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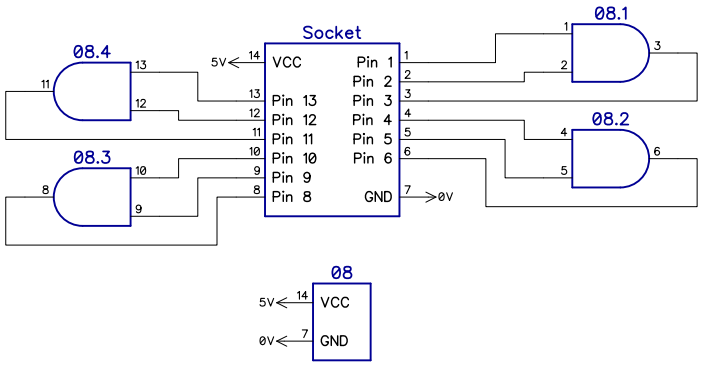
TYNEMOUTH PET 2001 VIDEO GLITCH FIX

OVERVIEW

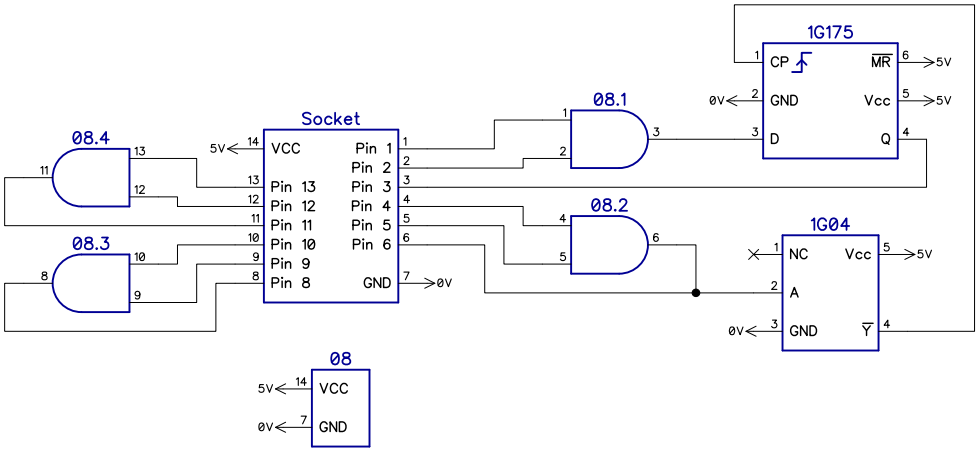
This board can be used to replace the E2 IC in a Commodore PET 2001 (not 2001N or later). It adds a pixel synchronisation flip flop into the video signal to fix video glitches inherent in the original design which manifest as thin vertical lines between characters when one is inverted and the next is not.

THEORY

E2 on the PET 2001 is a 74LS08, a quad AND gate. Two of these gates are part of the address decoding, we can ignore these. One buffers the 8MHz clock signal, and the other combines the inverted and non-inverted video signals.



This board interrupts the output of the gate which combines the video signals and inserts a flip flop. This is clocked by the 8MHz signal from the other gate.



The flip flop is triggered on the rising edge of the clock, which is not ideal, so an inverter is added to invert the clock signal first.

The result of this is each pixel is sampled in the middle and output, and the output does not change again until the middle of the next pixel, so should remove any of the video glitches.

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INSTALLATION

Carefully desolder the existing 74LS08 IC at position E2 (next to the 6502).

It is very easy to damage the traces on the PET boards of this era, so take things slowly and carefully and use lots of flux.

When removed, clean up the board and install the turned pin socket (included). This will ensure the module is raised up above the resistors next to it.

At this point, you could fit the original 74LS08 into this socket and test that everything is still working, before installing the Glitch Fix board.

If all is OK, remove the original 74LS08 and install the module into the socket, noting the orientation of the IC should be the same as before, with the notch facing the 6502.

If you are using a PET ROM/RAM board, you will need to raise that up by adding an additional 40 pin socket or two to the 6502 stack.

MORE INFORMATION

More information and photos of installation can be found on my blog post on the subject:

http://blog.tynemouthsoftware.co.uk/2024/03/commodore-pet-2001-repair-part-3-video-glitch.html