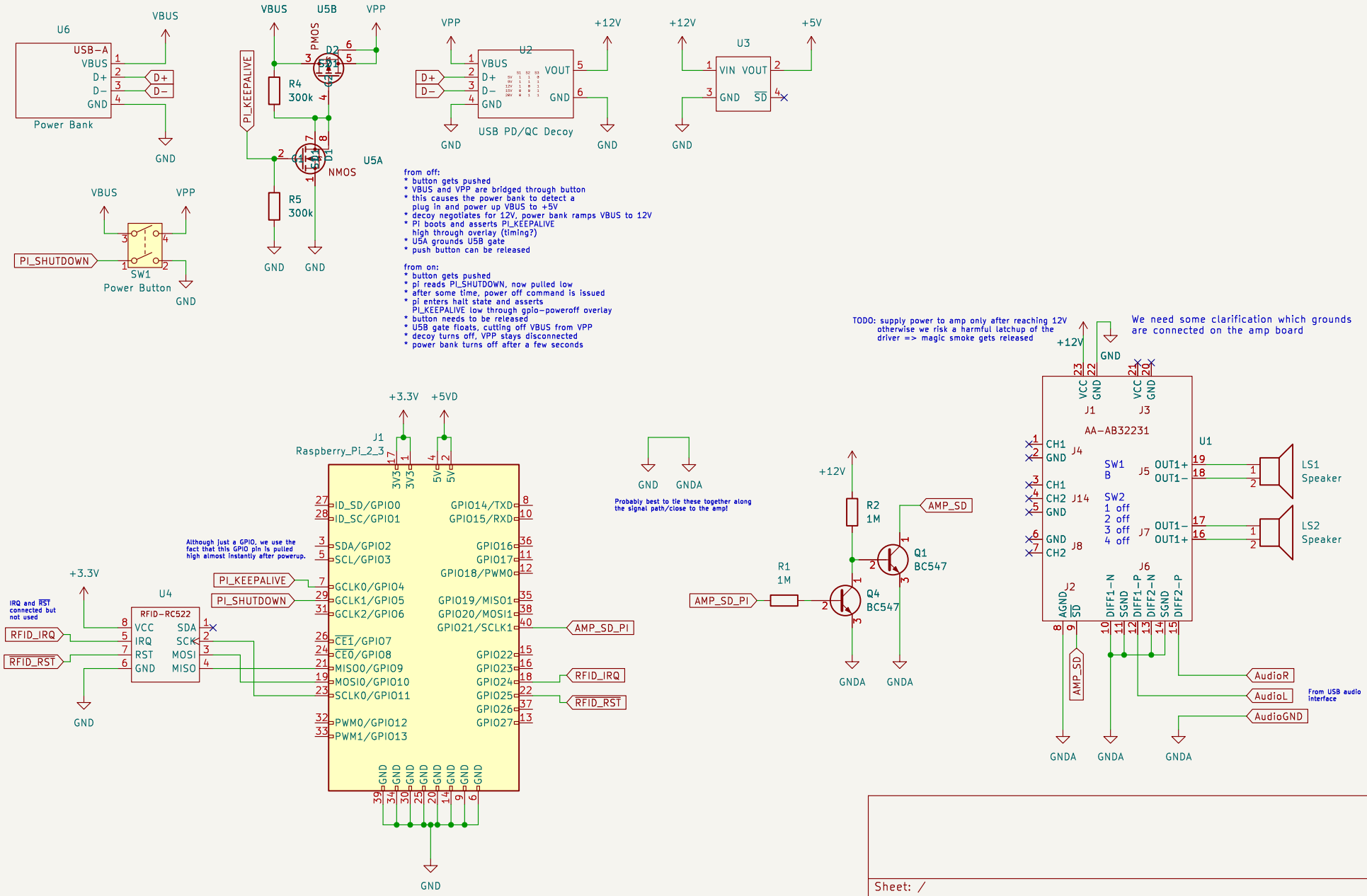
U6
USB-A
VBUS
D+
D-
GND
Power Bank
VBUS
GND
VBUS
VPP
SW1
Power Button
PI_SHUTDOWN
VBUS
U5B
VPP
PMOS
D2
R4
300k
PI_KEEPALIVE
U5A
NMOS
R5
300k
GND
GND
VPP
+12V
U2
VBUS
D+
D-
GND
VOUT
USB PD/QC Decoy
GND
GND
+12V
+5V
U3
VIN
VOUT
GND
SD
GND
from off:
* button gets pushed
* VBUS and VPP are bridged through button
* this causes the power bank to detect a plug in and power up VBUS to +5V
* decoy negotiates for 12V, power bank ramps VBUS to 12V
* Pi boots and asserts PI_KEEPALIVE high through overlay (timing?)
* U5A grounds U5B gate
* push button can be released
from on:
* button gets pushed
* pi reads PI_SHUTDOWN, now pulled low
* after some time, power off command is issued
* pi enters halt state and asserts PI_KEEPALIVE low through gpio-poweroff overlay
* button needs to be released
* U5B gate floats, cutting off VBUS from VPP
* decoy turns off, VPP stays disconnected
* power bank turns off after a few seconds
TODO: supply power to amp only after reaching 12V otherwise we risk a harmful latchup of the driver => magic smoke gets released
We need some clarification which grounds are connected on the amp board
+12V
GND
VCC
GND
J1
VCC
GND
J3
AA-AB32231
U1
CH1
GND
J4
SW1
B
J5
OUT1+
OUT1-
LS1
Speaker
CH1
CH2
GND
J14
SW2
1 off
2 off
3 off
4 off
J7
OUT1-
OUT1+
LS2
Speaker
GND
CH2
J8
J6
J2
AGND
SD
DIFF1-N
SGND
DIFF1-P
DIFF2-N
SGND
DIFF2-P
AMP_SD
AudioR
AudioL
AudioGND
From USB audio interface
GNDA
GNDA
GNDA
+3.3V
+5VD
J1
Raspberry_Pi_2_3
3V3
3V3
5V
5V
ID_SD/GPIO0
ID_SC/GPIO1
SDA/GPIO2
SCL/GPIO3
GCLK0/GPIO4
GCLK1/GPIO5
GCLK2/GPIO6
CE1/GPIO7
CE0/GPIO8
MISO0/GPIO9
MOSI0/GPIO10
SCLK0/GPIO11
PWM0/GPIO12
PWM1/GPIO13
GPIO14/TXD
GPIO15/RXD
GPIO16
GPIO17
GPIO18/PWM0
GPIO19/MISO1
GPIO20/MOSI1
GPIO21/SCLK1
GPIO22
GPIO23
GPIO24
GPIO25
GPIO26
GPIO27
PI_KEEPALIVE
PI_SHUTDOWN
AMP_SD_PI
RFID_IRQ
RFID_RST
Although just a GPIO, we use the fact that this GPIO pin is pulled high almost instantly after powerup.
GND
GND
GND