Datasheet

MVME2300 Series

VME Processor Modules

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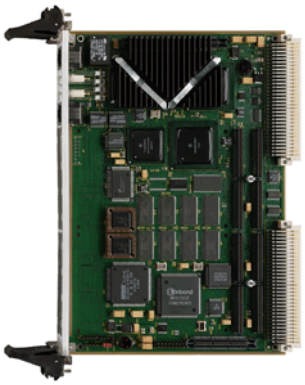
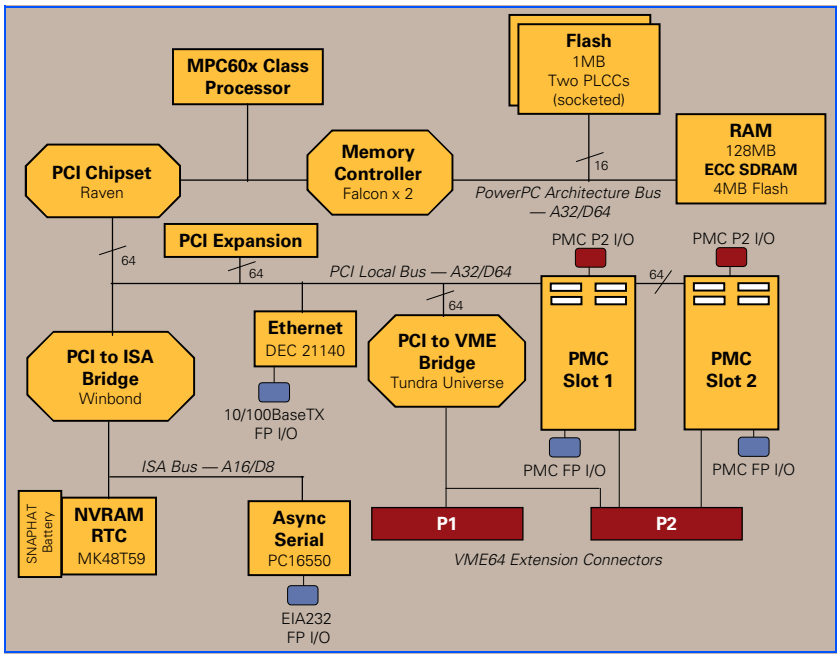


High-performance expansion VME board with the ability to customize applications

The MVME2300 series of VME boards provides the performance of Motorola's PowerPlus Architecture, and the ability to fully customize your application with two PCI mezzanine cards (PMCs).

Utilizing Motorola's MPC60x class 32-bit microprocessors, the peripheral component interconnect (PCI) bus for the on-board peripherals, processor-memory bus to PCI bus bridge, and a VME interface, the MVME2300 processor modules pack optimum levels of flexibility and performance into a single VME slot.



- MPC60x class 32-bit microprocessors
- L1 cache–16KB/16KB MPC603 or 32KB/32KB MPC604
- 128MB of on-board ECC DRAM
- Up to 1MB socketed Flash for on-board firmware or user-specified requirements
- 4MB on-board Flash memory for user-specified requirements
- On-board debug monitor with self-test diagnostics
- Two 32/64-bit PMC expansion slots with front-panel and P2 I/O
- 64-bit PCI expansion mezzanine connector
- 8K x 8 NVRAM and time-of-day clock with replaceable battery-backup
- One asynchronous serial debug port
- Four 32-bit timers, one 16-bit timer, one watchdog timer
- 10/100Mb/s Ethernet transceiver interface
- 4-level requester, 7-level interrupter, and 7-level interrupt handler for VMEbus

MVME2300 DETAILS

IEEE P1386.1 Compliant PMC Slots
The MVME2300 features dual PMC ports with support for both front-panel and P2 I/O. P2 I/O-based PMCs that follow the PMC committee recommendation for PCI I/O when using the VME64 extension connector are pin-out compatible with the MVME2300.

In addition to providing high-performance expansion I/O, the IEEE P1386.1 compliant PMC ports form a common architecture for future generations of products. Changing I/O requirements can be satisfied by simply replacing PMCs while reusing the same base platform, reducing the long-term cost of ownership.

VME64 Extension Connectors
To maximize the capabilities of the MVME2300, 5-row 160-pin DIN connectors replace the 3-row, 96-pin connectors historically used on VME for P1 and P2. Two rows, Z and D, have been added to the VME P1/J1 and P2/J2 connectors providing a user with additional I/O. The VME64 extension connector is 100 percent backward compatible with existing VME card systems.

PowerPlus Architecture
The PowerPlus Architecture is a processor and bus architecture fully optimized to get the maximum performance from the PowerPC architecture microprocessor family, the PCI bus, and the VMEbus. The outstanding performance of VME processor boards based on the PowerPlus Architecture is not due to a single factor. A number of elements in the design contribute to its outstanding performance including the processor-memory subsystem, high-speed local bus, optimally decoupled architecture, decoupling the processor from PCI, and the advanced VME interface that reduces PCI delays. Contact your sales representative for details.

SPECIFICATIONS

Processor

Microprocessor:	MPC603	MPC604
Clock Frequency:	200 MHz	333 MHz
On-chip Cache (I/D):	16KB/16KB	32KB/32KB

Memory

ECC Protected Main Memory:	Dynamic RAM with 66 MHz bus
Capacity (50ns EDO):	128MB
Single Cycle Accesses:	9 read/4 write
Read Burst Mode (60ns):	9-1-2-1 idle; 3-1-2-1 aligned page hit
Read Burst Mode (50ns):	8-1-1-1 idle; 2-1-1-1 aligned page hit
Write Burst Mode:	4-1-1-1 idle; 3-1-1-1 aligned page hit
Architecture:	128-bit, 2-way interleaved
EEPROM/Flash:	On-board programmable
Capacity:	1MB via two 32-pin PLCC/CLCC sockets; 4MB surface mount
Read Access (4MB port):	68 clocks (32-byte burst)
Read Access (1MB port):	260 clocks (32-byte burst)
NVRAM:	8KB; 4KB available for users
Cell Storage Life:	50 years at 55° C
Cell Capacity Life:	10 years at 100% duty cycle
Removable Battery:	Yes

VMEbus ANSI/VITA 1-1994 VME64 (IEEE STD 1014)

DTB Master:	A16–A32; D08–D64, BLT
DTB Slave:	A24–A32; D08–D64, BLT, UAT
Arbiter:	RR/PRI
Interrupt Handler/Generator:	IRQ 1–7/Any one of seven IRQs
System Controller:	Yes, jumperable or auto detect
Location Monitor:	Two, LMA32

Ethernet Interface

Controller:	DEC 21140
PCI Local bus DMA:	Yes
Connector:	Routed to front panel via an RJ-45

Asynchronous Serial Port

Controller:	PC16550
Connector:	Routed to the front panel via an RJ-45

Counters/Timers

TOD Clock Device:	MK48T59; 8KB NVRAM
Real-Time Timers/Counters:	Four, 16-bit programmable
Watchdog Timer:	Time-out generates reset

Miscellaneous

Reset and Abort switches and four LEDs for Fail, CPU, PMC1, PMC2 on front panel

IEEE P1386.1 PCI Mezzanine Card Slot

Address/Data:	A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors
PCI Bus Clock:	33 MHz
Signaling:	5 V
Power:	+3.3 V, +5 V, ±12 V, 7.5 watts maximum per PMC slot
Module Types:	One double-wide or two single-wide front-panel I/O or P2 I/O

Note: P2 I/O from PMC slot 2 is only accessible to systems equipped for VME64 extension connectors.

PCI Expansion Connector

Address/Data:	A32/D32/D64
PCI Bus Clock:	33 MHz
Signaling:	5V
Connector:	114-pin connector located on the planar of the MVME2300

Power Requirements

	+ 5 V ±5%
MVME2300 w/ MPC603 @ 200 MHz:	4.0 A typical, 4.75 A max.
MVME2300 w/ MPC604 @ 333 MHz:	5.0 A typical, 5.5 A max.

Note: Power requirements are PMC dependent at +12 and –12 volts.

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 (0.58 in.)

Demonstrated MTBF

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

Mean:	190,509 hours
95% Confidence:	107,681 hours

Environmental

	Operating	**Nonoperating**
Temperature:	0° C to +55° C	–40° C to +70° C
Humidity (NC):	5% to 85%	5% to 95%
Vibration:	1 G Sine Sweep 5–100 Hz	.5 G Sine Sweep 5–100 Hz; 3 G Sine Sweep 50–500 Hz

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.

Software Support

The MVME2300 is supported by a complete range of real-time operating systems and kernels.

ORDERING INFORMATION

Part Number	Description
All models contain 5MB Flash.	
MVME2304	200 MHz MPC603, 128MB ECC DRAM, IEEE handle
MVME2304-900	200 MHz MPC603, 128MB ECC DRAM, Scanbe handle
MVME2304-0141	333 MHz MPC604, 128MB ECC DRAM, original VME Scanbe front panel and handles
MVME2304-0141SC	333 MHz MPC604, 128MB ECC DRAM, original VME Scanbe front panel and handles w/ serial I/O pin-out
MVME2304-0143	333 MHz MPC604, 128MB ECC DRAM, IEEE 1101 compatible front panel with injector/ejector handles
Related Products	
PMCSPAN-002	Primary PCI expansion, mates directly to the MVME2300 providing slots for either two single-wide or one double-wide IEEE P1386.1 compliant PMC cards; optional PMCSPAN-010
PMCSPAN1-002	PMCSPAN-002 with original VME Scanbe ejector handles
PMCSPAN-010	Secondary PCI expansion, plugs directly into PMCSPAN-002 providing two additional PMC slots
PMCSPAN1-010	PMCSAN-010 with original VME Scanbe ejector handles
Documentation	
V2300A/IH	MVME2300 Installation and Use Manual
V2300A/PG	MVME2300 Programmer's Reference Guide
PMCSPANA/IH	PMCspan Installation Guide
PPCBUGA1/UM	PPC1Bug User's Manual, Part 1 of 2
PPCBUGA2/UM	PPC1Bug User's Manual, Part 2 of 2
PPCDIAA/UM	Firmware Diagnostics Manual
Documentation is available for online viewing and ordering at http://www.motorola.com/computer/literature	

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