# S32R27 Radar Microcontroller

## Power Architecture®-based MCU for Automotive and Industrial Applications

### Features

- Best-in-class performance/watt
- Safety with automotive pedigree
- Integrated accelerators designed for radar applications

## Product One-Sheet

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**Computation cores**—Dual Power Architecture e200z7 32-bit CPU compatible with MPC5775K and S32R27

**Dedicated safety processing cores**—Dual cores with checker core (available in lockstep operation)

**Optimized RADAR Signal Processing Acceleration** to maximize performance/watt

**Scaleable family of solutions**—Pin-compatible with S32R37

**Automotive Safety**—Designed for ASIL-D applications

**Security Enabled**—Embedded cryptographic security engine

## Specifications

| | | | |
|---|---|---|---|
| Cores | 2 x e200z7 2 x e200z4 (lock-step) | Speed | e200z7: 240 MHz e200z4: 120 MHz |
| On-Chip Flash | 2 MB w/ ECC | SRAM | 1.5 MB w/ ECC |
| RADAR processing | Signal Processing Toolbox SPT 2.0 | RADAR I/F | MIPI-CSI2 (4 data lanes) ∑Δ-ADC (4 x 12-bit,10 MSps) DAC (10 MSps) |
| Safety | ISO26262 SEooC up to ASIL-D | Security | CSE2 (Cryptographic Services Engine) |
| Temp Range (Tj) | -40 to 150°C AEC-Q100 Grade 1 | Comm. I/F | Zipwire (MCU I/F) 2 x SAR-ADC 2 x SPI 2 x I2C 3 x FlexCAN (incl. 2x CAN-FD) FlexRay LINFlexD Ethernet |

## Orderable Samples

| Part Number | Temp Range (Ta) | Flash | SRAM | Package |
|---|---|---|---|---|
| FS32R274KSK2MMM | -40 to 125 °C | 2 MB | 1.5 MB | 257 MAPBGA |
| FS32R274KSK2VMM | -40 to 105 °C | 2 MB | 1.5 MB | 257 MAPBGA |

## Block Diagram
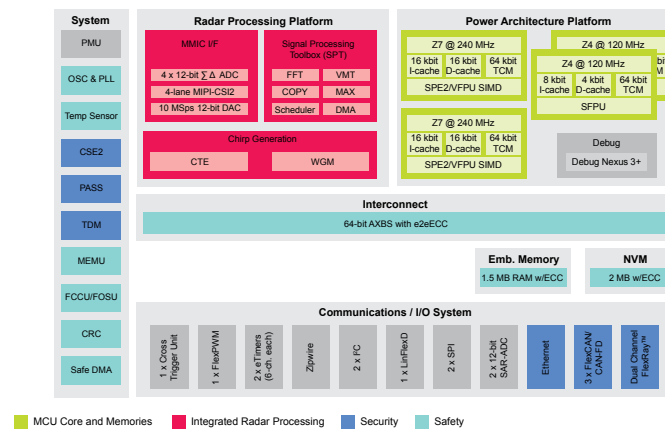


## Radar Application
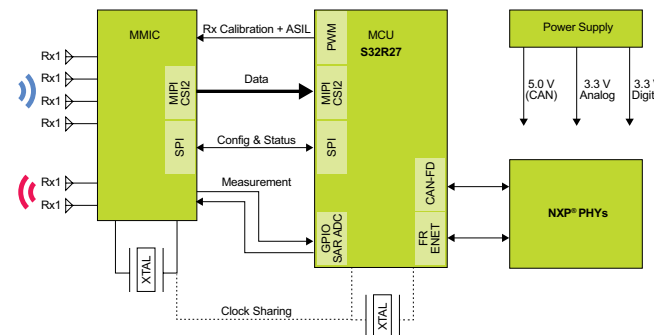


## Target Applications

- Automotive radar applications
  - Low- to mid-range radar, including side-looking and surround sensors, lane change/keeping assist (LCA, LKA), blind spot detection (BSD), rear-traffic-crossing alert (RTCA)
  - Long-range radar, including forward-looking sensor, adaptive cruise control (ACC), autonomous emergency braking (AEB), pedestrian protection
- Non-automotive radar applications
  - Building surveillance protecting hazardous points, areas and access
  - Smart home accident detection for the elderly
  - Industrial automation, e.g., position determination and safety guard

## Enablement Tools

- AUTOSAR safety MCAL and non-AUTOSAR MCAL
- S32 Design Studio IDE support with plug-ins for third-party tool vendor compilers and debuggers
- Compiler support by WindRiver, GreenHills
- Debugger support by Lauterbach, P&E, iSystems
- Radar accelerator graph editor and radar SDK
- SDK with low-level drivers integrated in S32DS IDE
- Model-based design in MATLAB™ for radar accelerator
- RDK-S32R274 automotive radar reference platform
- Hardware and software tools compatible with S32R37 microcontroller

## www.nxp.com/S32R27