

# MPC5746R Microcontroller

Ultra-Reliable MCUs based on Power Architecture® Technology.

Product One-Sheet

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**Multi-core Performance** – High performance and integration for enhanced powertrain/motor control use cases within a power envelope of previous-generation MCUs.

**Scalability** – Scalable flash, core configurations and packaging options for a range of industrial and automotive applications.

**Advanced Timers and ADCs** – eTPU timers and sigma - delta ADC converters allow for advanced filtering using on-chip knock hardware.

**Functional Safety** – AEC-Q100 qualification testing and lockstep cores help support ASIL-D and SIL-1 functional safety (ISO26262/IEC61508) requirements.

## Features

- ▶ AEC-Q100 Grade1, Ta 125°C
- ▶ Ethernet
- ▶ Precision eTPU Timers and ADC
- ▶ Ultra-Reliable MCU

## Orderable Samples

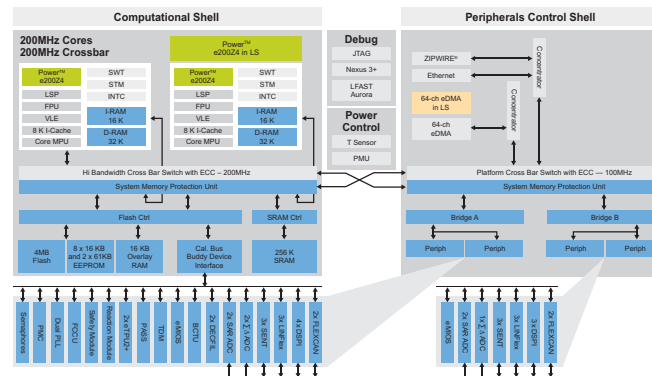
| Part Number    | Temp Range     | Package    |
|----------------|----------------|------------|
| SPC5746RK1MMT5 | -40°C to 125°C | 252 MAPBGA |
| SPC5745RK1MLU3 | -40°C to 125°C | 176 LQFP   |
| SPC5743RK1MLQ5 | -40°C to 125°C | 144 LQFP   |

[www.nxp.com/MPC5746R](http://www.nxp.com/MPC5746R)

## MPC5746R Specifications

|          |                          |           |  |
|----------|--------------------------|-----------|--|
| Flash    | Up to 4 MB               | Timer/PWM | 64-ch. eTPU, 32-ch. eMIOS                  |
| RAM      | Up to 256 KB             | Other     | 64-ch. DMA, ECC, 6-ch. SENT, Zipwire®, MSB |
| Cores    | Up to 2 x z4 (1 in LS)   | Analog    | Up to 52-ch. SAR ADCs and 20-ch. SD-ADCs   |
| Speed    | Up to 200 MHz/core       | Ethernet  | Ethernet (FEC)                             |
| Package  | 144 to 252 pins          | SCI/SPI   | Up to 4/5                                  |
| Op Range | 3.0 V - 5.5 V            | CAN       | 4 x FlexCAN                                |
| Temp     | -40°C to 125°C (ambient) | Security  | TDM, WDOG, CRC                             |

## MPC5746R Block Diagram



## Success Stories

- ▶ Transmissions
- ▶ Engine management
- ▶ Hybrid and electric motors

## Target Applications

- ▶ Engine control units (ECU)
- ▶ Electric DC motor control
- ▶ Ethernet connectivity
- ▶ Aerospace engines
- ▶ Safety critical applications

## Enablement Tools

- ▶ Evaluation boards:
  - MPC5746R-252DS 252-pin adapter
  - MPC5746R-176DS 176-pin adapter
  - MPC5746R-144DS 144-pin adapter
  - MPC57XXXMB motherboard
- ▶ S32 Design Studio (S32DS)
- ▶ NVM/Flash drivers
- ▶ AUTOSAR MCAL drivers (SDK)
- ▶ GreenHills, Wind River (Diab)
- ▶ Lauterbach
- ▶ iSystem
- ▶ P&E Micro, PLS



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