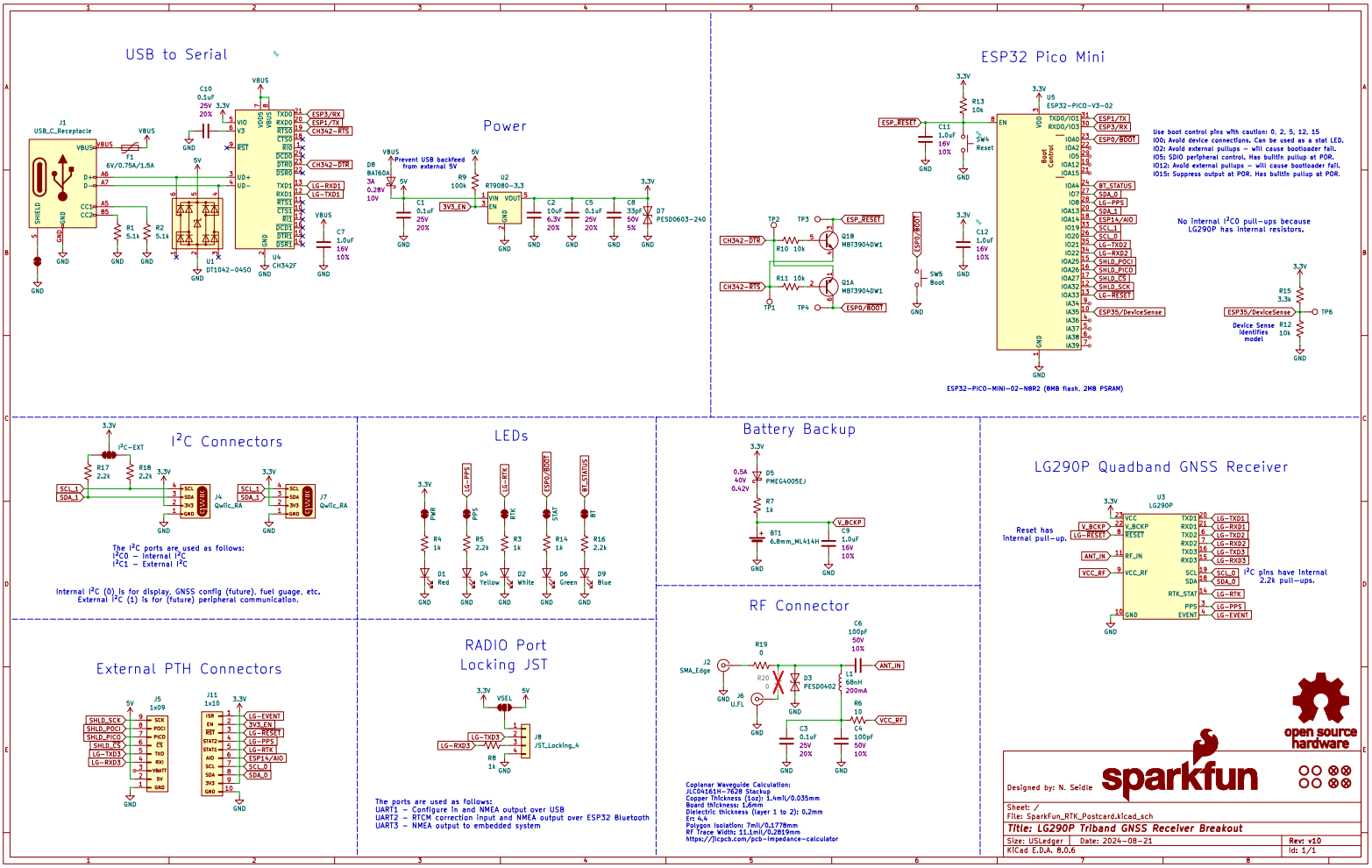
USB to Serial
J1
USB_C_Receptacle
VBUS
F1
6V/0.75A/1.5A
C10
0.1uF
25V
20%
3.3V
5V
GND
A6
A7
A5
B5
CC1
CC2
SHIELD
R1
5.1k
R2
5.1k
U1
DT1042-0450
VIO
V3
RST
UD+
UD-
VDD5
VBUS
TXD0
RXD0
RTS0
CTS0
RI0
DCD0
DTR0
DSR0
TXD1
RXD1
RTS1
CTS1
RI1
DCD1
DTR1
DSR1
U4
CH342F
C7
1.0uF
16V
10%
ESP3/RX
ESP1/TX
CH342-RTS
CH342-DTR
LG-RXD1
LG-TXD1
Power
D8
BAT60A
3A
0.28V
10V
Prevent USB backfeed from external 5V
C1
0.1uF
25V
20%
R9
100k
3V3_EN
U2
RT9080-3.3
VIN
EN
VOUT
GND
C2
10uF
6.3V
20%
C5
0.1uF
25V
20%
C8
33pF
50V
5%
D7
PESD0603-240
ESP32 Pico Mini
U5
ESP32-PICO-V3-02
ESP_RESET
C11
1.0uF
16V
10%
R13
10k
SW4
Reset
VDD
Boot Control
TXD0/IO1
RXD0/IO3
IO0
IO2
IO5
IO12
IO15
IO4
IO13
IO14
IO10
IO20
IO22
IO25
IO26
IO27
IO32
IO33
IA34
IA35
IA36
IA37
IA38
IA39
ESP1/TX
ESP3/RX
ESP0/BOOT
BT_STATUS
SDA_0
LG-PPS
SDA_1
ESP1/AIO
SCL_1
SCL_0
LG-TXD2
LG-RXD2
SHLD_POCI
SHLD_PICO
SHLD_CS
SHLD_SCK
LG-RESET
ESP35/DeviceSense
Use boot control pins with caution: 0, 2, 5, 12, 15
IO0: Avoid device connections. Can be used as a stat LED.
IO2: Avoid external pullups - will cause bootloader fail.
IO5: SDIO peripheral control. Has builtin pullup at POR.
IO12: Avoid external pullups - will cause bootloader fail.
IO15: Suppress output at POR. Has builtin pullup at POR.
No internal I²C0 pull-ups because LG290P has internal resistors.
TP2
TP3
TP1
TP4
CH342-DTR
CH342-RTS
R10
10k
R11
10k
Q1B
MBT3904DW1
Q1A
MBT3904DW1
SW5
Boot
C12
1.0uF
16V
10%
R15
3.3k
R12
10k
TP6
Device Sense identifies model
ESP32-PICO-MINI-02-N8R2 (8MB flash, 2MB PSRAM)
I²C Connectors
I²C-EXT
R17
2.2k
R18
2.2k
SCL_1
SDA_1
J4
Qwiic_RA
J7
Qwiic_RA
The I²C ports are used as follows:
I²C0 - Internal I²C
I²C1 - External I²C
Internal I²C (0) is for display, GNSS config (future), fuel guage, etc.
External I²C (1) is for (future) peripheral communication.
LEDs
LG-PPS
LG-RTK
ESP0/BOOT
BT_STATUS
PWR
PPS
RTK
STAT
BT
R4
1k
R5
2.2k
R3
1k
R14
1k
R16
2.2k
D1
Red
D4
Yellow
D2
White
D6
Green
D9
Blue
Battery Backup
D5
PMEG4005EJ
0.5A
40V
0.42V
R7
1k
BT1
6.8mm_ML414H
C9
1.0uF
16V
10%
V_BCKP
LG290P Quadband GNSS Receiver
U3
LG290P
Reset has internal pull-up.
LG-RESET
V_BCKP
ANT_IN
VCC_RF
VCC
RESET
RF_IN
TXD1
RXD1
TXD2
RXD2
TXD3
RXD3
SCL
SDA
RTK_STAT
PPS
EVENT
GND
LG-TXD1
LG-RXD1
LG-TXD2
LG-RXD2
LG-TXD3
LG-RXD3
SCL_0
SDA_0
LG-RTK
LG-PPS
LG-EVENT
I²C pins have internal 2.2k pull-ups.
External PTH Connectors
J5
1x09
J11
1x10
SHLD_SCK
SHLD_POCI
SHLD_PICO
SHLD_CS
LG-TXD3
LG-RXD3
SCK
POCI
PICO
CS
TXD
RXD
VBATT
5V
GND
ISR
EN
RST
STAT2
STAT1
AIO
SCL
SDA
3V3
LG-EVENT
3V3_EN
LG-RESET
LG-PPS
LG-RTK
ESP14/AIO
SCL_0
SDA_0
RADIO Port
Locking JST
VSEL
LG-TXD3
LG-RXD3
J8
JST_Locking_4
R8
1k
The ports are used as follows:
UART1 - Configure in and NMEA output over USB
UART2 - RTCM correction input and NMEA output over ESP32 Bluetooth
UART3 - NMEA output to embedded system
RF Connector
J2
SMA_Edge
R19
0
R20
0
J6
U.FL
D3
PESD0402
C6
100pF
50V
10%
ANT_IN
L1
68nH
200mA
R6
10
VCC_RF
C3
0.1uF
25V
20%
C4
100pF
50V
10%
Coplanar Waveguide Calculation:
JLC04161H-7628 Stackup
Copper Thickness (1oz): 1.4mil/0.035mm
Board thickness: 1.6mm
Dielectric thickness (layer 1 to 2): 0.2mm
Er: 4.4
Polygon Isolation: 7mil/0.1778mm
RF Trace Width: 11.1mil/0.2819mm
https://jlcpcb.com/pcb-impedance-calculator
open source hardware
sparkfun
Designed by: N. Seidle
Sheet: /
File: SparkFun_RTK_Postcard.kicad_sch
Title: LG290P Triband GNSS Receiver Breakout
Size: USLedger
Date: 2024-08-21
Rev: v10
KiCad E.D.A. 8.0.6
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