Fact Sheet

Freescale Semiconductor, Inc. *(vertical text, left margin)*

MC68360
QUAD INTEGRATED COMMUNICATION CONTROLLER (QUICC™)

The MC68360 Quad Integrated Communication Controller is a versatile one-chip integrated microprocessor and peripheral combination family that can be used in a variety of controller applications. It particularly excels in communications activities. The QUICC can be described as a next-generation MC68302, with higher performance in all areas of device operation, increased flexibility, and higher integration. The term "quad" comes from the fact that there are four serial communications controllers (SCCs) on the device. However, there are actually seven serial channels which include four SCCs, two serial management controllers (SMCs), and one serial peripheral interface (SPI).

Product Highlights

- CPU32+ Processor
- Up to 32-bit data bus (dynamic bus sizing for 8- and 16-bits)
- Memory controller (eight banks)
- Four general-purpose timers
- Two Independent DMAs (IDMAs)
- System Integration Module (SIM60)
- Up to four SCCs and two SMCs
- 240 pins defined: 241-Lead Pin Grid Array (PGA), 240-Lead Plastic Quad Flat Pack (PQFP), 357 Pin Ball Grid Array (BGA)
- Available at 25 and 33 MHz
- Strong 3rd party tools support

MC68360 Quad Integrated Communication Controller (QUICC™)

Typical Applications

- ISDN Equipment
- Mid-range Routers
- LAN Switches
- Bridges
- Telecom switching and transmission devices
- Wireless Infrastructure Applications & Base Stations

Technical Specifications

- CPU+ Processor (8.3 MIPS at 33MHz)
  - 32-bit version of the CPU32 core (fully compatible with CPU32)
- Up to 32-bit Data Bus (Dynamic Bus Sizing for 8- and 16-Bits) + 32 Address Lines
- Complete static design (0-33 MHz Operation)
- Slave mode to disable CPU32+ (allows use with external processors)
  - Multiple QUICCs can share one system bus (one master)
  - MC68040 companion mode allows QUICC to be an MC68040 companion chip and intelligent peripheral (29 MIPS at 33 MHz)
  - All QUICC features available in slave mode

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✽**Digital DNA**
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- Memory controller (eight banks)
  - Contains complete Dynamic Random-Access Memory (DRAM) controller
  - Glueless interface to DRAM Single In-Line Memory Modules (SIMMs), Static Random-Access Memory (SRAM), Electrically Programmable Read-Only Memory (EPROM), Flash EPROM, etc.
  - Boot chip select available at Reset (options for 8-, 16-, or 32-bit memory)
  - Special features for MC68040 including Burst Mode
- Four general-purpose timers
  - Four 16-bit timers or two 32-bit timers
- Two Independent DMAs (IDMAs)
- System Integration Module (SIM60)
  - Bus monitor
  - Spurious interrupt monitor
  - Periodic interrupt timer
  - Low power stop mode
  - Breakpoint logic provides on-chip H/W breakpoints
  - External masters may use on-chip features such as chip selects
  - On-chip bus arbitration with no overhead for internal masters
  - IEEE 1149.1 Test Access Port
- RISC Communications Processor Module (CPM)
  - Many new commands (e.g., Graceful Stop Transmit, Close RxBD)
  - Supports continuos mode transmission and reception on all serial channels
  - 2.5 kbytes of dual-port RAM
  - 14 Serial DMA (SDMA) channels
  - Three parallel I/O registers with open-drain capability
  - Each serial channel can have its own Pins (NMSI mode)
- Four baud rate generators
- Four SCCs
  - Ethernet/IEEE 802.3 optional on SCCs 1-2@25 MHz, SCCs 1-3@33 MHz
  - HDLC Bus
  - Universal Asynchronous Receiver Transmitter (UART)
  - Synchronous UART
  - Asynchronous HDLC (RAM microcode option) to support PPP (Point to Point Protocol)
- Two SMCs
  - UART
  - Transparent
  - General Circuit Interface (GCI) controller
- One SPI
- Time-Slot assignor
- Supports two TDM channels
- Parallel Interface Port (supports fast connection between QUICCs)

MC68360 Block Diagram
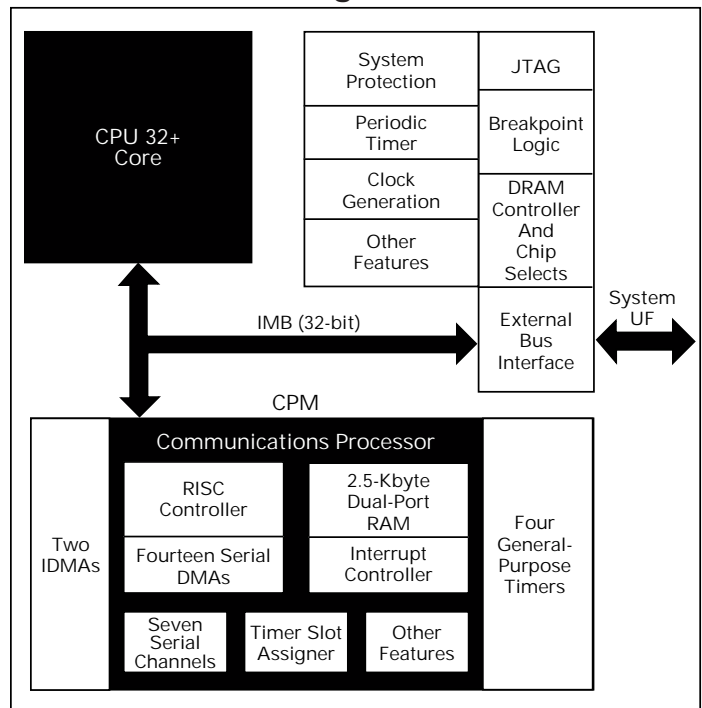
Contact Information

- Motorola offers user's manuals, application notes and sample code for all of its communications processors. In addition, local support for these products is also provided. This information can be found at:

  http://motorola.com/netcomm/

- For all other inquiries about Motorola products, please contact the Motorola Customer Response Center at:

  Phone: 800-521-6274

MC68360 Derivatives

	Serial Communications Controllers (SCCs)	Ethernet	MHDLC
MC68MH360	4	Yes	Yes
MC68EN360	4	Yes	–