USB1
GND
VBUS
1 GND   SHELL 14 GND
2 VBUS
3 SBU2
R1 4 CC1
5.1k 5 DN2
USB_DM 6 DP1
USB_DP 7 DN1
USB_DM 8 DP2
USB_DP 9 SBU1
R2 10 CC2
5.1k 11 VBUS
12 GND   SHELL 13 GND
TYPE-C 16PIN 2MD(073)

H1
VBAT 1
2
PZ254V-11-02P

C2
VSYS   4.7uF   GND

VBUS
R3
330k

VSYS_1 OUT
VPCC
SEL
VSYS PROG2
R4 THERM
110k PG#
USB_SENSE STAT2
R5 STAT1/LBO#
10k TE#
VSYS VSS
GND

EP 21

OUT 20 VSYS
IN 19
IN 18
CE 17 VSYS
VBAT_SENSE 16
VBAT 15 VBAT
VBAT 14
PROG1 13
PROG3 12
VSS 11

GND

U1
MCP73871-2CAI/ML

GND
C1
10uF   GND

C3
4.7uF

VBAT

GND

R7
100k

R15
1k
R14
1k

VBAT
R49
1k
VBAT_SENSE
R50
1k

GND   GND

3V3
C6 C7
10uF 10uF

GND GND

U2
L1
1.5uH 1 VOUT   EP 11
2 L2   FB 10
3 PGND   GND 9
4 L1   VINA 8
VSYS 5 VIN PS/SYNC 7
EN 6
C4
10uF

GND

TPS63030DSKTG4

GND GND

3V3
R8
1.13M

R9
200k

C5
100nF

GND

5V
C10 C11
10uF 10uF

GND GND

U3
L2
1.5uH 1 VOUT   EP 11
2 L2   FB 10
3 PGND   GND 9
4 L1   VINA 8
VSYS 5 VIN PS/SYNC 7
EN 6
C8
10uF

GND

TPS63030DSKTG4

GND

C9
100nF

GND

5V
R10
1.8M

R11
200k

GND

U4 — ESP32-S3-WROOM-1-N4

Left side pins:
- 1 GND
- 3V3_2 3V3
- 3 EN
- UP_4 IO4
- DOWN_5 IO5
- RIGHT_6 IO6
- LEFT_7 IO7
- P1_CS_8 IO15
- P2_CS_9 IO16
- CTRL_IN1_OUT1 10 IO17
- CTRL_IN1_OUT2 11 IO18
- SDA 12 IO8
- USB_DM 13 IO19
- USB_DP 14 IO20
- ENTER 15 IO3
- 16 IO46
- SCL 17 IO9
- 18 IO10
- 19 IO11
- MISO 20 IO12

Right side pins:
- 40 GND
- 39 VBAT_SENSE IO1
- 38 USB_SENSE IO2
- TXD0 37 TP3
- RXD0 36 TP4
- IO42 35
- IO41 34
- IO40 33 CS5
- IO39 32 CS4
- IO38 31 CS3
- IO37 30 CS2
- IO36 29 CS1
- IO35 28 CTRL_IN2_OUT2
- IO0 27 TP2
- IO45 26
- IO48 25
- IO47 24
- IO21 23 CTRL_IN2_OUT1
- IO14 22 CLK
- IO13 21 MOSI
- 41 GND

Decoupling
- C12 100nF (3V3 / GND)
- C13 100nF (3V3 / GND)
- R12 10k (3V3, TP1)

Connectors

H2 — PZ254V-11-04P
- 1
- SDA 2
- SCL 3
- 4
(5V, GND)

H3 — 2.54-2*3
- RIGHT / GND
- UP 5
- 1 2 LEFT
- 3 4 DOWN
- 5 6 ENTER

H4 — A2541WV-2x4P
- 5V 1 / 2 GND
- MOSI 3 / 4 MISO
- CS1 5 / 6 CLK
- 7 / 8 3V3

H5 — A2541WV-2x4P
- 5V 1 / 2 GND
- MOSI 3 / 4 MISO
- CS2 5 / 6 CLK
- 7 / 8 3V3

H6 — A2541WV-2x4P
- 5V 1 / 2 GND
- MOSI 3 / 4 MISO
- CS3 5 / 6 CLK
- 7 / 8 3V3

H7 — A2541WV-2x4P
- 5V 1 / 2 GND
- MOSI 3 / 4 MISO
- CS4 5 / 6 CLK
- 7 / 8 3V3

H8 — A2541WV-2x4P
- 5V 1 / 2 GND
- MOSI 3 / 4 MISO
- CS5 5 / 6 CLK
- 7 / 8 3V3

Test points: TP1, TP2, TP3, TP4, TP5, TP6

Bias

3V3 — C56 — IJACK2_R — 10uF
R43 10k — 3V3 — IN2_R — R44 10k — GND
3V3 — C57 — IJACK2_L — 10uF
R45 10k — 3V3 — IN2_L — R46 10k — GND
3V3 — R51 1k — REF_1V65 — R52 1k — GND
3V3 — C54 — IJACK1_R — 10uF — R39 10k — IN1_R — R40 10k — GND
3V3 — C55 — IJACK1_L — 10uF — R41 10k — IN1_L — R42 10k — GND

Switches

GND — C46 10uF — U10
3V3 — 14 VDD
13 CONT1
5 CONT2 — CTRL_IN1_OUT1
6 CONT3 — CTRL_IN2_OUT1
12 CONT4
7 VSS
74VHC4066M — GND

IN/OUT1 1 — IN1_POTOUT_R
OUT/IN1 2 — IN1_R_SW1
IN/OUT2 4 — IN1_POTOUT_L
OUT/IN2 3 — IN1_L_SW1
IN/OUT3 8 — IN2_POTOUT_L
OUT/IN3 9 — IN2_L_SW1
IN/OUT4 11 — IN2_POTOUT_R
OUT/IN4 10 — IN2_R_SW1

GND — C47 10uF — U12
3V3 — 14 VDD
13 CONT1
5 CONT2 — CTRL_IN1_OUT2
6 CONT3 — CTRL_IN2_OUT2
12 CONT4
7 VSS
74VHC4066M — GND

IN/OUT1 1 — IN1_POTOUT_R
OUT/IN1 2 — IN1_R_SW2
IN/OUT2 4 — IN1_POTOUT_L
OUT/IN2 3 — IN1_L_SW2
IN/OUT3 8 — IN2_POTOUT_L
OUT/IN3 9 — IN2_L_SW2
IN/OUT4 11 — IN2_POTOUT_R
OUT/IN4 10 — IN2_R_SW2

Digital pots.

U6 — MCP4261-103E/ST
P1_CS 1 CS# — 14 VDD — 3V3
CLK 2 SCK — 13 SDO — MISO — C44 100nF — GND
MOSI 3 SDI — 12 SHDN#
GND 4 VSS — 11 WP#
IN1_R 5 P1B — 10 P0B — IN1_L
IN1_POTOUT_R 6 P1W — 9 P0W — IN1_POTOUT_L
7 P1A — 8 P0A

U7 — MCP4261-103E/ST
P2_CS 1 CS# — 14 VDD — 3V3
CLK 2 SCK — 13 SDO — MISO — C43 100nF — GND
MOSI 3 SDI — 12 SHDN#
GND 4 VSS — 11 WP#
IN2_R 5 P1B — 10 P0B — IN2_L
IN2_POTOUT_R 6 P1W — 9 P0W — IN2_POTOUT_L
7 P1A — 8 P0A

Connectors

CN5 — KH-PJ-325C
1 — GND
2 — IJACK1_R
3
4
5 — IJACK1_L

CN6 — KH-PJ-325C
1 — GND
2 — IJACK2_R
3
4
5 — IJACK2_L

CN7 — KH-PJ-325C
1 — GND
2 — OJACK1_R
3
4
5 — OJACK1_L

CN8 — KH-PJ-325C
1 — GND
2 — OJACK2_R
3
4
5 — OJACK2_L

Amplifiers

OUT1_L — U8.1 LMV324IPWRE4 — C45 100nF — 3V3 — GND
IN1_L_SW1 — R33 1k — R23 1k — 4
IN2_L_SW1 — R34 1k — 2 —
REF_1V65 — 3 + — 1
11 — GND
3V3 — Q1 MMBT2222A — Q2 OUT1_L MMBT2907A — C48 470uF — OJACK1_L

OUT2_L — U8.3 LMV324IPWRE4
IN1_L_SW2 — R32 1k — R30 1k — 9
IN2_L_SW2 — R31 1k — 10 —
REF_1V65 — + — 8
3V3 — Q5 MMBT2222A — Q6 OUT2_L MMBT2907A — C51 470uF — OJACK2_L

OUT1_R — U8.2 LMV324IPWRE4
IN1_R_SW1 — R25 1k — R24 1k — 6
IN2_R_SW1 — R26 1k — 5 —
REF_1V65 — 2 + — 7
3V3 — Q3 MMBT2222A — Q4 OUT1_R MMBT2907A — C49 470uF — OJACK1_R

OUT2_R — U8.4 LMV324IPWRE4
IN1_R_SW2 — R28 1k — R29 1k — 13
IN2_R_SW2 — R27 1k — 12 —
REF_1V65 — 4 + — 14
3V3 — Q7 MMBT2222A — Q8 OUT2_R MMBT2907A — C50 470uF — OJACK2_R