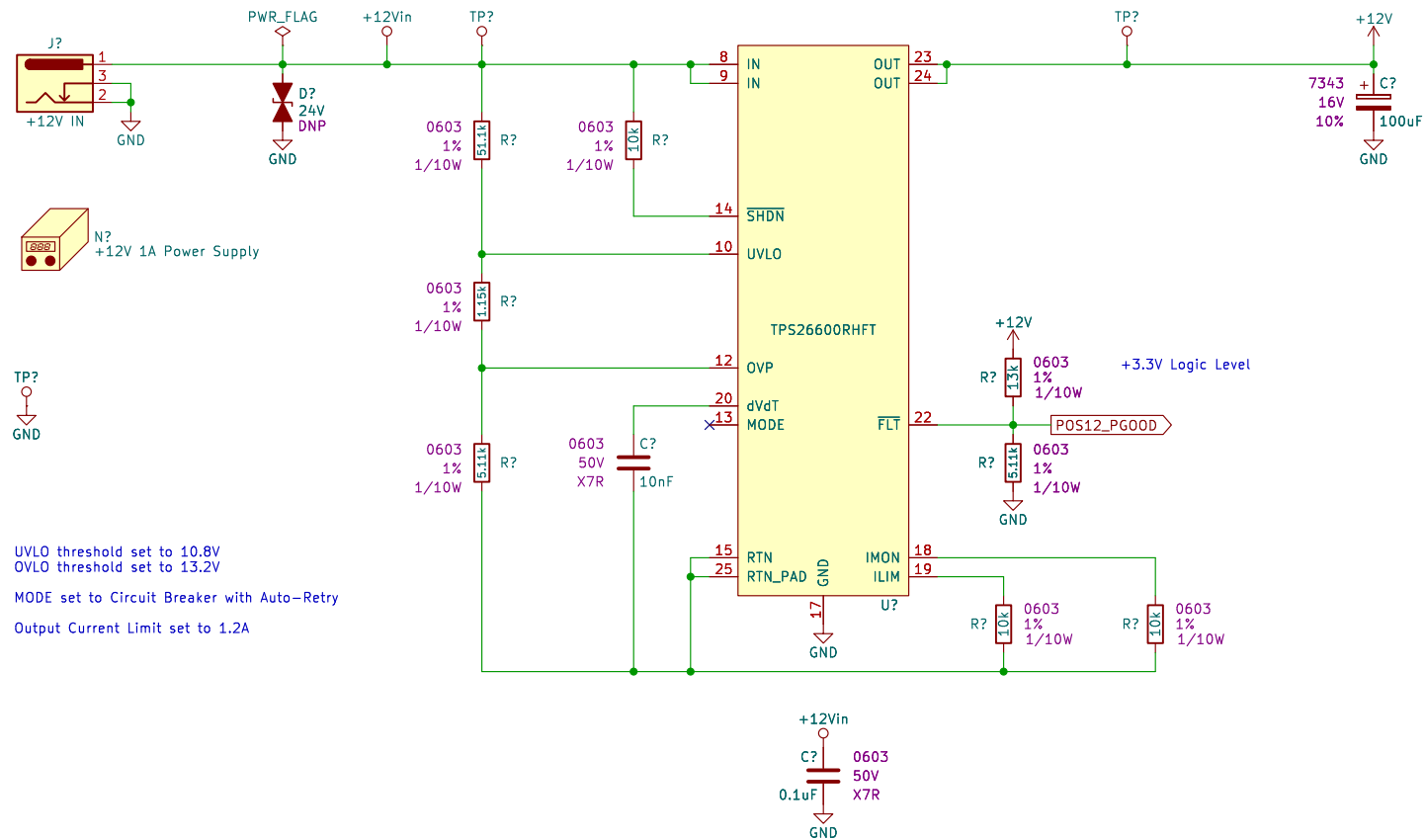


	1	2	3	4	5	
	<h1>Thermal Camera</h1> <p>https://github.com/drewsum/Thermal_Camera</p>					
A	01. Table of Contents					
	02. POS12 Input	POS12_Input	14. LCD Backlight Power Supply	LCD Backlight Power Supply	26. FLIR Lepton Sensor	FLIR Lepton Sensor
	03. POS12 Telemetry	POS12 Telemetry	15. LCD Backlight Telemetry	LCD Backlight Telemetry	27. USB Hub	USB Hub
	04. POS3P3 Power Supply	POS3P3 Power Supply	16. Battery Management	Battery Management	28. PGOOD LEDs	PGOOD LEDs
	05. POS3P3 Telemetry	POS3P3 Telemetry	17. PIC32MZ DA Programming	PIC32MZ DA Programming	29. Status LEDs	Status LEDs
B	06. POS1P8 Power Supply	POS1P8 Power Supply	18. PIC32MZ DA Clocking	PIC32MZ DA Clocking	30. Mechanical	Mechanical
	07. POS1P8 Telemetry	POS1P8 Telemetry	19. PIC32MZ DA Power	PIC32MZ DA Power		
	08. POS3P0 Power Supply	POS3P0 Power Supply	20. PIC32MZ DA 1	PIC32MZ DA 1		
	09. POS3P0 Telemetry	POS3P0 Telemetry	21. PIC32MZ DA 2	PIC32MZ DA 2		
	10. POS2P8 Power Supply	POS2P8 Power Supply	22. External Storage	External Storage		
C	11. POS2P8 Telemetry	POS2P8 Telemetry	23. Graphic LCD	Graphic LCD		
	12. POS1P2 Power Supply	POS1P2 Power Supply	24. USB UART	USB UART		
	13. POS1P2 Telemetry	POS1P2 Telemetry	25. Elapsed Time Counter	Elapsed Time Counter		
D						
					<div>Drew Maatman and Michael Laffin</div> <div>Sheet: /</div> <div>File: Thermal_Camera.kicad_sch</div> <div>Title: Thermal Camera</div> <div>Size: ADate: 2023-11-13</div> <div>KiCad E.D.A. kicad 7.0.9</div> <div>Rev: PRELIM</div> <div>Id: 1/30</div>	
	1	2	3	4	5	

Switch to +3.0V logic?



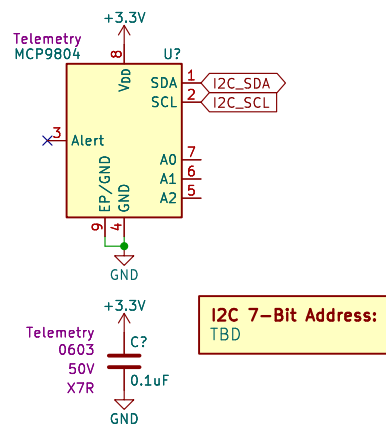
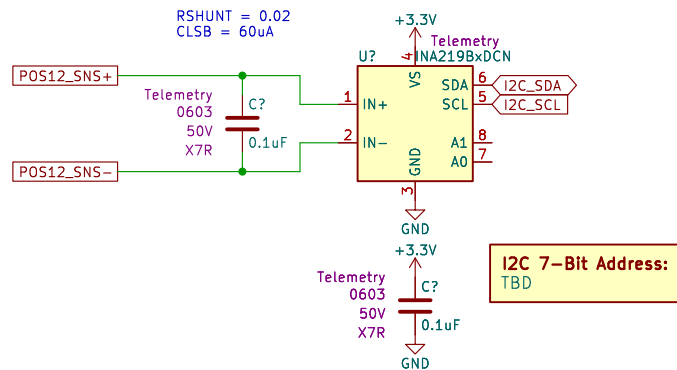
Drew Maatman and Michael Laffin

Sheet: /POS12_Input/
File: POS12_Input.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM
Id: 2/30



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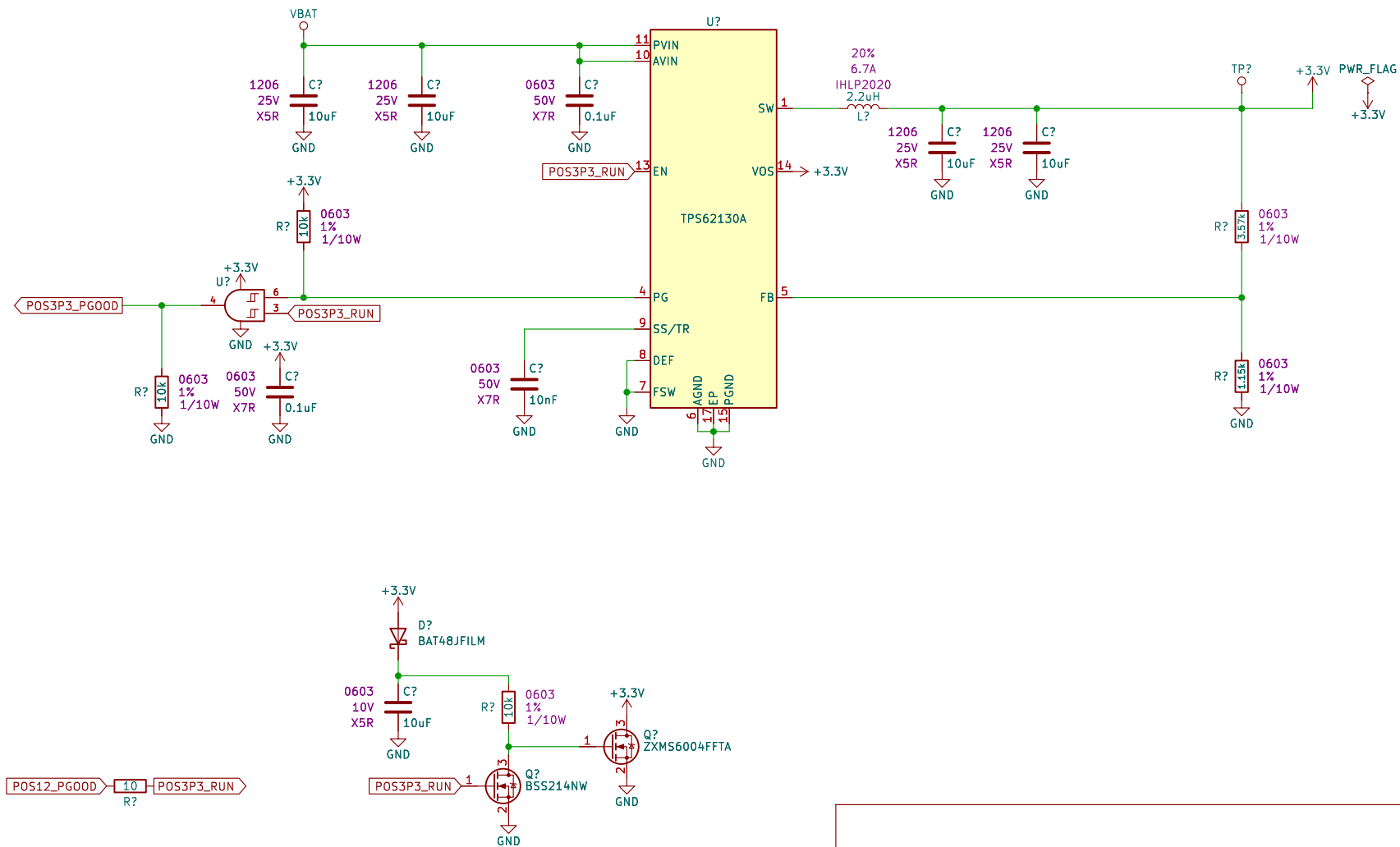
Sheet: /POS12 Telemetry/
File: POS12_Telemetry.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM
Id: 3/30

figure out sequencing
switch to +3.0V?



Sheet: /POS3P3 Power Supply/
File: POS3P3_Power_Supply.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13
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Rev: PRELIM

Id: 4/30

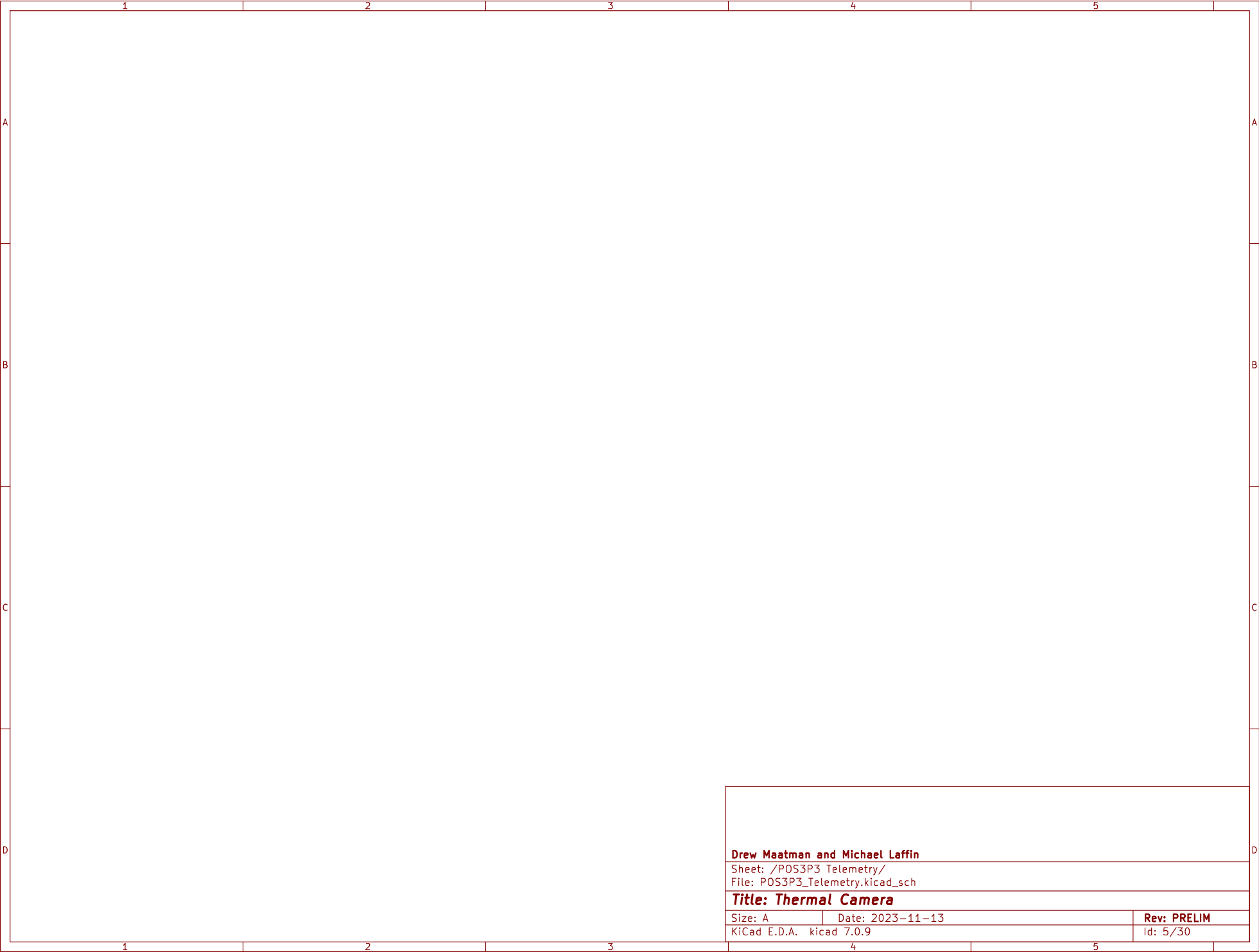
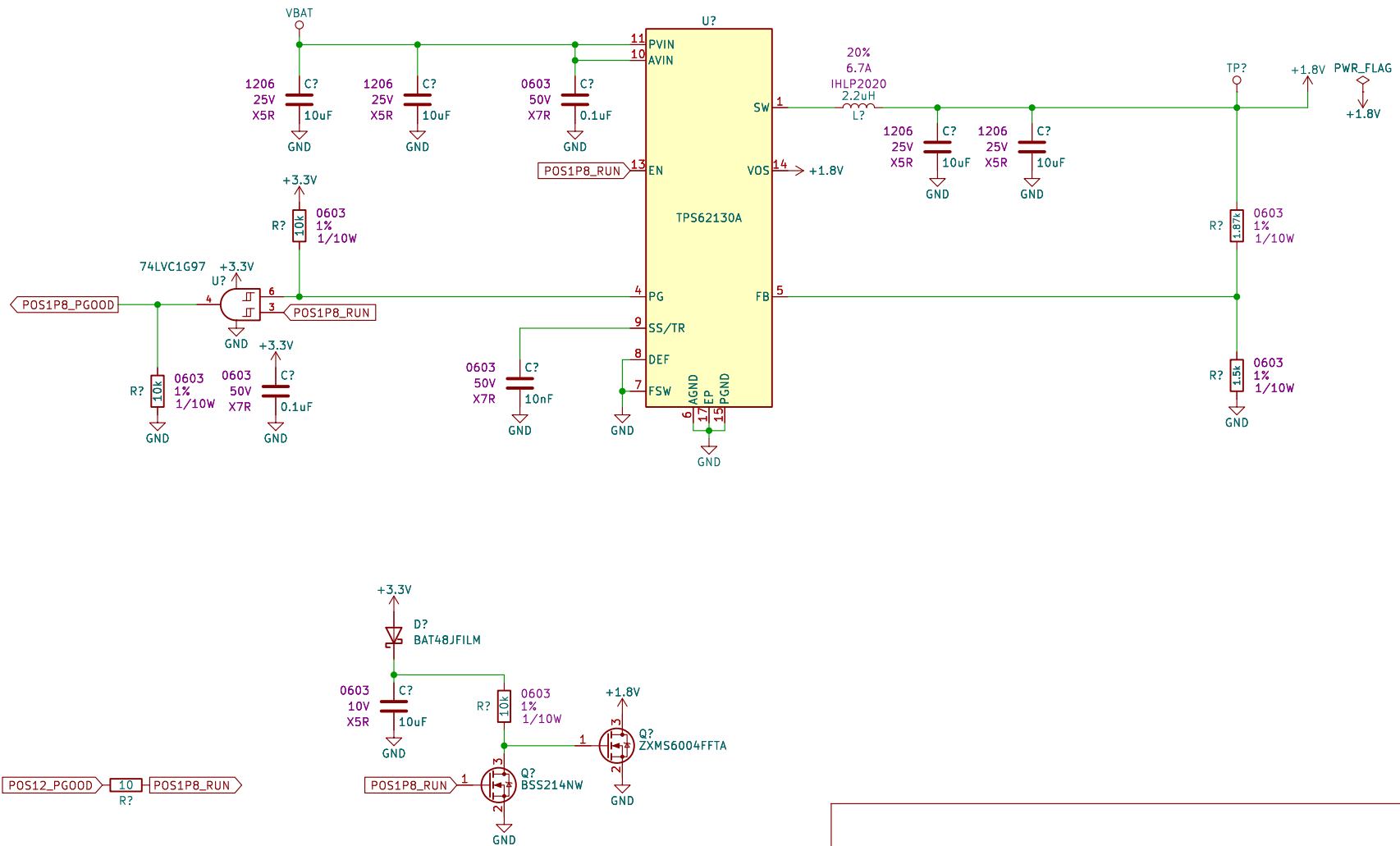


figure out sequencing



Drew Maatman and Michael Laffin

Sheet: /POS1P8 Power Supply/
File: POS1P8_Power_Supply.kicad_sch

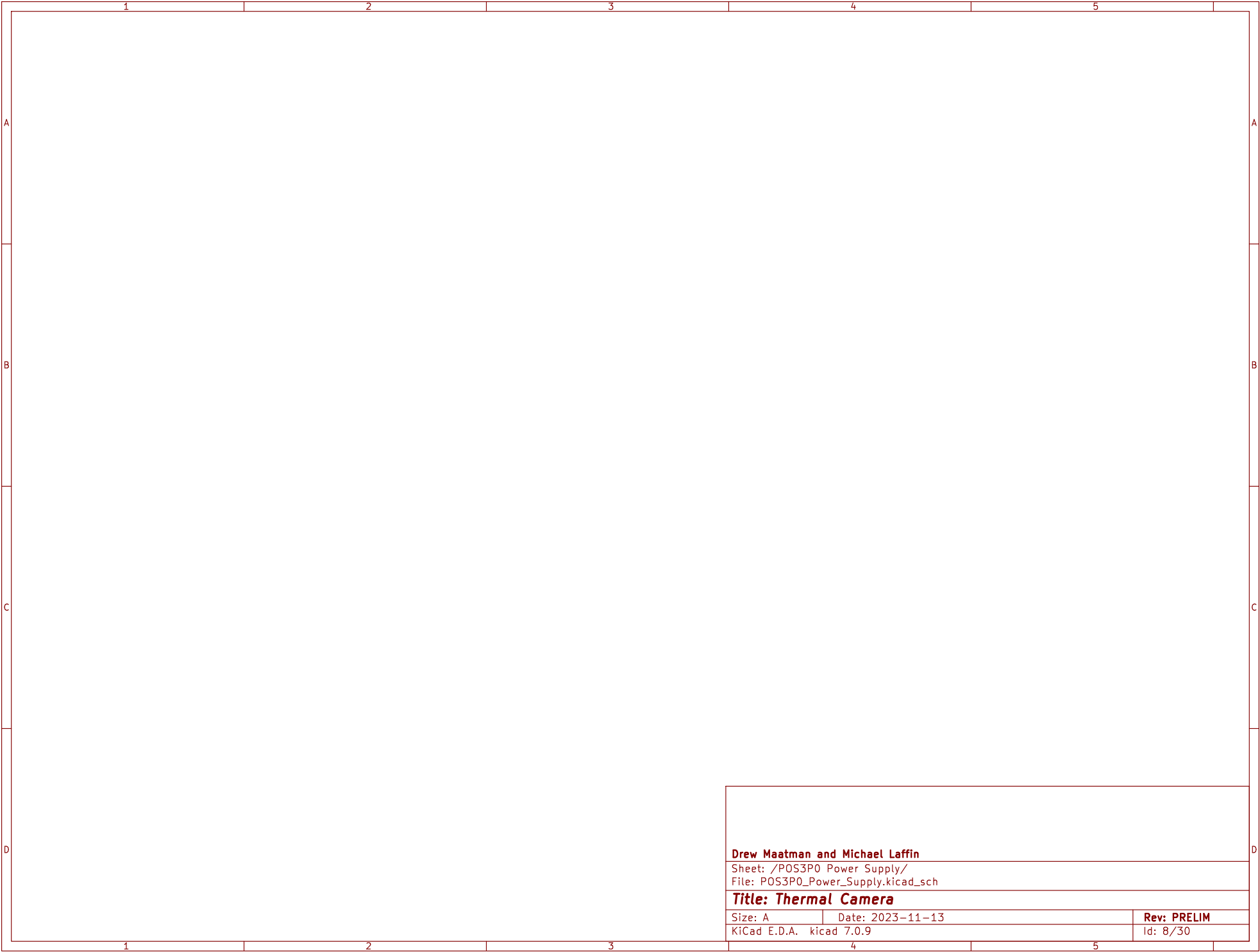
Title: Thermal Camera

Size: A	Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9	

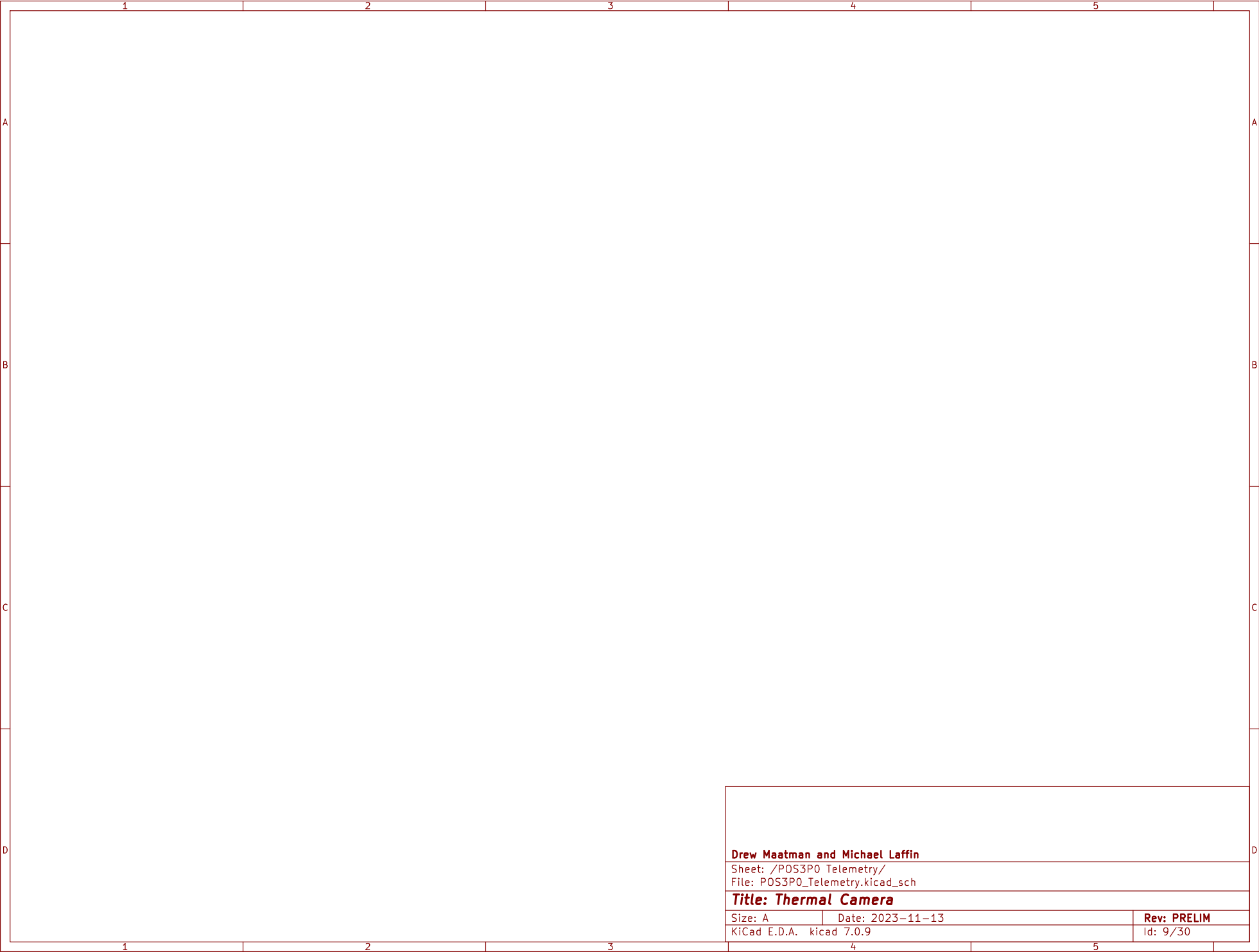
Rev: PRELIM
Id: 6/30

A blank sheet of graph paper with a grid pattern. The grid consists of horizontal and vertical lines forming squares. The top edge is labeled with numbers 1 through 5, and the right edge is labeled with letters A through D. In the bottom right corner, there is a rectangular box containing technical drawing information.

Drew Maatman and Michael Laffin	
Sheet: /POS1P8 Telemetry/ File: POS1P8_Telemetry.kicad_sch	
Title: Thermal Camera	
Size: A	Date: 2023-11-13 KiCad E.D.A. kicad 7.0.9
Rev: PRELIM Id: 7/30	

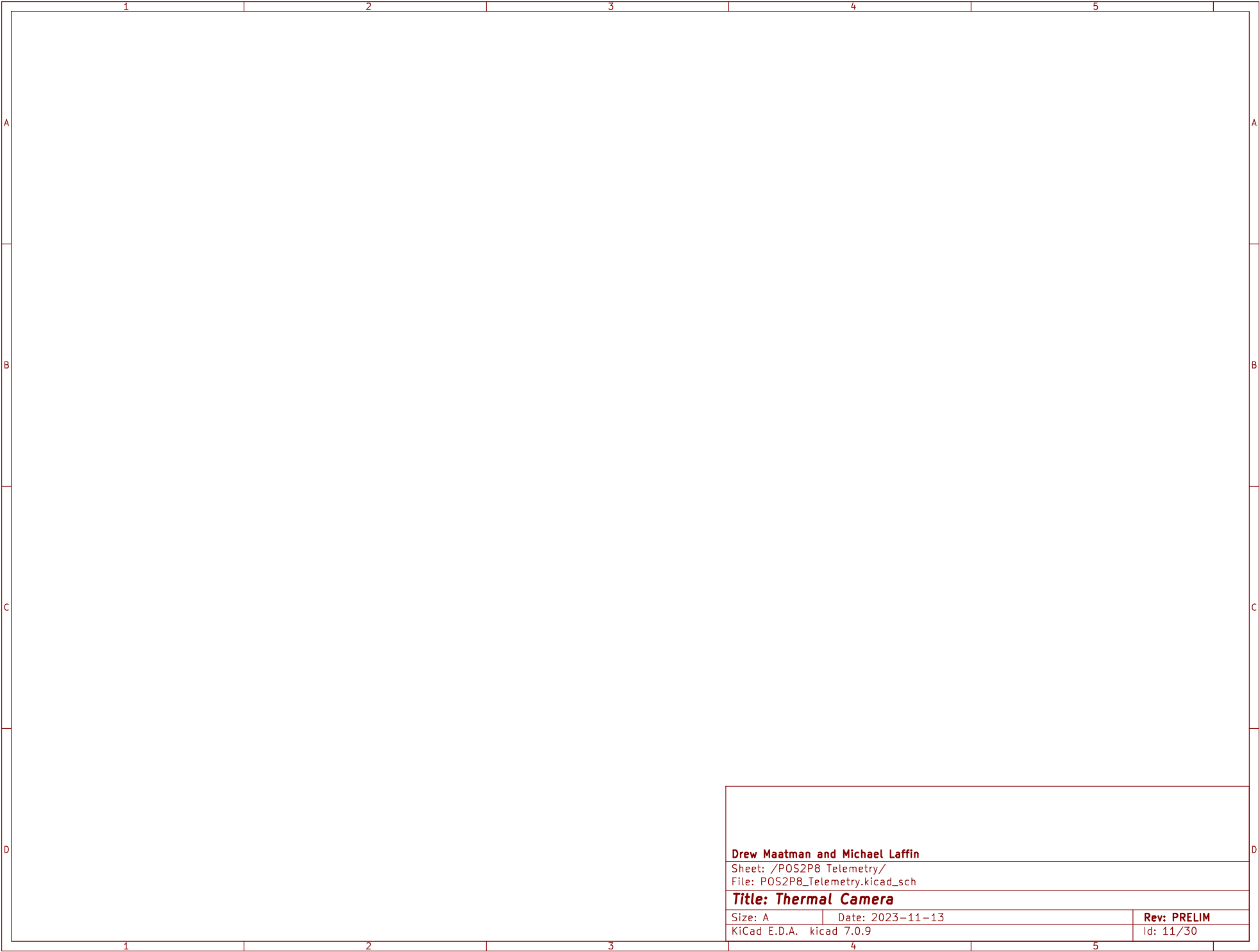


Drew Maatman and Michael Laffin		
Sheet: /POS3P0 Power Supply/		
File: POS3P0_Power_Supply.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 8/30



Drew Maatman and Michael Laffin		
Sheet: /POS3P0 Telemetry/ File: POS3P0_Telemetry.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 9/30

Rev: PRELIM
Id: 10/30



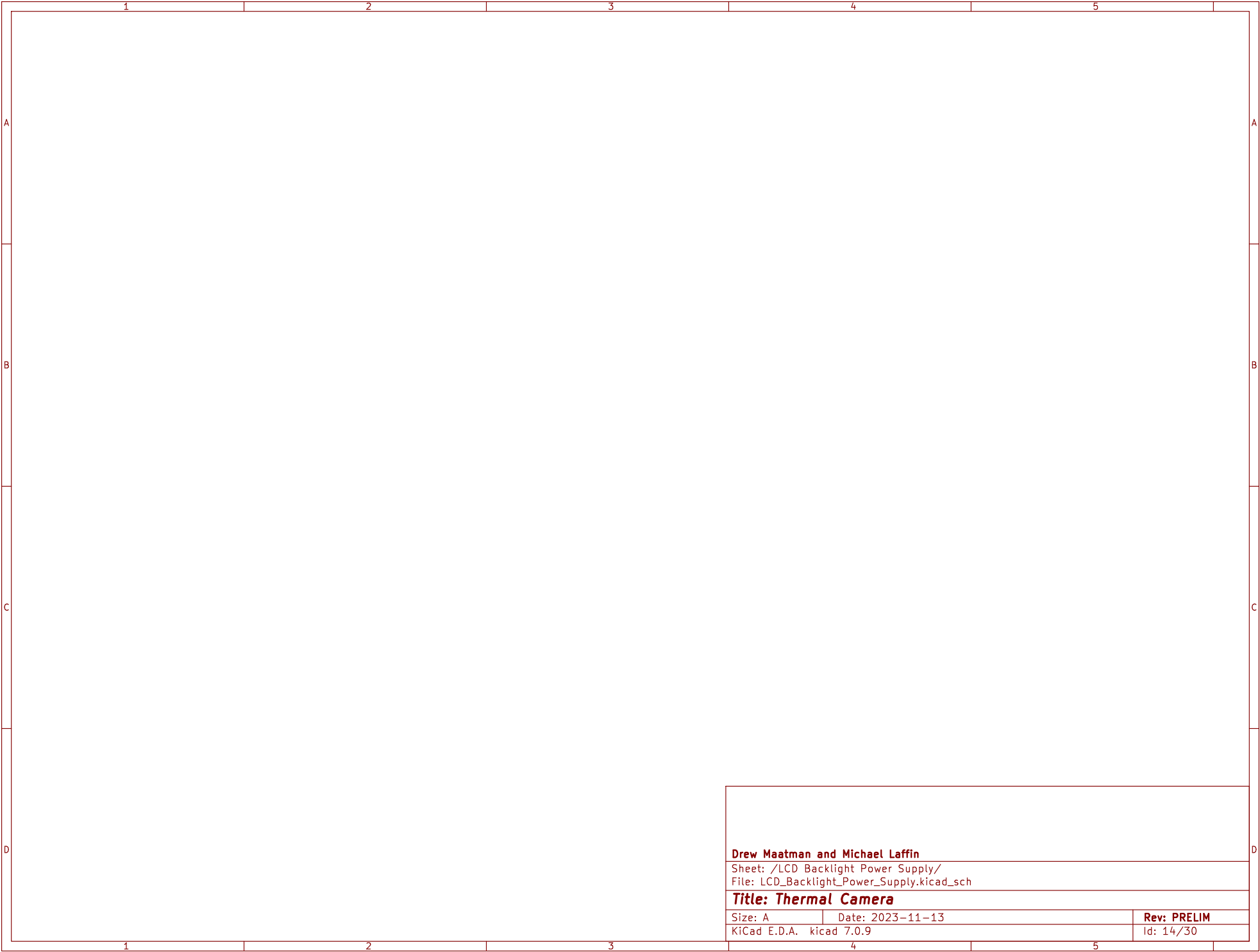
Drew Maatman and Michael Laffin		
Sheet: /POS2P8 Telemetry/ File: POS2P8_Telemetry.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 11/30

Rev: PRELIM
Id: 12/30

1					2					3					4					5					
A																									A
B																									B
C																									C
D																									D
1					2					3					4					5					

</

Drew Maatman and Michael Laffin		
Sheet: /POS1P2 Telemetry/ File: POS1P2_Telemetry.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 13/30

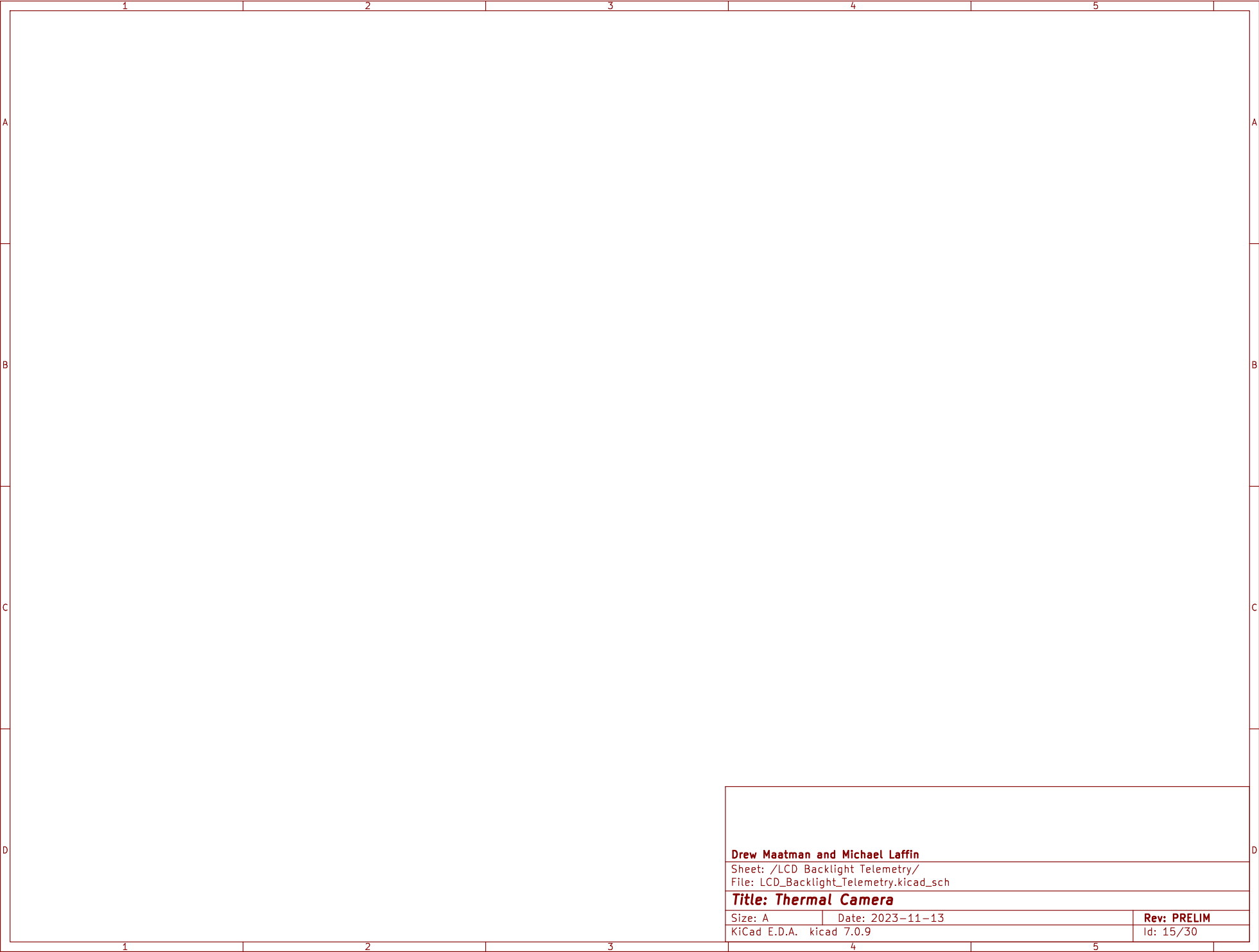


Drew Maatman and Michael Laffin

Sheet: /LCD Backlight Power Supply/
File: LCD_Backlight_Power_Supply.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 14/30



Drew Maatman and Michael Laffin		
Sheet: /LCD Backlight Telemetry/		
File: LCD_Backlight_Telemetry.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 15/30

1					2					3					4					5					
A																									A
B																									B
C																									C
D																									D
1					2					3					4					5					

</

Drew Maatman and Michael Laffin		
Sheet: /Battery Management/ File: Battery_Management.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 16/30

COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA
CONSIDER REMOVING BEADS

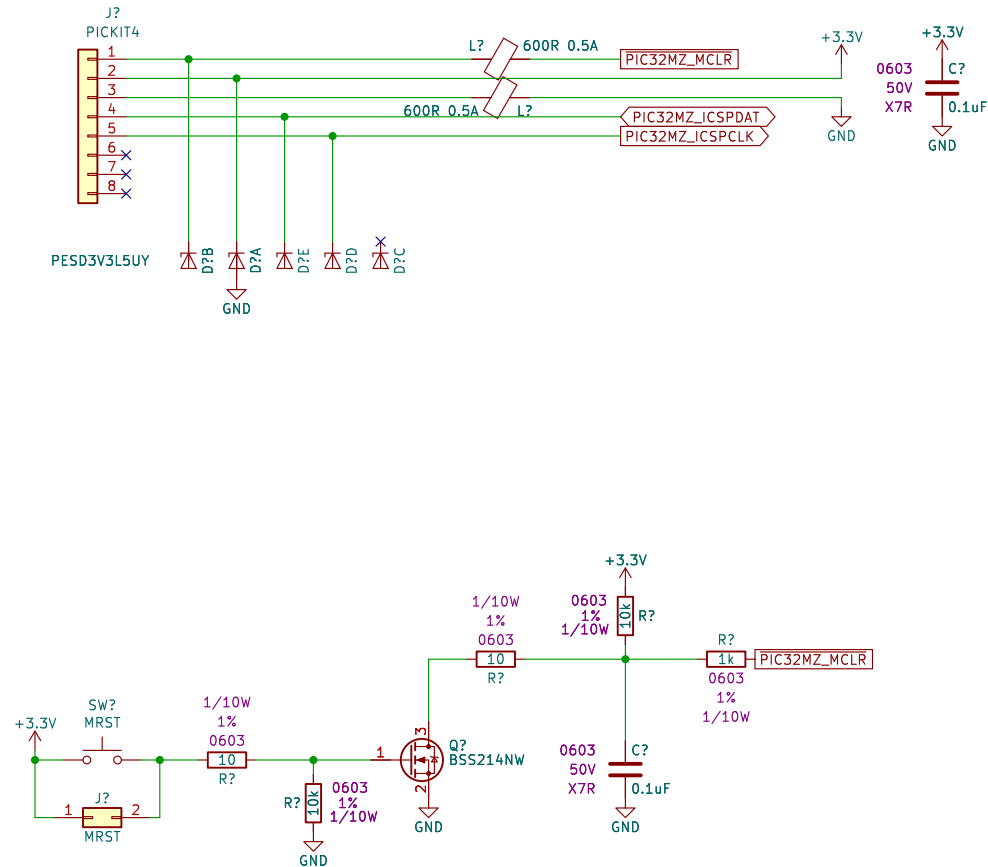
The schematic diagram illustrates the hardware setup for programming a PIC32MZ DA microcontroller. It is divided into two main sections: the top section for the PICKIT4 programmer and the bottom section for the reset circuit.

Top Section (PICKIT4 and PIC32MZ_MCLR):

- A PICKIT4 programmer is connected to the PIC32MZ_MCLR via an 8-pin header (J?).
- The PICKIT4 pins are connected to the PIC32MZ_MCLR pins as follows:
 - PICKIT4 pin 1 to PIC32MZ_MCLR pin 1 (VDD).
 - PICKIT4 pin 2 to PIC32MZ_MCLR pin 2 (VDD).
 - PICKIT4 pin 3 to PIC32MZ_MCLR pin 3 (VDD).
 - PICKIT4 pin 4 to PIC32MZ_MCLR pin 4 (VDD).
 - PICKIT4 pin 5 to PIC32MZ_MCLR pin 5 (VDD).
 - PICKIT4 pin 6 to PIC32MZ_MCLR pin 6 (VDD).
 - PICKIT4 pin 7 to PIC32MZ_MCLR pin 7 (VDD).
 - PICKIT4 pin 8 to PIC32MZ_MCLR pin 8 (VDD).
- The PIC32MZ_MCLR is connected to a 600R 0.5A resistor (L?) and a 0.1uF capacitor (C?) to GND.
- The PIC32MZ_ICSPDAT and PIC32MZ_ICSPCLK are connected to the PICKIT4 pins 1 and 2, respectively.

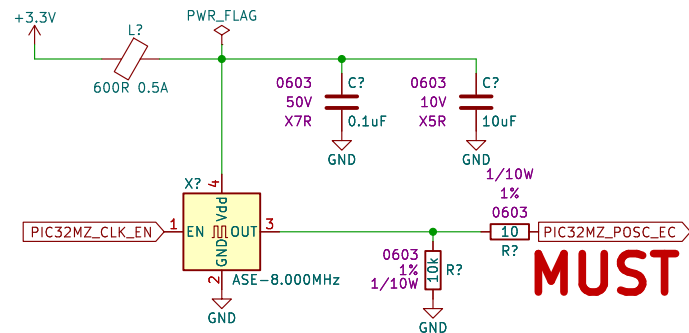
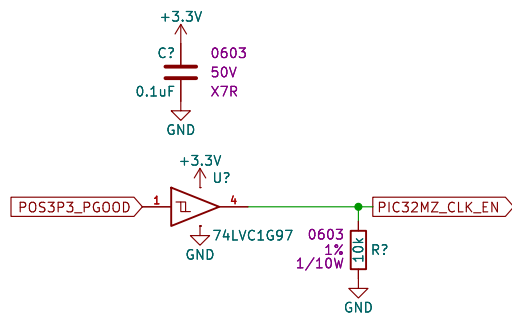
Bottom Section (Reset Circuit):

- A reset switch (SW? MRST) is connected to the PIC32MZ_MCLR via a 10k resistor (R?).
- The reset switch is also connected to a MOSFET (Q2 BSS214NW) via a 10k resistor (R?).
- The MOSFET is connected to the PIC32MZ_MCLR via a 10k resistor (R?).
- The MOSFET is also connected to a 0.1uF capacitor (C?) to GND.
- The PIC32MZ_MCLR is connected to a 10k resistor (R?) and a 0.1uF capacitor (C?) to GND.

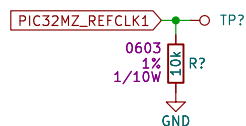
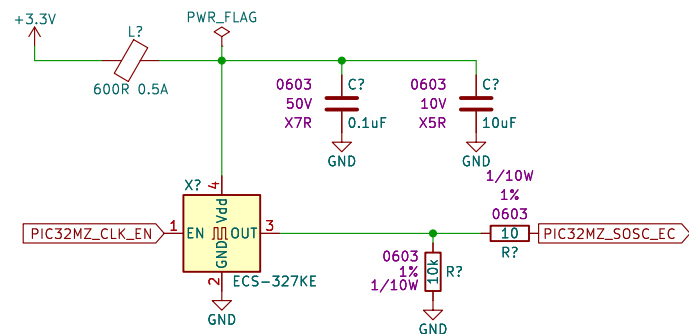


Rev: PRELIM
Id: 17/30

COPIED FROM PIC32MZ EF FIX FOR PIC32MZ DA



MUST BE 24MHZ



Drew Maatman and Michael Laffin

Sheet: /PIC32MZ DA Clocking/

File: PIC32MZ_DA_Clocking.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13

KiCad E.D.A. kicad 7.0.9

Rev: PRELIM

Id: 18/30

COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA

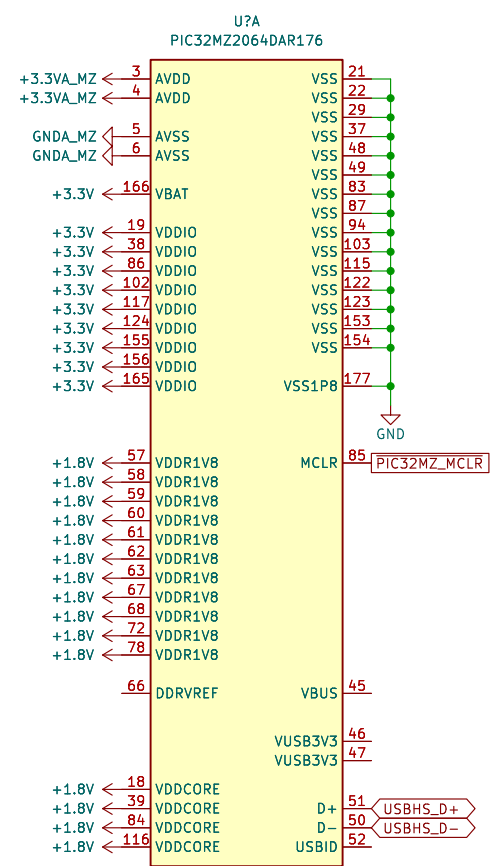
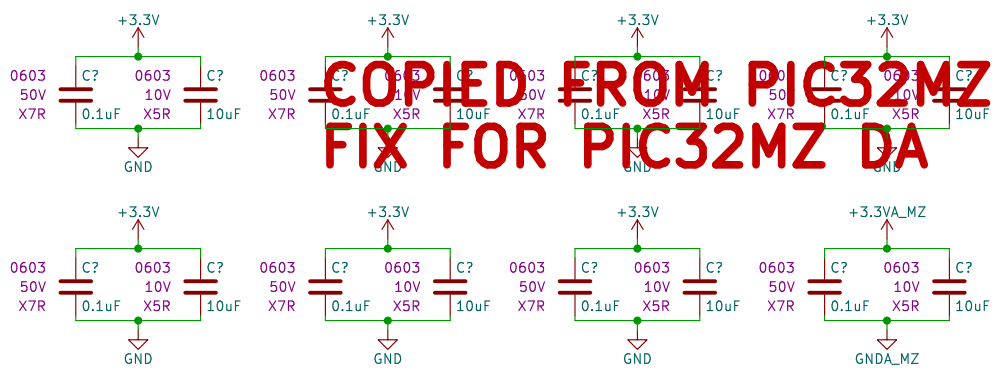
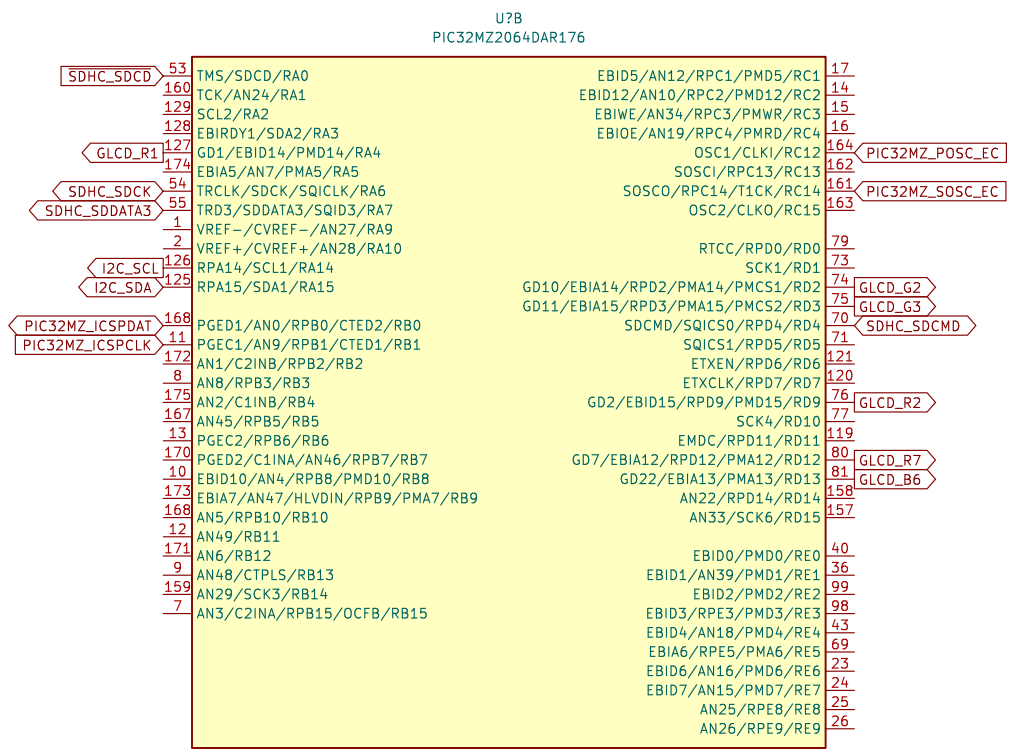


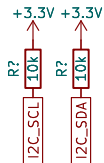
FIGURE OUT HOW TO USE THIS

Drew Maatman and Michael Laffin		
Sheet: /PIC32MZ DA Power/ File: PIC32MZ_DA_Power.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 19/30

See TABLE 36-1:RGB COLOR MAPPING for Graphic LCD Pin Mapping



DOUBLE CHECK
SOSC PIN



Drew Maatman and Michael Laffin

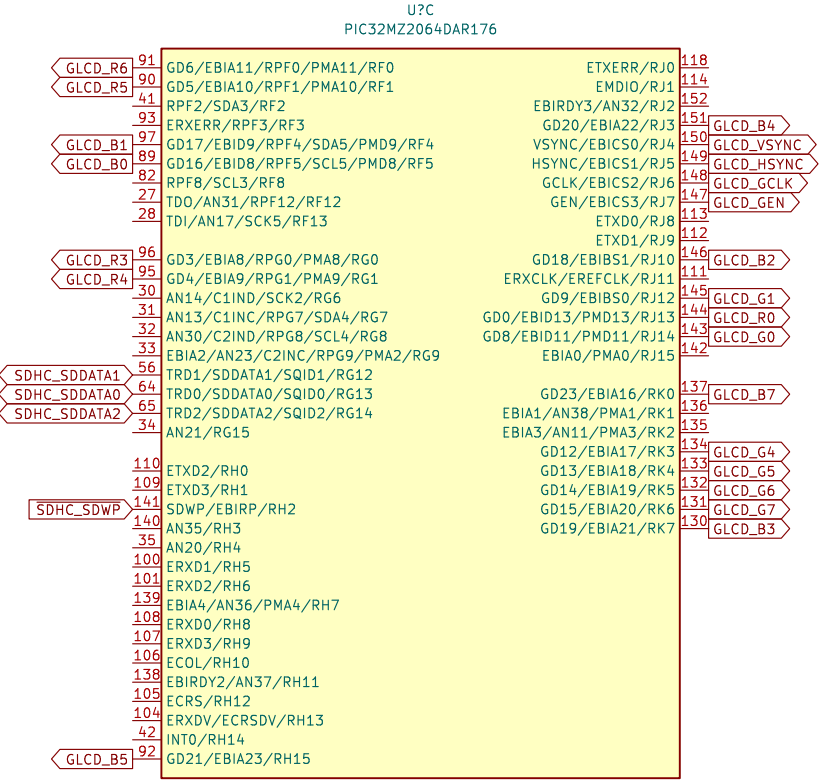
Sheet: /PIC32MZ DA 1/
File: PIC32MZ_DA_1.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM
Id: 20/30

See TABLE 36-1:RGB COLOR MAPPING for Graphic LCD Pin Mapping



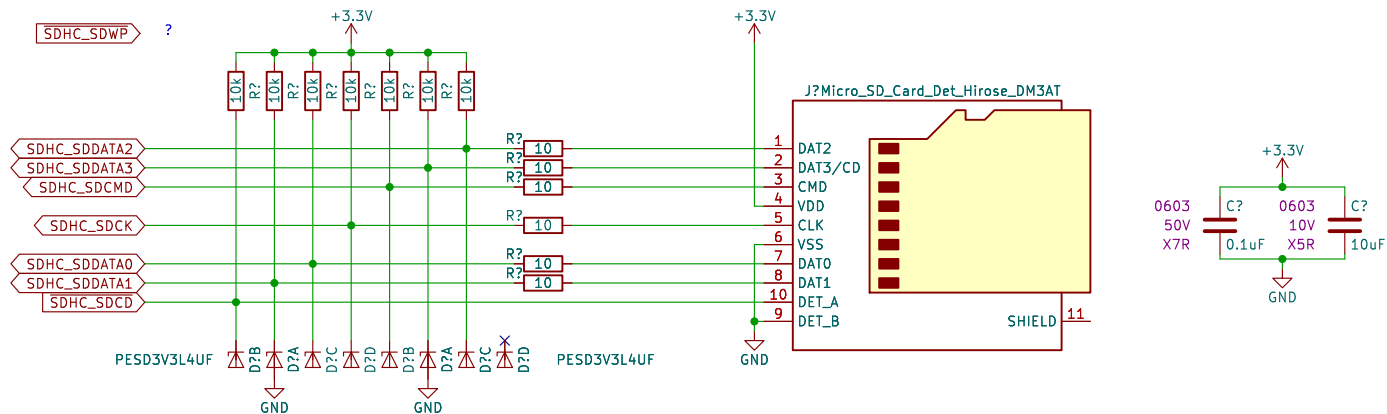
Drew Maatman and Michael Laffin

Sheet: /PIC32MZ DA 2/
File: PIC32MZ_DA_2.kicad_sch

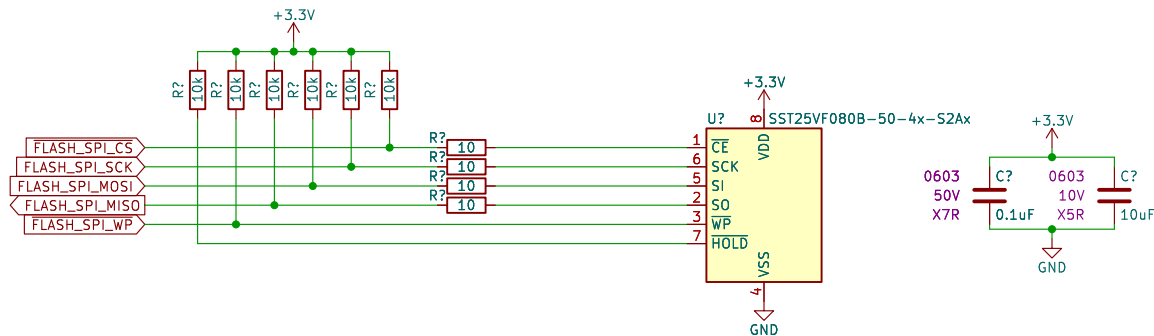
Title: Thermal Camera

Size: A Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM
Id: 21/30



Add SD card power switching?



SD CARD, SPI FLASH

BREAK OUT A SPI TO SD CARD AS INSURANCE

BREAK OUT FLASH SPI TO A HEADER FOR PROGRAMMING

Drawn: Michael and Michael

Sheet: /External Storage/

File: External_Storage.kicad_sch

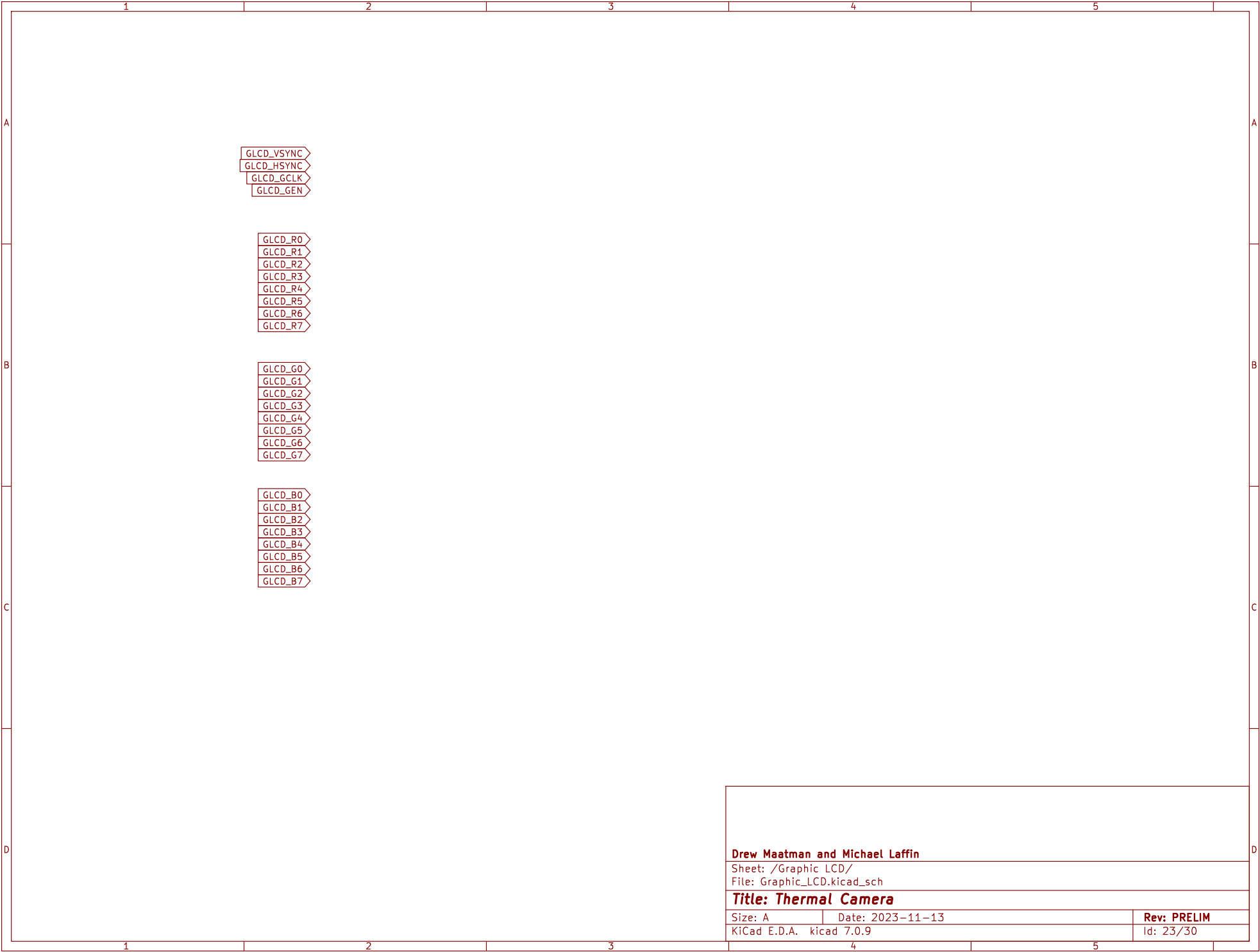
Title: Thermal Camera

Size: A Date: 2023-11-13

KiCad E.D.A. kicad 7.0.9

Rev: PRELIM

Id: 22/30



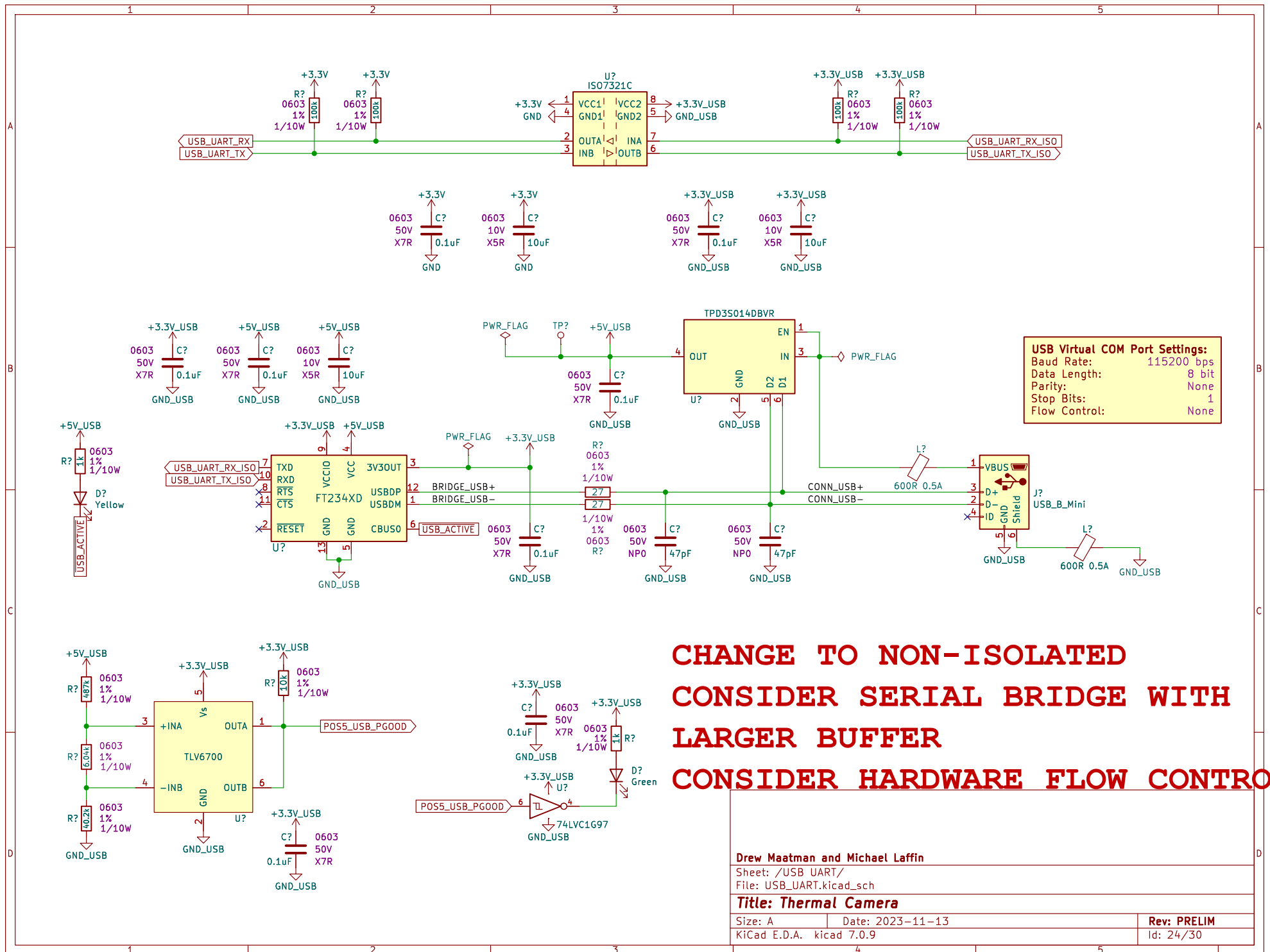
Drew Maatman and Michael Laffin

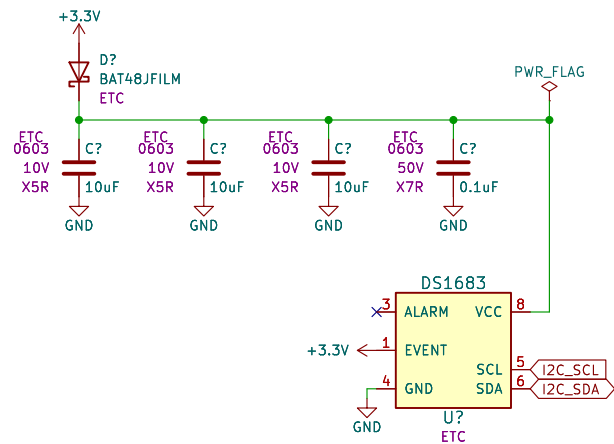
Sheet: /Graphic LCD/
File: Graphic_LCD.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM
Id: 23/30





I2C 7-Bit Address:
0x6B

Drew Maatman and Michael Laffin

Sheet: /Elapsed Time Counter/
File: Elapsed_Time_Counter.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13

KiCad E.D.A. kicad 7.0.9

Rev: PRELIM

Id: 25/30

Power Supply Considerations:
VDDC: 1.20V (1.14V min, 1.26V max), 50mVpp max ripple, 110mA max draw
VDD: 2.80V (2.72V min, 2.88V max), 30mVpp max ripple, 16mA max draw
VDDIO: 2.8V min, 3.1V max, 50mVpp max ripple, 310mA max draw

Power Supply Considerations:

VDDC: 1.20V (1.14V min, 1.26V max), 50mVpp max ripple, 110mA max draw

VDD: 2.80V (2.72V min, 2.88V max), 30mVpp max ripple, 16mA max draw

VDDIO: 2.8V min, 3.1V max, 50mVpp max ripple, 310mA max draw



Sheet: /FLIR Lepton Sensor/
File: FLIR_Lepton_Sensor.kicad_sch

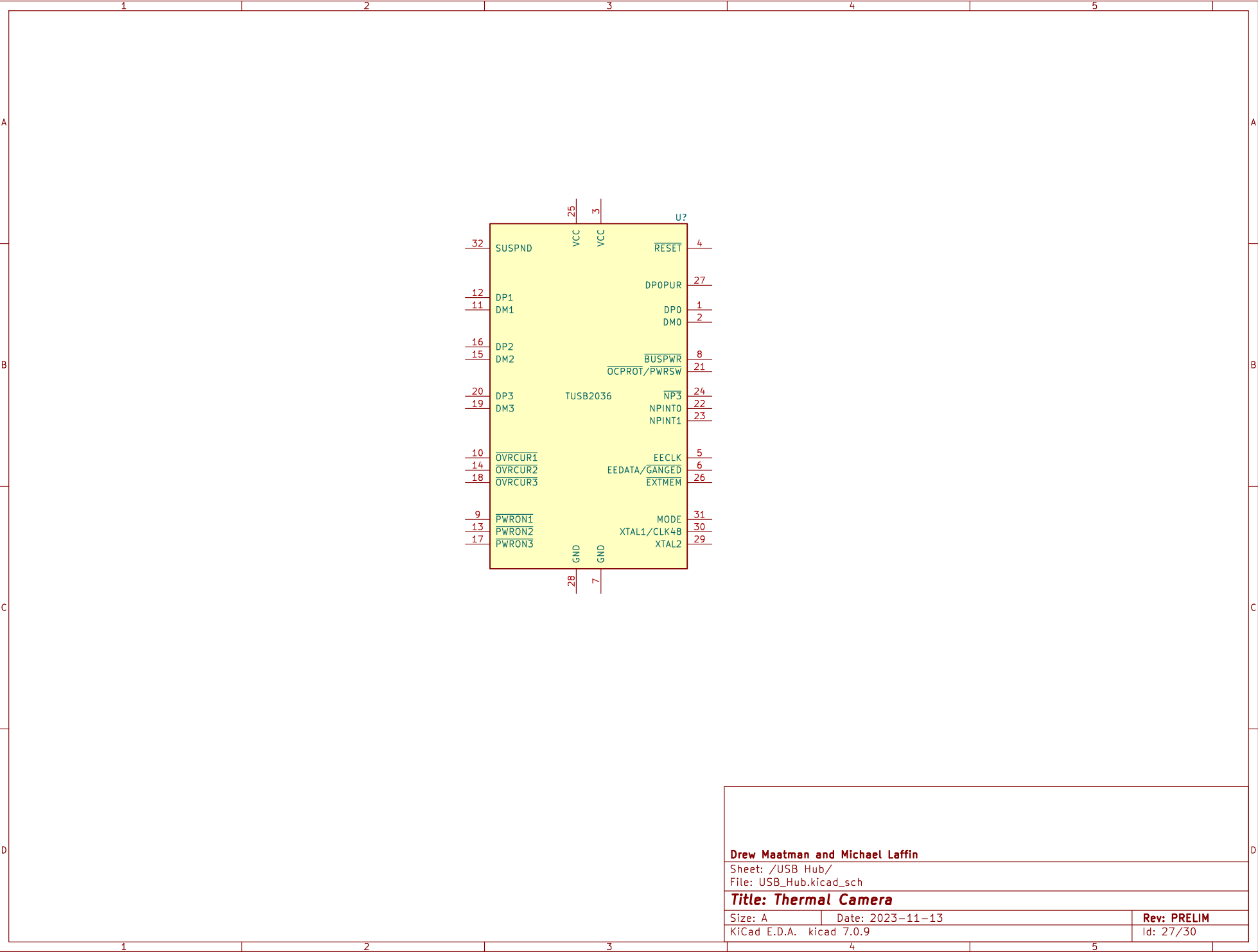
Title: Thermal Camera

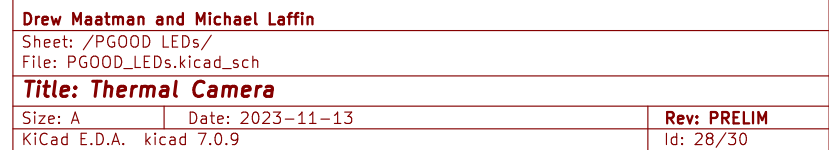
Size: A	Date: 2023-11-13
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Size: A	Date: .
KiCad E.D.A.	kiCad 7.0.9

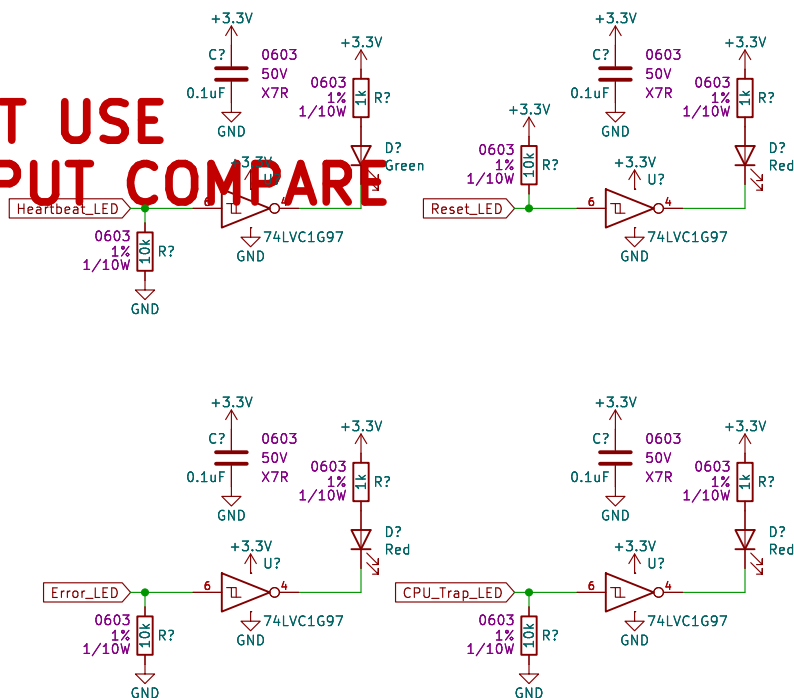
Rev. PRELIM

Id: 26/30





**MUST USE
OUTPUT COMPARE
PIN**



Drew Maatman and Michael Laffin

Sheet: /Status_LEDs/
File: Status_LEDs.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM
Id: 29/30

