

Thermal Camera

https://github.com/drewsum/Thermal_Camera

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Mechanical

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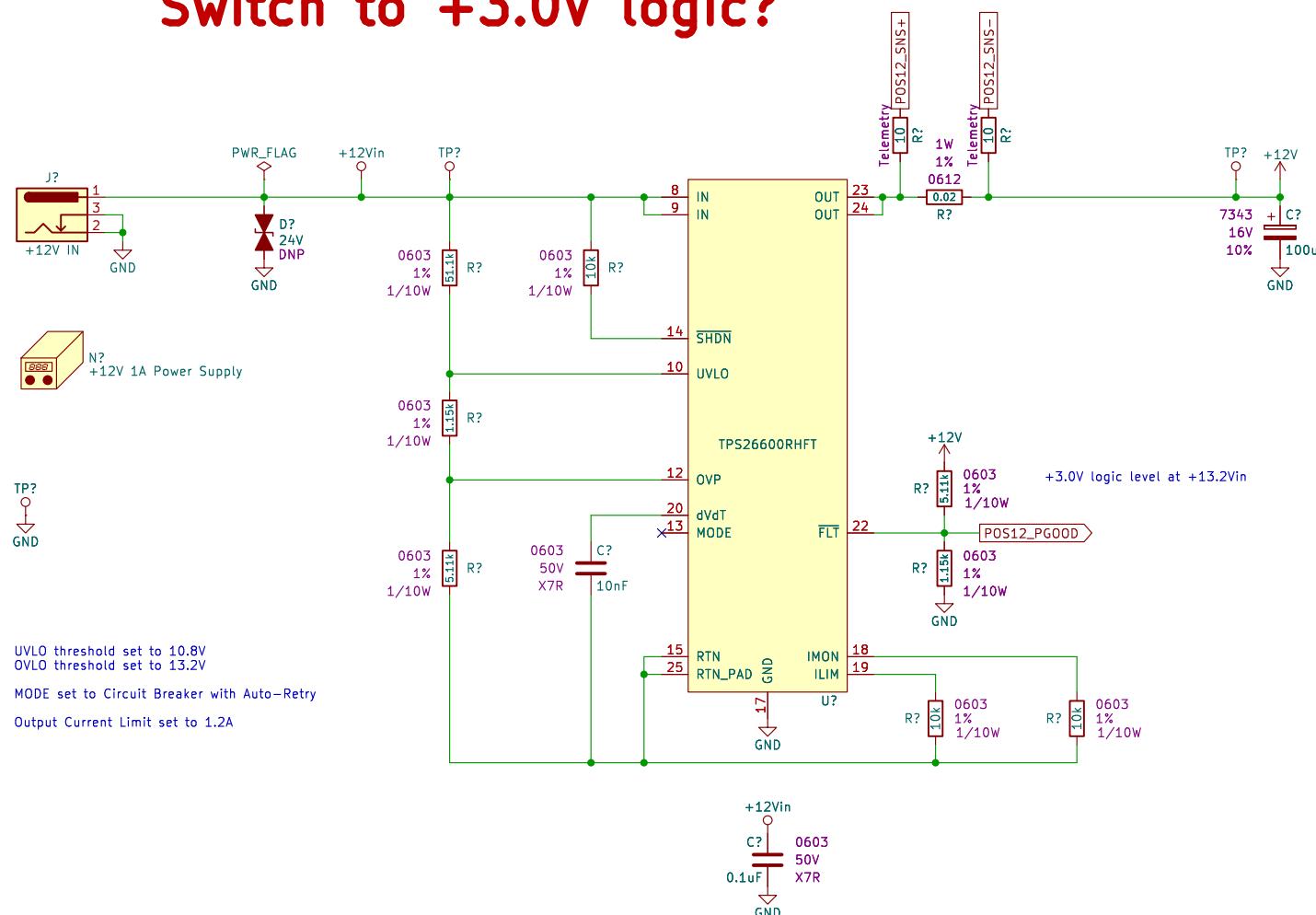
Sheet: /
File: Thermal_Camera.kicad_sch

Title: Thermal Camera

Size: A | Date: 2023-11-13
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Id: 1/28

Switch to +3.0V logic?



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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: 2/28

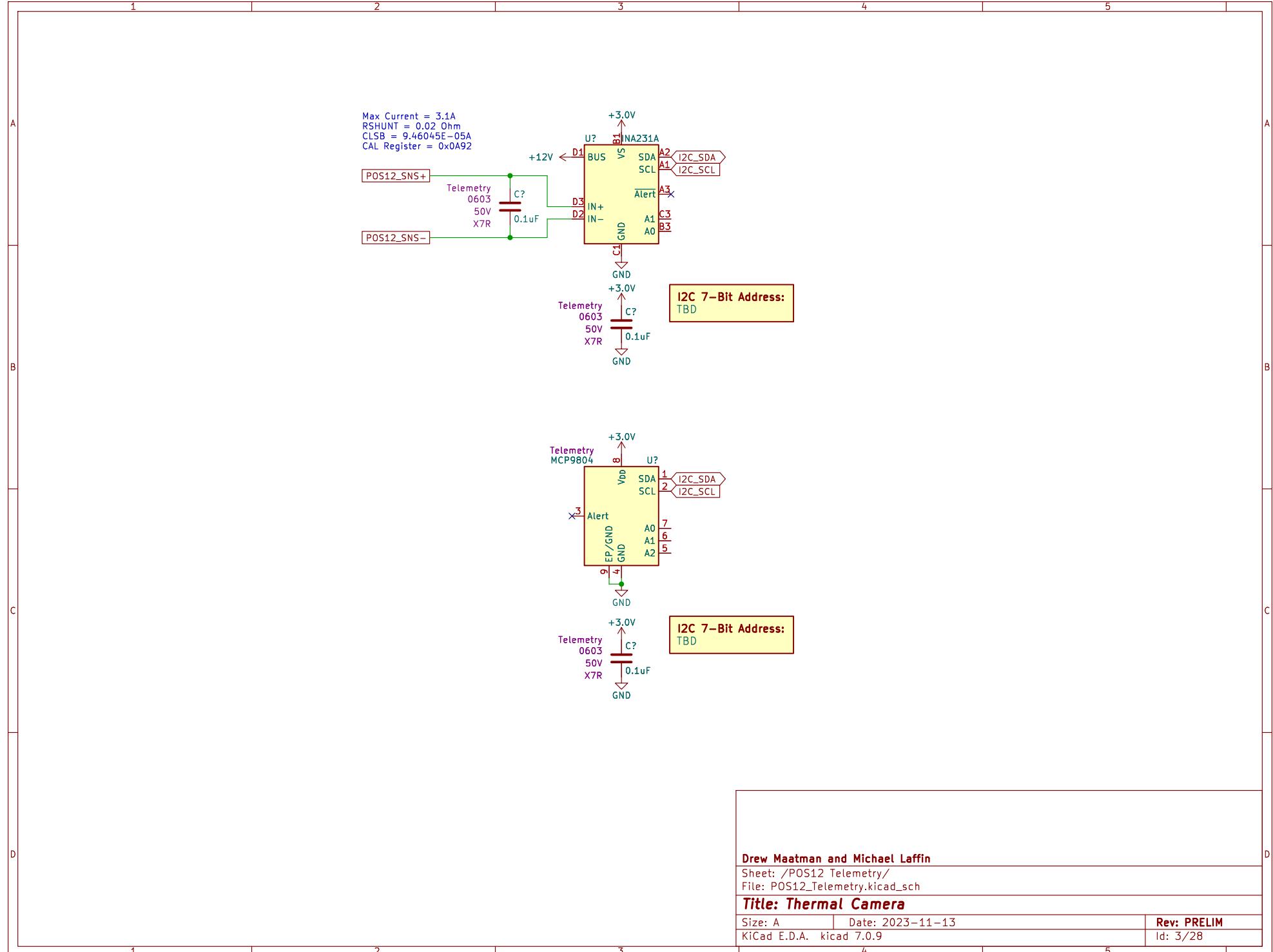
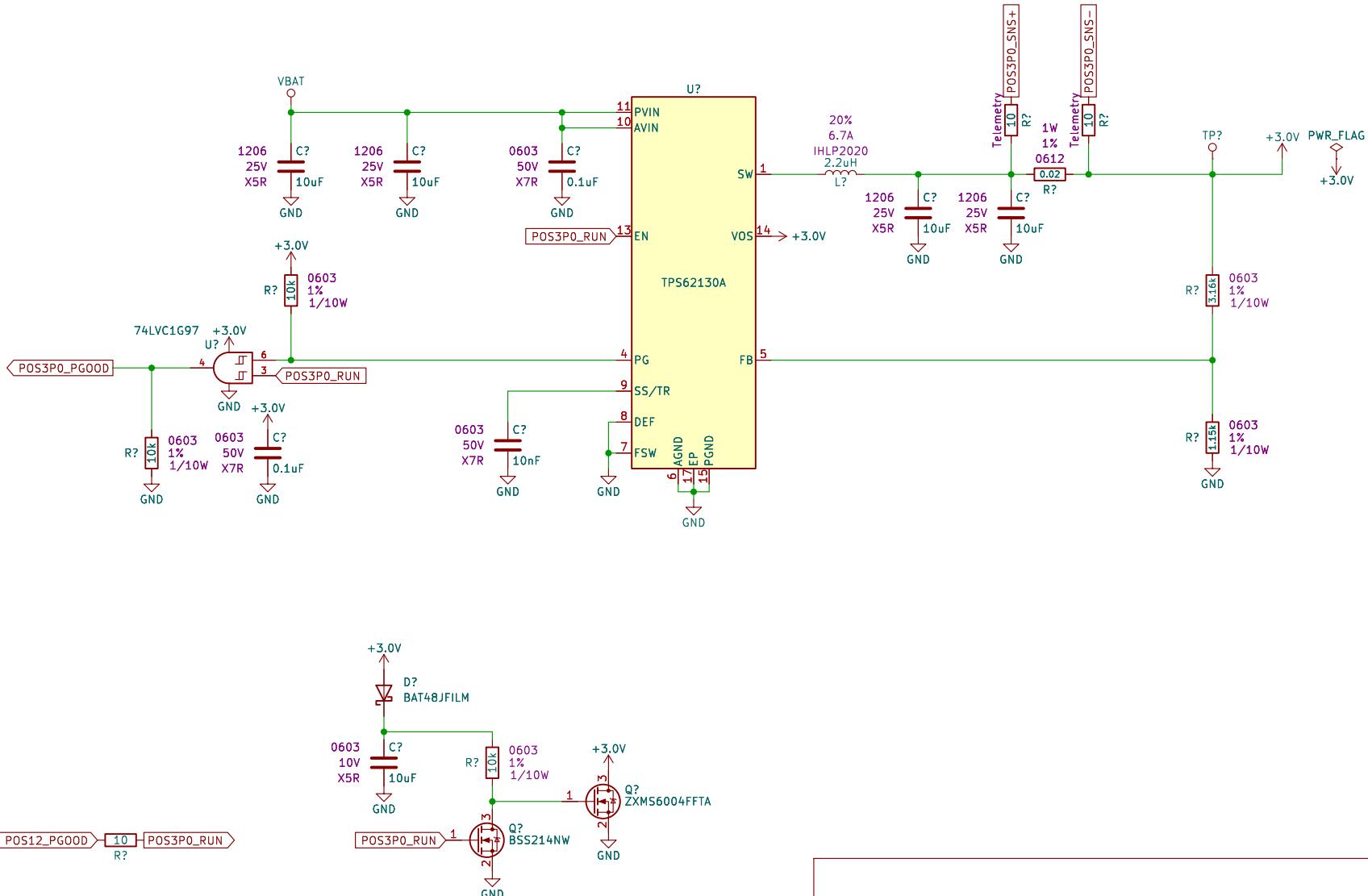


figure out sequencing



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Sheet: /POS3P0 Power Supply/
File: POS3P0_Power_Supply.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
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Rev: PRELIM
Id: 4/28

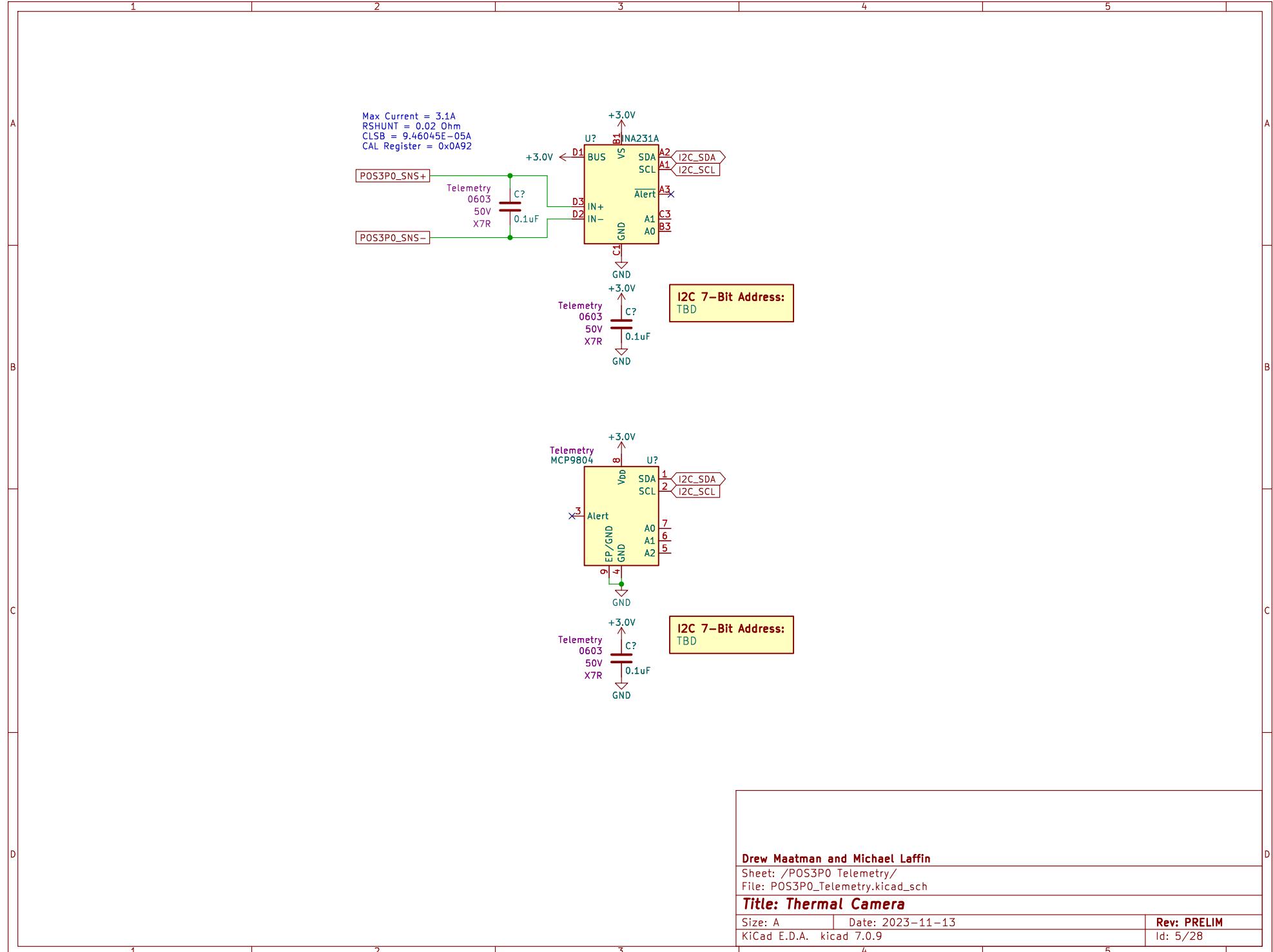
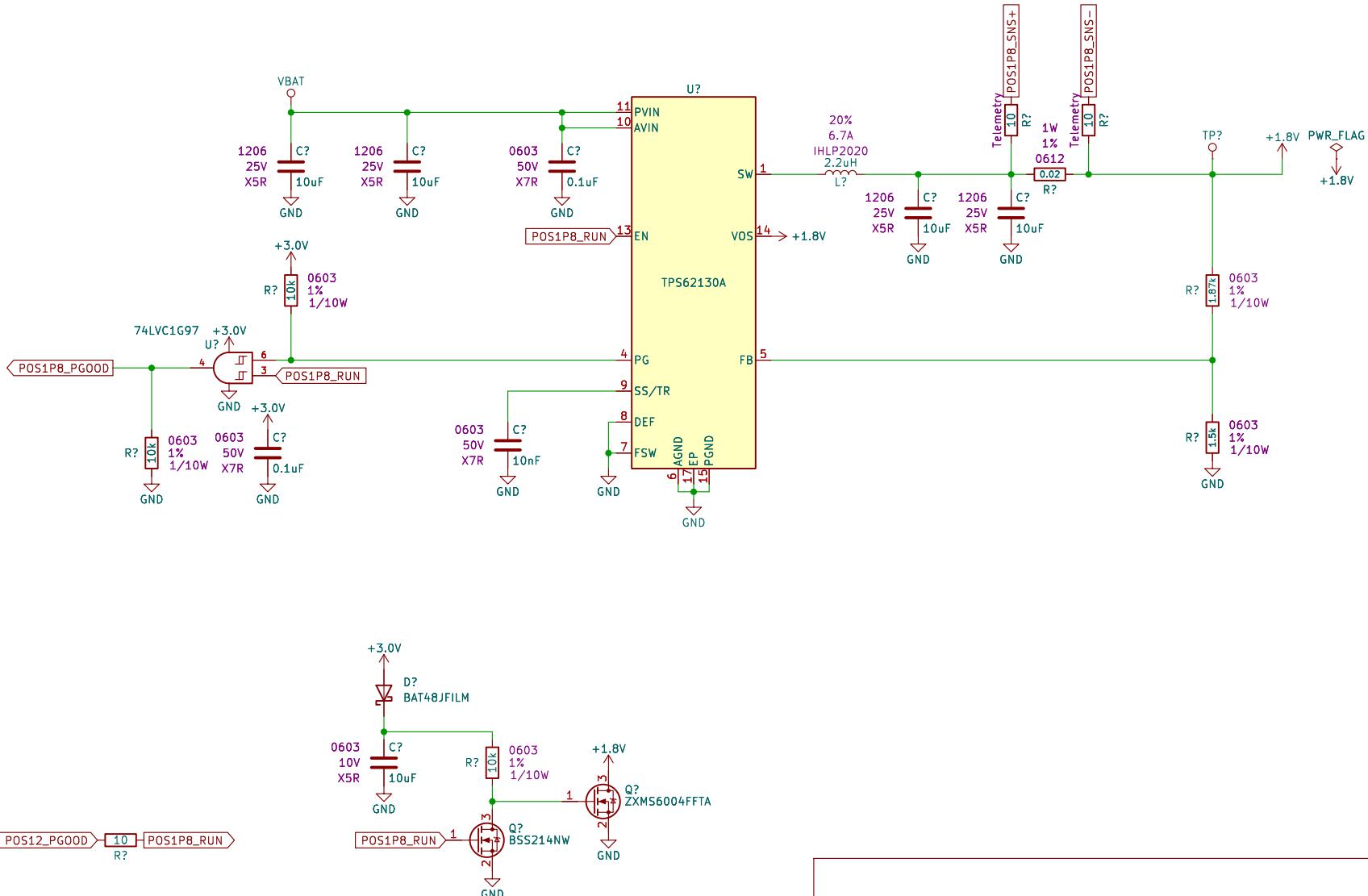


figure out sequencing



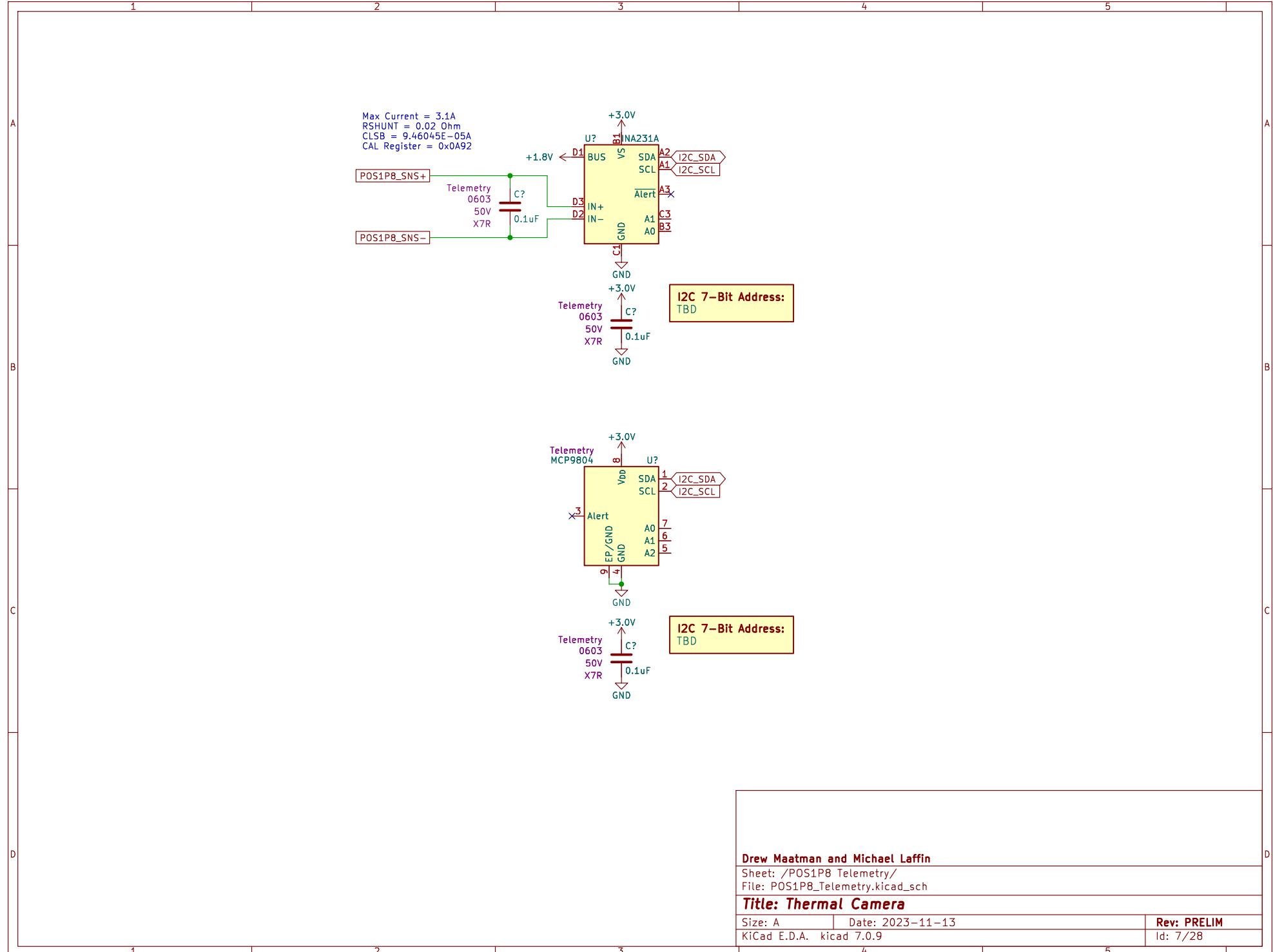
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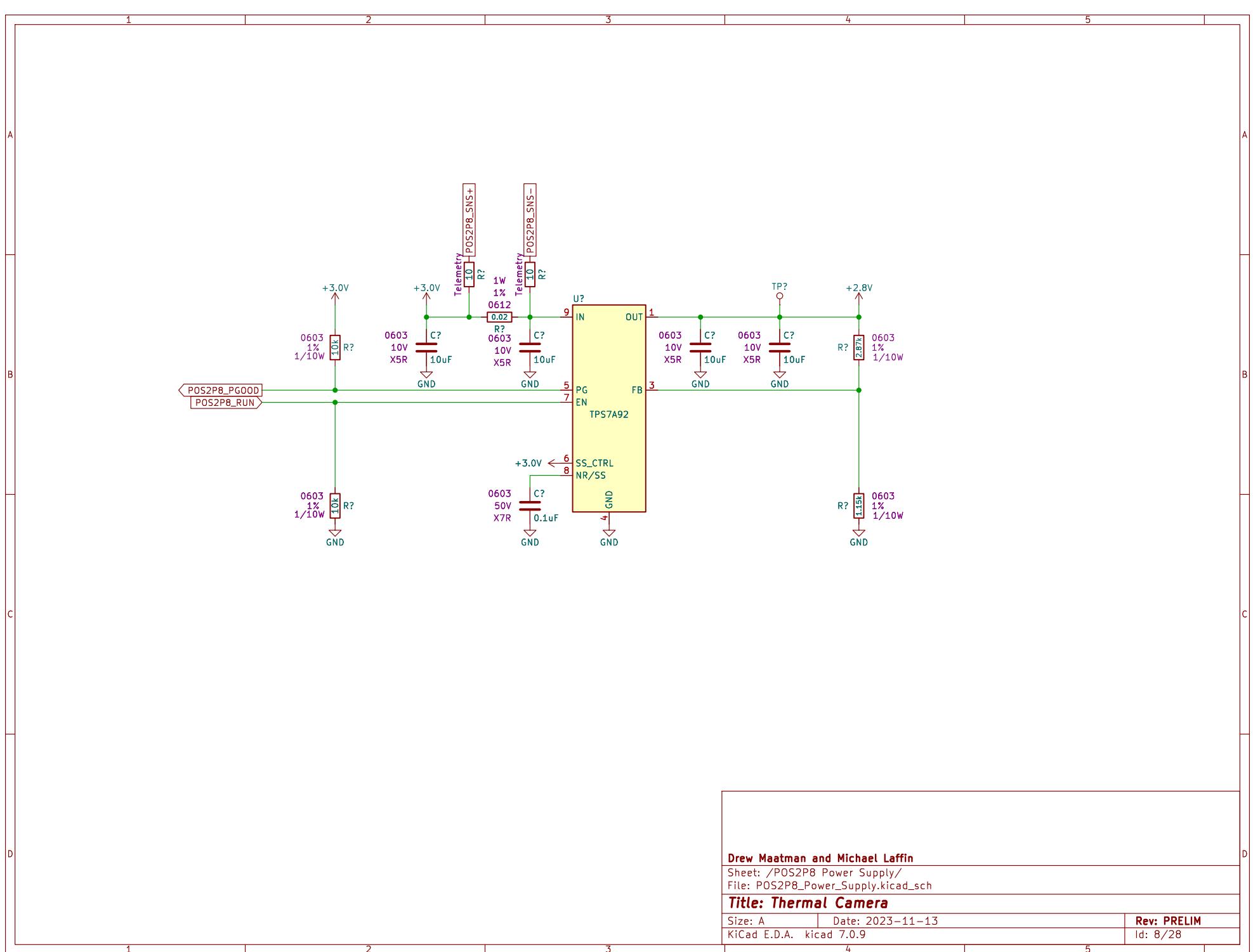
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File: POS1P8_Power_Supply.kicad_sch

Title: Thermal Camera

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

Rev: PRELIM
Id: 6/28





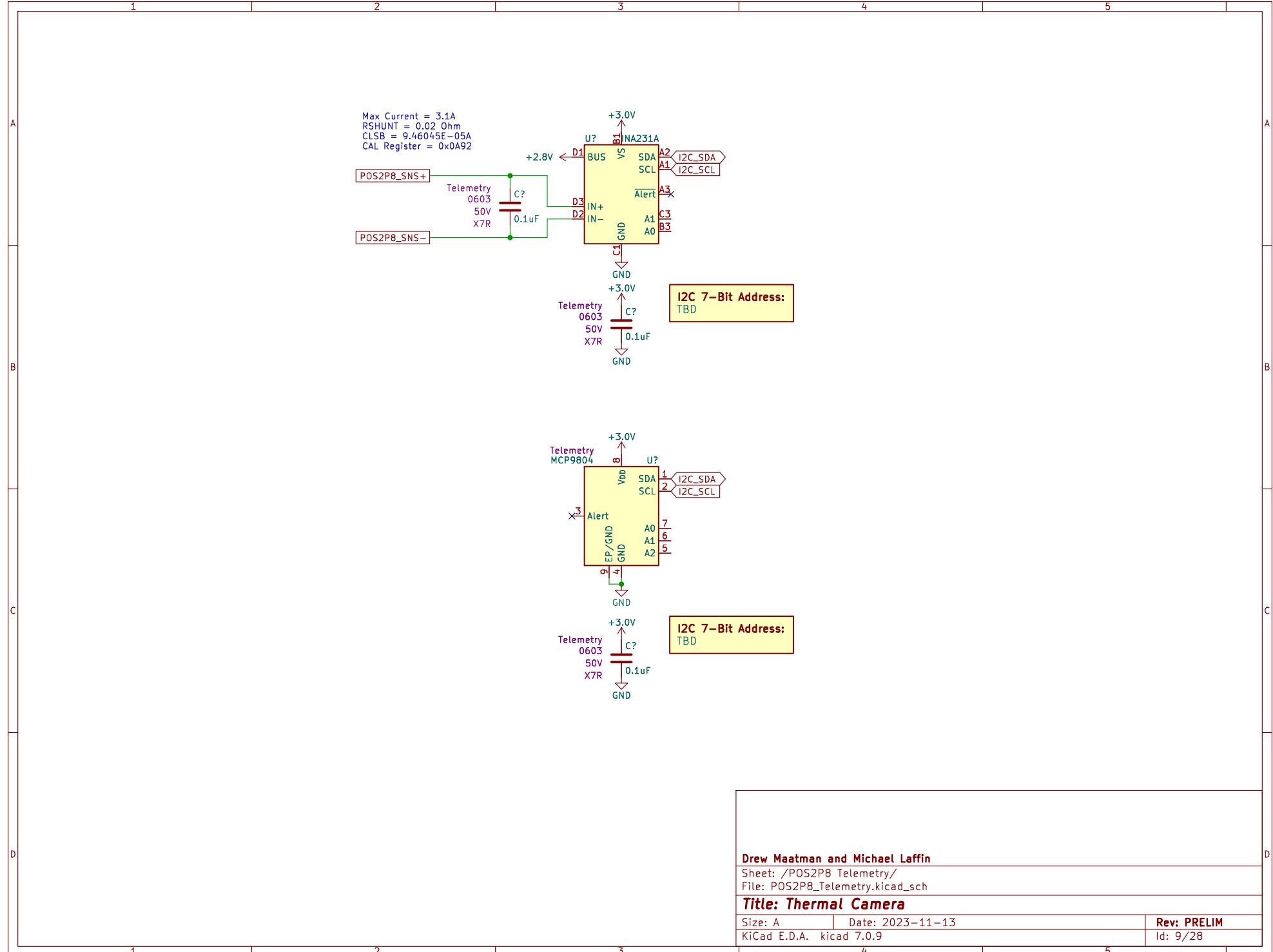
Drew Maatman and Michael Laffin

Sheet: /POS2P8 Power Supply/
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Title: Thermal Camera

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

Rev: PRELIM
Id: 8/28



A

A

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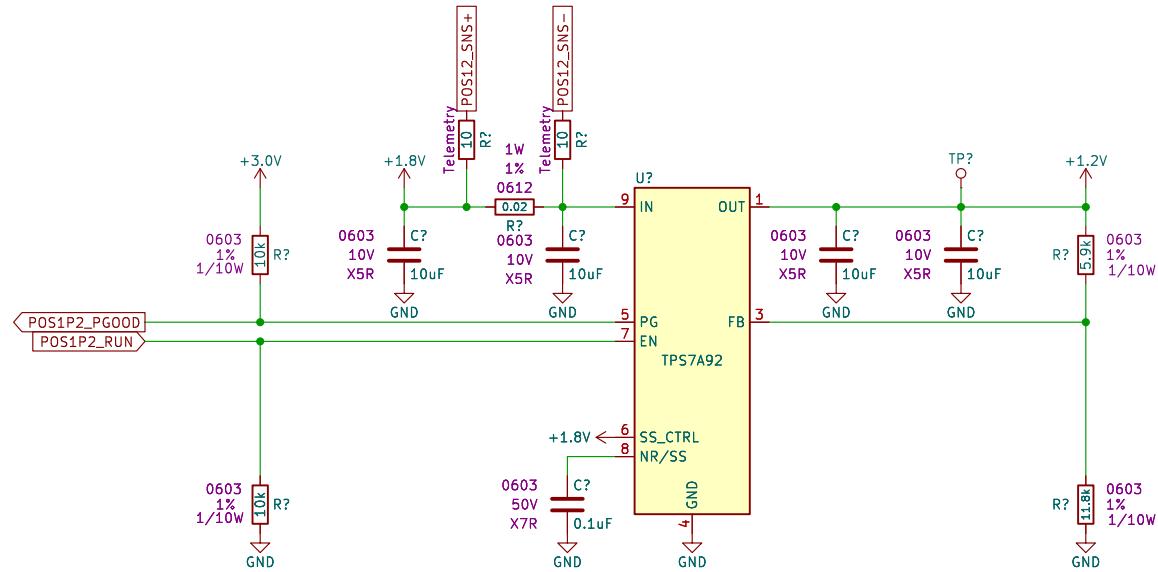
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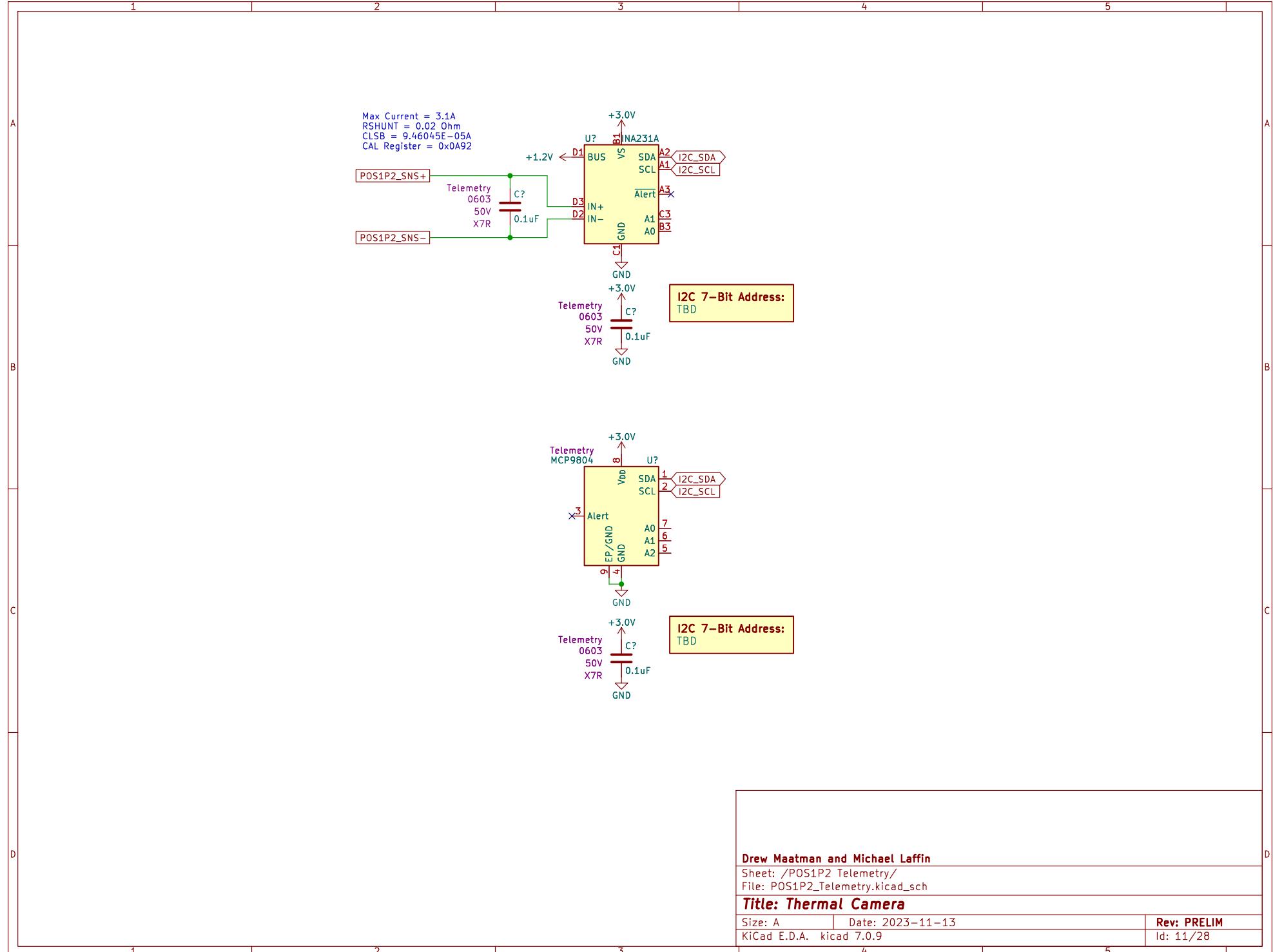
Drew Maatman and Michael Laffin

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Title: Thermal Camera

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

Rev: PRELIM
Id: 10/28



A

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C

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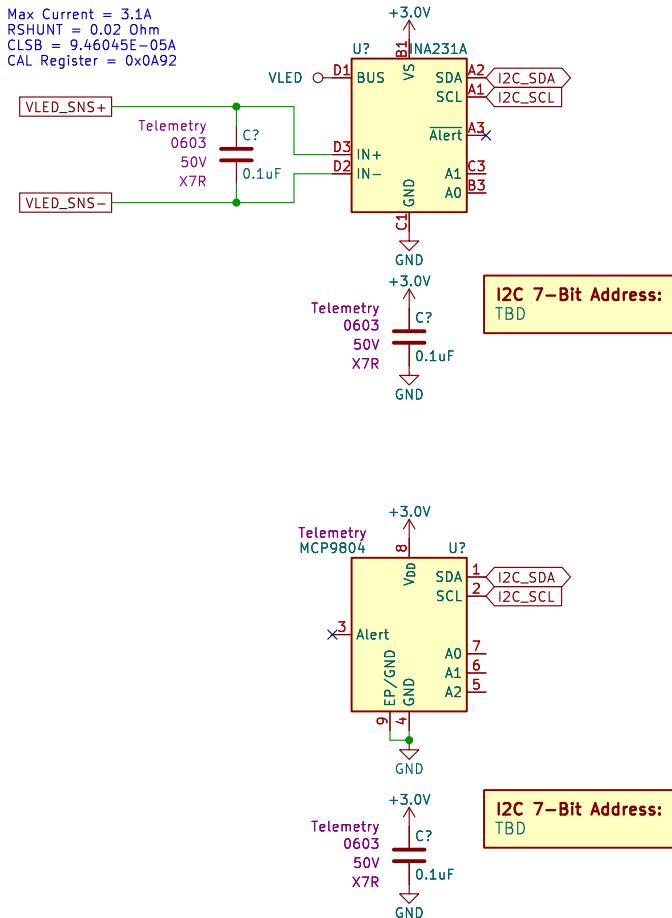
A

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Drew Maatman and Michael LaffinSheet: /LCD Backlight Power Supply/
File: LCD_Backlight_Power_Supply.kicad_sch**Title: Thermal Camera**Size: A | Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9Rev: PRELIM
Id: 12/28



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Sheet: /LCD Backlight Telemetry/
File: LCD_Backlight_Telemetry.kicad_sch

Title: Thermal Camera

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

Rev: PRELIM
Id: 13/28

A

B

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A

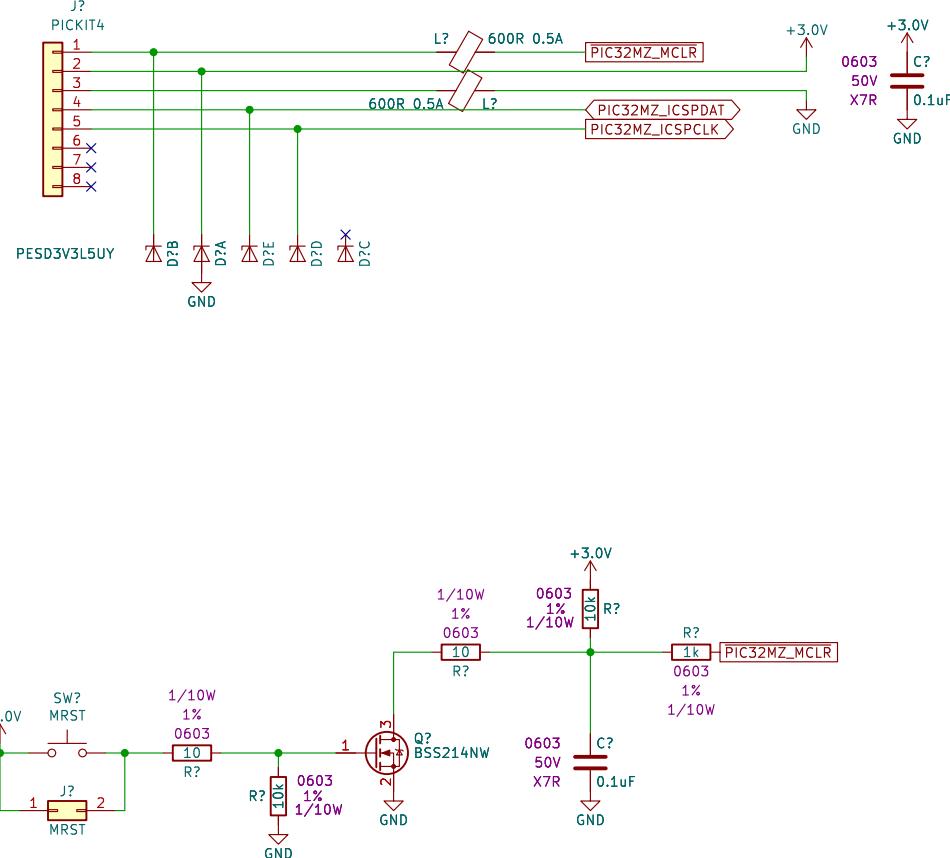
B

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D

Drew Maatman and Michael LaffinSheet: /Battery Management/
File: Battery_Management.kicad_sch**Title: Thermal Camera**Size: A | Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9Rev: PRELIM
Id: 14/28

COPIED FROM PIC32MZ EF FIX FOR PIC32MZ DA CONSIDER REMOVING BEADS



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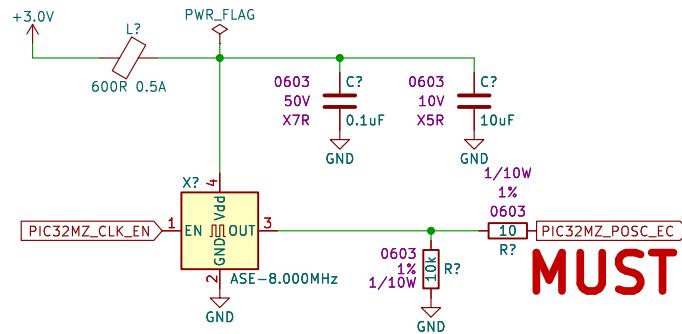
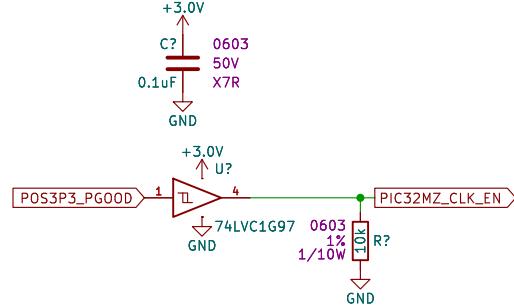
Sheet: /PIC32MZ DA Programming/
File: PIC32MZ_DA_Programming.kicad_sch

Title: Thermal Camera

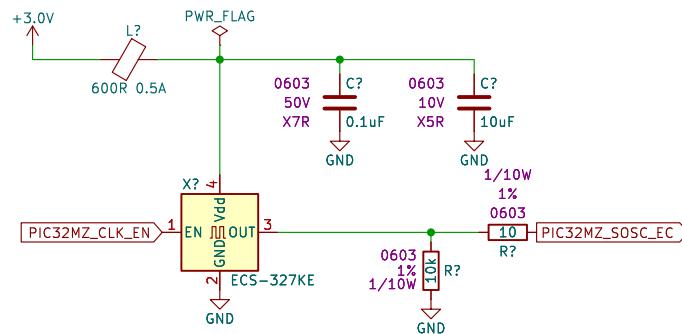
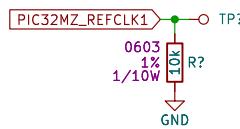
Size: A | Date: 2023-11-13
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Rev: PRELIM
Id: 15/28

COPIED FROM PIC32MZ EF FIX FOR PIC32MZ DA CHANGE TO +3.0V CLOCKS



MUST BE 24MHZ



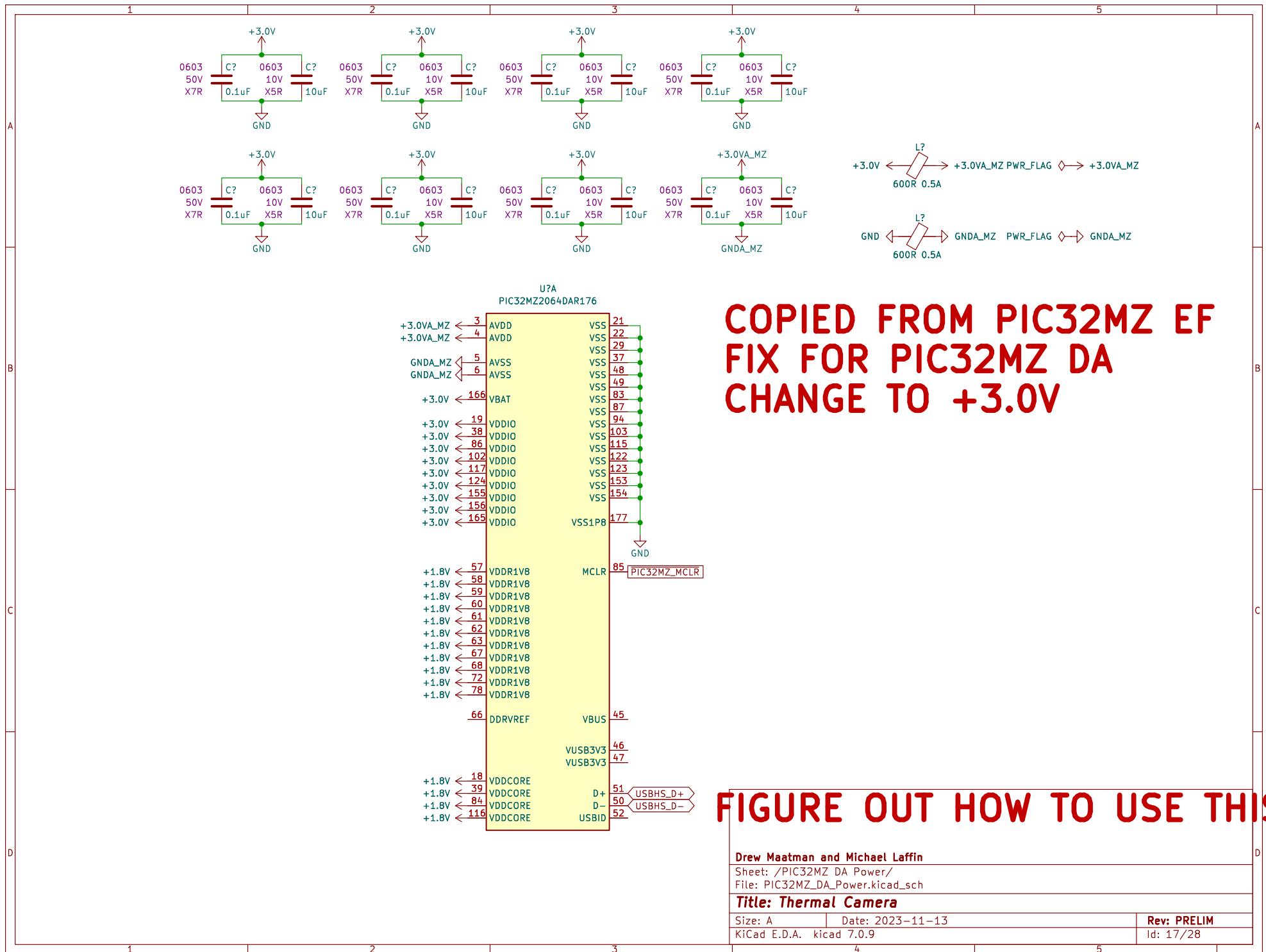
Drew Maatman and Michael Laffin

Sheet: /PIC32MZ DA Clocking/
File: PIC32MZ_DA_Clocking.kicad_sch

Title: Thermal Camera

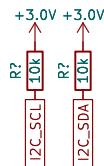
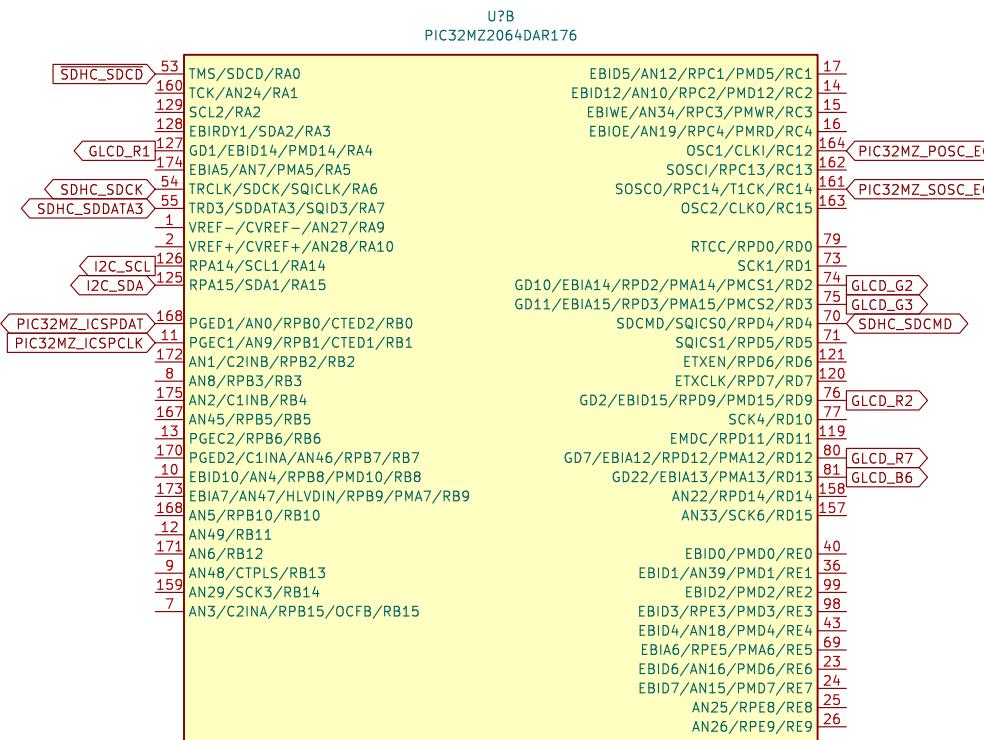
Size: A | Date: 2023-11-13
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Rev: PRELIM
Id: 16/28



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

**DOUBLE CHECK
SOSC PIN**



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Sheet: /PIC32MZ_DA_1/
File: PIC32MZ_DA_1.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13
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Rev: PRELIM
Id: 18/28

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

A

U?C
PIC32MZ22064DAR176

GLCD_R6	91	GD6/EBIA11/RPF0/PMA11/RF0	ETXERR/RJ0	118
GLCD_R5	90	GD5/EBIA10/RPF1/PMA10/RF1	EMDIO/RJ1	114
	41	RPF2/SDA3/RF2	EBIRDY3/AN32/RJ2	152
	93	ERXERR/RPF3/RF3	GD20/EBIA22/RJ3	151
GLCD_B1	97	GD17/EBID9/RPF4/SDA5/PMD9/RF4	VSYNC/EBICS0/RJ4	150
GLCD_B0	89	GD16/EBID8/RPF5/SCL5/PMD8/RF5	HSYNC/EBICS1/RJ5	149
	82	RPF8/SCL3/RF8	GCLK/EBICS2/RJ6	148
	27	TDO/AN31/RPF12/RF12	GEN/EBICS3/RJ7	147
	28	TDI/AN17/SCK5/RF13	ETXDO/RJ8	113
			ETXD1/RJ9	112
GLCD_R3	96	GD3/EBIA8/RPG0/PMA8/RG0	GD18/EBIBS1/RJ10	146
GLCD_R4	95	GD4/EBIA9/RPG1/PMA9/RG1	ERXCLK/EREFCCLK/RJ11	111
	30	AN14/C1IND/SCK2/RG6	GD9/EBIBS0/RJ12	145
	31	AN13/C1INC/RPG7/SDA4/RG7	GD0/EBID13/PMD13/RJ13	144
	32	AN30/C2IND/RPG8/SCL4/RG8	GD8/EBID11/PMD11/RJ14	143
	33	EBIA2/AN23/C2INC/RPG9/PMA2/RG9	EBIA0/PMA0/RJ15	142
SDHC_SDDATA1	56	TRD1/SDDATA1/SQID1/RG12	GD23/EBIA16/RK0	137
SDHC_SDDATA0	64	TRD0/SDDATA0/SQID0/RG13	EBIA1/AN38/PMA1/RK1	136
SDHC_SDDATA2	65	TRD2/SDDATA2/SQID2/RG14	EBIA3/AN11/PMA3/RK2	135
	34	AN21/RG15	GD12/EBIA17/RK3	134
	110	ETXD2/RH0	GD13/EBIA18/RK4	133
	109	ETXD3/RH1	GD14/EBIA19/RK5	132
SDHC_SDWP	141	SDWP/EBIRP/RH2	GD15/EBIA20/RK6	131
	140	AN35/RH3	GD19/EBIA21/RK7	130
	35	AN20/RH4	GLCD_G4	
	100	ERXD1/RH5	GLCD_G5	
	101	ERXD2/RH6	GLCD_G6	
	139	EBIA4/AN36/PMA4/RH7	GLCD_G7	
	108	ERXD0/RH8	GLCD_B3	
	107	ERXD3/RH9		
	106	ECOL/RH10		
	138	EBIRDY2/AN37/RH11		
	105	ECRS/RH12		
	104	ERXDV/ECRSDV/RH13		
	42	INT0/RH14		
	92	GD21/EBIA23/RH15		
GLCD_B5				

B

A

B

C

C

D

D

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Sheet: /PIC32MZ DA 2/

File: PIC32MZ_DA_2.kicad_sch

Title: Thermal Camera

Size: A Date: 2023-11-13

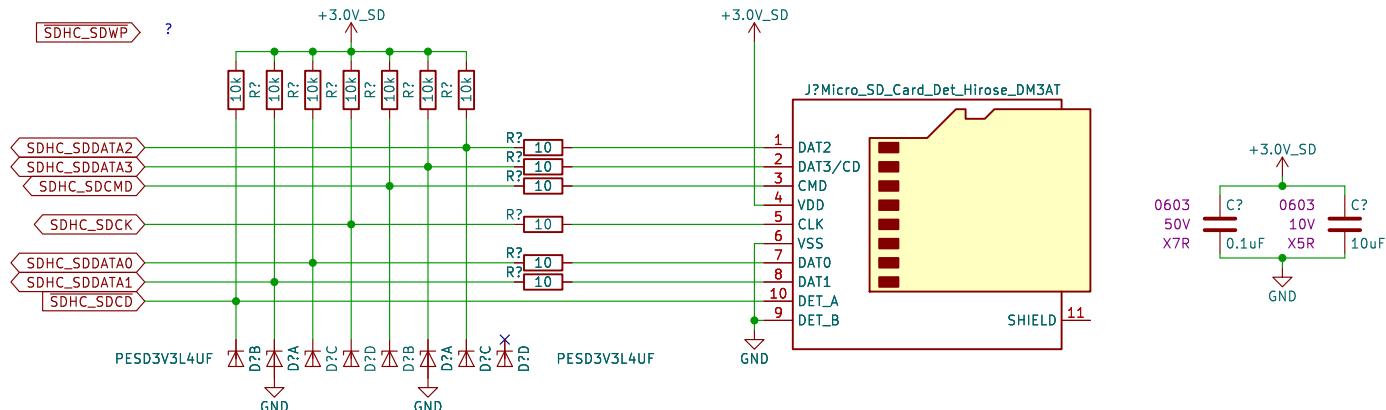
KiCad E.D.A. kicad 7.0.9

Rev: PRELIM

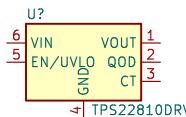
Id: 19/28

1 2 3 4 5

A

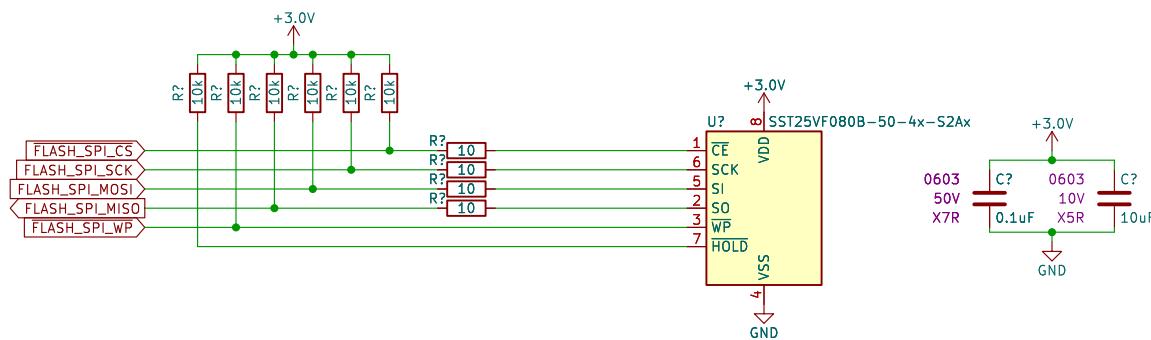


Add SD card power switching?



B

A



C

B

SD CARD, SPI FLASH

BREAK OUT A SPI TO SD CARD AS INSURANCE

BREAK OUT FLASH SPI TO A HEADER FOR PROGRAMMING

Drew Martin - dmlm@mit.edu

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: 20/28

1 2 3 4 5

A

GLCD_VSYNC
GLCD_HSYNC
GLCD_GCLK
GLCD_GEN

A

GLCD_R0
GLCD_R1
GLCD_R2
GLCD_R3
GLCD_R4
GLCD_R5
GLCD_R6
GLCD_R7

B

GLCD_G0
GLCD_G1
GLCD_G2
GLCD_G3
GLCD_G4
GLCD_G5
GLCD_G6
GLCD_G7

B

GLCD_B0
GLCD_B1
GLCD_B2
GLCD_B3
GLCD_B4
GLCD_B5
GLCD_B6
GLCD_B7

C

C

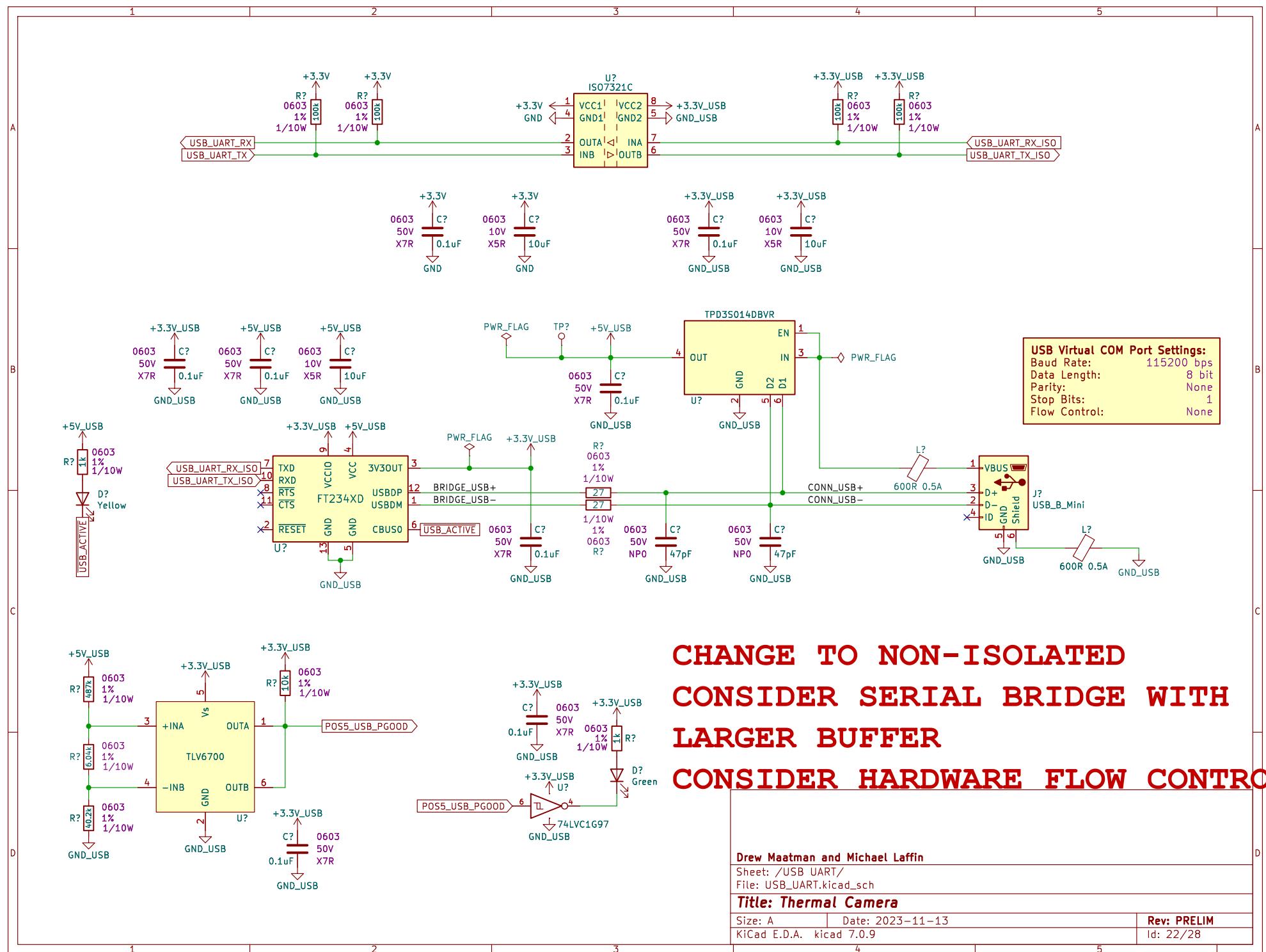
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Sheet: /Graphic_LCD/
File: Graphic_LCD.kicad_sch

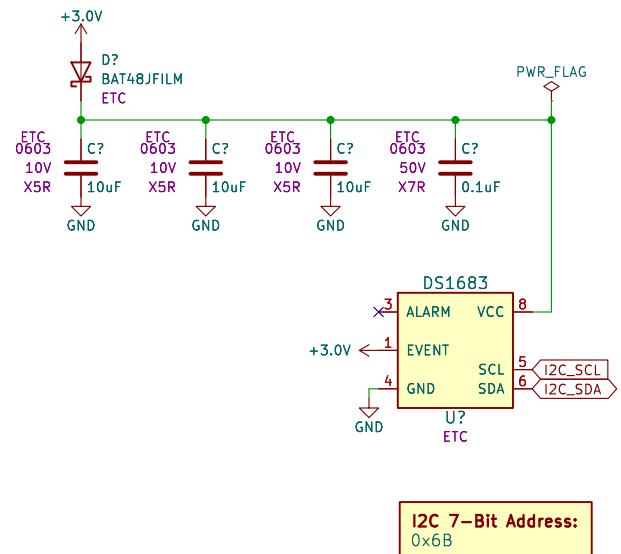
Title: Thermal Camera

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

Rev: PRELIM
Id: 21/28



1 2 3 4 5



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

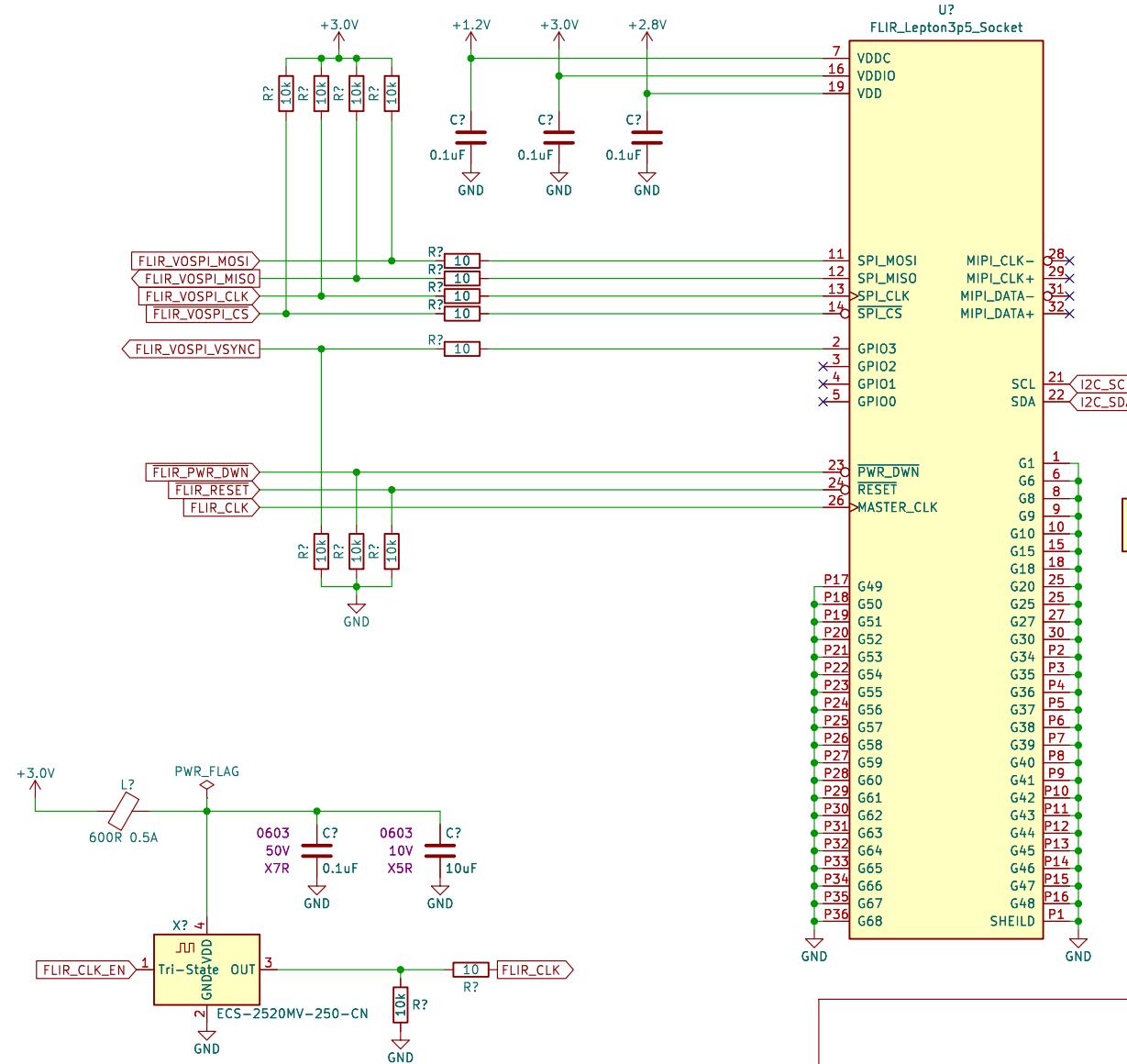
Title: Thermal Camera

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

Rev: PRELIM
Id: 23/28

1 2 3 4 5

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



I2C 7-Bit Address:
0x2A

See FLIR document #110-0144-04 for I2C register map



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

Title: Thermal Camera

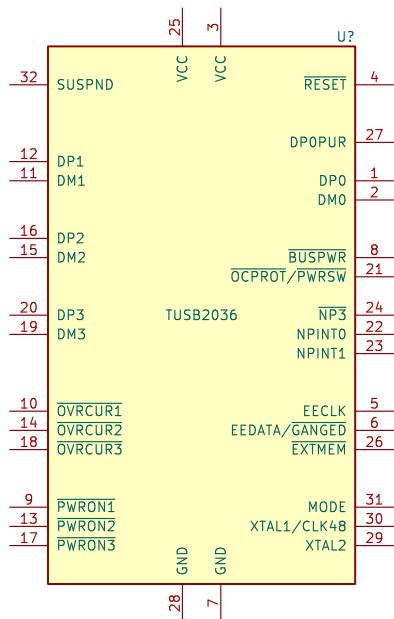
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Rev: PRELIM

Id: 24/28

CONSIDER CHANGING TO TUSB2046



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Sheet: /USB_Hub/
File: USB_Hub.kicad_sch

Title: Thermal Camera

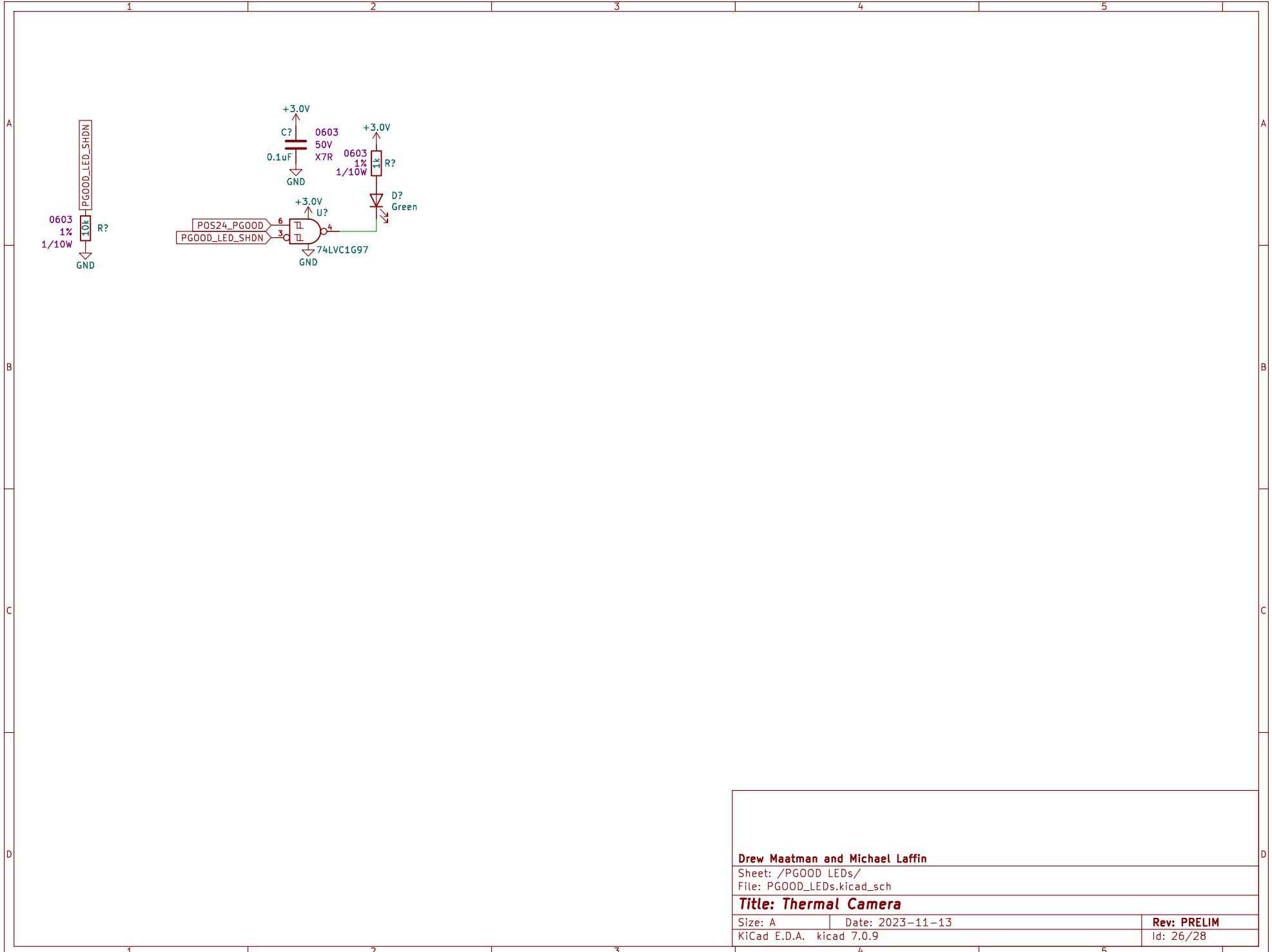
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4

Rev: PRELIM

Id: 25/28



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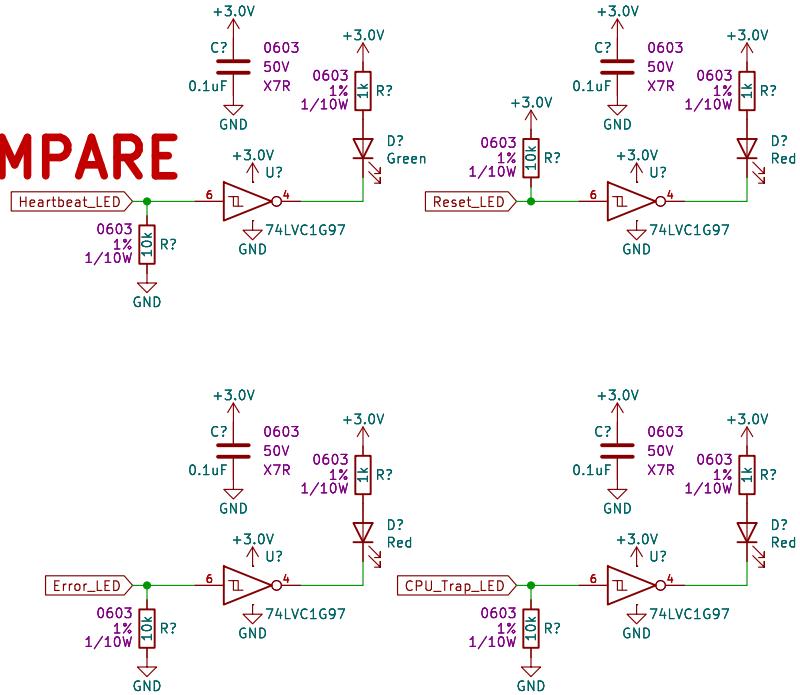
Sheet: /PGOOD LEDs/
File: PGOOD_LEDs.kicad_sch

Title: Thermal Camera

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

Rev: PRELIM
Id: 26/28

MUST USE OUTPUT COMPARE PIN



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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: 27/28

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A

B

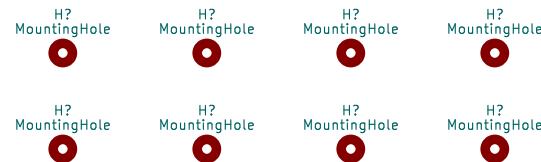
B

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Drew Maatman and Michael Laffin

Sheet: /Mechanical/
File: Mechanical.kicad_sch

Title: Thermal Camera

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

Rev: PRELIM
Id: 28/28

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