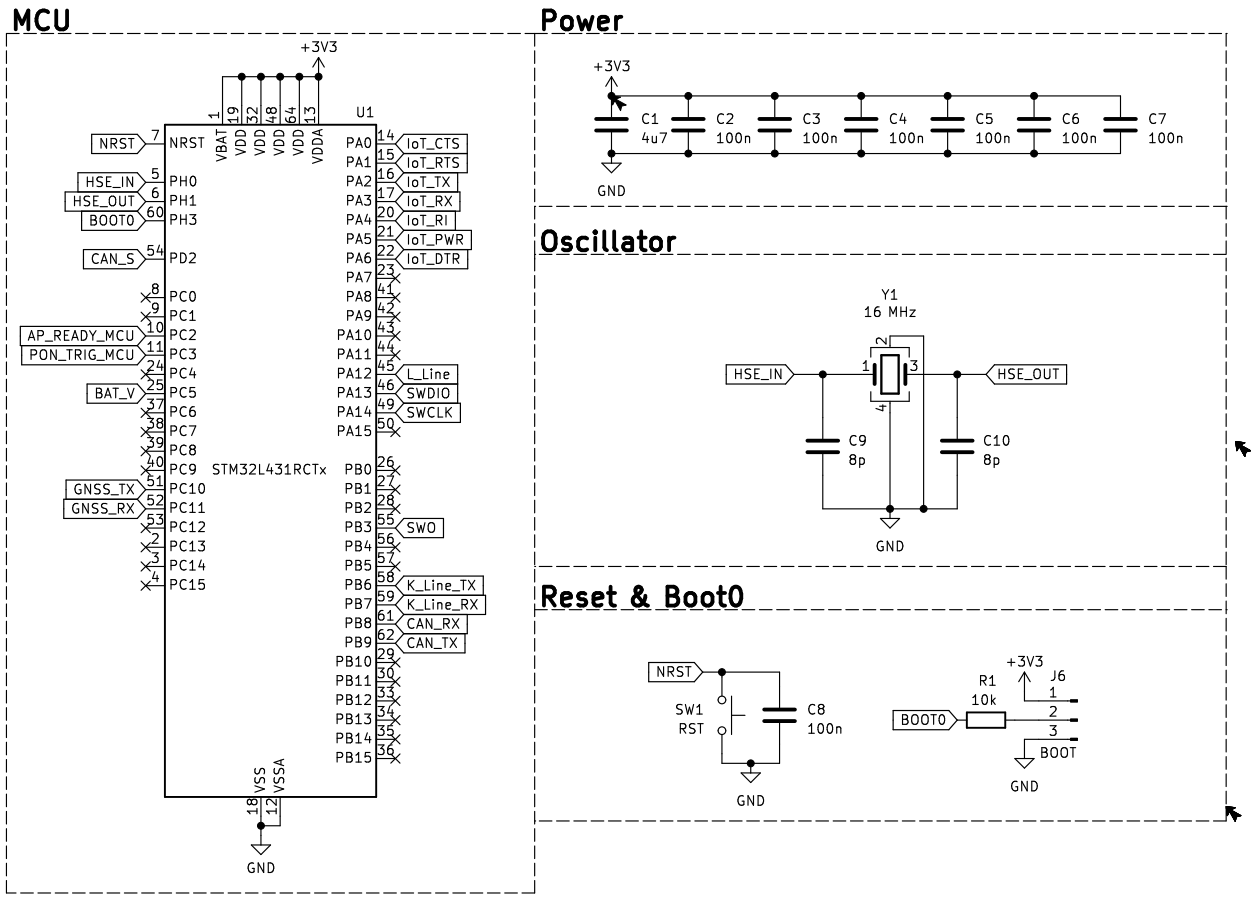
MCU – STM32L431



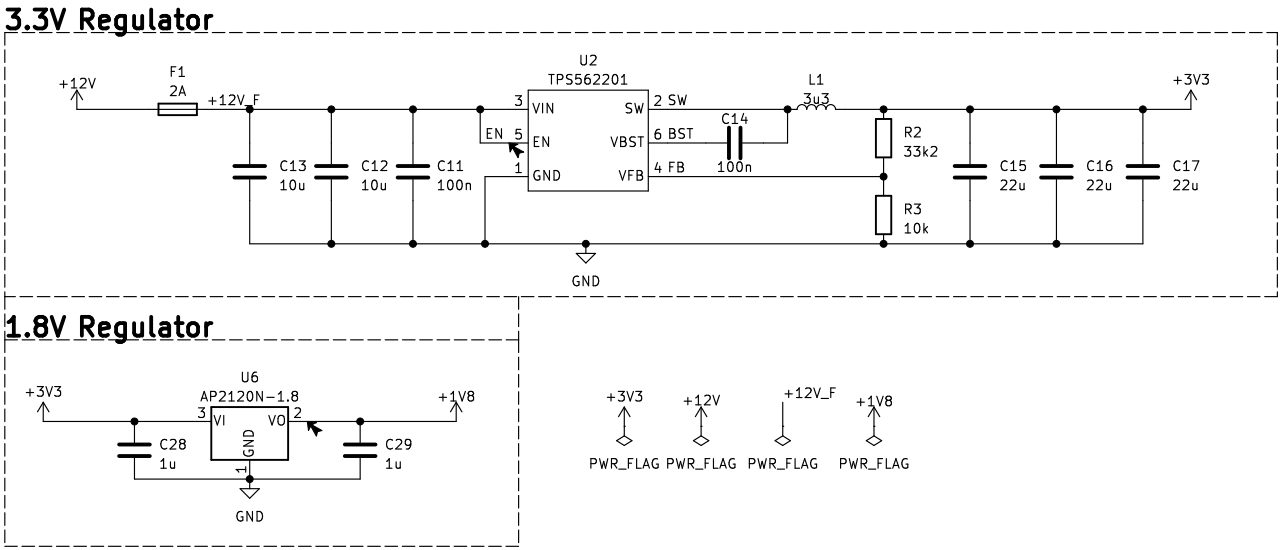
power_supply
File: pwr.kicad_sch

iot_module
File: iot.kicad_sch

car_comm
File: car.kicad_sch

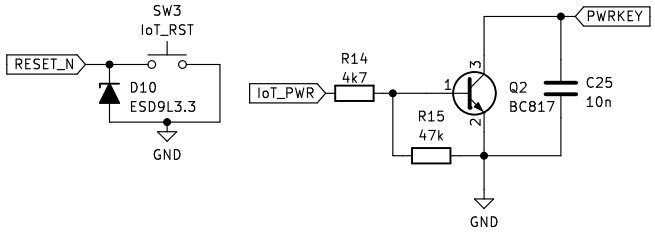
connectors
File: connect.kicad_sch

Power supplies

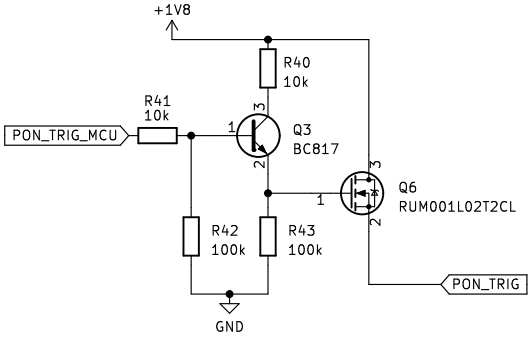


IoT Module Quectel BG77

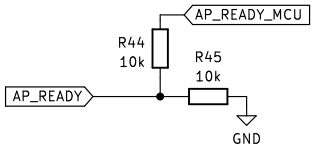
PWRKEY & RESET



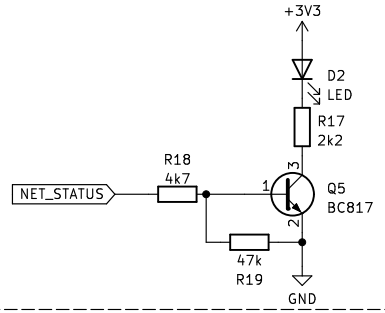
PON Trigger



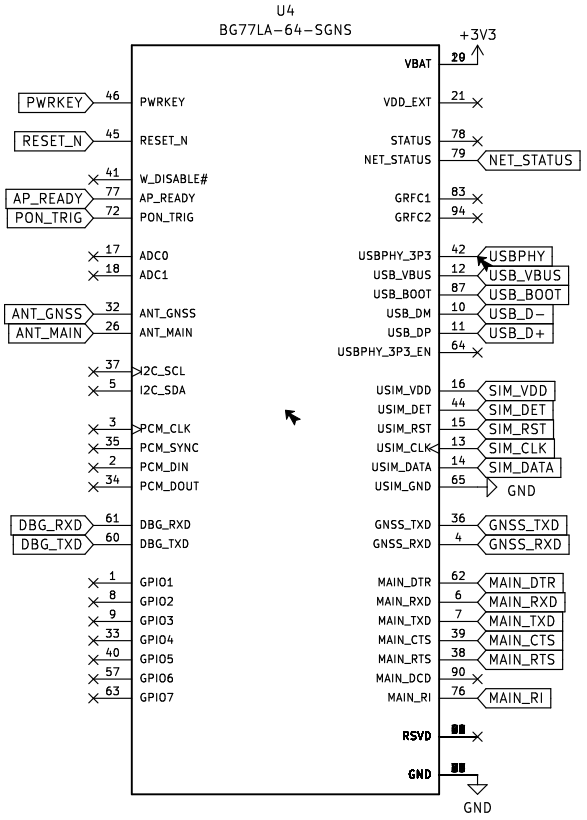
AP READY



STATUS INDICATOR



Main module

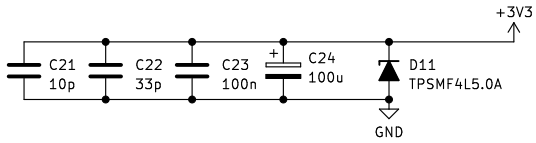


antenna — File: ant.kicad_sch

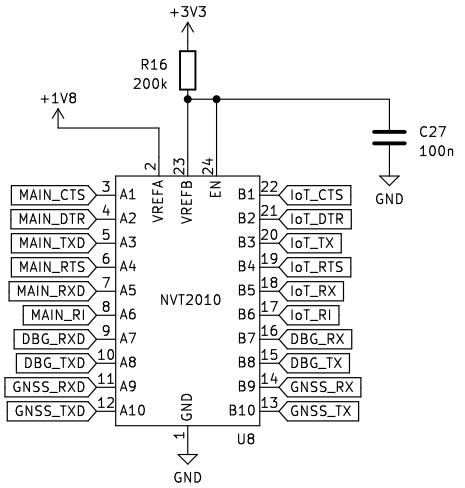
sim — File: sim.kicad_sch

usb — File: usb.kicad_sch

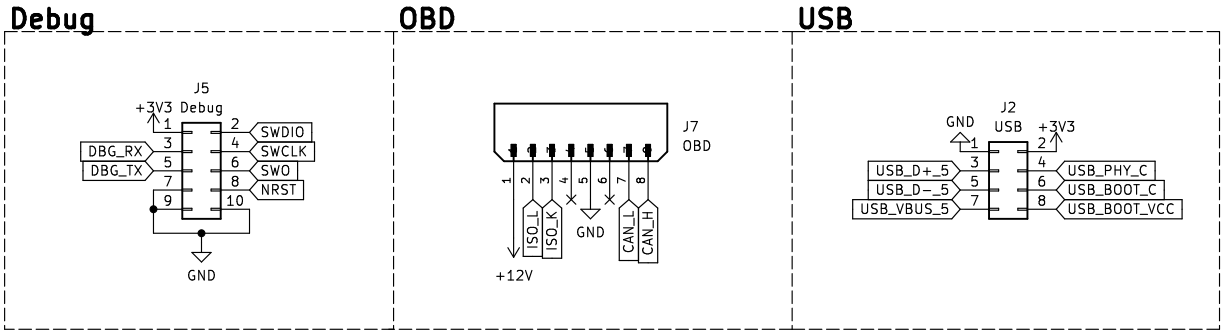
Power



UART Level Shifter

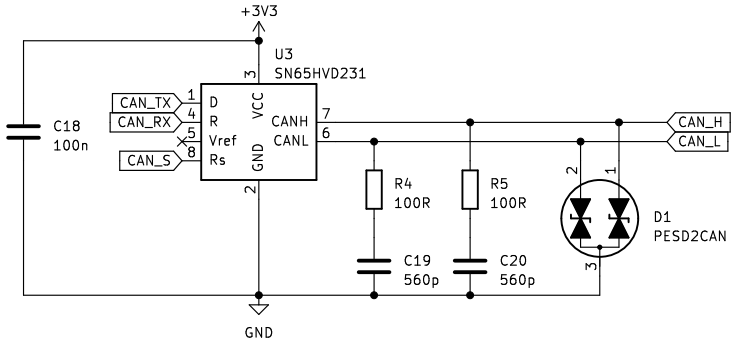


Connectors

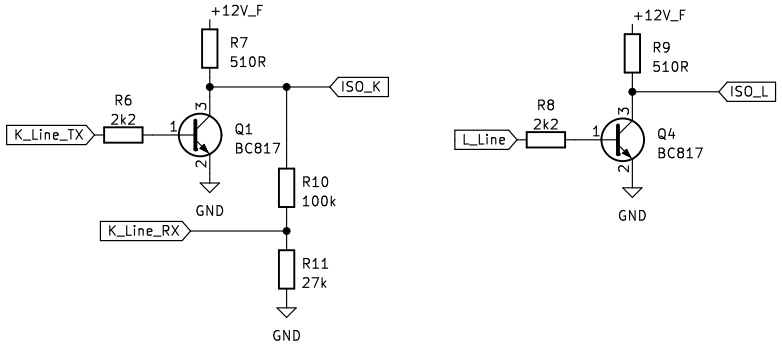

Debug
OBD
USB
J5
+3V3 Debug
1
2
SWDIO
3
4
SWCLK
DBG_RX
5
6
SWO
DBG_TX
7
8
NRST
9
10
GND
J7
OBD
1
2
3
4
5
6
7
8
ISO_L
ISO_K
GND
CAN_L
CAN_H
+12V
J2
GND
USB
+3V3
1
2
3
4
USB_D+_5
USB_PHY_C
5
6
USB_D-_5
USB_BOOT_C
USB_VBUS_5
7
8
USB_BOOT_VCC

Car communication circuitry

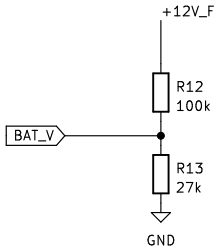
CAN BUS Transceiver



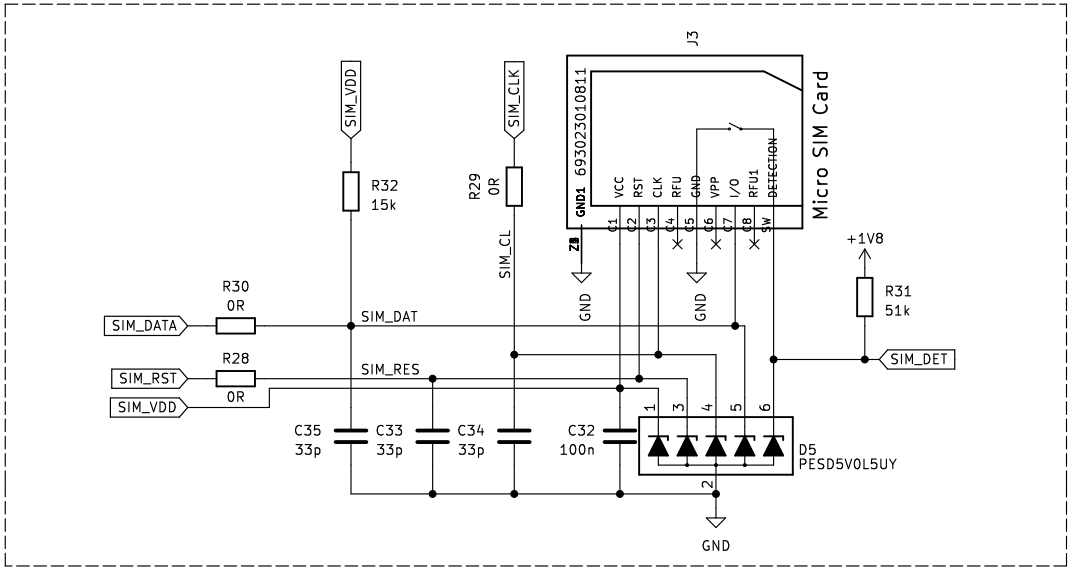
ISO 9141 / ISO 14230 Transceiver



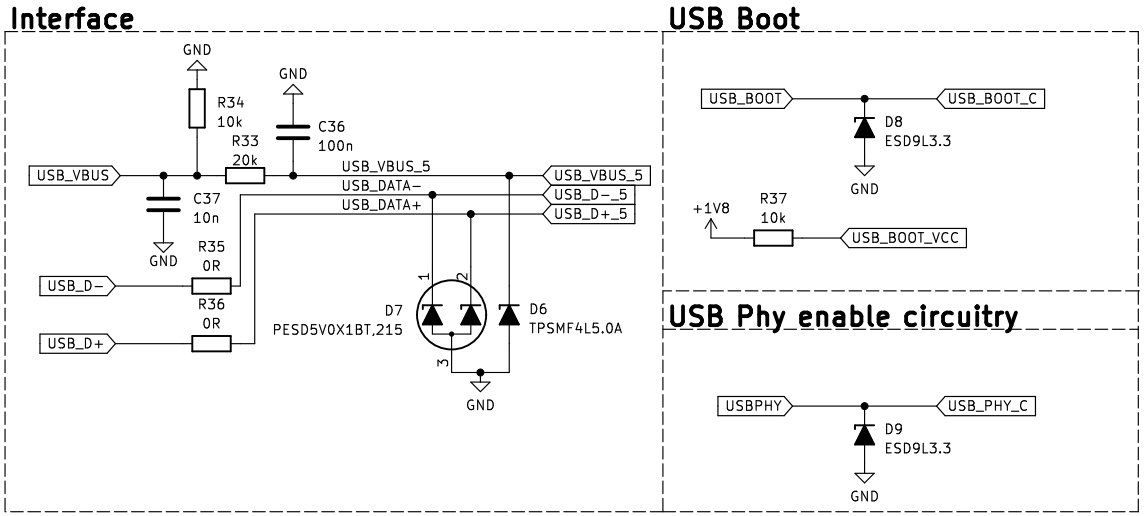
Battery Voltage Monitoring



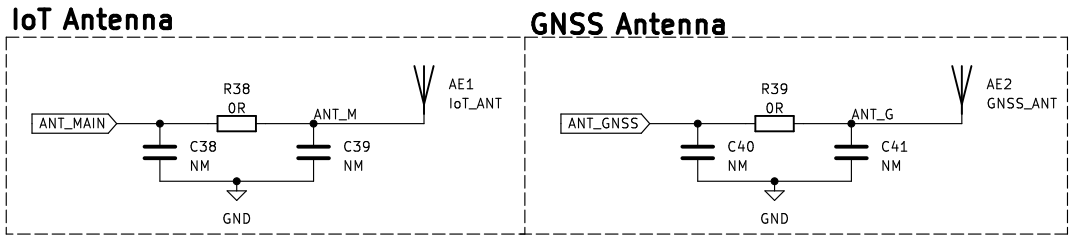
SIM Card


J3
Micro SIM Card
69302301081
SIM_VDD
SIM_CLK
R32
15k
R29
0R
SIM_CL
VCC
RST
CLK
RFU
GND
VPP
I/O
RFU1
DETECTION
GND1
C1
C2
C3
C4
C5
C6
C7
C8
SW
GND
GND
+1V8
R31
51k
SIM_DET
R30
0R
SIM_DATA
SIM_DAT
R28
0R
SIM_RST
SIM_RES
SIM_VDD
C35
33p
C33
33p
C34
33p
C32
100n
D5
PESD5V0L5UY
1
3
4
5
6
2
GND

USB


Interface
USB Boot
GND
GND
R34
10k
R33
20k
C36
100n
USB_VBUS
USB_VBUS_5
USB_DATA−
USB_DATA+
USB_VBUS_5
USB_D−_5
USB_D+_5
C37
10n
GND
R35
0R
R36
0R
USB_D−
USB_D+
D7
PESD5V0X1BT,215
D6
TPSMF4L5.0A
GND
USB_BOOT
USB_BOOT_C
D8
ESD9L3.3
GND
+1V8
R37
10k
USB_BOOT_VCC
USB Phy enable circuitry
USBPHY
USB_PHY_C
D9
ESD9L3.3
GND

Antennas


IoT Antenna
ANT_MAIN
R38
0R
ANT_M
AE1
IoT_ANT
C38
NM
C39
NM
GND
GNSS Antenna
ANT_GNSS
R39
0R
ANT_G
AE2
GNSS_ANT
C40
NM
C41
NM
GND