Sheet: Display Driver

File: Display_Driver.sch

Sheet: Display Nixie

File: Display_Nixie.sch

Sheet: Power Supply

File: Power_Supply.sch

Sheet: Clock Logic

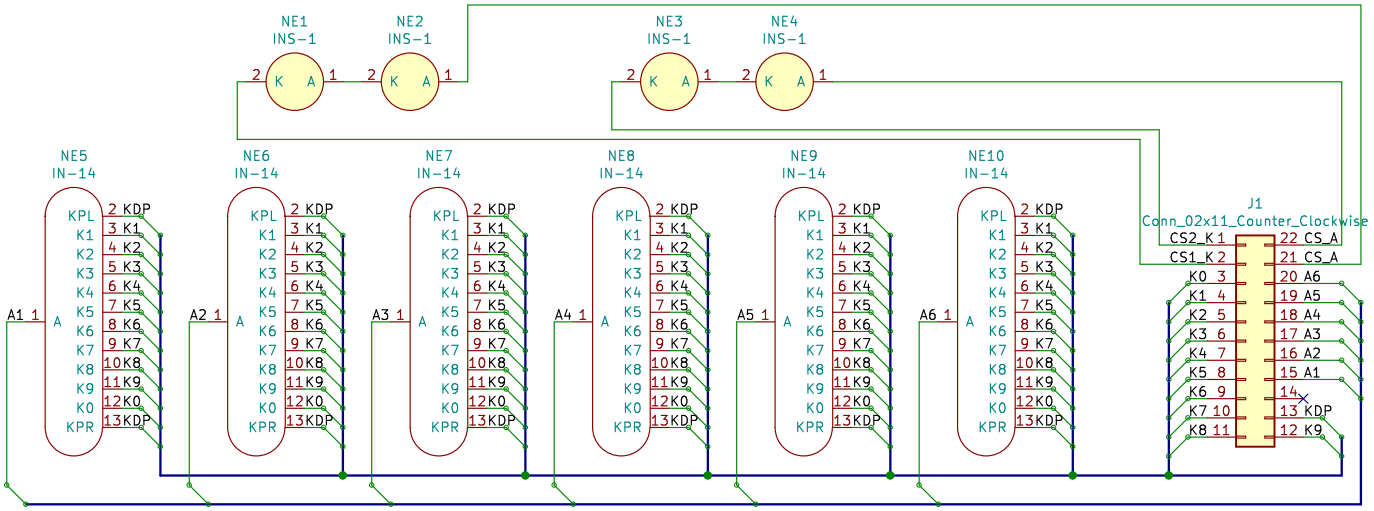
File: Clock_Logic.sch

NixieTTL Clock

Sheet: /
File: NixieClock.sch

Title: NixieTTL Clock

Size: A4	Date:	**Rev: 0**
KiCad E.D.A. kicad (5.1.5)-3		Id: 1/7



The design is intended for use with IN-14 Nixie numerical displays and INS-1 or IN-3 neon bulbs/indicators. A pin header is provided to connect other tubes or custom display boards.

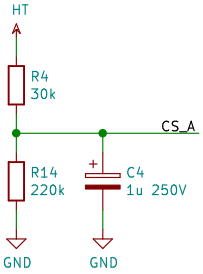
Nixie display

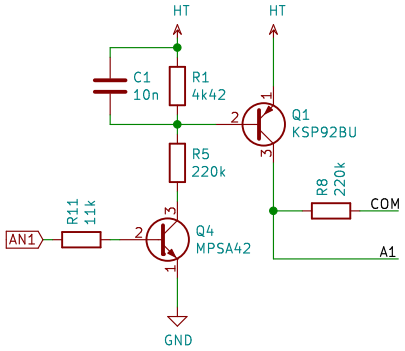
Sheet: /Display Nixie/
File: Display_Nixie.sch

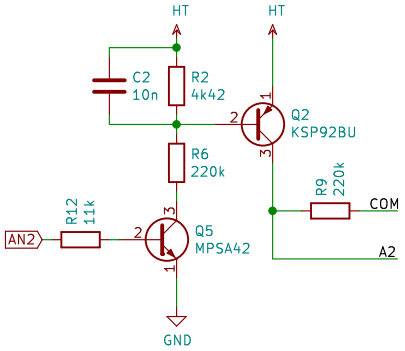
Title: NixieTTL Clock

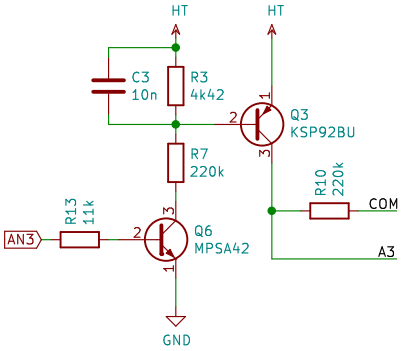
Size: A4	Date:	**Rev: 0**
KiCad E.D.A. kicad (5.1.5)-3		Id: 2/7

Separator indicators driver

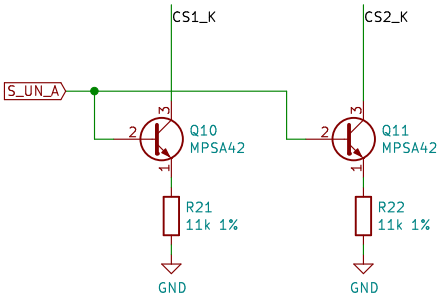


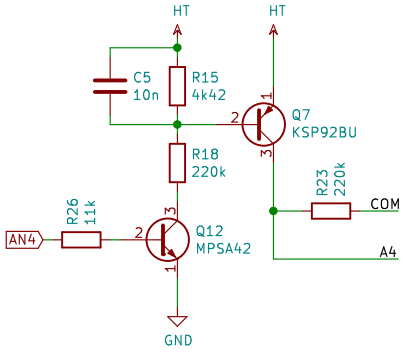


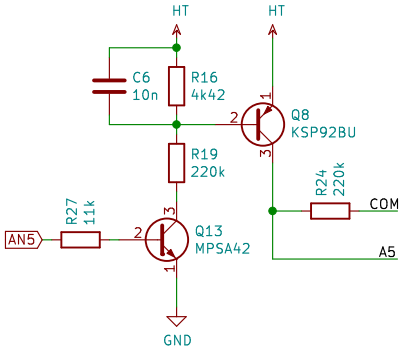


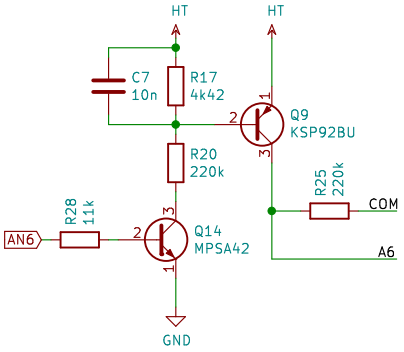


Anode drivers

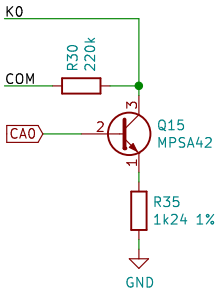


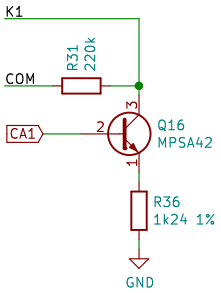


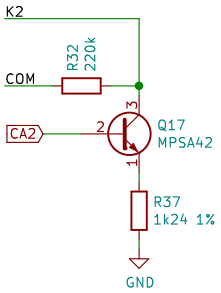


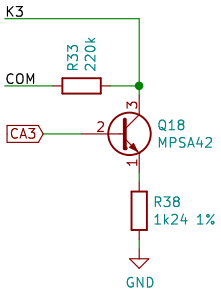


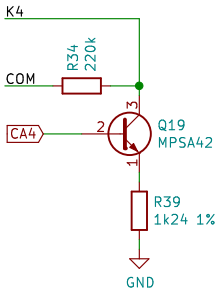
Test if base resistors are needed on the cathode drivers.

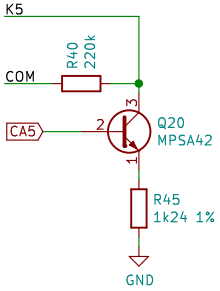


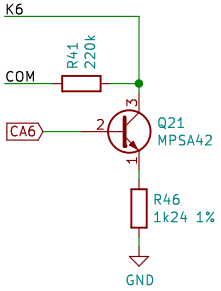


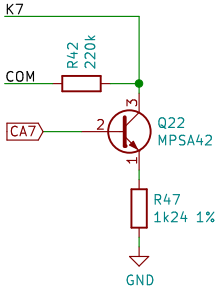


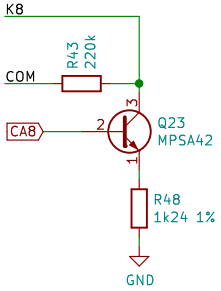


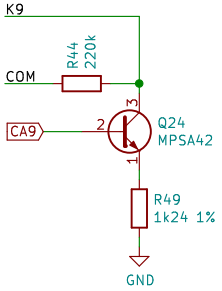


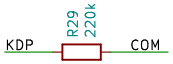












The function of the 220k resistors connected to COM node is to eliminate ghosting on the digits while the cathode drivers are open. The other measure to eliminate ghosting is the blanking time circuitry on the multiplexing logic.

Cathode drivers
Current through the Nixies is controlled by the emiter resistor and base voltage.

Power drivers for the Nixie displays and indicators

Sheet: /Display Driver/
File: Display_Driver.sch

Title: NixieTTL Clock

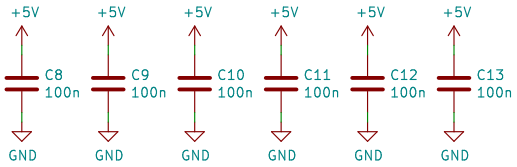
Size: A4 | Date: | **Rev: 0**
KiCad E.D.A. kicad (5.1.5)-3 | Id: 3/7

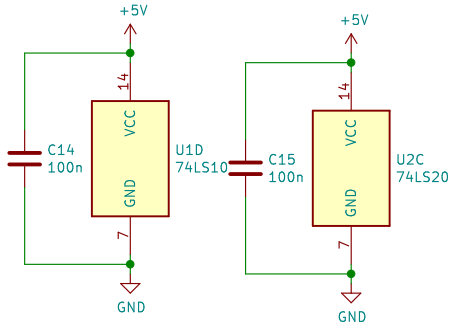
Sheet: Counter

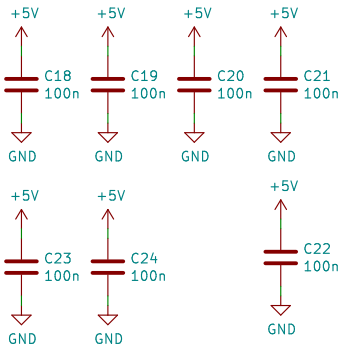
File: Counter.sch

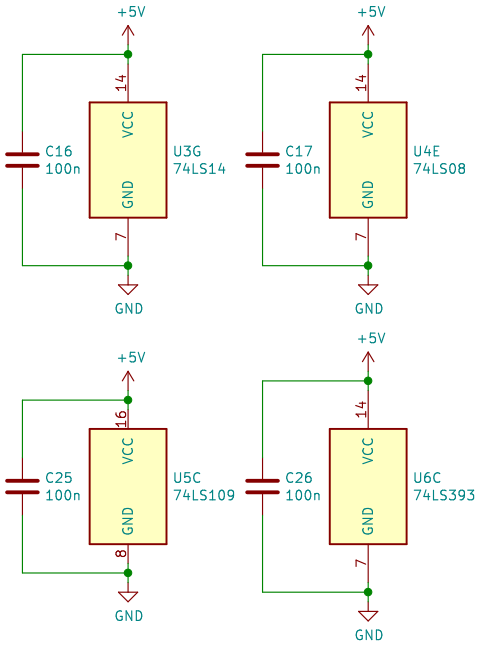
Sheet: Oscillator and Multiplexing

File: Oscillator_and_Multiplexing.sch







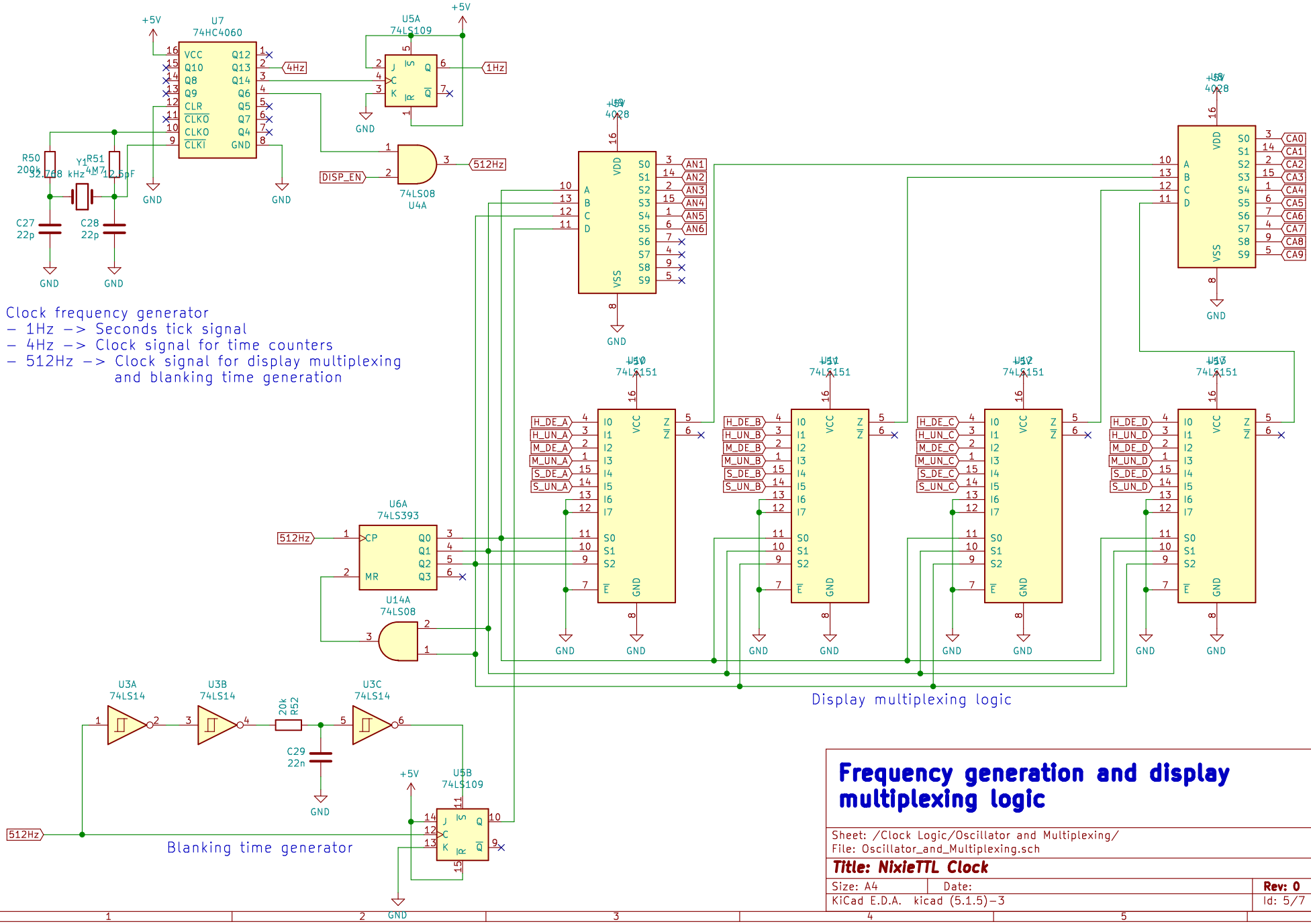


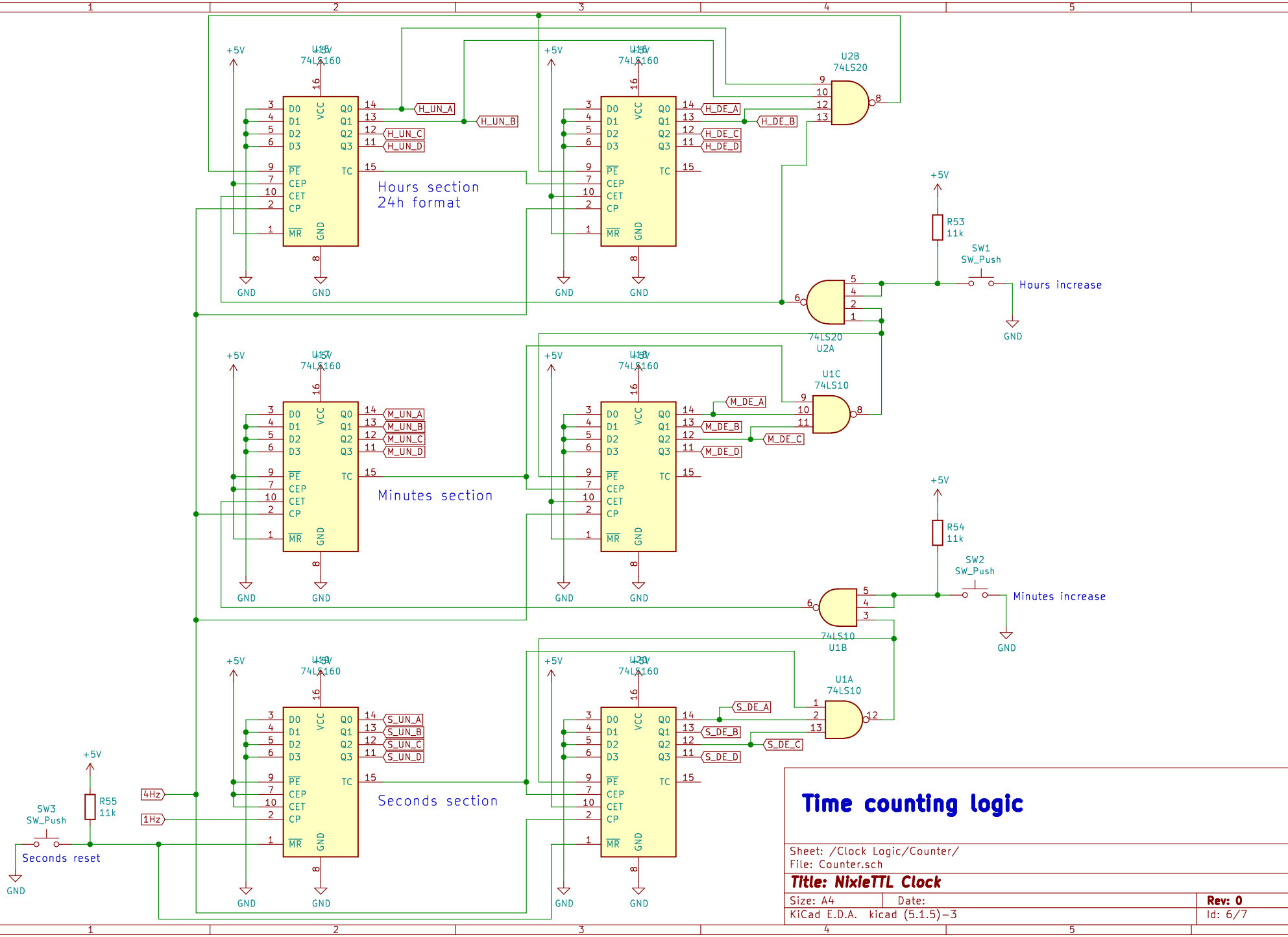
Logic subsystem and power decoupling

Sheet: /Clock Logic/
File: Clock_Logic.sch

Title: NixieTTL Clock

Size: A4	Date:	**Rev: 0**
KiCad E.D.A. kicad (5.1.5)-3		Id: 4/7

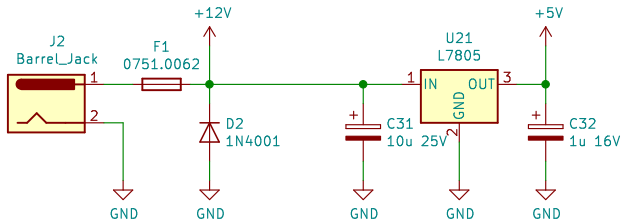

U7
74HC4060
U5A
74LS109
4Hz
1Hz
512Hz
DISP_EN
74LS08
U4A
R50
200k
R51
4M7
Y1
32.768 kHz
12.5pF
C27
22p
C28
22p
Clock frequency generator
– 1Hz –> Seconds tick signal
– 4Hz –> Clock signal for time counters
– 512Hz –> Clock signal for display multiplexing
and blanking time generation
4028
74LS151
U6A
74LS393
U14A
74LS08
Display multiplexing logic
U3A
74LS14
U3B
74LS14
U3C
74LS14
20k
R52
C29
22n
U5B
74LS109
Blanking time generator
Frequency generation and display multiplexing logic
Sheet: /Clock Logic/Oscillator and Multiplexing/
File: Oscillator_and_Multiplexing.sch
Title: NixieTTL Clock
Size: A4
Date:
Rev: 0
KiCad E.D.A. kicad (5.1.5)-3
Id: 5/7



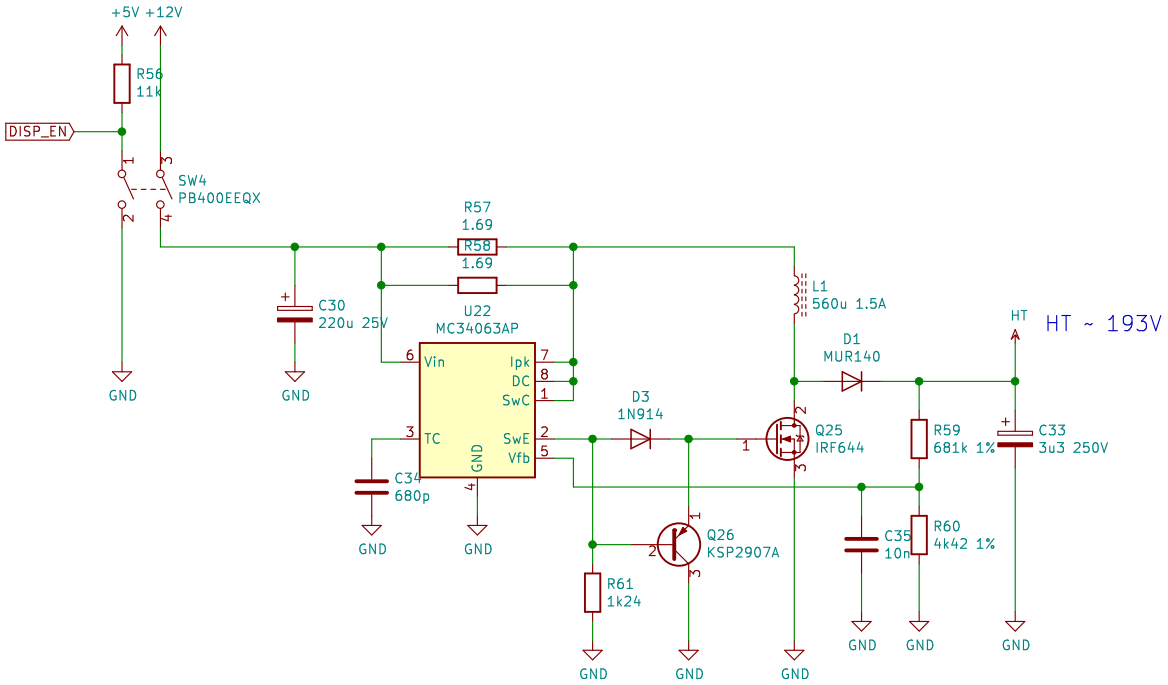
Time counting logic

Sheet: /Clock Logic/Counter/	
File: Counter.sch	
Title: NixieTTL Clock	
Size: A4	Date:
KiCad E.D.A. kicad (5.1.5)-3	Id: 6/7

Rev: 0



Power input and 5V supply



High Voltage supply for the Nixies

Power supply

Sheet: /Power Supply/
File: Power_Supply.sch

Title: NixieTTL Clock

Size: A4	Date:	**Rev: 0**
KiCad E.D.A. kicad (5.1.5)-3		Id: 7/7