

SAF85xx RFCMOS AUTOMOTIVE RADAR SoC

High performance one-chip radar SoC for automotive FMCW radar applications

The SAF85xx RFCMOS automotive radar SoC is a high performance one-chip for automotive FMCW radar applications, optimized for fast chirp modulation. This device is designed to operate from 76 to 81 GHz covering the full automotive radar frequency band. SAF85xx integrates a high performance radar transceiver which consists of a radar microprocessor unit (MPU) and SRAM. Entry NCAP sensor all the way up to high performance front radar sensors are enabled by this 3rd generation 28nm radar device supporting short, medium and long range radar applications in a compact form factor. SAF85xx is a ISO 26262 compliant device targeting ASIL Level B and is developed to meet the latest security requirements through its HSE security engine.

TARGET APPLICATIONS:

- Adaptive cruise control
- Autonomous emergency braking
- Blind spot detection
- Front cross-traffic alert
- Rear cross-traffic alert
- Lane change assistance
- Park assist
- Door open warning
- Front collision warning



KEY FEATURES

- Highly integrated transceiver for 76–81 GHz band
- Four transmitters and four receivers to support enhanced resolution
- 7-bit phase rotator with high accuracy
- Wide band usecases for short and long range sensing
- Low phase noise of -96 dBc/Hz
- High performance radar compute with Arm® Cortex®-A53, BBE32 vector DSP and radar accelerator
- Arm Cortex-M7 lockstep core for control and AUTOSAR®
- Radar processing acceleration with SPT3.4
- Integrated memory larger than 5.5 MB
- Very small footprint of 10.6 x 11.3 mm
- CAN FD and Gb Ethernet support
- Hardware security engine (HSE-M)
- ISO 26262 SEooC ASIL B
- -40°C to 150°C junction temperature
- AEC-Q100 automotive qualified

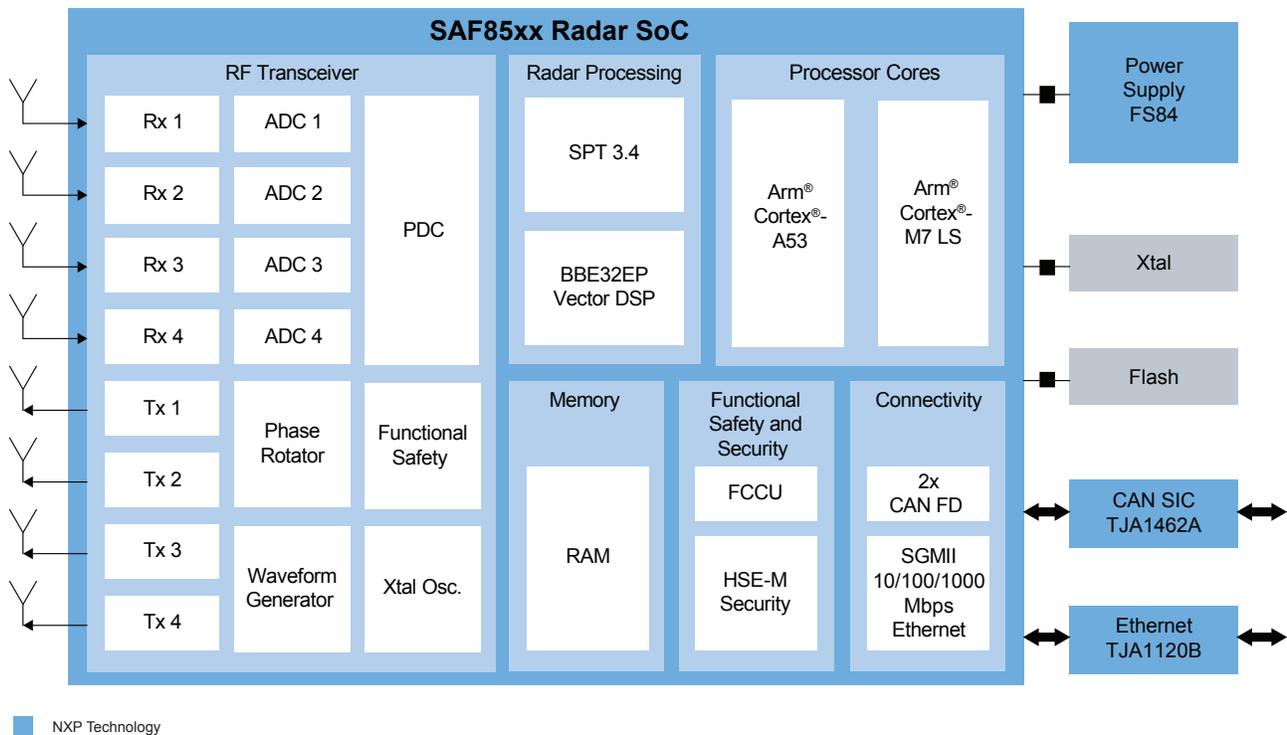
SOFTWARE AND TOOLS

- Radar SDK
- Inter Process Communication Framework (IPCF)
- S32 Design Studio
- S32 Flash Tool
- S32 Radar QKIT
- Radar Xplorer
- Real Time Drivers (RTD)
- HSE firmware
- Safety framework
- Compilers and Debuggers

BENEFITS

- High Performance Radar Transceiver
 - Enables higher resolution sensing
 - Robust detection driven by very low sensitivity with 2x improvement over TEF82xx
- Versatile Radar Processor
 - Multi-core processor to support FFT, point cloud or object output
 - Scales into NXP's S32R4x standalone radar MCUs
- 4D Sensing Enabled
 - Enables distance, speed, angle and height estimation in a small form factor
 - Supports multiple antenna concepts for performance scaling
- Future Proof Security
 - Hardware Security Engine provides the required flexibility to cover next generation requirements through software update
- Flexible Vehicle Interfaces
 - SGMII Ethernet up to 1 Gbps supports different radar outputs
 - Dual CAN FD to support conventional architectures

SAF85xx BLOCK DIAGRAM



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Document Number: SAF85XXFS REV 0