

EconoPET 40/8096

Open Hardware Commodore PET/CBM Mainboard

Hardware Rev. A - 2025-08-23



"Daddy, can we make a computer?"
—Milo, age 8

Please Don't Sue Me

This project is provided "**as is**," without warranty of any kind, express or implied. Use of this project is at your own risk. The authors and contributors are **not liable for any damages, injuries, including serious injury or death, or losses resulting from its use.**

⚠ Safety Warning

If you are not experienced with high-voltage electronics, seek guidance or supervision before proceeding. Always **unplug the machine before opening it** and be aware that **the monitor can retain a deadly high-voltage charge even when unplugged.**

PCBs can contain hazardous materials, including lead-based solder. Use appropriate personal protective equipment (PPE). **Do not eat, drink, or smoke while handling PCBs.** **The monitor is under vacuum and may implode** if physically damaged. The machine case may contain **sharp metal edges.**

Soldering involves high heat, molten metal, fumes, and burn risk — work in a ventilated area, wear safety glasses, keep flammables away, and unplug the iron when not in use.

⚠ Handling and Care Guidelines

When installing or servicing, **hold the board by its edges** and **avoid flexing or bending.** **Keep boards away from moisture, dust, direct sunlight, and extreme temperatures** to ensure long-term reliability.

Be gentle with PCB mounted connectors. Use straight-on pressure when inserting or removing cables. Note that the microSD card reader has a *push-to-eject* mechanism.

To protect both the EconoPET and your original PET/CBM mainboard, **handle all boards using proper ESD precautions.** Always work on an ESD-safe surface or wear a grounded wrist strap. Avoid touching circuitry directly and store boards in anti-static bags when not in use.

⚠ Not for Mission Critical Applications

The EconoPET is an amateur hobbyist project that seemed worth sharing. **The EconoPET is not certified by any standards or regulatory authority for any purpose.**

ℹ Trademark and Copyright Notice

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Introduction

The EconoPET 40/8096 is an open hardware recreation of the Commodore PET/CBM mainboard. It can be used to repair or upgrade a 2001, 30xx, 40xx or 80xx series machine. The EconoPET can also be used independently with an HDMI display and USB keyboard.



EconoPET as mainboard replacement



EconoPET as stand-alone computer

Features

Functionally, the EconoPET 40/8096 hardware is most similar to the Universal Dynamic PET v2 mainboard with a 64KB Expansion Memory Board installed.

- 96KB RAM (32KB base + 64KB banked expansion)
- Compatible I/O:
 - IEEE-488 port
 - User port (with optional 5V supply on pin 2)
 - Two Cassette ports (with configurable device #s)
- Native PET video generator:
 - Supports both 40 and 80 columns
 - Supports 9" (15 kHz) and 12" (20 kHz) monitors
 - Programmable CRTC (when using 12" monitor only)
- Support for both US graphics and business keyboard layouts

- Small internal speaker

The EconoPET also adds some modern conveniences. These include:

- Menu selectable ROM set with 40/80 column switching
- 3.5mm Audio Jack (requires amplified speakers)
- USB-C port for use with an ANSI/ISO keyboard
- HDMI port for use with modern displays (720x480p 60Hz)
- Updateable firmware via microSD card

For troubleshooting (and hackers) the EconoPET breaks out most board signals on pin headers. For more details, refer to the schematics in *Appendix A*.

Limitations

Limitations of the EconoPET mainboard replacement include:

- The EconoPET is **not compatible with expansion boards that connect to IC sockets** (Custom ROMs, RAM boards, SuperPET boards, etc.)
- **The CRTC is only programmable when using a 12" monitor.** When using a 9" monitor, the CRTC registers are read-only to prevent accidental damage.
- **ROMs have been patched** to fix bugs and support hardware combinations not originally produced by Commodore.
- **Only US keyboards are supported currently.** This applies to both the USB keyboard and native PET keyboard.

Note that the EconoPET CPU operates at 3V3 instead of 5V logic levels, making the EconoPET incompatible with original accessories that connect to the CPU socket.

There are also no ROM ICs. ROMs are loaded from the microSD card to SRAM at power on. Hackers will have little difficulty figuring out how to load custom ROMs on the EconoPET (but note that changes to config.yaml will need to be reapplied after firmware updates.)

Setup and Installation

This section describes the process of getting the EconoPET board up and running. There are three main steps to follow:

1. **Initializing the microSD card** describes the process of downloading the board firmware and copying it to a formatted microSD card.
2. **Board Configuration** involves setting various switches and jumpers to configure the EconoPET for your CBM/PET model.
3. **Board Installation** gives instructions for opening the CBM/PET case, removing the original mainboard, and installing the EconoPET board.

Each step is described in the following sections.

Initializing the microSD Card

The EconoPET uses a microSD card to configure the system at power on and reset. To prepare a microSD card for the EconoPET, or upgrade the firmware in the future, you will need to perform the following steps:

- Download and unzip the latest firmware from the EconoPET site:
<https://dlehenbauer.github.io/econopet/40-8096-A.html>
- Format the microSD card with the **FAT32** or **exFAT** filesystem
- Copy the unzipped contents of the firmware archive to the root of the microSD card

If you have trouble formatting the microSD card, try the SD Memory Card Formatter tool from the SD Association: <https://www.sdcard.org/downloads/>

⚠ Note – The microSD card reader uses a *push-to-eject* mechanism for card removal. **Do not remove the card by pulling**. Please be gentle with PCB mounted connectors.

⚠ Note – “Hot insertion” is not recommended. **Please ensure the CBM/PET is powered off when removing/inserting the microSD card.**

⚠ Note – Formatting permanently erases the contents of the drive. Be sure you have the intended drive selected before starting the format.

Board Configuration

First read the **Safety Warnings** and **Handling and Care Guidelines** at the beginning of this manual before proceeding. *If you are not experienced with high-voltage electronics, seek guidance or supervision before proceeding.*

Before installing the EconoPET replacement board, there are several important configurations that need to be completed:

- Assign device numbers to the cassette ports via solder jumpers
- Select the video configuration for your monitor
- Select the layout for your keyboard
- Choose whether user port pin 2 will provide a video signal or 5V

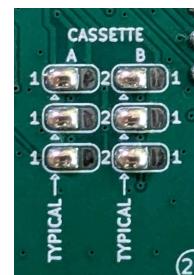
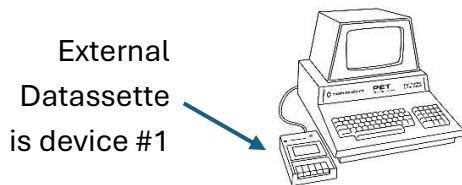
Each of these options is described in the following sections.

Cassette Port Device Number

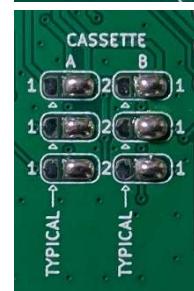
Most CBM/PET models designate the back cassette port as device #1 and the internal port as device #2. The exception is the original PET model with the “chicklet” keyboard and an integrated Datasette. On these machines, the device numbers are swapped so that the built-in Datasette is the primary device.

Use the solder jumpers on the back side of the PCB to assign device #1 and #2 to the rear and internal cassette ports:

Typical – Bridge all left and middle solder pads.



Built-in Datasette – Bridge all right and middle solder pads.

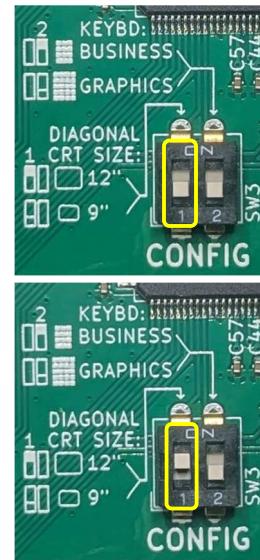
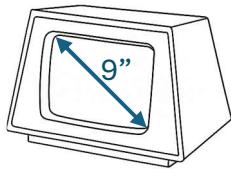


Monitor Type

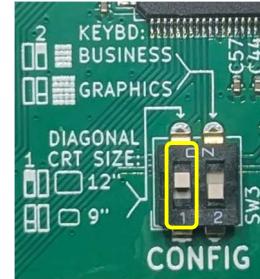
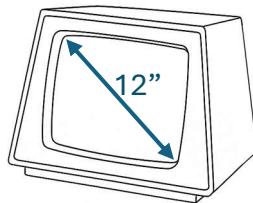
CBM/PET machines with 9" and 12" monitors use different and incompatible video signals. To determine your monitor type, measure your CRT tube diagonally from top-left corner to bottom-right corner.

Use the DIP switch #1 located on the top of the EconoPET PCB to select the correct video configuration for your monitor:

9" Monitor – Put DIP switch 1 in the down/off position.



12" Monitor – Put DIP switch 1 in the up/on position.



⚠ Important - If when powering on the CBM/PET you see a “bright spot” or “line” or hear a repeated ticking sound, **turn the machine off immediately to prevent damage**.

Keyboard Type

The CBM/PET machines shipped with two different keyboard layouts: the “graphics” keyboard layout and the “business” keyboard layout. An easy way to identify your keyboard type is to look at the numeric keypad.

Use DIP switch #2 located on the top of the EconoPET PCB to select your keyboard type.

Graphics – Put DIP switch 2 in the down/off position.



Business – Put DIP switch 2 in the up/on position.

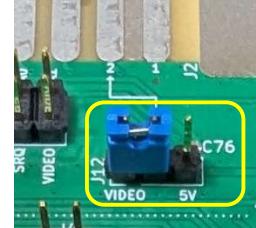


User Port Pin 2

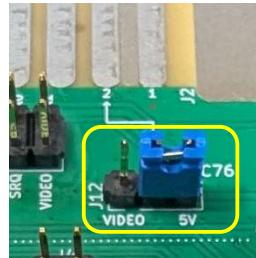
For convenience, the EconoPET allows you to convert Pin 2 to a 5V supply using a jumper. This allows you to power some peripherals directly from the user port without a separate power supply (e.g., the [TexElec SNES adapter](#)).

If you are unsure, or using an adapter to display video from the user port, choose ‘Normal’.

Normal – Use the jumper shunt to bridge the left and middle pins. This makes the User Port fully CBM/PET compatible.



5V – Use the jumper shunt to bridge the right and middle pins. This connects pin 2 of the user port to the +5V supply.



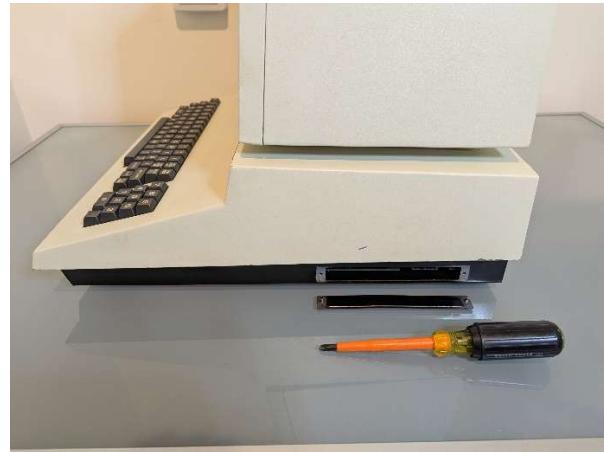
Board Installation

First read the **Safety Warnings** and **Handling and Care Guidelines** at the beginning of this manual before proceeding. *If you are not experienced with high-voltage electronics, seek guidance or supervision before proceeding.*

Step 1 – Make sure the machine is turned off and unplugged, then disconnect all external peripherals.



Step 2 – Unscrew and remove the expansion cover on the right side of the machine.



Step 3 – With the machine resting on its back, remove the two screws at the front that connect the bottom to the front.



Step 4 – Setting the machine upright, the case should now open like a clamshell.

⚠️ High Voltage Warning

Never insert fingers, tools, or any objects through the hole accessing the monitor compartment. **Cathode Ray Tubes (CRTs) can retain a deadly high-voltage charge even when unplugged.**

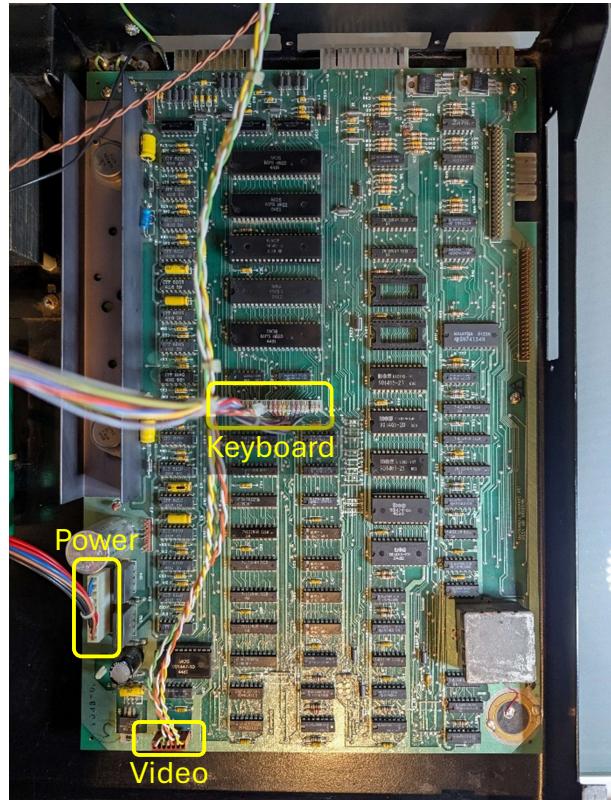
If you are not experienced with high-voltage electronics, seek guidance or supervision before proceeding.



Step 5 – Disconnect the internal power, keyboard, and video connectors.

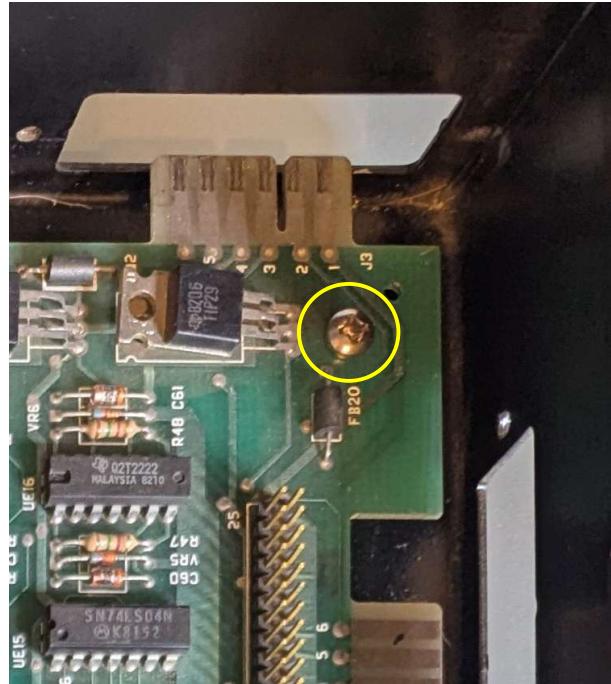
Note: The placement of the power, keyboard, and video connections varies between CBM/PET models.

Be gentle and support the board with your fingers. **Bending or flexing the PCB can damage the traces or solder joints.**



Step 6 – Remove the screws that secure the mainboard to the case. (Save the screws, you'll need them later).

Note: The location and type of mounting hardware varies between CBM/PET models.



Step 7 – In addition to screws, the mainboard may be connected to the case by plastics tabs.

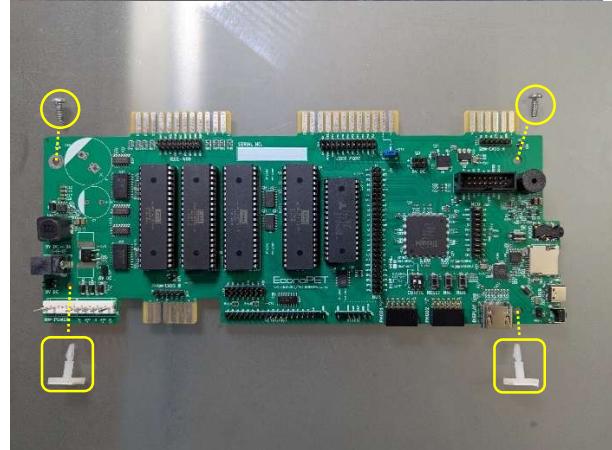
Pinch the tabs flat with a pair of pliers while gently working the PCB free one hole at a time.



Step 8 – Prepare to install EconoPET

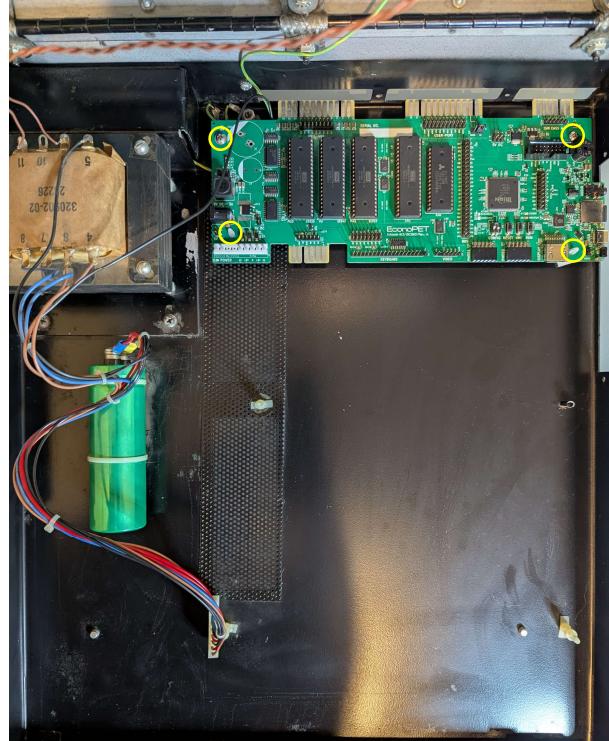
Before installing the EconoPET **check that you have completed the configuration steps** from the *Board Configuration* section.

To secure the EconoPET to the case, you will need two of the mounting screws from the original PCB as well as two 11mm nylon spacers to support the front of PCB.



Step 9 – Mount the EconoPET PCB at the back of the case.

- Place the nylon spacers through the mounting holes near the power and HDMI connectors.
- Insert the top left screw through the PCB into the mounting hole, but do not tighten it.
- Rotate the board until the top right screw hole aligns with the mounting hole and insert screw.
- Tighten the two mounting screws until just snug. Be gentle and do not overtighten.

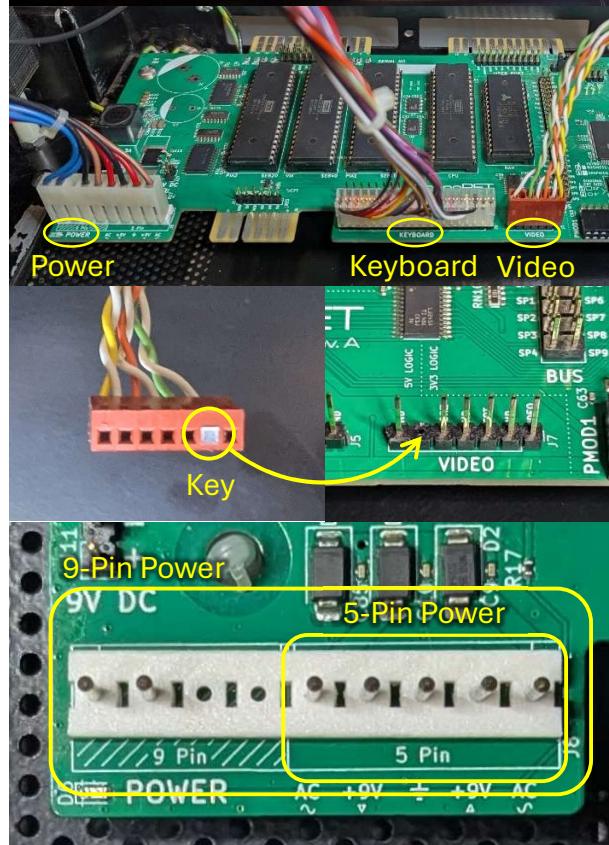


Step 10 – Reconnect the Power, Keyboard and Video cables.

The keyboard, video, and 9-pin power connectors are keyed and can only be connected one way.

If your CBM/PET's power connector has only 5-pins, use the right-most 5-pins on the EconoPET. (The 5-pin connector is symmetrical, so the orientation does not matter.)

Note: Avoid flexing the PCB when pressing down to insert connectors by gently support the underside of the PCB.



Step 11 – Close the CBM/PET case and reconnect power, leaving other peripherals disconnected for the time being.

Turn the CBM/PET power on. After a short pause, you should hear a friendly 4-note beep and see the power on menu.

⚠ Important - If when powering on the CBM/PET you see a “bright spot” or “line” or hear a ticking sound, **turn the machine off immediately to prevent damage.**



Troubleshooting

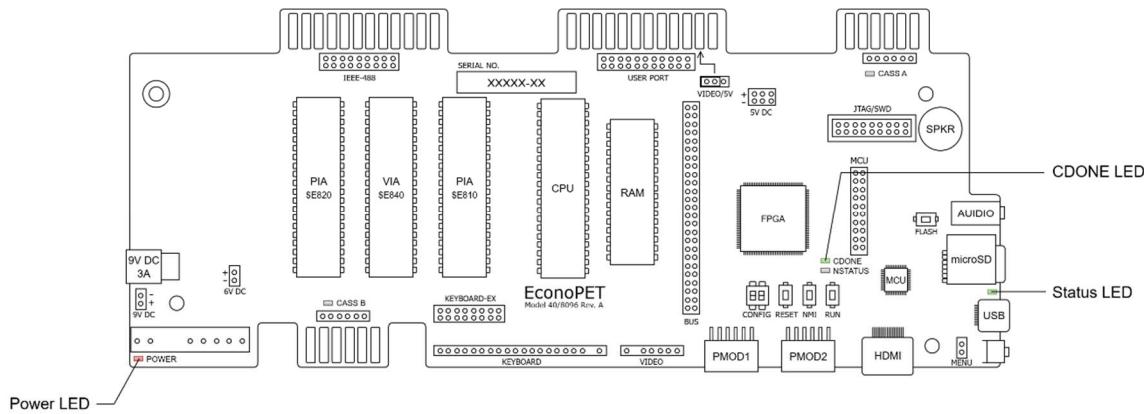
First read the **Safety Warnings** and **Handling and Care Guidelines** at the beginning of this manual before proceeding. *If you are not experienced with high-voltage electronics, seek guidance or supervision before proceeding.*

If you encounter issues with the EconoPET, the first step in troubleshooting is to **disconnect all peripherals**. This includes anything connected to the IEEE-488 port, User port, Cassette ports, USB-C port, and audio jack. By removing these connections, you can isolate the problem and determine if the issue lies with the EconoPET board or with one of the connected devices.

Diagnosing Boot Failures

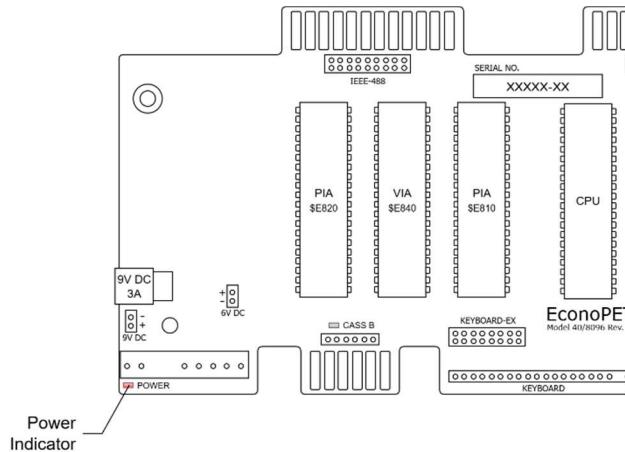
If the EconoPET does not successfully boot to the Power-On Menu, the next step in troubleshooting is to open the CBM/PET case. With the case open, you will be able to observe the system’s internal LED indicators, which provide information about how far the boot sequence progresses and help identify where the startup process may be failing.

The three main indicators are the Power LED, the Status LED, and the CDONE LED. The location of these LEDs is shown in the following diagram.



Power LED Does Not Light

The first LED to light is the red power indicator in the lower left corner, just below the CBM/PET power connector.



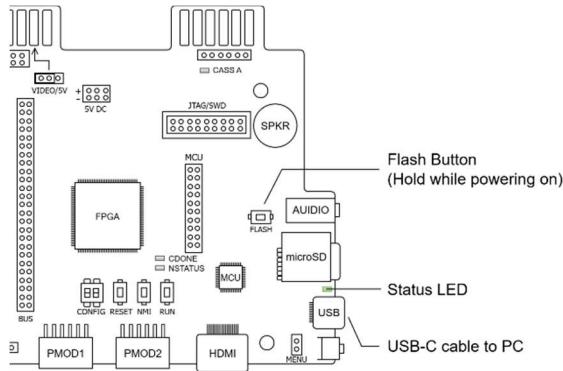
If the Power Indicator LED fails to illuminate when the system is switched on, check the following:

- With the power off and machine unplugged, **disconnect all peripherals** as described at the beginning of the Troubleshooting section.
- Verify that the machine is plugged in** and that the outlet is working outlet. Try eliminating any extension cords or power strips.
- Check that the internal power connector is correctly connected** to the EconoPET (see Board Installation section).
- Ensure that the CBM/PET power switch is in the ON position.** Note that the ON / OFF orientation of the CBM/PET power switch may be counter intuitive.

If the issue is still not identified, the problem is likely to be the CBM/PET power supply. At this point, you will want to refer to online troubleshooting guides.

Green Status LED Inactive

Under normal circumstances, the green Status LED located next to the microSD card will show activity shortly after power on. If the Status LED never lights, this indicates that the EconoPET bootloader is missing or corrupted.



First **prepare a microSD card as described in the *Initializing the microSD Card* section.**

(Once the EconoPET bootloader is restored, the microSD card will be used to finish the firmware update.)

To restore the EconoPET bootloader, do the following:

1. **Power off the CBM/PET.**
2. **Connect a USB cable** from the EconoPET's USB-C port to your computer.
3. **Enter flash mode:**
 - Press and hold the **FLASH** button on the EconoPET.
 - **While holding FLASH**, power on the CBM/PET.
 - After a couple of seconds, you can release the **FLASH** button.
4. The EconoPET will appear on your PC as a **USB mass storage device** named RPI-RP2.
5. **Copy the bootloader file:** Drag and drop the bootloader.uf2 file into the RPI-RP2 drive. (bootloader.uf2 is contained in the same .zip used to initialize the microSD card.)

6. After the file is copied, the EconoPET will automatically reboot and finish the firmware update from the microSD card. (Green LED will blink rapidly during this process.)
7. Disconnect the USB cable and proceed with troubleshooting (if necessary).

Status LED Error Indications

Under normal operation, the green **Status LED** next to the microSD card reader will:

- **Blink once** at power-on.
- **Turn on solid** while the EconoPET hardware is initializing.
- **Turn off** once initialization is complete.

If instead the Status LED blinks in a **continuous repeating pattern**, this indicates that the EconoPET has halted due to a critical error. The pattern is Morse code. Use the table below to decode the error message.

CDONE LED	Status LED	Description
Off	— ·	<p>The EconoPET bootloader could find the file ‘firmware.uf2’ at the root of the microSD card.</p> <ol style="list-style-type: none"> 1. Turn off the machine 2. Prepare the microSD card as described in the <i>Initializing the microSD Card</i> section 3. Reinsert the microSD card into the EconoPET 4. Turn on the machine.

Beep with No Video / Bad Video

If you hear the startup beep but do not see the boot menu on the CRT, verify that the CBM/PET video cable is securely connected and that **DIP switch #1** is set for the correct monitor type (see the *Monitor Type* section for more details).

⚠ Important - If when powering on the CBM/PET you see a “bright spot” or “line” or hear a repeated ticking sound, **turn the machine off immediately to prevent damage**.

Try connecting an HDMI display. If you see video on the HDMI display, but not the CBM/PET machine’s monitor, it is possible that monitor is not functioning correctly. At this point, you

will want to refer to online troubleshooting guides.

Error Message at Power On

If an error message appears at power-on, it usually indicates a problem with the contents of the microSD card. To resolve this, reformat and reinitialize the card as described in the *Initializing the microSD Card* section.



Keyboard Issues

If you have successfully booted to BASIC but find that typing on the CBM/PET keyboard produces the wrong characters, you probably have misconfigured the keyboard type. Power off the machine and toggle DIP switch #2 and see if this corrects the problem.

Also note that a few CBM/PET programs read the key matrix state directly from the PIA, assuming a specific keyboard layout (typically, it is games that assume the graphics keyboard layout).

When using a USB keyboard, you can work around the issues using the Num Lock key. Num Lock will toggle the USB keyboard between the business and graphics layout.

Cassette Ports Issues

If the cassette ports do not function as expected, verify that the device numbers are correctly assigned. The device number for each cassette port is set using the solder pads on the back of the EconoPET board. Refer to the *Cassette Port Device Number* section for instructions on selecting the correct configuration.

User Port Video Output Issues

If you are using a device that generates video from the User Port (such as a composite video adapter) and the output appears blank or incorrect, confirm that video output has been enabled on **User Port Pin 2**. Refer to the *User Port Pin 2* section for details on selecting and configuring this output.

Other Issues

If you've reached this section of the manual, I'm sorry. :-(

If the problem is with the EconoPET replacement board, please create an issue on GitHub and let me know what went wrong:

<https://github.com/DLehenbauer/econopet/issues>

The EconoPET is an open hardware / public domain hobbyist project. For those with a background in electronics, *Appendix A* provides schematics for the EconoPET board. The firmware source code and KiCad hardware project files are available on GitHub.

Help is always warmly appreciated.

For **general troubleshooting and repair of Commodore PET/CBM machines** (such as power supply or video display issues), I highly recommend the Commodore PET / CBM Enthusiasts group on Facebook:

<https://www.facebook.com/groups/214556078753960>

Acknowledgements

This project would not have been possible without the advice and encouragement of the [Commodore PET / CBM Enthusiasts](#) community on Facebook. While everyone I've met there has been fantastic, I am particularly grateful to the following members, who were especially generous in sharing their time and expertise in the earliest phases of the project:

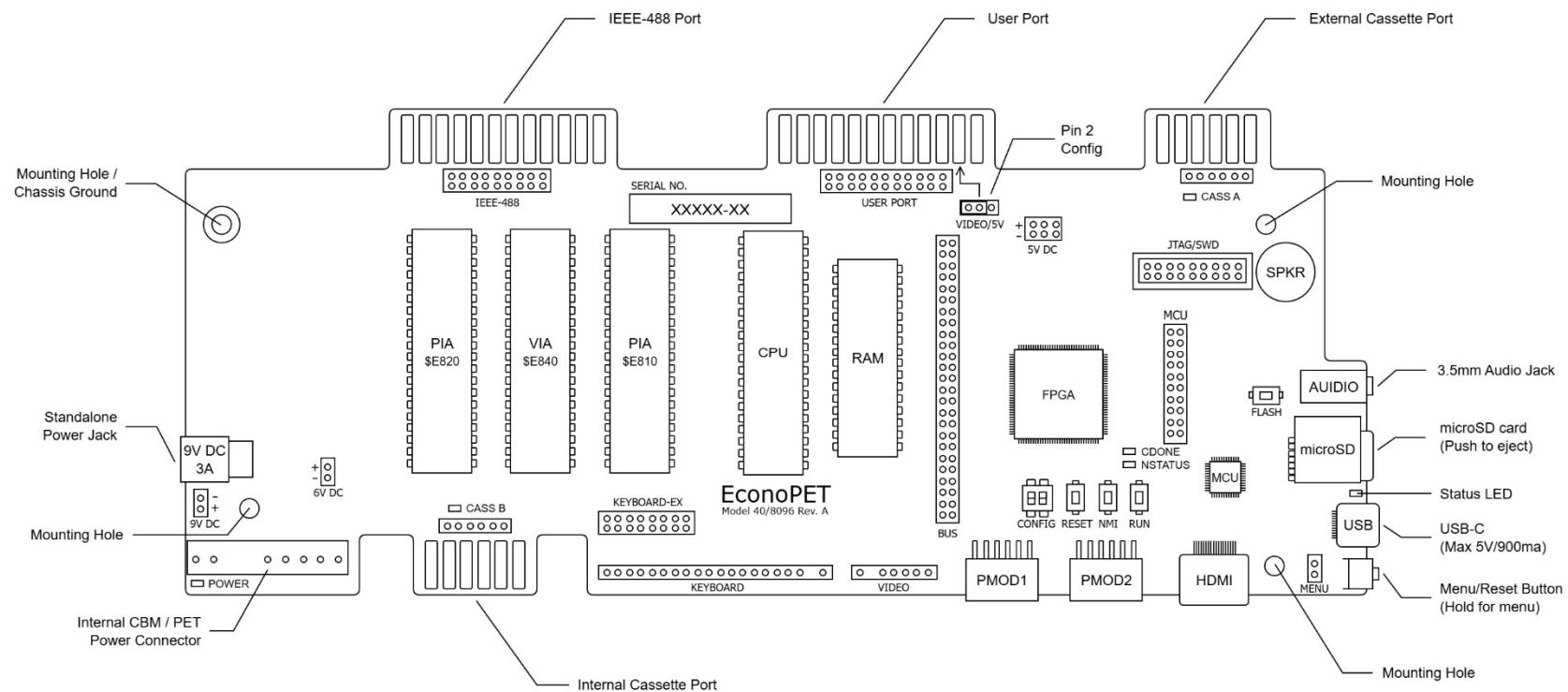
Gavin Andrews
Ethan Dicks
Steve Gray
Chuck Hutchins
Mia Magnusson
Sven Petersen
Jannie Van Zyl

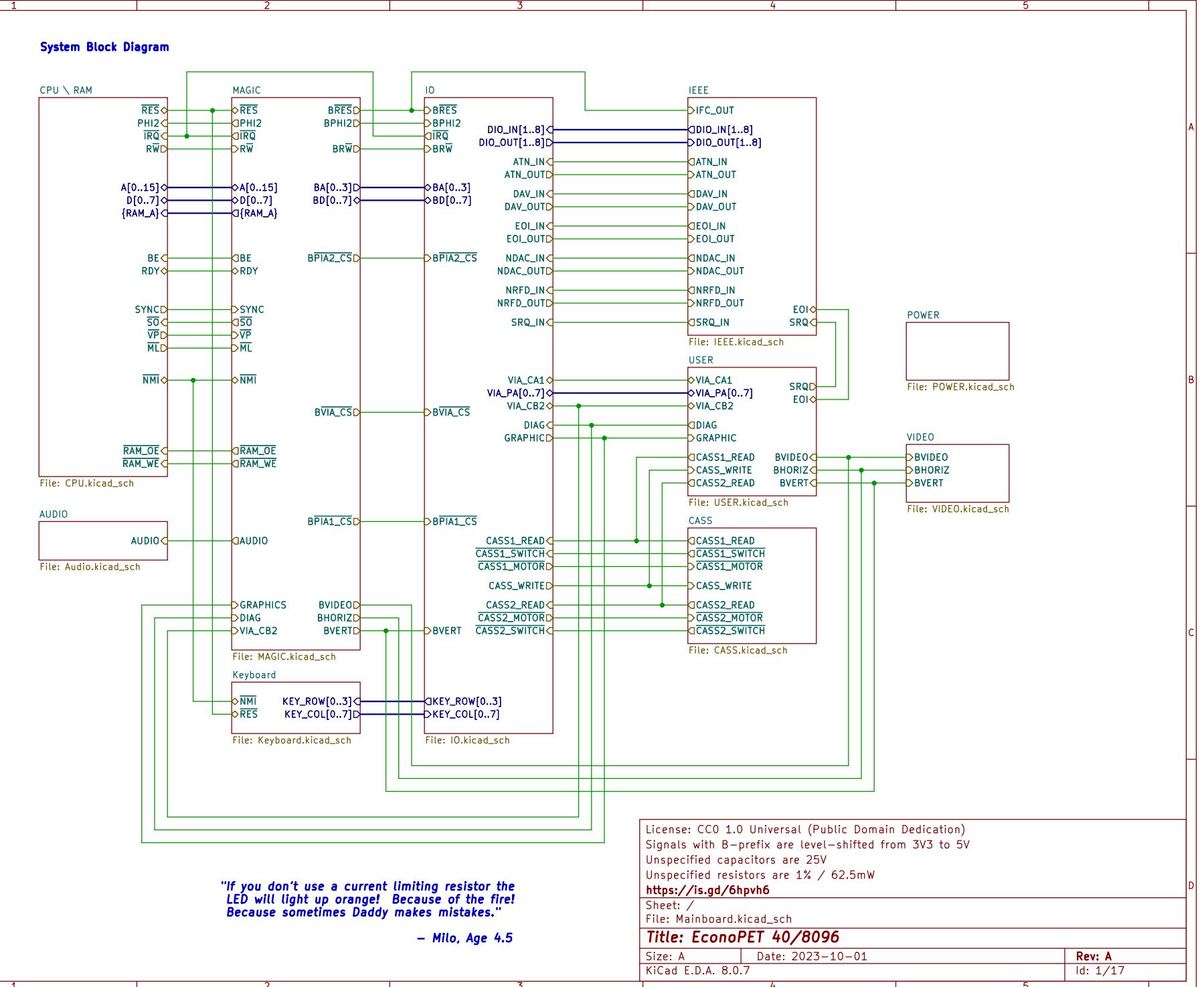
The PET/CBM community owes much to André Fachat for his thorough documentation of CBM/PET internals, and to Bo Zimmerman and others who have worked to preserve software and documentation.

And of course, I am grateful for the patience and support of my family. This journey started when my son asked if we could build a computer and was only possible with the support of my wife and partner, Bonnie, who once surprised me on my birthday with a RadioShack soldering iron.

Appendix A

Board Layout and Schematics

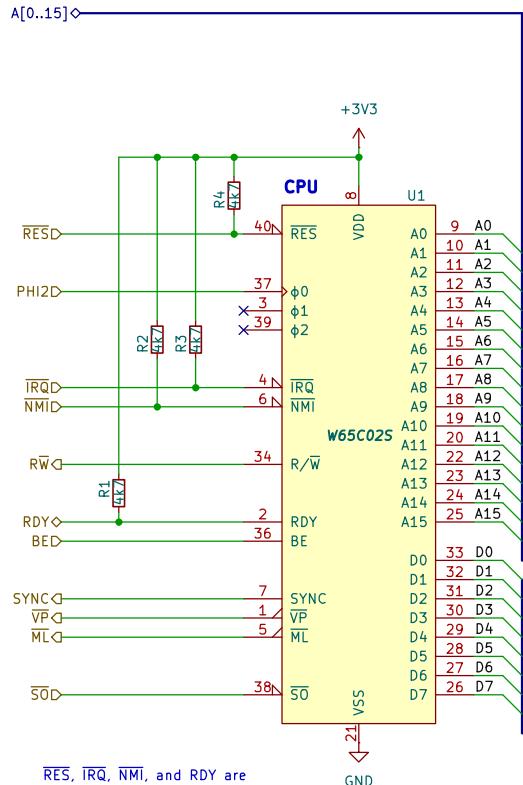




CPU and RAM operate at 3V3 so that the system bus and CPU control signals can be directly shared with the FPGA.

Level shifters are used for connections to the 5V I/O section. This design avoids needing level shifters for A[5..16].

The FPGA deasserts BE (Bus_Enable) to transition the CPU's Address, Data, and RW buffers to high-Z when the FPGA drives the bus.



{RAM_A}D

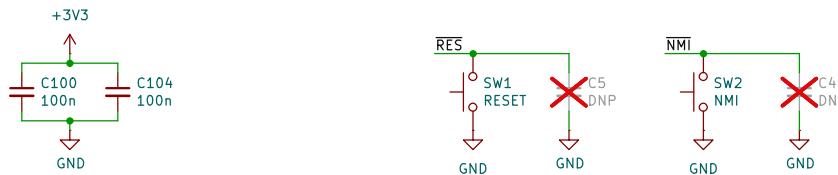
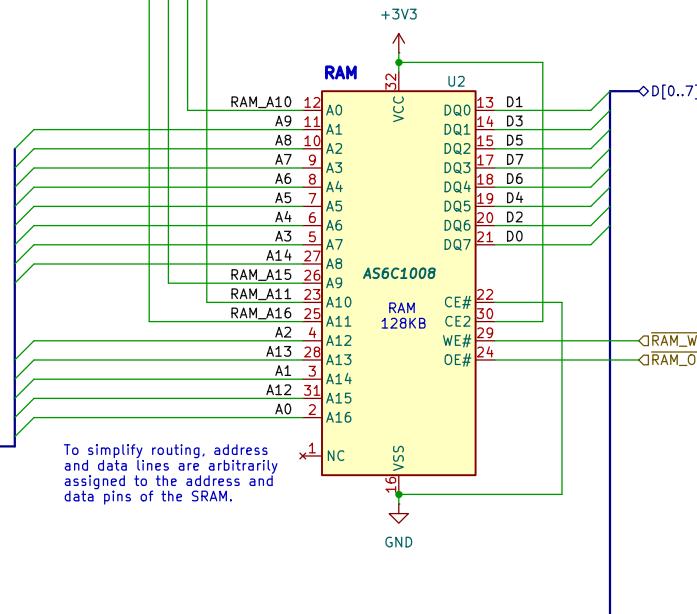
A single 128KB SRAM chip is used for the 32K main RAM, 64K expansion RAM, 2K display RAM, 2K character ROM and 26K system ROM. ROMs are initialized by the MCU on POR (via SPI → bus bridge provided by the FPGA).

A[15:0] are the address of the shared system bus, which is connected to the CPU, I/O, FPGA and most RAM address pins. The exceptions are RAM_A[16:15:11:10], which are driven exclusively by the FPGA.

RAM_A[11:10] is used by the FPGA to mirror display RAM when the CPU accesses the range \$8000–FFFF.

40 column PET has 1k of screen RAM, mirrored 4 times.
80 column PET has 2k of screen RAM, mirrored 2 times.

RAM_A[16:15] is used by the FPGA to implement bank switching when the CPU accesses the ranges \$8000–FFFF. The FPGA monitors writes to the control register at \$FFFF0 to determine which bank is currently selected.



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Signals with B-prefix are level-shifted from 3V3 to 5V

Unspecified capacitors are 25V

Unspecified resistors are 1% / 62.5mW

<https://is.gd/6hpvh6>

Sheet: /CPU \ RAM\

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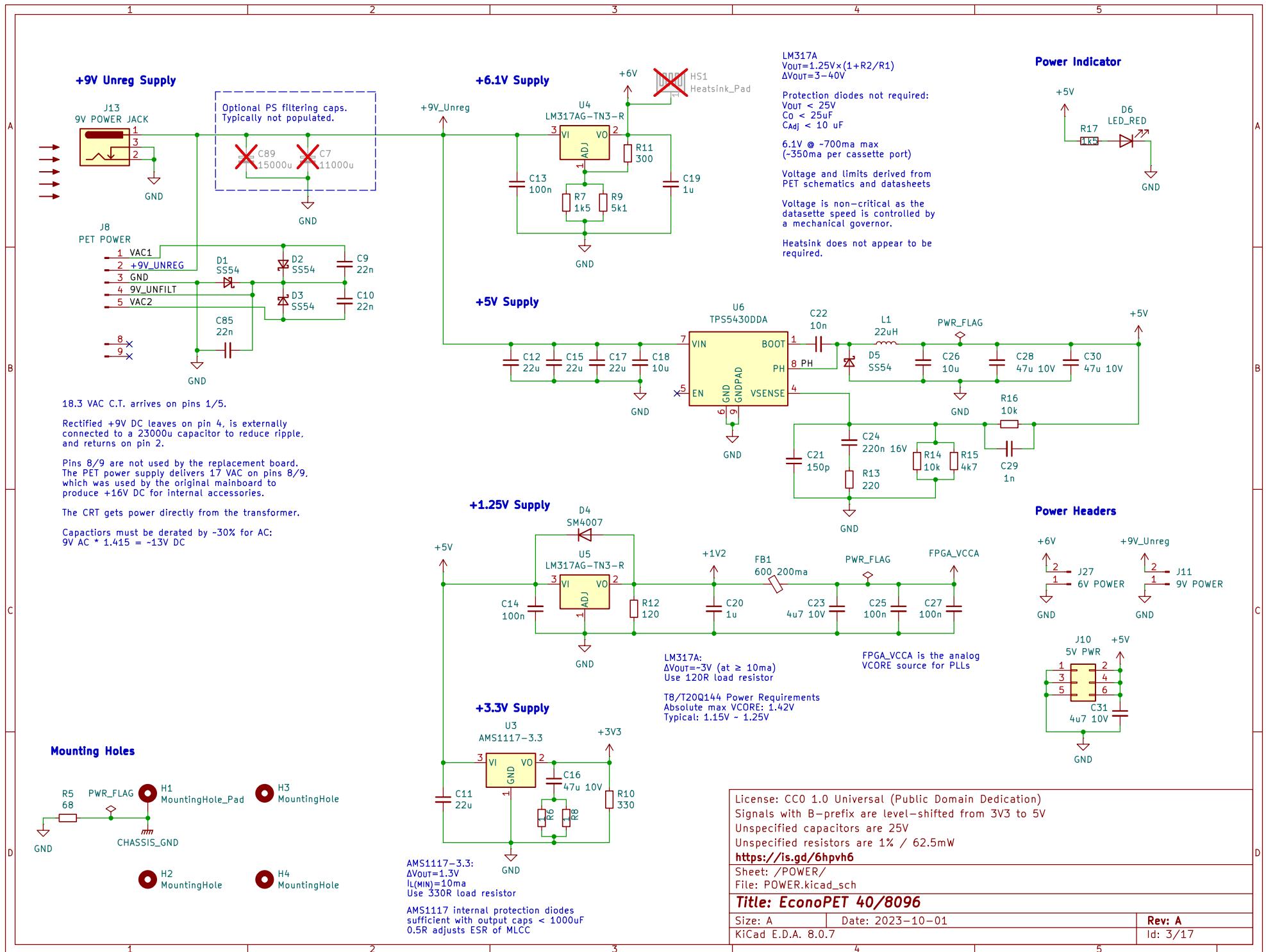
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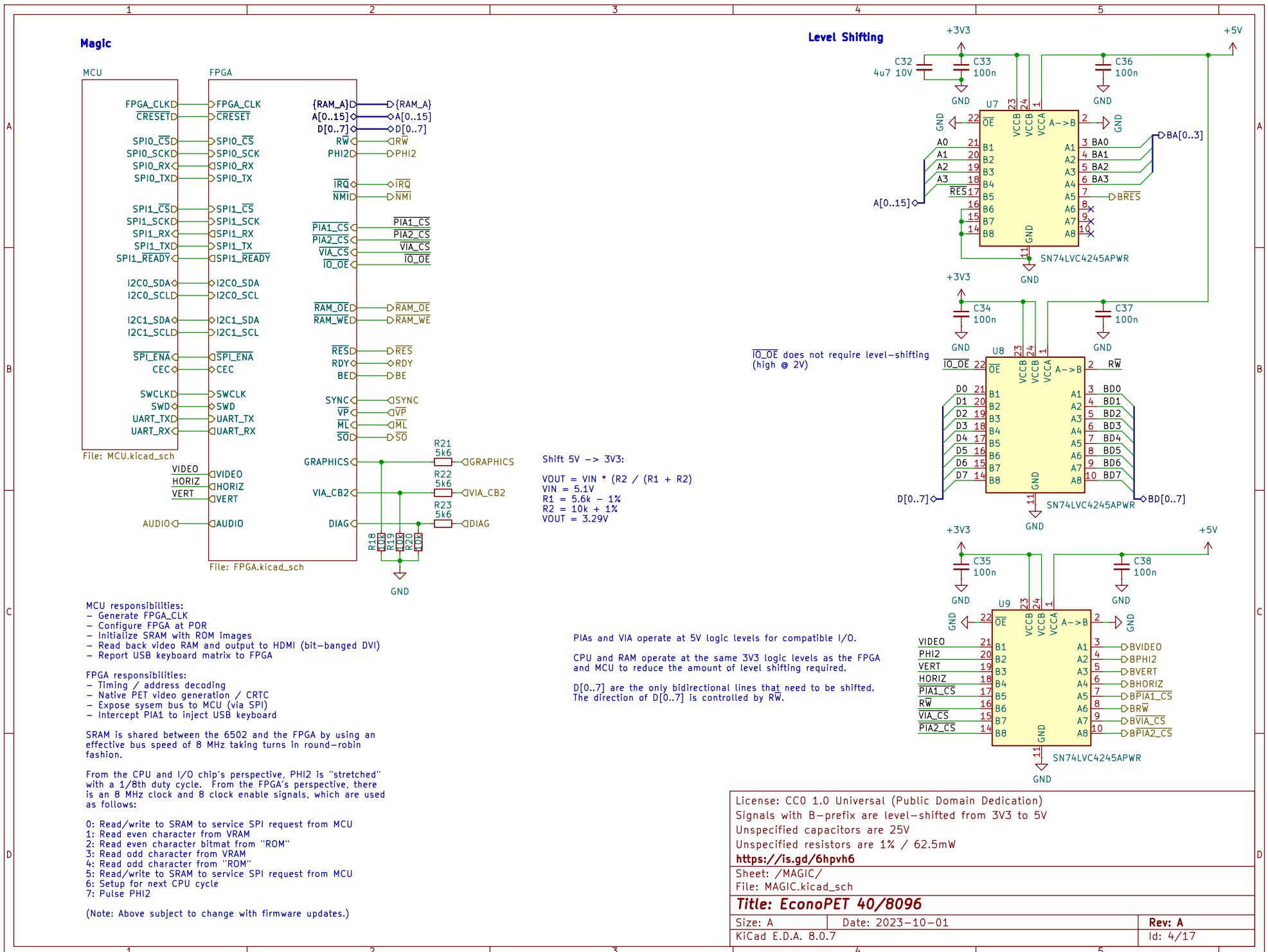
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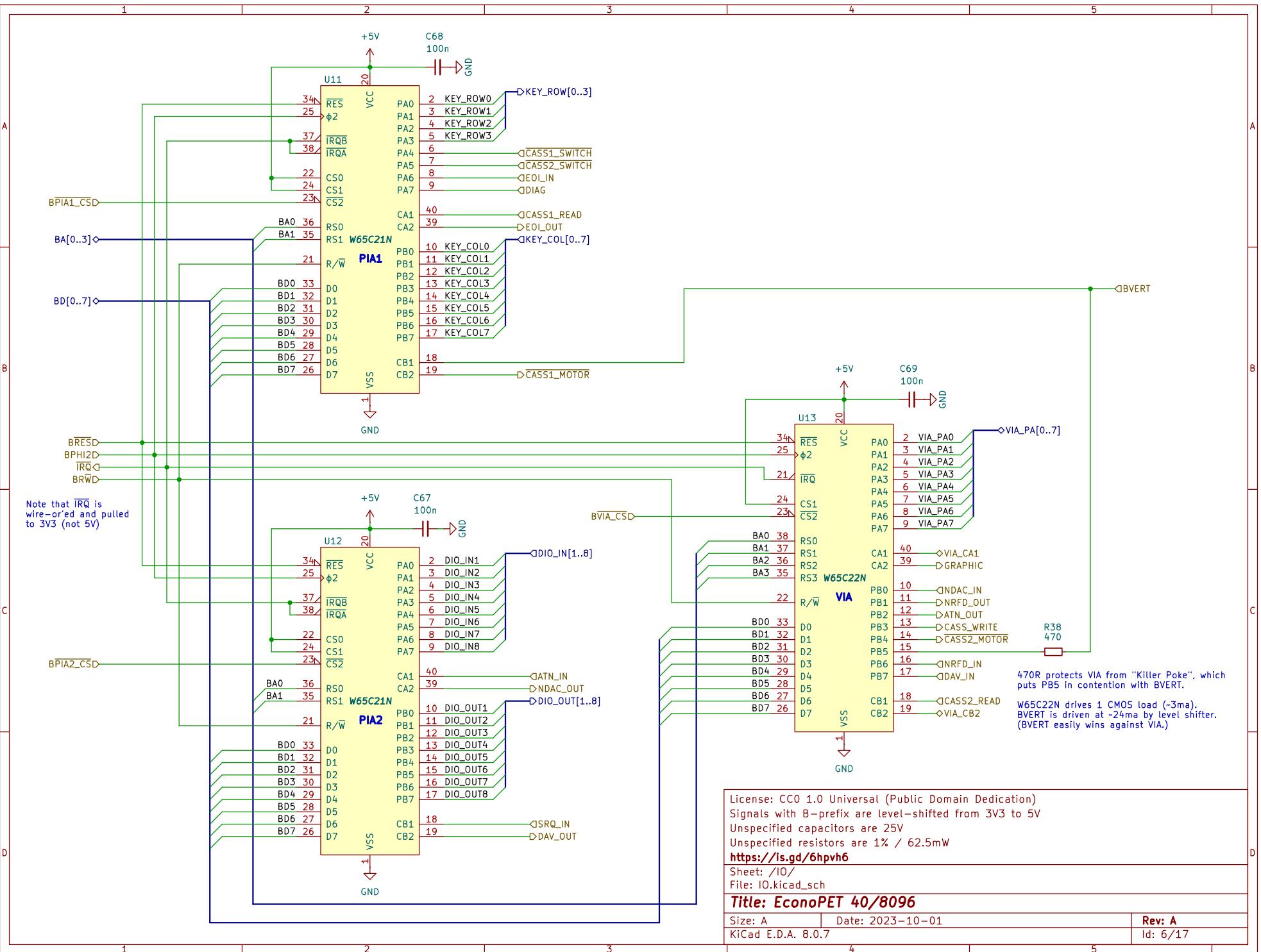
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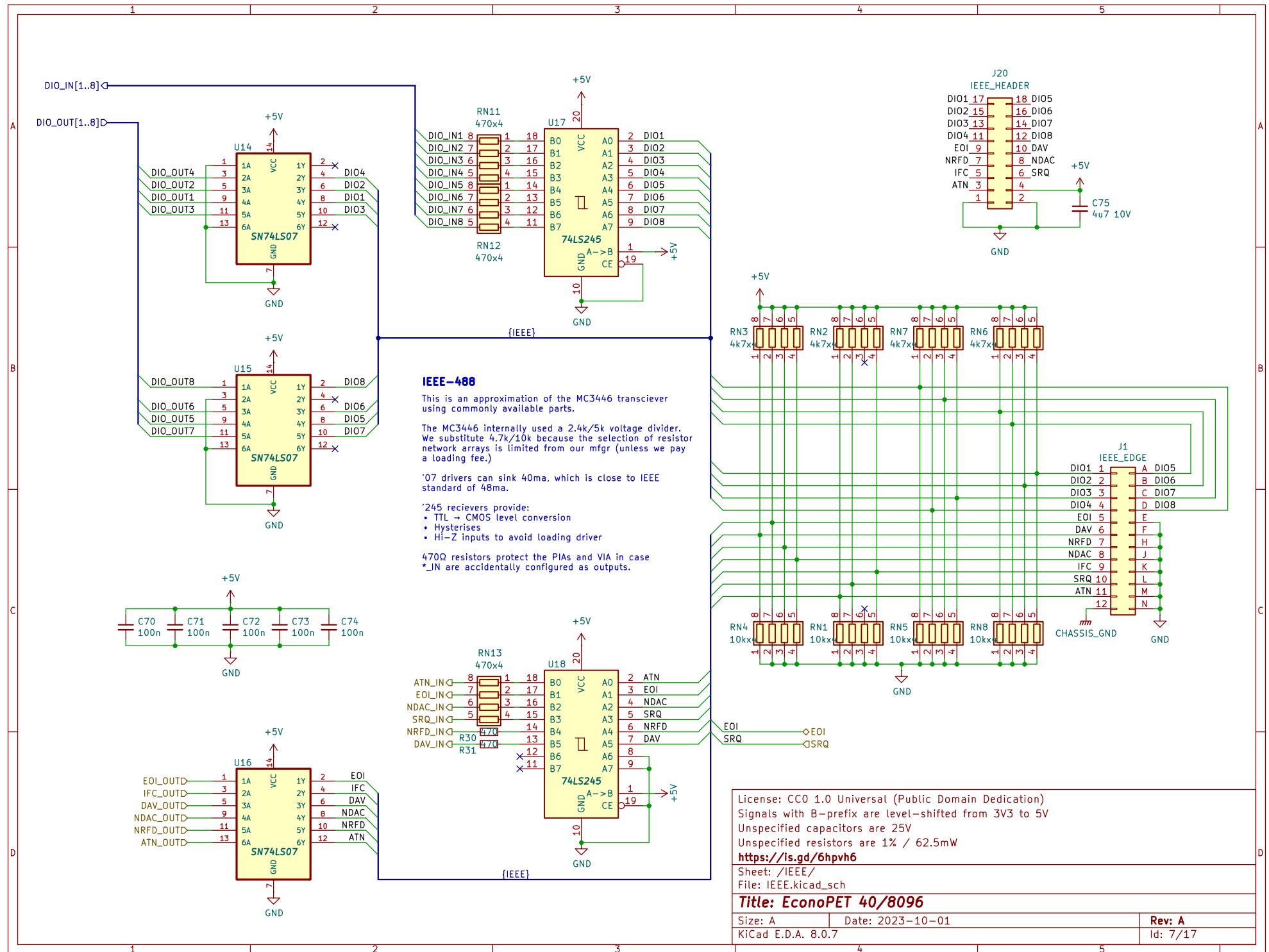
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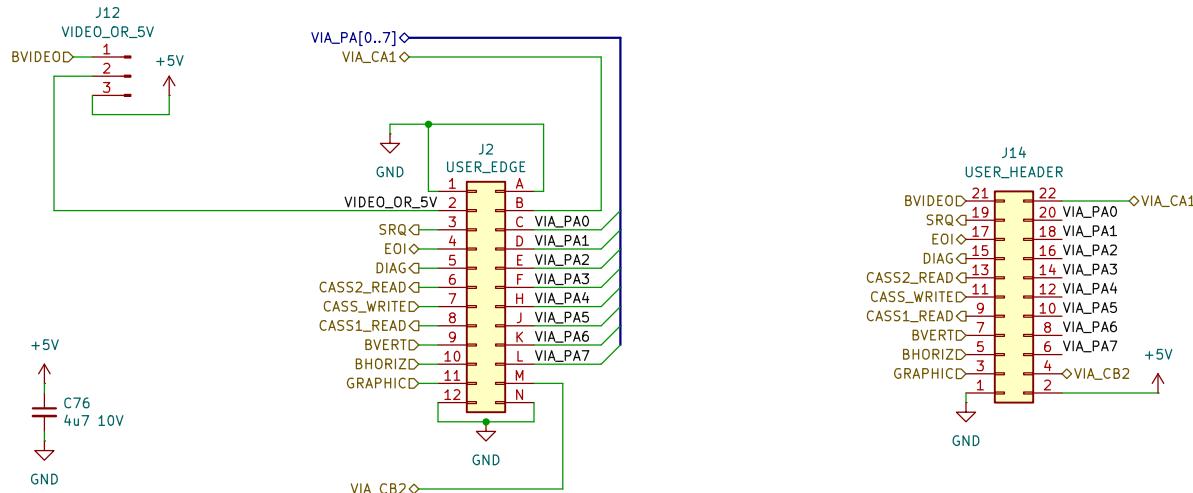
A

A

USER PORT

The VIDEO_OR_5V jumper allows partial compatibility with VIC-20 and C64 user port peripherals by delivering +5V on PIN_2 instead of PET video.

(Example: TexElec SNES adapter)



B

B

C

C

D

D

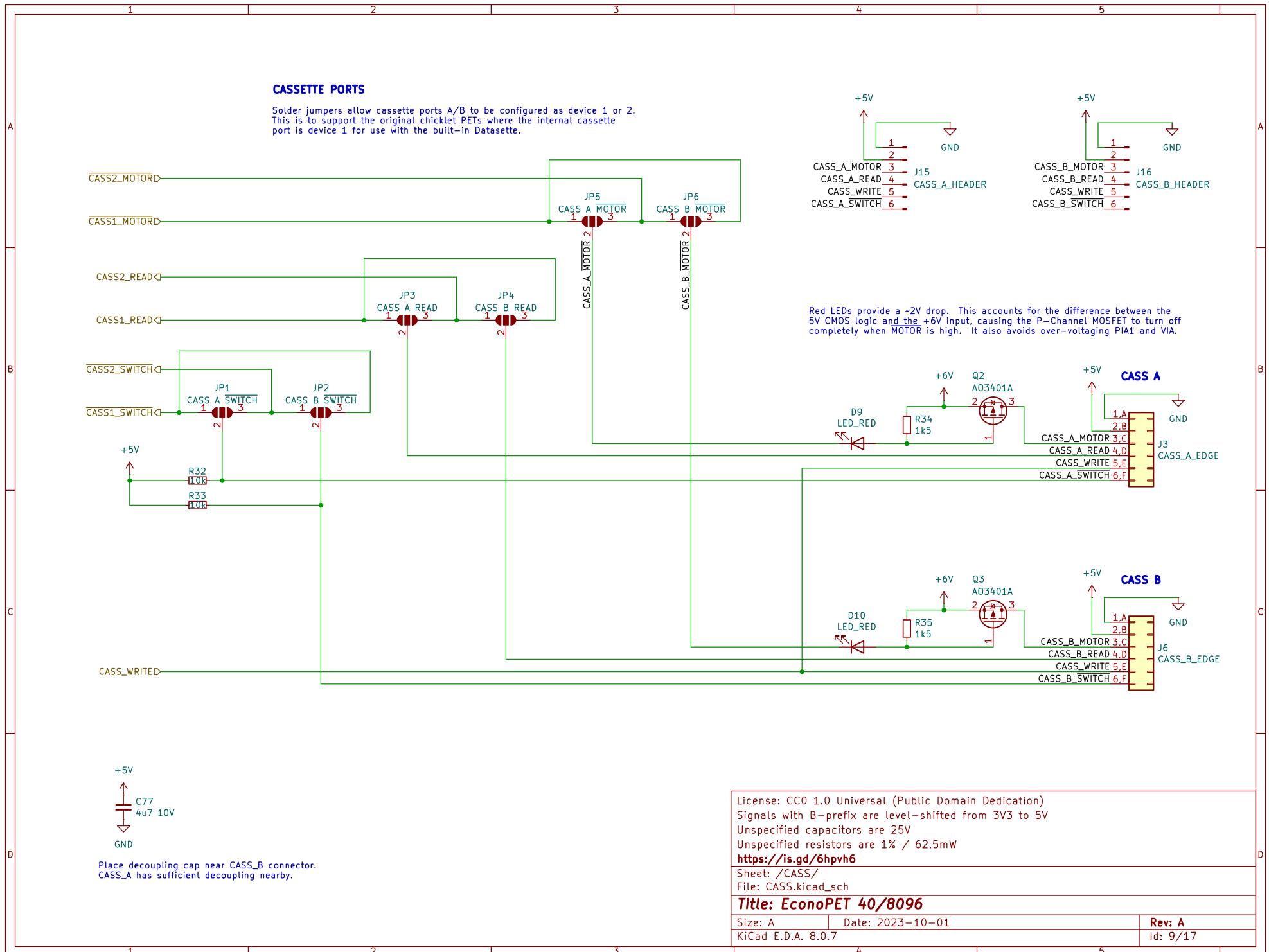
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 Signals with B-prefix are level-shifted from 3V3 to 5V
 Unspecified capacitors are 25V
 Unspecified resistors are 1% / 62.5mW
<https://is.gd/6hpvh6>

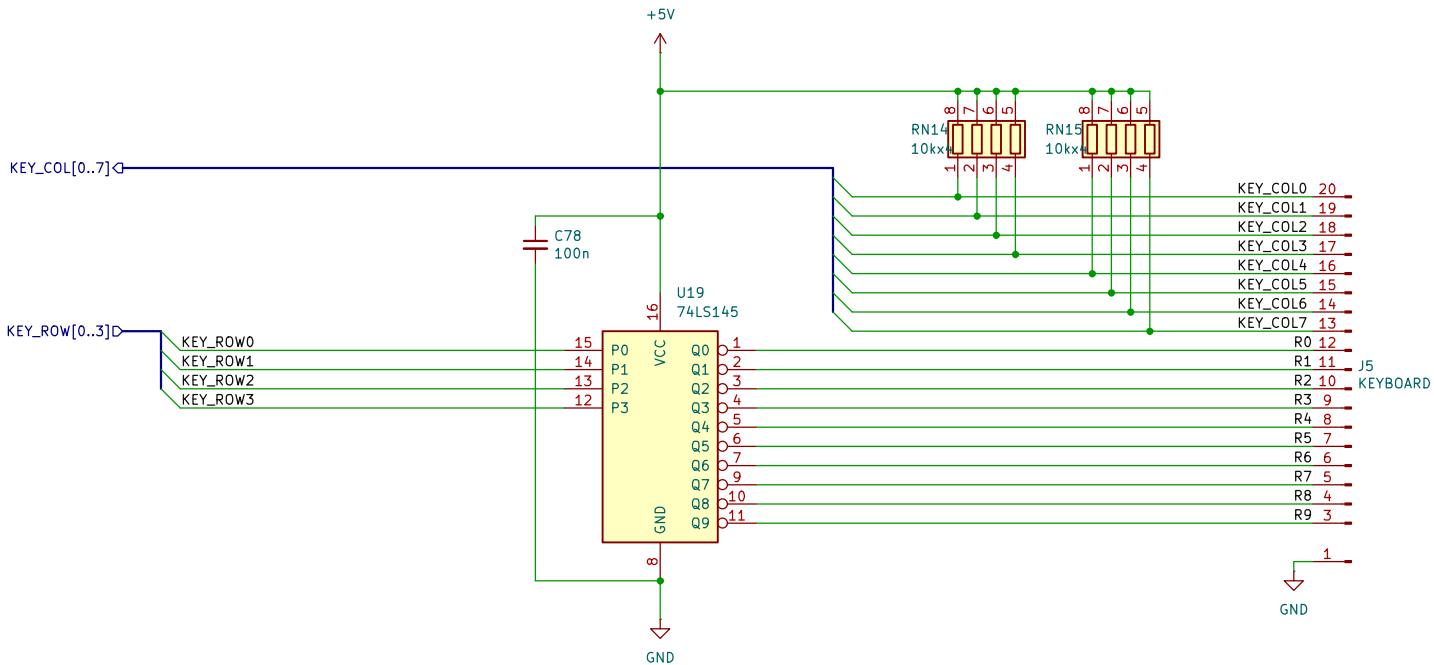
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Title: EconoPET 40/8096

Size: A	Date: 2023-10-01
KiCad E.D.A. 8.0.7	Rev: A

Id: 8/17





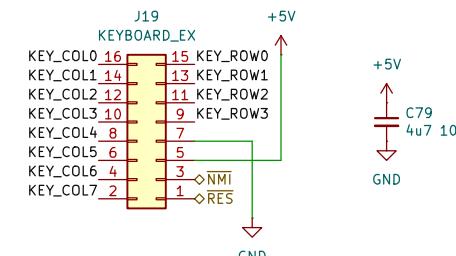
KEYBOARD

The PET uses a 74LS145 BCD-to-decimal to sink the active row of an 8x10 keyboard matrix. When a key in the selected row is pressed, it sinks the 10k pullup of the corresponding column.

The '145 is active low / open collector, capable of sinking an excessive 80mA for driving lamps in the pre-LED era. This is more than enough to sink all eight of the 10k pullups if the user pushes all keys for currently select row.

The KEYBOARD_EX header conveniently exposes the PA[3:0] and PB[7:0] lines for users interested in building adapters to support non-PET keyboards. It also exposes NMI for RESTORE and RES for reset.

<http://www.6502.org/users/sjgray/projects/petexpkbd/index.html>



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<https://is.gd/6hpvh6>

Sheet: /Keyboard/
 File: Keyboard.kicad_sch

Title: EconoPET 40/8096

Size: A Date: 2023-10-01
 KiCad E.D.A. 8.0.7

Rev: A
 Id: 10/17

1 2 3 4 5

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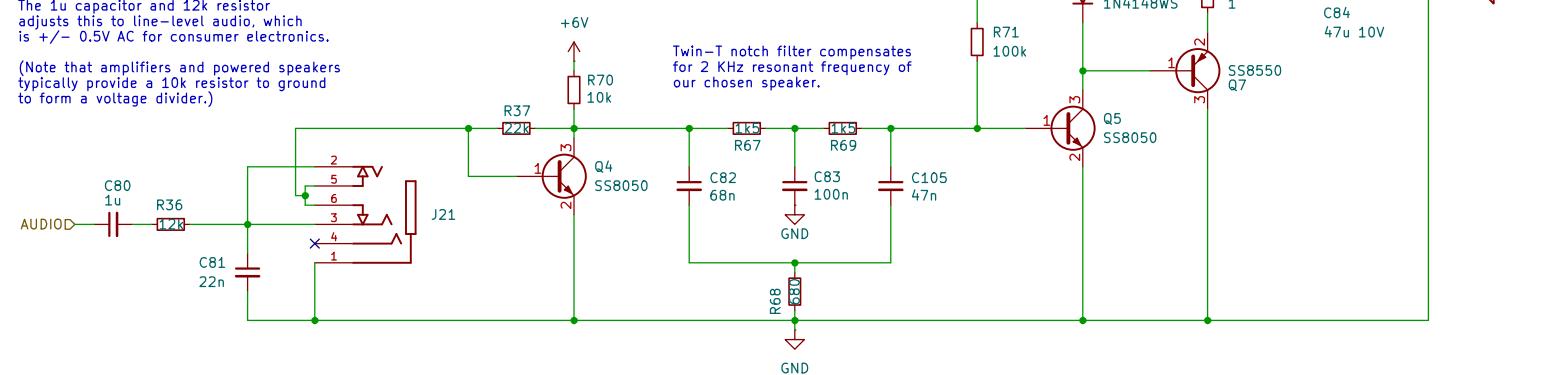
Audio

PET CB2 and DIAG are inputs to FPGA. FPGA implements AND gate and outputs AUDIO source. This saves an IC and allows for experimental enhancements, like SID emulation at \$8F00.

The AUDIO source is $\Delta\Sigma$ encoded 1-bit output from the FPGA (3V3 at 64 MHz).

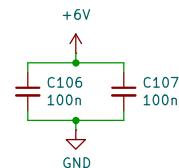
The 1u capacitor and 12k resistor adjusts this to line-level audio, which is $\pm 0.5V$ AC for consumer electronics.

(Note that amplifiers and powered speakers typically provide a 10k resistor to ground to form a voltage divider.)



B

B



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C

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Sheet: /AUDIO/
File: Audio.kicad_sch

Title: EconoPET 40/8096

Size: A Date: 2023-10-01
KiCad E.D.A. 8.0.7

Rev: A
Id: 11/17

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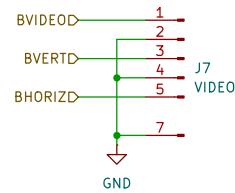
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VIDEO HEADER

Not too much to see here. :-)

If you're looking for the modern DVI video output over an HDMI connector,
look under Magic / MCU / DVI.

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Signals with B-prefix are level-shifted from 3V3 to 5V

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Unspecified resistors are 1% / 62.5mW

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Sheet: /VIDEO/

File: VIDEO.kicad_sch

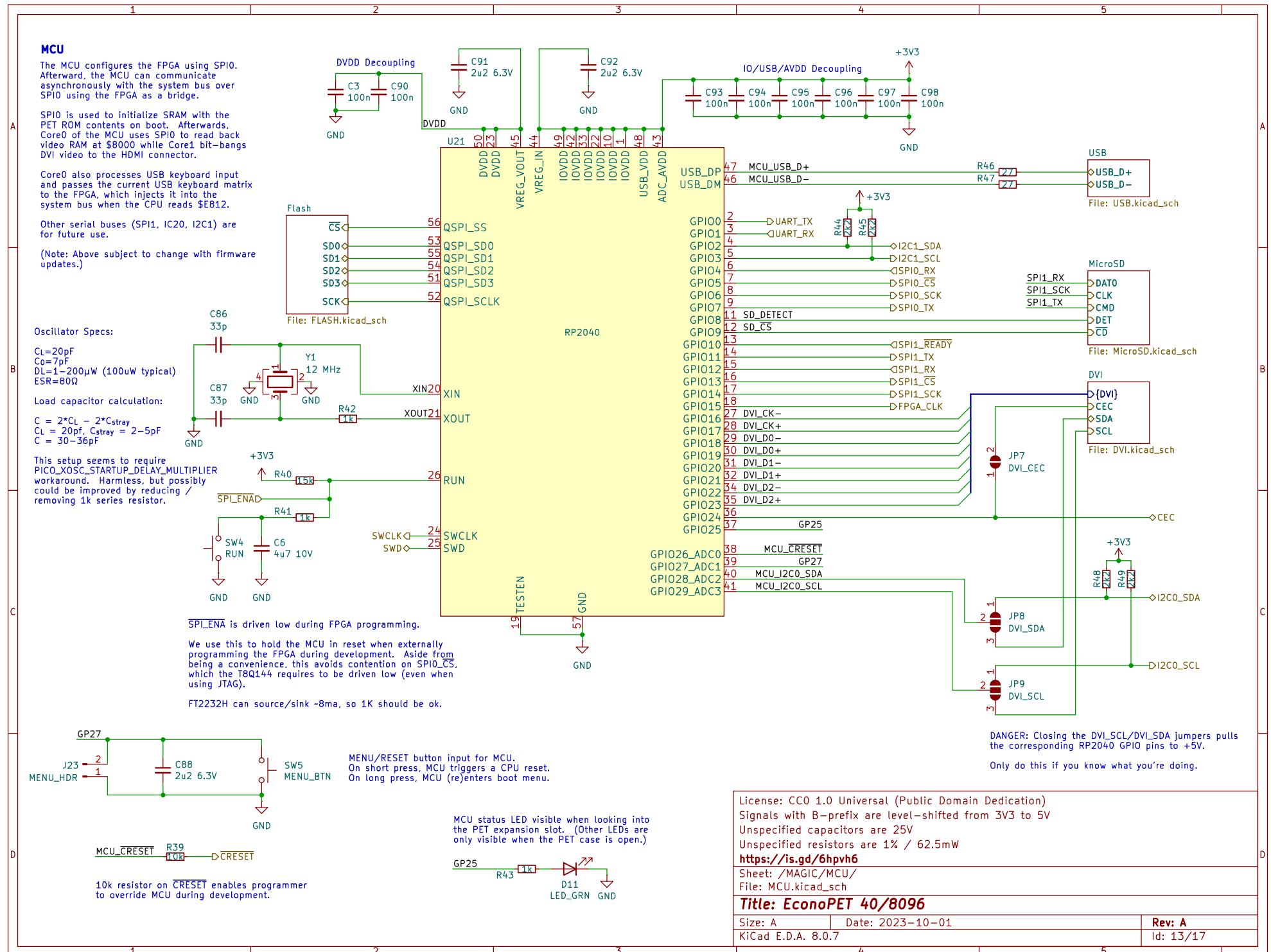
Title: EconoPET 40/8096

Size: A | Date: 2023-10-01

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Rev: A

Id: 12/17

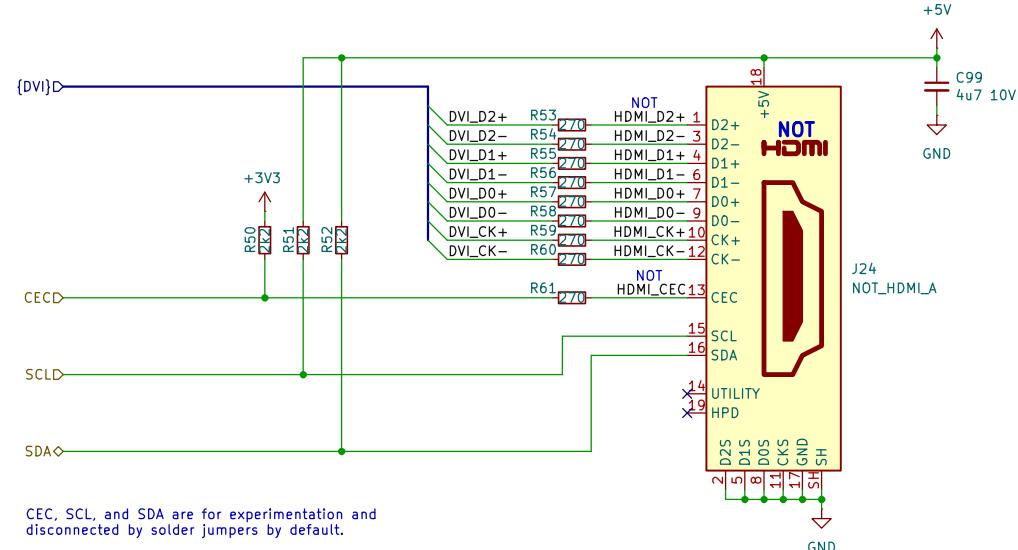


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DVI VIDEO

Uses legacy DVI TMDS protocol over an HDMI connector.
See: <https://github.com/Wren6991/PicoDVI>



CEC, SCL, and SDA are for experimentation and disconnected by solder jumpers by default.

DANGER: Closing the DVL_SCL/DVL_SDA jumpers pulls the corresponding RP2040 GPIO pins to +5V.

Only do this if you know what you're doing.

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Sheet: /MAGIC/MCU/DVI/
File: DVI.kicad_sch

Title: EconoPET 40/8096

Size: A	Date: 2023-10-01
KiCad E.D.A. 8.0.7	Rev: A

Id: 14/17

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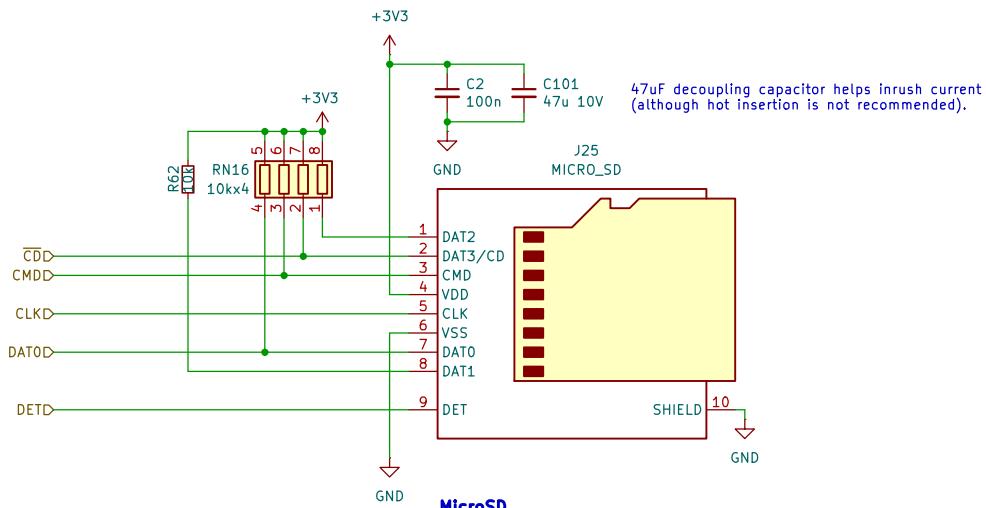
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Unspecified resistors are 1% / 62.5mW

<https://is.gd/6hpvh6>

Sheet: /MAGIC/MCU/MicroSD/

File: MicroSD.kicad_sch

Title: EconoPET 40/8096

Size: A Date: 2023-10-01

KiCad E.D.A. 8.0.7

Rev: A

Id: 15/17

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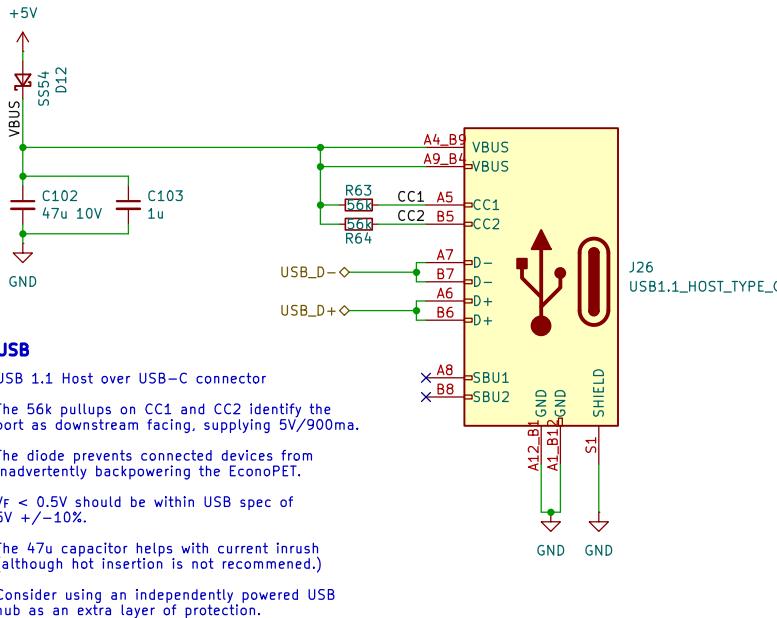
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 Unspecified capacitors are 25V
 Unspecified resistors are 1% / 62.5mW
<https://is.gd/6hpvh6>

Sheet: /MAGIC/MCU/USB/
 File: USB.kicad_sch

Title: EconoPET 40/8096

Size: A	Date: 2023-10-01
KiCad E.D.A. 8.0.7	Rev: A
Id: 16/17	

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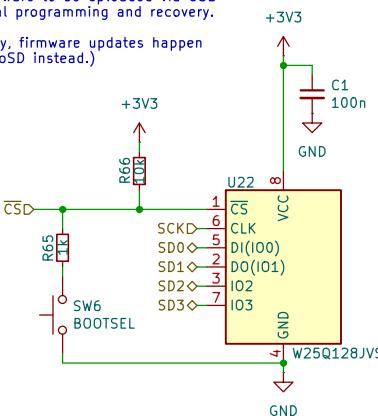
B

Flash

16MiB Quad SPI flash memory for MCU.

Holding BOOTSEL at power on puts the MCU into programming mode, allowing new firmware to be uploaded via USB for initial programming and recovery.

(Typically, firmware updates happen via microSD instead.)



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Signals with B-prefix are level-shifted from 3V3 to 5V

Unspecified capacitors are 25V

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<https://is.gd/6hpvh6>

Sheet: /MAGIC/MCU/Flash/

File: FLASH.kicad_sch

Title: EconoPET 40/8096

Size: A

Rev. A

REV: A