

github.com/jfleitz/gp-mpu

ePinball

Sheet: /

File: gp-mpu.kicad\_sch

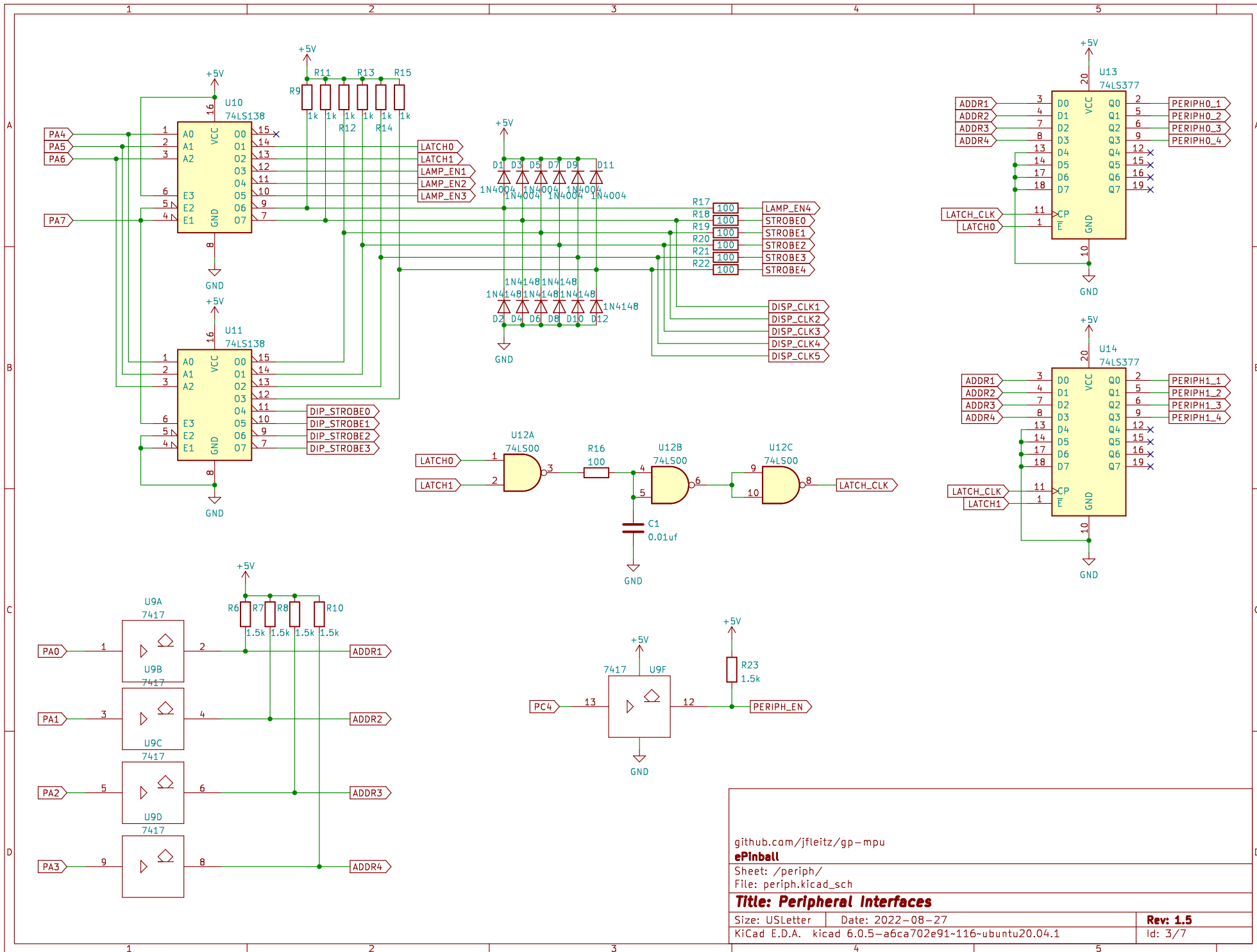
**Title: CPU and Memory**

Size: USLetter Date: 2022-08-27

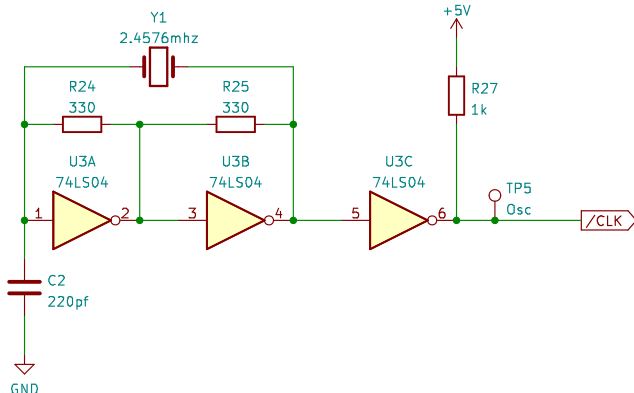
KiCad E.D.A. kicad 6.0.5-a6ca702e91-116-ubuntu20.04.1

**Rev: 1.5**

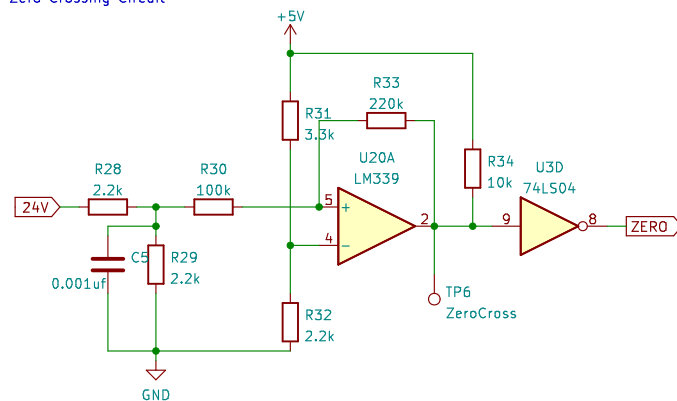
Id: 1/7



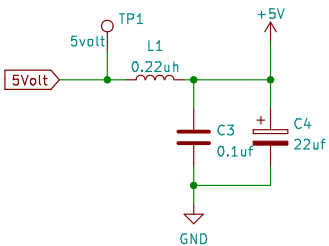
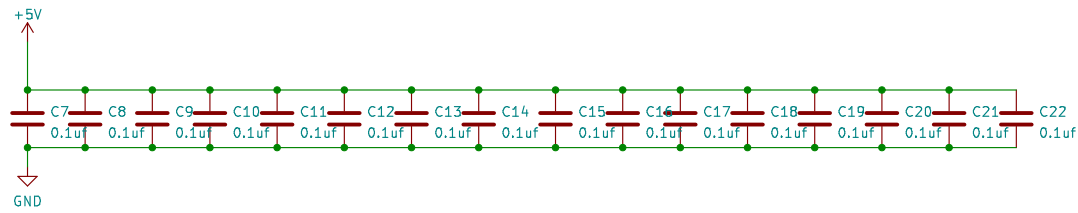
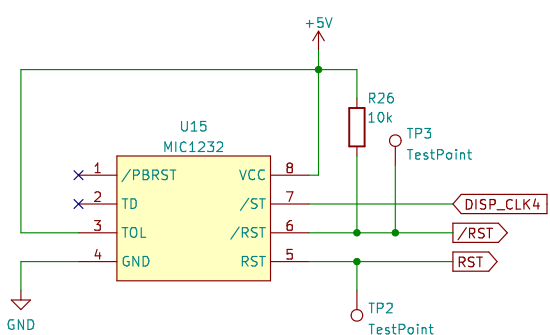
Oscillator



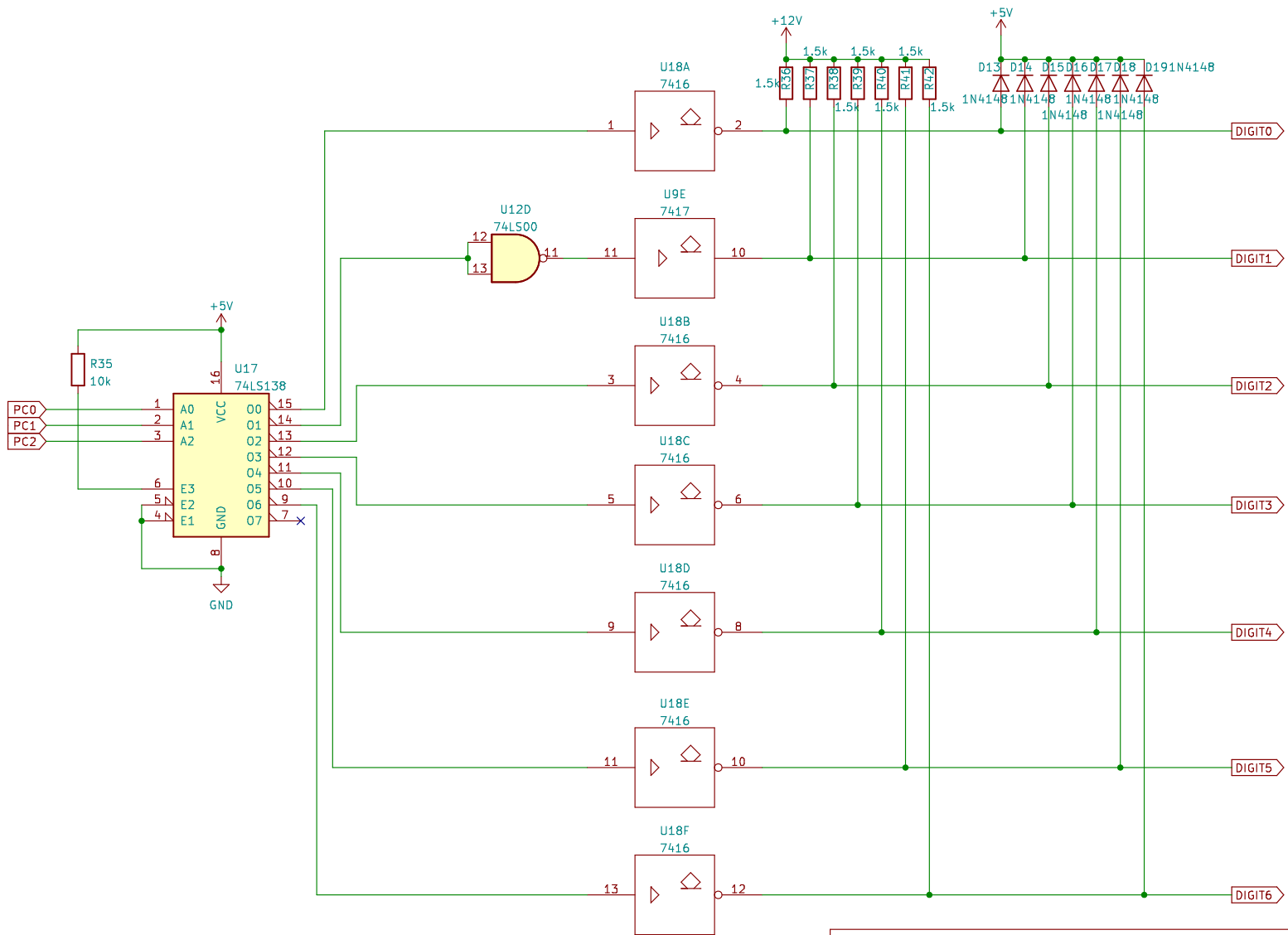
Zero Crossing Circuit



Watchdog



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Sheet: /osc\_watchdog/  
File: osc\_watchdog.kicad\_sch  
**Title: Oscillator, Watchdog, Zero Cross**  
Size: USLetter | Date: 2022-08-27 | **Rev: 1.5**  
KiCad E.D.A. kicad 6.0.5-a6ca702e91~116-ubuntu20.04.1 | Id: 4/7

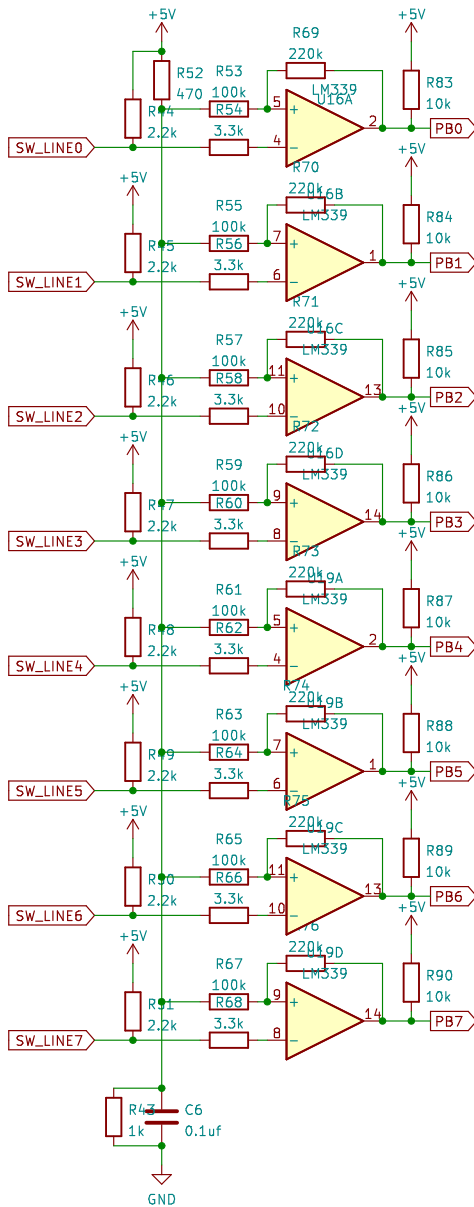


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**ePinball**  
 Sheet: /Displays/  
 File: display.kicad\_sch  
**Title: Display Digit Drivers**

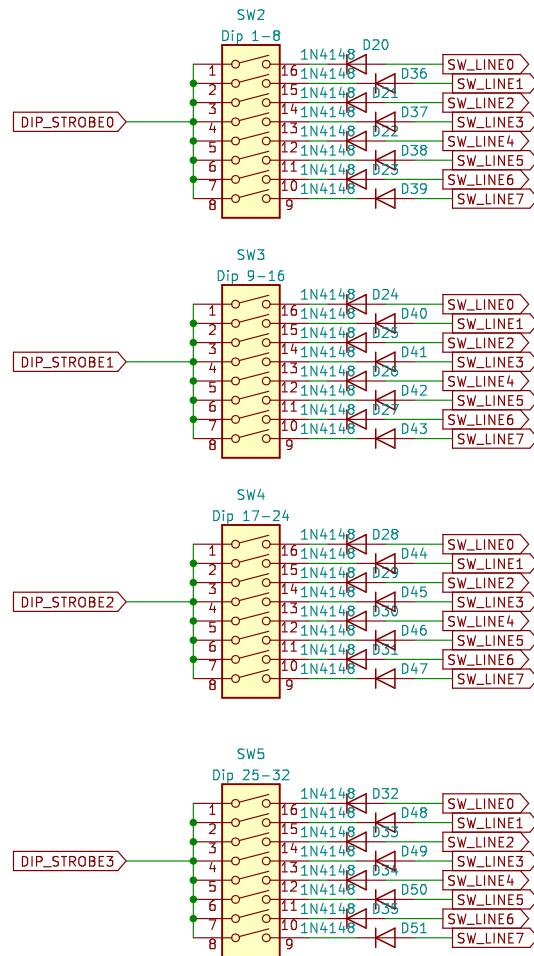
Size: USLetter	Date: 2022-08-27	<b>Rev: 1.5</b>
KiCad E.D.A. kicad 6.0.5-a6ca702e91-116-ubuntu20.04.1		Id: 4/7

Switch Matrix Input

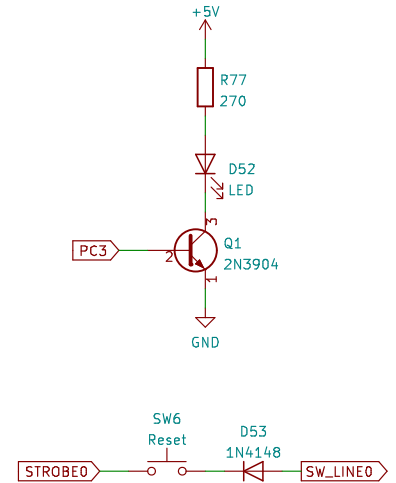
Need 10k pullup on each LM339 output  
 Check 6.8k pullup for proper value on Cyclones MPU  
 Check 10k pulldown (looks like 1k pulldown??) on Cyclones MPU



Dip Switch Settings



Diagnostic LED and Reset Switch



1.1: Update R52 = 470, R43 = 1k; Add R83-R90  
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Sheet: /switches/  
 File: switches.kicad\_sch

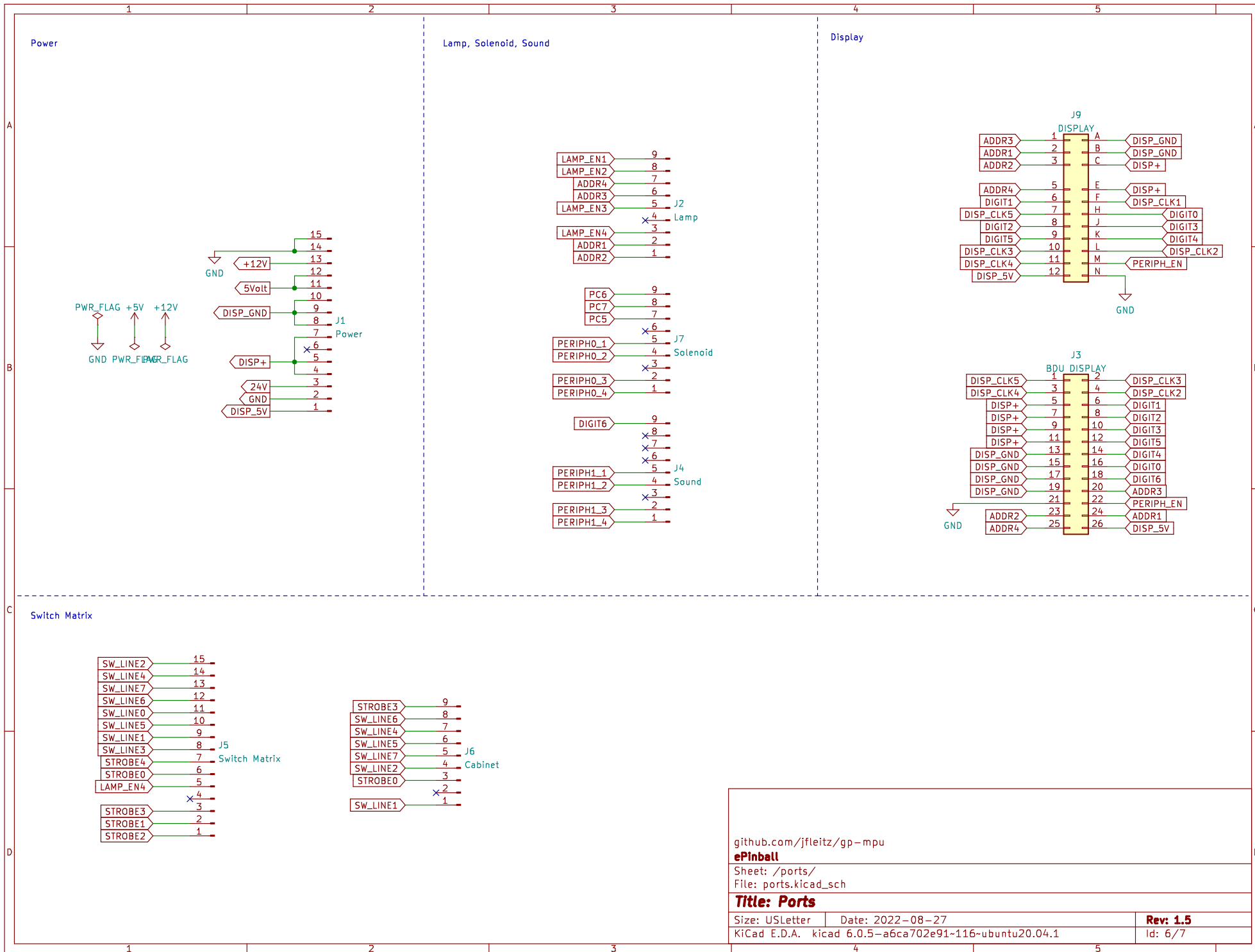
**Title: Switch Matrix, Dip Switches and Diag/Reset Sw**

Size: USLetter Date: 2022-08-27

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Sheet: /ports/

File: ports.kicad\_sch

**Title: Ports**

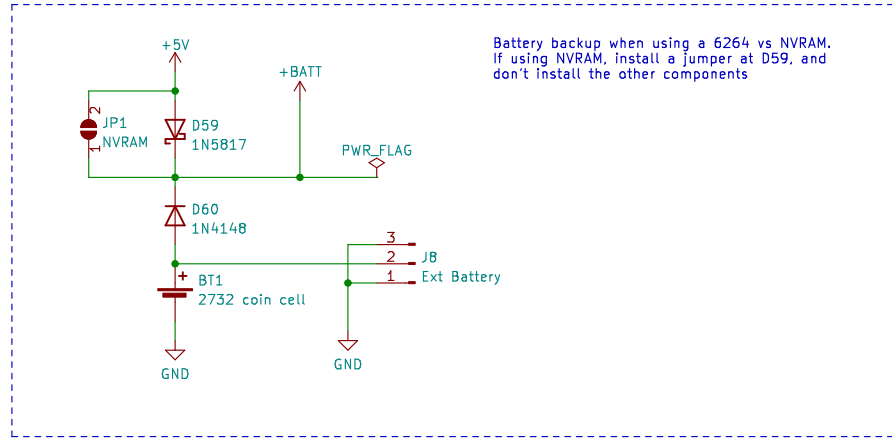
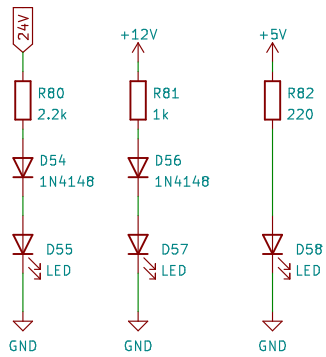
Size: USLetter Date: 2022-08-27

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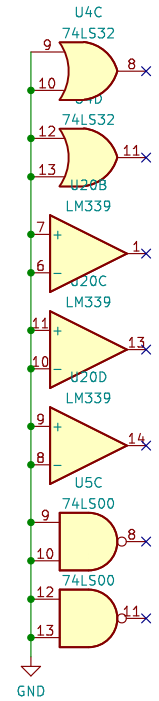
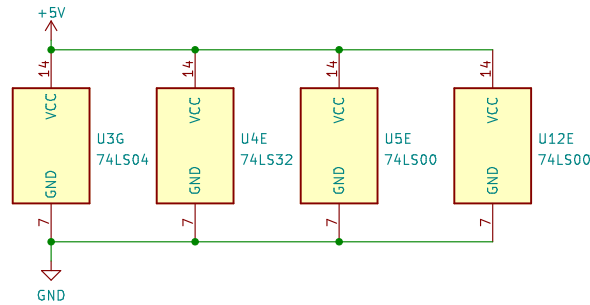
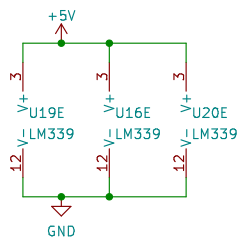
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Power Pins and NC pins



Battery backup when using a 6264 vs NVRAM.  
If using NVRAM, install a jumper at D59, and  
don't install the other components



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Sheet: /PowerPins/  
File: powerpins.kicad\_sch

**Title: Power and Non-Connected pins**

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**Rev: 1.5**  
Id: 7/7