

Safety Peripheral Drivers

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1. Software Product Overview

The Safety Peripheral Drivers (SPD) is a software product containing software components to control the safety related on-chip peripheral modules present on the device and thus it complements the S32 Real Time Drivers (RTD) product to provide software support for all on-chip peripheral modules.

The users can use it to develop their own safety solutions compliant with ISO 26262 functional safety. It allows integration up to ASIL D automotive safety integrity level. It is developed as Safety Element out of Context (SEooC). The Safety Peripheral Drivers software is designed to be integrated with AUTOSAR® and non - AUTOSAR applications. It is available for all NXP S32 Automotive Platform devices.

The Safety Peripheral Drivers package provides two software modules which are also included in the respective S32 Safety Software Framework (SAF, nxp.com/saf), see Figure 1.

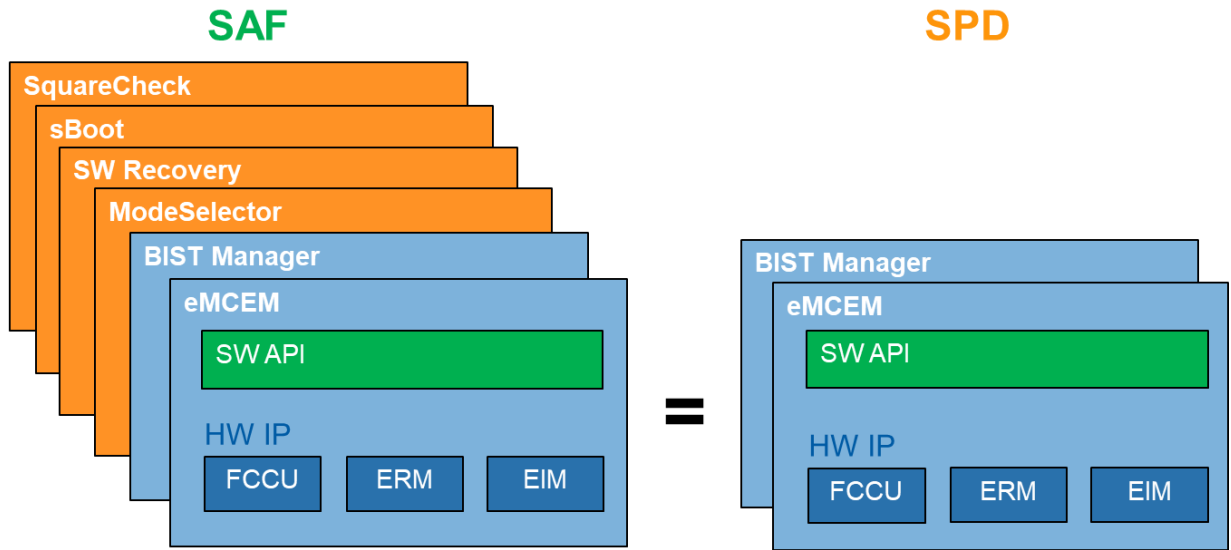


Figure 1. NXP's S32 SAF and SPD content

The software modules provided in SPD are:

- **BIST Manager** - Built in Self-Test Manager covering both LBIST (Logic BIST) and MBIST (Memory BIST)
- **eMCEM** – extended Microcontroller Error Manager

2. Software Content

The Safety Peripheral Drivers software is essential to achieve safety solution on applications on S32 Automotive Platform. The main features of the Safety Peripheral Drivers are as follows:

- BIST management and deployment to provide high availability
- Handling and reaction to detected faults
- Compliance with ISO 26262

BIST Manager (Built in Self-Test Manager)

- A driver for MBIST and LBIST HW modules
- Analyzes the results provided by LBIST and MBIST HW and initiates their execution

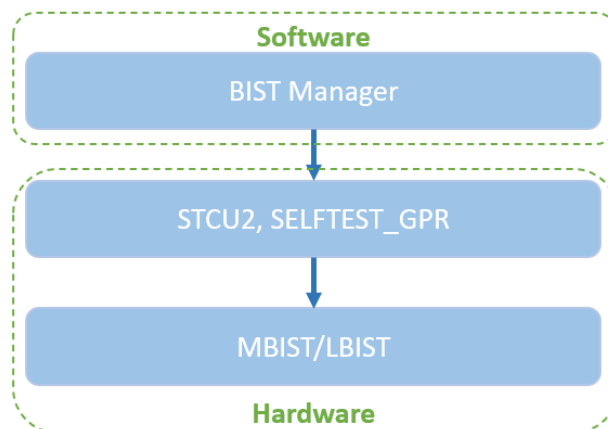


Figure 2. BIST Manager

eMCEM (extended Microcontroller Error Manager)

- Fault management of the microcontroller (FCCU HW IP)
- Configuration of fault reactions (reset, alarm IRQ, NMI, no reaction)
- Sophisticated error handling mechanism
- Allows to register an individual alarm handler for each FCCU fault
- Fault status reporting and fault clearing
- Error injection
- Memory error reporting

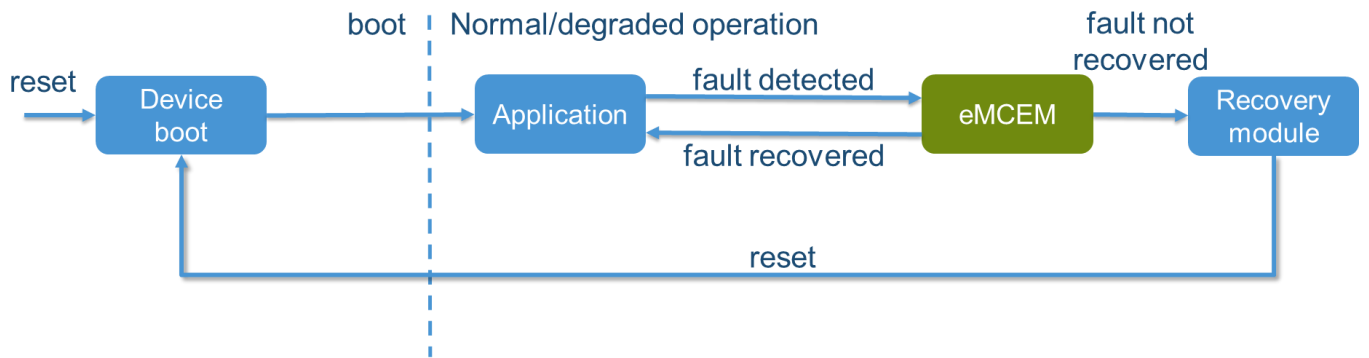


Figure 3. eMCEM (extended Microcontroller Error Manager)

3. Supported Targets

The Safety Peripheral Drivers described in this product brief are intended to be used with NXP Semiconductors S32G devices.

4. Quality, Standards Compliance and Testing Approach

The Safety Peripheral Drivers software product is developed according to NXP Software Development Processes that is ISO 26262, Automotive-SPICE, IATF 16949 and ISO 9001 compliant.

5. Document Information

Table 1. **Revision History**

Revision number	Date	Substantive changes
1	05/2022	Initial version
2	01/2023	Updated figure captions.

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