MoSys

128Kx32 to 656Kx32

## Preliminary Information

- **Ultra-High Performance**
  666 MByte/sec single device transfer rate
  36 ns RAS access, 13.8 ns CAS access
  6 ns burst cycle
- **Multibank Architecture**
  RAS and precharge may overlap CAS READ or WRITE to different banks effectively hiding RAS/precharge time.
- **Ideal Organization for Embedded Applications**

| Part Code | Organization | Banks | MBytes |
|---|---|---|---|
| MD904 | 128K x 32 | 16 | 0.5 |
| MD905 | 160Kx32 | 20 | 0.562 |
| MD906 | 192K x 32 | 24 | 0.75 |
| MD908 | 256K x 32 | 32 | 1.0 |
| MD909 | 288K x 32 | 36 | 1.125 |
| MD910 | 320K x 32 | 40 | 1.25 |
| MD916 | 512K x 32 | 64 | 2.0 |

- **Fine Granularity**
  Quarter MByte minimum granularity.
- **Variable Length Burst**
  Supports 4 to 128 byte interruptable bursts
- **Byte-level Write Control**
- **Low Internal and Interface Power**.
- **Small Footprint**
  Up to 2.3 MByte single package: 14 mm x 20 mm PQFP or 68 pin PLCC.
- **Compact, Easily Implemented Interface**
  Twenty-six signal, bus interface employs CMOS/LVCMOS/SSTL signaling.
- **Both 5.0V and 3.3V Supply Option**

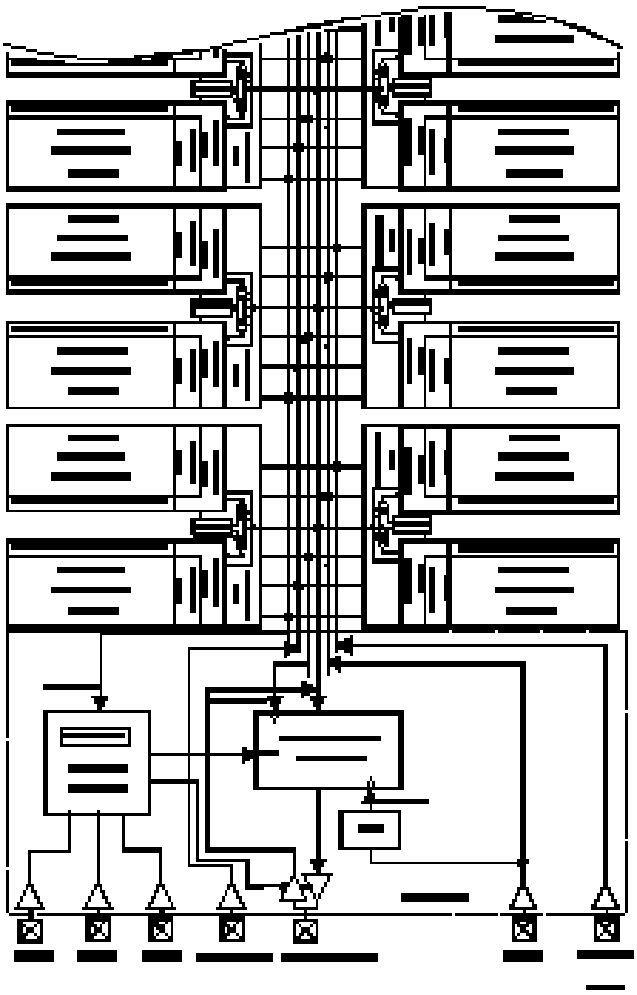

**Figure 1. MDRAM Block Diagram**

**Description**

The MoSys Multibank DRAM (MDRAM) is an extended performance synchronous DRAM optimized for ultra-high performance applications where high bandwidth, extremely short access latency and low cost are required. MDRAMs feature fully synchronous I/O at frequencies up to 333 MHz providing 666 MBytes per second of per device peak bandwidth .

An MDRAM can be viewed as an array of many independent 256 Kbit DRAMs, connected to a common bus internal to the MDRAM. The independence of bank facilitates overlapping, or "hiding" the RAS access and precharge penalty so that *average* access times will approach the CAS access time.

Embedded applications, using small amounts of DRAM (under 8 MBytes) will benefit from the MDRAM's fine granularity yielding lower cost solutions. MDRAM arrays can be created in increments of 256 KByte. An application *requiring* 2.75 MBytes *can use* precisely 2.75 MBytes of MDRAM rather than incrementing up to 4 MBytes as with any other DRAM.