Intel® Server System SC5400RA
Tested Memory Report

Revision 21.0

November 2008

Revision History

Date	Rev	Modifications
Nov/06	1.0	Initial release.
Jan/07	2.0	Added Hynix 512MB parts. Added Micron 1GB parts. Added Qimonda 2GB part. (In shaded area)
Feb/07	3.0	Added Hynix and Qimonda 512MB parts. (In shaded area)
Feb/07	4.0	Added Qimonda 512MB parts. (In shaded area)
Feb/07	5.0	Added Qimonda and Samsung 512MB parts. Added Micron, Qimonda, and Samsung 1GB parts. Added Kingston, Micron, and Qimonda 2GB parts. Updated vendor contact information. (In shaded area)
Mar/07	6.0	Updated contact information. Added Kingston 512MB and 2GB parts. (In shaded area)
Apr/07	7.0	Added Micron 512MB parts. Added Micron and Kingston 1GB parts. Added Kingston, Qimonda, Samsung, and ATP Electronics 2GB parts. Added Micron 4GB parts. (In shaded area)
May/07	8.0	Added Smart, Micron, and ATP Electronics 1GB parts. Added Micron and Kingston 2GB parts. (In shaded area)
May/07	9.0	Additional memory parts added. (In shaded area)
June/07	10.0	Additional memory parts added. (In shaded area)
July/07	11.0	Additional memory parts added. (In shaded area)
Aug/07	12.0	Additional memory parts added. (In shaded area)
Oct/07	13.0	Updated some contact information. Additional memory parts added. (In shaded area)
Oct/07	14.0	Removed incorrect part number.
Nov/07	15.0	Added an AMB revision notes. Added additional memory parts (in shaded area).
Jan/08	16.0	Removed modules built with Qimonda C1 stepping AMBs. Added additional memory parts (in shaded area).
Mar/08	17.0	Added additional memory parts (in shaded area).
June/08	18.0	Added additional memory parts (in shaded area).
June/08	19.0	Added additional memory parts (in shaded area).
Nov 08	20.0	Added additional memory parts (in shaded area).
Nov 08	21.0	Added additional memory parts (in shaded area).

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The Intel® Server System SC5400RA may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

* Other brands and names are the property of their respective owners.

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 is NOT recommended.*

Table of Contents

Overview of Memory Testing

The following test processes are used to qualify Dual In-Line Memory Modules (DIMMs) for use with the Intel® Server System SC5400RA. 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 Report. 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 boards, workstation boards, 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.

Note: Memory qualification for main memory is done by testing identical memory modules in all DIMM slots. Memory qualification does not include testing of mixed DIMM type and/or vendors. Mixing of DIMM type and/or vendors is not recommended.

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 is 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 and at room temperature.

1.3 Advanced functional testing

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.

1.4 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 Information:

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

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

Intel® Server System SC5400RA Memory Sub-system

The Intel® Server System SC5400RA main memory subsystem was designed to support Fully Buffered Dual In-line (FBD) Registered DDR2-533 and DDR2-667 FBDIMM memory ECC Synchronous Dynamic Random Access Memory (SDRAM). Other industry naming conventions for DDR2-533 includes PC2-4200, and DDR2-667 includes PC2-5300.

Note: Only DDR2 DIMMs that are Fully Buffered is supported on these server boards.

This server board provides 16 DIMMs slots. It is capable of supporting a minimum of 512MBs using a single 512MB FBDIMM, and a maximum of up to 64GB. Supported FBDIMM capacities for main memory include: 512MB, 1GB, 2GB, and 4GB.

Supported FBDIMM capacities for main memory include: 256MB, 512MB, 1GB, 2GB, and 4GB.

1.1 Main Memory Population

The Intel® Server System SC5400RA supports two memory riser cards. Each memory riser card has 8 eight DIMM, grouped into four DIMM channels for main memory. DIMMs within each bank should be identical (same manufacturer, CAS latency, number of rows, columns and devices, timing parameters etc.). Although DIMMs within a bank must be identical, the BIOS supports various DIMM sizes and configurations allowing memory between banks to be different. Memory sizing and configuration is guaranteed only for qualified DIMMs approved by Intel.

DIMM population rules depend on the operating mode of the memory controller, which is determined by the number of DIMMs installed. DIMMs must be populated in pairs. DIMM pairs are populated in the following DIMM slot order: A1 & B1, C1 & D1, A2 & B2, C2 & D2, and so on. DIMMs within a given pair must be identical with respect to size, speed, and organization. However, DIMM capacities can be different between different DIMM pairs.

For example, a valid mixed DIMM configuration may have 512MB DIMMs installed in DIMM Slots A1 & B1, and 1GB DIMMs installed in DIMM slots C1 & D1.

1.1.1 Memory Sub-system

The MCH masters four fully-buffered DIMM (FBD) memory channels. FBD memory utilizes a narrow high-speed, frame-oriented interface referred to as a channel. The four FBD channels are organized into two branches, with two channels on each branch. Each branch is supported by a separate memory controller. The two channels on each branch operate in lock-step to increase FBD bandwidth.

The four channels are routed to sixteen DIMM sockets and are capable of supporting registered DDR2-533 and DDR2-667 FBDIMM memory (stacked or unstacked). The read bandwidth of each FBDIMM channel is 4.25 GB/s for DDR2-533 FBDIMM memory, which gives a total read bandwidth of 17 GB/s for four DIMM channels. The read bandwidth of each FBDIMM channel is 5.35 GB/s for DDR2-667 FBDIMM memory, which gives a total read bandwidth of 21.4 GB/s for four DIMM channels.

The Intel® Server System SC5400RA supports two DIMM riser cards. Each DIMM riser card supports eight DIMM sockets, for total of sixteen DIMM sockets.

FBD memory channels are organized into two branches for support of RAID 1 (mirroring). A pair of channels becomes a branch in which Branch 0 consists of channels A and B, and Branch 1 consists of channels C and D. Branch 0 is routed to DIMM riser card 1 and Branch 1 is routed to DIMM riser card 2 (closest to the edge of the server board).

To boot the system, the system BIOS on the server board uses a dedicated I^2C bus to retrieve DIMM information needed to program the MCH memory registers. The following figure and table provides the I^2C addresses for each DIMM socket and it identifies the channels on each DIMM riser card.

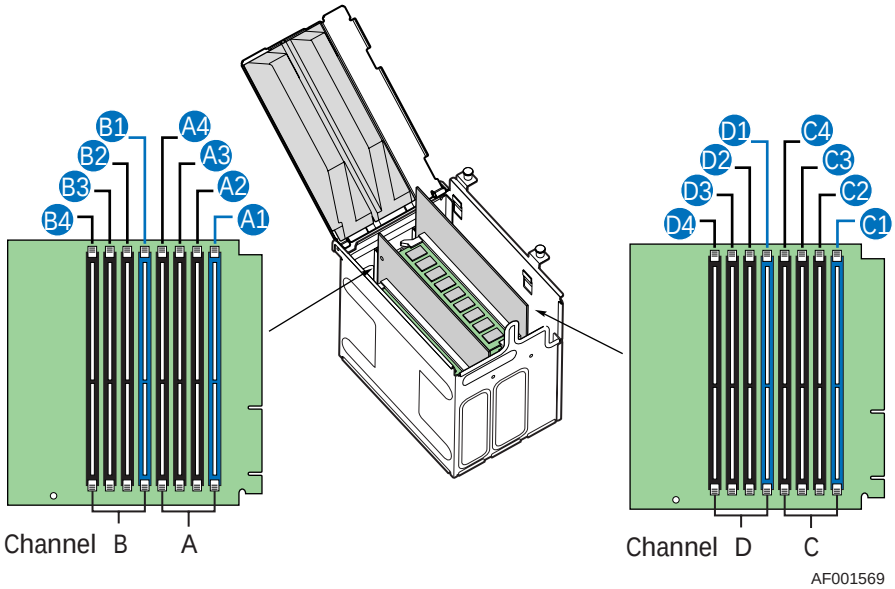

Table 1. I^2C Addresses for Memory Module SMB

Riser Card 1		Riser Card 2	
Device	**Address**	**Device**	**Address**
DIMM A1	0xA0	DIMM C1	0xA0
DIMM A2	0xA2	DIMM C2	0xA2
DIMM A3	0xA4	DIMM C3	0xA4
DIMM A4	0xA6	DIMM C4	0xA6
DIMM B1	0xA0	DIMM D1	0xA0
DIMM B2	0xA2	DIMM D2	0xA2
DIMM B3	0xA4	DIMM D3	0xA4
DIMM B4	0xA6	DIMM D4	0xA6

The following table lists the current supported memory types:

FBDIMM-533 CL4 & FBDIMM-667 CL5 Memory Matrix						
DIMM Capacity	**DIMM Organization**	**SDRAM Density**	**SDRAM Organization**	**# SDRAM Devices/rows/Ranks**	**# Address bits rows/Ranks/column**	**Ranked**
256MB	32M x72	256Mbit	64M x 4		13/11/2	
256MB	32M x72	256Mbit	32M x 8		13/10/2	
512MB	64M x72	256Mbit	128M x 4		13/12/2	
512MB	64M x72	256Mbit	64M x 8		13/11/2	
512MB	64M x72	512Mbit	128M x 4		14/11/2h	
512MB	64M x72	512Mbit	64M x 8		14/10/2	
1GB	128M x 72	512Mbit	256M x 4		14/12/2	
1GB	128M x 72	512Mbit	128M x 8		14/11/2	
1GB	128M x 72		256M x 4		14/11/3	
1GB	128M x 72		128M x 8		14/10/3	
2GB	256M x72		512M x 4		15/11/3	
2GB	256M x72		256M x 8			
4GB						

Intel® Server System SC5400RA Main Memory Tested

The following tables list DIMM devices tested to be compatible with the Intel® Server System SC5400RA. The list of tested memory is periodically updated as qualified memory is added during the production life of the Intel product.

Intel strongly recommends the use of ECC memory in all server products.

Memory modules not listed in the following tables have not been tested for compatibility and their use with the Intel® Server System SC5400RA 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.

Intel® Server System SC5400RA

Fully Buffered ECC, DDR2-533 DIMM Modules
512 MB Sizes (64Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Hynix	HYMP564F72 BP8D2-C4	HY5PS12821BFP-C4	Hynix		IDT	1.5	FDHS	(64Mx8)*9	1	1/24/07

Fully Buffered ECC, DDR2-667 DIMM Modules
512 MB Sizes (64Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Samsung	M395T6553CZ 4-CE61	K4T51083QC	Samsung		IDT	1.5	FDHS	(64Mx8)*18	2	11/10/06
Qimonda	M395T6553CZ 4-CE60	K4T51083QC	Qimonda		Intel	GB C0[1]	FDHS	(64Mx8)*9	1	11/10/06
Hynix	HYMP564F72 BP8D2-Y5	HY5PS12821BFP-Y5	Hynix		IDT	1.5	FDHS	(64Mx8)*9	1	1/16/07
Hynix	HYMP564F72 BP8N2-Y5	HY5PS12821BFP-Y5	Hynix		Intel	GB C0[1]	FDHS	(64Mx8)*9	1	1/16/07
Hynix	HYMP564F72 BP8D2-Y5	HY5PS12821BFP-Y5	Hynix		IDT	1.5	FDHS	(64Mx8)*9	1	1/16/07
Hynix	HYMP564F72 BP8N2-Y5	HY5PS12821BFP-Y5	Hynix		Intel	GB C0[1]	FDHS	(64Mx8)*9	1	1/16/07
Qimonda	HYS72T64400 HFD-3S-B	HYB18T512800AF -3S-B	Qimonda		IDT	C1	FDHS	(64Mx8)*9	1	2/9/07
Qimonda	HYS72T64400 HFN-3S-B	HYB18T512800AF -3S-B	Qimonda		Intel	D1	FDHS	(64Mx8)*9	1	2/9/07
Qimonda	HYS72T64400 HFN-3S-A	HYB18T512800AF	Qimonda		Intel	GB C0[1]	FDHS	(64Mx8)*9	1	2/26/07
Samsung	M395T6553EZ 4-CE65	K4T51083QE	Samsung		Intel	GB D1	FDHS	(64Mx8)*9	1	2/26/07
Kingston	KVR667D2S8 F5/512I	E5108AGBG-6E-E rev G	Elpida	2025285-002.A00 na	Intel	D1	Foxconn	(64Mx8)*9	1	3/19/07
Micron	MT9HTF6472 FY-667B4E3	MT47H64M8CB-3	Micron		Intel	GB C0[1]	FDHS	(64Mx8)*9	1	3/28/07
Micron	MT9HTF6472 FY-667D5E4	MT47H64M8-3	Micron		Intel	GB D1	FDHS	(64Mx8)*9	1	3/28/07
Kingston	KVR667D2S8 F5/512I	NT5TU64M8BE-3C rev B	Nanya	2025285-002.A00 na		D1	Foxconn	(64Mx8)*9	1	5/22/07
Crucial Technology	CT6472AF667 .9FD5D4	MT47H64M8B6-3:D	Micron		IDT	C1	FDHS	(64Mx8)*9	1	6/18/07
Crucial Technology	CT6472AF667 .9FD5E4	MT47H64M8B6-3:D	Micron		Intel	GB D1	FDHS	(64Mx8)*9	1	6/18/07
Micron	MT9HTF6472 FY-667D5D4	MT47H64M8B6-3:D	Micron		IDT	C1	FDHS	(64Mx8)*9	1	6/18007

[1] The GB C0 AMB revision does not support closed-loop throttling.

Fully Buffered ECC, DDR2-667 DIMM Modules 512 MB Sizes (64Mx72)										
Manufacturer	**Part Number**	**DRAM Part Number**	**DRAM Vendor**	**PCB Part Number**	**AMB Vendor**	**AMB Revision**	**Heat-sink Vendor**	**DRAM Organization**	**Rank**	**Date**
Qimonda	HYS72T64400 HFE-3S-B	HYB18T512800AF	Qimonda		NEC	B5+	FDHS	(64Mx8)*9	1	6/18/07
Samsung	M395T6553EZ 4-CE66	K4T51083QE-ZCE6	Samsung		IDT	C1	FDHS	(64Mx8)*9	1	6/18/07
Hynix	HYMP564F72 BP8D3-Y5	HY5PS12821BFP-Y5	Hynix		IDT	C1	FDHS	(64Mx8)*9	1	1/7/08
Hynix	HYMP564F72 BP8N3-Y5	HY5PS12821BFP-Y5	Hynix		Intel	GB D1	FDHS	(64Mx8)*9	1	1/7/08

(+) This vendor is part of the CMTL Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Note: The use of x4 FBDIMMs will only be supported with the server system operating in “Performance” mode (default). The use of x4 FBDIMMs while the server system is configured to operate in “Acoustics” mode is not supported.

Intel® Server System SC5400RA

Fully Buffered ECC, DDR2-667 DIMM Modules

1 GB Sizes (128Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Samsung	M395T2953CZ4-CE60	K4T51083QC	Samsung		Intel	GB C0[1]	FDHS	(64Mx8)*18	2	10/17/06
Samsung	M395T2953CZ4-CE61	K4T51083QC	Samsung		IDT	1.5	FDHS	(64Mx8)*18	2	10/17/06
Micron	MT18HTF12872FDY-667D5E3	MT47H64M8B6-3	Micron		Intel	GB C0[1]	FDHS	(64Mx8)*18	2	1/16/07
Micron	MT18HTF12872FDY-667B5E3	MT47H64M8CB-3	Micron		Intel	GB C0[1]	FDHS	(64Mx8)*18	2	1/16/07
Micron	MT18HTF12872FDY-667D6E4	MT47H64M8-3	Micron		Intel	GB D1	FDHS	(64Mx8)*18	2	2/26/07
Qimonda	HYS72T128420HFN-3S-B	HYB18T512800AF-3S-B	Qimonda		Intel	GB D1	FDHS	(64Mx8)*18	2	2/26/07
Samsung	M395T2953EZ4-CE65	K4T51083QE	Samsung		Intel	GB D1	FDHS	(64Mx8)*18	2	2/26/07
Micron	MT9HTF12872FY-667E1N6	MT47H129M8HQ-3:E	Micron		NEC	B5+	FDHS	(128Mx8)*9	1	3/28/07
Kingston	KVR667D2D8F5/1GI	E5108AGBG-6E-E rev G	Elpida	2025286-002.A00 na	Intel	D1	Foxconn	(64Mx8)*18	2	4/3/07
Micron	MT9HTF12872FY-667E1E4	MT47H128M8HQ-3:E	Micron		Intel	GB D1	FDHS	(128Mx8)*9	1	4/9/07
Micron	MT9HTF12872FY-667E1D4	MT47H128M8HQ-3:E	Micron		IDT	C1	FDHS	(128Mx8)*9	1	4/9/07
ATP Electronics	AP28K72S8BHE6S	K4T51083QE-ZCE6 rev E	Samsung	SP240S08K1 na	NEC	B5[2]	Foxconn	(64Mx8)*18	2	4/07/07
Smart Modular Technologies	SG1287FBD64852IBD5	HYB18T512800BF3S rev B	Qimonda	PG58G240NFBUB4RBS rev A	IDT	A1.5	Foxconn	(64Mx8)*18	2	4/20/07
Micron	MT18HTF12872FY-667D6E4	MT47H128M4	Micron		Intel	GB D1	FDHS	(128Mx4)*18	1	5/1/07
Smart Modular Technologies	SG1287FBD64852-HB	HY5PS12821CFP-Y5 rev C	Hynix	KS-11 (0646-3F)	IDT	A1.5	Hynix	(64Mx8)*18	2	4/30/07
Kingston	KVR667D2D8F5/1GI	NT5TU64M8BE-3C rev B	Nanya	2025286-002.A00 na		D1	Foxconn	(64Mx8)*18	2	5/22/07
Crucial Technology	CT12872AF667.18FD6D4	MT47H64M8B6-3:D	Micron		IDT	C1	FDHS	(64Mx8)*18	2	6/18/07
Crucial Technology	CT12872AF667.18F4D6D4	MT47H128M4B6-3:D	Micron		IDT	C1	FDHS	(128Mx4)*18	1	6/18/07
Crucial Technology	CT12872AF667.9FE1E4	MT47H128M8HQ-3:E	Micron		Intel	GB D1	FDHS	(128Mx8)*9	1	6/18/07
Crucial Technology	CT12872AF667.18FD6E4	MT47H64M8B6-3:D	Micron		Intel	GB D1	FDHS	(64Mx8)*18	2	6/18/07

[1] The GB C0 AMB revision does not support closed-loop throttling.

[2] This part may show voltage errors in the System Event Log (SEL) during boot. These errors will not affect system operation and can be ignored.

Fully Buffered ECC, DDR2-667 DIMM Modules 1 GB Sizes (128Mx72)										
Manufacturer	**Part Number**	**DRAM Part Number**	**DRAM Vendor**	**PCB Part Number**	**AMB Vendor**	**AMB Revision**	**Heat-sink Vendor**	**DRAM Organization**	**Rank**	**Date**
Crucial Technology	CT12872AF667.18F4D6E4	MT47H128M4B6-3:D	Micron		Intel	GB D1	FDHS	(128Mx4)*18	1	6/18/07
Crucial Technology	CT12872AF667.9FE1D4	MT47H128M8HQ-3:E	Micron		IDT	C1	FDHS	(128Mx8)*9	1	6/18/07
Crucial Technology	CT12872AF667.9FE1N6	MT47H128M8HQ-3:E	Micron		IDT	C1	FDHS	(128Mx8)*9	1	6/18/07
Micron	MT18HTF12872FDY-667D6D4	MT47H64M8B6-3:D	Micron		IDT	C1	FDHS	(64Mx8)*18	2	6/18/07
Micron	MT18HTF12872FY-667D6D4	MT47H128M4B6-3:D	Micron		IDT	C1	FDHS	(128Mx4)*18	1	6/18/07
Qimonda	HYS72T128420HFE-3S-B	HYB18T512800BF	Qimonda		NEC	B5+	FDHS	(64Mx8)*18	2	6/18/07
Qimonda	HYS72T128520HFD-3S-B	HYB18T512800BF	Qimonda		IDT	C1	FDHS	(64Mx8)*18	2	6/18/07
Ventura Technology Group	D2-54VD80SIV-555	K4T51083QE-ZCE6 rev E	Samsung	D2F28B na	IDT	A1.5	AVC	(64Mx8)*18	2	7/18/07
Samsung	M395T2953EZ4-CE66	K4T51083QE-ZCE6	Samsung		IDT	C1	FDHS	(64Mx8)*18	2	6/18/07
Smart Modular Technologies	SG1287FBD64852-SEI	K4T510830QE-ZCE6 rev E	Samsung	M395T2953EZ0 na	IDT	C1	Foxconn	(64Mx8)*18	2	9/14/07
Apacer	75.063AI.G00	K4T51083QE-ZCE6 rev E	Samsung	48.16203.095 rev 5	Intel	D1	AVC	(64Mx8)*18	2	9/21/07
Kingston	KVR667D2D8F5/1GI	HYB18T512800BF-3S rev B	Qimonda	2025286-002.A00 na	Intel	D1	Foxconn	(64Mx8)*18	2	10/5/07
Smart Modular Technologies	SG1287FBD64852SEC1	K4T51083QE-ZCE6 rev E	Samsung	PG58G240NFBUB4RBS rev A	IDT	C1	Foxconn	(64Mx8)*18	2	10/11/07
Smart Modular Technologies	SG1287FBD64852IBDC	HYB18T512800BF3S rev B	Qimonda	PG58G240NFBUB4RBS rev A	IDT	C1	Foxconn	64M x 8		10/22/07
Hynix	HYMP512F72CP8D3-Y5	HY5PS12821CFP-Y5	Hynix		IDT	C1	FDHS	(64Mx8)*18	2	1/7/08
Avant Technology	AVF7228B52E5667F1NYBP-IS	NT5TU64M8BE-25C rev B	Nanya	D2F28B rev B	IDT	C1	Foxconn	64M x 8	2	5/27/08
Avant Technology	AVF7228B52E5667F1ELJP-IS	EDE5108AJBG-8E-E rev J	Elpida	D2F28B rev B	IDT	C1	Foxconn	64M x 8	2	06/02/08
TRS	TRS32403X	K4T1G084QQ-HCE6 rev Q	Samsung	M395T6553EZ0-P150 rev 4	IDT	C1	Samsung	128M x 8	1	10/10/08
TRS	TRS32400X	HY5PS1G831CFP-Y5 rev C	Hynix	0806-2DC	IDT	C1	Hynix	128M x 8	1	10/16/08

(+) This vendor is part of the CMTL Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Note: The use of x4 FBDIMMs will only be supported with the server system operating in “Performance” mode (default). The use of x4 FBDIMMs while the server system is configured to operate in “Acoustics” mode is not supported.

Intel® Server System SC5400RA

Fully Buffered ECC, DDR2-667 DIMM Modules

2 GB Sizes (256Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Qimonda	HYS72T256420 HFD-3S-A		Qimonda		IDT	1.5	HS	(128Mx4)*36	2	11/10/06
Samsung	M395T5750CZ 4-CE61	K4T51043QC	Samsung		IDT	1.5	FDHS	(128Mx4)*36	2	11/14/06
Qimonda	HYS72T256420 HFD-3S-A	HYB18T512400 AF-3S-A	Qimonda		IDT	1.5	FDHS	(128Mx4)*36	2	1/15/07
Kingston	KVR667D2D4F 5/2GI (INT/ELP)	E5104AG-6E-E	Elpida		Intel	D1	FDHS	(128Mx4)*36	2	2/26/07
Micron	MT36HTF2567 2FY-667D1E3	MT47H128M4B6 -3	Micron		Intel	GB C0[1]	FDHS	(128Mx4)*36	2	2/26/07
Qimonda	HYS72T256420 HFD-3S-B	HYB18T512400 AF-3S-B	Qimonda		IDT	1.5	FDHS	(128Mx4)*36	2	2/26/07
Qimonda	HYS72T256420 HFN-3S-B	HYB18T512400 AF-3S-B	Qimonda		Intel	GB D1	FDHS	(128Mx4)*36	2	2/26/07
Kingston	KVR667D2D4F 5/2GI	HYB18T512400 BF3S rev B	Qimonda	2025372-002.A00 na	Intel	D1	Foxconn	(128Mx4)*36	2	3/14/07
Kingston	KVR667D2D4F 5/2GI	NT5TU128M4AE -3C rev A	Nanya	2025372-002.A00 na	Intel	D1	Foxconn	(128Mx4)*36	2	3/19/07
Kingston	KVR667D2D4F 5/2GI	HYB18T512400 AF3S rev A	Qimonda	2025372-002.A00 na	Intel	D1	Foxconn	(128Mx4)*36	2	04/03/07
ATP Electronics	AP56K72G4BH E6S	K4T51043QE-ZCE6 rev E	Samsung	SP240G0 4K1 na	NEC	B5[2]	Foxconn	(128Mx4)*36	2	04/05/07
Qimonda	HYS72T256420 HFE-3S-B	HYB18T512400 AF-3S-A	Qimonda		NEC	B5+	FDHS	(128Mx4)*36	2	4/9/07
Samsung	M395T5750EZ4 -CE65	K4T51043QE	Samsung		Intel	GB D1	FDHS	(128Mx4)*36	2	4/9/07
Kingston	KVR667D2D8F 5/2GI	MT47H128M8H Q-3 rev E	Micron	2025286-002.A00 na	Intel	D1	Foxconn	128M x 8		4/11/07
Kingston	KVR667D2D4F 5/2GI	HY5PS12421BF P-Y5 rev B	Hynix	0708-6A	IDT	A1.5	AVC	(128Mx4)*36	2	4/18/07
Micron	MT18HTF2567 2FY-667E1E4	MT47H256M4	Micron		Intel	GB D1	FDHS	(256Mx4)*18	1	5/1/07
Micron	MT36HTF2567 2FY-667D1E4	MT47H128M4	Micron		Intel	GB D1	FDHS	(128Mx4)*36	2	5/1/07
Ventura Technology Group	D2-56VF82SIV-555	K4T51043QC-ZCE6 rev C	Samsung	D2F24E na	IDT	A1.5	AVC	(128Mx4)*36	2	5/16/07

[1] The GB C0 AMB revision does not support closed-loop throttling.

[2] This part may show voltage errors in the System Event Log (SEL) during boot. These errors will not affect system operation and can be ignored.

Fully Buffered ECC, DDR2-667 DIMM Modules 2 GB Sizes (256Mx72)										
Manufacturer	**Part Number**	**DRAM Part Number**	**DRAM Vendor**	**PCB Part Number**	**AMB Vendor**	**AMB Revision**	**Heat-sink Vendor**	**DRAM Organization**	**Rank**	**Date**
Crucial Technology	CT25672AF667.18FE1D4	MT47H256M4HQ-3:E	Micron		IDT	C1	FDHS	(256Mx4)*18	1	6/18/07
Crucial Technology	CT25672AF667.18FE1E4	MT47H128M8HQ-3:E	Micron		Intel	GB D1	FDHS	(128Mx8)*18	2	6/18/07
Crucial Technology	CT25672AF667.18FE1E4	MT47H256M4HQ-3:E	Micron		Intel	GB D1	FDHS	(256Mx4)*18	1	6/18/07
Crucial Technology	CT25672AF667.36FD1E4	MT47H128M4B6-3:D	Micron		Intel	GB D1	FDHS	(128Mx4)*36	2	6/18/07
Micron	MT18HTF25672FY-667E1D4	MT47H256M4HQ-3:E	Micron		IDT	C1	FDHS	(256Mx4)*18	1	6/18/07
Legacy Electronics Inc.	B527M4C90EE-30R	K4T51043QC-ZCE6 rev C	Samsung	D2F24E_A rev A	IDT	A1.5	AVC	(128Mx4)*36	2	7/9/07
Legacy Electronics Inc.	M527NAE90BE-30R	MT47H128M8HQ-3 rev E	Micron	D2F28B rev B	IDT	A1.5	AVC	(128Mx8)*18	2	7/11/07
Micron	MT36HTF25672FY-667D1D4	MT47H128M4B6-3	Micron		IDT	C1	FDHS	(128Mx4)*36	2	7/16/07
Smart Modular Technologies	SG2567FBD28452IBD5	HYB18T512400BF3S rev B	Qimonda	PG54G240NFSUB1RES rev C	IDT	A1.5	Foxconn	(128Mx4)*36	2	7/23/07
Samsung	M395T5750EZ4-CE66	K4T51043QE-ZCE6	Samsung		IDT	C1	FDHS	(128Mx4)*36	2	6/18/07
Micron	MT18HTF25672FDY-667E1E4	MT47H128M8HQ-3:E	Micron		Intel	GB D1	FDHS	(128Mx8)*18	2	9/17/07
Apacer	75.A72AI.G00	K4T51043QE-ZCE6 rev E	Samsung	48.1A205.011 rev 1	Intel	D1	AVC	(128Mx4)*36	2	9/23/07
Smart Modular Technologies	SG2567FBD28452IBDC	HYB18T512400BF3S rev B	Qimonda	PG54G240NFSUB1RES rev C	IDT	C1	Foxconn	(128Mx4)*36	2	9/27/07
Kingston	KVR667D2D4F5/2GI	NT5TU128M4BE-3C rev B	Nanya	2025378-001.A00 na	Intel	D1	Foxconn	(128Mx4)*36	2	10/07/07
Kingston	KVR667D2D8F5/2GI	E1108ACBG-6E-E rev C	Elpida	2025286-002.A00 na	Intel	D1	Foxconn	128M x 8	2	2/15/08
Avant Technology	AVF7256B61E5667F1ELCP-IS	EDE1108ACBG-8E-E rev C	Elpida	D2F28B rev B	IDT	C1	Foxconn	128M x 8	2	5/30/08
Avant Technology	AVF7256B61E5667F0ELCP-IS	EDE1108ACBG-8E-E rev C	Elpida	50-1451-01A rev A	IDT	C1	Foxconn	128M x 8	2	6/02/08
TRS	TRS32406X	K4T1G084QQ-HCE6 rev Q	Samsung	M395T2953EZ0-P110 rev 4	IDT	C1	Samsung	128M x 8	2	10/09/08

(+) This vendor is part of the CMTL Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Note: The use of x4 FBDIMMs will only be supported with the server system operating in “Performance” mode (default). The use of x4 FBDIMMs while the server system is configured to operate in “Acoustics” mode is not supported.

Intel® Server System SC5400RA

Fully Buffered ECC, DDR2-667 DIMM Modules

4 GB Sizes (512Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Micron	MT36HTF51272FY-667E1D4	MT47H256M4HQ-3:E	Micron		IDT	C1	FDHS	(256Mx4)*36	2	3/28/07
Micron	MT36HTF51272FY-667E1E4	MT47H256M4HQ-3:E	Micron		Intel	GB D1	FDHS	(256Mx4)*36	2	4/9/07
Micron	MT36HTF51272FY-667E1N6	MT47H256M4HQ-3:E	Micron		NEC	B5+	FDHS	(256Mx4)*36	2	4/9/07
Legacy Electronics Inc.	M547RAE90EE-30R	MT47H256M4HQ-3 rev E	Micron	D2F24E rev E	IDT	A1.5	AVC	(256Mx4)*36	2	5/17/07
ATP Electronics	AP12K72G4BJE6M	MT47H256M4HQ-3 rev E	Micron	SP240G04K1 na		B5[2]	Foxconn	(256Mx4)*36	2	5/29/07
Crucial Technology	CT51272AF667.36FE1E4	MT47H256M4HQ-3:E	Micron		Intel	GB D1	FDHS	(256Mx4)*36	2	6/18/07
Crucial Technology	CT51272AF667.36FE1D4	MT47H256M4HQ-3:E	Micron		IDT	C1	FDHS	(256Mx4)*36	2	6/18/07
Crucial Technology	CT51272AF667.36FE1N6	MT47H256M4HQ-3:E	Micron		IDT	C1	FDHS	(256Mx4)*36	2	6/18/07
Smart Modular Technologies	SG5127FBD225652MEC	MT47H256M4HQ-3 rev E	Micron	PG54G240NFSUB2RES rev A	IDT	C1	Foxconn	(256Mx4)*36	2	8/06/07
Smart Modular Technologies	SG5127FBD225652-SA	K4T2G264QA-ZCE6 rev A	Samsung	M395T5166AZ0 na	IDT	A1.5	Samsung	(256Mx4)*36	2	8/15/07
Samsung	M395T5160CZ4-CE66	K4T2G264QC-ZCE6	Samsung		IDT	C1	FDHS	(2x256Mx4)*18	2	6/18/07
Smart Modular Technologies	SG5127FBD225652-SC	K4T1G044QC-ZCE6 rev C	Samsung	M395T5750EZ0 na	IDT	A1.5	Samsung	(256Mx4)*36	2	9/6/07
Smart Modular Technologies	SG5127FBD225652SCD	K4T1G044QC-ZCE6 rev C	Samsung	M395T5750EZ0 na	IDT	C1	Samsung	(256Mx4)*36	2	9/12/07
Apacer	78.BHGA8.421	E1104ACSE-6E-E rev C	Elpida	48.1A205.011 rev 1	IDT	C1	AVC	(256Mx4)*36	2	10/18/07
Avant Technology	AVF7251B62E5667F4ELCP-IS	EDE1104ACSE-8E-E rev C	Elpida	BA2FRCU 3.10 rev 3.10	IDT	C1	Foxconn	256M x 4	2	5/31/08
TRS	TRS32409X	K4T1G044QQ-HCE6 rev Q	Samsung	M395T5750EZ0-P081 rev 4	IDT	C1	Samsung	256M x 4	2	10/12/08

[2] This part may show voltage errors in the System Event Log (SEL) during boot. These errors will not affect system operation and can be ignored.

(+) This vendor is part of the CMTL Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Note: The use of x4 FBDIMMs will only be supported with the server system operating in “Performance” mode (default). The use of x4 FBDIMMs while the server system is configured to operate in “Acoustics” mode is not supported.

Sales Information

Vendor Name	Web URL	Vendor Direct Sales Info
ATP Electronics	http://www.atpinc.com/	Tel (1) 408-732-5000, ext 5858 Fax 408-732-5893 sales@atpusa.com
ATP Electronics -- Taiwan Inc.	http://www.atpinc.com/	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/	
Qimonda (Infineon)	http://www.Qimonda (Infineon).com/business/distribut/index.htm	
ITAUCOM	http://www.itaucom.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	www.smartm.com/channel/hpc/	Gene Patino (949) 439-6167 Gene.Patino@Smartm.com
Super Talent Electronics	http://www.supertalentmemory.com	David Crume (408) 957-8181 support@supertalentmemory.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	Vender Direct Sales Info: Andreas Gruendl Tel: +49.89.945532-34 Fax: +49.89.945532-41 Andreas.gruendl@trs-eu.com
Unigen	http://www.unigen.com	
Ventura Technology Inc	http://www.venturatech.com	Sam Lewis 760 724-8700 ext. 103
Viking InterWorks	http://www.vikinginterworks.com	Adrian Proctor Tel: 949-643-7255 adrian.proctor@sanmina-sci.com
Virtium Technology Inc	http://www.virtium.com	Tod Skelton @ (949) 460-0020 ext. 146 or email @ tod.skelton@virtium.com
Wintec Industries	http://www.wintecindustries.com	Tel 510-360-6300 Fax 510-770-9338

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 System. 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 of the Intel® Server System. 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 an Intel® Server System 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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