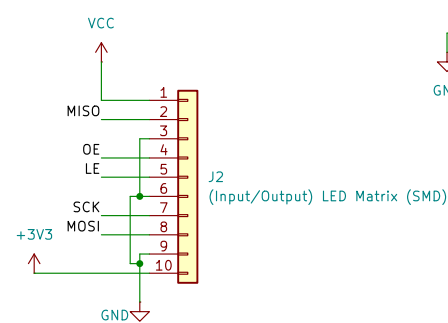
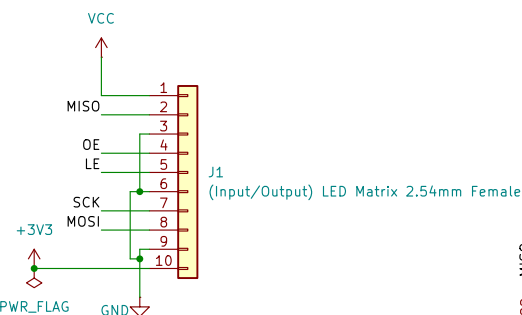
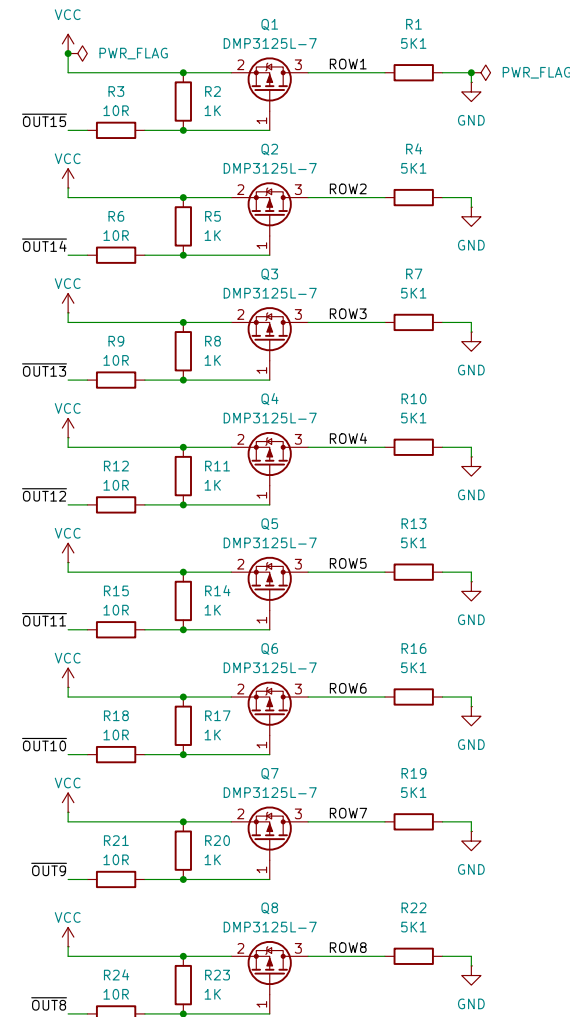
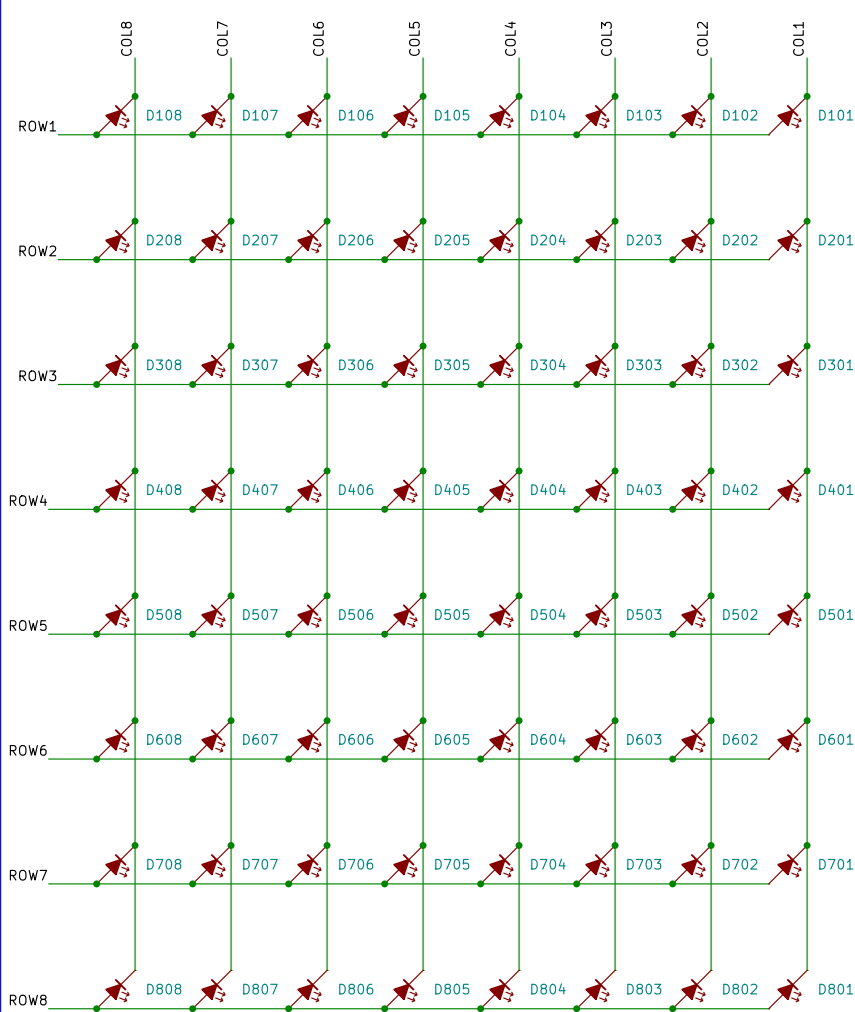


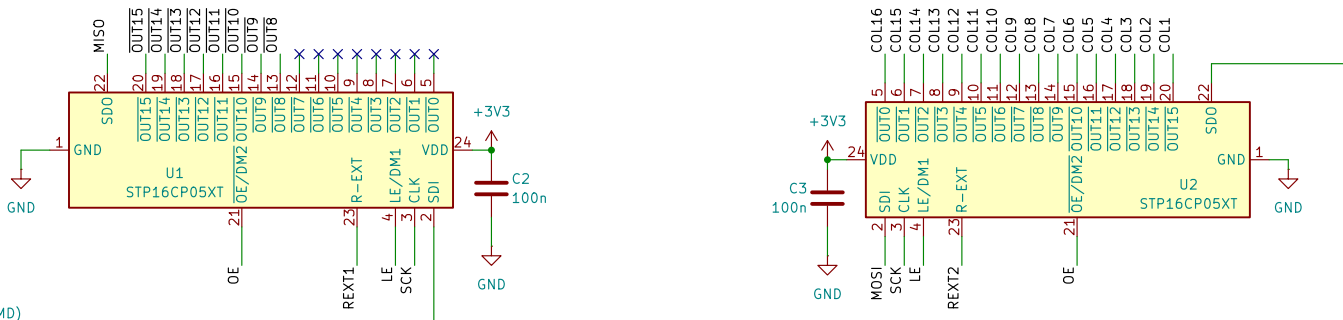
LED Matrix #1



LED Matrix #2



Cascade Direction
Last (in chain) <-- First (in chain)



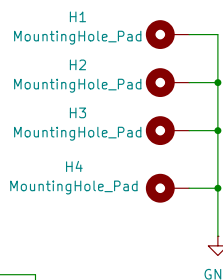
SPI writes

Appears that serial data is expected to be MSB first
such that MSB is mapped to OUT15 and LSB to OUT0

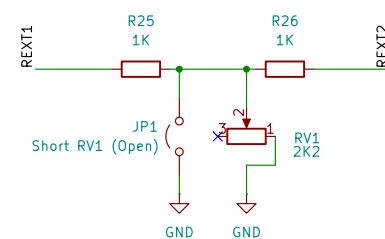
Means that
For U1:
SPI 0x0100 sets ROW8 MOSFET
SPI 0x8000 sets ROW1 MOSFET

For U2:
SPI 0x0001 sets COL16
SPI 0x8000 sets COL1

SPI master can control how COLs are mapped
e.g. can reverse bits such that COL1 --> COL16
(same is true for the rows)



Brightness Control
Short JP for max brightness
Alternatively, adjust with potentiometer



Replace 16 w/ 64 for STP04CM05 device (not used)

$R_{ext} = (V_{ref}/I_{out}) * 16$

$1K = 16(1.25/I_{out})$

$1K/16 = 1.25/I_{out}$

$I_{out} (1K/16) = 1.25 \text{ ----> } I_{out} = 16(1.25/1K)$
 $= 0.02A \text{ ----> } 20mA$

$I_{ch} = [V_{ref} - 2(V_{ref}*R_{reg})]/((2 * R_{reg}) + R_{set})*16/R_{set}$

Where $R_{set} = R_{ext}$

Where $R_{reg} = RV1$

$I_{ch_min} = 0.00370370368 A \text{ ----> } 3.7 \text{ mA (minimum)}$

$I_{ch_max} = 19.9mA \text{ (for } RV1 = 1 \text{ ohm)}$

LED matrix board controlled by two STP16CP LED IC drivers
See: ST's Application note AN3981 for detailed usage of the LED IC driver

Sheet: /

File: stp16cp05_led_matrix_8x16_breakout_m0805.kicad_sch

Title: STP16CP05 LED Matrix 8x16 Breakout

Size: A3

Date: 2024-11-25

Rev: v04

KiCad E.D.A. 8.0.6

Id: 1/1