



Intel® Storage System SSR212MA, SSR212CC

Tested Memory List (TML)

Revision 1.0

May, 2006

Storage Group Technical Marketing

Revision History

Date	Rev	Modifications
May/06	1.0	Initial Release

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Please Note: DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation. Intel recommends similar manufacturer and similar speeds in each Rank on the memory module. Mixing of dissimilar memory manufacturer and similar speeds in each Rank on the memory module is NOT recommended.

Table of Contents

1. Overview of Memory Testing	5
1.1 Paper Qualification.....	5
1.2 Functional Testing.....	5
1.3 Computer Memory Test Lab*	5
2. Memory Subsystem	6
2.1 Memory Population	7
2.2 Identifying “Single Rank” or “Double Ranked” DIMMs	9
3. Tested Memory	10
Registered ECC, DDR2-400 DIMM Modules	10
256MB Size (32M x 72).....	10
Registered, ECC, DDR2-400 DIMM Modules 512 MB Sizes (64Mx72).....	11
Registered, ECC, DDR2-400 DIMM Modules 512 MB Sizes (64Mx72).....	12
Registered, ECC, DDR2-400 DIMM Modules 512 MB Sizes (64Mx72).....	13
Registered, ECC, DDR2-400 DIMM Modules	1
1GB Size (128M x 72).....	1
Registered, ECC, DDR2-400 DIMM Modules	2
1GB Size (128M x 72).....	2
Registered, ECC, DDR2-400 DIMM Modules	3
1GB Size (128M x 72).....	3
Registered, ECC, DDR2-400 DIMM Modules	4
1GB Size (128M x 72).....	4
Registered, ECC, DDR2-400 DIMM Modules	5
2GB Size (256M x 72).....	5
Registered, ECC, DDR2-400 DIMM Modules	6
2GB Size (256M x 72).....	6
4. Sales Information	7
5. CMTL* (Computer Memory Test Labs)	9

1. Overview of Memory Testing

The following test processes are used to qualify Dual In-Line Memory Modules (DIMMs) for use with the Intel® Server Board SE7520JR2, contained within the Intel® Storage Server SSR212MA and SSR212CC. Memory is a vital subsystem in a server. Intel requires that strict guidelines be met before a DIMM vendor is added to the Tested memory List. To be included on the list as a fully supported DIMM, the memory must undergo rigorous tests to ensure that the product will perform the intended server product functions. Memory qualification for Intel server, workstation and RAID Controller products is performed both by Intel's Memory Validation Lab (MVL) and by an independent external test lab, Computer Memory Test Lab* CMTL).

The Tested Memory Lists for Intel's server board, workstation board, and RAID controller products categorize memory modules as advanced tested. The advanced testing process includes a standard paper qualification and then is followed by two levels of functional testing. DIMMs that have completed and passed Advanced Testing are considered to be compatible with the product on which they were tested, and with the test software and operating systems that was used during the test process.

1.1 Paper Qualification

A paper qualification is performed to verify that the specifications of a given DIMM meet Intel's memory specifications for a given product. Specification criteria reviewed include: critical timings, electrical characteristics, timing requirements, environmental requirements, and packaging requirements.

1.2 Functional Testing

After a given DIMM passes the standard paper qualification, functionality of the DIMM is then tested with the intended Intel product. Two levels of functional testing are performed; standard and advanced.

Standard functional testing requires that the given DIMM and Intel product combination operate with no failures for a period of no less than 24 hours for both minimum and maximum DIMM configurations. Testing is performed using a Microsoft* Windows* operating system and a custom test package. The test systems operate with standard voltage at room temperature.

Advanced functional testing requires that the given DIMM and Intel product combination operate with no failures for a period of no less than 24 hours for both minimum and maximum DIMM configurations. Testing is performed with multiple operating systems and various custom test packages. Each test configuration is tested with various voltage and temperature margin conditions.

1.3 Computer Memory Test Lab*

Computer Memory Test Lab, also known as CMTL*, is a leading memory test organization responsible for testing a broad range of memory products. A memory product, which receives a "PASS" after being tested by CMTL, means it functions correctly and consumers can use the product to perform the intended server functions. In order to pass these stringent standards, memory products must maintain the highest manufacturing procedures and pass an exacting battery of tests. Testing is performed with Intel supplied equipment and procedures defined by Intel's various functional testing levels.

CMTL Contact Info:

Office: (949) 716-8690
Fax: (949) 716-8691

Computer Memory Test Lab (CMTL)
24 Hammond Suite F
Irvine, CA 92618
<http://www.cmtlabs.com/>

2. Memory Subsystem

The Intel® Storage Server SSR212MA or SSR212CC supports DDR2-400 memory.

NOTE: Industry naming conventions for equivalent memory technologies include the following:

- DDR2400 = PC23200

The following maximum memory capacities are supported based on the number of DIMM slots provided and maximum supported memory loads by the chipset:

12 GB maximum capacity.

The minimum memory supported with the system running in single channel memory mode is:

256MB.

However, we do not recommend this configuration. Please see the *Intel® Storage System SSR212MA Technical Product Specification (TPS)* or the *Intel® Storage System SSR212CC Technical Product Specification (TPS)* for recommended memory configurations.

Supported DIMM capacities are as follows:

DDR2-400 Memory DIMM sizes include: 256MB, 512MB, 1GB, and 2GB.

2.1 Memory Population

The Storage Server SSR212MA or SSR212CC has six DIMM slots, or three DIMM banks. Both DIMMs in a bank should be identical (same manufacturer, CAS latency, number of rows, columns and devices, timing parameters etc.). Although DIMMs within each bank must be identical, the BIOS supports various DIMM sizes and configurations allowing the banks of memory to be different. Memory sizing and configuration is guaranteed only for qualified DIMMs approved by Intel.

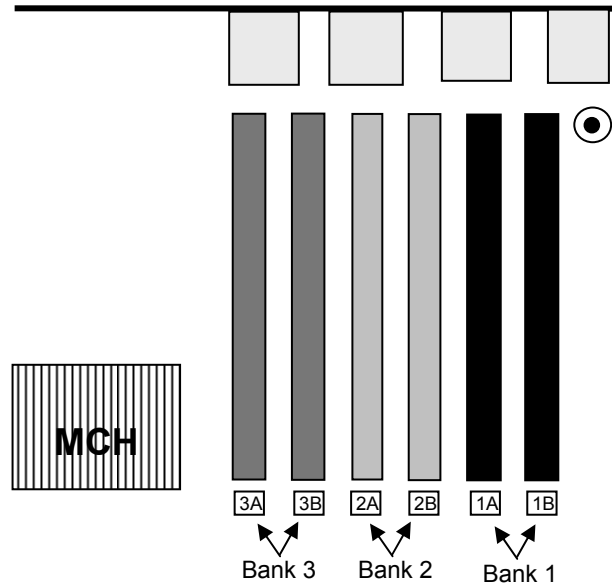


Figure 1. Identifying Banks of Memory

The memory controller is capable of supporting up to 4 loads per channel for DDR2-400. Memory technologies are classified as being either single rank or dual rank depending on the number of DRAM devices that are used on any one DIMM. A single rank DIMM is a single load device, ie) Single Rank = 1 Load. Dual rank DIMMs are dual load devices, ie) Dual Rank = 2 loads.

DDR2-400 DIMM population rules are as follows:

- (1) DIMMs banks must be populated in order starting with the slots furthest from MCH
- (2) Dual rank DIMMs are populated before single rank DIMMs
- (3) A maximum of four DIMMs can be populated when all four DIMMs are dual rank DDR2-400 DIMMs

The following tables show the supported memory configurations:

- s/r = single rank
- d/r = dual rank
- E = Empty

Table 1. Supported DDR2-400 DIMM Populations

MCH	Bank 3 – DIMMs 3A, 3B	Bank 2 – DIMMs 2A, 2B	Bank 1 – DIMMs 1A, 1B
	S/R	S/R	S/R
	E	S/R	S/R
	E	E	S/R
	E	D/R	D/R
	E	E	D/R
	E	S/R	D/R
	S/R	S/R	D/R

Note: On the Storage System SSR212MA or SSR212CC, when using all dual rank DDR2-400 DIMMs, a total of four DIMMs can be populated. Configuring more than four dual rank DDR2-400 DIMMs will result in the BIOS generating a memory configuration error.

2.2 Identifying “Single Rank” or “Double Ranked” DIMMs

- **x8SR** = x8 *Single-Ranked modules* - have 5 DRAM's on the front and 4 DRAM's on the back with empty spots in between the DRAM's.
- **x8DR** = x8 *Double-Ranked modules* - have 9 DRAM's on each side for a total of 18 (no empty slots)
- **x4SR** = x4 *Single-Ranked modules* - have 9 DRAM's on each side for a total of 18 – and look similar to x8 Double-Ranked
- **x4DR** = x4 *Double-Ranked modules* - have 18 (stacked) DRAM's on each side for a total of 36

The following tables list the current supported memory types:

DDR2-400 Registered SDRAM Module Matrix						
DIMM Capacity	DIMM Organization	SDRAM Density	SDRAM Organization	# SDRAM Devices/rows/Ranks	# Address bits rows/Ranks/column	Ranked
256MB	32M x 72	256Mbit	32M x 8	9/1/4	13/2/10	Single Ranked
512MB	64M x 72	256Mbit	64M x 4	18/1/4	13/2/11	Single Ranked
512MB	64M x 72	256Mbit	32M x 8	18/2/4	13/2/10	Double Ranked
512MB	64M x 72	512Mbit	64M x 8	9/1/4	14/2/10	Single Ranked
1GB	128M x 72	512Mbit	128M x 4	18/1/4	14/2/11	Single Ranked
1GB	128M x 72	512Mbit	64M x 8	18/2/4	14/2/10	Double Ranked
1GB	128M x 72	1Gbit	128M x 8	9/1/8	14/3/10	Single Ranked
2GB	256M x 72	1Gbit	256M x 4	18/1/8	14/3/11	Single Ranked
2GB	256M x 72	1Gbit	128M x 8	18/2/8	14/3/10	Double Ranked
2GB	256M x 72	2Gbit	256M x 8	9/1/8	15/3/10	Single Ranked

3. Tested Memory

The following tables list DIMM devices tested to be compatible with the Intel® Storage Server SSR212MA or SSR212CC. The list of tested memory is periodically updated as qualified memory is added during the production life of the Intel product.

Memory modules not listed in the following tables have not been tested for compatibility and their use with the Storage Server SSR212MA or SSR212CC may result in unpredictable operation and data loss.

Caution: Third party memory vendors may use the same module part number with different DRAM vendors and die revisions. To insure proper system operation, verify that each DRAM vendor and die revision has been separately tested and qualified. Please notify CMTL if there is a discrepancy. This list is subject to change without notice.

Note: This list is not intended to be all-inclusive. It is provided as a convenience to Intel's general customer base, but Intel does not make any representations or warranties whatsoever regarding the quality, reliability, functionality, or compatibility of these memory modules.

Registered ECC, DDR2-400 DIMM Modules 256MB Size (32M x 72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
Samsung	M393T3253FG0-CCC Date Code: 0521	K4T56083QF-GCCC	Samsung		9/22/04		(32Mx8) [*] 9	x8SR	
Micron	MT9HTF3272Y-40EB2	MT47H32M8BP-37E	Micron		9/22/04	Yes	(32Mx8)[*] 9	x8SR	
Infineon	HYS72T32000HR-5-A	HYB18T256800AF5-A	Infineon		9/22/04	Yes	(32Mx8)[*] 9	x8SR	
+ATP Electronics	AH32K72N8BQC4M	MT47H32M8BP(FP)-37E rev	Micron	SH240N08K1	11/16/04		(32Mx8) [*] 9	x8SR	
+Buffalo*	D2R400A-ES256MBJ	MT47H32M8BP(FP)-5E rev B	Micron	2DRA18F-BA	12/7/04		(32Mx8) [*] 9	x8SR	
Samsung	M393T3253FZ0-CCC Date Code: 0521	K4T56083QF-ZCCC	Samsung		2/24/05	Yes	(32Mx8)[*] 9	x8SR	
+ATP Electronics	AH32K72N8BQC4S	K4T56083QF-GCD5 rev F	Samsung	SH240N08K1	5/4/05		(32Mx8) [*] 9	x8SR	
Samsung	M393T3253FG3-CCC	K4T56083QF-GCCC	Samsung		11/4/05		(32Mx8) [*] 9	x8SR	
Samsung	M393T3253FZ3-CCC	K4T56083QF-ZCCC	Samsung		11/4/05	Yes	(32Mx8)[*] 9	x8SR	
+Smart Modular Technologies	SB327RDR23283-5-I	HYB18T256800AF5 rev A	Infineon	0408 (240-11-4)	12/8/05	Yes	(32Mx8) [*] 9	x8SR	

Modules shaded in blue do not contain Lead.

Verify that the DRAM part number matches the DRAM on this list before purchasing.

**Registered, ECC, DDR2-400 DIMM Modules
512 MB Sizes (64Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Smart Modular Technologies	SM647RDR2648351A	HYB18T512800AC5 rev A	Infineon	P54G240NE BUB1RA rev A	11/4/04		(64Mx8)* 9	SR	
+Legacy Electronics Inc.	S506472J20A-50A	HYB18T256400AF5 rev A	Infineon	LE18DD2F2404RRH rev 1	11/11/04		(64Mx4)* 18	SR	
+ATP Electronics	AH64K72M4BQC4S	K4T56043QF-GCCC rev F	Samsung	SH240M04K1	10/28/04		(64Mx4)* 18	SR	
Kingston	KVR400D2R3/512	HYB18T512800AF5 rev A	Infineon	2025263-001.A00	10/28/04		(64Mx8)* 9	SR	
Samsung	M393T6453FG0-CCC Date Code: 0521	K4T56083QF-GCCC	Samsung		11/29/04		(32Mx8)* 18	DR	
+Wintec Industries	39C921284B-L	K4T51083QB-GCD5 rev B	Samsung	D2R872	12/9/04		(64Mx8)* 9	SR	
+Wintec Industries	39C921284B-GL	K4T51083QB-ZCD5 rev B	Samsung	D2R872 na	07/29/05		(64Mx8)* 9	SR	
Micron	MT9HTF6472Y-40EB2	MT47H64M8CB-5E	Micron		8/15/05	Yes	(64Mx8)* 9	SR	
+Dataram	DTM63312A	HYB18T512800AF5 rev A	Infineon	40042A rev A	9/12/05		(64Mx8)* 9	SR	
+Buffalo	D2R400A-E512MBJ	MT47H32M8BP(FP)-5E rev B	Micron	2DRB28F-BA	12/6/04		(32Mx8)* 18	DR	
Micron	MT18HTF6472Y-40EB2		Micron		12/13/04	Yes			
Hynix	HYMP564R728-E3AA	HY5PS12821-F-E3	Hynix		12/13/04		(64Mx8)* 9	SR	
+Apacer*	75.963A1.565	K4T51083QB-GCCC rev B	Samsung	48.16188.011 rev 1	12/20/04		(64Mx8)* 9	SR	
Infineon	HYS72T64001HR-5-A	HYB18T256400AF5-A	Infineon		1/31/05	Yes	(64Mx4)* 18	SR	
+Dataram	DTM63311C	K4T56043QF-GCCC rev F	Samsung	40011A rev A	1/31/05		(64Mx4)* 18	SR	
Samsung	M393T6553BZ0-CCC	K4T51083QB-ZCCC	Samsung		2/24/05	Yes	(64Mx8)* 9	SR	
Samsung	M393T6453FZ0-CCC Date Code: 0521	K4T56083QF-ZCCC	Samsung		2/24/05	Yes	(32Mx8)* 18	DR	
Samsung	M393T6450FZ0-CCC Date Code: 0521	K4T56043QF-ZCCC	Samsung		2/24/05	Yes	(64Mx4)* 18	SR	
+Apacer	75.963A1.573	K4T51083QB-ZCCC rev B	Samsung	48.16188.011 rev 1	3/1/05		(64Mx4)* 18	SR	
+Kingston	KVR400D2S8R3/512I	HYB18T512800AF37 rev A	Infineon	2025263-001.A00 rev A	4/27/05		(64Mx8)* 9	SR	
Samsung	M393T6553CZ0-CCC	K4T51083QC-ZCCC	Samsung		5/2/05	Yes	(64Mx8)* 9	SR	
+ATP Electronics	AH64K72N8BHC4S	K4T51083QB-GCCC rev B	Samsung	SH240N08K1	5/12/05		(64Mx8)* 9	SR	
+Legacy Electronics Inc.	L506472K20A-50A	G64Mx8DDR2	Legacy	LE9DD2F2408RRA rev A	6/7/05		(64Mx8)* 9	SR	

Registered, ECC, DDR2-400 DIMM Modules 512 MB Sizes (64Mx72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Apacer	76.92220.B07	K4T51083QB-ZCD5 rev B	Samsung	48.16188.011 rev 1	6/22/05		(64Mx8)*9	SR	
+Apacer	76.92220.B12	HYB18T512800AF5 rev A	Infineon	48.16188.011 rev 1	6/23/05		(64Mx8)*9	SR	
+Viking	VR5ER647218EBPL1	MT47H64M8CB-37E rev B	Micron	0000992A rev A	6/20/05		(64Mx8)*9	SR	
+Apacer	76.92220.B03	K4T51083QB-ZCCC rev B	Samsung	48.16188.011 rev 1	6/30/05		(64Mx8)*9	SR	
+Apacer	76.92220.B13	EDE5108AESK-5C-E rev E	Elpida	48.16188.011 rev 1	7/11/05		(64Mx8)*9	SR	
+Kingston	KVR400D2S8R3/512I	HYB18T512800AF37 rev A	Infineon	2025263-001.C00 na	7/5/05		(64Mx8)*9	SR	
Infineon	HYS72T64000HR-5-A	HYB18T512800AC5	Infineon		7/8/05	Yes	(64Mx8)*9	SR	
+Apacer	75.963A1.G01	EDE5108AGSE-5C-E rev G	Elpida	48.16188.011 rev 1	10/13/05		(64Mx8)*9	SR	
+Legacy Electronics Inc.	B557K4C2AAA-50	K4T51083QC-ZCCC rev C	Samsung	LE9DD2F2408 RRA rev A	10/13/05		(64Mx8)*9	SR	
Nanya Technology Corporation*	NT512T72U89A0BV-5A	NT5TU64M8AE-5A rev A	Nanya	NTPCB00020 P (0509) na	10/17/05	Yes	(64Mx8)*9	SR	
+Ventura Technology Group	D2-52KC53SV-333	K4T56043QF-ZCD5 rev F	Samsung	D2R472 na	9/30/05		(64Mx4)*18	SR	
+Kingston	KVR400D2S8R3/512I	NT5TU64M8AE-37B rev A	Nanya	2025263-001.C00 na	11/2/05		(64Mx8)*9	SR	
Samsung	M393T6450FZ3-CCC	K4T56043QF-ZCCC	Samsung		10/24/05	Yes	(64Mx4)*18	SR	
Samsung	M393T6553CZ3-CCC	K4T51083QC-ZCCC	Samsung		11/4/05	Yes	(64Mx8)*9	SR	
Samsung	M393T6453FG3-CCC	K4T56083QF-GCCC	Samsung		11/4/05		(32Mx8)*18	DR	
Samsung	M393T6453FZ3-CCC	K4T56083QF-ZCCC	Samsung		11/4/05	Yes	(32Mx8)*18	DR	
Samsung	M393T6450FG3-CCC	K4T56043QF-GCCC	Samsung		11/4/05		(64Mx4)*18	SR	
+ATP Electronics	AH64K72F8BHC4S	K4T51083QC-ZCD5 rev C	Samsung	SH240F08K1 na	12/05	Yes	(64Mx8)*9	SR	
+Apacer	75.963A1.G02	K4T51083QC-ZCD5 rev C	Samsung	48.16188.011 rev 1	12/05	Yes	(64Mx8)*9	SR	
+Smart Modular Technologies	SG647RDR264835-SC	K4T51083QC-ZCCC rev C	Samsung	M393T6553B G1 (KS-11A)	1/17/06	Yes	(64Mx8)*9	SR	
Hynix	HYMP564R72BP8-E3	HY5PS12821BFP-E3	Hynix		1/10/06	Yes	(64Mx8)*9	SR	

Registered, ECC, DDR2-400 DIMM Modules 512 MB Sizes (64Mx72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
Hynix	HYMP564R72P8-E3	HY5PS12821FP-E3	Hynix		1/10/06	Yes	(64Mx8)*9	SR	
+Legend	L64723C7-R41H2H1F	HY5PS12821FP-E3 rev 1st Gen.	Hynix	104 (0530,0534)	2/8/06	Yes	(64Mx8)*9	SR	
+Buffalo	D2R400A-ES512MBJ	MT47H64M8CB-5E rev B	Micron	2DRA18F-BAna	2/23/06	Yes	(64Mx8)*9	SR	
+Dataram	DTM63312B	NT5TU64M8AE-37B rev A	Nanya	40042A rev A	2/28/06	Yes	(64Mx8)*9	SR	
+Ventura Technology Group	D2-52KD65SV-333	K4T51083QC-ZCD5 rev C	Samsung	D2R18A na	3/14/06	Yes	(64Mx8)*9	SR	
Transcend Information	TS64MQR72V4J	K4T51083QC-ZCCC rev C	Samsung	09-2140 na	3/22/06	Yes	(64Mx8)*9	SR	

Modules shaded in blue do not contain Lead.

Verify that the DRAM part number matches the DRAM on this list before purchasing.

**Registered, ECC, DDR2-400 DIMM Modules
1GB Size (128M x 72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Smart Modular Technologies	SM1287RDR212435IA	HYB18T512400AC5 rev A	Infineon	P54G240NESU BRCC rev A	10/22/04		(128Mx4)*18	SR	
+Smart Modular Technologies	SM1287RDR212435SB	K4T51043QB-GCCC rev B	Samsung	P54G240NESU BRCC rev A	11/17/04		(128Mx4)*18	SR	
+Wintec Industries	39S931281A-L	HYB18T512800AF5 rev A	Infineon	D2R872	11/18/04		(64Mx8)*18	DR	
+ATP Electronics	AH28K72M4BHC4S	K4T51043QB-GCCC rev B	Samsung	SH240M04K1	11/23/04		(128Mx4)*18	SR	
+Legacy Electronics Inc.	S512872M20A-50A	HYB18T512400AF(C)5 rev A	Infineon	LE18DD2F2404RRH rev 1	11/24/04		(128Mx4)*18	SR	
+Smart Modular Technologies	SM1287RDR21243-5-I	HYB18T512400AC5 rev A	Infineon	240-13-4	11/30/04		(128Mx4)*18	SR	
+Dataram	DTM63310F	K4T51043QB-GCCC rev B	Samsung	40011A rev A	12/9/04		(128Mx4)*18	SR	
Samsung	M393T2953BG0-CCC	K4T51083QB-GCCC	Samsung		12/14/04		(64Mx8)*18	DR	
+Smart Modular Technologies	SM1287RDR21243-5-S	K4T51043QB-GCCC rev B	Samsung	M393T2950BG0	12/23/04		(128Mx4)*18	SR	
+Apacer	75.072A1.564	K4T51043QB-GCCC rev B	Samsung	48.16189.011 rev 1	12/21/04		(128Mx4)*18	SR	
+Smart Modular Technologies	SB1287RDR212435IA	HYB18T512400AF5 rev A	Infineon	PB54G240NESUBRCC1 rev A	1/7/05		(128Mx4)*18	SR	
Kingston	KVR400D2R3/1G	E5104AB-4A-E rev B	Elpida	2025248-001 rev 0.5	1/14/05		(128Mx4)*18	SR	
Netlist Inc*	NLD127R212038-D32KSB	K4T51043QB-GCCC rev B	Samsung	0208-10 rev A	2/2/05		(128Mx4)*18	SR	
Samsung	M393T2953BZ0-CCC	K4T51083QB-ZCCC	Samsung		2/24/05	Yes	(64Mx8)*18	DR	
+Smart Modular Technologies	SM1287RDR21243-5-H	HY5PS12421F-E3 rev A	Hynix	E72369	2/16/05		(128Mx4)*18	SR	
Samsung	M393T2950BG0-CCC Date Code: 0521	K4T51043QB-GCCC	Samsung		2/28/05		(128Mx4)*18	SR	
+Viking	VR5ER287214EB PL1	MT47H128M4BT-37E rev A	Micron	0001009A rev A	3/14/05		(128Mx4)*18	SR	
Samsung	M393T2953CZ0-CCC	K4T510830C-ZCCC	Samsung		3/22/05	Yes	(64Mx8)*18	DR	
Netlist Inc	NLD127R21203F-D32KSB	K4T51043QB-ZCCC rev B	Samsung	0208-10 rev A	3/16/05	Yes	(128Mx4)*18	x4SR	
+Legend	L12723C7-RCAH2HBF	HY5PS12821F-E3 rev A	Hynix	B62RRCA rev A	3/16/05		(64Mx8)*18	DR	
+Viking	VR5ER287214EB PL1	MT47H128M4BT-37E rev A	Micron	0001009A rev A	3/14/05		(128Mx4)*18	SR	
+Viking	VR5ER287218EB PL1	K4T51083QB-ZCD5 rev B	Samsung	0000992A rev A	3/16/05		(64Mx8)*18	DR	
Samsung	M393T2950BZ0-CCC Date Code: 0521	K4T51043QB-ZCCC	Samsung		4/14/05	Yes	(128Mx4)*18	SR	
Infineon	HYS72T128000H R-5-A	HYB18T512400AF5	Infineon		4/27/05	Yes	(128Mx4)*18	SR	
+Ventura Technology Group	D2-54KF53SV-333	K4T51043QB-ZCCC rev B	Samsung	D2R472	4/21/05		(128Mx4)*18	SR	

Registered, ECC, DDR2-400 DIMM Modules 1GB Size (128M x 72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Apacer	75.072A1.574	K4T51043QB-ZCCC rev B	Samsung	48.16189.011 rev 1	4/18/05		(128Mx4)*18	SR	
+Netlist, Incorporated	NLD127R212038-D32KIA	HYB18T5124 00AF5 rev A	Infineon	0208-10 rev A	4/21/05		(128Mx4)*18	SR	
+Kingston	KVR400D2S4R3/1GI	E5104AE-5C-E rev E	Elpida	2025248-001.B00	5/9/05		(128Mx4)*18	SR	
Transcend Information	TS128MQR72V4 K	K4T51043QB-GCCC rev B	Samsung	09-2090	5/5/05		(128Mx4)*18	SR	
Corsair	CM73DD1024R-400/S	K4T51043QB-ZCD5 rev B	Samsung	50-00129 rev A	5/25/05		(128Mx4)*18	SR	
+Wintec Industries	39S931341A-L	HYB18T5124 00AF5 rev A	Infineon	D2R472	6/1/05		(128Mx4)*18	SR	
+Apacer	78.01068.331	HYB18T5124 00AF5 rev A	Infineon	48.16189.011 rev 1	5/31/05		(128Mx4)*18	SR	
SimpleTech	ST72P4T128M-A05AU	K4T51043QB-ZCCC rev B	Samsung	E186014	5/27/05		(128Mx4)*18	SR	
+Legacy Electronics Inc.	B512872M20A-50A	K4T51043QB-GCCC rev B	Samsung	LE18DD2F2404 RRH rev A	6/14/05		(128Mx4)*18	SR	
+Apacer	76.02220.B11	K4T51043QB-ZCCC rev B	Samsung	48.16189.011 rev 1	6/27/05		(128Mx4)*18	SR	
+Viking	VR5ER287218EB PL3	MT47H64M8 CB-37E rev B	Micron	0000992A rev A	6/24/05		(64Mx8)*18	DR	
+Smart Modular Technologies	SB1287RDR2124 3-5-H	HY5PS12421 FP-E3 A 1st Generation	Hynix	E72369 na	7/14/05		(128Mx4)*18	SR	
+Apacer	76.02220.B06	HYB18T5124 00AF5 rev A	Infineon	48.16189.011 rev 1	7/12/05		(128Mx4)*18	SR	
+Wintec Industries	39C931344B-GL	K4T51043QB-ZCCC rev B	Samsung	D2R472 na	7/7/05		(128Mx4)*18	SR	
+Avant Technology	AVF7228R52E34 00F0-MTB	MT47H64M8 CB-37E rev B	Micron	50-1431-01B rev B	6/29/05		(64Mx8)*18	DR	
Samsung	M393T2950CZ0-CCC	K45T1043QC-ZCCC	Samsung		7/8/05	Yes	(128Mx4)*18	SR	
Infineon	HYS72T128020H R-5-A	HYB18T5128 00AF5-A	Infineon		7/25/05	Yes	(64Mx8)*18	DR	
+Smart Modular Technologies	SB1287RDR2124 3-5-E	E5104AB-4A-E rev B	Elpida	Z10 026A na	08/02/05		(128Mx4)*18	SR	
+Legacy Electronics Inc.	L512872M20A-50A	BGA128X4DD R2NC (DDR DAT)	Legacy	LE18DD2F2404 RRH rev A	08/17/05		(128Mx4)*18	SR	
Micron	MT18HTF12872Y-40EB3	MT47H64M8 BT-5E	Micron		8/19/05	Yes	(128Mx4)*18	SR	
+Kingston	KVR400D2S8R3/1GI	HYB18T1G80 0AF-5 rev A	Infineon	2025263-001.C00	8/30/05		(128Mx8)*9	SR	
+Dataram	DTM63327A	HYB18T5128 00AF5 rev A	Infineon	40056A rev A	9/16/05		(64Mx8)*18	DR	
+Wintec Industries	39931344B-L	K4T51043QB-GCCC rev B	Samsung	D2R472 na	9/22/05		(128Mx4)*18	SR	
Samsung	M393T2950CZ3-CCC	K4T51043QC-ZCCC	Samsung		9/30/05	Yes	(128Mx4)*18	SR	
+Corsair	CM73DD1024R-400/E	E5104AE-5C-E rev E	Elpida	50-00129 rev A	9/29/05		(128Mx4)*18	SR	

Registered, ECC, DDR2-400 DIMM Modules 1GB Size (128M x 72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Kingston	KVR400D2S4R3/1GI	HYB18T512400AF5 rev A	Infineon	2025248-001.B00 na	10/18/05		(128Mx4)*18	SR	
+Legacy Electronics Inc.	C517M7A2AHA-50	NT5TU128M4AE-5A rev A	Nanya	LE18DD2F2404RRH rev A	10/10/05		(128Mx4)*18	SR	
Nanya Technology Corporation	NT1GT72U4PA0BV-5A	NT5TU128M4AE-5A rev A	Nanya	NTPCB00019 (0519, 0515) na	10/21/05	Yes	(128Mx4)*18	SR	
+Legacy Electronics Inc.	B517M4C2AHA-50	K4T51043QC-ZCCC rev C	Samsung	LE18DD2F2404RRH rev A	10/27/05		(128Mx4)*18	SR	
+Smart Modular Technologies	SG1287RDR264835IA5	HYB18T512800AF5 rev A	Infineon	PG58G240NEBUB2RB rev A	11/4/05		(64Mx8)*18	DR	
+Smart Modular Technologies	SG1287RDR264835IA	HYB18T512800AF37 rev A	Infineon	PG58G240NEBUB2RB rev A	11/9/05		(64Mx8)*18	DR	
Hynix	HYMP512R72P8-E3		Hynix		10/24/05		(64Mx8)*18	DR	
Samsung	M393T2953CZ3-CCC	K4T510830C-ZCCC	Samsung		11/4/05	Yes	(64Mx8)*18	DR	
+Legacy Electronics Inc.	D2D1G400R72S4C3	HYB18T512400AF5 rev A	Infineon	240-13-5	12/20/05	Yes	(128Mx4)*18	SR	
+Apacer	75.072A1.G02	K4T51043QC-ZCD5 rev C	Samsung	48.16189.011 rev 1	12/23/05	Yes	(128Mx4)*18	SR	
+Smart Modular Technologies	SG1287RDR264835SC	K4T51083QC-ZCD5 rev C	Samsung	PG58G240NEBUB2RB rev A	1/5/06	Yes	(64Mx8)*18	DR	
+Kingston	KVR400D2S4R3/1GI	HYB18T512400AF37 rev A	Infineon	2025248-001.B00 na	1/12/06	Yes	(128Mx4)*18	SR	
Hynix	HYMP112R72P8-E3	HY5PS1G831FP-E3	Hynix		1/10/06	Yes	(128Mx8)*9	SR	
SimpleTech	ST72P4T128M-A05AU	K4T51043QC-ZCCC rev C	Samsung	D2R472 na	1/20/06	Yes	(128Mx4)*18	SR	
+Dataram	DTM63310J	NT5TU128M4AE-5A rev A	Nanya	40011A rev A	2/2/06	Yes	(128Mx4)*18	SR	
Hynix	HYMP512R72BP8-E3	HY5PS12821BFP-E3	Hynix		1/31/06	Yes	(64Mx8)*18		
Hynix	HYMP512R72BP4-E3	HY5PS12421BFP-E3	Hynix		1/31/06	Yes	(128Mx4)*18	SR	
Hynix	HYMP512R72P4-E3	HY5PS12421FP-E3	Hynix		1/31/06	Yes	(128Mx4)*18	SR	
Legend	L12723C7-R41H2M1F	HY5PS12421F-E3 rev 1st Gen.	Hyundai	104	2/14/06		(128Mx4)*18	SR	
+ATP Electronics	AH28K72M4BHC4S	K4T51043QC-ZCCC rev C	Samsung	SH240M04K2 na	2/17/06	Yes	(128Mx4)*18	SR	
+MDT Technologies	I924-402-18R	HYB18T512400AF5 rev A	Infineon	240-13-5 na	2/22/06	Yes	(128Mx4)*18	SR	
+Dataram	DTM63327B	NT5TU64M8AE-37B rev A	Nanya	40056A rev A	2/27/06	Yes	(64Mx8)*18	DR	

Registered, ECC, DDR2-400 DIMM Modules 1GB Size (128M x 72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Kingston	KVR400D2S8R3/1GI	E1108AA-5C-E rev A	Elpida	2025263-001.C00 na	3/2/06	Yes	(128Mx4)*18	SR	
+TRS	TRS31265	HYB18T512400AF5 rev A	Infineon	M0549LA1 rev 1	3/17/06	Yes	(128Mx4)*18	SR	
Transcend Information	TS128MQR72V4J	K4T51083QC-ZCD5 rev C	Samsung	09-2060 rev 1	3/24/06	Yes	(64Mx8)*18	DR	

Modules shaded in blue do not contain Lead.

Verify that the DRAM part number matches the DRAM on this list before purchasing.

**Registered, ECC, DDR2-400 DIMM Modules
2GB Size (256M x 72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Smart Modular Technologies	SB2567RDR212835IA	HYB18T512400AF5 rev A	Infineon	PB52G240NES UB1RJ	2/28/05		(128Mx4) *36	DR	
+ATP Electronics	AH56K72M4BJC4M	MT47H256M4BT-5E rev A	Micron	SH240M04K1	3/7/05		(256Mx4) *18	SR	
+ATP Electronics	AH56K72J4BHC4C	HYB18T512400AF5 rev A	Infineon	SH240J04K1	3/24/05		(128Mx4) *36	DR	
+Smart Modular Technologies	SM2567RDR22543-5-I	HYB18T1G400AF-5 rev A	Infineon	240-13-5	3/30/05		(256Mx4) *18	SR	
+Smart Modular Technologies	SM2567RDR22543-5-S	K4T1G044QM-ZCCC rev M	Samsung	M393T2950BG0	4/15/05		(256Mx4) *18	SR	
Netlist, Incorporated	NLD257R212038-D32KIA	HYB18T512400AF5 rev A	Infineon	0203-10 rev A	4/18/05		(128Mx4) *36	DR	
Infineon	HYS72T256000H R-5-A	HYB18T1G400AF-5	Infineon		5/4/05	Yes	(256Mx4) *18	SR	
+Kingston	KVR400D2D8R3/2GI	HYB18T1G800AF-5 rev A	Infineon	2025302-001.A00 na	08/11/05		(128Mx8) *18	DR	
Micron	MT36HTF25672Y-40EB1		Micron		8/19/05	Yes			
Samsung	M393T5750CZ0-CCC	K45T1043QC-ZCCC	Samsung		9/20/05	Yes	(128Mx4) *36	DR	
+Kingston	KVR400D2D4R3/2GI	E5104AE-5C-E rev E	Elpida	2025292-001.A00	5/3/05		(128Mx4) *36	DR	
+Smart Modular Technologies	SG2567RDR212835IA	HYB18T512400AF5 rev A	Infineon	PG52G240NES UB1RJ rev A	6/10/05		(128Mx4) *36	DR	
+Smart Modular Technologies	SG2567RDR212835IA	HYB18T512400AF5 rev A	Infineon	PG52G240NES UB1RJ rev A	6/10/05		(128Mx4) *36	DR	
+Apacer	76.A2220.B10	HYB18T512400AF5 rev A	Infineon	48.1A189.012 rev 2	6/16/05		(128Mx4) *36	DR	
+Dataram	DTM63309B	K4T51043QC-ZCCC rev C	Samsung	40040A rev A	7/25/05		(128Mx4) *36	DR	
+Wintec Industries	39C941441A-L	HYB18T1G400AF-5 rev A	Infineon	D2R472 na	7/1/05		(256Mx4) *18	SR	
+ATP Electronics	AH56K72M4BJC4C	HYB18T1G400AF-3.7 rev A	Infineon	SH240M04K1 na	10/5/05		(256Mx4) *18	SR	
+Smart Modular Technologies	SG2567RDR21283-5-H	HY5PS1G421MP-E3 rev A	Hynix	0518-1,-2,-3,-4,-6	10/10/05	Yes	(256Mx4) *18	SR	
+ATP Electronics	AH56K72M4BJC4C	HYB18T1G400AF-5 rev A	Infineon	SH240M04K1 na	10/31/05	Yes	(256Mx4) *18	SR	
Nanya Technology Corporation	NT2GT72U4NA1 BV-5A	NT5TU128M4AE-5A rev A	Nanya	NTPCB00037P (0514) na	10/19/05	Yes	(128Mx4) *36	DR	
Hynix	HYMP125R72P4-E3	HY5PS1G431FP-E3	Hynix		10/24/05		(256Mx4) *18	SR	
Samsung	M393T5750CZ3-CCC	K45T1043QC-ZCCC	Samsung		11/4/05	Yes	(128Mx4) *36	DR	
Samsung	M393T5660MZ3-CCC	K4T1G044QM-ZCCC	Samsung		11/4/05	Yes	(256Mx4) *18	SR	
+Kingston	KVR400D2D4R3/2GI	HYB18T512400AF5 rev A	Infineon	2025292-001.B00 na	11/11/05		(128Mx4) *36	DR	
+Legacy Electronics Inc.	B527M4C2BJA-50	K4T51043QC-ZCCC rev C	Samsung	LE36DD2F2404RRJ rev B	11/23/05		(128Mx4) *36	DR	

Registered, ECC, DDR2-400 DIMM Modules 2GB Size (256M x 72)									
Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	Lead Free	DRAM Organization	Rank	EOL
+Legacy Electronics Inc.	D2D2G400R72S4 C3	HYB18T1G400AF-5 rev A	Infineon	240-13-5	12/21/05	Yes	(256Mx4) *18	SR	
+Legend	L25723C7-R41H2W2F	HY5PS1G421MP-E3 rev 1st Gen.	Hynix	0536	1/17/06	Yes	(256Mx4) *18	SR	
Samsung	M393T5660AZ3-CCC	K4T1G044QA-ZCCC	Samsung		12/13/05	Yes	(256Mx4) *18	SR	
+Kingston	KVR400D2D4R3/2GI	HYB18T512400AF3 7 rev A	Infineon	2025292-001.B00 na	1/26/06	Yes	(128Mx4) *36	DR	
Hynix	HYMP525R72BP 4-E3	HY5PS12421BFP-E3	Hynix		1/31/06	Yes	(128Mx4) *36	DR	
Hynix	HYMP125R72P8-E3	HY5PS1G831FP-E3	Hynix		1/31/06	Yes	(128Mx8) *18		
+MDT Technologies	I948-402-18R	HYB18T1G400AF-5 rev A	Infineon	240-13-5 na	2/21/06	Yes	(256Mx4) *18	SR	
+Legacy Electronics Inc.	L527R5A2AHA-50X	256MX4DDR2MDT rev A	Legacy	LE18DD2F2404 RRH rev A	3/7/06		(256Mx4) *18	SR	
+Kingston	KVR400D2D8R3/2GI	E1108AA-5C-E rev A	Elpida	2025302-001.A00 na	3/10/06	Yes	(128Mx4) *36	DR	

Modules shaded in blue do not contain Lead.

Verify that the DRAM part number matches the DRAM on this list before purchasing.

4. Sales Information

Vendor Name	Web URL	Vendor Direct Sales Info
ATP Electronics	http://www.atpinc.com/	Albert Chung Tel: (1) 408-732-5831, Ext 5858 Fax: (1) 408-732-5055 sales@atpinc.com
ATP Electronics -- Taiwan Inc.	http://www.atpinc.com/	Patty Kuo Tel 011-886-2-2659-6368 Fax 886-2-2659-4982
Avant Technology	http://www.avanttechnology.com	Brad Scoggins Phone: (512)491-7411 Fax: (512)491-7412 brads@avanttechnology.com
Aved Memory Products	http://www.avedmemory.com/	
Buffalo Technology	http://www.buffalotech.com/	(800) 967-0959 memory@buffalotech.com
Centon Electronics	http://www.centon.com	Tel: 949-855-9111 Fax: 949-855-6035
Corsair	http://www.corsairmicro.com/	Tel: 510-657-8747 Fax: 510-657-8748
Dane-Elec	http://www.dane-memory.com/	Michal Hassan @ (949)450-2941 or email @ Michal@Dane-memory.com
Dataram	http://www.dataram.com/	Paul Henke, 800-328-2726 x2239 in USA 609-799-0071 phenke@dataram.com
GoldenRAM	http://www.goldenram.com	Jason M. Barrette @ 800-222-861 x7546 jasonb@goldenram.com or Michael E. Meyer @800-222-8861 x7512 michaelm@goldenram.com
Hitachi	http://semiconductor.hitachi.com/pointer/	
Hyundai/Hynix Semiconductor	http://www.hea.com/	
Infineon	http://www.infineon.com/business/distribut/index.htm	
ITAUCOM	http://www.itauc.com.br	
JITCO CO LTD	http://www.jitco.net/	Seong Jeon Tel: 82-32-817-9740 s.jeon@jitco.net
Kingston	http://www.kingston.com	US.- Call (877) 435-8726 Asia – Call 886-3-564-1539 Europe – Call +44-1932-755205
Legacy Electronics Inc.	http://www.legacyelectronics.com	U.S. Contact: Gary Ridenour, 949-498-9600, Ext 350 European Contact: 49 89 370 664 11
Legend	http://www.legend.com.au	
Micron	http://silicon.micron.com/mktg/ http://silicon.micron.com/mktg/mbqual/qual_data.cfm	
MSC Vertriebs GmbH	http://www.msc-ge.com	William Perrigo 49-7249-910-417 Fax: 49-7249-910-229 wpe@msc-ge.com
Nanya Technology	http://www.ntc.com.tw	Winson Shao 886-3-328-1688, Ext 6018 winsonshao@ntc.com.tw

Vendor Name	Web URL	Vendor Direct Sales Info
Netlist, Inc	http://www.netlistinc.com	Christopher Lopes 949.435.0025 tel 949.435.0031 fax sales@netlistinc.com
Peripheral Enhancements	http://www.peripheral.com/	
Samsung	http://www.korea.samsungsemi.com/locate/buy/list_na.html	For US customers go to: http://www.mymemorystore.com/
Silicon Tech	http://www.silicontech.com/contact/salescontacts.shtml	
Simple Tech	http://www.simpletech.com	Ron Darwish @ (949) 260-8230 or email @ Rdarwish@Simpletech.com
SMART Modular Technologies	http://www.smartm.com/channel	Gene Patino (949) 439-6167 Gene.Patino@Smartm.com
Swissbit	http://www.swissbit.com	Tony Cerreta Tel: 914-935-1400 x240 Fax: 914-935-9865 tony.cerreta@swissbitna.com
TechnoLinc Corporation	http://www.technolinc.com	David Curtis 510-445-7400 davidc@technolinc.com
TRS* Tele-Radio-Space GmbH	http://www.certified-memory.com http://www.certified-memory.de	Vendor Direct Sales Info: Andreas Gründl, Pho.: +49(0)89/94553234, Fax.: +49(0)89/94553293, agruendl@trs-space.de
Unigen	http://www.unigen.com	
Ventura Technology Inc	http://www.venturatech.com	Don Hummel @ 805-581-0800 x 108 or email @ don@venturatech.com
Viking InterWorks	http://www.vikinginterworks.com	
Virtium Technology Inc	http://www.virtium.com	Tod Skelton @ (949) 460-0020 ext. 146 or email @ tod_skelton@virtium.com
Legend	http://www.legend.com.au	Tel: 800-338-2361 Fax: 949-459-8577 orderdesk@vikingcomponents.com
Wintec Industries	http://www.wintecindustries.com	Tel 510-360-6300 Fax 510-770-9338

5. CMTL* (Computer Memory Test Labs)

CMTL is a privately owned and operated memory testing organization responsible for testing a broad range of memory products. Memory devices tested by CMTL must undergo a rigorous battery of tests to ensure that the product will perform the intended server functions. Memory capability is a major factor your customers consider. CMTL has the ability to test and certify memory on Intel-based server platforms. The list of memory modules, which have undergone testing through the CMTL facility, should be referenced when considering modules for integration into this Intel server product. Stringent standards with regard to manufacturing procedures and quality must be met to pass the exacting tests required for qualification through the independent testing facility. Testing is performed by CMTL with Intel server products and test procedures defined by Intel's Memory Qualification Lab. Intel routinely audits the CMTL facility to ensure all procedures, process handling, and testing methodologies are met.

IMPORTANT NOTE

DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation. Intel recommends similar manufacturer and similar speeds in each Rank on the memory module. Mixing of dissimilar memory manufacturer devices or dissimilar memory device speeds is not recommended. This document contains information which is the proprietary property of Intel Corporation. Nothing in this document constitutes a guaranty, warranty, or license, express or implied. Intel has tested the following DIMMs for minimum electrical and functional compatibility with the Intel® Server RAID Controller. This listing is not intended to be all inclusive; it only represents the DIMMs Intel or CMTL has tested. Users of this list are reminded to check with the DIMM manufacturer or Distributor to ensure that a particular DIMM model is adequate for the intended purpose on the Intel® Server RAID Controller. Intel provides no indemnities for and expressly disclaims all liabilities for any and all such guaranties, representations, and warranties (oral or written) whether express or implied, related to DIMMs in a Intel® Server RAID Controller product, including without limitation to: fitness for a particular purpose; merchantability; noninfringement of intellectual property or other rights of any third party or of Intel. The reader is advised that third parties may have intellectual property rights which may be relevant to this document and the technologies discussed herein, and is advised to seek the advice of competent legal counsel, without obligation of Intel. Intel retains the right to make changes to this document at any time, without notice. Intel makes no warranty or representation with respect to the use of this document or reliance by the reader upon its contents, and assumes no responsibility for any errors which may appear in the document nor does it make a commitment to update the information contained herein.

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