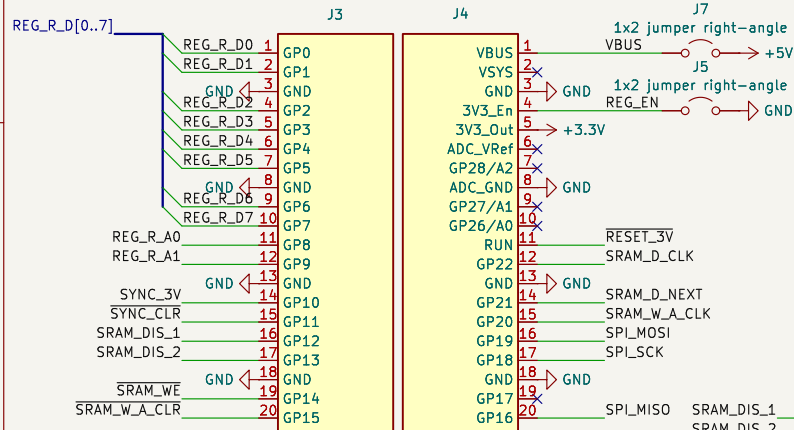


The 3.3V regulator built into the microcontroller is documented as only supplying a max of 300mA to external circuitry.

Rather than use that, we use our own regulator in the cartridge board. It can power the microcontroller and all 3V logic chips. Then we power the microcontroller through the 3V3_OUT and GND pins.

One jumper connects 3V3_EN connects to GND to disable the board's regulator. Another jumper connects VBUS to the +5V supply to power the 5V chips.

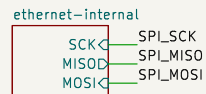
While programming the microcontroller in-place via USB, the jumper should be on the VBUS pins. While operating in the Sega, the jumper should be on the 3V3_EN pins.



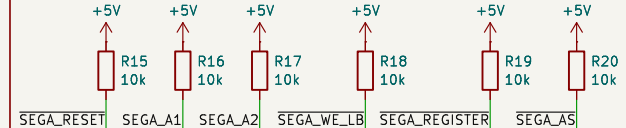
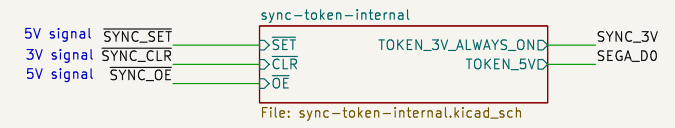
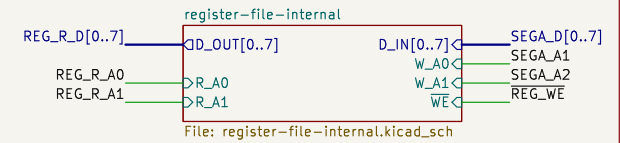
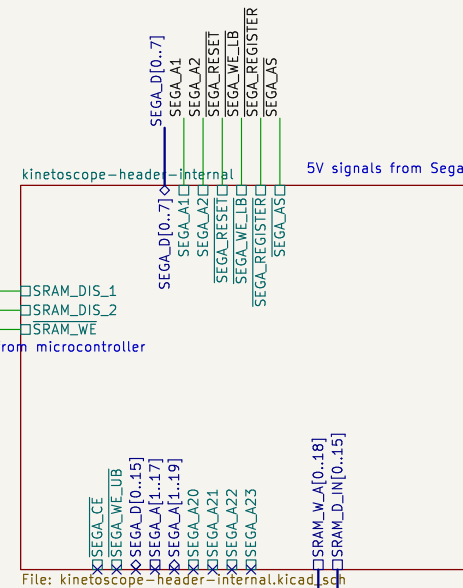
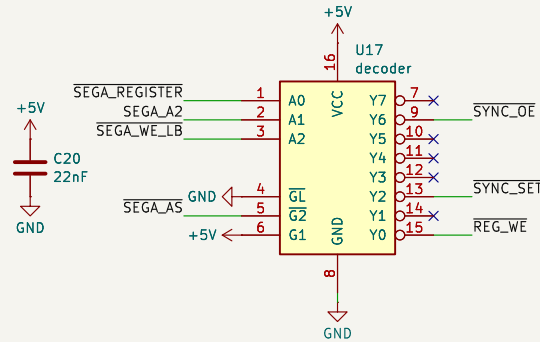
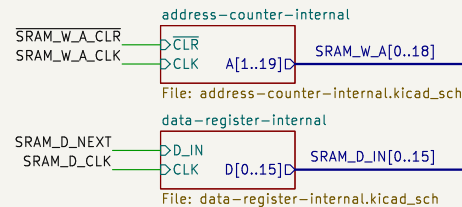
X2

Template for RPiPicoW board header alignment

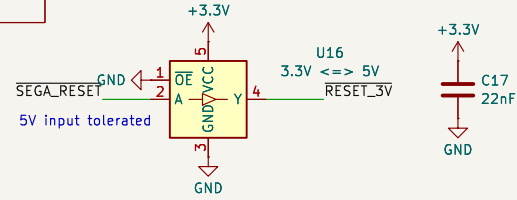
GP17 is chip-select in the design that used Adafruit's Ethernet Featherwing. Ethernet chip-select is hard-coded in this version, so GP17 is unused and SPI can't be shared.



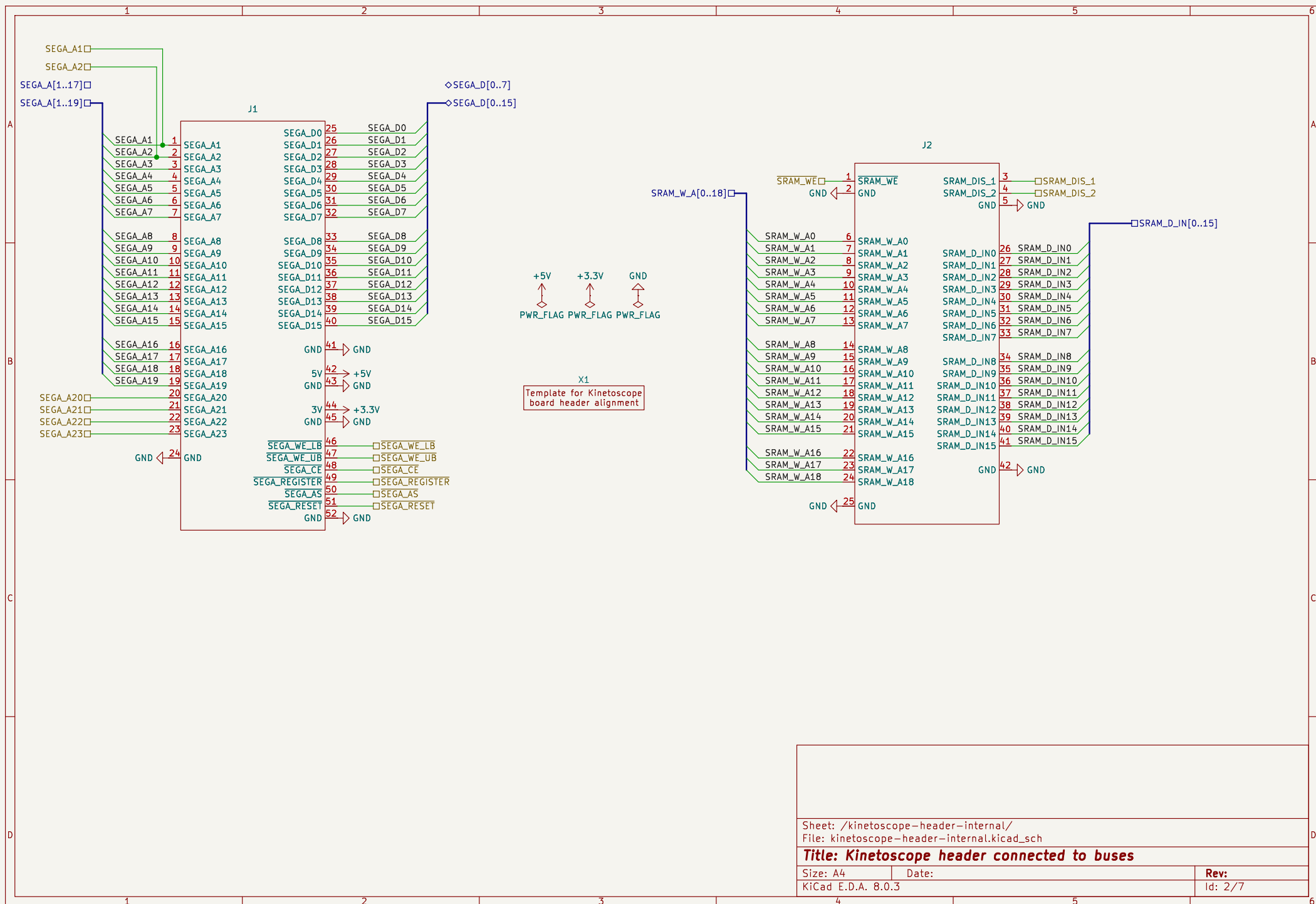
File: ethernet-internal.kicad_sch



While powering the microcontroller via USB without the Sega (during programming and testing), pull-up resistors on these lines keep inputs from floating. They can be set low for testing with jumper wires in the cartridge pin header.



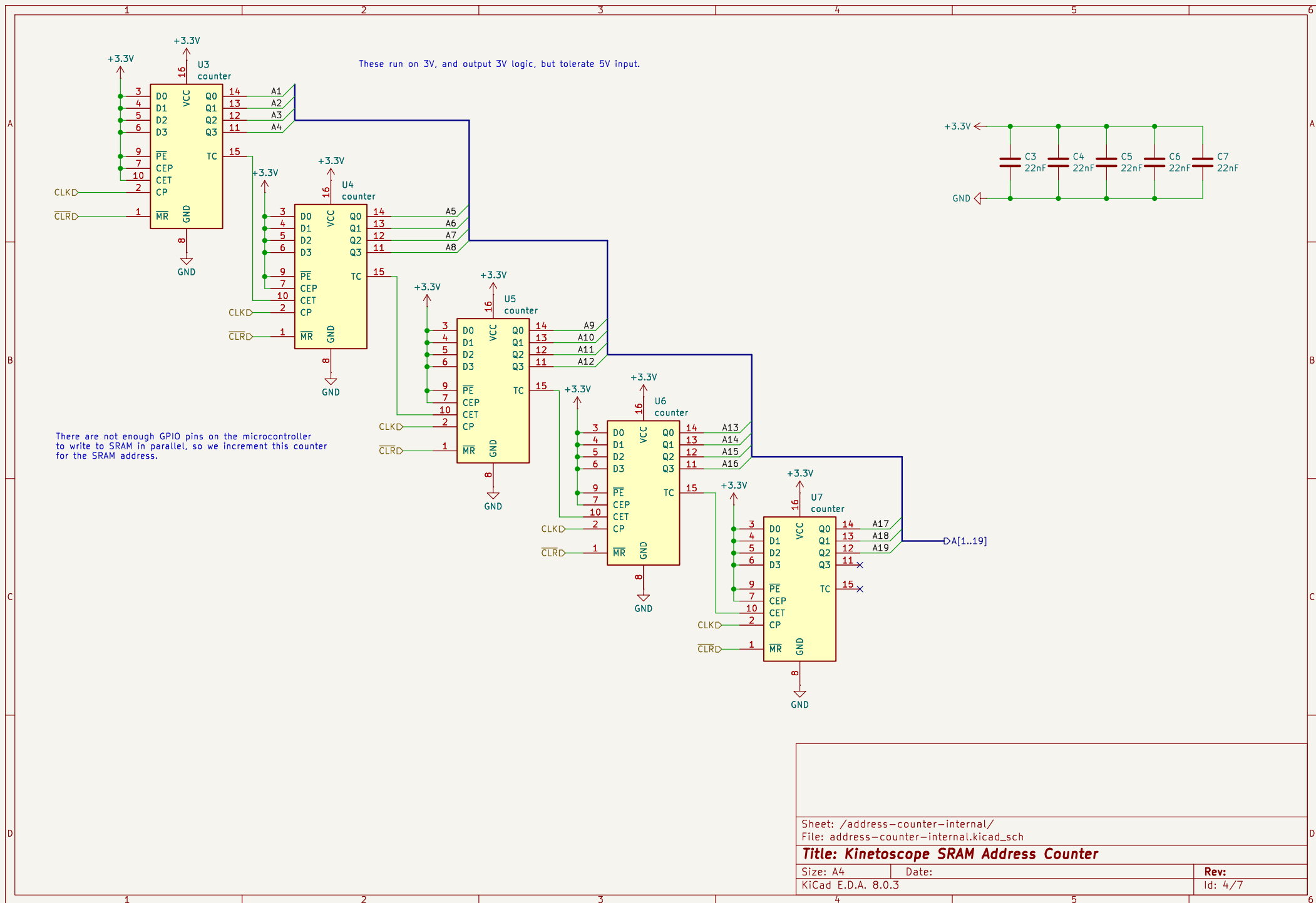
Sheet: /		D
File: microcontroller.kicad_sch		
Title: Kinetoscope Microcontroller and Register Board		
Size: A4	Date:	Rev:
KiCad E.D.A. 8.0.3		Id: 1/7



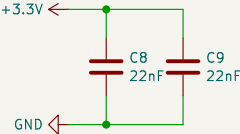
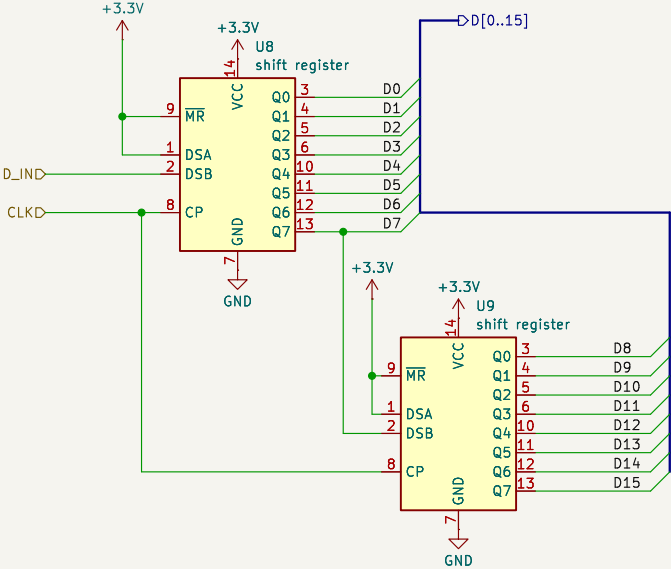
Sheet: /kinetoscope-header-internal/
File: kinetoscope-header-internal.kicad_sch

Title: Kinetoscope header connected to buses

Size: A4	Date:	Rev:
KiCad E.D.A. 8.0.3		Id: 2/7



There are not enough GPIO pins on the microcontroller
to write to SRAM in parallel, so we fill this register serially.



Sheet: /data-register-internal/
File: data-register-internal.kicad_sch

Title: Kinetoscope SRAM Data Register

Size: A4
KiCad E.D.A. 8.0.3

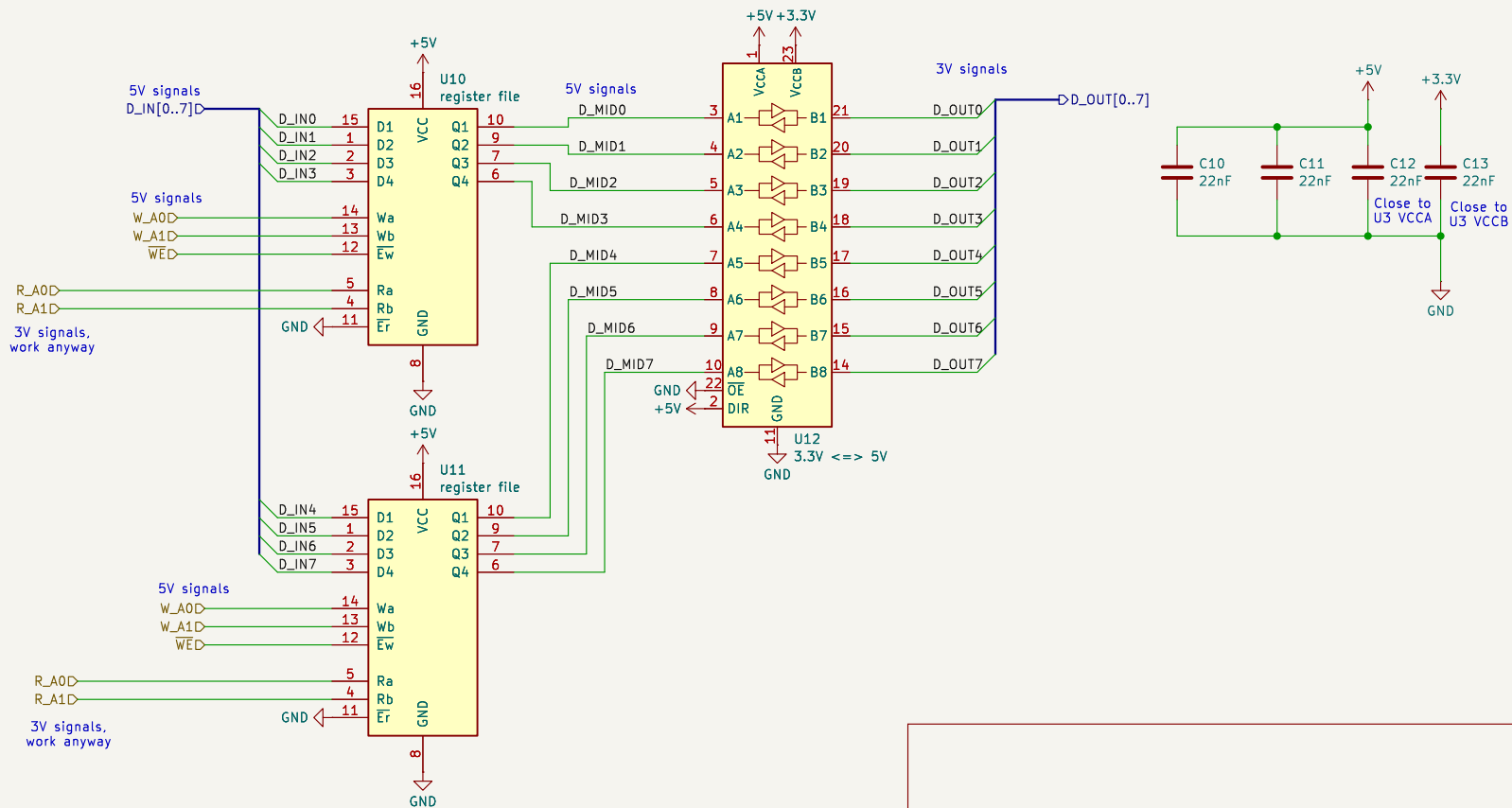
Date:

Rev:
Id: 5/7

This is a set of four 8-bit registers that can be independently read and written by the two controllers (one reads, one writes).

The registers are assumed to be written by a device with a shared data bus (Sega Genesis) and read by a device with dedicated pins (microcontroller). The read output is always enabled.

Everything runs on +5V, but must be compatible with 3.3V inputs. If using a slightly different part number, please check input voltages in the data sheet. The data outputs are 3.3V.



Sheet: /register-file-internal/
File: register-file-internal.kicad_sch

Title: Kinetoscope Register File connected to buses

Size: A4

Date:

Rev:

KiCad E.D.A. 8.0.3

Id: 6/7

The token will be cleared on boot/reset.

The microcontroller will be able to clear the token ($\overline{\text{CLR}}$), indicating to the M68k that the command has been executed.

Command codes and arguments are passed through a separate register file.

