S32R45 RADAR PROCESSOR

High-performance, safe and secure processing for long-range radar imaging

OVERVIEW

The S32R45 is a 32-bit automotive radar application MPU based on Arm® Cortex®-A53 and Cortex-M7 cores. This MPU is designed primarily for the civil automotive ADAS radar market and is well suited for a variety of industrial and consumer applications.

For the automotive ADAS radar market, the S32R45 MPU addresses the segment of high-end long-range front and rear radar and advanced radar imaging and serves as the advanced domain controller for the New Car Assessment Program (NCAP). It delivers high-performance radar processing in scalable, safe, secure and power-efficient fashion.

KEY FEATURES

- Quad Arm Cortex-A53 @ 800 MHz, flexible lockstep
- Triple Arm Cortex-M7 lockstep pairs @ 400 MHz
- LAX 1.0: >300 GFLOPS
- SPT 3.1 @ 600 MHz with integrated DSP and multi-threading
- 8 MB SRAM with ECC
- DDR3L-1600 with 16-/32-bit support and LP-DDR4-1600/3200 with 16-/32-bit support
- HSE High
- 2 x SAR ADC 16-ch.
- 4x MIPI CSI2
- PCIe 2 x Gen2/3, 2 lanes
- 2 x GbE 10/100/1000 Mbit/s
- 8 x FlexCAN with FD
- ISO26262 SEooC ASIL B(D)
- -40 °C to 150 °C (Tj) AEC-Q100 Grade-1

SOFTWARE AND TOOLS

- DIAG Tool
- AUTOSAR® MCAL4.4
- HSE firmware
- Safety SDK
- Inter-process communication framework
- Linux® BSP
- Platform SDK M7
- RADAR SDK
- S32 Design Studio
- S32 Compilers (GCC, Windriver)
- S32 RADAR QKIT RTM
- Debuggers (Lauterbach, NXP and GHS)

BENEFITS

Superior performance per power

- SPT 3.1 Radar processing sub-system provides 10x performance increase over SPT 2.0
- LAX 1.0 linear algebra accelerator for environmental modelling and fusion processing acceleration

Multifaceted Scalability

- Scalable memory support for significantly increased radar data and algorithm software
- Support up to four cascaded transceivers for advanced LRR RADAR
- Unique PCIe® scalability support for combining multiple S32R45 devices and serving as high-performance domain controllers
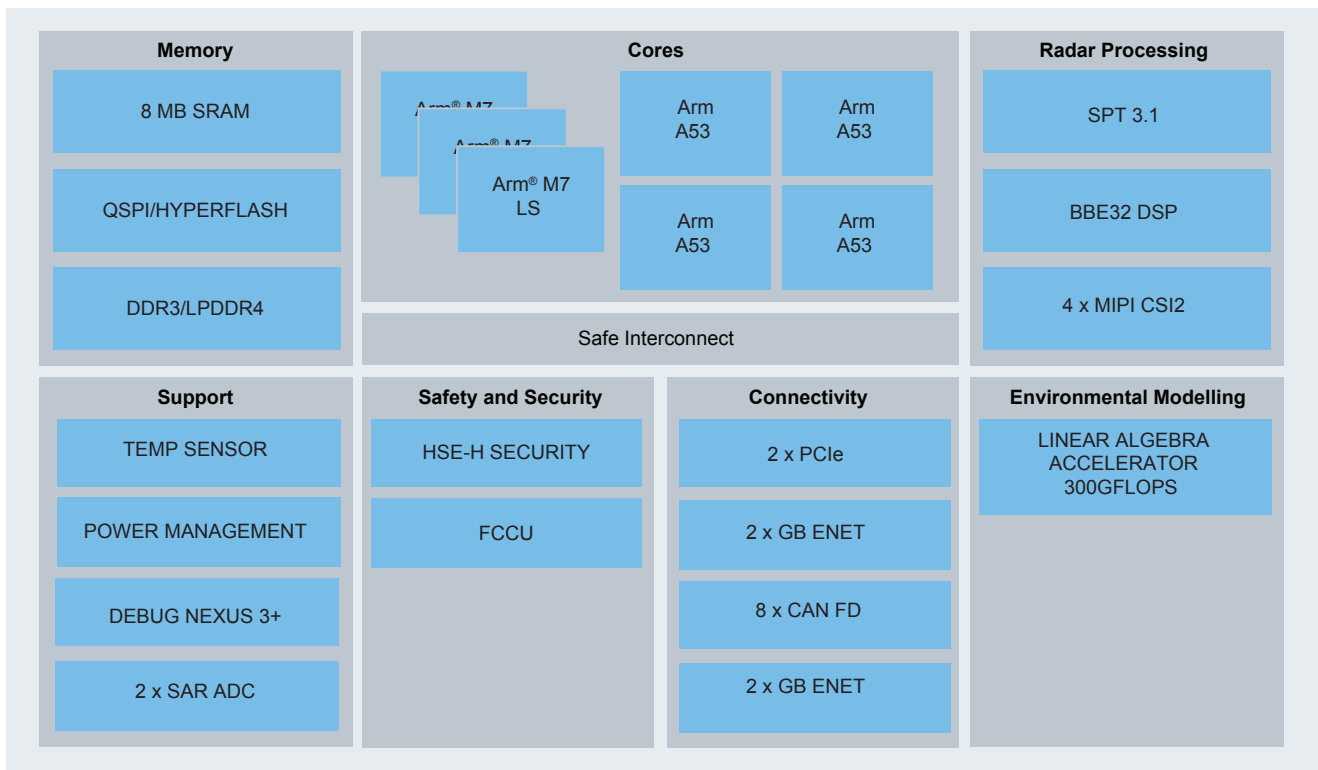
Functional Safety

- Strong ASIL D processing support for domain controller applications

Software Enablement

- Extensive Radar SDK with enablement for advanced radar and fusion processing algorithms

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Memory	Cores	Radar Processing
8 MB SRAM	Arm® M7 / Arm® M7 / Arm® M7 LS · Arm A53 · Arm A53	SPT 3.1
QSPI/HYPERFLASH	Arm A53 · Arm A53	BBE32 DSP
DDR3/LPDDR4		4 x MIPI CSI2
	Safe Interconnect	

Support	Safety and Security	Connectivity	Environmental Modelling
TEMP SENSOR	HSE-H SECURITY	2 x PCIe	LINEAR ALGEBRA ACCELERATOR 300GFLOPS
POWER MANAGEMENT	FCCU	2 x GB ENET	
DEBUG NEXUS 3+		8 x CAN FD	
2 x SAR ADC		2 x GB ENET	

www.nxp.com/S32R45