

MPC5674F Family

Revolutionizing “green” engine designs with Power Architecture® technology

Overview

The MPC5674F 32-bit Power Architecture® microcontroller family is designed to enable greener engines to come to market faster, at lower costs and with higher reliability. The MPC5674F is designed to help you offer more fuel-efficient automobiles and meet stricter government-mandated emissions standards by enabling precise control of engine events, such as combustion, without sacrificing performance.

The MPC5674F MCU outpaces all other powertrain MCUs with its 264 MHz clock speed (which outperforms all powertrain microcontrollers on the market today), 4 MB of on-chip flash, 64-channel dual timing units, quad ADCs, on-chip digital signal processing and 256K RAM (for data storage) that can perform knock detection without requiring additional external components.

The MPC5674F's combination of exceptional performance, advanced signal processing capabilities and ultra-large flash memory array address the growing computational demands of green engine designs, including common rail diesel injection systems, gasoline direct injection engines, homogenous charge compression ignition (HCCI) systems and hybrid electric vehicles (HEV).

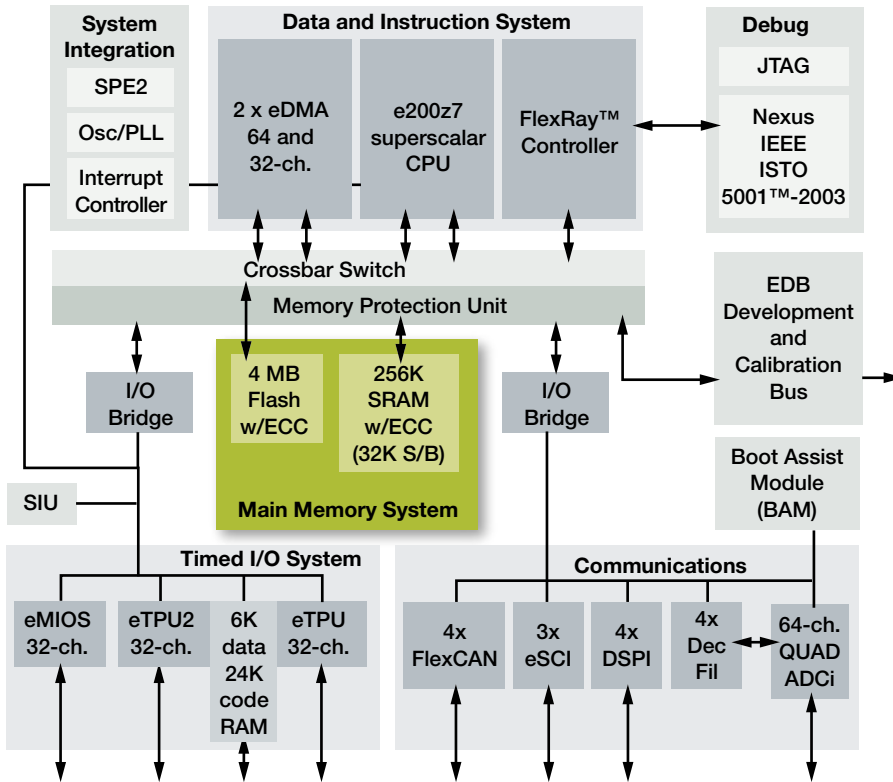
Target Applications

- Powertrain engine control
- Gasoline direct injection (GDI)
- Common rail diesel injection or clean diesel
- Hybrid electric vehicles (HEV)
- Knock detection
- Cylinder deactivation
- Transmission control
- Continuously Variable Transmission (CVT)



Features	Benefits
<ul style="list-style-type: none"> • Power Architecture e200z7 core at 264 MHz • SIMD module for DSP and floating point operations • Variable length encoding (VLE) 	<ul style="list-style-type: none"> • 600 DMIPS from 264 MHz core with integrated DSP capability allows users to enable ‘virtual sensors’ and eliminate many external ICs • The capability to reduce code footprint by up to 30 percent for improved code density and reduced memory requirements
4 MB flash memory w/ECC	Generous memory supports autocode generation and modeling tools that speed time to market
256K SRAM w/ECC	Extra RAM to meet next-generation requirements
64-channel Dual eTPU2	<ul style="list-style-type: none"> • Most precise engine timers available • Using complex timers to monitor systems results in precisely controlled fuel delivery and improved gas mileage
64-channel quad analog-to-digital converter (ADC)	Allows independent and simultaneous conversions. 12-bit ADC offers <1 us conversions.
Dual-channel FlexRay™ controller	Capable of up to 10 Mbps bandwidth
4 x FlexCAN	<ul style="list-style-type: none"> • Compatible with TouCAN, 64 buffers each
3 x eSCI 4 x DSPI Microsecond bus support	<ul style="list-style-type: none"> • Microsecond bus support • Supports LIN/J2602 • 16 bits wide with up to 6 chip selects each
Hardware decimators	Used to minimize DSP calculations and reduce CPU load by up to five percent by leveraging the DMA as an anti-knock filter
On-chip regulator for standby voltage	Saves system cost
Nexus 3+ support	Sophisticated debug capability
416-pin PBGA package 516-pin PBGA package (with expanded bus option)	Offers significant I/O and access to external memory or ASICs

MPC5674F Block Diagram



Package Options

Part Number	Temperature Ranges	Package
MPC5674FMVR264	-40°C to +125°C	416 PBGA (Pb free)
MPC5674FMVY264	-40°C to +125°C	516 PBGA (Pb free)
PPC5674FMVR264 (samples)	-40°C to +125°C	416 PBGA (Pb free)
PPC5674FMVY264 (samples)	-40°C to +125°C	516 PBGA (Pb free)

Development Tools

MPC5674FXKIT416 (416 PBGA evaluation board)

MPC5674FXKIT516 (516 PBGA evaluation board)

Learn More: For more information about the MPC5674F family of microcontrollers, please visit www.freescale.com/automotive.



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