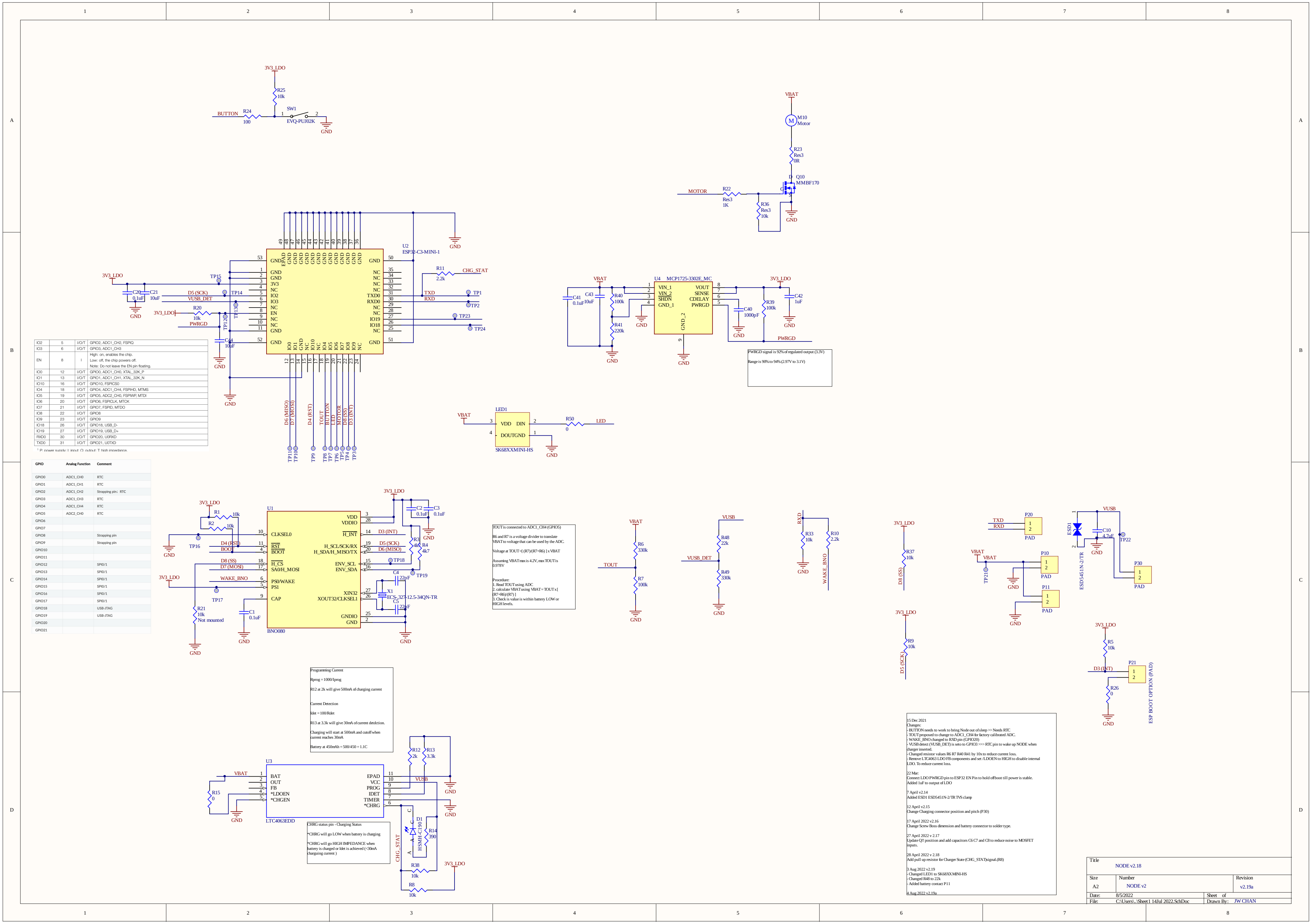


IO2	5	I/O/T	GPIO2, ADC1_CH2, FSPIQ
IO3	6	I/O/T	GPIO3, ADC1_CH3
EN	8	I	High: on, enables the chip. Low: off, the chip powers off. Note: Do not leave the EN pin floating.
IO0	12	I/O/T	GPIO0, ADC1_CH0, XTAL_32K_P
IO1	13	I/O/T	GPIO1, ADC1_CH1, XTAL_32K_N
IO10	16	I/O/T	GPIO10, FSPICS0
IO4	18	I/O/T	GPIO4, ADC1_CH4, FSPIHD, MTMS
IO5	19	I/O/T	GPIO5, ADC2_CH0, FSPIWP, MTDI
IO6	20	I/O/T	GPIO6, FSPICLK, MTCK
IO7	21	I/O/T	GPIO7, FSPID, MTDO
IO8	22	I/O/T	GPIO8
IO9	23	I/O/T	GPIO9
IO18	26	I/O/T	GPIO18, USB_D-
IO19	27	I/O/T	GPIO19, USB_D+
RXD0	30	I/O/T	GPIO20, U0RXD
TXD0	31	I/O/T	GPIO21, U0TXD

[1] P: power supply; I: input; O: output; T: high impedance.

GPIO	Analog Function	Comment
GPIO0	ADC1_CH0	RTC
GPIO1	ADC1_CH1	RTC
GPIO2	ADC1_CH2	Strapping pin; RTC
GPIO3	ADC1_CH3	RTC
GPIO4	ADC1_CH4	RTC
GPIO5	ADC2_CH0	RTC
GPIO6		
GPIO7		
GPIO8		Strapping pin
GPIO9		Strapping pin
GPIO10		
GPIO11		
GPIO12		SPI0/1
GPIO13		SPI0/1
GPIO14		SPI0/1
GPIO15		SPI0/1
GPIO16		SPI0/1
GPIO17		SPI0/1
GPIO18		USB-JTAG
GPIO19		USB-JTAG
GPIO20		
GPIO21		

PWRGD signal is 92% of regulated output (3.3V)

Range is 90% to 94% (2.97V to 3.1V)

TOUT is connected to ADC1_CH4 (GPIO5)

R6 and R7 is a voltage divider to translate VBAT to voltage that can be used by the ADC.

Voltage at TOUT =[(R7)/(R7+R6)] x VBAT

Assuming VBAT max is 4.2V, max TOUT is 0.978V

Procedure:
1. Read TOUT using ADC
2. calculate VBAT using VBAT = TOUT x [(R7+R6)/(R7)]
3. Check is value is within battery LOW or HIGH levels.

Programming Current

Rprog = 1000/Iprog

R12 at 2k will give 500mA of charging current

Current Detection

Idet = 100/Rdet

R13 at 3.3k will give 30mA of current detdction.

Charging will start at 500mA and cutoff when current reaches 30mA

Battery at 450mAh = 500/450 = 1.1C

CHRG status pin - Charging Status

*CHRG will go LOW when battery is charging

*CHRG will go HIGH IMPEDANCE when battery is charged or Idet is achieved (<30mA charguing current)

15 Dec 2021
Changes:
- BUTTON needs to work to bring Node out of sleep >> Needs RTC
- TOUT proposed to change to ADC1_CH4 for factory calibrated ADC.
- WAKE_BNO changed to RXD pin (GPIO20)
- VUSB detect (VUSB_DET) is seto to GPIO3 >>> RTC pin to wake up NODE when charger inserted.
- Changed resistor values R6 R7 R40 R41 by 10x to reduce current loss.
- Remove LTC4063 LDO FB components and set /LDOEN to HIGH to disable internal LDO. To reduce current loss.

22 Mar:
Connect LDO PWRGD pin to ESP32 EN Pin to hold off boot till power is stable.
Added 1uF to output of LDO

7 April v2.14
Added ESD1 ESD5451N-2/TR TVS clamp

12 April v2.15
Change Charging connector position and pitch (P30)

17 April 2022 v2.16
Change Screw Boss dimension and battery connector to solder type.

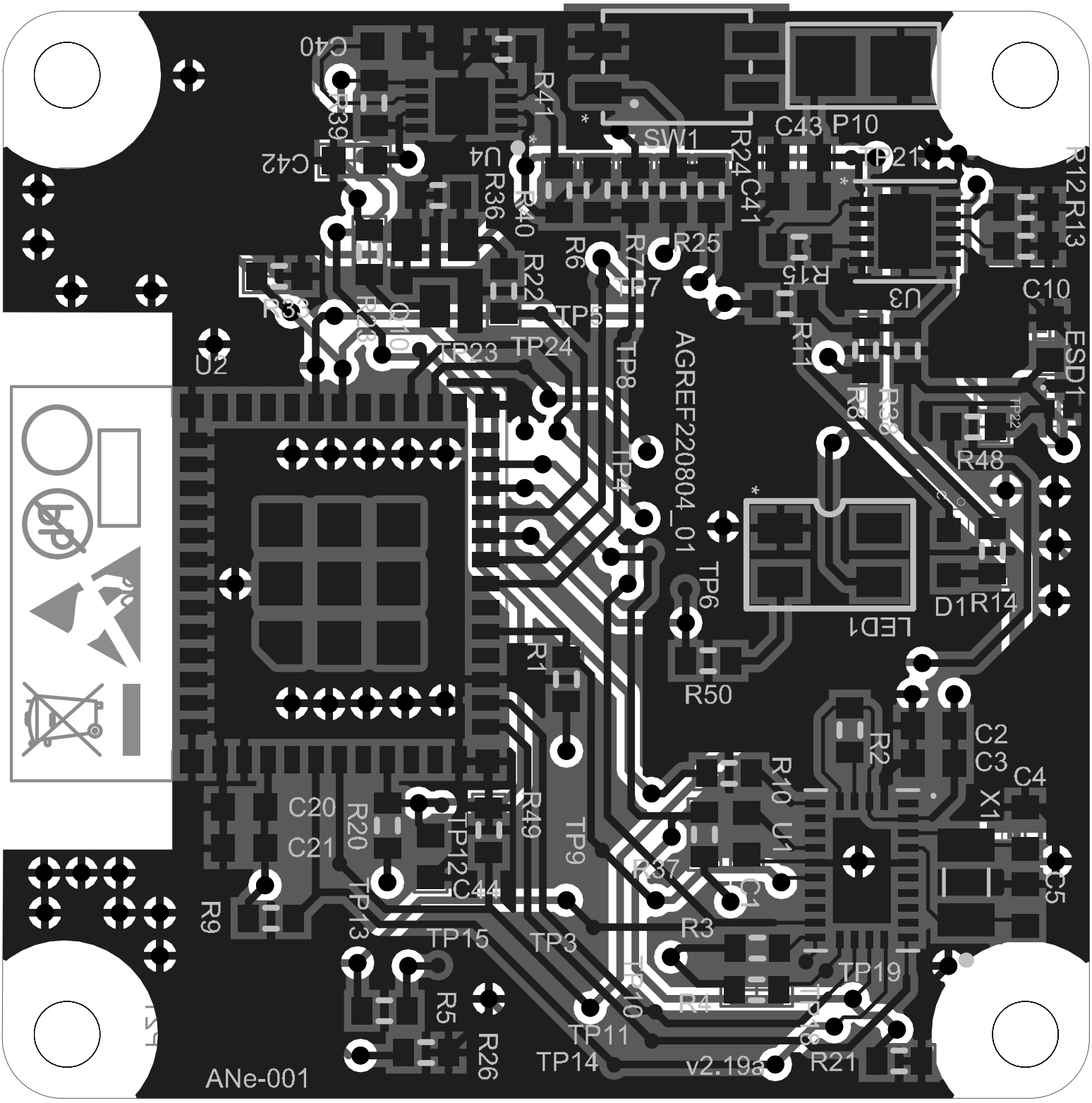
27 April 2022 v 2.17
Update Q!! position and add capacitors C6 C7 and C8 to reduce noise to MOSFET inputs.

28 April 2022 v 2.18
Add pull up resistor for Charger State (CHG_STAT)signal.(R8)

3 Aug 2022 v2.19
- Changed LED1 to SK68XX MINI-HS
- Changed R48 to 22k
- Added battery contact P11

4 Aug 2022 v2.19a

Title	NODE v2.18		
Size	Number		Revision
A2	NODE v2		v2.19a
Date:	8/5/2022	Sheet of	
File:	C:\Users\..\Sheet1 14Jul 2022.SchDoc	Drawn By:	JW CHAN


C40
C39
C42
R41
SW1
C43
P10
R24
C41
R12
R13
R36
R40
U4
R6
R7
R25
R22
R15
U3
C10
R3
R23
Q10
TP5
TP24
TP23
U2
TP8
AGREF22804_01
R11
ESD1
R8
R38
TP22
R48
TP4
TP6
LED1
D1
R14
R50
R1
C2
C3
C4
R2
R10
U1
X1
C20
C21
R20
TP12
R49
TP9
R37
C1
C5
R9
C44
TP13
TP15
TP3
R3
TP19
R5
R10
R4
C6
R26
TP11
TP14
v2.19a
R21
ANe-001