PC card convertion to Mac

ATI Radeon 9800 Pro 128Mb 256bits

See also David Pirinelli's Radeon 9800 XT conversion; in my experience you can skip step 2 (except the tape part of course). (Since David's site has been down for months, I mirrored the file.)

I was not going to pay 85 % more for a genuine Mac Edition 9800 Pro than a "PC Edition" (at the time of purchase), as it was far too heavy a Mac tax, so I bought a cheap Sapphire. The first method was Eric Murphy's one, grafting on the 9800 a Radeon 7000's flash memory first flashed with a 9800 Mac Edition ROM. That's because the flashing software only recognises half of a 128 KiB flash chip when soldered on a PC 9800 (stock flash is 64 KiB, which is too small to hold a Mac ROM). Then Ian S. sent me high resolution pictures of his 9800 Mac Edition, and I noticed a row of eight resistors that looked implanted differently on the PC card. Eric instantly tried on a 9700 (which has the same layout as the 9800), and I later verified on my 9800: moving these resistors removes the 64 KiB limitation.

1) Move three 10 kΩ resistors to match the 9800 Mac Edition configuration.
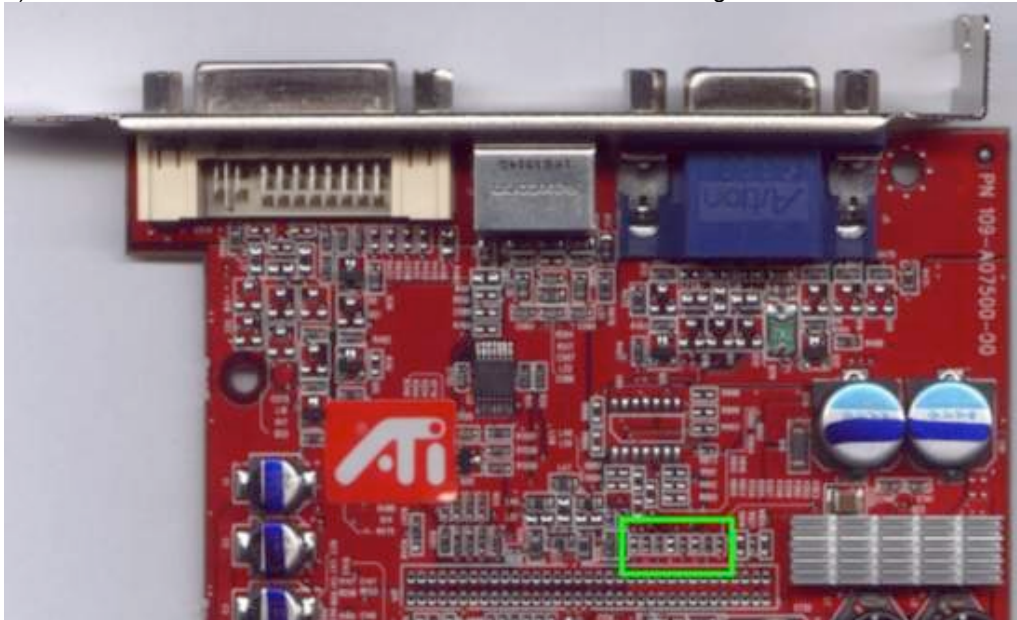
Green arrows point to Mac card resistors:
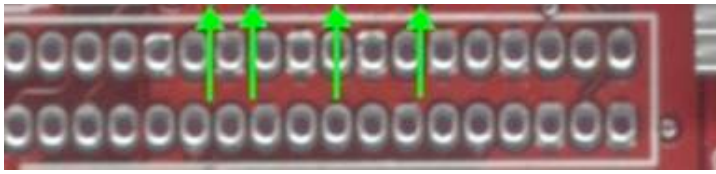
PC card: R - - R - R R -
Mac card: - R R - R - R -

These 0402 resistors are very small (1 mm long, much smaller than the ones to move to overclock Macs), so you'd better have a very fine tipped soldering iron.

Update: Version 8.7 of ATI Multi Flasher (bundled with Graphiccelerator) ignores the 64KiB flash block, so if flashing will be done on a Mac, moving these tiny resistors isn't necessary.
Also, I've not tested this, but I was informed that recent versions of ATIFLASH (beginning from version 3.10) will ignore the 64 KiB flash block. (atiflash is (obviously) an ATI card flasher program, comparable to flashrom used below.)

2) Determine if your card has a 64 or 128 KiB flash chip. Two possible ways:
- Install the card in an AGP 4x or 8x PC running DOS (the real thing, not a Windows command prompt), grab the latest version of flashrom, and type *flashrom -i*. In the romsize column, 0x10000 indicates a 64 KiB flash, while 0x20000 means a 128 KiB one.
- Locate the flash chip on the card (see picture below), read the part number and brand, and search for its specifications. Some common parts:
  STMicroelectronics M25P05 = 64 KiB ; M25P10 = 128 KiB
  PMC Pm25LV512 = 64 KiB ; Pm25LV010 = 128 KiB
  The first method is the safest one, since sometimes markings are incorrect: some ST M25P10 were marked M25P05.

If it's only 64 KiB (most likely), then a 128 KiB chip must be soldered.
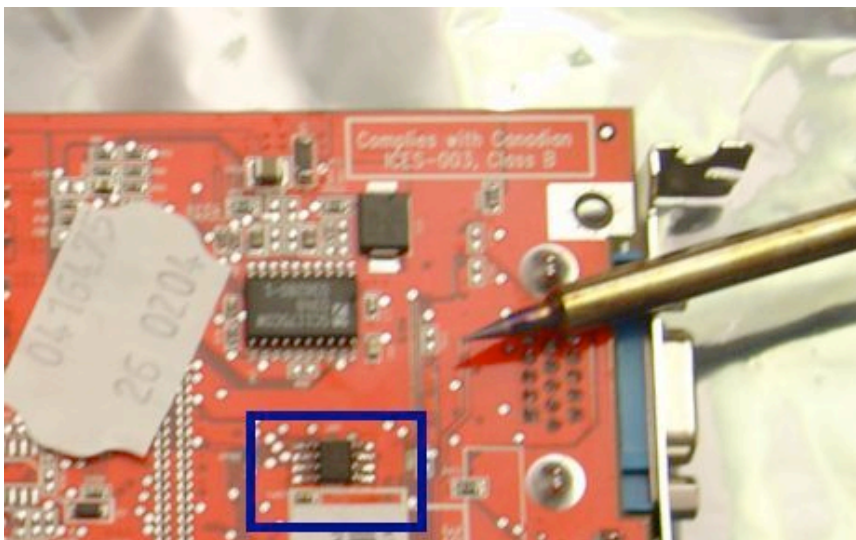
3) The easy, software only, part. It's best if you have a second, PCI, video card on which you can connect your display so you can see what you're doing, especially if there are error messages.

- Flashing the card using a Mac OS 9 Mac: use my graphic cards overclocking tool (Graphiccelerator) and the 9800 Mac Edition ROM. Launch Graphiccelerator (under OS X), choose Open Flasher, select ATI Multi Flasher, then the 9800 ROM. After that, restart in OS 9, launch the flasher, answer 'yes' to confirm and restart! Note however that I don't know how the flasher behaves if there are multiple Radeon cards in the Mac; verify the card in Slot-1 (AGP) will be the one flashed before clicking Yes! If someone tries, please keep me informed so I can update the page if necessary.

  Those working blind can put the flasher in the Startup Items, and press 'escape' to confirm ('return' being the shortcut for 'No').
 Update: it's now possible to flash under OS X too.
- Flashing the card using a DOS PC: you'll need flashrom and the 9800 Mac Edition ROM. Navigate to the correct directory and type *flashrom -pm 0 ROM_file_name -f*

If you have a Power Mac G5, congratulations it's finished!

4) For installation in a G4, you must force the card to operate in AGP 4x or 2x. You can either unsolder four resistors (R5 and R6 on front of the card, R2 and R4 on back):
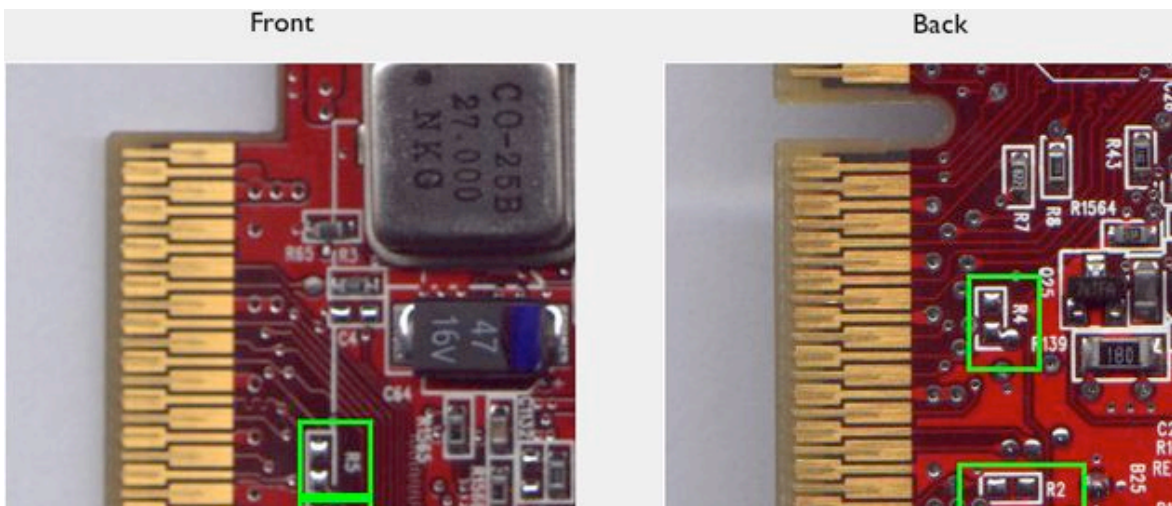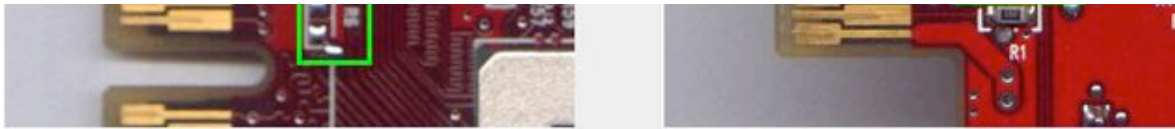
or apply two small bits of tape in order to isolate two connections on the back side of the card (#3 and #11, counting from bottom on the picture) on the AGP connector:
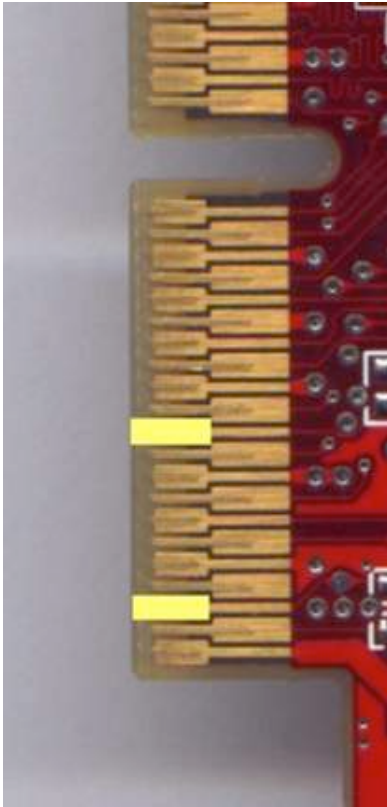
Thanks to Eric Murphy's Radeon 9600 Pro in a G4 article for this trick.

I recommend the tape solution, as it will be easier to revert to an AGP 8x setup once you have a G5 :)
All done!

FAQ

Q: Which brand/model is best suited for this conversion?

A: Any card following ATI's original design, with the red PCB (black PCB cards have a different components layout, for instance). These are the most common anyways, from ATI itself of course, and also Powercolor, Sapphire, Club 3D, etc. Mine is a Sapphire OEM. Someone told me he flashed a Hercules 3D Prophet which already had a 128 KiB flash chip, but there's no way to know if all of these cards are the same.
Absolutely avoid 9800 Pro 128 bits or 9800 SE cards.

Contact