



Am95C94

Advanced Burst Error Processor

DISTINCTIVE CHARACTERISTICS

- Implements Reed-Solomon code for the proposed X3B11 and ISO Continuous Servo standard.
- Supports:
 - 5-way and 10-way interleaving
 - 512-byte and 1024-byte sectors
 - Alternative sector sizes up to 2550 bytes
 - Layered CRC (optional)
- Performs fast correction vector computation, entirely in hardware; there is no need for external software to reduce syndromes to vectors.
- Parallel operation on two contiguous sectors; checkbytes for the second sector accumulate while correction vectors for first sector are computed. This allows "on-the-fly" correction.
- Data and EDAC interface is byte-wide parallel; operates at speeds up to 10 Mbytes per second.
- Microprocessor-compatible 8-bit data bus with optional parity.
- Correction vector generation performance with a 20 MHz system clock is such that up to 80 correction vectors can be generated in under 400 μ secs for a 1024 byte sector.

GENERAL DESCRIPTION

The Am95C94 Advanced Burst Error Processor (ABEP) performs error detection and correction in optical disk systems. The ABEP implements the proposed ANSI X3B11 Standard Continuous Composite Servo Reed-Solomon Error Detection and Correction (EDAC) algorithm. It interfaces directly with AMD's disk data controller for optical systems, the Am95C96 Optical Disk Data Controller (ODC).

The ABEP simultaneously performs syndrome generation for the sector being read, and correction vector generation for the previously read sector. This allows "on-the-fly" correction of data transferred from the disk at a high rate. This feature is extremely critical for optical disk systems, where read errors can be very frequent.

The ABEP works closely with the Am95C96 disk data controller. The ABEP resides on the buffer interface bus alongside the buffer memory. It functions as a slave peripheral on this bus, supporting high-speed disk data transfer operations. Parity can be generated and checked on this 8-bit bus.

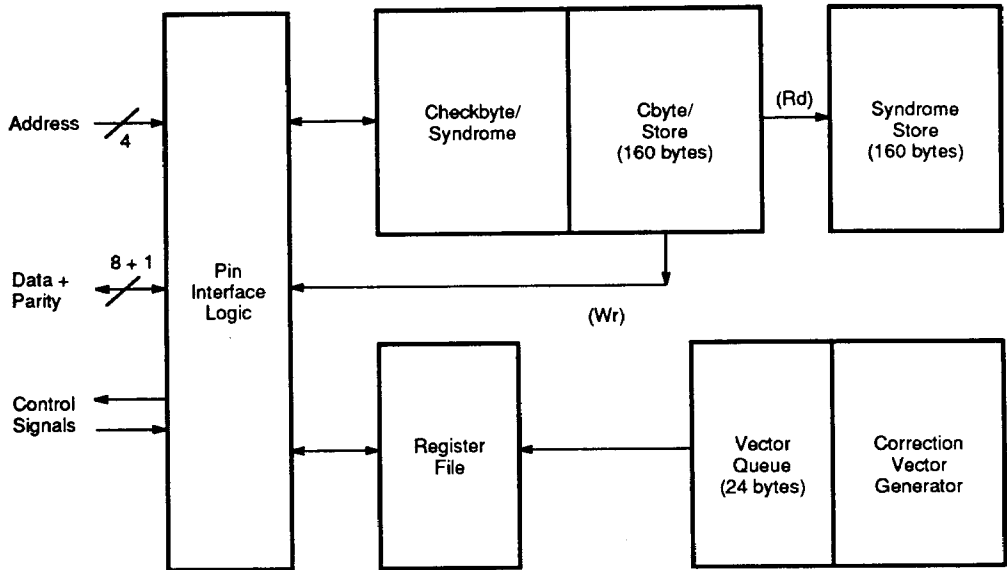
During a disk write operation, the data controller transfers a sector of data bytes from the buffer memory to the

disk and simultaneously to the ABEP. The ABEP generates checkbytes for this sector, and the data controller writes these checkbytes to the disk after the sector data.

During a disk read operation, the data controller transfers a sector of data bytes from the disk to the buffer memory and simultaneously to the ABEP. Using the checkbytes read from the disk, the ABEP determines whether there are any errors, and, if so, how to correct them. If correction is required, correction vector generation takes place while the data and checkbytes of the next sector are being read from the disk and written to the ABEP. The disk data controller performs any necessary corrections to data during disk sector transfers by using the correction vectors computed by the ABEP. This ensures that errors can be corrected "on the fly," allowing high-speed, zero-sector-interleave read operations.

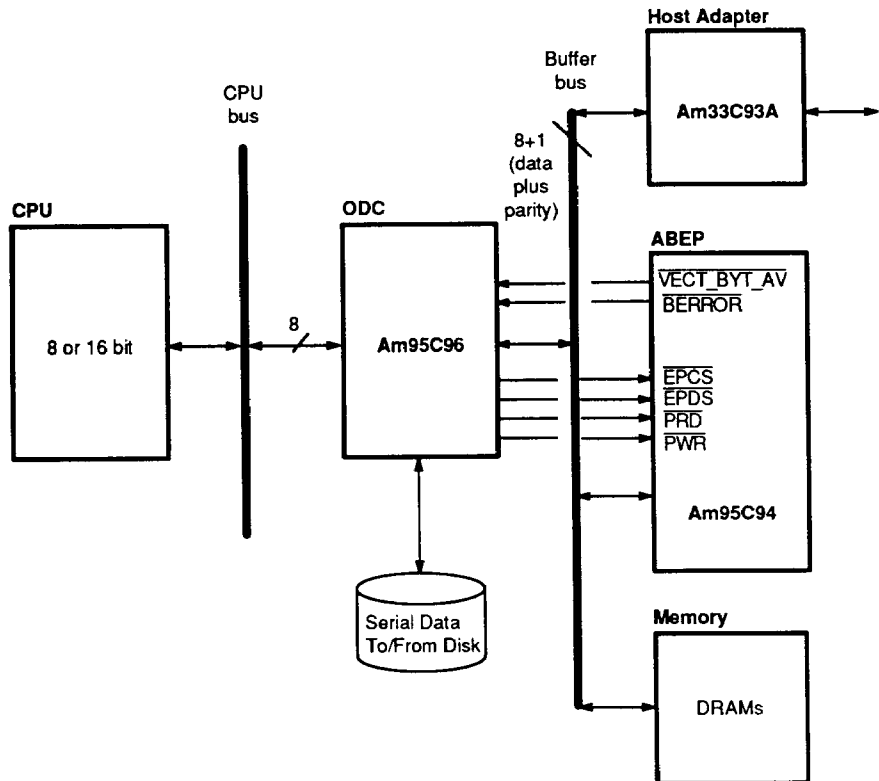
Unlike earlier error-processing chips, the Am95C94 ABEP may be treated as a black-box error processor; no software assistance is required for error checking or correction vector generation.

BLOCK DIAGRAM



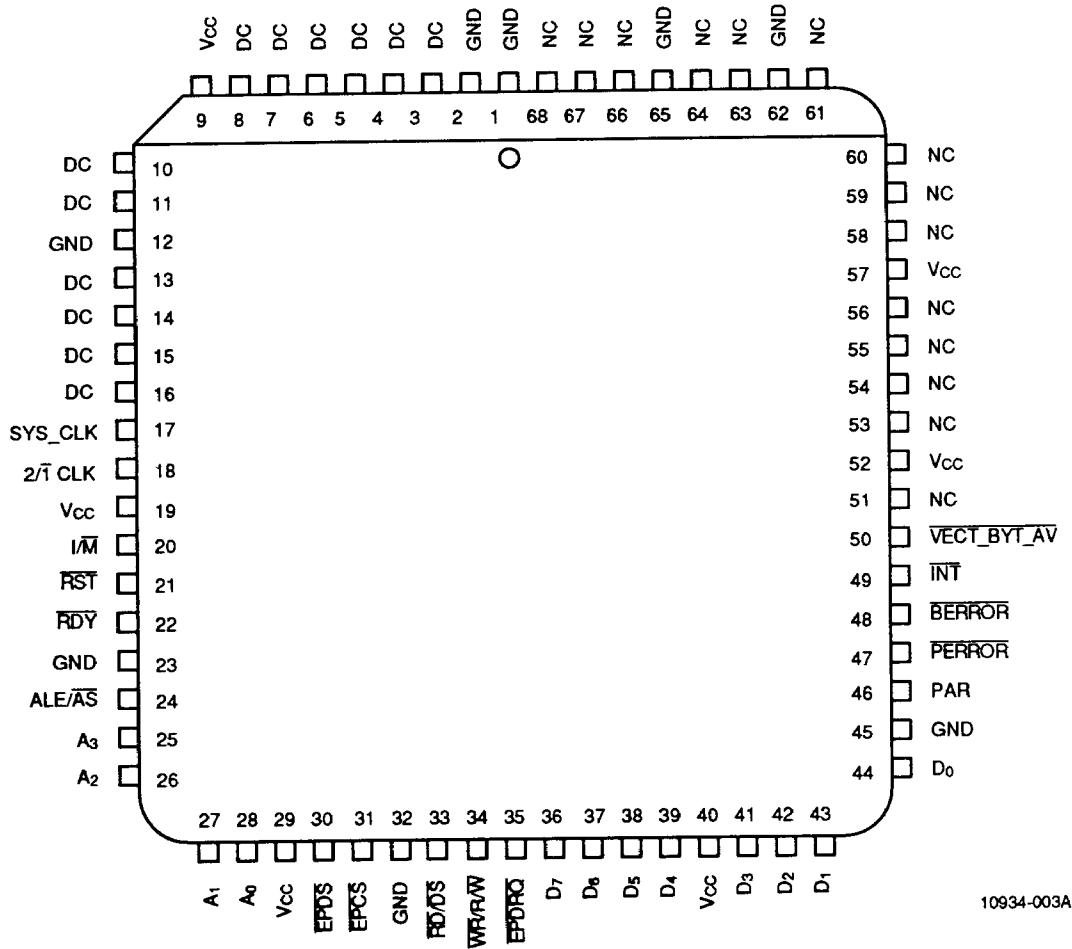
10934-001A

SYSTEM DIAGRAM



10934-002A

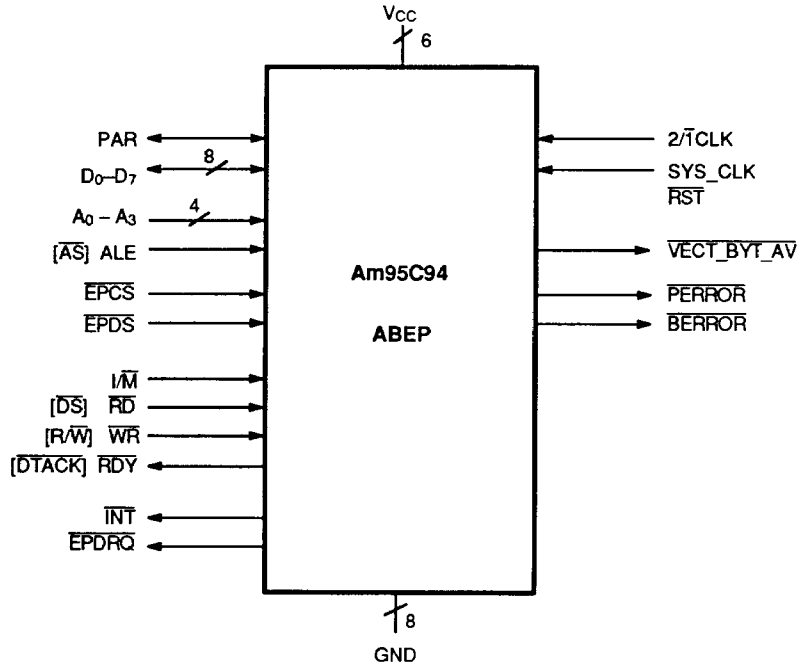
CONNECTION DIAGRAM



10934-003A

Note: NC means No Connection to Die,
DC means Do Not Connect These Pins.

LOGIC SYMBOL



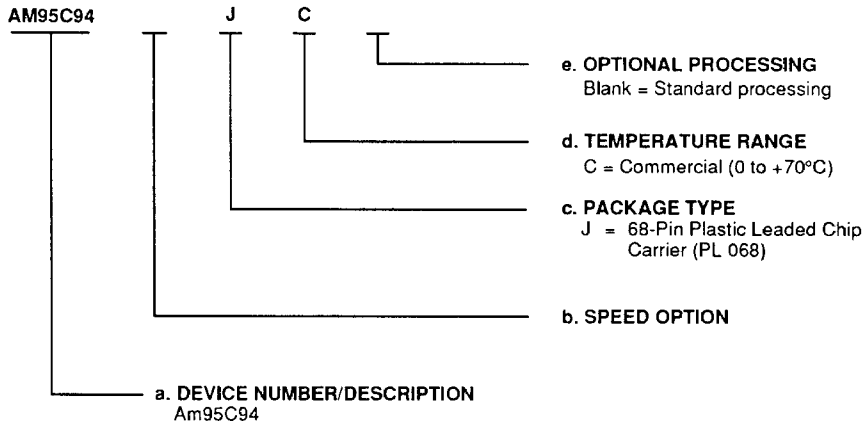
10934-004A

ORDERING INFORMATION

Standard Products

AMD standard products are available in several packages and operating ranges. The ordering 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	
AM95C94	JC

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.

Sales Offices

North American

ALABAMA	(205) 882-9122
ARIZONA	(602) 242-4400
CALIFORNIA,	
Culver City	(213) 645-1524
Newport Beach	(714) 752-6262
Roseville	(916) 786-6700
San Diego	(619) 560-7030
San Jose	(408) 452-0500
Woodland Hills	(818) 992-4155
CANADA, Ontario,	
Kanata	(613) 592-0060
Willowdale	(416) 224-5193
COLORADO	(303) 741-2900
CONNECTICUT	(203) 264-7800
FLORIDA,	
Clearwater	(813) 530-9971
Ft. Lauderdale	(305) 776-2001
Orlando (Casselberry)	(407) 830-8100
GEORGIA	(404) 449-7920
ILLINOIS,	
Chicago (Itasca)	(312) 773-4422
Naperville	(312) 505-9517
KANSAS	(913) 451-3115
MARYLAND	(301) 796-9310
MASSACHUSETTS	(617) 273-3970
MICHIGAN	(313) 347-1522
MINNESOTA	(612) 938-0001
NEW JERSEY,	
Cherry Hill	(609) 662-2900
Parsippany	(201) 299-0002
NEW YORK,	
Liverpool	(315) 457-5400
Poughkeepsie	(914) 471-8180
Rochester	(716) 272-9020
NORTH CAROLINA	(919) 878-8111
OHIO,	
Columbus (Westerville)	(614) 891-6455
Dayton	(513) 439-0470
OREGON	(503) 245-0080
PENNSYLVANIA	(215) 398-8006
SOUTH CAROLINA	(803) 772-6760
TEXAS,	
Austin	(512) 346-7830
Dallas	(214) 934-9099
Houston	(713) 785-9001

International

BELGIUM, Bruxelles	TEL (02) 771-91-42
	FAX (02) 762-37-12
	TLX 846-61028
FRANCE, Paris	TEL (1) 49-75-10-10
	FAX (1) 49-75-10-13
	TLX 263282F
WEST GERMANY,	
Hannover area	TEL (0511) 736085
	FAX (0511) 721254
	TLX 922850
München	TEL (089) 4114-0
	FAX (089) 406490
	TLX 523883
Stuttgart	TEL (0711) 62 33 77
	FAX (0711) 625187
	TLX 721882
HONG KONG,	
Wanchai	TEL 852-5-8654525
	FAX 852-5-8654335
	TLX 67955AMDAPHX
ITALY, Milan	TEL (02) 3390541
	FAX (02) 3533241
	TLX (02) 3498000
	TLX 843-315286
JAPAN,	
Kanagawa	TEL 462-47-2911
	FAX 462-47-1729
Tokyo	TEL (03) 345-8241
	FAX (03) 342-5196
	TLX J24064AMDTKOJ
Osaka	TEL 06-243-3250
	FAX 06-243-3253

International (Continued)

KOREA, Seoul	TEL 822-784-0030
	FAX 822-784-8014
LATIN AMERICA,	
Ft. Lauderdale	TEL (305) 484-8600
	FAX (305) 485-9736
	TLX 5109554261 AMDFTL
NORWAY, Hovik	TEL (03) 010156
	FAX (02) 591959
	TLX 79079HBCN
SINGAPORE	TEL 65-3481188
	FAX 65-3480161
	TLX 55650 AMDMMI
SWEDEN,	
Stockholm	TEL (08) 733 03 50
(Sundbyberg)	FAX (08) 733 22 85
	TLX 11602
TAIWAN	TEL 886-2-7213393
	FAX 886-2-7723422
	TLX 886-2-7122066
UNITED KINGDOM,	
Manchester area	TEL (0925) 828008
(Warrington)	FAX (0925) 827693
	TLX 851-628524
London area	TEL (0483) 740440
(Woking)	FAX (0483) 756196
	TLX 851-859103

North American Representatives

CANADA	
Burnaby, B.C.	DAVETEK MARKETING (604) 430-3680
Calgary, Alberta	DAVETEK MARKETING (403) 291-4984
Kanata, Ontario	VITEL ELECTRONICS (613) 592-0060
Mississauga, Ontario	VITEL ELECTRONICS (416) 676-9720
Lachine, Quebec	VITEL ELECTRONICS (514) 636-5951
IDAHO	INTERMOUNTAIN TECH MKTG, INC (208) 888-6071
ILLINOIS	HEARTLAND TECH MKTG, INC (312) 577-9222
INDIANA	Huntington - ELECTRONIC MARKETING CONSULTANTS, INC (317) 921-3450
	Indianapolis - ELECTRONIC MARKETING CONSULTANTS, INC (317) 921-3450
IOWA	LORENZ SALES (319) 377-4666
KANSAS	Merriam - LORENZ SALES (913) 384-6556
	Wichita - LORENZ SALES (316) 721-0500
KENTUCKY	ELECTRONIC MARKETING CONSULTANTS, INC (317) 921-3452
MICHIGAN	Birmingham - MIKE RAICK ASSOCIATES (313) 644-5040
	Holland - COM-TEK SALES, INC (616) 399-7273
	Novi - COM-TEK SALES, INC (313) 344-1409
MISSOURI	LORENZ SALES (314) 997-4558
NEBRASKA	LORENZ SALES (402) 475-4660
NEW MEXICO	THORSON DESERT STATES (505) 293-8555
NEW YORK	East Syracuse - NYCOM, INC (315) 437-8343
	Woodbury - COMPONENT CONSULTANTS, INC (516) 364-8020
OHIO	Centerville - DOLFUSS ROOT & CO (513) 433-6776
	Columbus - DOLFUSS ROOT & CO (614) 885-4844
	Strongsville - DOLFUSS ROOT & CO (216) 238-0300
PENNSYLVANIA	DOLFUSS ROOT & CO (412) 221-4420
PUERTO RICO	COMP REP ASSOC, INC (809) 746-6550
UTAH, R ² MARKETING	(801) 595-0631
WASHINGTON	ELECTRA TECHNICAL SALES (206) 821-7442
WISCONSIN	HEARTLAND TECH MKTG, INC (414) 792-0920

Advanced Micro Devices reserves the right to make changes in its product without notice in order to improve design or performance characteristics. The performance characteristics listed in this document are guaranteed by specific tests, guard banding, design and other practices common to the industry. For specific testing details, contact your local AMD sales representative. The company assumes no responsibility for the use of any circuits described herein.



Advanced Micro Devices, Inc. 901 Thompson Place, P.O. Box 3453, Sunnyvale, CA 94088, USA
 Tel: (408) 732-2400 • TWX: 910-339-9280 • TELEX: 34-6306 • TOLL FREE: (800) 538-8450
APPLICATIONS HOTLINE TOLL FREE: (800) 222-9323 • (408) 749-5703

© 1989 Advanced Micro Devices, Inc.
 8/989
 Printed in USA