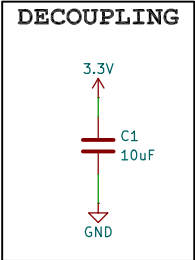
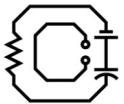


Overcurrent : F1 (800mA trigger)  
Polarity inversion : D1 (~0.3V drop)  
Overvoltage : D2 (3.6V nom trigger)  
Actual output voltage: ~3.4V



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Ramtin B Meldani



**C3I**

Sheet: /Alim/  
File: Alim.kicad\_sch

**Title: Power Couple Ruler**

Size: A4

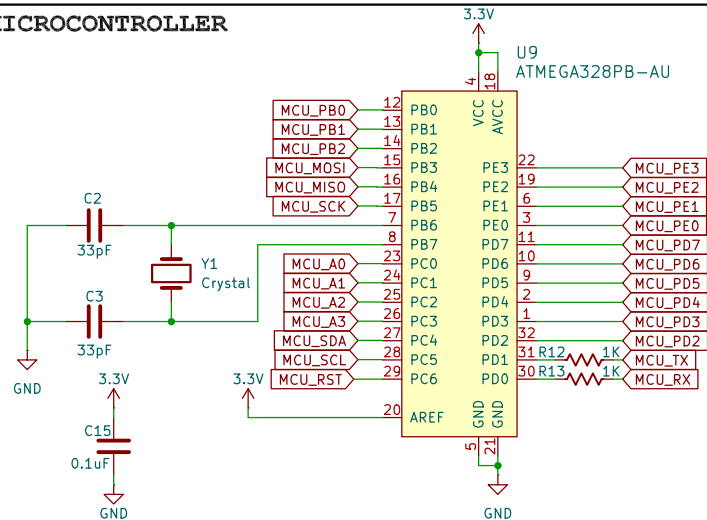
Date: A24

Rev: 1

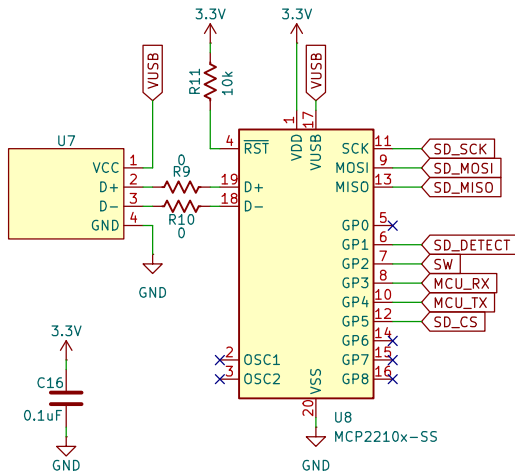
KiCad E.D.A. 8.0.4

Id: 2/5

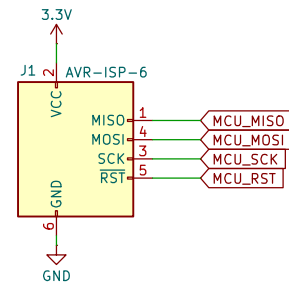
## MICROCONTROLLER



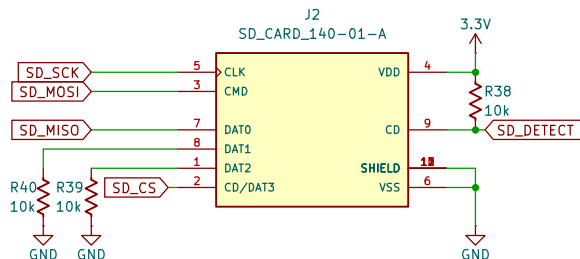
## USB



## PROGRAMMER



## MEMORY SD CARD SLOT



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### C3I

Sheet: /MCU/  
File: MCU.kicad\_sch

### Title: Power Couple Ruler

Size: A4  
KiCad E.D.A. 8.0.4

Date: A24

Rev: 1  
Id: 3/5

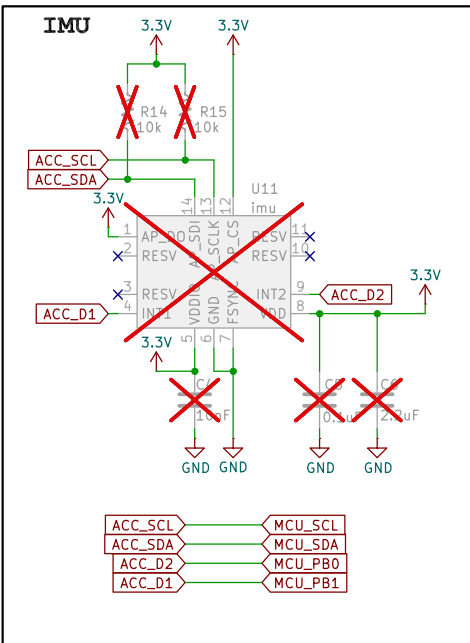


## BUTTONS

Diagram showing seven button connections (SW4 to SW9) to the MCU pins (MCU\_PD2 to MCU\_PD7). Each button circuit includes a 2.2uF capacitor to GND, a 4.99k resistor to GND, and a 4.99k resistor to the MCU pin. The button is connected between the MCU pin and 3.3V.

- SW4: MCU\_PD2, C7 (2.2uF), R25 (4.99k), R18 (4.99k)
- SW5: MCU\_PD3, C8 (2.2uF), R26 (4.99k), R19 (4.99k)
- SW6: MCU\_PD4, C9 (2.2uF), R27 (4.99k), R20 (4.99k)
- SW7: MCU\_PD5, C10 (2.2uF), R28 (4.99k), R22 (4.99k)
- SW8: MCU\_PD6, C11 (2.2uF), R29 (4.99k), R24 (4.99k)
- SW9: MCU\_PD7, C12 (2.2uF), R30 (4.99k), R23 (4.99k)

Debouncing filters :  
fc = 14.5 Hz



A circuit diagram showing a parallel combination of a resistor and a capacitor. The resistor is represented by a zigzag line on the left, and the capacitor is represented by two parallel lines on the right. Both are connected to a common top and bottom wire.

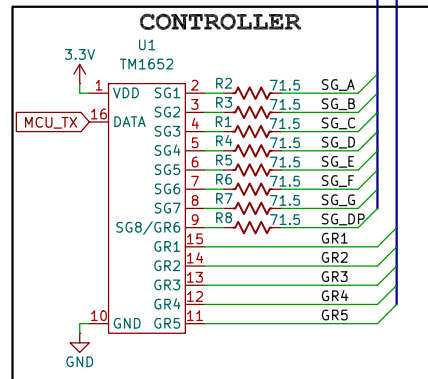
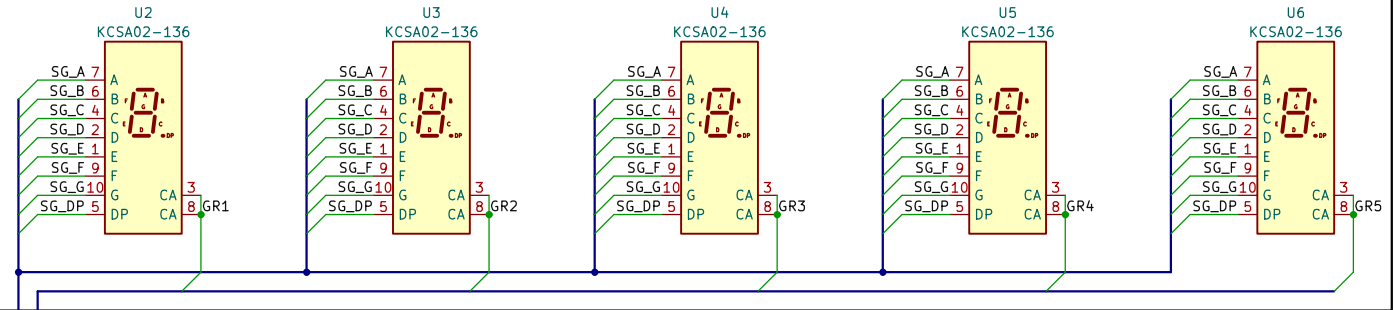
**Title: Power Couple Ruler**

Id: 4/5

Segment LEDs :  
Vf = 2-2.5 V  
If = 20 mA

Resistor :  
 $3.4V - 2 = 1.4 V$   
 $1.4 V / 20 mA = 70 ohm$   
 $P = 1.4 V * 20 mA = 28 mW$

## 7 SEGMENT DISPLAYS



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C3I

Sheet: /Display/  
File: Display.kicad\_sch

**Title: Power Couple Ruler**

Size: A4 Date: A24  
KiCad E.D.A. 8.0.4

Rev: 1  
Id: 5/5