

Assembly Instructions

1. Populate and solder the electronic components of the PCB (Fig.1) with the exceptions as noted in the schematic
 - a. Not populating the ISP header will prevent accidental confusion between the SAO and ISP headers
2. 3d print the "Segment Back Separator", this is used to isolate each LED to light up the appropriate segment. (Fig.2)
3. Using 2mm screws attach the "Separator" to the PCB. (Fig.3)
 - a. Within the repo are two .step files, "rightHoles" have mounting holes that are modeled straight though and need nuts to secure the separator, "taperedHoles" have tapered mounting holes that allow for the 2mm screw to bite into the plastic as it is screwed in.
3. Using the included makefile, flash the ATtiny84 with the correct fuse settings and program
4. Enjoy the completed SAO! (Fig. 4)

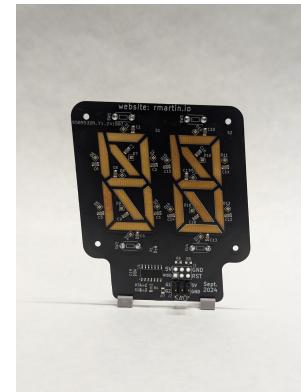


Fig.1



Fig.2

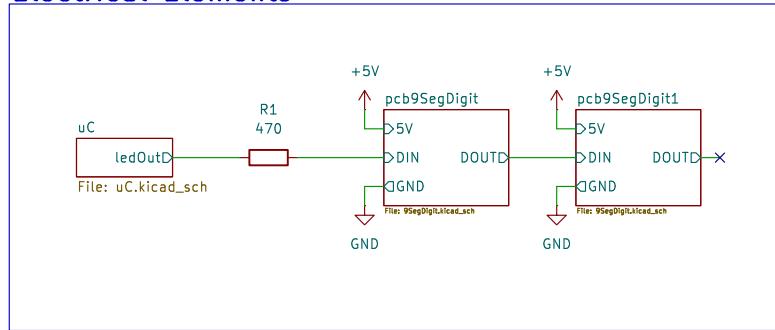


Fig.3

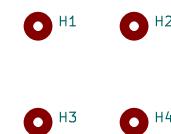


Fig.4

Electrical Elements



Mechanical Elements



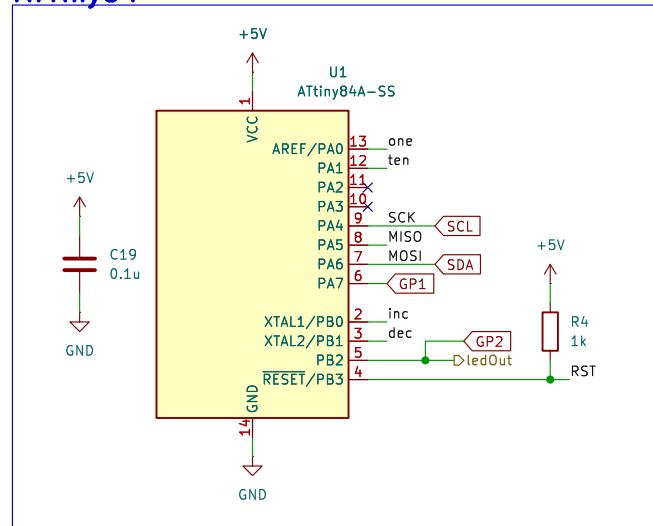
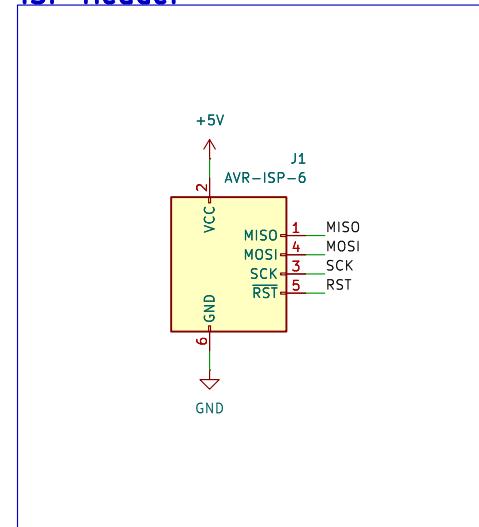
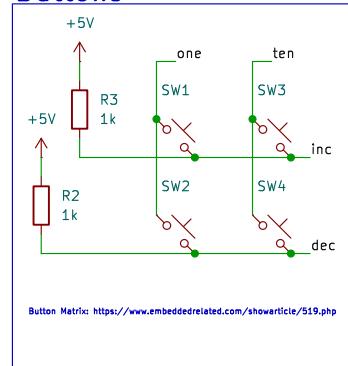
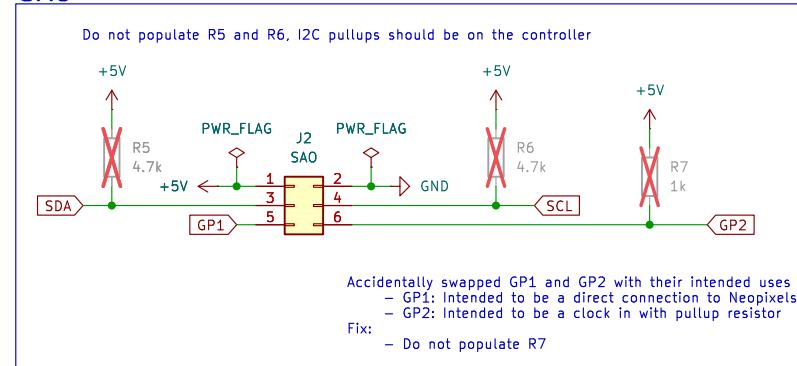
<https://github.com/martinbros/9SegCounter>
Ryan Martin

Sheet: /
File: pcb9segCounter.kicad_sch

Title: Nine Segment SAO

Size: A4	Date: 2024-10-24
KiCad E.D.A. 8.0.5	

Rev: 1
Id: 1/4

ATTiny84**ISP Header****Buttons****SAO**

I2C Reference: <https://ladvien.com/attiny-i2c/>
Library: <https://github.com/svoisen/TinyWire>

<https://github.com/martinbros/9SegCounter>

Ryan Martin

Sheet: /uC/
File: uC.kicad_sch

Title: Nine Segment SAO

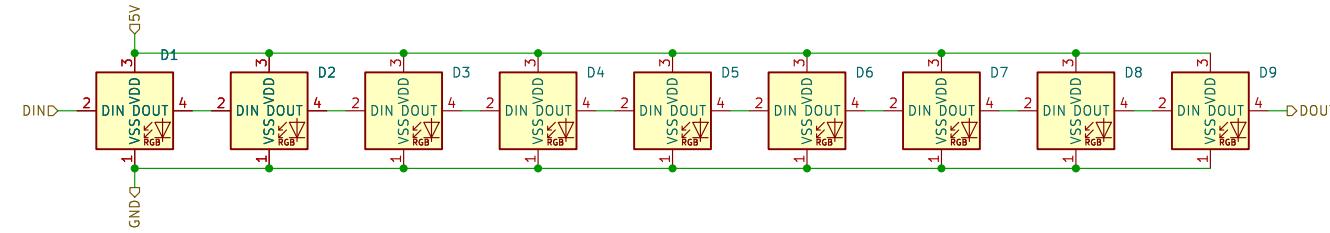
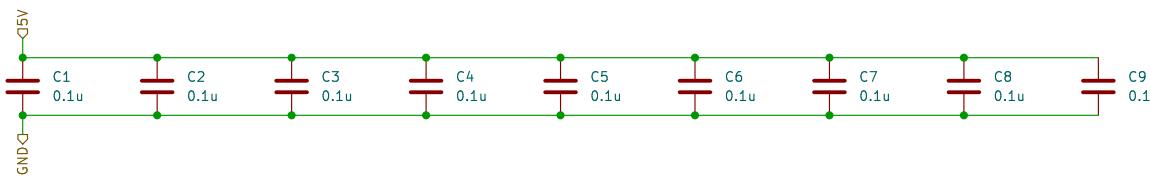
Size: A4 Date:
KiCad E.D.A. 8.0.5

Rev: 1
Id: 2/4

A

9-Segment Window

S1

Segment Neopixels: SK6805 EC10**Segment Decoupling Capacitors**

<https://github.com/martinbros/9SegCounter>

Ryan Martin

Sheet: /pcb9SegDigit/

File: 9SegDigit.kicad_sch

Title: Nine Segment SAO

Size: A4 Date:

KiCad E.D.A. 8.0.5

Rev: 1

Id: 3/4

1 2 3 4 5 6

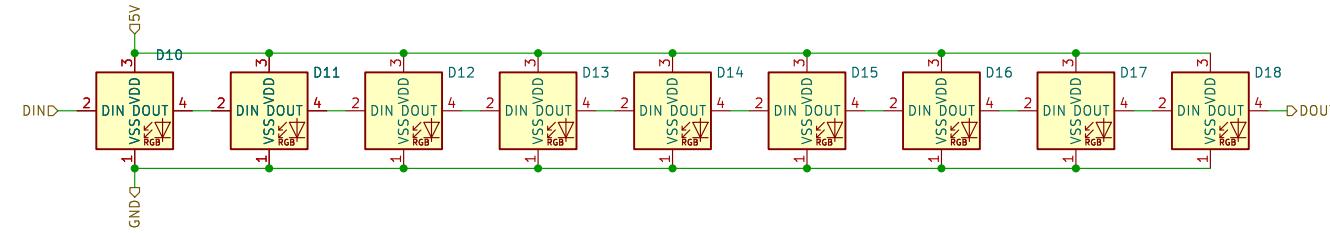
A

9-Segment Window

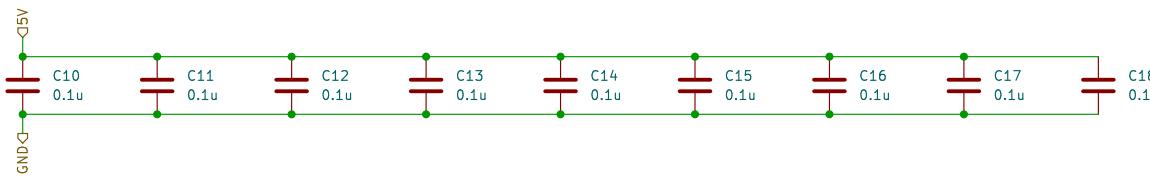


S2

Segment Neopixels: SK6805 EC10



Segment Decoupling Capacitors



<https://github.com/martinbros/9SegCounter>

Ryan Martin

Sheet: /pcb9SegDigit1/
File: 9SegDigit.kicad_sch

Title: Nine Segment SAO

Size: A4 Date:
KiCad E.D.A. 8.0.5

Rev: 1
Id: 4/4

1 2 3 4 5 6