POWER AND FILTERING

PWR_FLAG PWR_FLAG
VBUS VBAT

Q1
DMG3415U

D1
MBR1020VL

R1 100K
EN

U1
VIN VOUT
EN
GND NC

+3.3V

R2 100K

C2 10uF C3 10uF C4 1uF C5 10uF

GND

Note: additional cap(s) may not be needed if we don't route power off board (as on the Feather?)

LIPO CHARGING

VBUS

MCP73831/2
LIPO Charger

U3
VDD VBAT
PROG
STAT VSS

VDD: 3.75–6V
Temp: −40–85°C

D2 ORANGE R6 1K

R3 4.7K C6 10uF

R4 100K
VBAT_SENSE
R7 100K

VBAT

GND GND GND

10K = 100mA
5.0K = 200mA
2.0K = 500mA
1.0K = 1000mA

This cryptic comment implies that the value of the PROG resistor must be calibrated to the battery's capacity?

BATTERY INPUT

X1
VBAT +
−
GND

VBUS

X2
VBUS
D+
D−
ID
GND
20329

USB TO SERIAL CONVERTER

+3.3V

CP2104
USB/UART BRIDGE

U2A
VIO
VDD
REGIN
#RST
#SUSPEND
SUSPEND
GPIO0/TXLED
GPIO1/RXLED
GPIO2
GPIO3
GND
VBUS
D+
D−
VPP
NC
RI
DCD
DTR
DSR
TXD
RXD
RTS
CTS

DTR
RXD0
TXD0
RTS

VIO: 1.8–VDD
Op. Temp: −40–85°C

C1 10uF

GND GND GND

THERMAL PAD
U2B
GND

RESET
Q2
MMBT2222A
R5 10K
DTR

Q3
MMBT2222A
IO0
R8 10K
RTS

ESP32/BLUETOOTH MODULE

RESET
SW1
R9 10K
+3.3V

RST
GND

C7 1uF
GND

RESET

+3.3V

U4
ESP32-WROOM-32E

EN
IO36 SENSOR_VP
IO39 SENSOR_VN
IO34
IO35
IO32/BTN_A
IO33/BTN_B
IO4/BTN_C
IO25/BTN_N
IO26/BTN_E
IO27/BTN_S
IO14/BTN_W
NC
NC
NC
NC
NC
NC
NC
MTDI/IO12
MTDO/IO15
IO2
IO0
IO22
IO23
3.3V
TXD0
RXD0
IO0/RTS
LED/IO13
SDATA/IO18
SCLK/IO5
SDC/IO16
SRST/IO21
SCS/IO17
IO12
IO15
IO2
IO19
IO22
IO23
GND

TXD0
RXD0
IO0
LED

VBAT_SENSE
BTN_A
BTN_B
BTN_C
BTN_N
BTN_E
BTN_S
BTN_W

SENSOR_VP
SENSOR_VN

UI BUTTONS

SW2 A
SW3 B
SW4 C
GND

GAMEPAD BUTTONS

SW6 SW7 SW8 SW5
UP   RT   DN   LT
GND

R10 1K D3 RED
LED
GND

DISPLAY CONNECTOR

J1
Conn_01x08_Socket
DISP_SPI_DATA
DISP_SPI_CLK
DISP_SPI_DC
DISP_SPI_RST
DISP_SPI_CS
+3.3V

Wired for SPI mode. May need to cut traces J1 & J2 on the display module.

DEBUG/BODGE HEADERS

J2
Conn_01x10_Socket
IO12
IO15
IO2
IO19
IO22
IO23
IO34
IO36
IO39
GND

Unused GPIO pins exposed to pads for debugging/bug fixes or extra features.

OLED1
DISP_SPI_DATA
DISP_SPI_CLK
DISP_SPI_DC
DISP_SPI_RST
DISP_SPI_CS
+3.3V
GND
DISPLAY

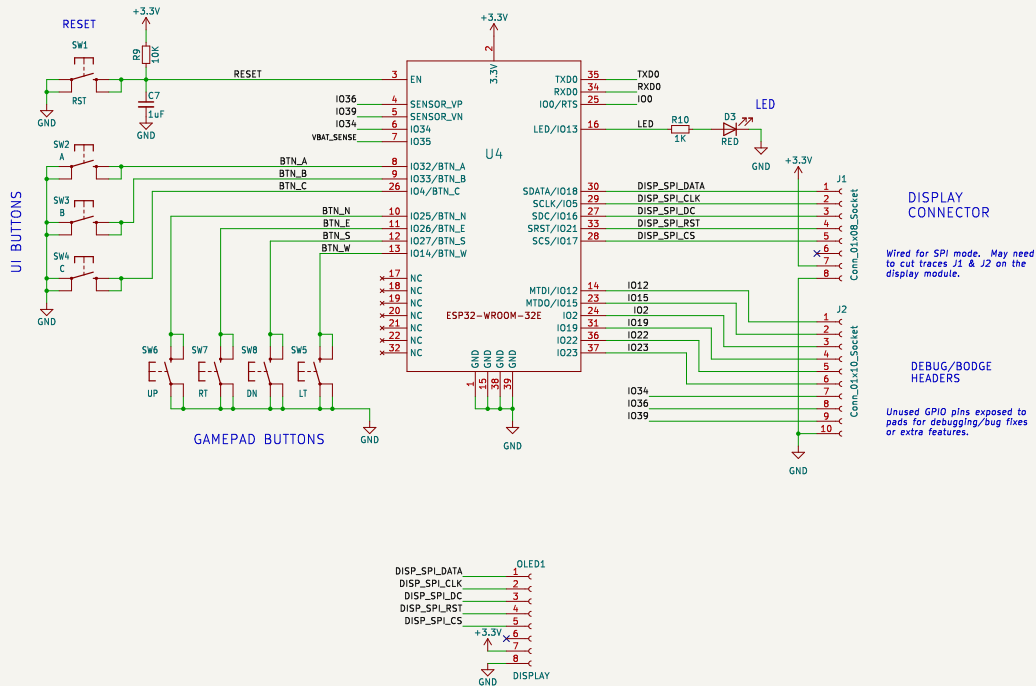Quick hack to represent the 1.5" OLED display module. Only the 8-pin connector and mechanical mounting holes are exposed.

NOTES

ALL of the package footprints need to be found, imported or recreated in KiCad, because the Eagle import did not map to ANY equivalent footprints. I didn't think it even possible that the KiCAD footprint library could possibly get any worse, yet with every release they find a way.

Switches: Adafruit uses what they call "KMR2" switches but the exact model is possibly out of stock; any reasonable tactile switch to be spec'ed based on height or physical size. Click link for more info.

Re diode D1: Huzzah uses the MBR120 which is unobtanium; Adafruit replaced it with the MBR1020VL per this link to their website – click for more info. PDF datasheet included.

Hard reset switch may or may not be externally accessible? Should be present on board for debugging.