ESP32S3 Adapter for Kraft Apple II joystick.

The only tricky bit was deciding how to measure the potentiometers, turns out they are not 150K, but closer to 840K, they just sweep though only part of a turn which comes out to 150K. So, a typical setup of Vref on one pin, GND on the other and the GPIO on the sweep doesn't produce good results. I opted for the same type of circuit as the Apple II, a resistor / capacitor circuit and timing the decay of the capacitor through the potentiometer + 100 Ohm resistors to prevent shorts.   Works pretty well. The code could use some optimizations, and I would like to add some noise damping and a "center notch" so that it doesn't jump around as much. For the hardware, I might design a board to make it all fit nicely inside the case with the USB C port for charging.

Helpful background material :
https://www.pcbway.com/project/shareproject/DIY_ESP32_Bluetooth_GamePad_for_Android_PlayStation_and_PC_6757e6d6.html

BOM

- Seeed Studio XIAO ESP32S3
- https://a.co/d/4IfFFjK
- Lithium Polymer Battery 3.7V 1100mAh 603449 Lipo Rechargeable Battery with Wire JST 2.0mm Connector
- https://a.co/d/gKSH2N4
- JST-PH 2.0 Male and Female Connector Cable for Battery
- https://a.co/d/30AddlC
- 12mm Push Button Latching
- https://a.co/d/jg9bTFu
- Mini Breadboard Kit and wires
- https://a.co/d/cWobW0Q
- 100 ohm resistors (2)
- https://a.co/d/1OWLQXc
- 22 nF capacitors (2) Metalized Mylar Polyester Film Capacitors
- https://a.co/d/0WU8yBR
- Crimping Tool Kit Ratcheting Crimper with 2.54mm Dupont Connectors
- https://a.co/d/2lhNsBY

Schematic:

Black Button

Red Button

D0
D1
D2
D3
D4
D5
D6

R   B

seeed studio
Model:XIAO-ESP32-S3
FCC ID:Z4T-XIAOESP32S3

FC   CE

5V
GND
3V3
D10   Y
D9   X
D8
D7 Charge

22 nF

100 Ohm