Switch Matrix

Row1 — SW1 TAB, SW2 Q, SW3 W, SW4 E, SW5 R, SW6 T, SW7 Y, SW8 U, SW9 I, SW10 O, SW11 P, SW12 BKSP, SW13 7, SW14 8, SW15 9

Row2 — SW16 CTRL, SW17 A, SW18 S, SW19 D, SW20 F, SW21 G, SW22 H, SW23 J, SW24 K, SW25 L, SW26 ENTER, SW27 4, SW28 5, SW29 6

Row3 — SW30 SHFT, SW31 Z, SW32 X, SW33 C, SW34 V, SW35 B, SW36 N, SW37 M, SW38 <., SW39 Fn, SW40 Up, SW41 1, SW42 2, SW43 3

Row4 — SW44 CTRL, SW45 WIN, SW46 ALT, SW47 Fn2, SW48 SPC, SW49 ALT, SW50 LEFT, SW51 DOWN, SW52 RIGHT, SW53 0, SW54 DOT

Diodes D1–D54 1N4148. Columns Col1–Col15.

USB Connector

J1 USB_B_Mini
F1 Polyfuse
RB060–60TR
5V

CSH1 and RSH1
In order to offer a low-impedance, low-inductance path to EMI and ESD, reference [4] recommends that the USB shield and ground pin be connected through a net consisting of a capacitor ranging between 10nF and 470nF and a high value resistor.

ESD protection

U2 USBLC6-2SC6

CUSB1
Reference [5] recommends that this capacitor be attached for decoupling.

MCU Shenanigans

U3 ATMEGA32U4

CXL1/2 capacitors:
Crystal load capacitors. The datasheet [3] recommends a 8pF value. The 8.2pF value was used because it was more commonly found.

C8x capacitors:
Decoupling or bypass capacitors. The AN2519 [2] indicates that the typical decoupling capacitor values are 100nF for analog voltage. It also recommends that the main VCC voltage be decoupled, but does not recommend a value for this. The value used was 1uF.

CU1:
CU1: this is the UCAP pin capacitor. The MCU datasheet [1] specifies that this pin should be connected to an external 1uF capacitor.

RESET NETWORK
The reset network added was taken directly from Application Note [2]. See section 3 for details.

RHWB1
Datasheet [1] recommends that the HWB pin be connected to GNd through a 1k resistor.

Logos

L1 AcheronLogo
L2 ElongateLogoPlated
L3 ElongateLabel
L4 ElongateLabelMask
L5 O5HLogo
L6 BRFlag

Extra pins

J2 Conn_01x06_Female

ISP pins

J3 Conn_01x06_Female

RGB

RGB1–RGB6 WS2812B

REFERENCES

[1] ATMEGA32U4 datasheet
http://ww1.microchip.com/downloads/en/DeviceDoc/Atmel-7766-8-bit-AVR-ATmega16U4-32U4_Datasheet.pdf

[2] AN2519 Application Note: AVR® Microcontroller Hardware Design Considerations
http://ww1.microchip.com/downloads/en/AppNotes/AN2519-AVR-Microcontroller-Hardware-Design-Considerations-00002519B.pdf

[3] NX5032GC 16MHz crystal datasheet
https://www.ndk.com/images/products/catalog/c_NX5032GC-STD-CSK-6_e.pdf

[4] AN232B-06 Application Note
https://www.ftdichip.com/Support/Documents/AppNotes/AN232B-06_11.pdf

[5] USBLC6-2 Datasheet
https://www.st.com/resource/en/datasheet/usblc6-2.pdf

Designed by Gondolindrim and MrKeebs
Sheet: /
File: elongate.sch
Title: **ElongatePCB**
Size: A2 | Date: 2019-09-13 | Rev: 1.2
KiCad E.D.A. kicad 5.1.4 | Id: 1/1