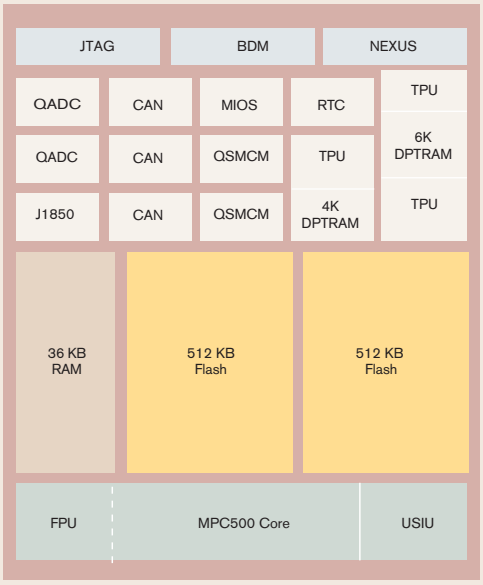
32-bit Embedded Controllers

MPC565

The MPC565—An Industry First

The MPC565 32-bit embedded microcontroller from Freescale Semiconductor, containing a PowerPC® core, is the industry's first embedded microcontroller to include 1 MB of Flash memory. The benefit to you? Leading-edge performance, exceptional functionality and a high level of increased production flexibility.

Now you can integrate the unbeatable performance of a 56 MHz core and advanced peripheral features with 1 MB of Flash memory on a single silicon chip. This combination is ideal for high-performance automotive applications, as well as other control-intensive applications. Whether you're designing an automotive, industrial control, avionics or robotics application, the MPC565, with its ability to monitor a multitude of analog inputs, including basic digital filtering, is the perfect solution. The 1 MB of Flash on the MPC565 also makes it a good fit for applications using embedded operating systems.



Flexibility Like Never Before

With 1 MB of Flash memory—more than double the Flash memory on any of Freescale's family of MPC500 products—you have the flexibility to make cost-effective field upgrades even after the product is in your customers' hands. Your customers benefit from convenient access to additional functionality. You are equipped to help keep your development and support costs low.

Two memory blocks make in-application programming of parameter tables, diagnostic values and application data easy.

Additional Computing Muscle

Capable of powering complex applications in harsh environments at clock speeds of up to 40 MHz or 56 MHz, the MPC565, with its PowerPC core and floating point unit (FPU), offers additional computing muscle with third-generation time processor units (TPU3). Each TPU includes its own RISC core and memory system, which allows it to function as its own microcontroller dedicated to timing functions capable of processing up to 20 million instructions per second with a 40 MHz system clock. With a 56 MHz system clock, up to 28 million instructions per second can be achieved. Off-chip serial communications are handled by queued serial multichannel modules (QSMCM) that offer UART and SPI functionality. Additionally, three TouCAN™ (CAN 2.0B) controller modules are designed to allow service for three separate networks or a single network with three times the message buffers. Controller Area Network (CAN), a broadcast-oriented communication protocol, supports both automotive and industrial networking. DeviceNet™ is an industrial-specific communication network based on CAN.

The MPC566 offers code compression in addition to all the other features on the MPC565, saving you up to 50 percent in memory space.

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Protect Your Technology Investments

All members of Freescale's MPC500 Family have a clear migration path between products and from previous generations so you can cost effectively adopt or upgrade your products as your needs change.

The MPC565 leverages a full set of development tools and operating systems already available for this computing platform. For example, debug and calibration are supported using the original background debug mode (BDM) as well as the new Nexus debug port on the MPC555 tools base. The industry-standard READI (Nexus) interface also provides support for additional features.

Flash security locks external access to content and code to help protect your application software from your competitors.

Benefits

> 1 MB of embedded Flash helps provide you maximum design functionality and flexibility

> Quick time to market

> Code compatibility and scalability among family members and between generations helps eliminate migration worries and also provides software reuse between family members

Features

> 1 MB of internal Flash memory (divided into two blocks of 512 KB)

> 40 MHz or 56 MHz PowerPC core with floating point unit

> 36 KB of static RAM/10 KB of DPTRAM (which can be shared by TPUs for customized TPU code) and 4 KB of DECRAM providing additional RAM used for compression tables on the compression parts (MPC562, MPC564 and MPC566) or otherwise used as SRAM

> Four-bank external memory controller and extensive I/O features

> 5V general purpose I/O (GPIO)

> Engineered to operate within industrial temperatures (-40°C to +85°C) as well as extreme temperatures (-55°C to +125°C)

> Three time processor units (TPU3)

> Queued serial multichannel modules for universal asynchronous receiver/transmitter (UART) and serial peripheral interface (SPI) functionality support off-chip serial communications

> Three TouCAN (CAN version 2.0B) and one J1850 interface

> Comprehensive suite of low-level driver software

> Full Nexus (Class 3) debug and calibration port

> JTAG and BDM

Committed to You for the Long Run

With 30 years of experience, Freescale (formerly the Semiconductor Products Sector of Motorola, Inc.) understands your priorities—design higher performance products in less time and at a reduced total cost. To that end, the MPC500 Family of microcontrollers, including the MPC565, enables you to buy as much or as little performance as you need to meet your product development goals.

Learn More: For more information about Freescale products, please visit **www.freescale.com**.

MPC565FACT
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