SOLUTION SYSTEMS
TECHNOLOGIES INC

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- **System Integration**
- **Consulting**
- **Value Added Resale**
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We are a systems integrator and value added reseller of computer hardware and software primarily focusing on the embedded marketplace. We provide custom turnkey solutions to get your project started quickly. We pride ourselves in our agility and ability to engineer complex solutions quickly.

Contact us today to find out how our experts can help in your embedded computing needs.

Motorola

MVME147-0XX Series
Single Board Computer
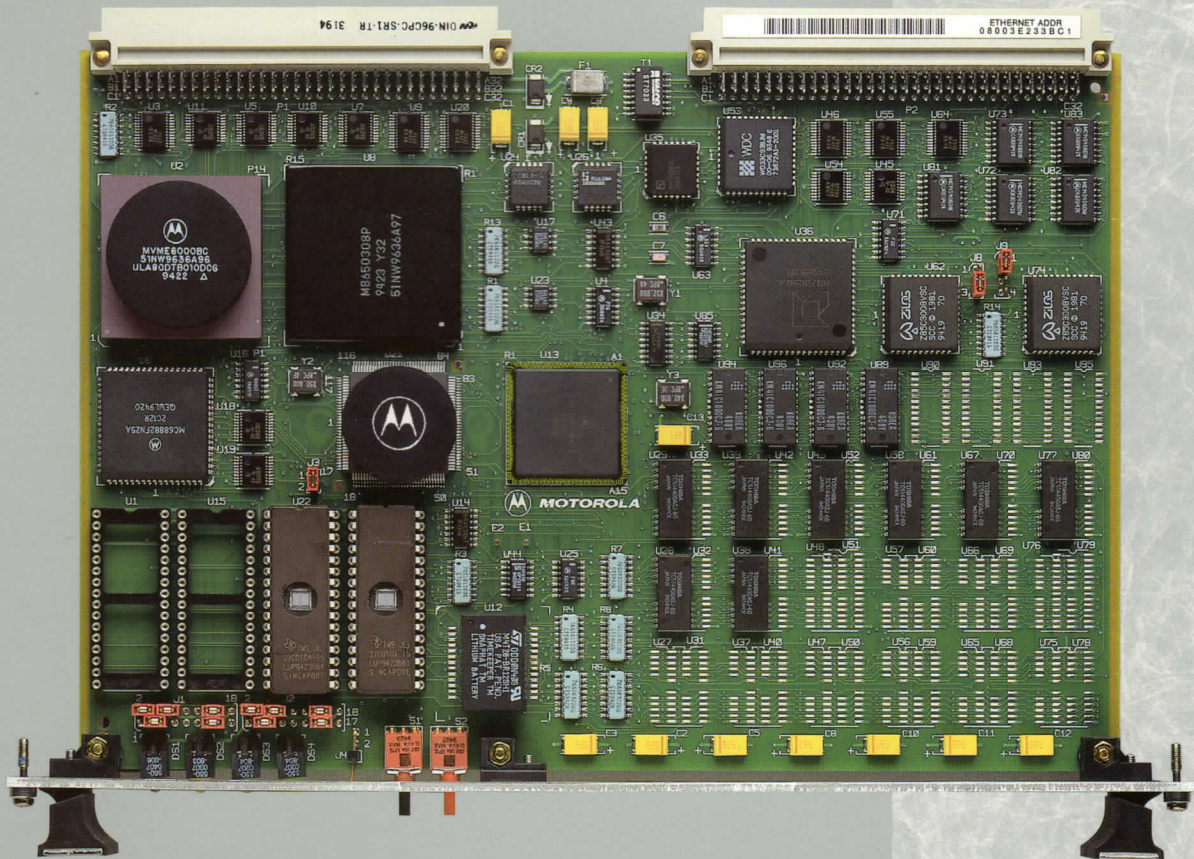
Highlights

Single Board Computer users have several requirements: time-to-market, cost of ownership and price performance. The MVME147-0XX Series solves these requirements by providing a solution with proven technology, off-the-shelf software availability and the industry's first five-year limited warranty.

The MVME147-0XX Series features an MC68030 Enhanced 32-bit microprocessor. The MC68030 was the first general purpose microprocessor with on-chip cache memory for both instructions and data which increases the processor's efficiency by 20 to 40 percent.

The MC68030 features a complete Memory Management Unit (MMU) which provides the software protection and virtual memory functions critical to many applications. By integrating the MMU into the fast on-chip environment, the MC68030 boosts the speed of memory management functionality and provides programmable protection and paging capabilities. For those applications not requiring an MMU, this function may be switched off to provide real-time response.

For compute-intensive applications, the MVME147 utilizes a MC68882 Floating Point Coprocessor. Included are full floating-point arithmetic, trigonometric functions and built-in constants.

The MVME147-0XX Series is available in a variety of speed and memory configurations to fit the needs of many applications requiring scalable computing power.

Features

- 16.67, 25, or 32 MHz MC68030 Enhanced 32-Bit Microprocessor
- 16.67, 25, or 32 MHz MC68882 Floating-Point Coprocessor
- 4, 8, 16, or 32MB of Shared DRAM, with programmable parity
- 2K x 8 SRAM and Time-of-Day Clock with Battery
- Four 28/32-Pin ROM/PROM/ EPROM/EEPROM Sockets 16-Bits Wide
- A32/D32 VMEbus Master/Slave Interface with System Controller Function
- Four EIA-232-D Serial Communications Ports
- Centronics-Compatible Printer Port
- Two 16-Bit Timers and Watchdog Timer
- SCSI Bus Interface with DMA
- Ethernet Transceiver Interface
- 4-Level Requester, 7-Level Interrupter, and 7-Level Interrupt Handler for VMEbus
- On-board Debugger and Diagnostic Firmware

Transition Modules

Optional MVME712 Series Transition Modules are available to support the use of standard I/O connections for the MVME147 Series. These modules take the I/O connections for the peripherals on-board the MVME147 Series from the P2 connection of the module to a transition module that has industry standard connections.

Development Software

Development software for the MVME147 Series includes the on-board debugger/monitor firmware and driver packages for the UNIX® SYSTEM V/68™ and VMEexec® environments. Object and source code is available for application development. Debugger/monitor firmware is included on the board.

Product Enhancements

Since the introduction of the MVME147, Motorola has made extensive changes to utilize state-of-the-art components and manufacturing processes. The MVME147-0XX series was redesigned to replace several discrete logic components with one ASIC. DRAM packages were also changed. Typical power consumption was reduced by approximately 35 percent.

The Motorola Commitment

With the MVME147 Series, Motorola continues a commitment to meeting your needs with leading edge technology. Adherence to industry standards and open architecture provides the maximum in hardware and software compatibility, while facilitating system customization and expansion.

This commitment is evident in the MVME147. Combining the high performance of the MC68030 microprocessor with its support of existing MC68000-based software, the MVME147 single board computer offers the widest range of flexibility, functionality, and performance available for today's systems integration and OEM marketplace.

MVME147 Performance							
	16.67 MHz		25 MHz		32 MHz		
Access Sequence	Read Cycles	Write Cycles	Read Cycles	Write Cycles	Read Cycles	Write Cycles	Notes
MPU to Local DRAM							
No Parity	4	4	4	4	4	4	1, 2
Delayed Parity	N/A	N/A	4	4	4	4	1, 2
Parity	N/A	N/A	5	5	5	4	1, 2
MPU to Local ROM	9	9	13	13	16	16	1, 3
VMEbus to Local DRAM	800ns	650ns	13 500ns	11 420ns	13 500ns	11 400ns	4, 5
MPU to Global RAM							
VMEbus Master	6+A	6+A	9+A	9+A	12+A	12+A	5, 6
System Controller/ Not Master	11+B	11+B	17+B	17+B	22+B	22+B	5, 7
Not System Controller/Not Master	9+C	9+C	15+C	15+C	19+C	19+C	5, 8

1. No arbitration overhead.
2. Except RMW cycles where the MVME147 is required to obtain VMEbus mastership before RMW cycle can be started.
3. Device access time must be 200 ns or less.
4. DS0*/DS1* asserted to DTACK* asserted.
5. Typical values. Actual values may be greater or less depending on the state of the slave device.
6. $A = t_a/T$ cycles.
7. $B = (t_a + t_r)/T$ cycles.
8. $C = (t_a + t_g)/T$ cycles.
t_a = DS0*/DS1* to the assertion of DTACK* (slave access time).
t_r = BRx* low to BBSY high and AS* high (bus requested and granted).
t_g = BRx* low to BGINX* low and AS* high (bus requested and granted).
T = MPU clock period, 16.67 MHz = 60 ns, 25 MHz = 40 ns, 32 MHz = 31.25 ns.
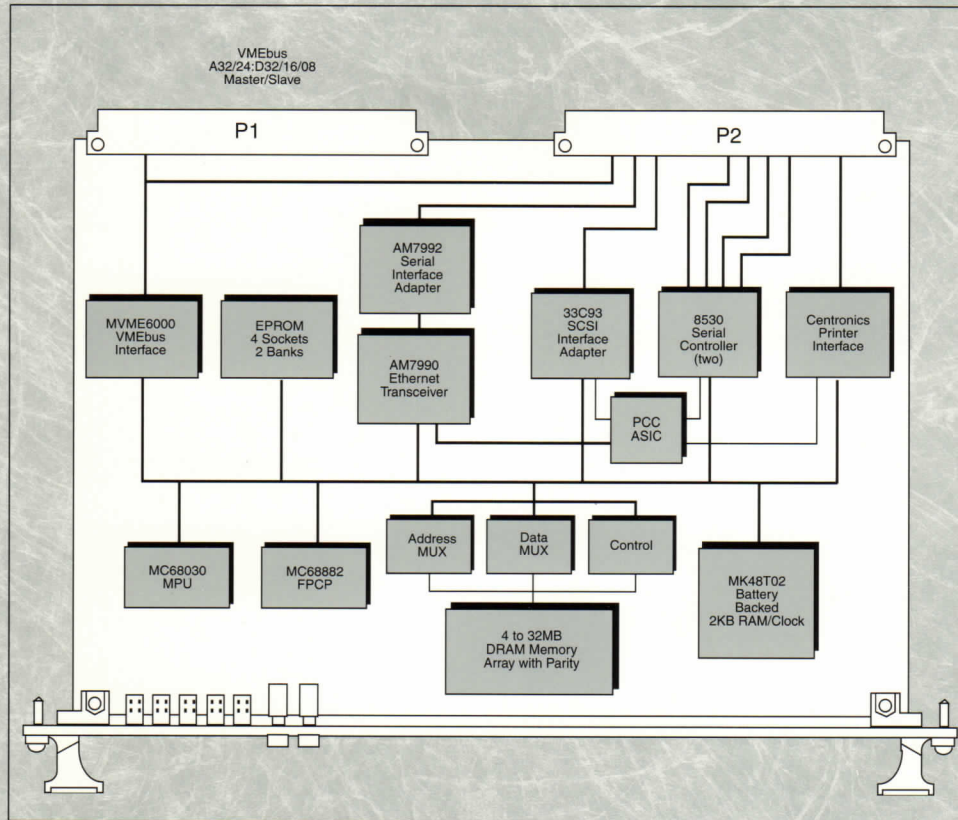
MVME147 Series Ordering Information	
Part Number	Description
MVME147-010	16.67 MHz, 4MB DRAM, No Parity, 4 SIO, 1 PIO, SCSI
MVME147-011	25 MHz, 4MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME147-012	25 MHz, 8MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME147-022	32 MHz, 8MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME147-013	25 MHz, 16MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME147-023	32 MHz, 16MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME147-014	25 MHz, 32MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME147-024	32 MHz, 32MB DRAM, 4 SIO, 1 PIO, Ethernet and SCSI
MVME712A	4 DB-9 Female Serial Port Connectors, 1 RJ-11 Connector, Centronics Parallel Port Connector, and P2 Adapter
MVME712AM	Same as MVME712A, Includes 2400 Baud Modem
MVME712B	DB-15 Ethernet Connector and SCSI Connector
MVME712M	4 DB-25 Female Serial Port Connectors, Centronics Parallel Port Connector, DB-15 Ethernet Connector, SCSI Connector, and P2 Adaptor
MVME712P2	Adaptor Module from VME Backplane to Cabling for Transition Modules
MVME712-012	Same as MVME712A but with DIN Connector at P2 for Use with MVME946 Chassis
MVME147FWnn	Object of the Debugger/Monitor, Requires Software License SWL-2A
M68N3TSBG147nn	Source and Object of the Debugger/Monitor, UNIX SYSTEM V/68 Format, Requires Software License SWL-2A
M68N3TSS147nn	Source and Object of the SCSI Firmware for the MVME147 UNIX SYSTEM V/68 Format, Requires Software License SWL-2A
NOTE:	As denoted above, nn indicates the Firmware Revision Level

Processor	
Type	68030
Clock Frequency	16.67, 25 or 32 MHz
Floating Point	68882
Clock Frequency	16.67, 25 or 32 MHz

Memory	
Type	Dynamic RAM
Capacity	4, 8, 16, or 32MB
Read Burst Mode - no parity	4-2-2-2
Read Burst Mode - parity	5-3-3-3
Write Burst Mode	4-2-2-2
Parity	Yes
Shared	VME
EPROM (32-pin PLCC)	16 bit
# of Sockets (max. capacity)	4 (1M x 8)
Capacity	4MB

VMEbus (IEEE STD 1014)	
Addressing Capabilities Master/Slave	A16, A24, A32
Data Transfer Capabilities Master/Slave	D08, D16, D32, UAT
Arbiter	RR/PRI
Interrupt Handler	IRQ 1-7
Interrupt Generator	Any 1 of 7
System Controller	Yes, Jumperable
Location Monitor	4, LMA32

SCSI Bus	
Controller	33C93
Asynchronous	1.5MB/s
Synchronous	4.0MB/s
Local Bus DMA	Yes

Ethernet	
Controller	AM7990
Local Bus DMA	Yes

TOD Clock	
TOD Clock Device	M48T02; 2KB NVRAM;
Real-Time Timer/Counters	Three 16-bit, 1msec Resolution

Serial Ports	
Controller	8530
Async Baud Rate, bps max.	19.2K
Sync Baud Rate, bps max.	19.2K

Board Size	
Card Height	9.2 in. (233.4 mm)
Card Depth	6.3 in. (160.0 mm)
Front Panel Height	10.3 in. (261.8 mm)
Front Panel Width	0.8 in. (19.8 mm)

Power Dissipation	
Maximum	30 watts
+ 5V ± 5%	6.0A (max.)
	5.0A (typical)
+12V ± 10%	1.0A (max., with off-board LAN transceiver)
-12V ± 10%	100mA (typical)

Hardware Support	
Multiprocessing Hardware Support	4 Mailbox Interrupts, RMW, Shared RAM
Debug/Monitor (included)	MVME147BUG
Transition Module (optional)	MVME712 Series

Environmental	
Temperature (operating)	0°C to +55°C
Temperature (storage)	-40°C to +85°C
Vibration (operating)	2 G's RMS, 20-2000 Hz Random
Altitude (operating)	15,000 feet
Humidity (noncondensing)	5% to 90%

Regulatories		
Safety	All printed wiring boards (PWB's) are manufactured by UL recognized manufacturers, with a flammability rating of 94V-0	C E

Demonstrated MTBF	
Mean	190,509 Hours
90% Confidence	107,681 Hours

Kernel and Operating System Software Support	
Motorola, Inc.	UNIX SYSTEM V/68
Emerge Systems, Inc.	RTUX™
Eyring, Inc.	PDOS®
Integrated Systems, Inc.	pSOS+™, VMEexec
Industrial Programming, Inc.	MTOS™
JMI Software Consultants, Inc.	C EXECUTIVE™
Lynx Real-Time Systems	LynxOS
Microware System Corporation	OS-9™
Microtec Research, Inc.	VRTX-32™
RTMX-UniFlex, Inc.	UniFLEX®, RTMX
Wind River Systems	VxWorks™

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