Voltage Regulation

Closing jumper bypasses PTC to allow >2A current flows.

Close VE to enable processor control of 3.3V bus.

AP7361C-33FGE
VIN: 3.7-6.0V
IOUT(Max): 1.0A

LiPo Charger

LiPo Range: 3.6-4.2V

1A/15V/220mV

MCP73831

Charge current: 450mA
(1000V/Rprog)

µSD

20V/4.2A/52mΩ/1.4W

microSD

Microphone for noise detection

SPH0641LM4H-1

Switches

SARA-R5

SARA SDIO is 1.8V

SARA I2S is 1.8V

Qwiic

Be careful providing external 3.3V here as it may compete with the 3.3V regulator.

QWIIC_RIGHT_ANGLE

GPIOs

RTC

0.100uA Leakage
0.410V drop at 1mA
1.0V drop at 15mA
BAS70-05

3A/10V/7280mV
300uA Leakage

ML414H

1mAhr Capacity
See Seiko catalog for charge circuit

LEDs

DIAG

SARA I2C (3.3V)

Be careful providing external 3.3V here as it may compete with the 3.3V regulator.

SIM

DT1042-04SO-7

ICM-20948 IMU

IMU Level Shifting

IC3
SN74AVC4T774PW

Controller In Peripheral Out (CIPO)

20V/0.2A/8MHz/1.2Ω/1Vth

IMU Voltage Regulator

SP6214-1.8V

Iout (max): 100mA
Vin (max): 7.0V
Vdrop (max): 250mV
Iq: 65uA

1.8V/100mA

USB

JTAG

MicroMod Connector

H5
STAND-OFF-REFLOW2.5MM_TALL

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Special Instructions

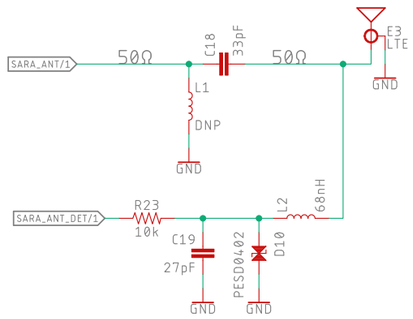
TITLE: MicroMod_Asset_Tracker

Design by: Paul Clark

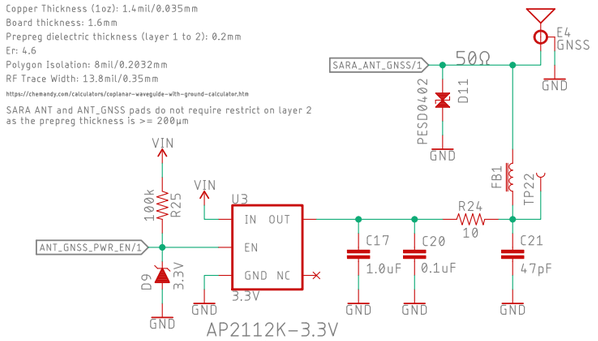
REV: v10

Date: 24/09/2020 17:26

Sheet: 1/2

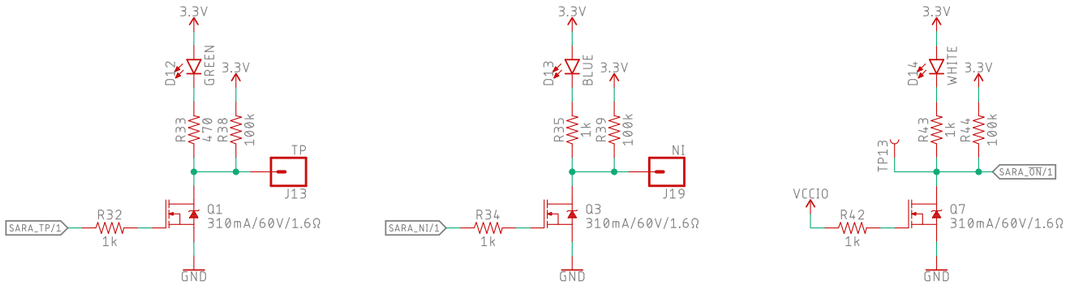


LTE Antenna

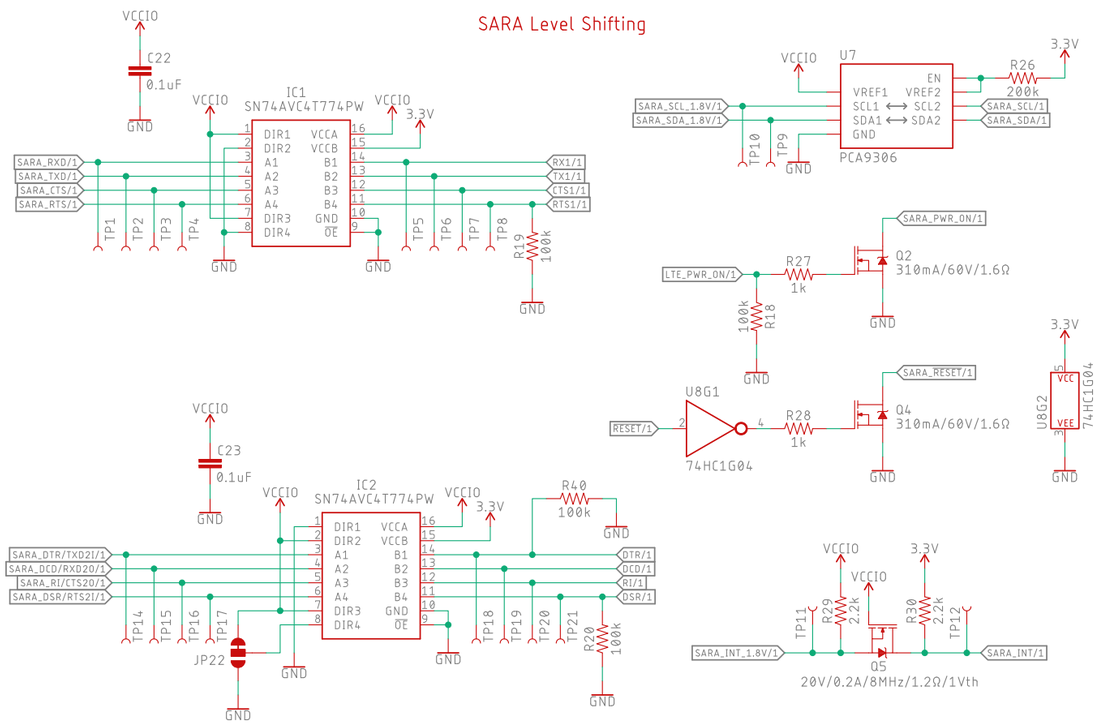


GNSS Antenna

SARA LEDs



SARA Level Shifting



SARA-R5 VCC Design Notes:

VCC: Min. 3.3V Typ. 3.8V Max. 4.4V
VCC Extended: Min. 3.0V Max. 4.5V

Worst case:
Maximum current draw during Tx: 395mA
Estimated current for other components: 100mA
Total maximum current draw: ~500mA
AP7361C-33 drop out voltage: ~170mV at: 500mA output current; Vout = 3.3V; 25°C
D7 LSM115J Schottky diode forward voltage: ~210mV at: 500mA; 25°C
AP7361C 3.3V output will start to fall when the battery voltage falls below 3.68V at 500mA
For a typical 2000mAh LiPo battery discharging at 500mA (0.25C), we would expect 3.68V to be reached when the battery is approximately 50% discharged.

Typical:
Typical current draw during Tx/Rx: 195mA at 23dBm
Estimated current for other components: 100mA
Total typical current draw: ~300mA
AP7361C-33 drop out voltage: ~100mV at: 300mA output current; Vout = 3.3V; 25°C
D7 LSM115J Schottky diode forward voltage: ~180mV at: 300mA; 25°C
AP7361C 3.3V output will start to fall when the battery voltage falls below 3.58V at 300mA
For a typical 2000mAH LiPo battery discharging at 300mA (0.15C), we would expect 3.58V to be reached when the battery is approximately 90% discharged.

TITLE: MicroMod_Asset_Tracker	
Design by: Paul Clark	REV: v10
Date: 24/09/2020 17:26	Sheet: 2/2