Classic E Expandable Desktop

User-Installable Upgrades

PERFORMANCE UPGRADES

SX-25

The Classic E-Series i486 SX/25 model incorporates a two-site CPU design, providing for a variety of upgrade possibilities. The first socket site (U59) contains the i486 SX/25 PQFP CPU soldered to the baseboard. The second socket site (U58) is the OverDrive Processor Socket, and will accept an OverDrive processor or an i487 SX math coprocessor. Refer to the table below when installing any upgrade processor or validating existing processor jumper positions.

DX-33

The Classic E-Series i486 DX/33 does not use the PQFP CPU site (U59). Instead, the i486DX CPU is installed in the 238-pin upgrade socket (U58). Upgrading the i486 DX model requires removing the main CPU from the low insertion force socket and replacing it with an upgrade processor. The table below lists the variety of CPU upgrade options for the Classic-E.

Upgrade Processor...	*...should be in CPU Socket...*	*...and jumper settings should be...*			
		J5	*J6*	*J32*	*J33*
i486SX-25	(U59) PQFP	1-2	2-3	Don't Care	1-3, 2-4
i486SX-25	U58	1-2	2-3	3-4	4-6
i486DX-33	U58	2-3	2-3	1-2, 5-6	3-5, 4-6
i486DX2-66	U58	2-3	2-3	1-2, 5-6	3-5, 4-6
ODP486SX-20	U58	2-3	1-2	1-2, 5-6	1-3, 2-4
ODP486SX-25	U58	1-2	2-3	1-2, 5-6	1-3, 2-4
ODP486SX-33	U58	2-3	2-3	1-2, 5-6	1-3, 2-4
ODP486DX-33	U58	2-3	2-3	1-2, 5-6	1-3, 2-4
ODPR486DX-25	U58	1-2	2-3	1-2, 5-6	3-5, 4-6
ODPR486DX-33	U58	2-3	2-3	1-2, 5-6	3-5, 4-6
i487SX-25	U58	1-2	2-3	1-2, 5-6	1-3, 2-4

OVERDRIVE PROCESSORS

This table lists the OverDrive Processors supported by the Classic E-Series. Contact Intel's Personal Computer Enhancement Division (800-538-3373) for more information.

Product Code	*Pins*	*External Clock Speed*	*Internal CPU Speed*
ODP486SX-20	169	20 MHz	40 MHz
ODP486SX-25	169	25 MHz	50 MHz
ODP486SX-33	169	33 MHz	66 MHz
ODP486DX-33	169	33 MHz	66 MHz
ODPR486DX-25	168	25 MHz	50 MHz
ODPR486DX-33	168	33 MHz	66 MHz
Future OverDrive	238	Future OverDrive based on Pentium microprocessor technology	

SYSTEM MEMORY

Classic-E supports only single-sided page mode SIMMs in these sizes: 256 Kb x 36, 1 Mb x 36 and 4 Mb x 36. All SIMMs are 80 ns or faster. This table shows all possible memory combinations. Boldface rows indicate configurations using the 4 MB SIMM supplied with each system.

Bank 0 SIMM Type	*Bank 1 SIMM Type*	*Bank 2 SIMM Type*	*Bank 3 SIMM Type*	*Total Memory*
256 Kb X 36	Empty	Empty	Empty	1 MB
256 Kb X 36	256 Kb X 36	Empty	Empty	2 MB
256 Kb X 36	256 Kb X 36	256 Kb X 36	Empty	3 MB
256 Kb X 36	256 Kb X 36	256 Kb X 36	256 Kb X 36	4 MB
1 Mb X 36	**Empty**	**Empty**	**Empty**	**4 MB**
1 Mb X 36	**1 Mb X 36**	**Empty**	**Empty**	**8 MB**
1 Mb X 36	**1 Mb X 36**	**1 Mb X 36**	**Empty**	**12 MB**
1 Mb X 36	**1 Mb X 36**	**1 Mb X 36**	**1 Mb X 36**	**16 MB**
1 Mb X 36	**256 Kb X 36**	**Empty**	**Empty**	**5 MB**
1 Mb X 36	**256 Kb X 36**	**256 Kb X 36**	**Empty**	**6 MB**
1 Mb X 36	**256 Kb X 36**	**256 Kb X 36**	**256 Kb X 36**	**7 MB**
1 Mb X 36	**4 Mb X 36**	**Empty**	**Empty**	**20 MB**
1 Mb X 36	**4 Mb X 36**	**1 Mb X 36**	**Empty**	**24 MB**
1 Mb X 36	**4 Mb X 36**	**256 Kb X 36**	**Empty**	**21 MB**
1 Mb X 36	**4 Mb X 36**	**256 Kb X 36**	**256 Kb X 36**	**22 MB**
1 Mb X 36	**4 Mb X 36**	**1 Mb X 36**	**1 Mb X 36**	**28 MB**
1 Mb X 36	**4 Mb X 36**	**4 Mb X 36**	**Empty**	**36 MB**
1 Mb X 36	**4 Mb X 36**	**4 Mb X 36**	**256 Kb X 36**	**37 MB**
1 Mb X 36	**4 Mb X 36**	**4 Mb X 36**	**1 Mb X 36**	**40 MB**
1 Mb X 36	**4 Mb X 36**	**4 Mb X 36**	**4 Mb X 36**	**52 MB**
4 Mb X 36	Empty	Empty	Empty	16 MB
4 Mb X 36	4 Mb X 36	Empty	Empty	32 MB
4 Mb X 36	4 Mb X 36	4 Mb X 36	Empty	48 MB
4 Mb X 36	4 Mb X 36	4 Mb X 36	4 Mb X 36	64 MB

Possible SIMM Memory Configurations.

QUALIFIED SIMM VENDORS

The following tables list SIMMs that are known to be compatible with the specified Intel platforms. SIMMs that are not listed also should function properly as long as their specifications are compatible with the devices listed below. In general, SIMM devices that are faster than those specified for a given platform will work although no extra performance will be realized. The SIMM devices shown are categorized according to three levels of qualification:

1. Intel Approved and Tested: The device has been electrically tested by Intel and is known to be compatible with the specified platform(s). In addition, the vendor has met or exceeded Intel's product change, quality control, and availability requirements and is listed on our Approved Manufacturing List.

2. Intel Tested: Samples of the device have been electrically tested by Intel across voltage and temperature margins ("four corners") and is known to be compatible with the specified platform(s).

3. Customer Tested: The device has been electrically tested by a customer and is reported to be compatible with the specified platform(s).

Intel recommends that SIMMs listed as (1) *Intel Approved and Tested* or (2) *Intel Tested* be used to ensure reliable system operation. SIMMs not listed or listed as (3) *Customer Tested* can be used; but, in the event of unreliable system operation, the SIMMs should be replaced with SIMMs tested by Intel (1 or 2) to determine whether the SIMMs are causing the problem.

IMPORTANT NOTE

SIMM devices with gold contacts should NOT be placed into SIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation

Vendor Contacts (phone numbers are provided for convenience only and may change without notice. Current as of 7/94.

Centon	516-471-7700
Fujitsu	408-922-9000
Hyundai	408-473-9200
Kelly Micro Systems	800-854-3900
Micron	208-368-3900*
MPM	800-899-4676
NEC	415-960-6000
Samsung	408-954-7000
Simple Technologies	714-558-1120
Smart Modular	510-623-1231
Texas Instruments	214-644-5580
Toshiba	503-629-0818*

*ask for the number of a representative in your area

256K X 36 (1MB PER SIMM)

Tin-lead contacts, 80 ns

Vendor	*Qual.*	*Part Number*	*Comments*
Samsung Corning Co.	1	KMM536256AW-7	
Samsung Corning Co.	1	KMM536256B-8	**Obsolete**
Texas Instruments**	1	TM256KBK36B-80	**Obsolete**
Texas Instruments**	1	TM256KBK36C-80	**Obsolete**
Toshiba Corp.	1	THM362500AS-80	**Obsolete**
Centon Electronics	3	CE25636-LT7	

1M X 36 (4MB PER SIMM)

Tin-lead contacts, 80ns

Fujitsu Ltd.	1	MB85346-80PS/70PS	**Obsolete**
Fujitsu Ltd.	1	MB85323-70PS	
Hyundai	1	HYM536100AM-70NT	
NEC Electronics, Inc.	1	MC-421000A36BE-80	
Samsung Corning Co.	1	KMM5361000B-8/7	**Obsolete, but still in circulation**
Samsung Corning Co.	1	KMM5361003-8/7	**Obsolete**
Samsung Corning Co.	1	KMM5361003C-7	
Smart Mod. Tech. Inc.	1	SMI5361000-8/7	
Texas Instruments	1	TM124MBK36A-80	**Obsolete**
Texas Instruments	1	TM124MBK36B-80	**Obsolete**
Texas Instruments	1	TM124MBK36R-80	
Texas Instruments	1	TM124MBK36T-70	
Toshiba Corp.	1	THM361020AS-80	
Centon Electronics	3	CE1036LT-7	
MPM	3	1MX3670T	

4M X 36 (16MB PER SIMM)

Tin-lead contacts, 80 ns

Micron Technology	3	MT12D436M-8	
Samsung Corning Co.	3	KMM5364000H-8	
Toshiba Corp.	3	THM364080AS-80	
Centon Electronics	3	CE4036LT-7	
MPM	3	4MX3670T	

CACHE SRAM

The Classic E-Series can be upgraded with a second level cache by adding industry-standard SRAM to DIP sockets on the baseboard. The design requires 20 ns data SRAM and 15 ns tag and dirty bit SRAM.

	SRAM Size			
Cache Size	*Bank 0 U42-U45*	*Bank 1 U54-U57*	*Tag U50*	*Dirty Bit U62*
64 KB	(4) 8Kb x 8	(4) 8Kb x 8	(1) 8Kb x 8	(1) 64Kb x 1
128 KB	(4) 32Kb x 8	none	(1) 32Kb x 8	(1) 64Kb x 1
256 KB	(4) 32Kb x 8	(4) 32Kb x 8	(1) 32Kb x 8	(1) 64Kb x 1

Possible Second Level Cache Combinations.

This table lists the part numbers for cache components from several vendors.

Device Type	*Motorola*	*Cypress*	*IDT*	*Samsung*	*Mitsubishi*
8 Kb x 8, 15 ns	MEM6264PC15	CY7C185-15PC	7164S15TP	KM68685BP-15	N/A
8 Kb x 8, 20 ns	MEM6264PC20	CY7C185-20PC		KM68685BP-20	N/A
32 Kb x 8, 15 ns	MEM6206PC15	CY7C199-15PC	71256S15TP	KM68257BP-20	N/A
32 Kb x 8, 20 ns	MEM6206PC15	CY7C199-20PC	71256S20TP	KM68257BP-20	N/A
64 Kb x 1, 15 ns	MEM6287P15	CY7C187-15PC	7187S15P	N/A	M5M5187BP-15

Sampling of Cache Component Vendors.

TITLE:	Classic E Expandable Desktop User-Installable Upgrades
DATE/VER:	11/17/94, Ver. 2.1