Datasheet

CPV5350

CompactPCI Host Slot Processor Board

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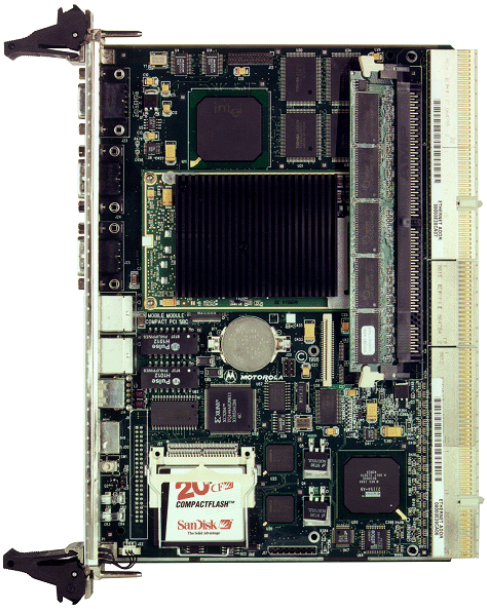
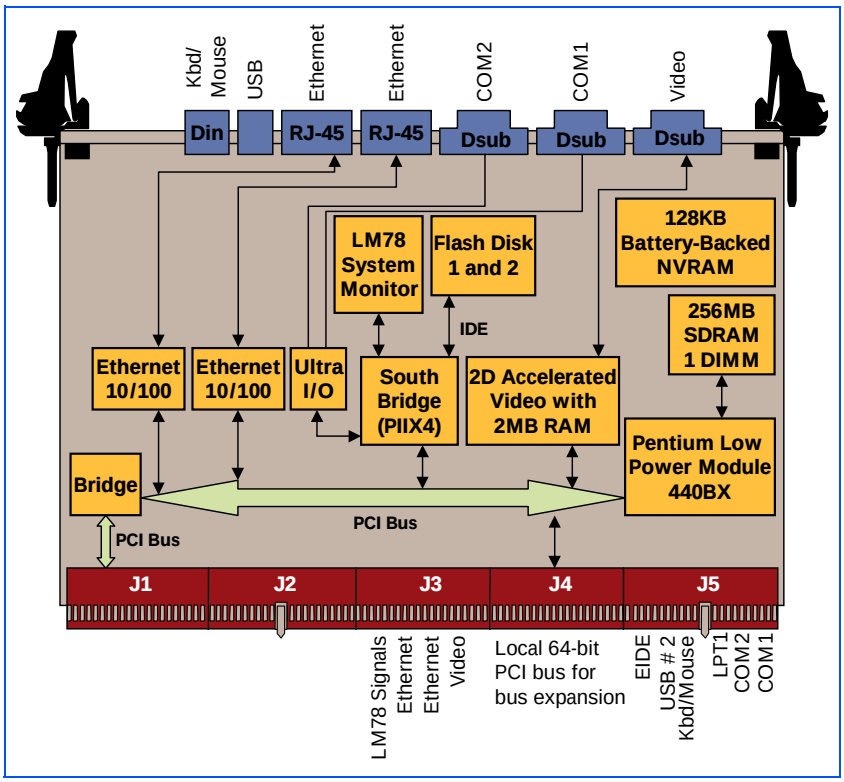


High-performance single-board computer providing I/O access from either the front or rear.

Motorola Computer Group's CPV5350 is a high-performance, single-slot, CompactPCI® single-board computer powered by an Intel® Pentium® II or Pentium® III processor—Low Power Module. Highly integrated, it provides standard PC I/O plus USB, PCI EIDE, accelerated graphics and dual Fast Ethernet controllers, with an on-board CompactFlash™ connector for solid-state disk expansion. This clever design allows I/O access from either the front or rear. The CPV5350 is also fully compliant to the PICMG® 2.1 revision 1.0 CompactPCI Hot Swap Specification, making it an ideal choice for high availability applications.

The CPV5350 is designed to meet the needs of embedded application developers. Typical applications include broadband data or intelligent network switching; CTI server; industrial control and automation; military and aerospace; and medical, scientific or imaging products.



- Intel® low power processor module including:
  - Pentium® II or Pentium® III processor
  - 82440BX chipset
  - 66/100 MHz system bus frequency
- Up to 256MB on-board 3.3V SDRAM
- Accelerated 2D graphics with 2MB video memory
- Dual 10BaseT/100BaseTX Fast Ethernet
- Two Universal Serial Bus (USB) channels
- Two asynchronous serial ports
- One bi-directional parallel port
- PS/2 keyboard/mouse interface, real-time clock and watchdog timer
- PCI Enhanced IDE controller with support for up to four devices (up to two on-board Flash disks and two off-board IDE devices)
- 128KB non-volatile (battery-backed) RAM
- On-board BIOS stored in 512KB Flash ROM
- Supported by industry-standard operating systems such as Windows NT® and VxWorks®, with others to come

CPV5350 DETAILS

Intel Pentium II or Pentium III Processor—Low Power Module

For high-end embedded applications, the CPV5350 fully supports the Pentium II or Pentium III processor—Low Power Module (LPM). The processor is combined with the Intel 440BX PCI chipset resulting in exceptional processing capability. The LPM contains 32KB of internal Level 1 cache memory as well as 256KB of Level 2 cache, delivering rapid data access to complex applications. Dynamic execution and dual independent buses are additional performance advantages. For continual LPM processor speed enhancement options, consult your Motorola sales representative.

Memory

The CPV5350 provides one 168-pin DIMM site for on-board memory expansion. Up to 256MB of PC100 compliant synchronous DRAM is supported. Memory size is detected by the system BIOS.

2D Accelerated Graphics

A CHIPS 69000 HiQVideo™ accelerator with 2MB integrated memory provides eye-opening 2D accelerated graphics performance for human-machine interfaces and imaging applications. Resolutions up to 1280 x 1024 are supported.

Dual Ethernet

Two Intel 82559 Ethernet controllers provide redundant Ethernet ports for monitoring and telecom applications. One or both of these controllers can be used as a diagnostic interface allowing for remote monitoring of system status (for example, voltage and temperature).

Hot Swap Compatible

The CPV5350 can be inserted or removed in a powered system and allows other non-system slot boards to be removed or added while the chassis is powered up. Individual clocks for each slot and access to the backplane ENUM# signals are in compliance with the PICMG 2.1 revision 1.0 CompactPCI Hot Swap Specification.

On-Board Peripherals

The CPV5350 has an extensive array of on-board I/O that is available from both the front panel of the CPV5350 and/or the rear panel via the CPV5350BTM80 transition module. Two serial, one parallel, two USB, PS/2 mouse and keyboard, one IDE channel (secondary), speaker, reset and floppy are routed via CompactPCI connector J5; and SMBus (alarm), video and dual Ethernet are routed through the backplane via CompactPCI connector J3.

CompactPCI Bus

Designed to the CompactPCI interface standard, the CPV5350 supports a 32-bit PCI interface on the J1 physical CompactPCI connector. On-card devices connect directly to the local bus. Off-card CompactPCI bus accesses are supported through the Intel 21154 PCI-PCI bridge.

The PCI local bus is also routed to J4, which enables this board to be used in a Motorola high availability system such as the CPX8000 family. Consult your local Motorola representative or the Motorola Web site at www.motorola.com/computer for more information.

SPECIFICATIONS

Processor

- Single 333 MHz Pentium II processor—Low Power Module
- Single 500 MHz Pentium III processor—Low Power Module

System Bus

333 MHz processor: 66 MHz bus

500 MHz processor: 100 MHz bus

Cache

Level 1: 16/16KB instruction/data (Pentium II resident)

Level 2: 256KB (integrated)

Memory

Socket: One 168-pin latching DIMM socket accommodates 1/2/4/8/16/32MBx72 DIMM

DRAM: PC100 compliant synchronous, 60ns, parity or ECC mode (Both registered and unbuffered memory are supported.)

Addressing

Real and protected (36-bit) addressing supported

Data Path

CPU/PCI bus: 64-bit/32-bit

Bus Interface

CompactPCI bus: PCI Specification Rev. 2.1 compliant, 32-bit, 33 MHz

Clock/Calendar

Real-time clock with (replaceable) battery backup; includes CMOS

Interrupts

Four CompactPCI level-sensitive interrupts, configurable to any interrupt vector for Plug-and-Play compatibility
Note: All ISA on-card interrupts are Plug-and-Play compliant.

Ethernet

Controller: Two Intel 82559

PCI Bus Master: Yes, with PCI burst

Graphics

Controller: CHIPS 69000 2D accelerated video

Video Memory: 2MB on-chip SDRAM

Resolution: 1280 x 1024 max.; Quarter VGA 320 x 240, 320 x 200

IDE Flash Disk

Type: Surface-mounted SanDisk® Flash chipset

Capacity: 16MB

Mode: True IDE, configured as primary master

I/O Interfaces (Front Panel and Planar)

USB Ports: Two; 4-pin USB on front panel and at J5

Serial Ports: Two RS-232 (16550) 9-pin Dsub on front panel

Parallel Port: One bi-directional 25-pin header with all IEEE 1284 protocols supported including EPP and ECP

Ethernet: Two RJ-45 on front panel

Video: 15-pin Dsub on front panel

Keyboard/mouse: 6-pin mini-DIN on front panel (Y-cable accessory recommended)

Floppy Disk: One channel (360K to 2.88MB) header

EIDE: Two channel/four device PCI EIDE with LBA and PIO mode 5 support; supports up to two on-board Flash disks and two off-board IDE devices.

Note: Additional devices may be attached via transition module.

BIOS Features

- BIOS in Flash EPROM
- Auto-configuration or extended setup with serial/parallel ports remappable
- Diskless, keyboardless and videoless operation
- BIOS POST and Setup
- System and video BIOS shadowing
- Network boot using PXE (Preboot eXecution Environment)
- CMOS backup to Flash (allows operation without battery)

CPV5350BTM80 Transition Module I/O

Transition module provides backplane I/O from J3 and J5 on the CPV5350.

On-board Headers: Speaker, reset, two 40-pin IDE, 34-pin floppy, USB (two 4-pin), keyboard/mouse

Rear Panel: Serial (two RS-232 9-pin Dsub), bi-directional parallel (25-pin Dsub), Ethernet (two RJ-45), Video (15-pin D), Kbd/mse (one 6-pin mini DIN)

Supervisory

Watchdog Timer: Two-level, software programmable (17.8 ms to 291 sec.); drives interrupt (configurable), NMI or system reset

Alarm Microcontroller (NS LM78): CPU temperature (user definable threshold alarm on selectable IRQ: 5, 7, 9, 11, NMI or SMI), backplane and CPU voltages, and chassis fan rotation and intrusion, with status interrogated via NMI, SMI or SMBus

Reset Switch: Guarded, on front panel

Front panel LEDs: Power OK (green), disk activity (green), watchdog alarm (red), speaker output (amber), Ethernet link (green), Ethernet activity (amber)

Mechanical

6U, 4HP wide (233 mm x 160 mm x 20 mm), conforms to PICMG 2.0 CompactPCI (Rev. 2.1) and PCI SIG 2.1 specifications

Power Requirements

	333 MHz	500 MHz
+5V:	3 A	3.5 A
+12V:	100 mA	< 25 mA
–12V:	1 mA	< 25 mA
+3.3V:	3 A	3 A

Demonstrated MTBF

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

Mean: 107,161 hours

95% Confidence: 60,570 hours

Environmental

	Operating	Nonoperating
Temperature:	0° C to +50° C	–40° C to +65° C
Altitude:	5,000 m	15,000 m
Humidity (NC):	10% to 80%	10% to 90%
Vibration:	2 Gs RMS, 20–2000 Hz random	6 Gs RMS, 20–2000 Hz random

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)

This product was tested in a representative system to the following standards:

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

Safety

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

ORDERING INFORMATION

Part Number	Description
Base Board Bundles	
All bundles include dual Ethernet, EIDE, front panel and rear I/O.	
CPV5350B-333	333 MHz Pentium II processor–Low Power Module, 256KB L2 cache
CPV5350-500	500 MHz Pentium III processor–Low Power Module, 256KB L2 cache
Transition Modules	
CPV5350BTM80-F	CPV5350B transition module for the CPX8200 Series (factory installed)
CPV5350BTM80-K	CPV5350B transition module for the CPX8200 Series (FRU)
CPV5350BTM80AI-F	CPV5350 transition module with alarm interconnect for the CPX1200 Series (factory installed)
CPV5350BTM80EX-F	CPV5350 transition module for the CPX2408 Series (factory installed)
Memory	
MEMSD-*xxx*-F (where *xxx* = number of MB)	64MB to 256MB PC100 compliant DIMM memory
Other On-Board Options	
CFLASH*xxx* (where *xxx* = number of MB)	On-board EIDE compliant CompactFlash memory
Miscellaneous	
CPVCABLE-2	Front panel cable kit: includes PS/2 "Y" cable for keyboard/mouse
Documentation	
CPV5350A/IH	CPV5350 Installation and Use Manual
CPV5350A/PG	CPV5350 Programmer's Reference Guide
Documentation is available for online viewing and ordering at http://www.motorola.com/computer/literature.	

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