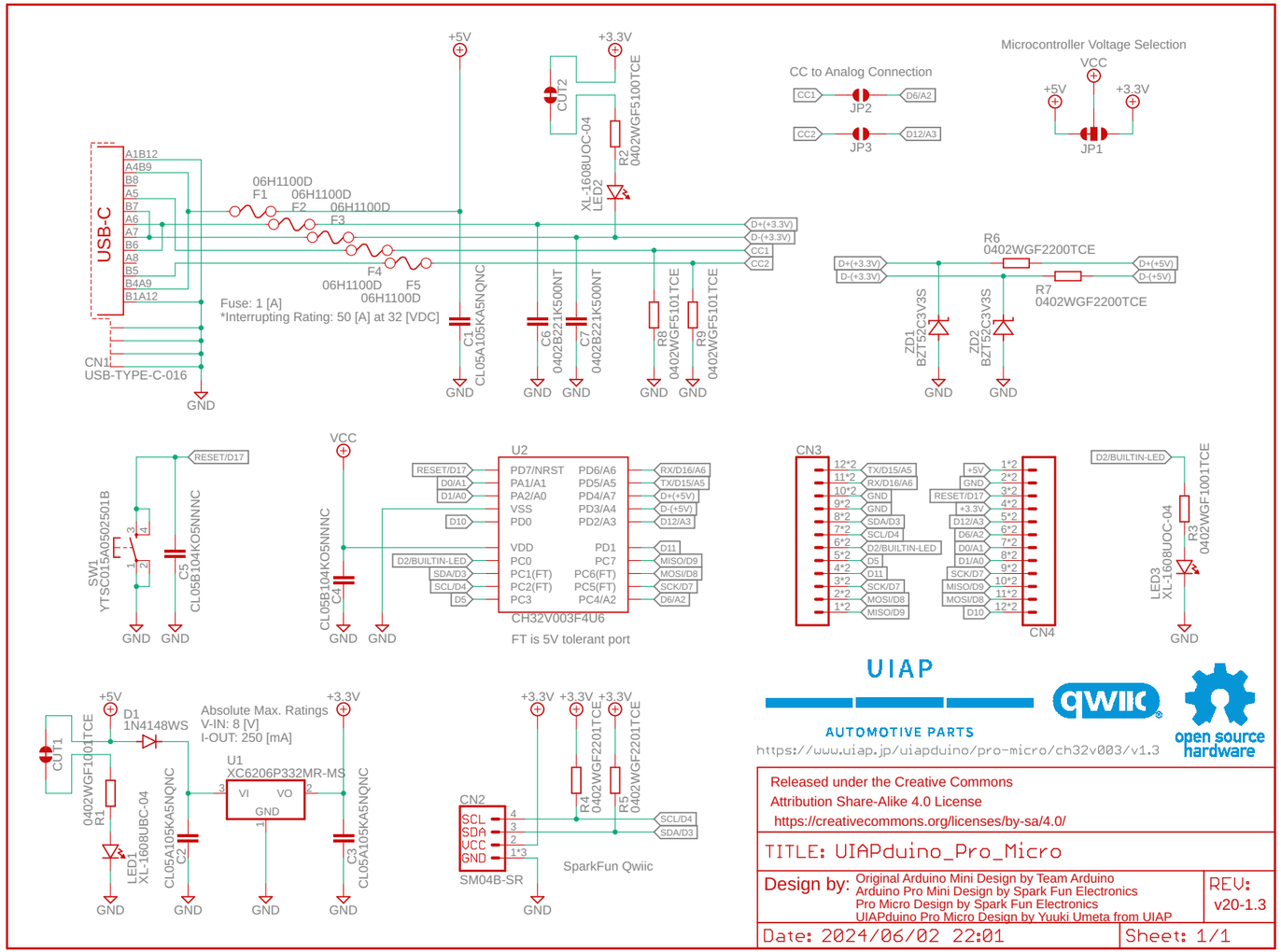

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TITLE: UIAPduino_Pro_Micro

Design by: Original Arduino Mini Design by Team Arduino
Arduino Pro Mini Design by Spark Fun Electronics
Pro Micro Design by Spark Fun Electronics
UIAPduino Pro Micro Design by Yuuki Umeta from UIAP

REV: v20-1.3

Date: 2024/06/02 22:01

Sheet: 1/1

USB 2.0 Specification
https://www.usb.org/document-library/usb-20-specification

7.1.5.1 Low-/Full-speed Device Speed Identification
Low-speed devices are terminated as shown in Figure 7-21 with the pull-up resistor on the D- line.
A device that has a detachable cable must use a 1.5 kΩ ±5% resistor tied to a voltage source between 3.0 V and 3.6 V (VTERM) to satisfy these requirements.
Devices with captive cables may use alternative termination means. However, the Thevenin resistance of any termination must be no less than 900 Ω.

7.1.6.1 Low-speed and Full-speed Input Characteristics
The termination must be able to charge the D+ or D- line from 0 V to VIH (min) within 2.5 µs.

Table 7-7. DC Electrical Characteristics
Input Levels for Low-/full-speed
Low: Max 0.8 V
Output Levels for Low-/full-speed
Low: Max 0.3 V
Decoupling Capacitance
Upstream Facing Port Bypass Capacitance (VBUS to GND): 1.0 - 10.0 µF
Input Capacitance for Low-/full-speed
Transceiver edge rate control capacitance: Max 75 pF
Terminations
Bus Pull-up Resistor on Upstream Facing Port: 1.5 kOhm ±5%
Bus Pull-down Resistor on Downstream Facing Port: 15 kOhm ±5%

Table 7-10. Low-speed Source Electrical Characteristics
Driver Characteristics
Upstream Facing Port (w/cable, low-speed only): 200 - 450 pF

USB Type-C® Cable and Connector Specification Release 2.3
https://www.usb.org/document-library/usb-type-cr-cable-and-connector-specification-release-23

Table 3-10 USB Full-Featured Type-C Standard Cable Assembly Wiring
Notes:
3. Contacts B6 and B7 should not be present in the USB Type-C plug.

4.3 Sideband Use (SBU)
The SBU pins on a port shall either be open circuit or have a weak pull-down to ground no stronger than zSBUTermination (≥ 950 kΩ) when in USB 3.2 or USB 2.0.

Table 4-27 Source CC Termination (Rp) Requirements
Resistor pull-up to 4.75 – 5.5 V
Default USB Power: 56 kΩ ± 20%
1.5 A @ 5 V: 22 kΩ ± 5%
3.0 A @ 5 V: 10 kΩ ± 5%

Table 4-28 Sink CC Termination (Rd) Requirements
± 10% resistor to GND5.1 kΩ

Table 4-39 Voltages on Sink CC Pins – Multiple Source Current Advertisements
Detection
vRa: −0.25 V to 0.15 V (Threshold 0.2 V)
vRd-Connect: 0.25 V to 2.04 V
vRd-USB: 0.25 V to 0.61 V (Threshold 0.66 V)
vRd-1.5: 0.70 V to 1.16 V (Threshold 1.23 V)
vRd-3.0: 1.31 V to 2.04 V

CH32V003 Datasheet
https://www.wch-ic.com/downloads/CH32V003DS0_PDF.html

3.3.9 I/O port characteristics
Output drive current characteristics
GPIO (General-Purpose Input/Output Port) can sink or output up to ±8mA current, and sink or output ±20mA current (not strictly to VOL/VOH).