NXP

32-bit Microcontrollers

Qorivva MPC563xM Family
32-bit MCUs for entry-level powertrain applications

Target Applications
- 1–4-cylinder gasoline direct injection engines
- Entry-level diesel engines
- Entry-level transmission

Overview
The Qorivva MPC563xM is Freescale's first 32-bit, 90 nm powertrain MCU family built on Power Architecture® technology designed for up to 4-cylinder engines. It not only offers enhanced powertrain functionality, such as on-chip emission control, but addresses cost constraints for 32-bit powertrain applications. If you are currently using 16-bit solutions for powertrain, the Qorivva MPC563xM enables you to go beyond 16-bit capabilities with a family that offers up to 1.5 MB of flash, 111K of total SRAM and up to 80 MHz of CPU performance.

Go Green by Reducing Knock
- On-chip knock system makes tight emission control affordable and allows a three to five percent improvement of economy and power
- Power and memory size allow fast development of "clean sheet" solutions to meet emissions legislation
- No active external components required for on-chip knock system through variable on-chip gain and sensor bias
- Same integrated components can be used for a patented sensor diagnostics scheme that meets on-board diagnostics

Ease of Use
- Offers a 144-pin quad flat package (QFP) option. QFP has visible pins, making it easier to assemble and inspect since infrared and X-ray technology is not required
- Microsecond bus enabled for connecting ASIC with the Qorivva MPC563xM family

Mitigates Supply Risk
- The Qorivva MPC563xM family of devices offers dual-sourced solutions, enabling you to design applications with confidence that the supply will be there
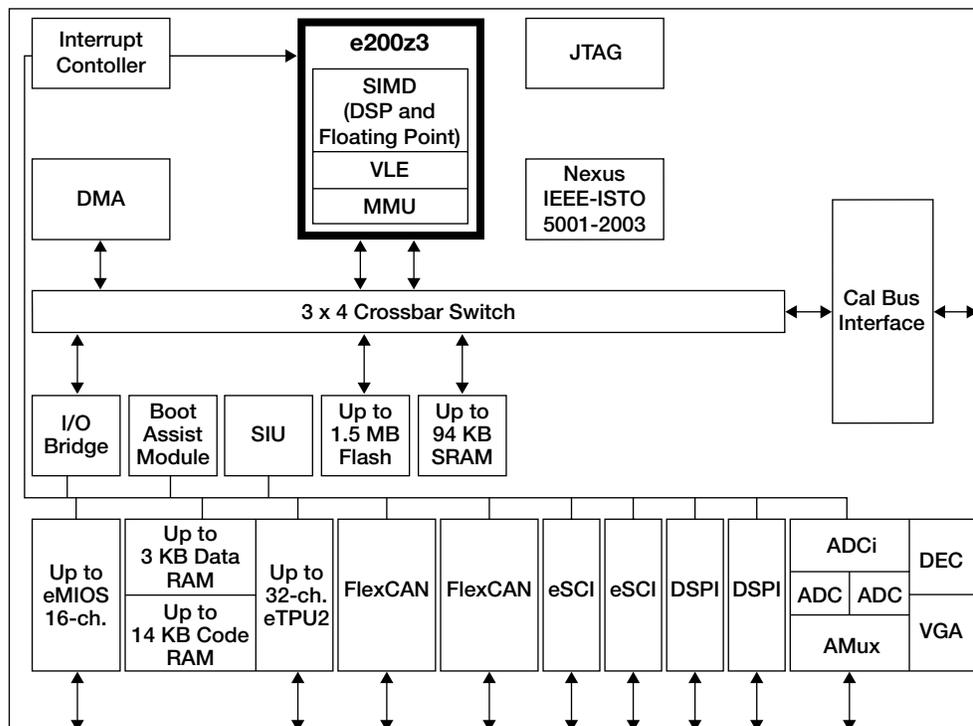
Improves Performance
- Combination of hardware decimator and DMA can lead to a savings of up to five percent of the CPU load
- eTPU and I/O configured to handle electronic manual transmissions (paddle flap) applications where up to four brushless DC motors are used
- Offers 32 eTPU2 channels to handle complex timer applications and offload the CPU

Helps Save Cost
- Requires only one linear power supply (5V)
- Compatibility with existing Qorivva MPC5500 family allows code sharing and cost reduction of existing solutions into these new markets

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Qorivva MPC563xM Block Diagram

Freescale Technology

Qorivva MPC563xM Key Features

- e200z3 core, built on Power Architecture technology, up to 80 MHz
- Single instruction/multiple data (SIMD) module for DSP and floating point operations
- Variable length encoding (VLE) capability to help reduce code footprint by up to 30 percent for improved code density and reduced memory requirements
- Family includes 768 KB, 1 MB and 1.5 MB flash memory options with ECC
- Up to 111 KB SRAM
- 32-channel eTPU2 to handle complex timer applications and offload the CPU
- Up to 34-channel dual analog-to-digital converter (ADC) with differential channels and input variable gain amplifiers
- 2 x FlexCAN compatible with TouCAN, 64 + 32 buffers
- 2 x eSCI
- 2 x DSPI (16 bits wide) up to six chip selects each with continuous mode mode, DMA and microsecond bus channel (MSC) support
- Die temperature sensor
- 32-channel enhanced DMA controller
- 191 source interrupt controller
- Nexus IEEE-ISTO 5001-2003 Class 2+ (eTPU2 Class 1)
- Single 5V power supply with internal regulator supporting 3.3V
- Frequency modulating phase-locked loop (FMPLL)
- 100 LQFP, 144 LQFP, 176 LQFP, 208 MAPBGA and VertiCal Calibration System package options

Selector Guide

Product	Frequency Options	Flash	RAM	eTPU2	eMIOS	QADC	Package Options
MPC5634M	40 MHz, 60 MHz, 80 MHz	1.5 MB	94K	1 x 32-ch.	1 x 16-ch.	34-ch. dual 12-bit	144 LQFP, 176 LQFP, 208 MAPBGA
MPC5633M	40 MHz, 60 MHz, 80 MHz	1 MB	64K	1 x 32-ch.	1 x 16-ch.	34-ch. dual 12-bit	100 LQFP, 144 LQFP, 176 LQFP, 208 MAPBGA
MPC5632M	40 MHz, 60 MHz	768K	48K	1 x 32-ch.	1 x 8-ch.	32-ch. dual 12-bit	100 LQFP, 144 LQFP

Learn More: For current information about the Qorivva MPC563xM family, please visit **freescale.com/Qorivva**.

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