



32-bit Automotive MCUs

Qorivva MPC577xK Family

Highly integrated automotive radar MCU for advanced driver assistance systems

The Open Road to Self Driving

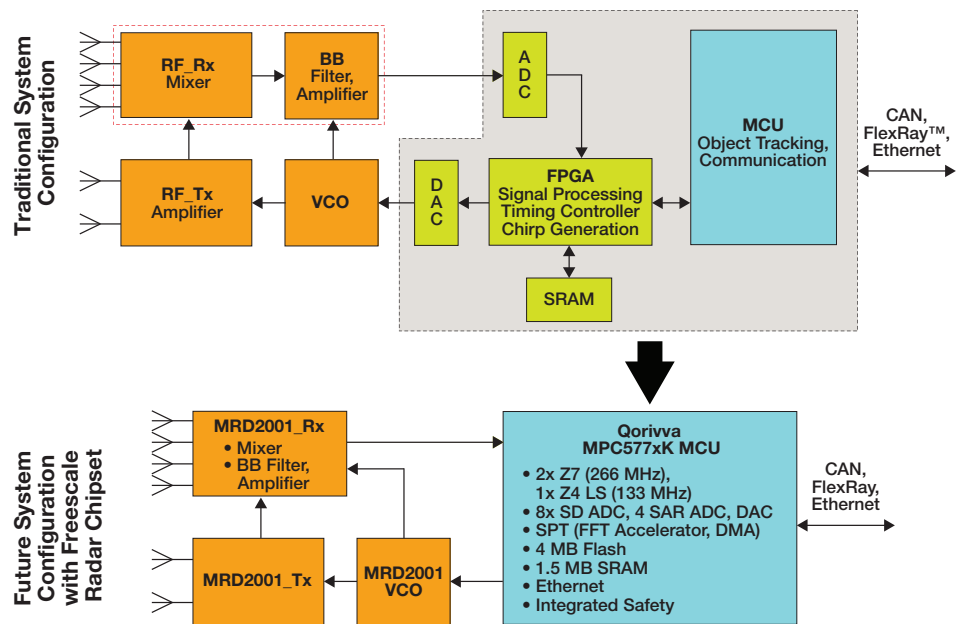
Target Applications

- Adaptive cruise control
- Emergency brake system
- Blind spot detection
- Park assist
- Cross traffic assist
- Side impact assist
- Radar fusion center

Overview

The Qorivva MPC577xK 32-bit embedded MCU family is specially designed for automotive radar systems, providing high levels of digital and analog integration and performance within a single chip for next-generation radar-based ADAS systems. The MPC577xK family removes the need for additional external components to the MCU that are typically used in existing radar systems, such as an FPGA, ADC, DAC and SRAM, thus reducing the overall number of components within the system, the size of the PCB and the complexity of software. The MPC577xK MCU family, when combined with the MRD2001 77 GHz packaged radar front-end chipset, offers a complete system-level radar solution for ADAS applications.

Radar MCU Chipset Evolution



Software and Development Tools

A comprehensive suite of hardware and software development tools is available to help simplify and speed system design. Development support is available from world-class tool vendors, providing compilers, debuggers and simulation development environments.

Compilers

- Wind River Diab
- Green Hills Software

Debuggers

- P&E Micro
- Lauterbach

Runtime Software

- SPT assembler/disassembler
- RAppID
- Flash and EEPROM drivers
- AUTOSAR MCAL 4.0

Operating Systems

- AUTOSAR OS 4.0 provided by third-party vendors

SafeAssure Program

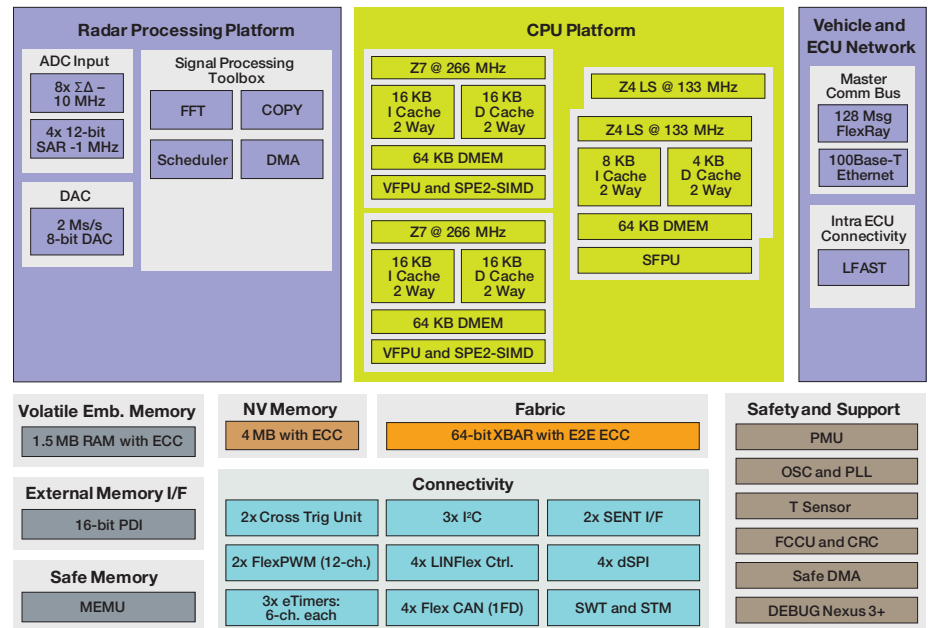
Functional Safety. Simplified.

Our SafeAssure functional safety program is designed to help system manufacturers more easily achieve system compliance with International Standards Organization (ISO) 26262 and IEC 61508 functional safety standards. The program highlights Freescale solutions—hardware and software—that are optimally designed to support functional safety implementations and come with a rich set of enablement collateral. For more information, visit freescale.com/SafeAssure.

Qorivva MPC577xK MCU Key Features

In addition to the two 266 MHz e200z7 processing cores and the e200Z4 lockstep cores for functional safety, the MPC577xK MCU also features a state-of-the-art Signal Processing Toolbox (SPT). The SPT contains all the hardware modules required for processing sampled signals from short-, medium- and long-range radar applications.

Qorivva MPC577xK Block Diagram



All devices in the MPC577xK family are part of the SafeAssure program, designed to help system manufacturers more easily achieve compliance with functional safety standards. The family is built around a safety concept targeting an ISO 26262 ASIL D integrity level. The MPC577xK family has an integrated safety architecture that helps minimize additional software and module-level features to reach this target.

MPC577xK Features for Radar

Feature	Description
Radar Processing Platform	Signal Processing Toolbox (SPT): FFT accelerator, DMA ADC input: 8x SD - 10 MHz, 4x 12-bit SAR -1 MHz DAC: 2 Ms/s 8-bit DAC
CPU Platform	Processing cores: 2x e200z7 (266 MHz) Functional safety core2: e200z4 in lockstep (133 MHz)
Vehicle and ECU Network	Ethernet, FlexRay, LFAST
Memory	NVM: 4 MB with ECC SRAM: 1.5 MB with ECC External memory support: 16-bit PDI
Connectivity	CTU, I ² C, SENT, FlexPWM, LINFlex, dSPI, eTimers, CAN-FD, SWT, STM
Safety and Support	PMU, OSC and PLL, T sensor, FCCU and CRC, safe DMA, Nexus 3+
Package	356 PBGA
Temperature	-40 °C to +125 °C, 150 °C Tj, AEC-Q100 grade 1
Supply	3.3 V I/O (5 V SAR) and 1.2 V core (ext. or PMU)

For more information, visit freescale.com/MPC577xK

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