

G3 RAM - upgrade

Remarks on the usage of SDRAM in *Power Macintosh G3* Computers

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June 19, 1998, revised November 15, 2000

The now called *Old World Apple Power Macintosh G3* models come with the *Gossamer* Logic Board.¹ They support *SDRAM* in three 168-pin *DIMM* slots. Because these models do read the *SPD-EEPROM* (Serial Presence Detect Electrical Erasable Programmable Read Only Memory) on the *DIMM*, the *PROM* is required and must be set properly according to [2] and [3]. Many (if not all) *IBM-compatibles* do not read the *SPD-EEPROM*, therefore some manufacturers don't put this part on on their *DIMMS*. Others do provide an appropriate *EEPROM*, which is not programmed properly though. Where the first can be easily determined (in most cases it's a tiny 8-pin package labeled *24C02* or similar), the latter may only be found out by trial and error. Due to many sellers restricting the warranties to Integrated Circuits this may become an expensive adventure.

The intention in writing this is to provide you with the information, I have, so you may be able to distinguish compatible and incompatible parts, before you have to buy them. It is always a good idea to ask your dealer if he would take back the parts, if they are not working with your computer, but most dealers won't do that, because *RAM* is a highly *ESD* - sensitive (ElectroStatic Discharge) device and you can never be sure, if and how long it will work after it has become familiar with some kind of electrical dischargement.

According to [1], table 1 lists the parts that work properly with the *Power Macintosh G3* models. [5] gives a list of vendors that build compatible *DIMMs* (table 2) and a list of vendors that build incompatible ones (table 3).² My own *RAM*-Configuration is listed in table 4.

<i>Vendor Name</i>	<i>SDRAM DIMM part number</i>
Hyundai	HY57V168010A TC-10, HYM7V64400TFG-10
LG Semicon	GM72V1681BT 10K, GMM2642233BL TG-10K 7042S
Samsung	KMM366S104BTN, KMM366S403BT2

Table 1: Compatible *SDRAM DIMMs* for the *Power Macintosh G3* computer

¹ *Macintosh* computers that are upgraded with *G3* upgrade cards (*NuBus*-models like the *6100*, *7100*, *8100*) are not subject to this document.

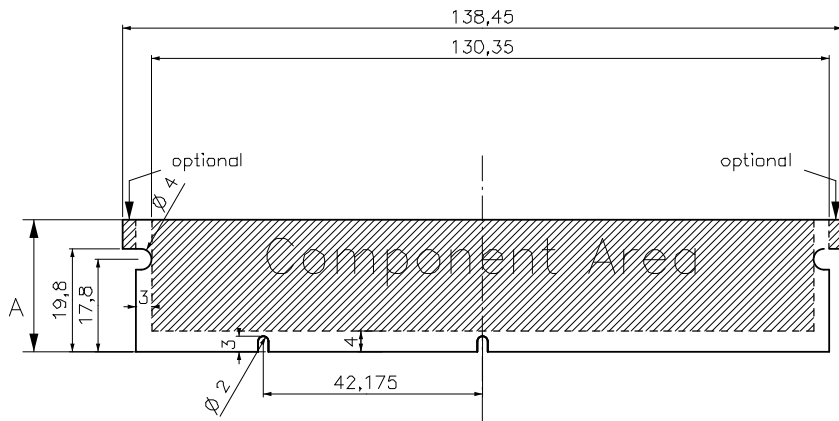
² Note that *Samsung* is listed as a vendor of compatible parts in table 1, while it is listed as vendor of incompatible ones in table 3.

The *Technical Information* [6] that ships with the computer provides the following information concerning the *DIMM*-specifications:

The main logic board has three expansion slots that accept 1.15-inch *DIMMs* that meet these specifications:

- 8, 16, 32, or 64 MB
- 3.3 volts (V), unbuffered, 64-bit wide, 168-pin
- 100 MHz/10 nanoseconds (ns) cycle time or faster using *SDRAM*

As you can see in figure 1, there is a restriction in the height of the *DIMMs*. They may only be as high as 1.15", which is approximately 29 mm. Higher modules won't fit in the *G3-Desktop* cases. Note that [6] also mentions that the maximum amount of *DRAM* that can be installed is 192MB, which supercedes other documentation that says you can install a maximum of 384MB. Where the 192MB configuration is achieved by filling all three slots with 64MB *DIMMs*.



A: May be one of the following:
a) 25.27 - 25.5
b) 31.62 - 31.88
c) 37.97 - 38.23

ATTENTION: Only Modules with A < 29.21 will fit in the PM G3 models!

Modules are not as thick as 4 Issue B, Dec 1996
or 9 in Component Area and
1.27+/-0.10 in contact Area. as of JEDEC MO-161

All Dimensions are in Millimeters.

Tolerances are +/- 0.13 unless otherwise specified.

Figure 1: Dual Inline Memory Module (*DIMM*)

Fujitsu
Hyundai
IBM
Micron
Optosys
SEC

Table 2: Vendors of compatible *SDRAM DIMMs*

Acer
Asus
Samsung

Table 3: Vendors of *in-* compatible *SDRAM DIMMs*

<i>Vendor Name</i>	<i>DIMM part number</i>	<i>RAM part number</i>	<i>Capacity</i>
LG Semicon (preinstalled)	GMM 2644133BLTG-10K	LG Semicon LGS GM72V16821BT10K	32MB
Hyundai		HY57V651620TC-10	64MB

Table 4: Parts that work in my own *G3*

References

- [1] Schwander, Lee, Gray, Llewellyn, Arrigoni: *Developer Note* Power Macintosh, Revised 11/21/97, Apple Technical Publications, ©Apple Computer, Inc. 1997
- [2] *JEDEC standard 21-C*, release 7, section 4.5.4, available at
<http://www.eia.org/jedec/download/freestd/pub21/>
- [3] *JEDEC standard 21-C*, release 7, section 4.1.2.5, available at
<http://www.eia.org/jedec/download/freestd/pub21/>
- [4] *JEDEC MO-161 specifications*, available at
<http://www.eia.org/jedec/download/freestd/pub95/#M0>
- [5] Carsten Maier: *Tuning Werkstatt* Macintosh Upgrading, Teil 2: RAM und Cache, c't Magazin für Computer und Technik, 5/98, Verlag Heinz Heise GmbH & Co KG, Hannover
- [6] Apple Computer, Inc: *Technical Information* Specifications for Power Macintosh G3 desktop Computers, ©1997 Apple Computer, Inc.

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If you explore any errors in this document, please point me to these and send me an E-Mail. I am also wondering, if someone has managed to run 128MB DIMMs in the G3, so please send an E-Mail if you know about this.

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