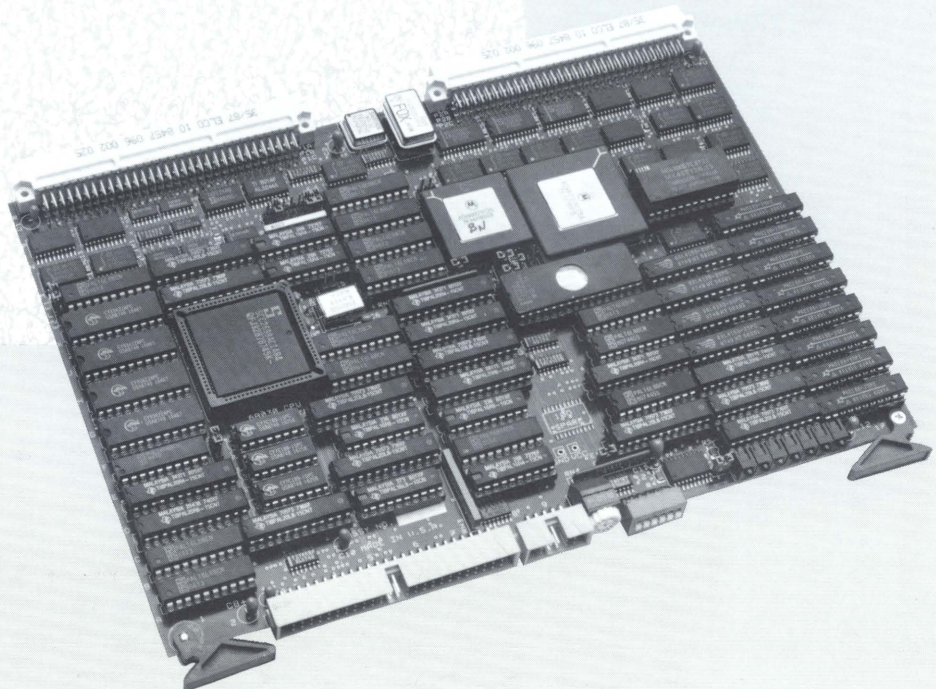# VME-68K30 *CPU*

Features

- Second-generation 32-bit MC68030 CPU at 25 or 16 MHz
- MC68882 floating point coprocessor at 25 or 16 MHz, that is twice as powerful as the MC68881
- Up to 7 VAX MIPS processing speed
- Ability to operate in single or multiprocessor environments
- 64-KByte external cache memory
- On-board battery clock and static RAM
- Write pipeline
- Eight on-board RS-232C ports with modem control on one port for remote diagnostics
- Ability to perform soft and hard reset of cluster
- Standard VSB or proprietary high-speed memory bus
- Support for distributed processing

The VME-68K30 high-performance processor boards are based on Motorola's MC68030 CPU and provide a high price/performance ratio for single processor and multiprocessor UNIX systems, and for real-time applications. Integrated Solutions' experience in multiprocessor and real-time systems has been fully utilized in designing the VME-68K30. For multiprocessor systems, the VME-68K30 has shared memory on the VMEbus. For real-time systems, features include variable clock counters and 16-bit counter/timers. Mutual exclusion, semaphores and dynamic definition of shared memory increase the support for distributed processing.

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Maximized Performance

The VME-68K30 CPU provides a number of high-performance features including Harvard architecture, burst fill, on-chip data caching, and pipelining. The VME-68K30 maximizes the performance available from the MC68030 CPU by providing several architectural features including the following:

On-Board Cache. In addition to the 68030 internal cache, the board has 64 KBytes of external data/instruction cache. The 68030 cache-miss will burst fill for the external cache in four long word lines. Cache is organized in 16-byte lines.

Use of the VSB . The CPU supports industry-standard VSB. Higher performance is realized when memory is accessed via the VSB and the entire VMEbus bandwidth is used for I/O operations. Up to 256 MBytes of memory can be supported.

Virtual DMA. This feature provides a general purpose gather/scatter mechanism for DMA operation, allowing for system software optimization in the allocation of I/O buffers, the support for demand paging, and performance of raw I/O. Another advantage of VDMA is the ability to, in effect, extend the addressing capabilities of controller cards, allowing controllers which only generate "standard" VMEbus addresses to access memory beyond 16 MBytes.

VMEbus Interface

The VME-68K30 interfaces with the VMEbus as an A32,A24,A16/ D32 master or slave. The VME-68K30 interface logic is consistent with the following VME specifications:

Data Transfer Bus Requester
    RWD/ROR (jumper selectable)
Data Transfer Bus (DTB) Master
    A16/D32, A24/D32, A32/D32
Data Transfer Bus (DTB) Slave
    A16/D32, A24/D32, A32/D32
Interrupt Handler
    IH (1-7) (STAT)

Physical Configuration
    EXP
Arbiter
    PRI
Time-out
    TOUT=16 us

Form Factor

The form factor for the VME-68K30 is a standard double-high VME board, 160mm by 233.33mm.

Electrical Requirements

The maximum power requirements of the VME-68K30 are +5 volts, 4.5A (typical), 8.0A (maximum); ±12 volts, 300mA (typical), 500mA (maximum)

Environmental Requirements

The VME-68K30 has the following environmental requirements:
    Operating temperature (ambient): 0° to 35° C or 32° to 95° F
    Storage temperature: -45° to 65° C or -49° to 150° F
    Relative humidity: 20 to 80 percent (non-condensing)