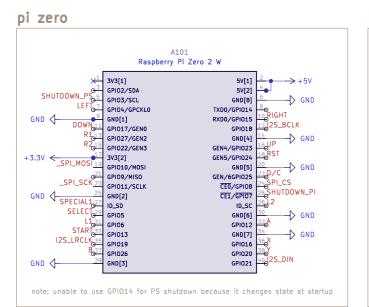
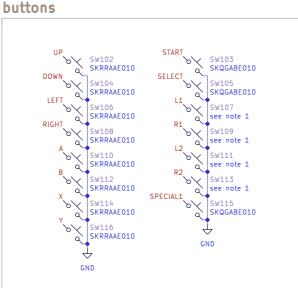
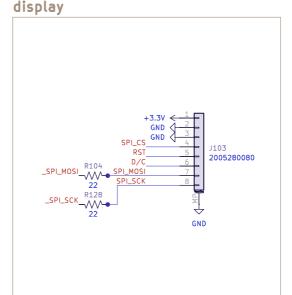
power management D101 DSK110 100V diode used intentionally for higher Vf — BATT should be <4.5V for proper boost converter operation USB powers the system directly while battery is charging https://ww1.microchip.com/downloads/en/DeviceDoc/51746a.pdf R101 10k R102 100k J101 USB C 6 pin 5V boost converter D102 orange C101 ¬\\\\ 3415 J LMV393 22u = GND L101 22u STAT1: charging STAT2: complete 2.2u U101A \uparrow \uparrow LMV393 ₹ R105 1.69k C103 10u GND GND 3 D104 U102 MCP73833T-FCI/MF R107 R107 \{ \} 10u = R106 22u U103 GND 0.1u F101 1A 3415 100k PAM2401 \uparrow \uparrow k ≥ R110 1.69k R110 R111 3.335V 750k GND GND GND R113 } CC2 R112 STAT1 Q103 BSS138 1.69k STAT2 THERM R115 AGND PG e & PROG 100k ≥ 5.1k 5.1k RSET PGND U101B R119 GND R121 GND GND LMV393 7 5 \rightarrow 68k R120 SW101 R120 \le 1.69k GND GND GND GND GNDGND SKQGABE010 GND 2.97V (3.13V @ - input) 7 LOW_BATT GND R122 \$ D107 +BATT ← √ √ √ − charge rate: 591mA GND GND BAT54 BAT54 BAT54 C112 output goes high when battery low SHUTDOWN_PI SHUTDOWN_PS N N filter input is pulled down when low battery indicator is on! R124

5.1k

LOW_BATT

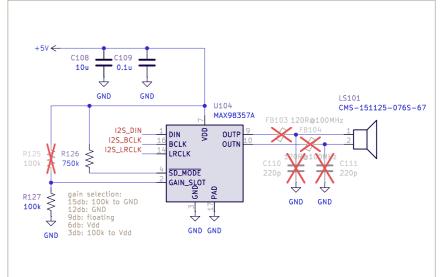






because of high ripple current from raspberry pi, low battery indicator will trigger when voltage is nominally 3.2–3.3V

i2s audio



0

Title: pi tin main pcb

Date: 2025-03-08

GND

note 1:
for mint tin case use PTS645SM43SMTR92 LFS (6mm x 4.3mm SMT vertical tactile)
for 3d printed case use TL3336AF160Q (6mm x 4mm SMD right angle tactile)

power sequencing:
 startup:
 SW101 turns BATT switch Q102 on through Q103 (BATT_SW_EN)
 R111 latches Q102 on through Q103

normal operation:
 SHUTDOWN_PI (active high) is pulled up by -50K internal pullup
 LOW_BATT is LOW, causing SHUTDOWN_PI to be pulled low through D105
 D105 protects GP107 from voltages >3.3V
 D106 prevents LOW_BATT from turning off Q103/Q102

shutdown:
 SW101 overrides LOW_BATT pulldown, causing SHUTDOWN_PI to go high
 OR, LOW_BATT signal goes high—Z due to low battery condition
 Shutdown script on Pi triggers safe shutdown when GP107 is high for >1 second
 SHUTDOWN_PS (active low) turns off Q103/Q102 when Pi has safely shut down
 D107 prevents I2C pullups from turning on Q103/Q102 after Pi stops actively pulling down GP10

dtoverlay=gpio-shutdown.gpio_pin=7.active_low=0.gpio_pull=up
dtoverlay=gpio-poweroff.gpio_pin=3.active_low=1

H103
MountingHole
H105
MountingHole
H106
MountingHole
H106
MountingHole

drawn by jackw01
alley cat engineering
Sheet: /
File: mintypcb.kicad_sch

O FID101

O FID102