Am9580A/Am9590

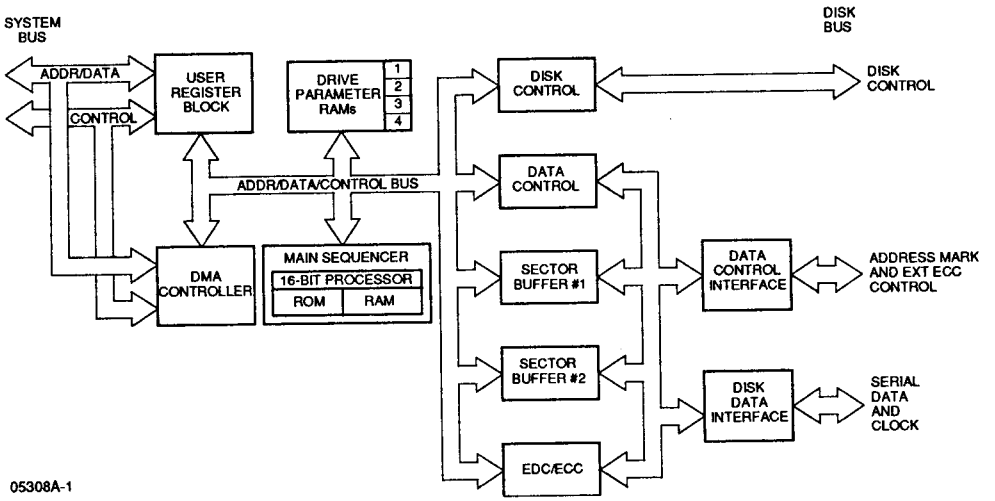
Hard Disk Controllers

PRELIMINARY

DISTINCTIVE CHARACTERISTICS

- **Am9580A supports ST506/412 and IBM double-density floppy formats**
- **Am9590 supports ESDI, ST506/412, and IBM double-density floppy formats**
- **Supports hard- and soft-sectored formats**
- **Controls up to four drives in any mix of hard and flexible formats**
- **Two on-chip 512-byte sector buffers support zero-sector interleaving**
- **Supports error checking algorithms including:**
  - CRC/CCITT
  - Single-Burst Reed-Solomon
  - Double-Burst Reed-Solomon
  - External ECC (user-definable Error Correcting Codes)
- **Linked-list command and data structures**
- **On-chip DMA controller supports 32-bit addressing and 8/16 bit data**
- **Am9590 supports data rates up to 15 Mbit/second**

BLOCK DIAGRAM



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To receive a complete data sheet, contact your local sales office.

Publication #	Rev.	Amendment
09853	A	/0

Issue Date: March 1988

GENERAL DESCRIPTION

The Am9580A and the Am9590 are single-chip solutions to the problems encountered in designing data formatters and disk system controllers. A companion part is also offered, the Am9582 Disk Data Separator, which when combined with one of the above disk controllers provides all of the functions which until now have been found only on sophisticated board-level products.

Both of these highly integrated disk controllers are flexible enough to cope with the differing requirements of today's broad marketplace, while using the advanced technology and innovative features that tomorrow's market will demand.

These disk controllers support both rigid and flexible disk drives and their respective data formats. Four drives of any mix (hard and flexible) can be controlled with these devices, with individual drive characteristics easily user-programmable.

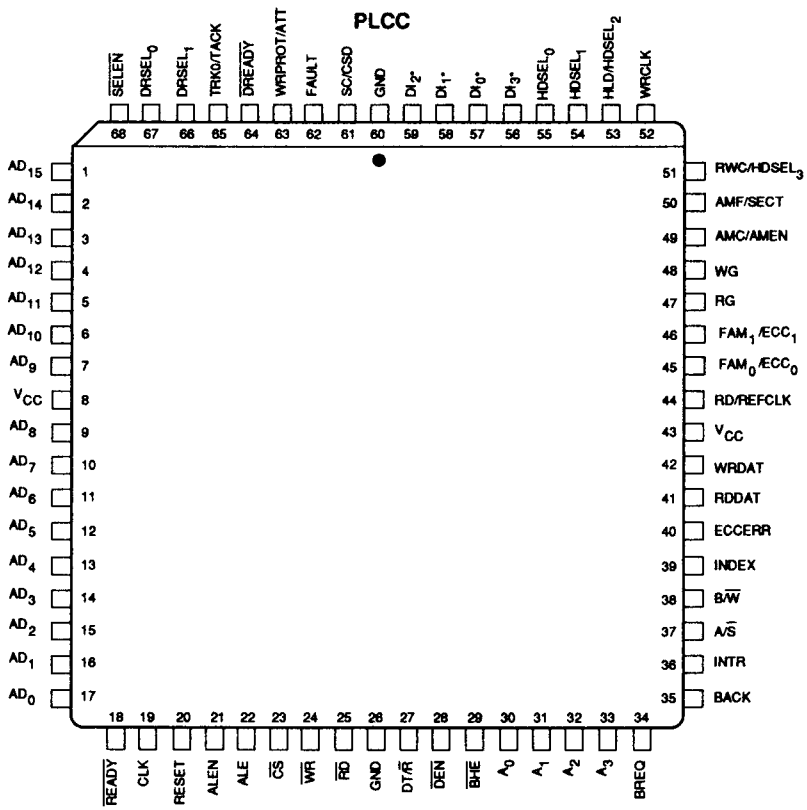
A sophisticated on-chip DMA controller fetches commands, writes status information, fetches data to be written on disk, and writes data that has been read from the disk. The DMA operation is programmable to adjust the bus occupancy, data bus width (8 or 16 bits), and wait state insertion. Two sector buffers allow zero-sector interleaving to access data on physically adjacent sectors, improving both file access time and system throughput. Sector sizes of 128, 256, and 512 bytes are programmable.

Both controllers ensure data integrity by selecting either an error-detecting code (CRC-CCITT), or one of two error-correcting codes (Single- or Double-Burst Reed-Solomon). Additionally, the Hard Disk Controller (HDC) provides handshake signals to control external Error-Correcting Codes (ECC) circuitry to implement any user-definable ECC algorithm.

The ESDI and ST506/412 interfaces are completely supported by the Am9590. Users interested only in the ST506/412 standard can use the Am9580A. Both of these controllers provide all of the required signals.

CONNECTION DIAGRAMS

Top View



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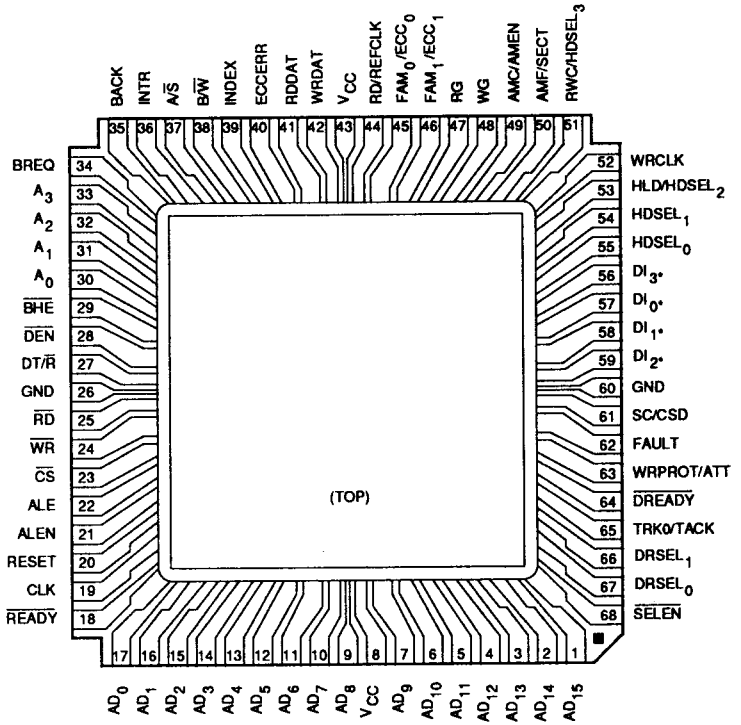
*Refer to Pin Description section for options.

CONNECTION DIAGRAMS (Cont'd.)

Top View

LCC



* Refer to Pin Description section for options.

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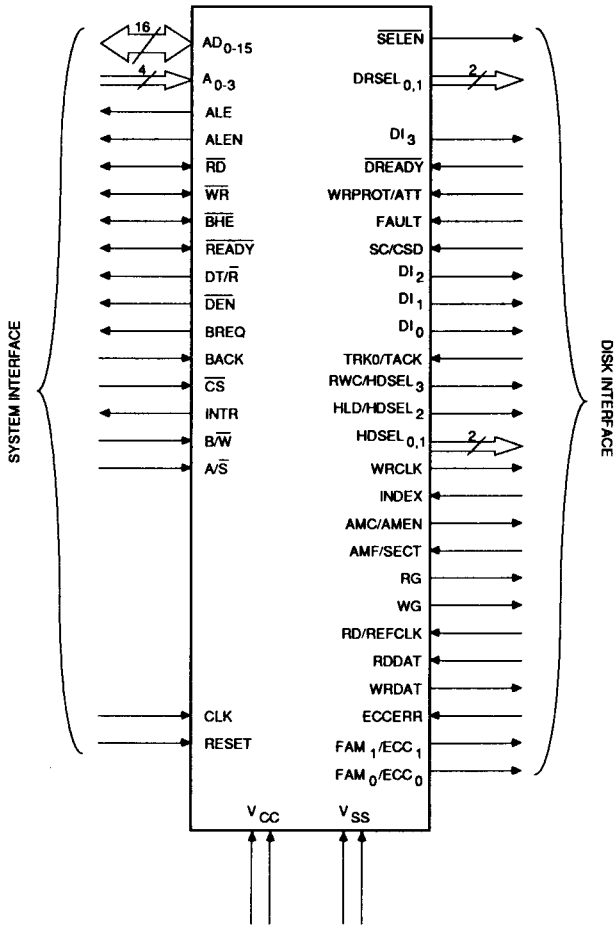
LOGIC SYMBOL



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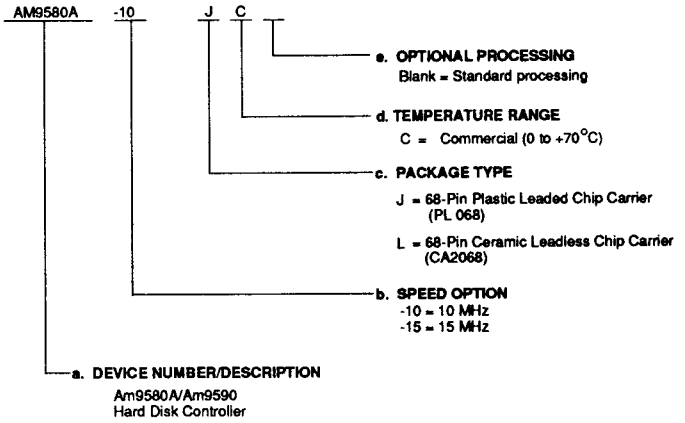
ORDERING INFORMATION

Standard Products

AMD standard products are available in several packages and operating ranges. The order number (Valid Combination) is formed by a combination of:

a. Device Number
b. Speed Option (if applicable)
c. Package Type
d. Temperature Range
e. Optional Processing



Valid Combinations	
AM9580A-10	JC, LC
Am9590-15	

Valid Combinations

Valid Combinations list configurations planned to be supported in volume for this device. Consult the local AMD sales office to confirm availability of specific valid combinations, to check on newly released combinations, and to obtain additional data on AMD's standard military grade products.

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