# ATX PSU and Pico VGA Analog Board for Compact Macs

Note: This design is based on the Pico VGA Scan Converter by GuruThree:
https://github.com/guruthree/mac-se-video-converter

VGA Interface is based off the RP2040 reference design:
https://datasheets.raspberrypi.com/rp2040/hardware-design-with-rp2040.pdf

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|---|---|
| S/C: N/A | |
| Drawn By: DosFox | ATX_VGA_Analog_Board |
| Version: VDEV1 | 16/Aug/24 13:02 |
| | Sheet: 1/1 |

| ADDITIONAL ITEMS | KPN | QUANTITY |
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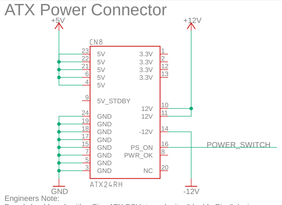
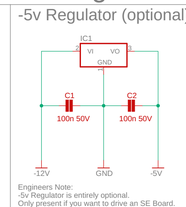
## ATX Power Connector



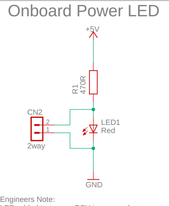

Engineers Note:
Board should work with a Pico ATX PSU, to make it a "double Pico" design.
Any other ATX power supply should be fine though.

## -5v Regulator (optional)



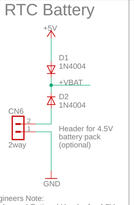

Engineers Note:
-5v Regulator is entirely optional.
Only present if you want to drive an SE Board.
-5v is usually missed on modern ATX PSUs, so we'll regulate it here!

## Onboard Power LED



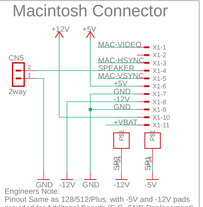

Engineers Note:
LED added to ensure PSU is powered up.
Also an option to add an external LED if needed.

## RTC Battery



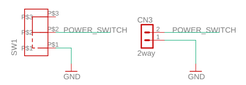

Engineers Note:
Diodes and Optional Header for 4.5V Battery Pack to power the RTC

## Macintosh Connector



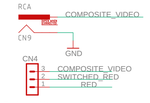

Engineers Note:
Pinout Same as 128/512/Plus, with -5V and -12V pads provided for Additional Boards (E.G, SND Replacement)
Pin 2 is the key and can be snipped out.

## ATX Power Switch



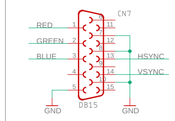

Engineers Note:
On board slide Power Switch, with the option for an off board toggle switch as well.

## Composite Video



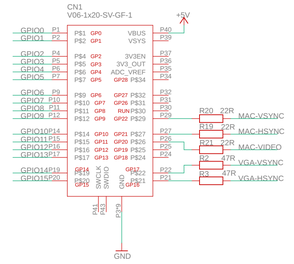

Engineers Note:
Composite video connector is entirely optional, but has been retained in case it's desired.
Ensure a jumper is fitted to CN4.

## VGA Connector



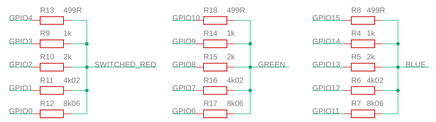

Engineers Note:
It's a VGA port. What else do you want from me?

## Raspberry Pi Pico Header




Engineers Note:
Pico Header and Pinout, again taken from the reference material.
22R inline resistors for some protection.
Found that the video output from a plus board is only about 3-4v, within tolerance of a standard Pico.
R22, R23, R24 are present but DNF'd, in case they are needed (I.E, with an SE board)

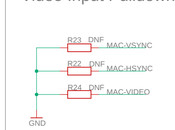
## Resistor Ladder DAC




Engineers Note:
VGA DAC, as based off the design as found in the "Hardware design with RP2040".
DAC's retained to allow for compatability with the optional composite output.

This board is designed to be compatible with the 128/512/Plus. However, it should also work with the SE and SE/30.
Would not surprise me if it works with a Classic and Classic ii as well.

## Video Input Pulldowns




Engineers Note:
Pull downs on the Mac Video Lines to form potential dividers, just in case they're needed, otherwise DNF.