Nixie Clock *REDUX* - Core Board

02. Power Input — Power Input — File: power_input.kicad_sch

03. Power Input Telemetry — Power Input Telemetry — File: power_input_telemetry.kicad_sch

04. +3.3V Power Supply — +3.3V Power Supply — File: pos3p3_power_supply.kicad_sch

05. +3.3V Telemetry — +3.3V Telemetry — File: pos3p3_telemetry.kicad_sch

06. +180V Power Supply — +180V Power Supply — File: pos180_power_supply.kicad_sch

07. +180V Telemetry — +180V Telemetry — File: pos180_telemetry.kicad_sch

08. PIC32MZ Programming — PIC32MZ Programming — File: pis32mz_programming.kicad_sch

09. PIC32MZ Bypass — PIC32MZ Bypass — File: PIC32MZ_Bypass.kicad_sch

10. PIC32MZ — PIC32MZ — File: PIC32MZ.kicad_sch

11. PIC32MZ Clocking — PIC32MZ Clocking — File: PIC32MZ_Clocking.kicad_sch

12. Backup RTC — Backup RTC — File: Backup_RTC.kicad_sch

13. USB UART Bridge — USB UART Bridge — File: USB_UART_Bridge.kicad_sch

14. Platform ETC — Platform ETC — File: Platform_ETC.kicad_sch

15. PGOOD LEDs — PGOOD LEDs — File: PGOOD_LEDs.kicad_sch

16. Status LEDs — Status LEDs — File: Status_LEDs.kicad_sch

17. IO Buffers 1 — IO Buffers 1 — File: IO_Buffers_1.kicad_sch

18. IO Buffers 2 — IO Buffers 2 — File: IO_Buffers_2.kicad_sch

19. IO Connector — IO Connectors — File: IO Connectors.kicad_sch

20. Misc Circuits — Misc Circuits — File: Misc_Circuits.kicad_sch

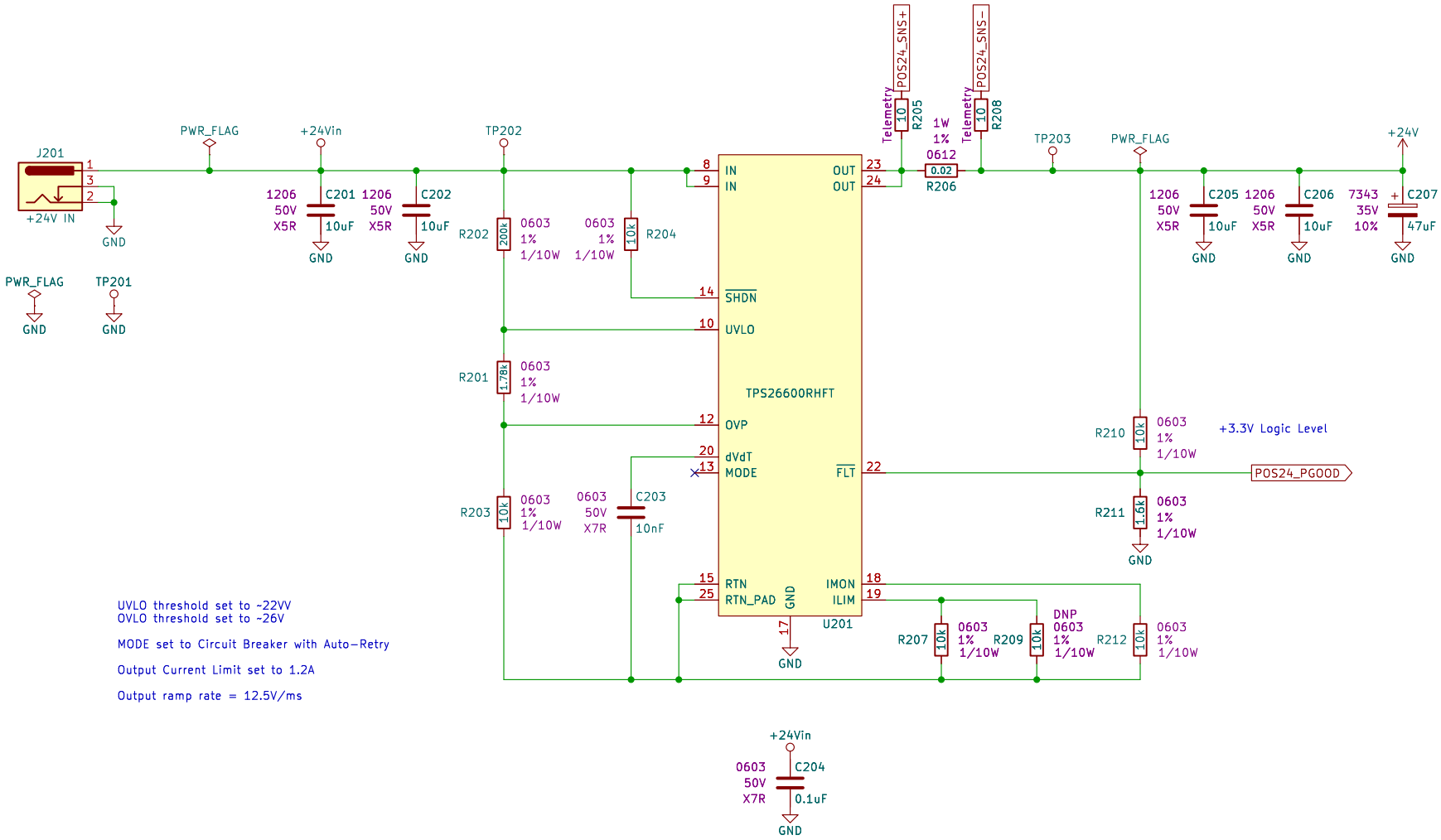
21. Mechanical — Mechanical — File: Mechanical.kicad_sch

Drew Maatman

Sheet: /
File: Nixie_Clock_Core.kicad_sch

Title:

Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 1/21



Drew Maatman		
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Title:		
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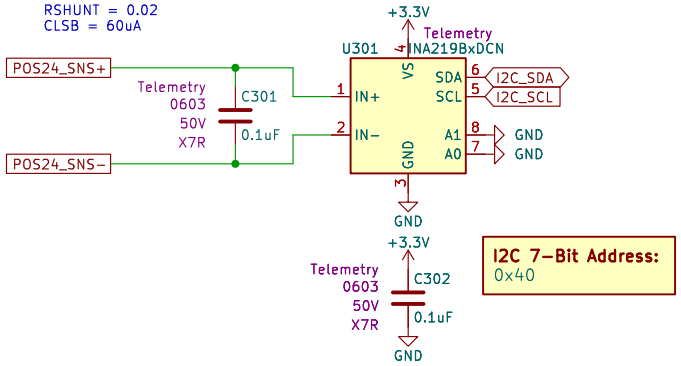
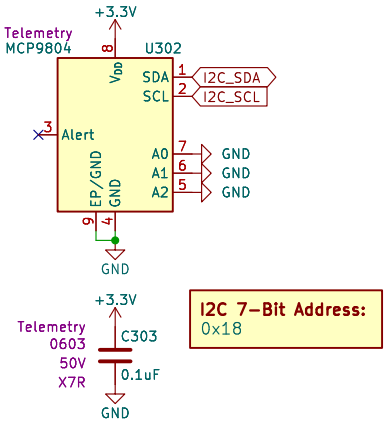
KiCad E.D.A. kicad 7.0.1		Id: 2/21





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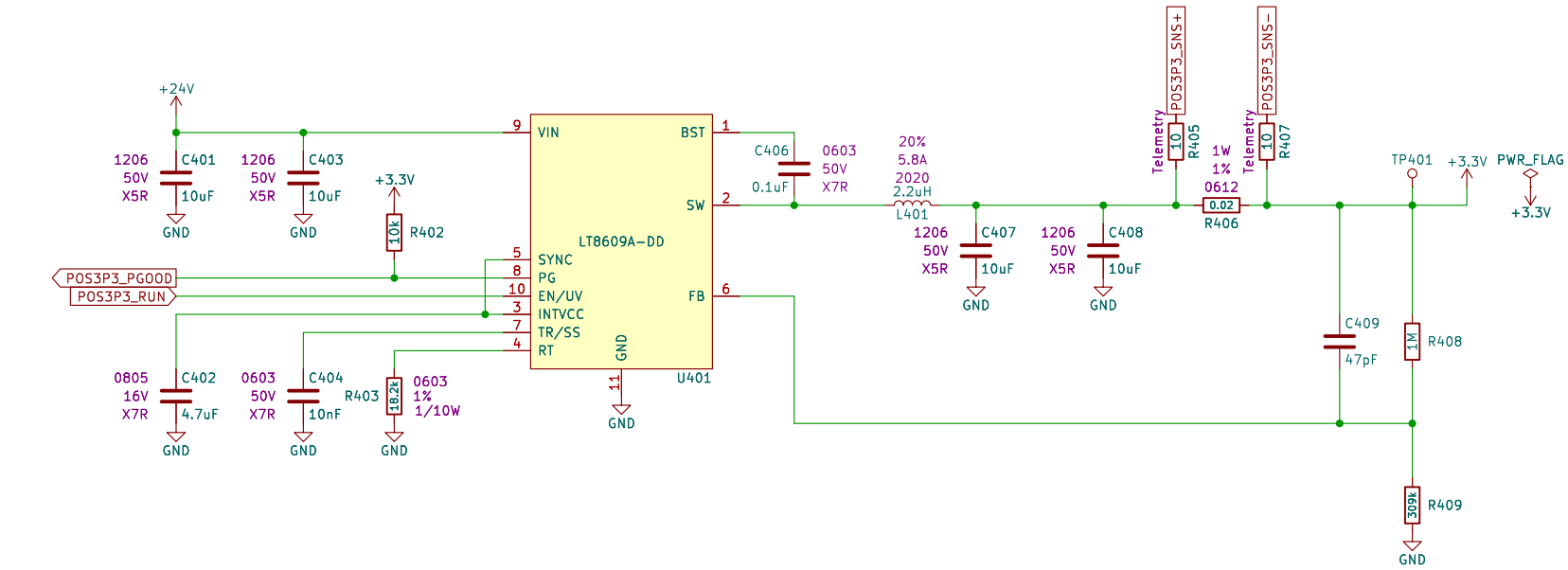
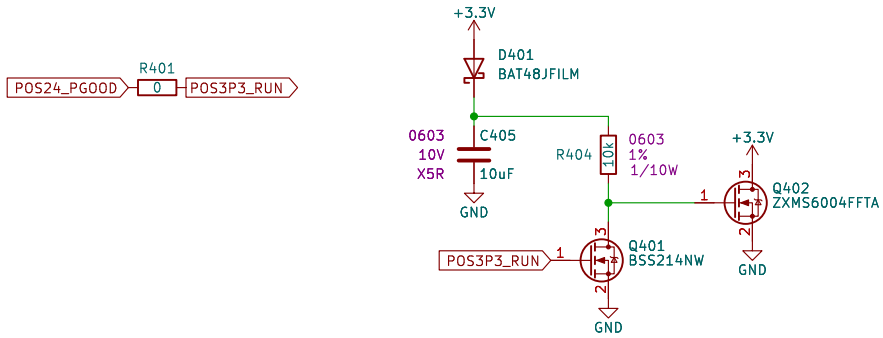
KiCad E.D.A. kicad 7.0.1		Id: 3/21





Drew Maatman		
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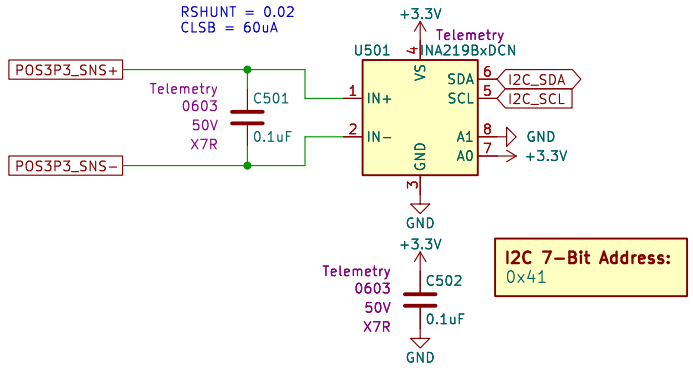
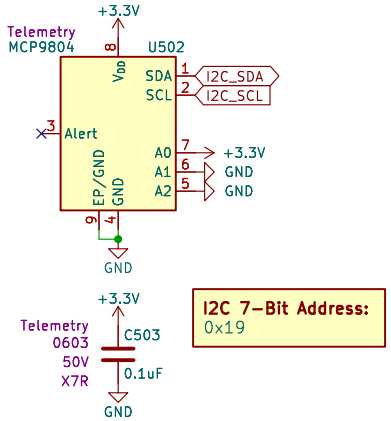
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 4/21





Drew Maatman		
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File: pos3p3_telemetry.kicad_sch		
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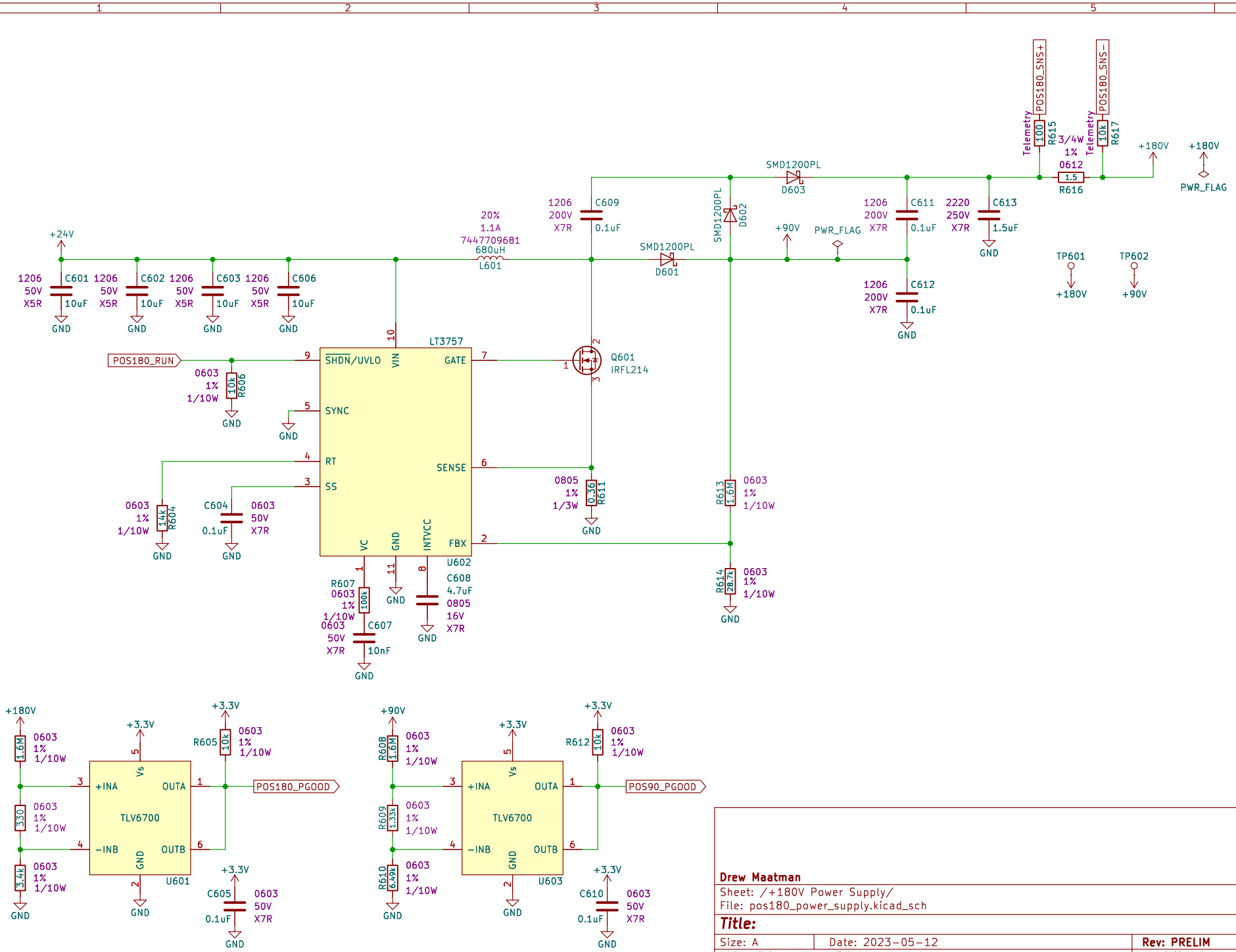
Size: A	Date: 2023−05−12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 5/21

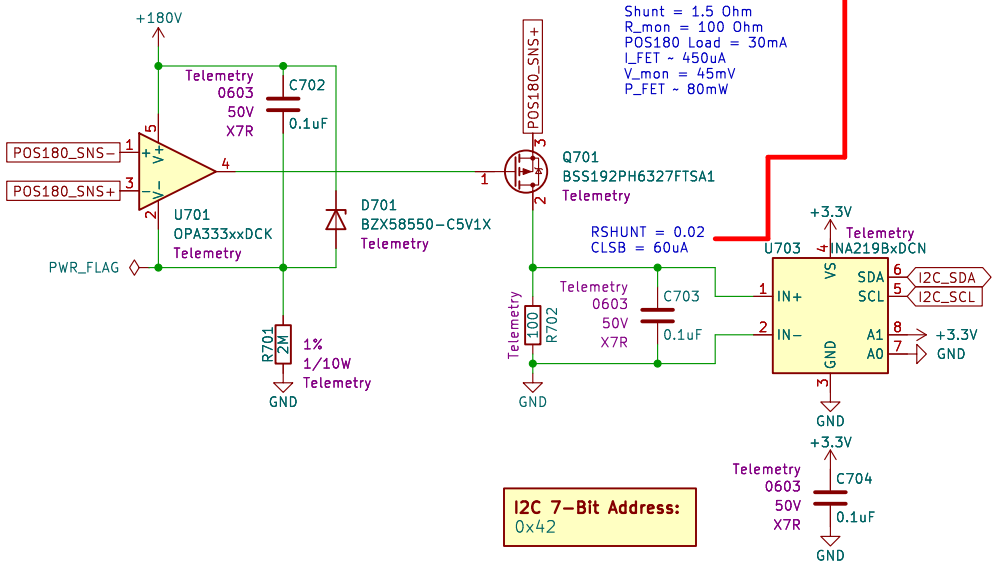


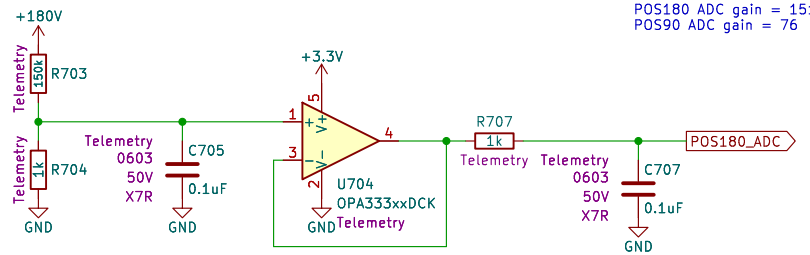
Drew Maatman	
Sheet: /+180V Power Supply/	
File: pos180_power_supply.kicad_sch	
Title:	
Size: A	Date: 2023-05-12
KiCad E.D.A. kicad 7.0.1	Id: 6/21

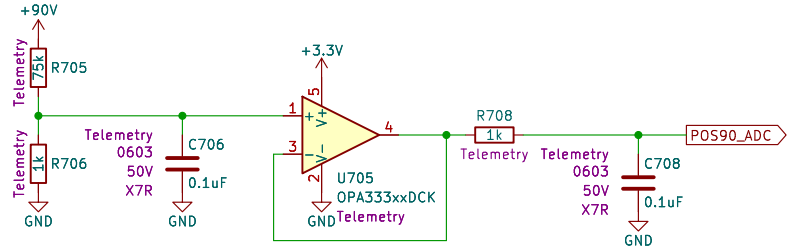
Rev: PRELIM

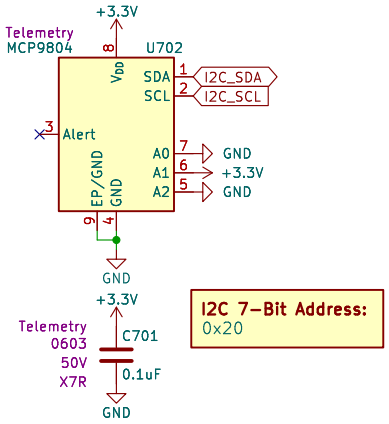
INA219 SCALING NOTES WRONG, RSHUNT = 1.5Ohm

From TIDU849









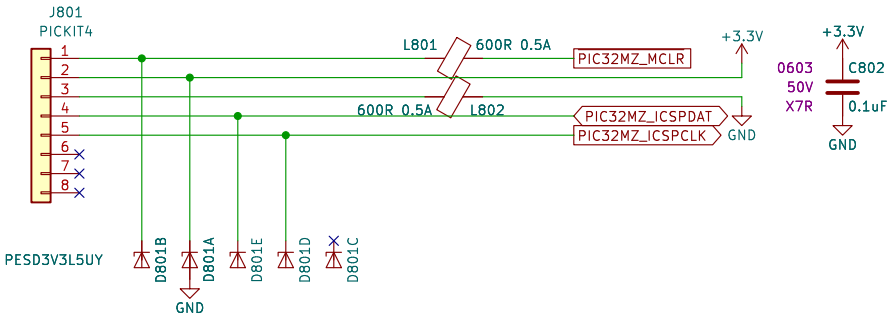
Drew Maatman

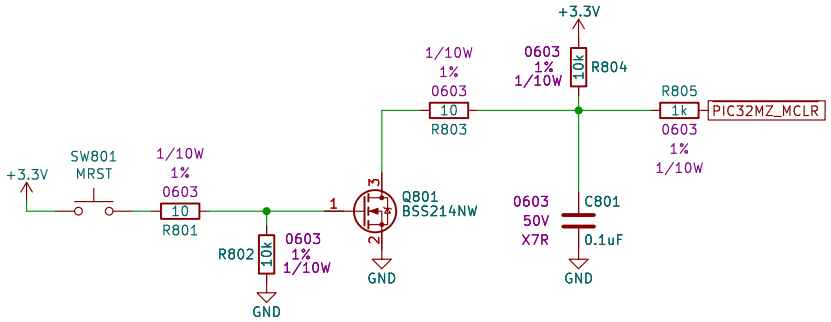
Sheet: /+180V Telemetry/

File: pos180_telemetry.kicad_sch

Title:

Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 7/21





Drew Maatman		
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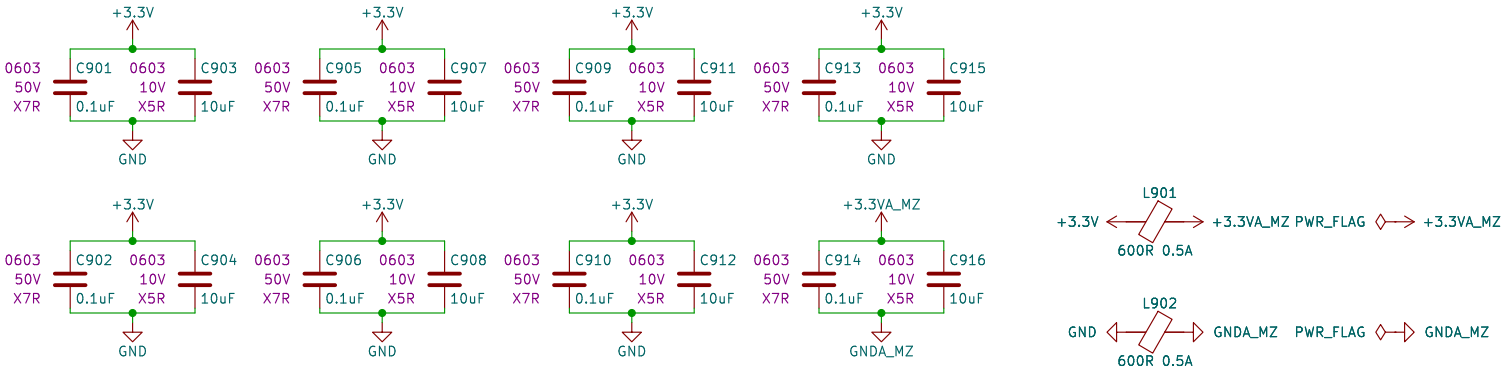
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 8/21



Drew Maatman		
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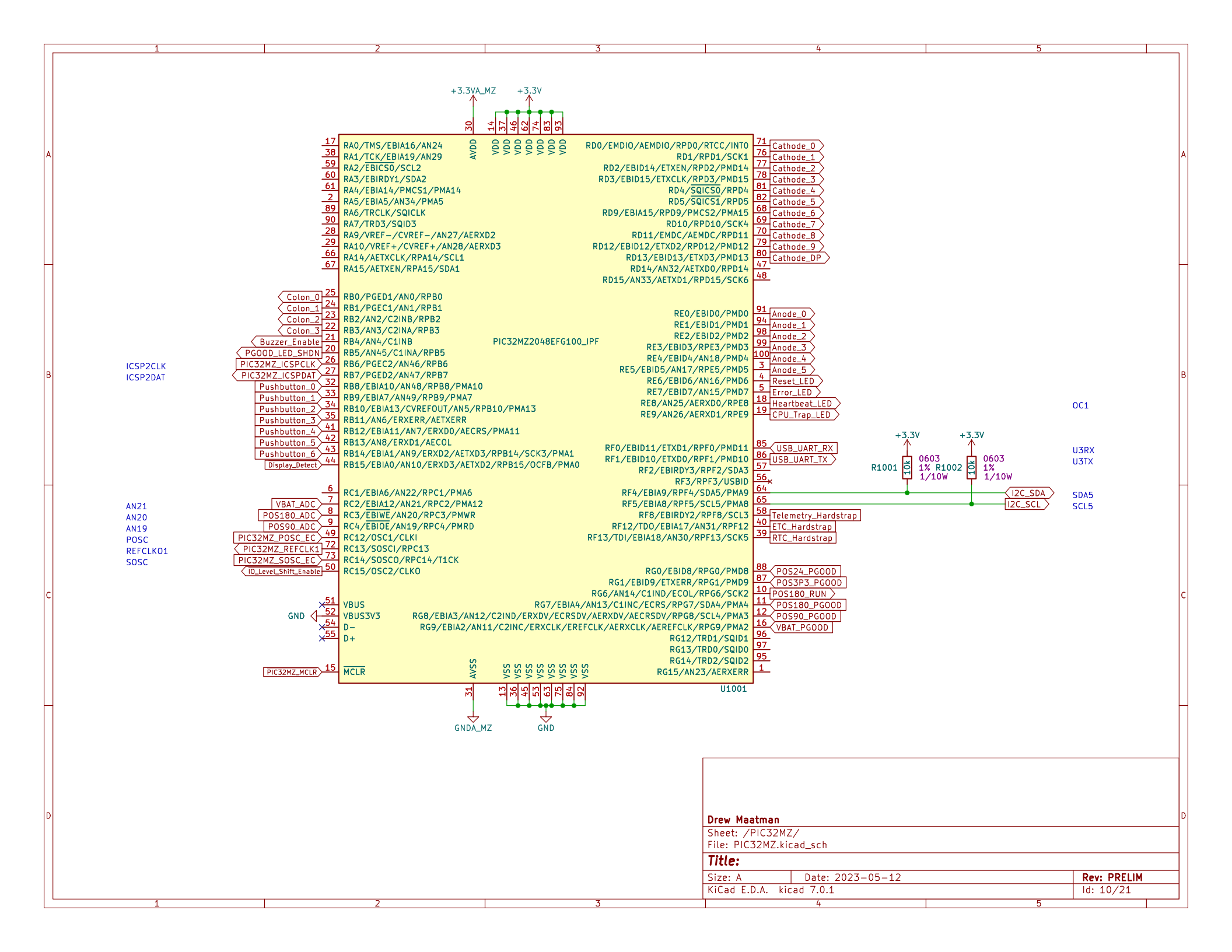
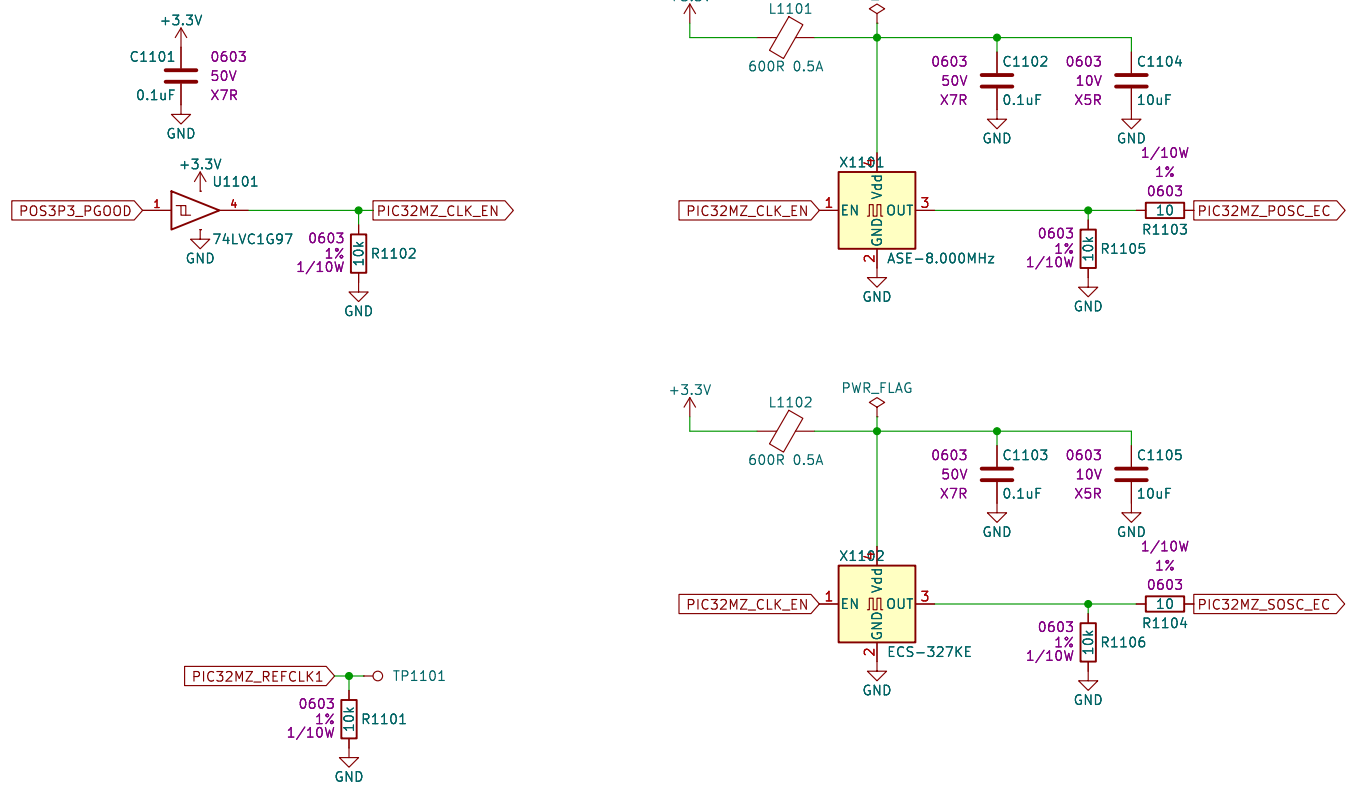
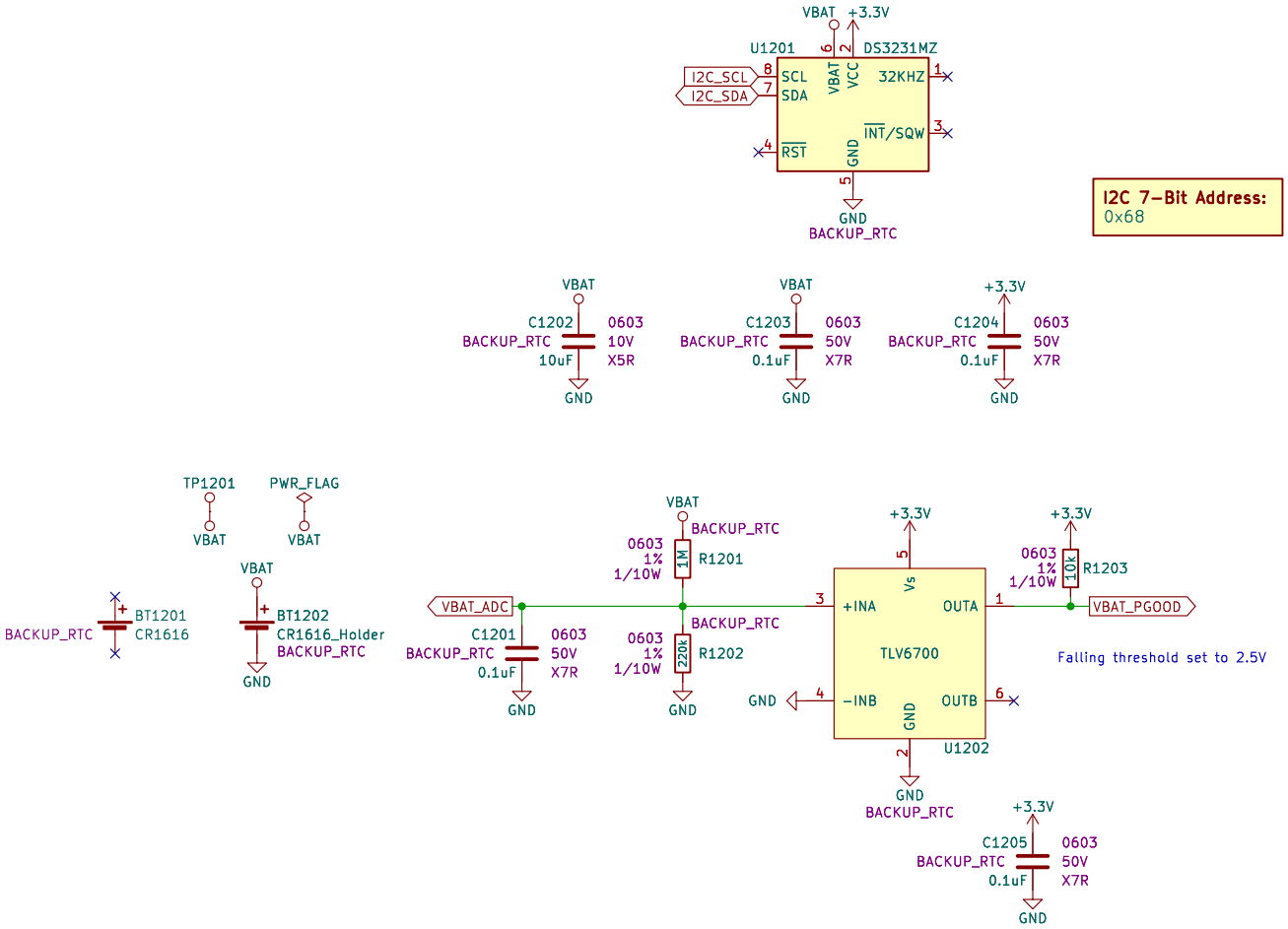
File: PIC32MZ_Bypass.kicad_sch		
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 9/21


+3.3VA_MZ
+3.3V
RA0/TMS/EBIA16/AN24
RA1/TCK/EBIA19/AN29
RA2/EBICS0/SCL2
RA3/EBIRDY1/SDA2
RA4/EBIA14/PMCS1/PMA14
RA5/EBIA5/AN34/PMA5
RA6/TRCLK/SQICLK
RA7/TRD3/SQID3
RA9/VREF-/CVREF-/AN27/AERXD2
RA10/VREF+/CVREF+/AN28/AERXD3
RA14/AETXCLK/RPA14/SCL1
RA15/AETXEN/RPA15/SDA1
RB0/PGED1/AN0/RPB0
RB1/PGEC1/AN1/RPB1
RB2/AN2/C2INB/RPB2
RB3/AN3/C2INA/RPB3
RB4/AN4/C1INB
RB5/AN45/C1INA/RPB5
RB6/PGEC2/AN46/RPB6
RB7/PGED2/AN47/RPB7
RB8/EBIA10/AN48/RPB8/PMA10
RB9/EBIA7/AN49/RPB9/PMA7
RB10/EBIA13/CVREFOUT/AN5/RPB10/PMA13
RB11/AN6/ERXERR/AETXERR
RB12/EBIA11/AN7/ERXD0/AECRS/PMA11
RB13/AN8/ERXD1/AECOL
RB14/EBIA1/AN9/ERXD2/AETXD3/RPB14/SCK3/PMA1
RB15/EBIA0/AN10/ERXD3/AETXD2/RPB15/OCFB/PMA0
RC1/EBIA6/AN22/RPC1/PMA6
RC2/EBIA12/AN21/RPC2/PMA12
RC3/EBIWE/AN20/RPC3/PMWR
RC4/EBIOE/AN19/RPC4/PMRD
RC12/OSC1/CLKI
RC13/SOSCI/RPC13
RC14/SOSCO/RPC14/T1CK
RC15/OSC2/CLKO
VBUS
VBUS3V3
D-
D+
MCLR
RD0/EMDIO/AEMDIO/RPD0/RTCC/INT0
RD1/RPD1/SCK1
RD2/EBID14/ETXEN/RPD2/PMD14
RD3/EBID15/ETXCLK/RPD3/PMD15
RD4/SQICS0/RPD4
RD5/SQICS1/RPD5
RD9/EBIA15/RPD9/PMCS2/PMA15
RD10/RPD10/SCK4
RD11/EMDC/AEMDC/RPD11
RD12/EBID12/ETXD2/RPD12/PMD12
RD13/EBID13/ETXD3/PMD13
RD14/AN32/AETXD0/RPD14
RD15/AN33/AETXD1/RPD15/SCK6
RE0/EBID0/PMD0
RE1/EBID1/PMD1
RE2/EBID2/PMD2
RE3/EBID3/RPE3/PMD3
RE4/EBID4/AN18/PMD4
RE5/EBID5/AN17/RPE5/PMD5
RE6/EBID6/AN16/PMD6
RE7/EBID7/AN15/PMD7
RE8/AN25/AERXD0/RPE8
RE9/AN26/AERXD1/RPE9
RF0/EBID11/ETXD1/RPF0/PMD11
RF1/EBID10/ETXD0/RPF1/PMD10
RF2/EBIRDY3/RPF2/SDA3
RF3/RPF3/USBID
RF4/EBIA9/RPF4/SDA5/PMA9
RF5/EBIA8/RPF5/SCL5/PMA8
RF8/EBIRDY2/RPF8/SCL3
RF12/TDO/EBIA17/AN31/RPF12
RF13/TDI/EBIA18/AN30/RPF13/SCK5
RG0/EBID8/RPG0/PMD8
RG1/EBID9/ETXERR/RPG1/PMD9
RG6/AN14/C1IND/ECOL/RPG6/SCK2
RG7/EBIA4/AN13/C1INC/ECRS/RPG7/SDA4/PMA4
RG8/EBIA3/AN12/C2IND/ERXDV/ECRSDV/AERXDV/AECRSDV/RPG8/SCL4/PMA3
RG9/EBIA2/AN11/C2INC/ERXCLK/EREFCLK/AERXCLK/AEREFCLK/RPG9/PMA2
RG12/TRD1/SQID1
RG13/TRD0/SQID0
RG14/TRD2/SQID2
RG15/AN23/AERXERR
AVDD
VDD
AVSS
VSS
PIC32MZ2048EFG100_IPF
U1001
GND
GNDA_MZ
Colon_0
Colon_1
Colon_2
Colon_3
Buzzer_Enable
PGOOD_LED_SHDN
PIC32MZ_ICSPCLK
PIC32MZ_ICSPDAT
Pushbutton_0
Pushbutton_1
Pushbutton_2
Pushbutton_3
Pushbutton_4
Pushbutton_5
Pushbutton_6
Display_Detect
VBAT_ADC
POS180_ADC
POS90_ADC
PIC32MZ_POSC_EC
PIC32MZ_REFCLK1
PIC32MZ_SOSC_EC
IO_Level_Shift_Enable
PIC32MZ_MCLR
Cathode_0
Cathode_1
Cathode_2
Cathode_3
Cathode_4
Cathode_5
Cathode_6
Cathode_7
Cathode_8
Cathode_9
Cathode_DP
Anode_0
Anode_1
Anode_2
Anode_3
Anode_4
Anode_5
Reset_LED
Error_LED
Heartbeat_LED
CPU_Trap_LED
USB_UART_RX
USB_UART_TX
Telemetry_Hardstrap
ETC_Hardstrap
RTC_Hardstrap
POS24_PGOOD
POS3P3_PGOOD
POS180_RUN
POS180_PGOOD
POS90_PGOOD
VBAT_PGOOD
I2C_SDA
I2C_SCL
R1001
R1002
10k
0603
1% 1/10W
ICSP2CLK
ICSP2DAT
AN21
AN20
AN19
POSC
REFCLKO1
SOSC
OC1
U3RX
U3TX
SDA5
SCL5
Drew Maatman
Sheet: /PIC32MZ/
File: PIC32MZ.kicad_sch
Title:
Size: A
Date: 2023-05-12
Rev: PRELIM
KiCad E.D.A. kicad 7.0.1
Id: 10/21



Drew Maatman		
Sheet: /PIC32MZ Clocking/		
File: PIC32MZ_Clocking.kicad_sch		
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 11/21



Drew Maatman		
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Title:		
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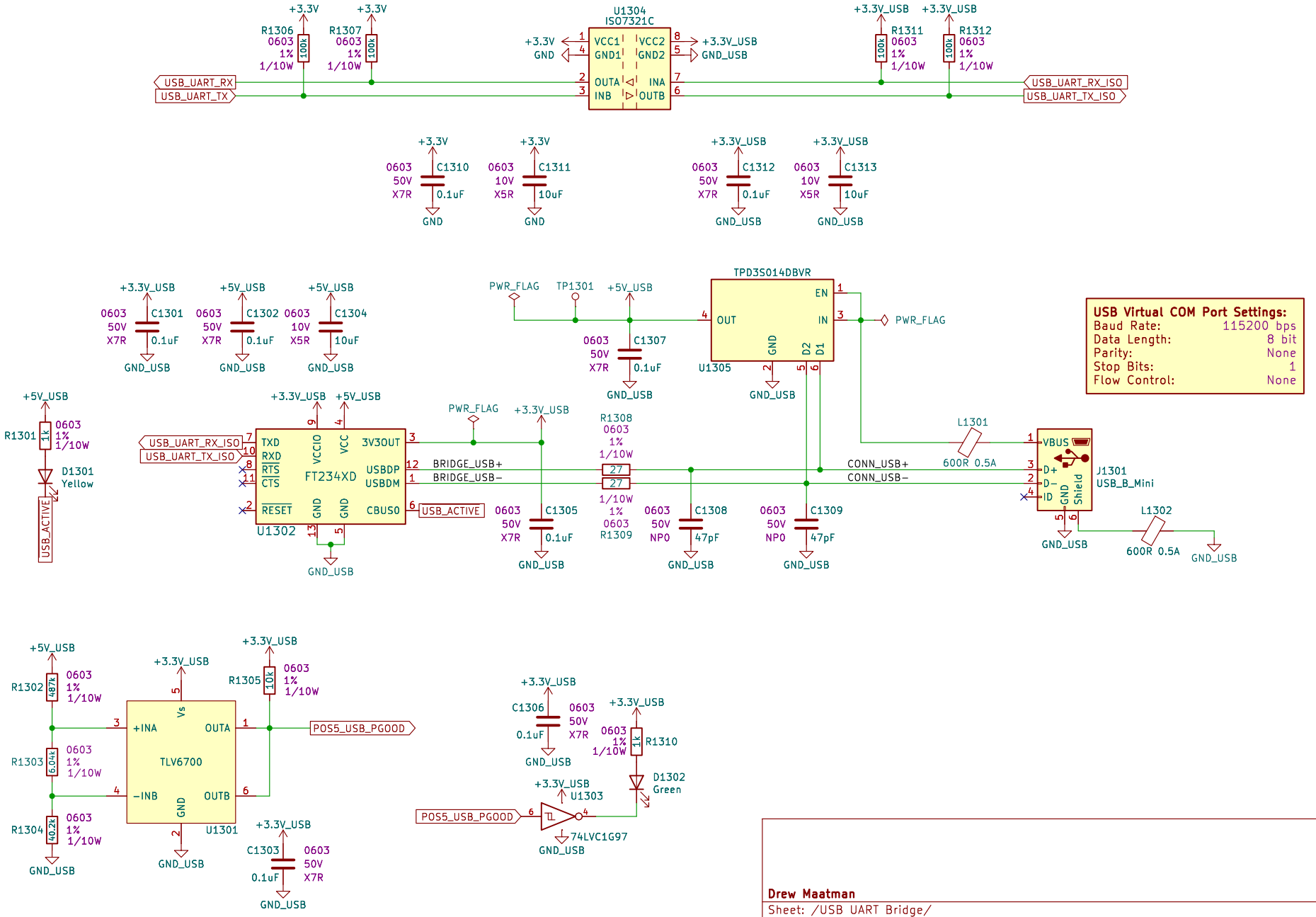
KiCad E.D.A. kicad 7.0.1		Id: 12/21



USB Virtual COM Port Settings:

Baud Rate:	115200 bps
Data Length:	8 bit
Parity:	None
Stop Bits:	1
Flow Control:	None

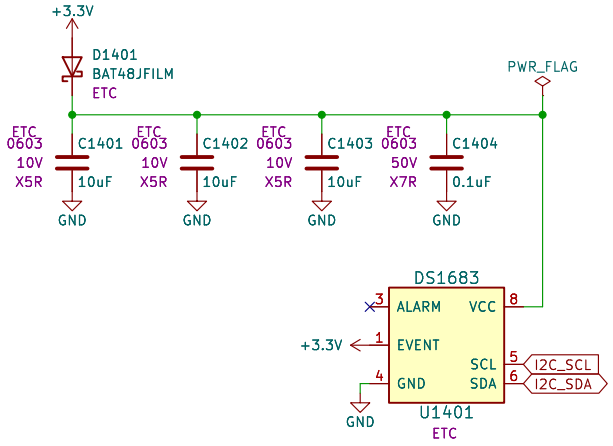
Drew Maatman

Sheet: /USB UART Bridge/

File: USB_UART_Bridge.kicad_sch

Title:

Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 13/21



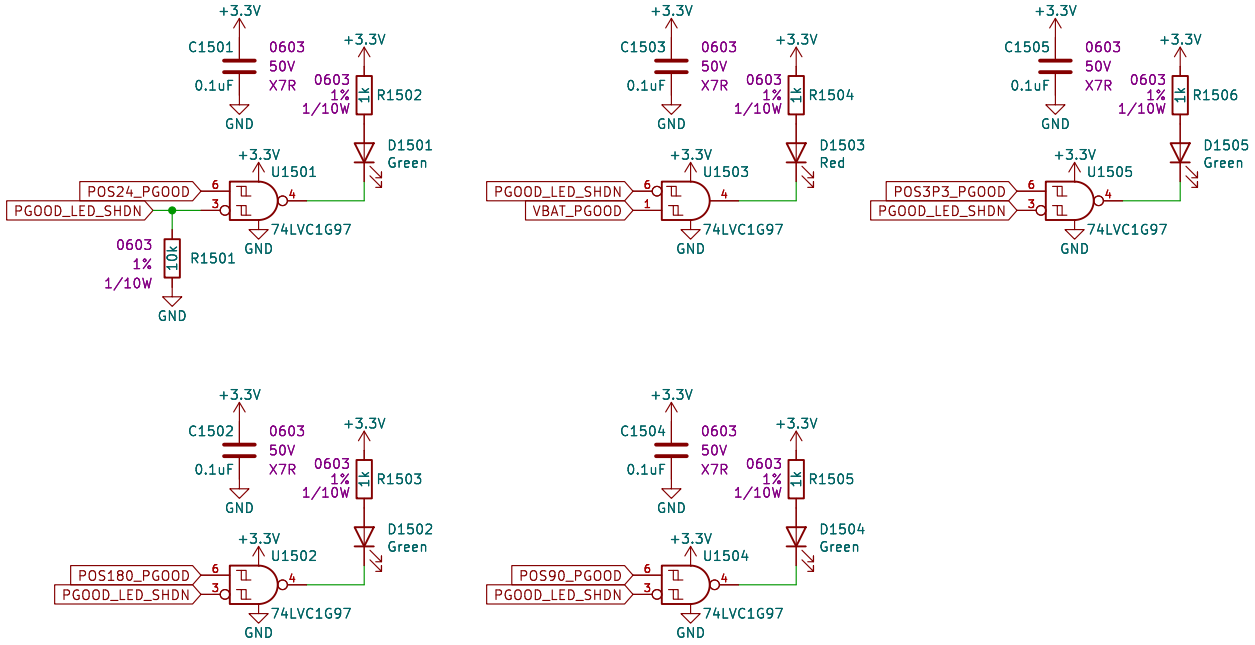
I2C 7-Bit Address:
0x6B

Drew Maatman

Sheet: /Platform ETC/
File: Platform_ETC.kicad_sch

Title:

Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 15/21



Drew Maatman

Sheet: /PGOOD LEDs/
File: PGOOD_LEDs.kicad_sch

Title:

Size: A	Date: 2023-05-12	**Rev: PRELIM**
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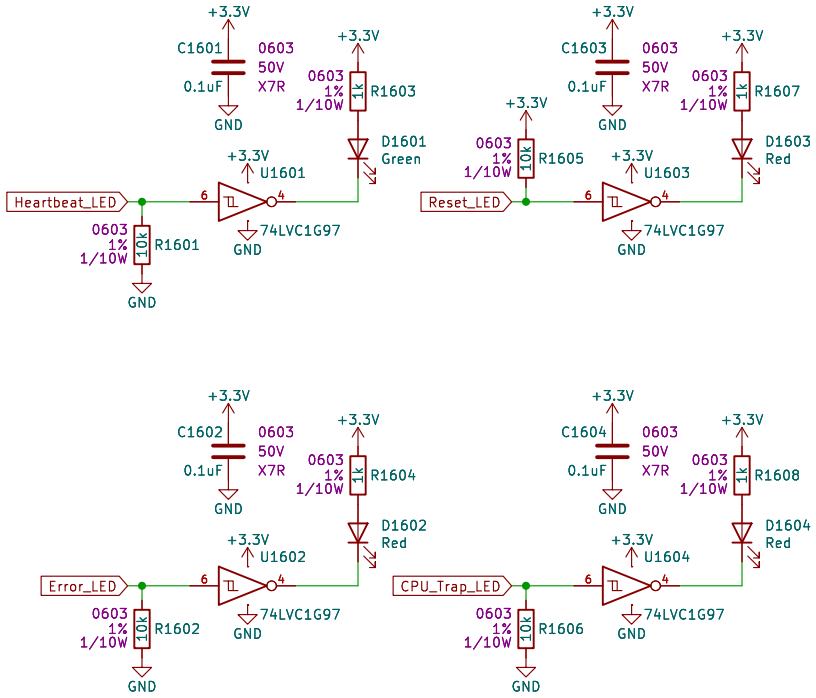

Drew Maatman		
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File: Status_LEDs.kicad_sch		
Title:		
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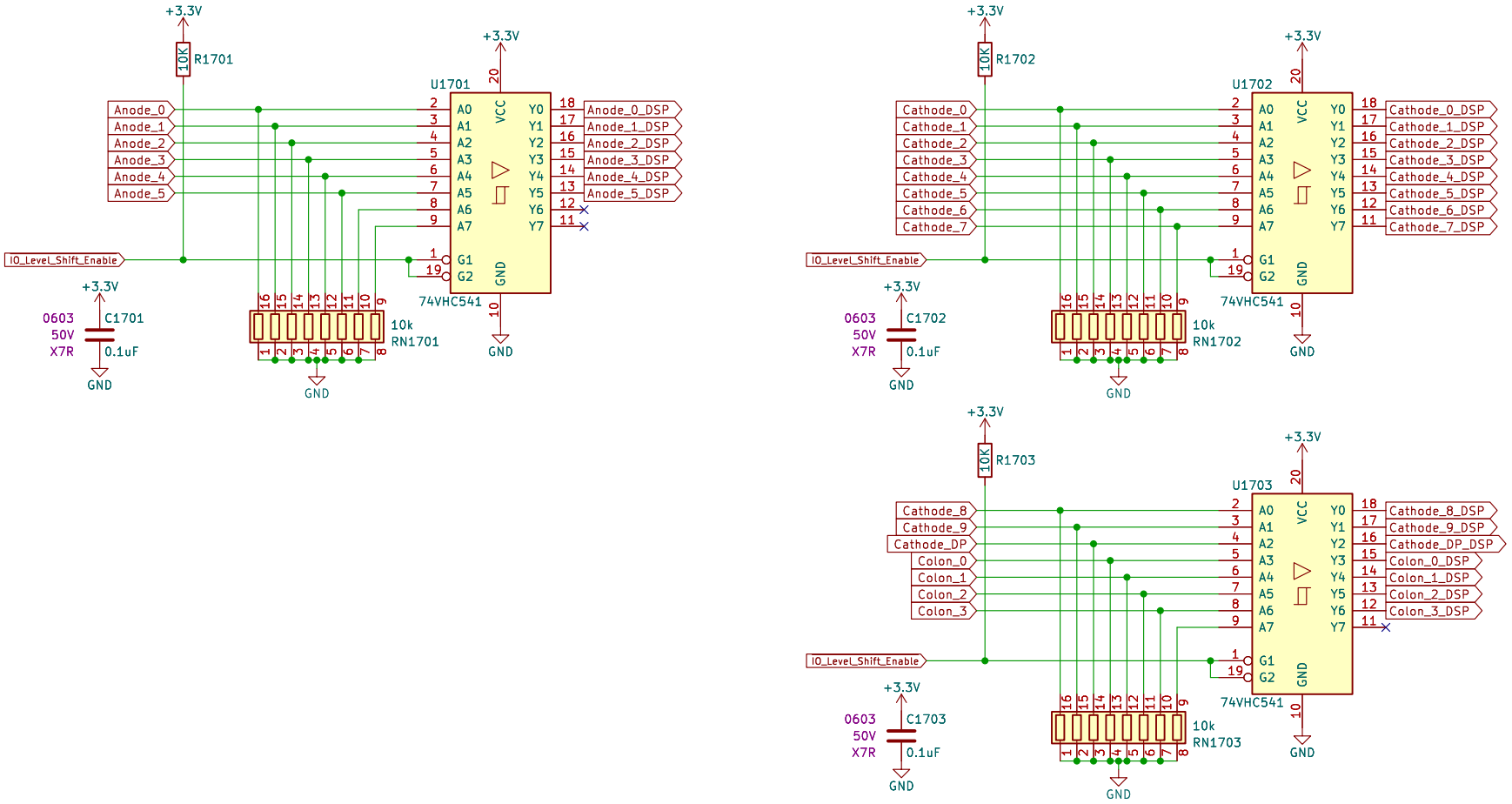
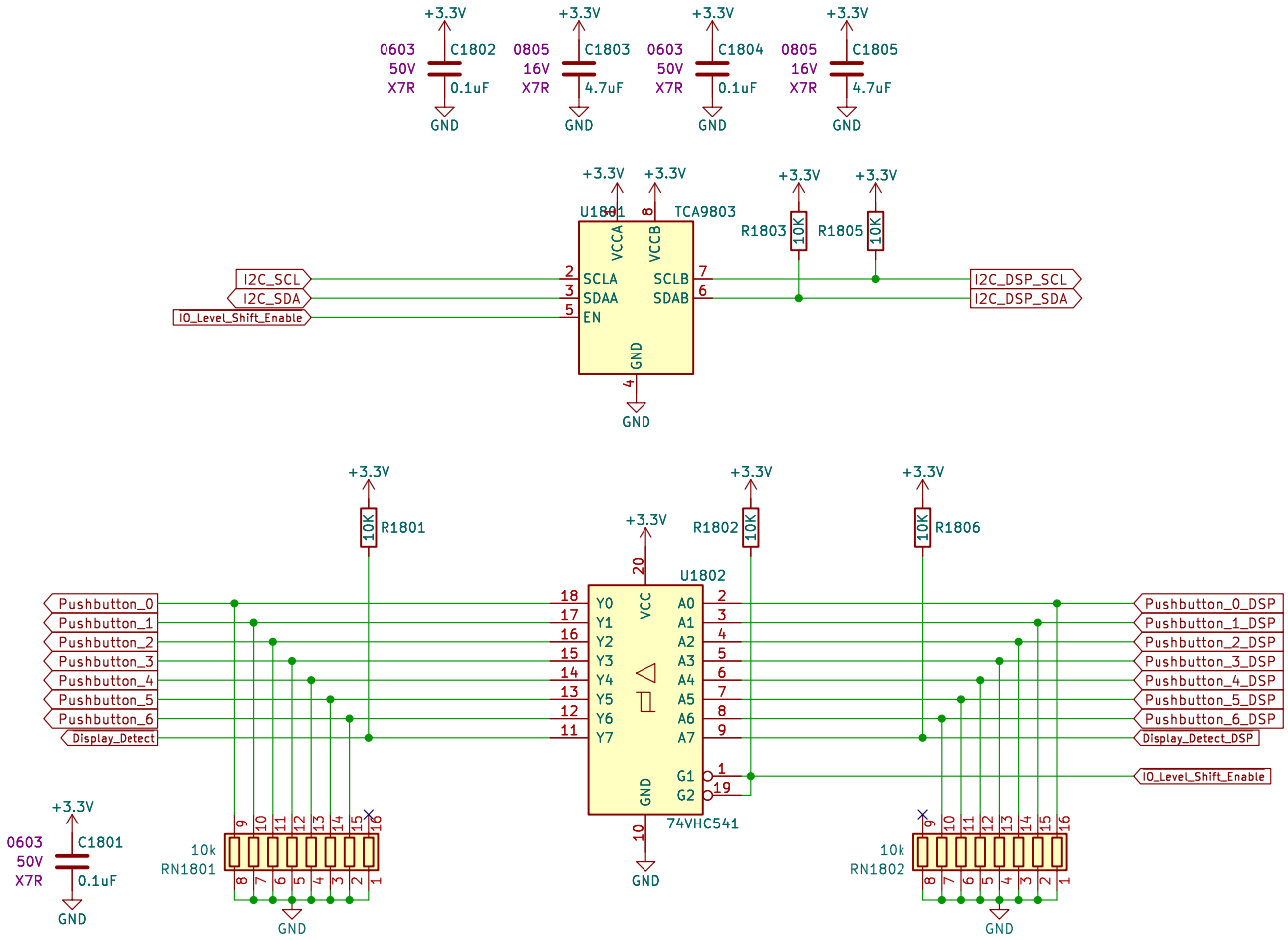
KiCad E.D.A. kicad 7.0.1		Id: 17/21



Drew Maatman		
Sheet: /IO Buffers 1/		
File: IO_Buffers_1.kicad_sch		
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 18/21

CONSIDER ADDING LOAD SWITCH FOR CARRIER BOARD +3.3v



Drew Maatman		
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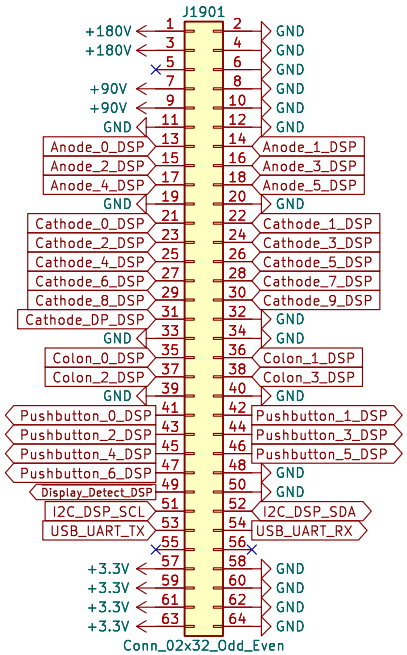
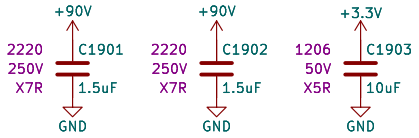
File: IO_Buffers_2.kicad_sch		
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 19/21

FIND A CONNECTOR THAT CAN HANDLE HIGH VOLTAGE AND SIGNALLING THAT ISNT AWFUL

CONSIDER USING 0.1" SMT HEADERS - MAY BE TOO LARGE





Drew Maatman		
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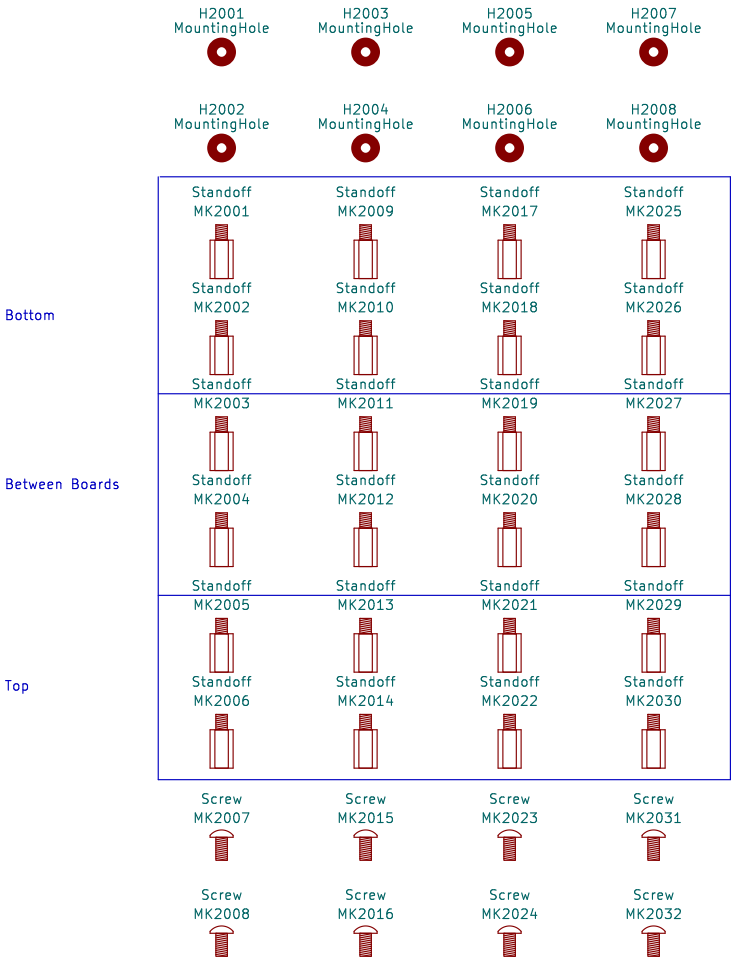
File: IO Connectors.kicad_sch		
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 20/21

ENSURE STACK IS CORRECT HEIGHT



Drew Maatman		
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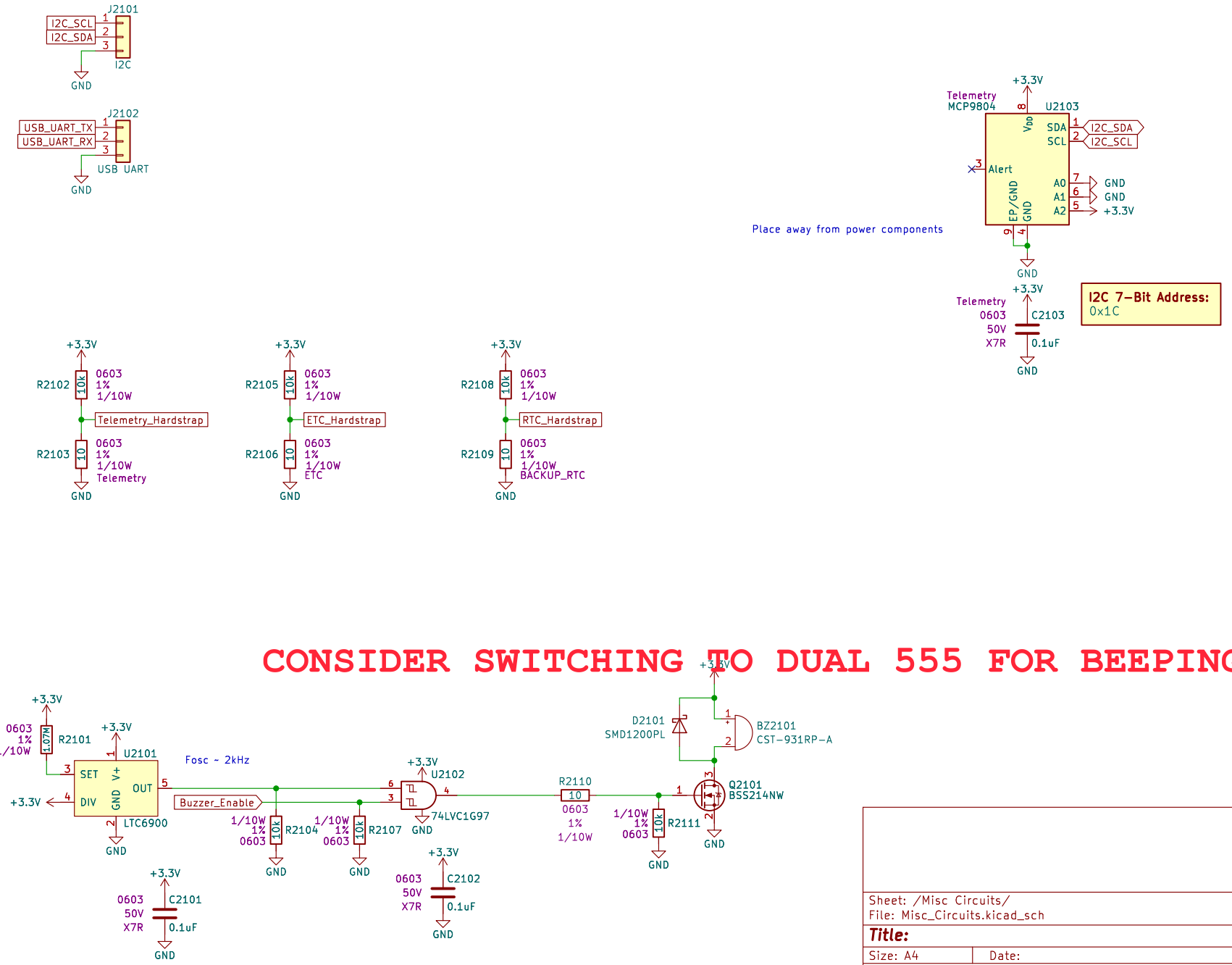
Title:		
Size: A	Date: 2023-05-12	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 21/21


J2101
I2C_SCL
I2C_SDA
I2C
GND
J2102
USB_UART_TX
USB_UART_RX
USB UART
GND
+3.3V
Telemetry
MCP9804
U2103
VDD
SDA
SCL
Alert
EP/GND
GND
A0
A1
A2
I2C_SDA
I2C_SCL
GND
GND
+3.3V
Place away from power components
Telemetry
0603
50V
X7R
C2103
0.1uF
GND
I2C 7-Bit Address:
0x1C
R2102
10k
0603
1%
1/10W
Telemetry_Hardstrap
R2103
10
Telemetry
R2105
ETC_Hardstrap
R2106
ETC
R2108
RTC_Hardstrap
R2109
BACKUP_RTC
CONSIDER SWITCHING TO DUAL 555 FOR BEEPING
R2101
4.07M
U2101
SET
V+
DIV
GND
OUT
LTC6900
Fosc ~ 2kHz
Buzzer_Enable
R2104
R2107
U2102
74LVC1G97
R2110
10
R2111
D2101
SMD1200PL
BZ2101
CST-931RP-A
Q2101
BSS214NW
C2101
C2102
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Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 7.0.1
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