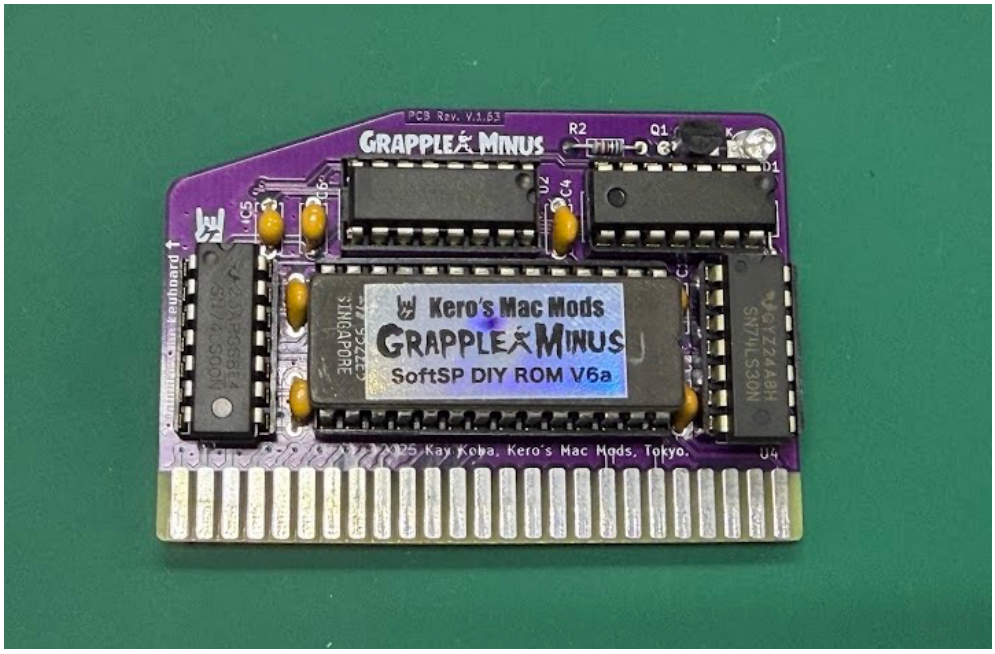
Kero's Mac Mods

GRAPPLER MINUS V1.63 Card Kit

Assembly Guide

Store Page: https://en.infinityproducts.co.jp/product-page/grappler-minus-fully-assembled-card-or-bare-pcb
GitHub: https://github.com/kerokero5150/GrapplerMinus
**The files uploaded to GitHub are version 1.4, which has slight differences in circuit configuration compared to this kit.*



Kit Contents

Please verify that the following parts are included:

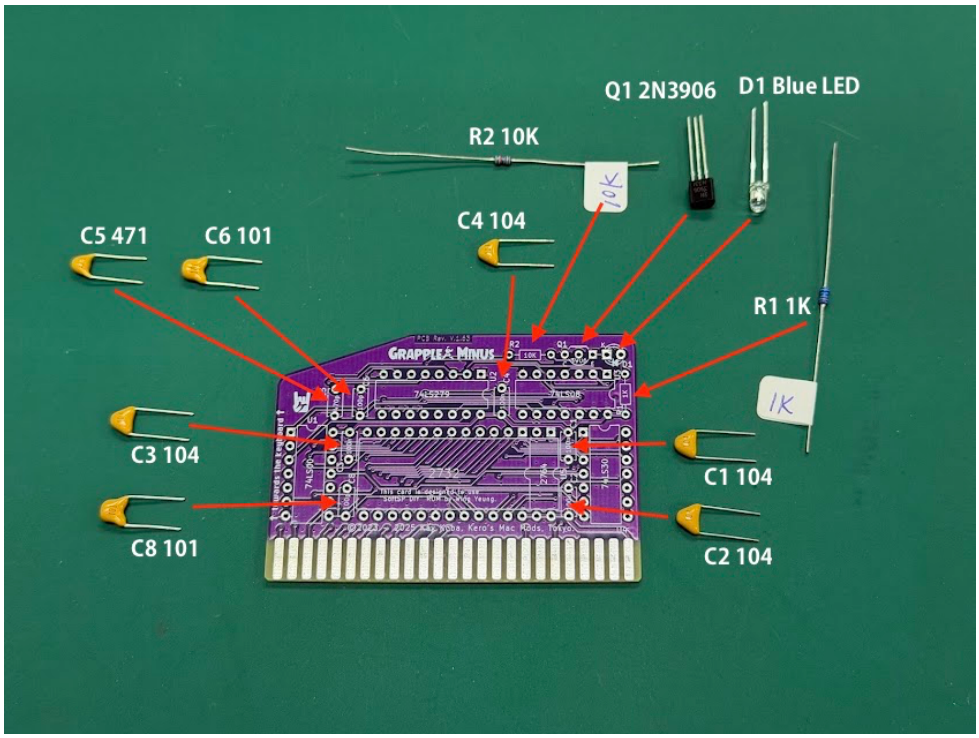
- Grappler Minus bare card *Main PCB
- 74LS00
- 74LS279
- 74LS08

- 74LS30
- 3x 14-pin IC sockets
- 1x 16-pin IC socket
- 4x 100nF capacitors
- 2x 100pF capacitors
- 1x 470pF capacitor
- 1x Pre-flashed EPROM
- 1x 24-pin ROM Socket
- 3906 Transistor
- 10K Resistor
- 1K Resistor
- M3 Blue LED

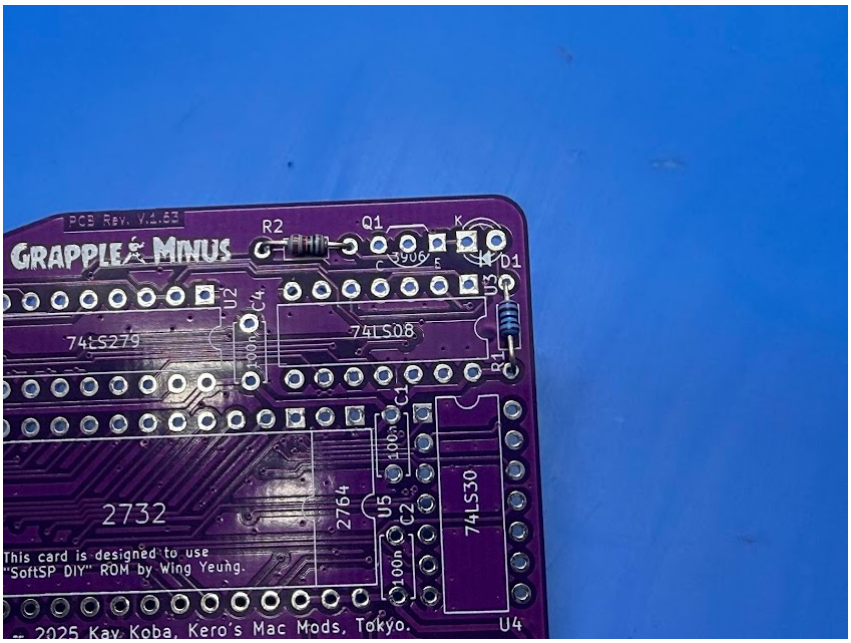
Safety Notice and Disclaimer

1. **Ensure Safe Assembly**
   When assembling or using this product, please use appropriate tools and maintain a safe working environment. There is a risk of burns, cuts, or other injuries. Exercise caution at all times.
2. **Keep Out of Reach of Children**
   This product contains small parts that may pose a choking hazard. Store it in a secure location, especially if young children are present in your household.
3. **Serious Accidents and Fatalities**
   We are not liable for any serious accidents (such as electric shock, fire, or other hazards) caused by improper use or unsafe working conditions. Please handle and operate the product responsibly.
4. **Impact on Other Devices**
   We do not provide any warranty or assume responsibility for damage or malfunction of other devices connected to or used with this product.
5. **Disclaimer of Liability**
   We disclaim all liability for any damages—direct, indirect, incidental, or consequential—arising from the use of this product. All use is at the user's own risk.

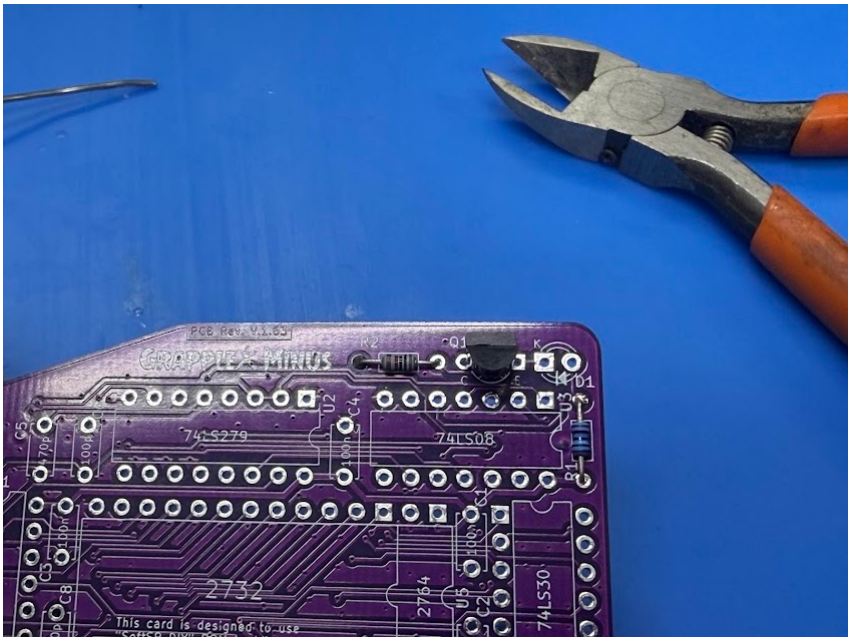
Assembly Instructions



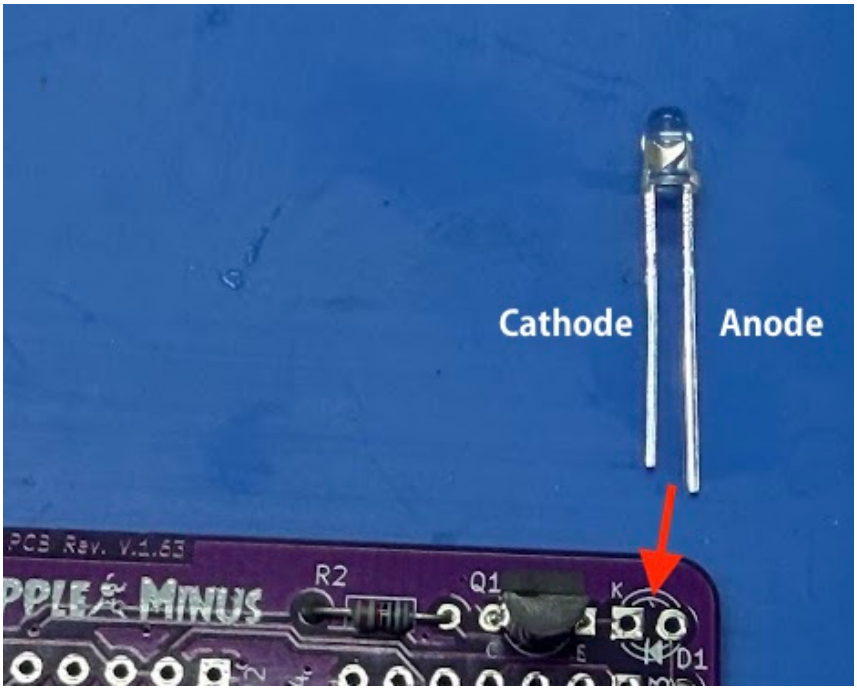
1. **Start with the shortest components.**
   Resistors are the shortest, solder the R1 1K and R2 10K resistors to the PCB.



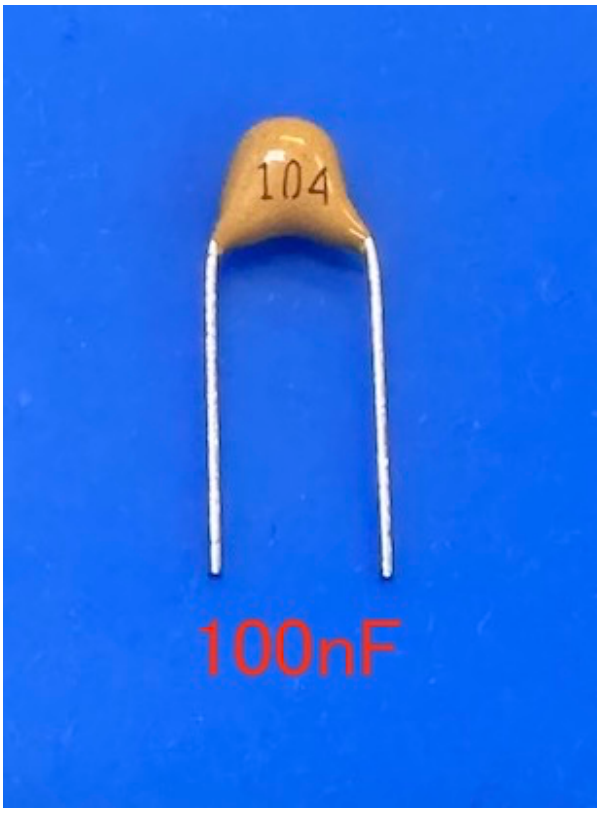
2. Next, solder the Q1 3906 Transistor to the PCB. Make sure the flat side is facing up.



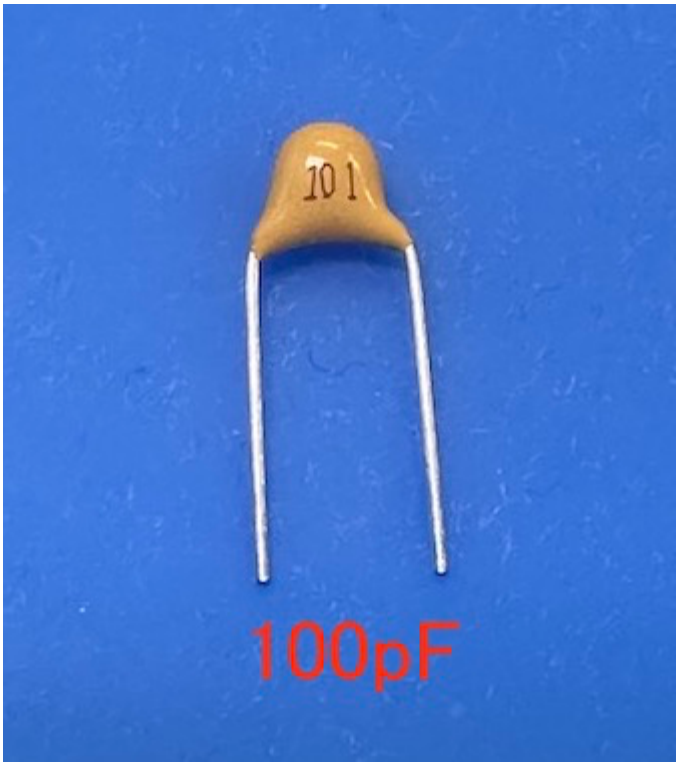
3. Next, solder the LED. The side marked with a "K" on the PCB silkscreen will be the cathode, so align the shorter leg of the LED with the K.



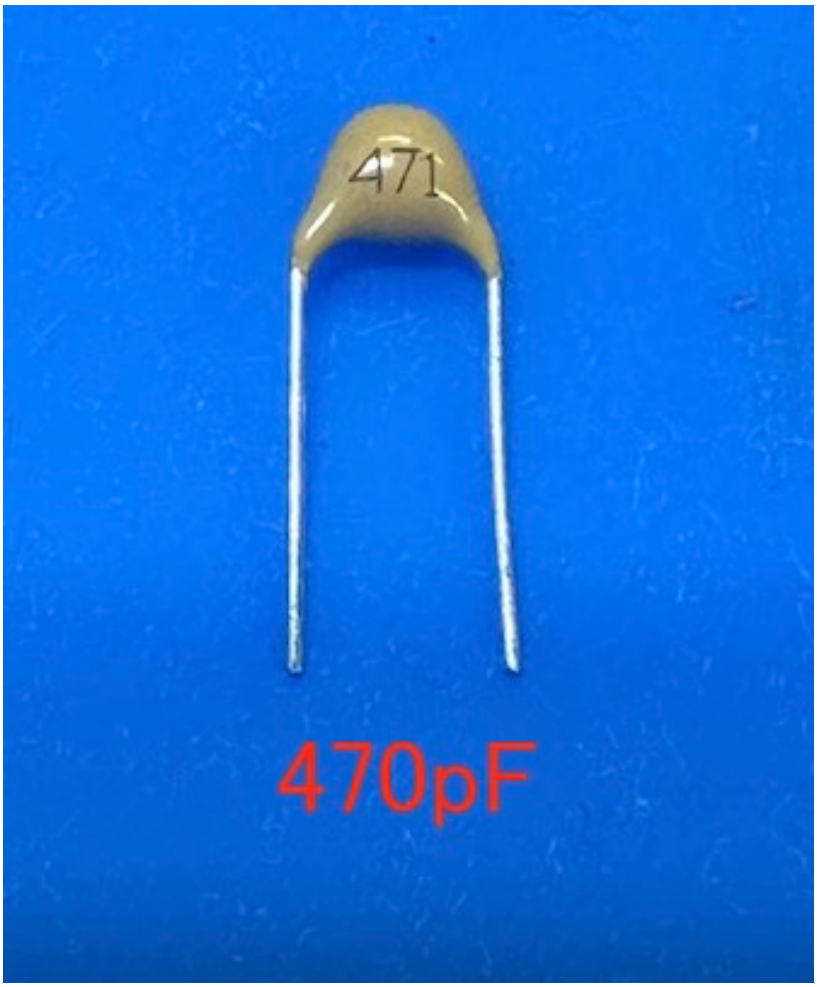
4. Next, solder the capacitors. Begin by installing the four 100nF capacitors marked "104." Use a magnifying glass to identify them and place them in positions **C1, C2, C3, and C4**.



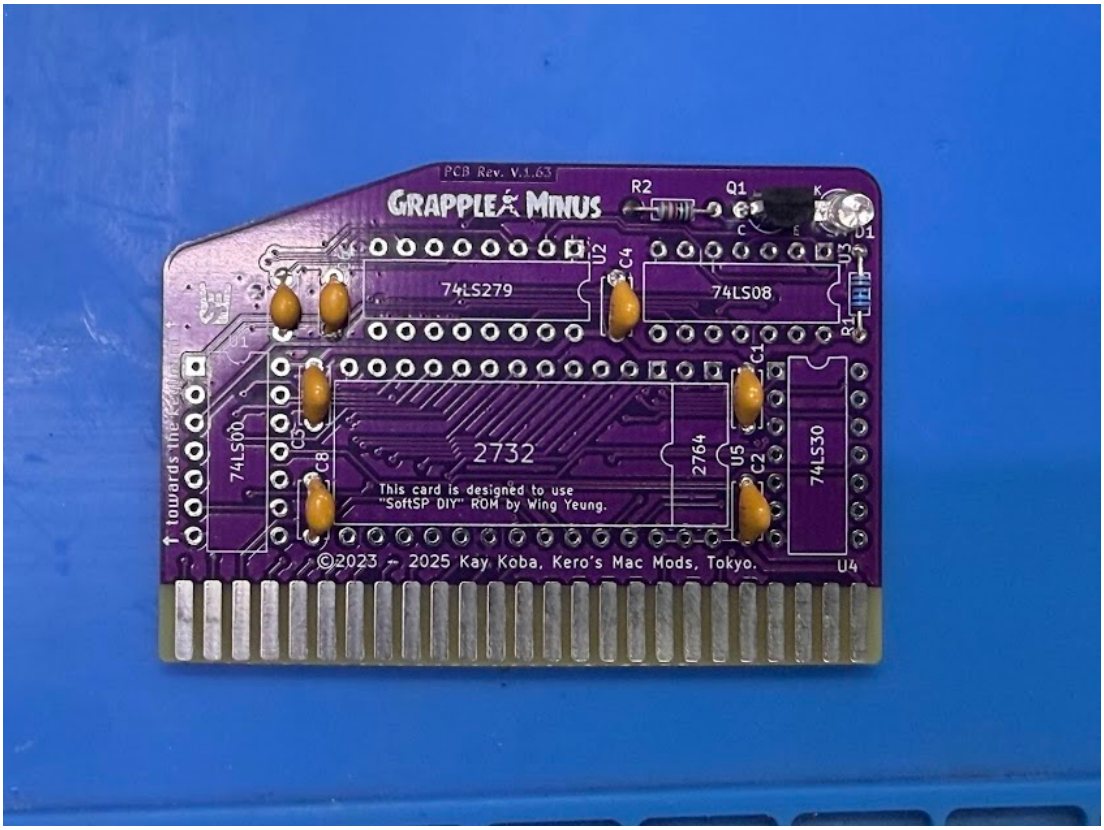
5. **Install the 100pF capacitors.**
   Locate the two capacitors marked "101" (100pF) and install them at **C6 and C8**.



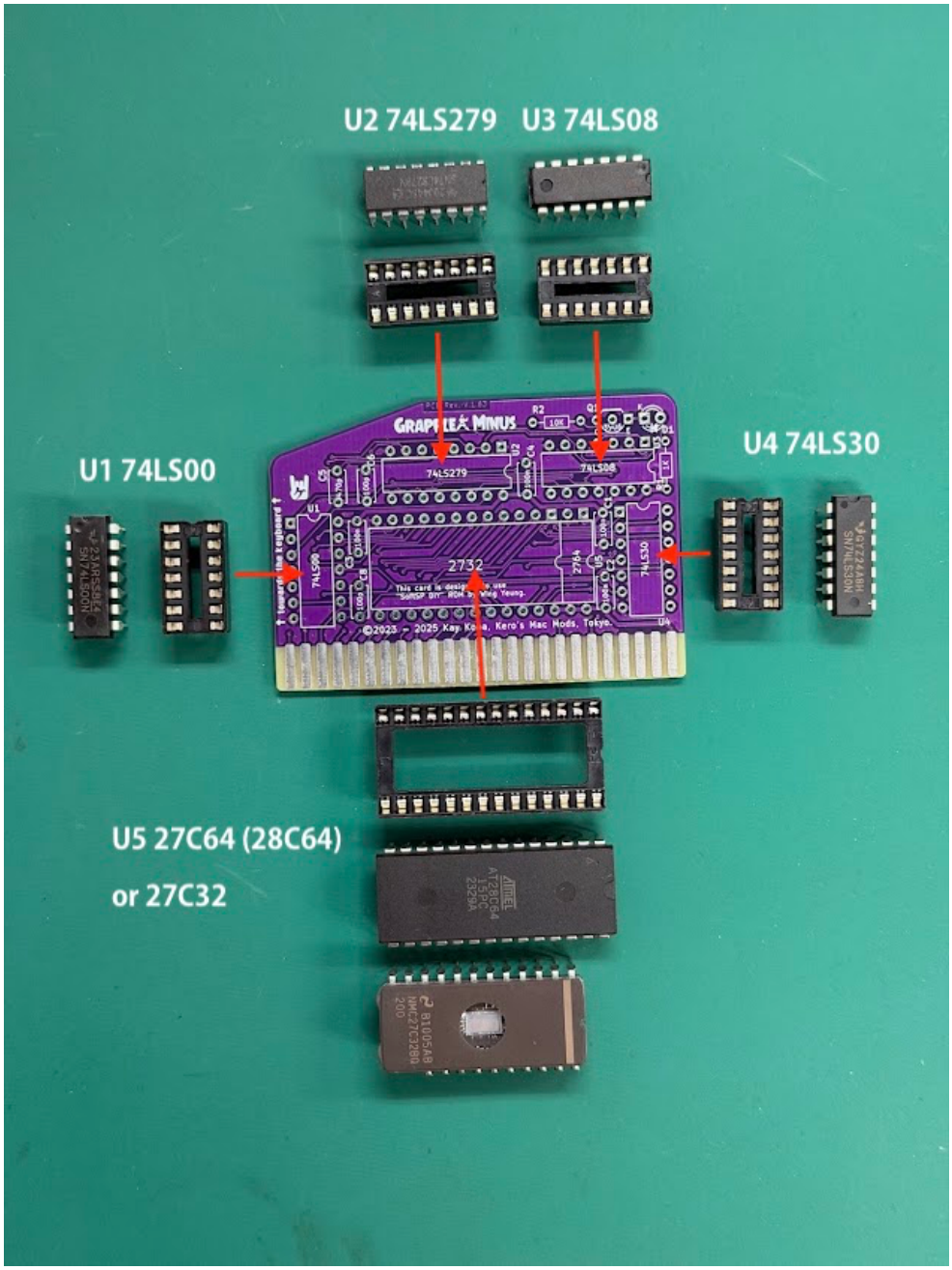
6. **Install the 470pF capacitor.**
   Find the capacitor marked "471" (470pF) and install it at **C5**.



Once all capacitors are in place, solder them from the back side and trim any excess leads.

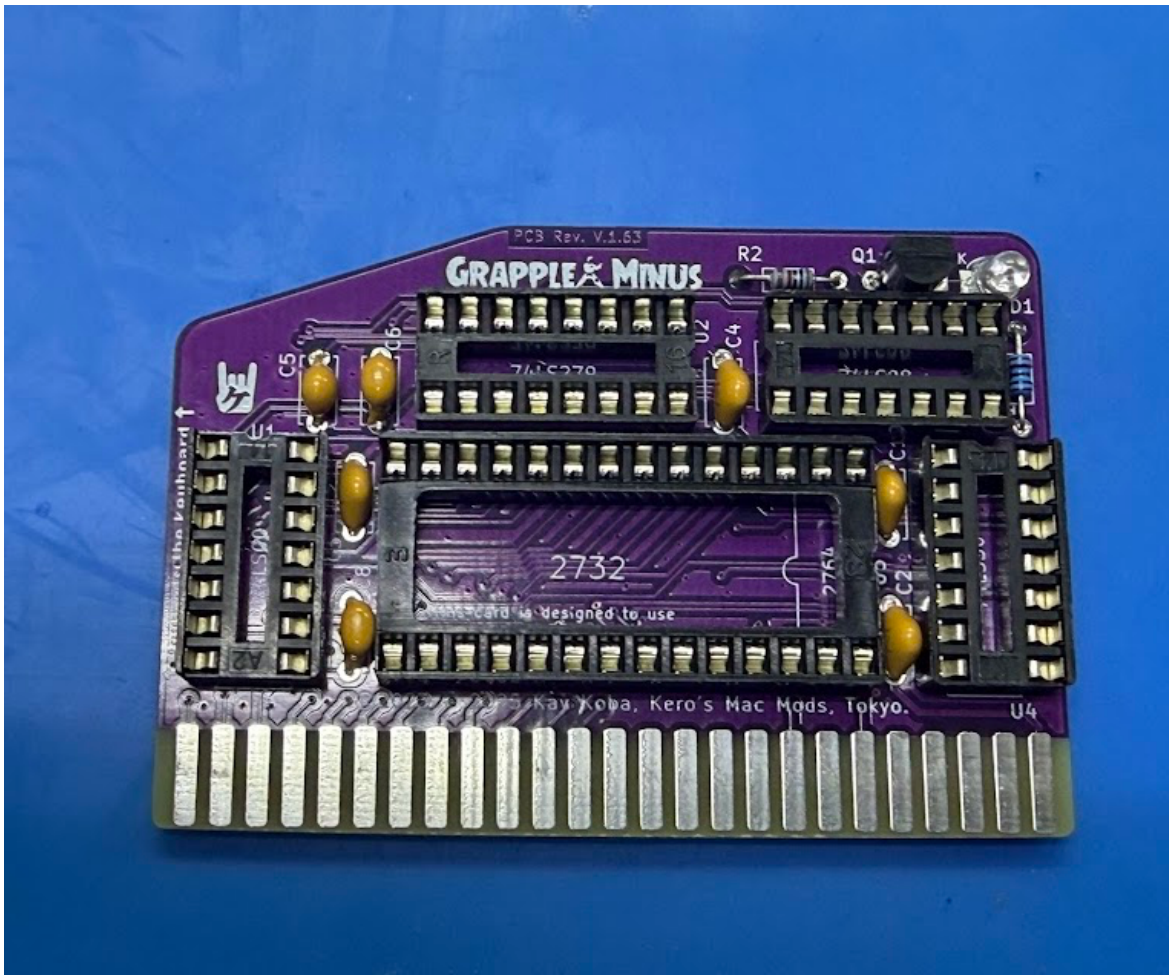


7. **Install the IC sockets.**
    - Install three **14-pin IC sockets** in positions **U1, U3, and U4**.

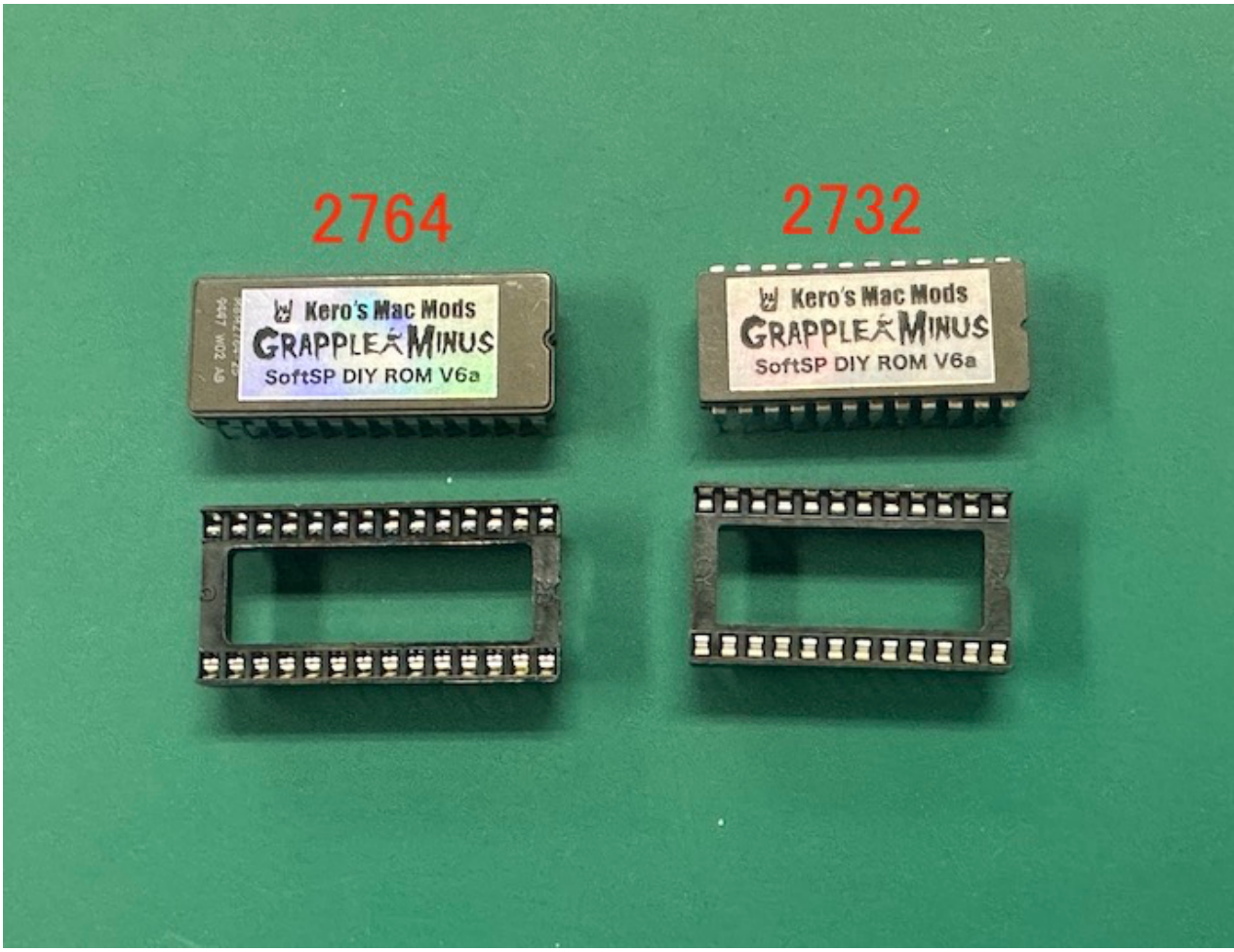


- To prevent the sockets from falling out during soldering, slightly bend two opposite corner pins outward when viewed from the back.

8. **Install the 16-pin IC socket.**
   - Install one **16-pin IC socket** at **U2**.
   - Once positioned, solder all sockets from the back.

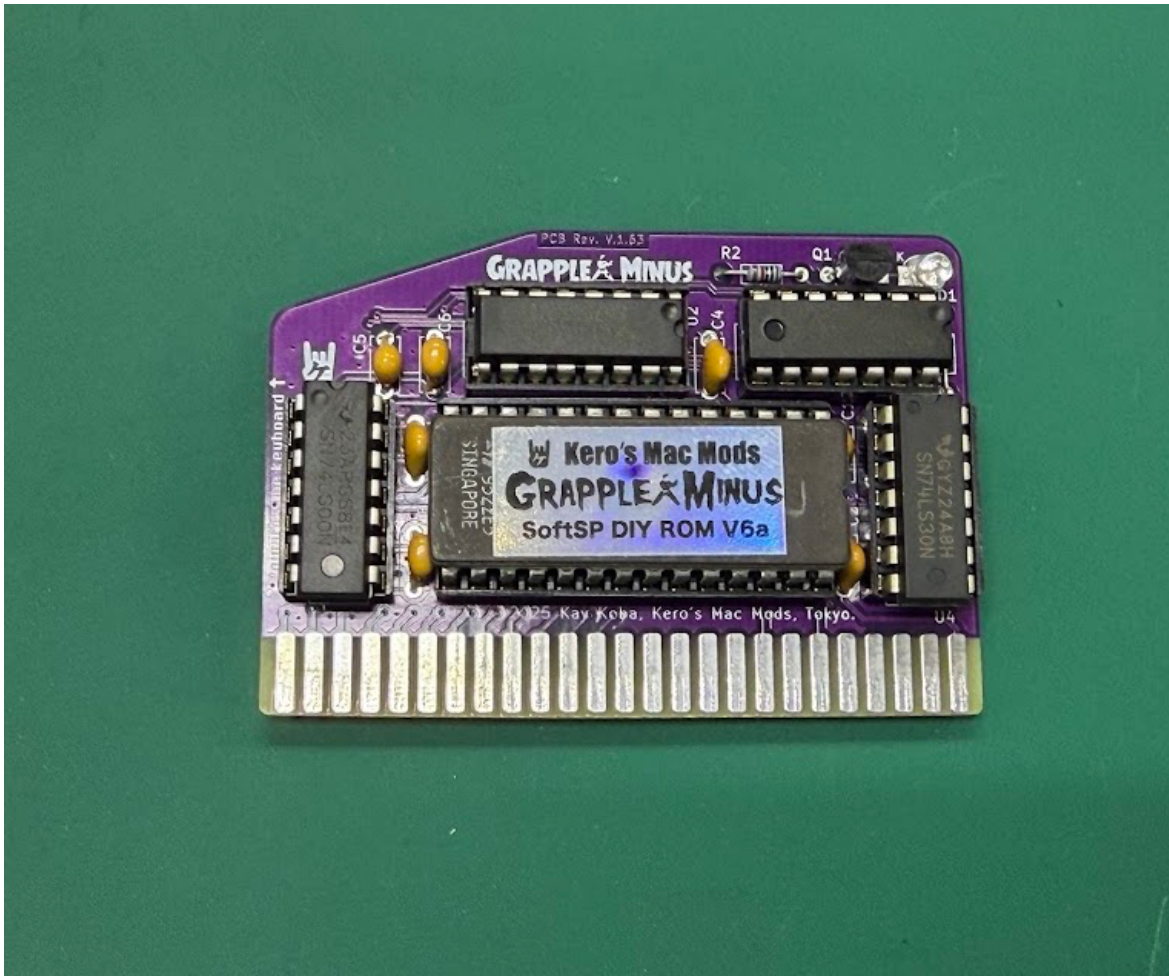
- 

9. **Install the ROM socket.**



- If your kit includes a **2732 ROM**, use a **24-pin socket** and align it to the **left side** of the footprint.
- If your kit includes a **2764 ROM**, use a **28-pin socket**, and all pins should fit into the holes.
- The only difference between these ROMs is their size (4KB vs. 8KB), but they contain the same program. Your kit will include either one, depending on availability.

10. **Insert the ICs and ROM.**
    - Once all soldering is complete, install the ICs into their respective sockets.



- Finally, insert the ROM into its socket.

Final Check

Before using your Grappler Minus Card, carefully inspect the soldering on the back. Look for **cold joints** or **solder bridges** (especially common).

Enjoy!

For usage instructions, please refer to the **project page** or **product page**.