DATASHEET

MOTOROLA

MCP820

CompactPCI Host Slot Processor Board

KEY FEATURES

MPC7410 processor

High-performance L2 cache

High-performance, low-latency SDRAM subsystem

Up to 2GB of ECC protected capacity

New DMA capability

Variety of persistent memory types and capacities

Dual 10/100BaseT Ethernet

Two USB ports (optional)

Two async serial ports, two async/sync serial ports, keyboard and mouse

Single PMC slot

PCI Enhanced IDE (EIDE) controller and floppy disk controller

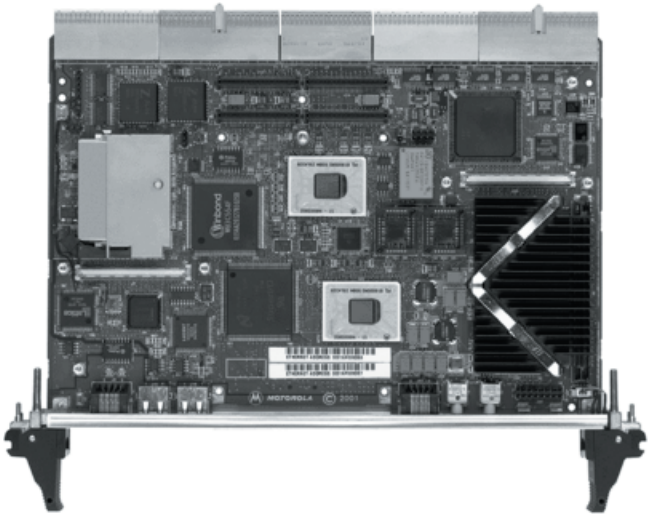
On-board debug monitor with self-test diagnostics

Four 32-bit timers, three watchdog timers

The MCP820 series provides substantial investment protection to deployed infrastructure by providing an easy upgrade and migration to state-of-the-art features and performance. Utilizing low-power, high-performance MPC7410 processors with 2MB of secondary cache, dual peripheral component interconnect (PCI) buses for the on-board peripherals and a 64-bit bridge to the CompactPCI® interface, the MCP820 series packs optimum performance and functionality in a single CompactPCI slot.

The MCPTM-01 transition module provides industry standard connector access to a single mouse/keyboard connector, EIDE and floppy connectors (internal), one RJ-45 connector and one 10-pin header providing access to the asynchronous serial ports, one PIM, two RJ-45 connectors for rear Ethernet and two additional sync/async serial ports via a single connector.

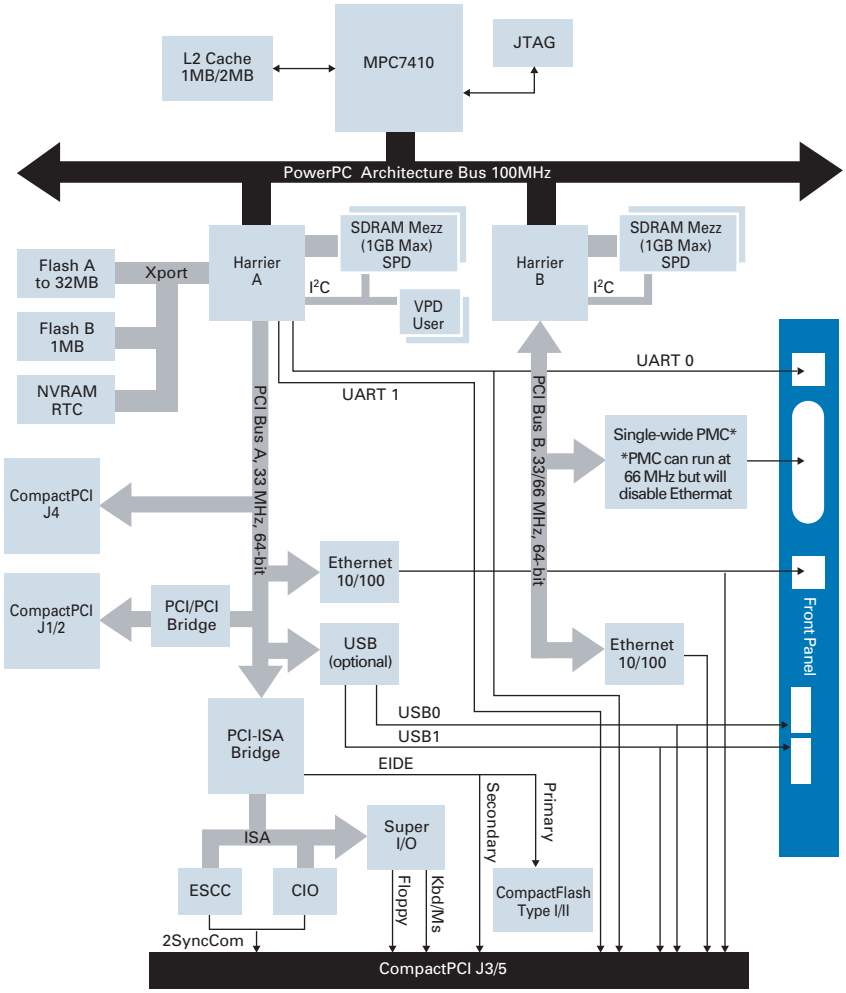
Designed with relevant standards, compatibility and interoperability in mind, the MCP820 is compliant with PICMG® 2.1 (Hot Swap), VITA 36 (PIM), IEEE 1386.1 (PMC) and Motorola's high availability system architecture specifications. The MCP820 supports booting a complete range of real-time operating systems and kernels which may be purchased from companies such as Wind River Systems, Inc. and other leading providers.



RoHS 0/6 NOT COMPLIANT

See back page for details

The Motorola MCP820 series is a family of CompactPCI host-slot processor modules and the first host-slot modules to benefit from Motorola's PowerPlus III Architecture. The MCP820 series pushes performance and functionality of the PowerPlus Architecture to unprecedented levels.



SPECIFICATIONS

PROCESSING SUBSYSTEM

Processor: 500 MHz MPC7410 processor

On-chip L1 Cache (I/D): 32K/32K

High-Performance L2 Cache: 200 MHz parity protected, 2MB

Frontside Bus: 100 MHz

CONTROLLER AND MEMORY SUBSYSTEM

Dynamic Memory: ECC protected synchronous dynamic RAM

Capacity: Up to four RAM500 mezzanines yielding 2GB maximum capacity

Additional Functions: Dual DMA engine—See the Harrier ASIC Programmer's Reference Guide for details; dual multi-processor interrupt controller (MPIC). One DMA engine per Harrier controller.

Single Cycle Accesses: 10 read/5 write

Read Burst Mode: 8-1-1-1 idle; 3-1-1-1 aligned page hit (CL3)

Write Burst Mode: 4-1-1-1 idle; 3-1-1-1 aligned page hit

COMPACTPCI INTERFACE

Controller: Intel® 21154

Address/Data: A32/D32/D64 with parity

PCI Bus Clock: 33/66 MHz, PCI 2.1 compliant

Signaling: 3.3V output, input defined by VIO

ETHERNET INTERFACE

Controller: Dual Intel® 82559ER

Interface Speed: 10/100Mbps

PCI Local bus DMA: Yes, with PCI burst

Connector: One RJ-45 on front panel, one TM port RJ-45 via Jx

PERSISTENT MEMORY

Flash Capacity (bootable): 1MB via two 32-pin PLCC sockets; additional 32MB surface mount; selectable via reset vector

CompactFlash: Single Type I/II memory card socket for large capacity needs (50-pin socket)

Controller: W83C554

Interface: ATA, true IDE mode

NVRAM: 32KB total capacity, 4KB available for user data

Cell Storage Life: 50 years at 55° C

Cell Capacity Life: 10 years at 100% duty cycle

Removable Battery: Yes

SROM/Serial EEPROM: AT93C46 SROMs for Ethernet configuration; two 8KB dual-address I^2C devices for vital product data (VPD) and user configuration data; separate 256 byte standard I^2C serial EEPROMs (on mezzanines) for memory VPD

ASYNCHRONOUS SERIAL PORTS

Controller: PC97317

Number of Ports: Two, 16550-compatible

Configuration: EIA-574-DTE

Async Baud Rate, bps max.: 38.4K EIA-232, 115Kb/s raw

Connector (COM1): Front panel RJ-45, also RJ-45 on MCPTM-01

Connector (COM2): Routed to J3, 10-pin header on MCPTM-01

SYNCHRONOUS SERIAL PORTS

Controller: Z85230/Z8536

Number of Ports: Two

Configuration: TTL to P2 (both ports), SIM on MCPTM-01

Baud Rate, bps max.: 2.5MB sync, 38.4KB async

Oscillator Clock Rate (PCLK): 10 MHz/5 MHz

Connector: Routed to J3, HD-50 on MCPTM-01

EIDE INTERFACE

Controller: W83C554F

Connector: Routed to J5, one 40-pin header on MCPTM-01; plus on-board CompactFlash

USB

Controller: USS312

Connectors: Two Series A receptacles on front panel, also routed to J5

FLOPPY

Controller: PC97317

Compatible Controllers: DP8473, 765A, N82077

Configuration: 3.5" 2.88MB and 1.44MB; 5.25" 1.2MB

Connector: Routed to J3, 34-pin header on MCPTM-01

MOUSE/KEYBOARD INTERFACE

Controller: PC97317

Connector: Routed to J3, 6-pin mini DIN on MCPTM-01

IEEE P1386.1 PCI MEZZANINE CARD SLOT

Address/Data: A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors

PCI Bus Clock: 33 MHz or 66 MHz

Signaling: 3.3V

Power: +3.3V, +5V, 12V, 7.5 watts maximum per PMC slot

Module Types: Basic, single-wide, front panel I/O or J3 I/O

COUNTERS/TIMERS

TOD Clock Device: MT48T37, 32KB NVRAM

Real-Time Timers/Counters: Four 32-bit programmable

Watchdog Timers: Three, time-out generates reset

POWER REQUIREMENTS

(not including power required by PMC, PIM or SIMs)

	+3.3V ±5%	+5V ±5%	12V ±5%
MCP820-500:	2.6 A typ.	2.8 A typ.	15 mA typ.
	3.5 A max.	3.75 A max.	20 mA max.

BOARD SIZE

Height: 233.4 mm (9.2 in.)

Depth: 160.0 mm (6.3 in.)

Front Panel Height: 261.8 mm (10.3 in.)

Width: 19.8 mm (0.8 in.)

Max. Component Height: 14.8 mm (0.6 in.)

FRONT PANEL DETAIL AND CONTENT

LED Indicators: Board FAIL, CPU Activity and Hot Swap Status

Recessed Switches: Reset and Abort

TRANSITION MODULES

TRANSITION MODULE I/O CONNECTORS

Asynchronous Serial Ports: RJ-45 labeled as COM1

Synchronous Serial Ports: Two (Serial 3 and Serial 4). User configurable via the installation of SIMs. Two 60-pin connectors on planar for installation of two serial interface modules. Single 50-pin external connector with Y-cable adapter.

Mouse/Keyboard: 6-pin circular female mini DIN

Floppy: 34-pin header

EIDE: One 40-pin header

BOARD SIZE

Height: 233.4 mm (9.2 in.)

Depth: 80.0 mm (3.1 in.)

Front Panel Height: 261.8 mm (10.3 in.)

Width: 19.8 mm (0.8 in.)

ALL MODULES

ENVIRONMENTAL

	Operating	Storage/Transit
Temperature:	0° C to +55° C, forced air cooling exit air	–40° C to +85° C
Humidity (NC):	10% to 80%	10% to 90%
Vibration:	0.5 G RMS, 20–2000 Hz random	6.0 Gs RMS, 20–2000 Hz random

DEMONSTRATED MTBF

(based on a sample of eight boards in accelerated stress environment)

Mean: 190,509 hours

95% Confidence: 107,681 hours

SAFETY

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

ELECTROMAGNETIC COMPATIBILITY (EMC)

Intended for use in systems meeting the following regulations:

U.S.: FCC Part 15, Subpart B, Class A (non-residential)

Canada: ICES-003, Class A (non-residential)

Motorola board products are tested in a representative system to the following standards, results pending:

CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

ORDERING INFORMATION

Part Number	Description
MCP820-500	500 MHz MPC7410 with support for USB, order memory separate
MCP820-505-CK	500 MHz MPC7410 without support for USB, order memory separate (configurable spare)
Related Products	
MCPTM-01	Transition module: One RJ-45 async serial port connector, one HD-50 sync/async serial port connector (Y-cable splits to two HD-26 connectors), one mouse/keyboard 6-pin mini DIN, PIM
RAM500-005	128MB memory mezzanine, MCP820/MCP765/MVME5100, top
RAM500-015	128MB memory mezzanine, MCP820/MCP765/MVME5100, bottom
RAM500-006	256MB memory mezzanine, MCP820/MCP765/MVME5100, top
RAM500-016	256MB memory mezzanine, MCP820/MCP765/MVME5100, bottom
RAM500-010	512MB memory mezzanine, MCP820/MCP765/MVME5100, top
RAM500-020	512MB memory mezzanine, MCP820/MCP765/MVME5100, bottom
CFLASH-xxx	CompactFlash memory card (where xxx = number of MB)
Documentation	
MCP820A/IH	MCP820 Installation and Use (includes MCPTM-01 information)
MCP820A/PG	MCP820 Programmer's Reference Guide
PPCBUGA1/UM and PPCBUGA2/UM	PPCBug Firmware Package User's Manual, volumes 1 and 2
PPCDIAA/UM	PPCBug Diagnostics Manual
Documentation is available for online viewing and ordering at www.motorola.com/computer/literature	

Future RoHS Status

This product is being redesigned for 5/6 RoHS compliance. When the RoHS compliant version is available, the RoHS designator will be updated accordingly.

SOLUTION SERVICES

Motorola provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh. And solution extras include enhanced warranty and repairs.

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