for a user-friendly “plug and charge” mechanism for authentication, authorization, billing and flexible load control based on information exchanged between an EV and the charging infrastructure.

Some characteristics of smart charging include:

- No credit card or payment method requirement for charging a vehicle; the EV identifies itself to the charging station and gets the authorized access to the energy for charging its battery
- Energy transfers from the EV to the charging station and vice versa; this helps prevent overloading of the electric grid
- Wireless or wired software updates can occur during charging

S32G2 HARDWARE SECURITY ENGINE FEATURES

- The hardware security engine (HSE) is a security subsystem that runs relevant security functions for confidentiality, data integrity and authenticity
- HSE security engine firmware operates on a dedicated Arm® Cortex®-M7 core running at 400 MHz and utilizing its own secure RAM and ROM

The HSE subsystem features the following cryptographic accelerators:

- A TDES engine
- An AES engine supporting all standard key sizes (128, 192, 256 bits) and various complex ciphering modes (CBC, CTR, GCM, etc.)

- A hash engine supporting standard SHA1 and SHA2 hash primitives up to 512-bit digest
- A public key cryptographic (PKC) engine which accelerates RSA and ECC operations
- Supported symmetric and asymmetric cryptography

ENABLER TOOLS

- S32 Design Studio for S32 platform processors with configuration tools
- S32 debugger probe enables debugging and trace for S32G2
- Real Time Drivers combining functionalities of SDK and MCAL as single software product for single S32 families
- Linux BSP the reference software for Arm Cortex-A53 cores
- HSE firmware enables hardware security module integrated with S32G2
- FreeRTOS the real-time OS for Arm Cortex-M7 cores

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