

High-Performance Processors

MPC7447A PowerPC® Processor

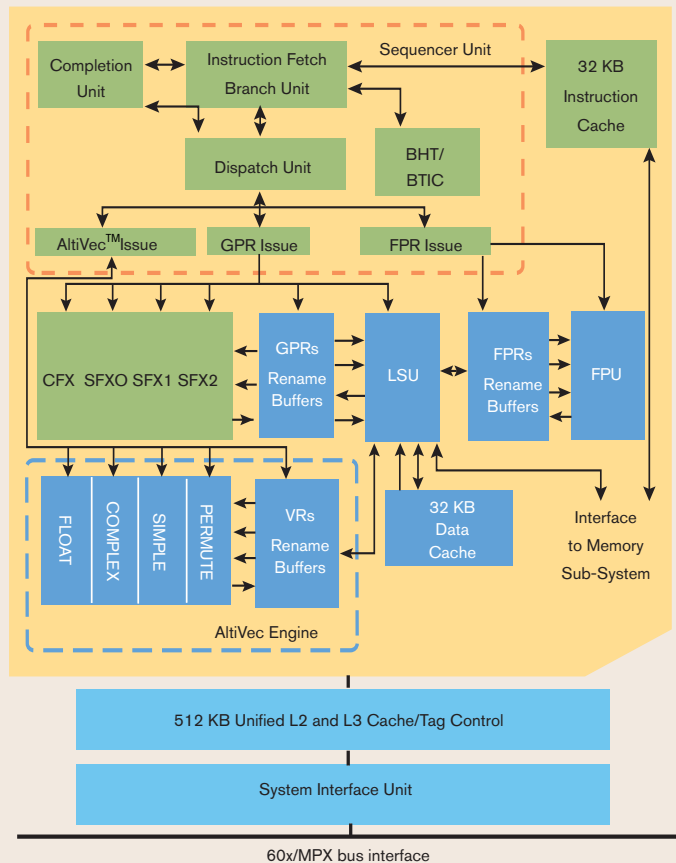
The MPC7447A is a high-performance, low-power PowerPC processor with enhanced power management capabilities. Key architectural features include 512 KB of on-chip L2 cache, a 64-bit bus interface and a full 128-bit implementation of Freescale's AltiVec™ technology. MPC7447A processors are ideal for leading-edge computing, embedded network control and signal processing applications.

Designed as pin-compatible replacements for Freescale's MPC7447 products, these new processors have been shown to reach speeds of 1.5 GHz. MPC7447A processors benefit from Freescale's silicon-on-insulator (SOI) process technology, engineered to help deliver significant power savings without sacrificing speed. Low-power versions of the MPC7447A are available.

Embedded Enhancements

The MPC7447A offers eight instruction BAT and data BAT registers to help support lightweight embedded operating systems, enabling more large tables of data. The processors also provide cache locking to the L1 caches so that key performance algorithms and code can be locked in the L1 cache.

MPC7447A POWERPC® PROCESSOR BLOCK DIAGRAM



	MPC7447A	MPC7447A Low-Power Version
CPU Speeds – Internal	up to 1.5 GHz	up to 1.2 GHz
Bus Frequency	133/166 MHz	133/166 MHz
Bus Interface	64-bit	64-bit
Bus Protocol	MPX/60x	MPX/60x
Instructions per Clock	4 (3 + Branch)	4 (3 + Branch)
Integrated L1 Cache	32 KB instruction 32 KB data	32 KB instruction 32 KB data
Integrated L2 Cache	512 KB	512 KB
Typical Power Consumption	19W @ 1420 MHz	9.3W @ 1167 MHz
Package	360 CBGA	360 CBGA
Process	0.13 μ 9LM CMOS with SOI	0.13 μ 9LM CMOS with SOI
Voltage	1.3V internal, 1.8/2.5V I/O	1.1V internal, 1.8/2.5V I/O
Performance (est.)	3000 Dhrystone 2.1 MIPS @ 1.3 GHz	2310 Dhrystone 2.1 MIPS @ 1 GHz
Execution Units	Integer(4), Floating-Point, AltiVec(4), Branch, Load/Store	Integer(4), Floating-Point, AltiVec(4), Branch, Load/Store

Superscalar Microprocessor

MPC7447A processors feature a high-frequency superscalar PowerPC core, capable of issuing four instructions per clock cycle (three instructions plus one branch) into 11 independent execution units:

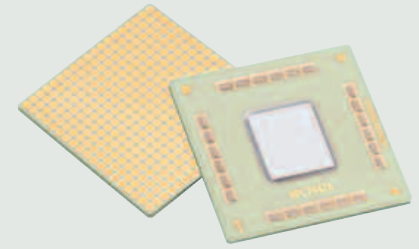
- > Four integer units (three simple plus one complex)
- > Double-precision floating point unit
- > Four AltiVec technology units (simple, complex, floating and permute)

- > Load/store unit

- > Branch processing unit

NEW Power Management Features

- > Clock frequency can be changed dynamically
- > Temperature sensing diodes included to monitor die temperature



Compatibility and Support

- > MPC7447A processors are pin for pin compatible with MPC7445 and MPC7447 processors.
- > As with all PowerPC microprocessors, MPC7447A processors are software compatible with the MPC7xx family of processors from Freescale.
- > PowerPC microprocessors enjoy a broad set of operating systems, compilers and development tools from third-party vendors.

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

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