Expanding RAM on the Amiga 4000

by Adam Levin-Delson

Commodore currently sells the Amiga 4000 with two megabytes of Chip RAM and four megabytes of Fast RAM. Chip RAM refers to memory that both the CPU and the Amiga's custom chips can access directly. The custom chips cannot directly access Fast RAM. Two megabytes is the maximum amount of Chip RAM that the computer can presently access, but Fast RAM can be upgraded to a maximum of either four or 16 megabytes, depending upon the type of RAM used.

Memory Layout

All the A4000's RAM is packaged in SIMM (single in-line memory module) format, which is easy to handle, making upgrading a simple procedure. A single four-megabyte SIMM is used to give the Amiga its four megabytes of Fast RAM. This leaves three more Fast RAM SIMM slots, each capable of holding another four megabytes for a total of eight, twelve, or the maximum of sixteen megabytes of Fast RAM. It is possible to use less expensive one megabyte SIMMs as Fast RAM, but since SIMM types cannot be mixed this would require the removal of the existing four-megabyte SIMM. Since there are only four SIMM slots, using one-megabyte SIMMs would yield a maximum of four megabytes of memory.

The single slot for Chip RAM is unique in that it has no neighboring slot to its right. This allows the use of a double-sided SIMM (with chips on both sides), instead of the single-sided SIMMs as required by the spacing of the Fast RAM SIMM slots. A single two-megabyte SIMM is used to give the Amiga its two megabytes of Chip RAM. This SIMM may be removed and a one-megabyte SIMM used in its place, giving a total of one megabyte of Chip RAM.

Adding Memory

Adding SIMMs to the existing Fast RAM requires no additional action. Changing from fou megabyte to one megabyte SIMMs (or vice versa) requires changing a jumper on the motherboard. This jumper (J852) is on the left side of the motherboard (the same side as th SIMM slots are on). It is labelled ``SIMM SIZE'' and has two positions: ``256K x 32'' and ``1M x 32''. Jumper the ``256K'' pin and the center pin for one megabyte SIMMs, the ``1M pin and the center pin for four megabyte SIMMs.

No jumper change is required when switching between one-megabyte and two-megabyte Ch RAM SIMMs.

SIMM Specifications

Each one megabyte Fast RAM SIMM must meet the following specifications:

physical: 72-pin, single-sided SIMM with a maximum height of one inch (If this SIMM to be used as Chip RAM, it may be double-sided).
electrical: 80-nanosecond DRAM, 256 kilobytes by 32 bits or 256 kilobytes by 36 bits.

Each two megabyte Fast RAM SIMM must meet the following specifications:

physical: 72-pin, SIMM with a maximum height of one inch (This SIMM is only suitab as Chip RAM. As such, it may be double-sided).
electrical: 80-nanosecond DRAM, 512 kilobytes by 32 bits or 512 kilobytes by 36 bits.

Each four megabyte Fast RAM SIMM must meet the following specifications:

physical: 72-pin, single-sided SIMM with a maximum height of one inch.
electrical: 80-nanosecond DRAM, 1 megabyte by 32 bits or 1 megabyte by 36bits.

The ``by 36 bits'' parts are overkill in that only the first 32 bits are used, but they may be m readily available than the ``by 32 bits'' parts.

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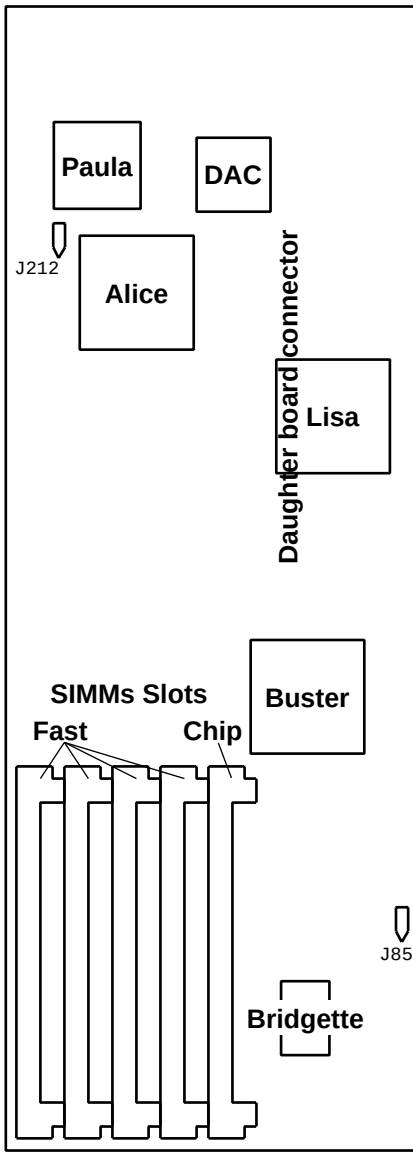

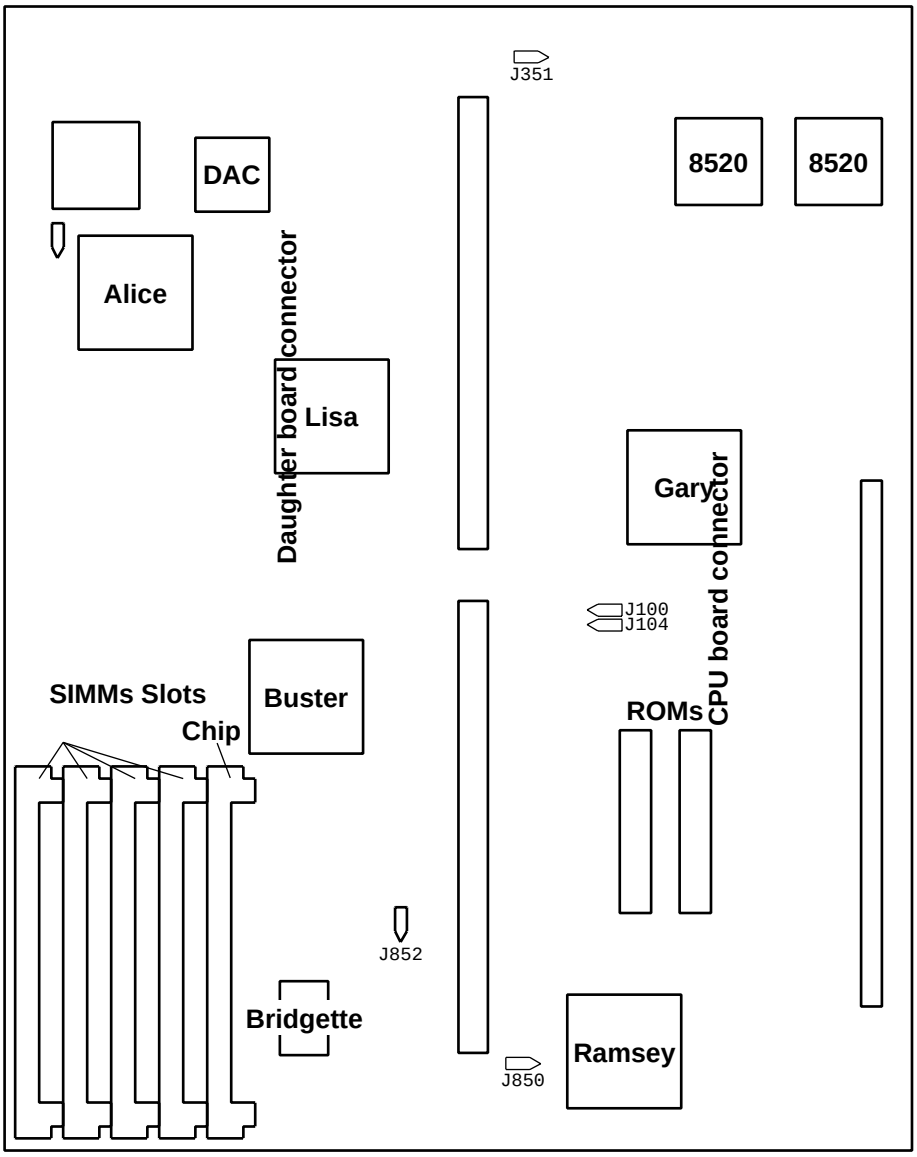
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