-MCP23017's i2c bus allows up to 8 slaves by assigning different address via address pins

Will use shared bus and clock, SDA on PB3, SCL on PB2

-Tiva supplies 3.3V

MCP23017 will take 3.3V, but limited to 100kHz or 400kHz for i^2c

Line driver will take logic from 3.3V i/o expander and supply 5V to 7seg displays

-4.6kOhm (PCB v1) or 3.9k(PCB v2) resistors for SCL/SDA

-330Ohm resistors for LEDs

-Potentiometers will use ADC on PB4&5

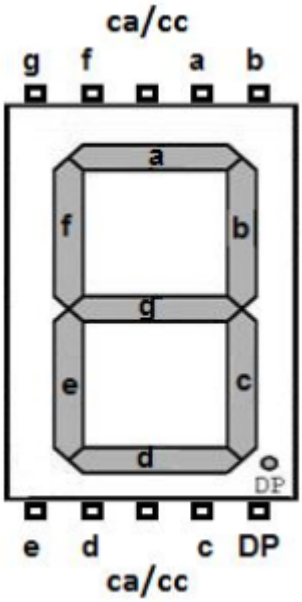
~~-Purple/Green wires: GND, Yellow wires: VDD/Vcc or GPIO, Blue wires: +, Gray/White: SDA/SCL,Orange: GPIO~~ (Cancelled breadboard, designed PCB)

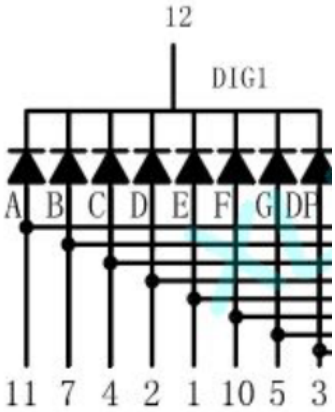
-i2c scl/sda pullup resistors must be >=500 I think

$$R_p \geq \frac{V_{dd} - V_{OL}}{I_{OL}}$$

SDA | V_{OL} | — | — | 0.8 | V | I_{OL} = 3.0 mA, V_{DD} = 4.5V ,(3.3-1.8)/.003

4.6k





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(Photos screenshotted from Google Images)

--275 to 900Ohm resistors for LEDs

Top left: 220 (out of bounds)

Top right: 5x 330, 2x

Logs:

6/12/21 - sda/scl lines hooked up, 5v/3.3v/GND hooked up, i2c pullups, line driver power/enable/gnd hooked up,i/o expander connected to line buffer, i/o expander sda&scl&addresses wired, schematic finished

Still need to wire displays (w/ resistors), wire switches, connect all to microcontroller

(unknown date) - cancelled breadboard, doing PCB design

I2c addresses from I2CDetect on Beaglebone Black's linux