Thermal Camera

https://github.com/drewsum/Thermal_Camera

01. Table of Contents

02. POS12 Input
03. POS12 Telemetry
04. POS3P3 Power Supply
05. POS3P3 Telemetry
06. POS1P8 Power Supply
07. POS1P8 Telemetry
08. POS3P0 Power Supply
09. POS3P0 Telemetry
10. POS2P8 Power Supply
11. POS2P8 Telemetry
12. POS1P2 Power Supply
13. POS1P2 Telemetry
14. LCD Backlight Power Supply
15. LCD Backlight Telemetry
16. Battery Management
17. PIC32MZ DA Programming
18. PIC32MZ DA Clocking
19. PIC32MZ DA Power
20. PIC32MZ DA 1
21. PIC32MZ DA 2
22. External Storage
23. Graphic LCD
24. USB UART
25. Elapsed Time Counter
26. FLIR Lepton Sensor
27. USB Hub
28. PGOOD LEDs
29. Status LEDs
30. Mechanical

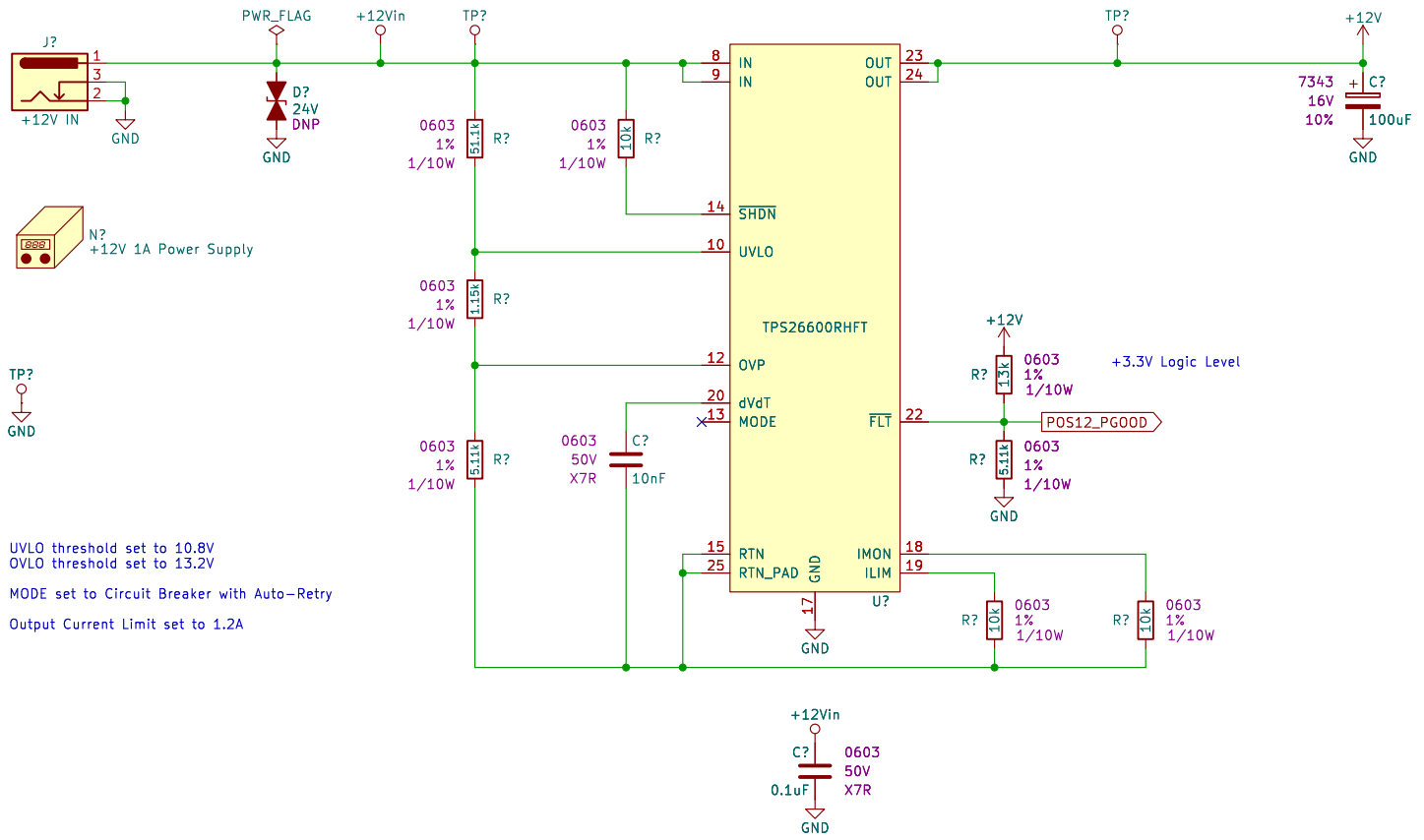
Drew Maatman and Michael Laffin

Sheet: /
File: Thermal_Camera.kicad_sch

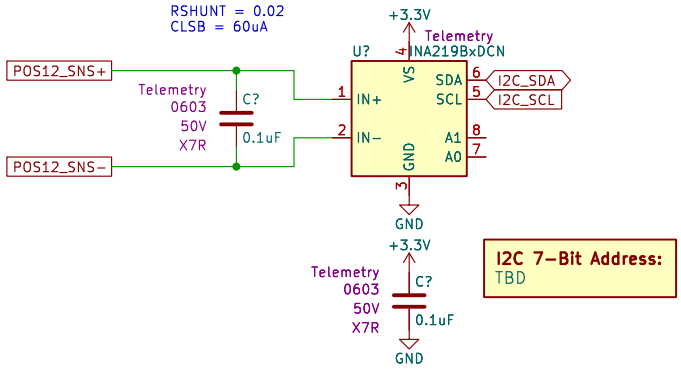
Title: Thermal Camera

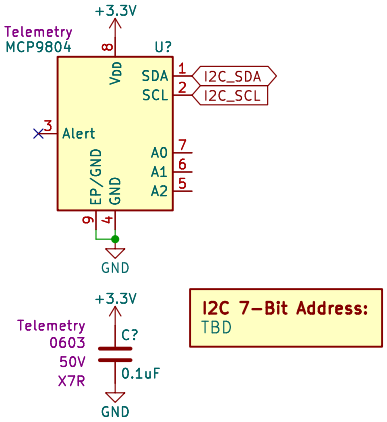
Size: A | Date: 2023-11-13 | Rev: PRELIM

KiCad E.D.A. kicad 7.0.9 | Id: 1/30



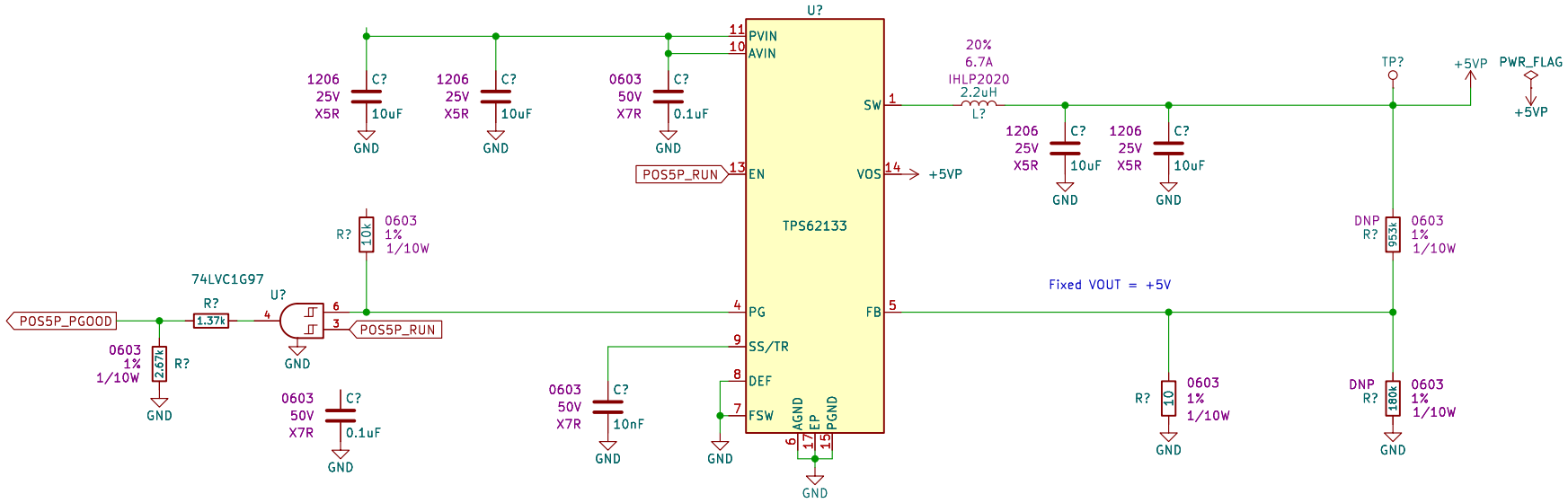
Drew Maatman and Michael Laffin		
Sheet: /POS12_Input/		
File: POS12_Input.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 2/30

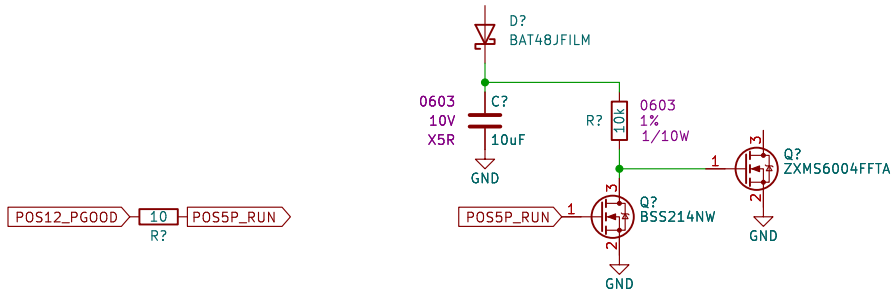




Drew Maatman and Michael Laffin		
Sheet: /POS12 Telemetry/		
File: POS12_Telemetry.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 3/30

CHANGE TO +3.3V





Drew Maatman and Michael Laffin	
Sheet: /POS3P3 Power Supply/	
File: POS3P3_Power_Supply.kicad_sch	
Title: Thermal Camera	
Size: A	Date: 2023-11-13
KiCad E.D.A. kicad 7.0.9	Id: 4/30

Rev: PRELIM

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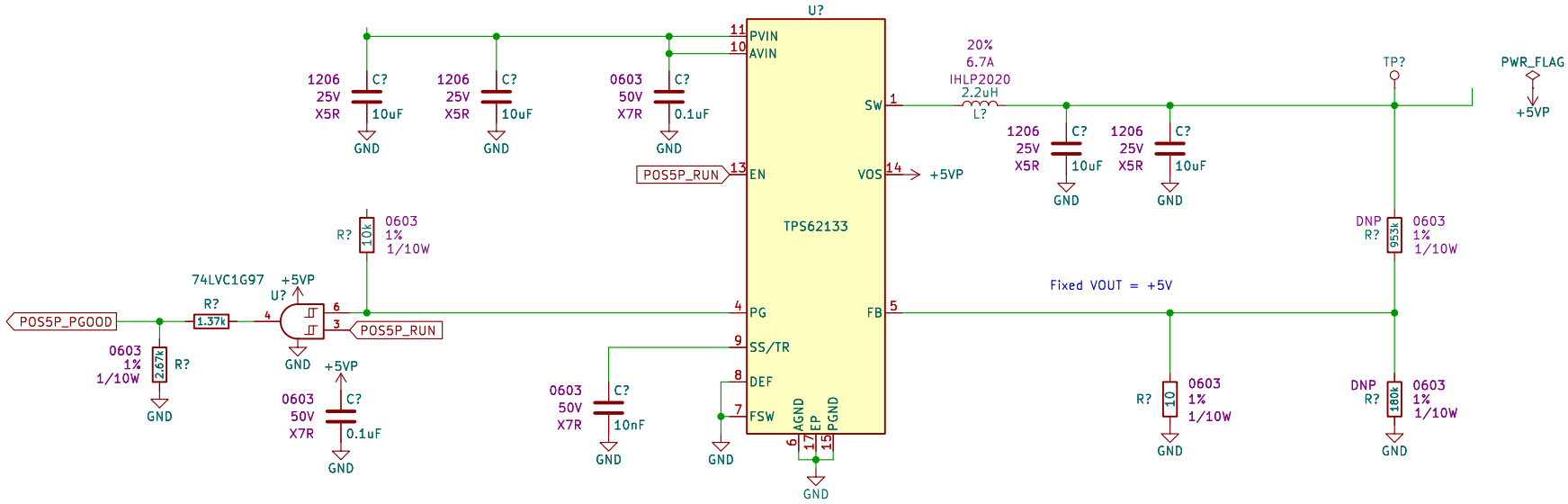
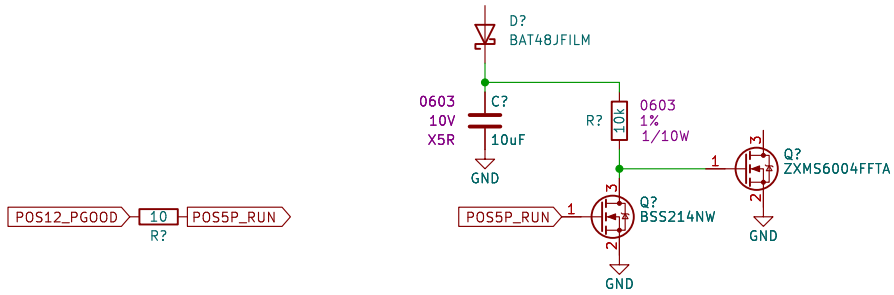
Sheet: /POS3P3 Telemetry/
File: POS3P3_Telemetry.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 5/30

CHANGE TO +1.8V





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	Id: 6/30

Rev: PRELIM

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Sheet: /POS1P8 Telemetry/
File: POS1P8_Telemetry.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 7/30

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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

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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

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Sheet: /POS2P8 Power Supply/
File: POS2P8_Power_Supply.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 10/30

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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

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Sheet: /POS1P2 Power Supply/
File: POS1P2_Power_Supply.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 12/30

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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

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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

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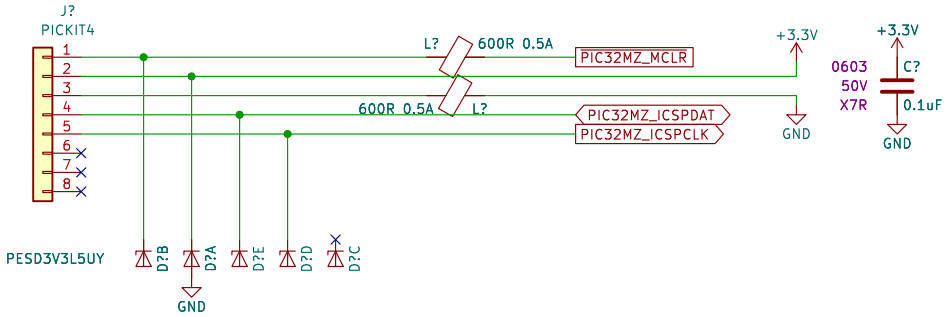
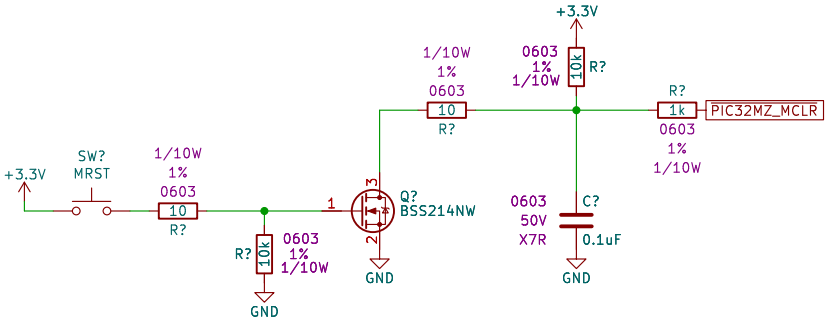
Sheet: /Battery Management/
File: Battery_Management.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 16/30

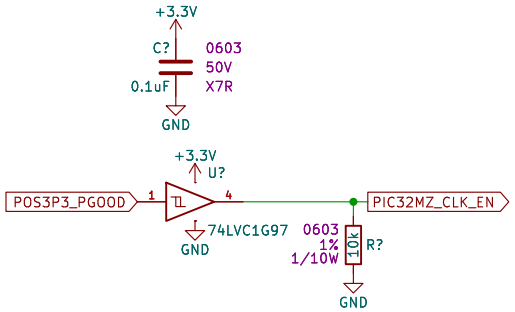
COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA
CONSIDER REMOVING BEADS

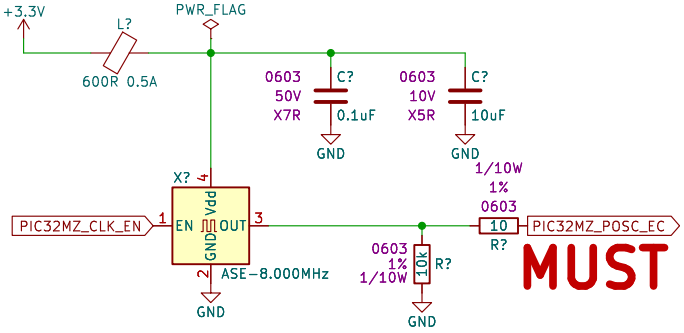




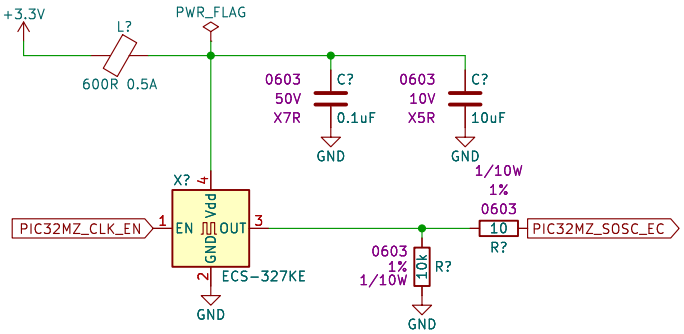
Drew Maatman and Michael Laffin		
Sheet: /PIC32MZ DA Programming/		
File: PIC32MZ_DA_Programming.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 17/30

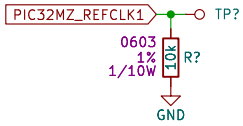
COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA



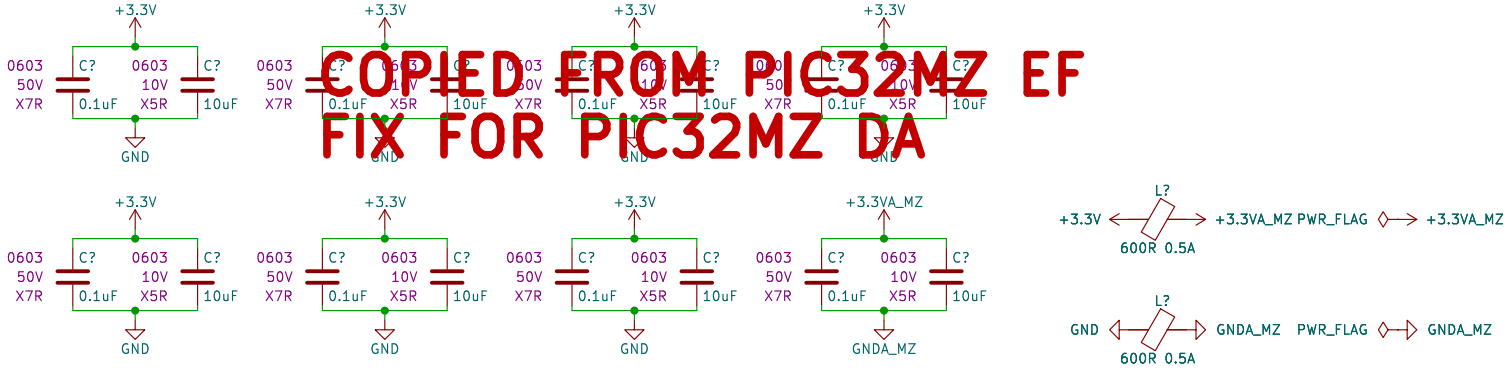


MUST BE 24MHZ





Drew Maatman and Michael Laffin		
Sheet: /PIC32MZ DA Clocking/		
File: PIC32MZ_DA_Clocking.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 18/30



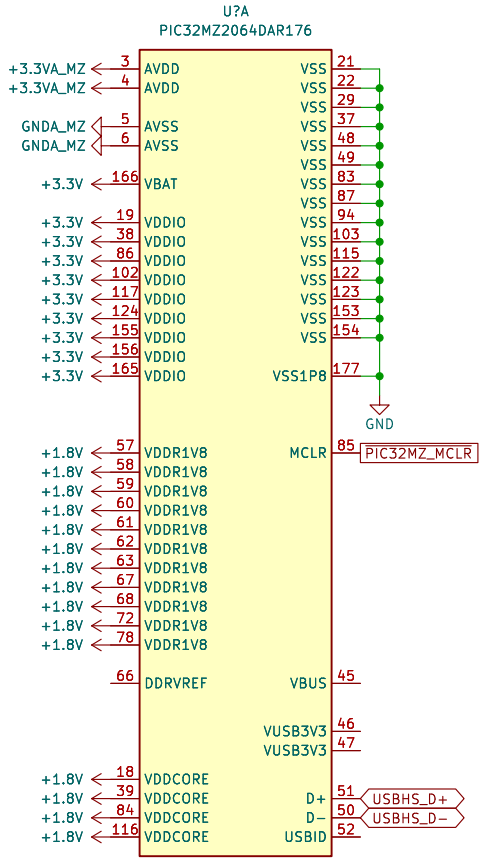


FIGURE OUT HOW TO USE THIS

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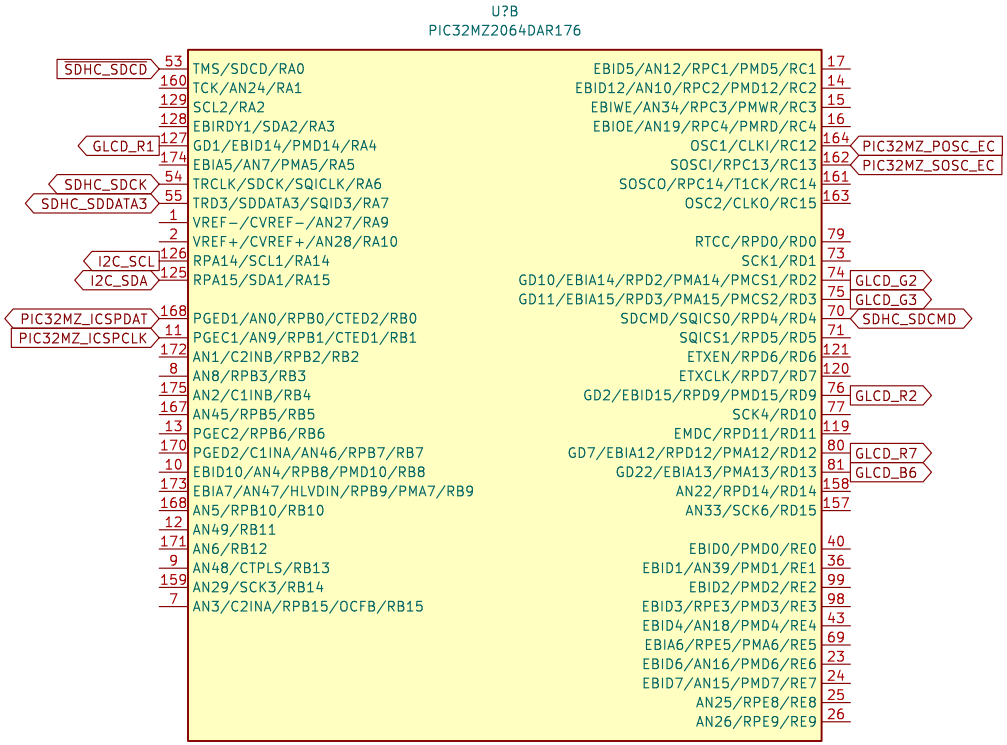
Sheet: /PIC32MZ DA Power/
File: PIC32MZ_DA_Power.kicad_sch

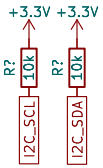
Title: Thermal Camera

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



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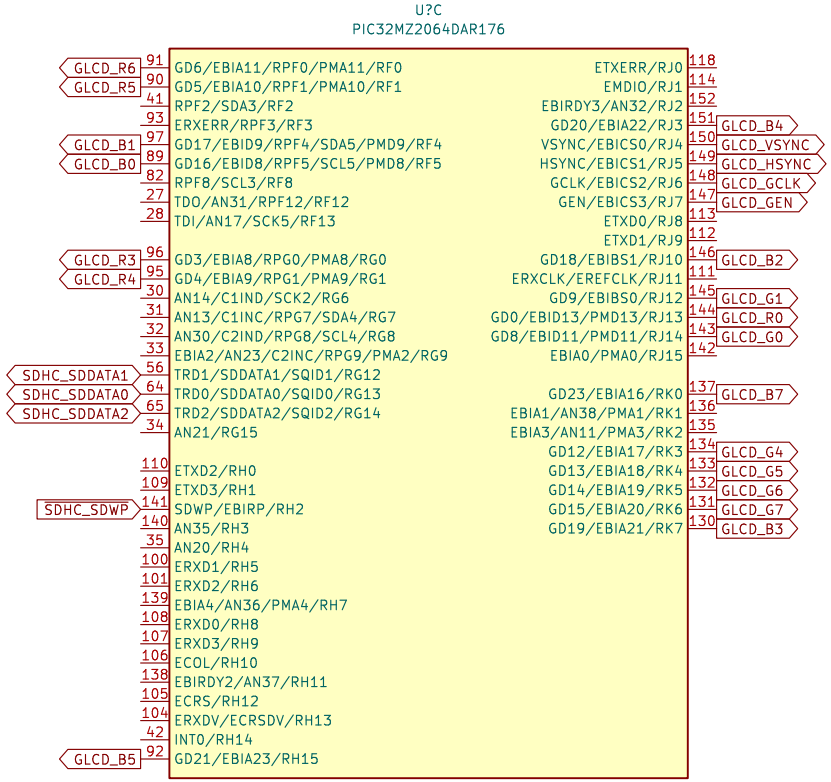
Sheet: /PIC32MZ DA 1/
File: PIC32MZ_DA_1.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		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	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 21/30

SD CARD, SQI FLASH

SQI FLASH may not be able to be broken out when PIC is configured for SDHC: CONSIDER OPTIONS FOR SUPPORTING EITHER

BREAK OUT A SPI TO SD CARD AS INSURANCE

Drew Maatman and Michael Laffin

Sheet: /External Storage/
File: External_Storage.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	Rev: PRELIM
KiCad E.D.A. kicad 7.0.9		Id: 22/30

GLCD_VSYNC
GLCD_HSYNC
GLCD_GCLK
GLCD_GEN

GLCD_R0
GLCD_R1
GLCD_R2
GLCD_R3
GLCD_R4
GLCD_R5
GLCD_R6
GLCD_R7

GLCD_G0
GLCD_G1
GLCD_G2
GLCD_G3
GLCD_G4
GLCD_G5
GLCD_G6
GLCD_G7

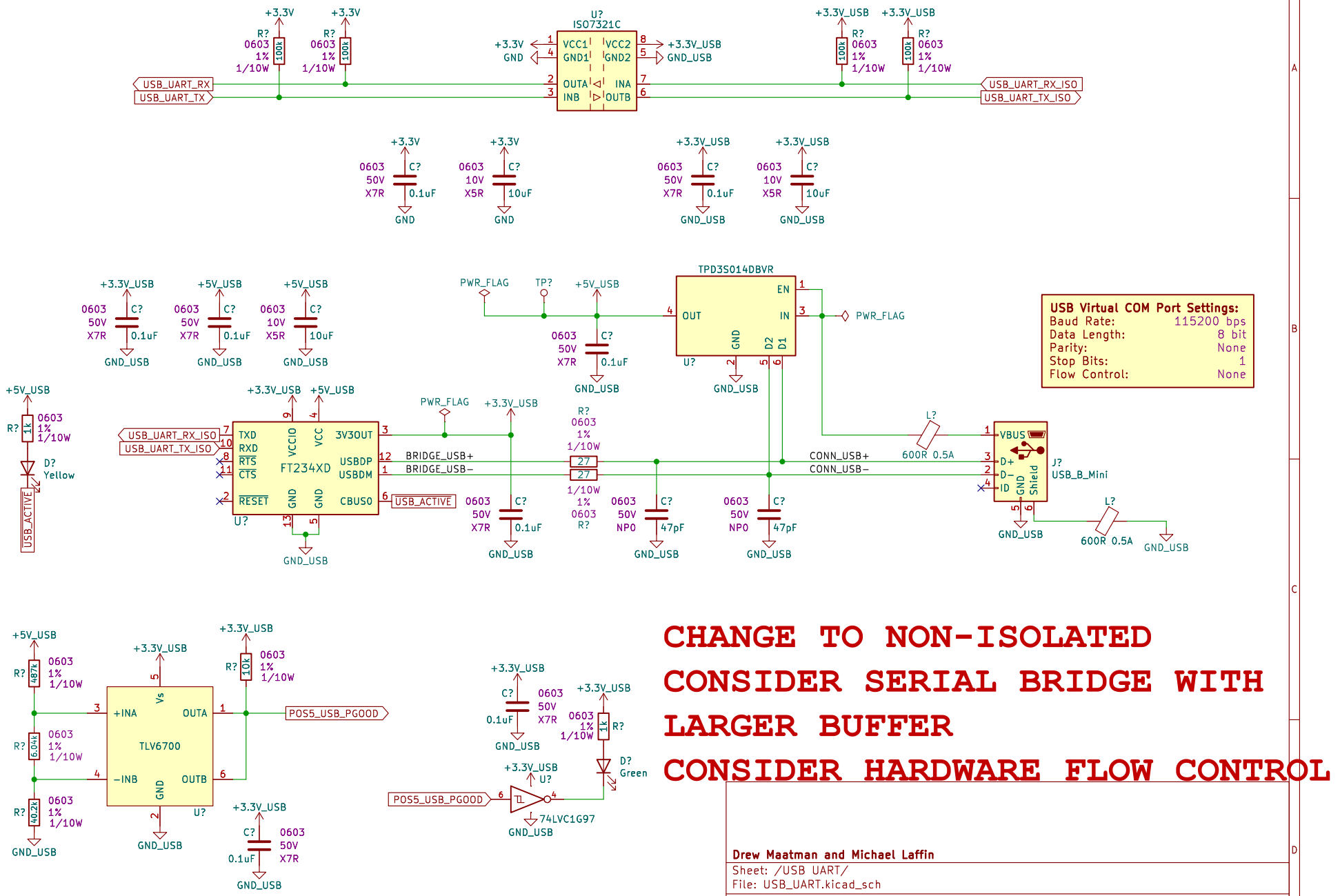
GLCD_B0
GLCD_B1
GLCD_B2
GLCD_B3
GLCD_B4
GLCD_B5
GLCD_B6
GLCD_B7

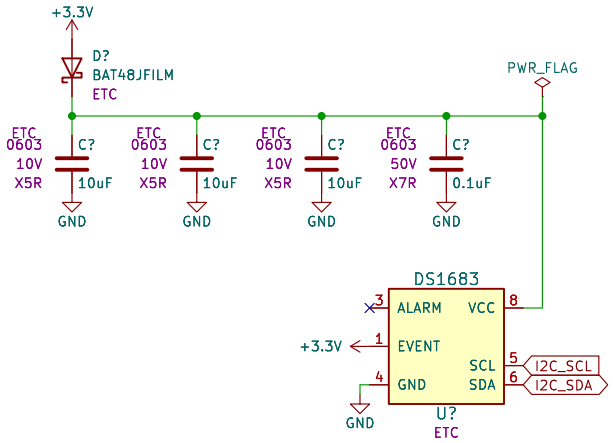
Drew Maatman and Michael Laffin

Sheet: /Graphic LCD/
File: Graphic_LCD.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 23/30


USB_UART_RX
USB_UART_TX
ISO7321C
USB_UART_RX_ISO
USB_UART_TX_ISO
TPD3S014DBVR
PWR_FLAG
USB Virtual COM Port Settings:
Baud Rate: 115200 bps
Data Length: 8 bit
Parity: None
Stop Bits: 1
Flow Control: None
FT234XD
USB_ACTIVE
BRIDGE_USB+
BRIDGE_USB−
CONN_USB+
CONN_USB−
USB_B_Mini
TLV6700
POS5_USB_PGOOD
74LVC1G97
CHANGE TO NON-ISOLATED
CONSIDER SERIAL BRIDGE WITH LARGER BUFFER
CONSIDER HARDWARE FLOW CONTROL
Drew Maatman and Michael Laffin
Sheet: /USB UART/
File: USB_UART.kicad_sch
Title: Thermal Camera
Size: A
Date: 2023-11-13
Rev: PRELIM
KiCad E.D.A. kicad 7.0.9
Id: 24/30



I2C 7-Bit Address:
0x6B

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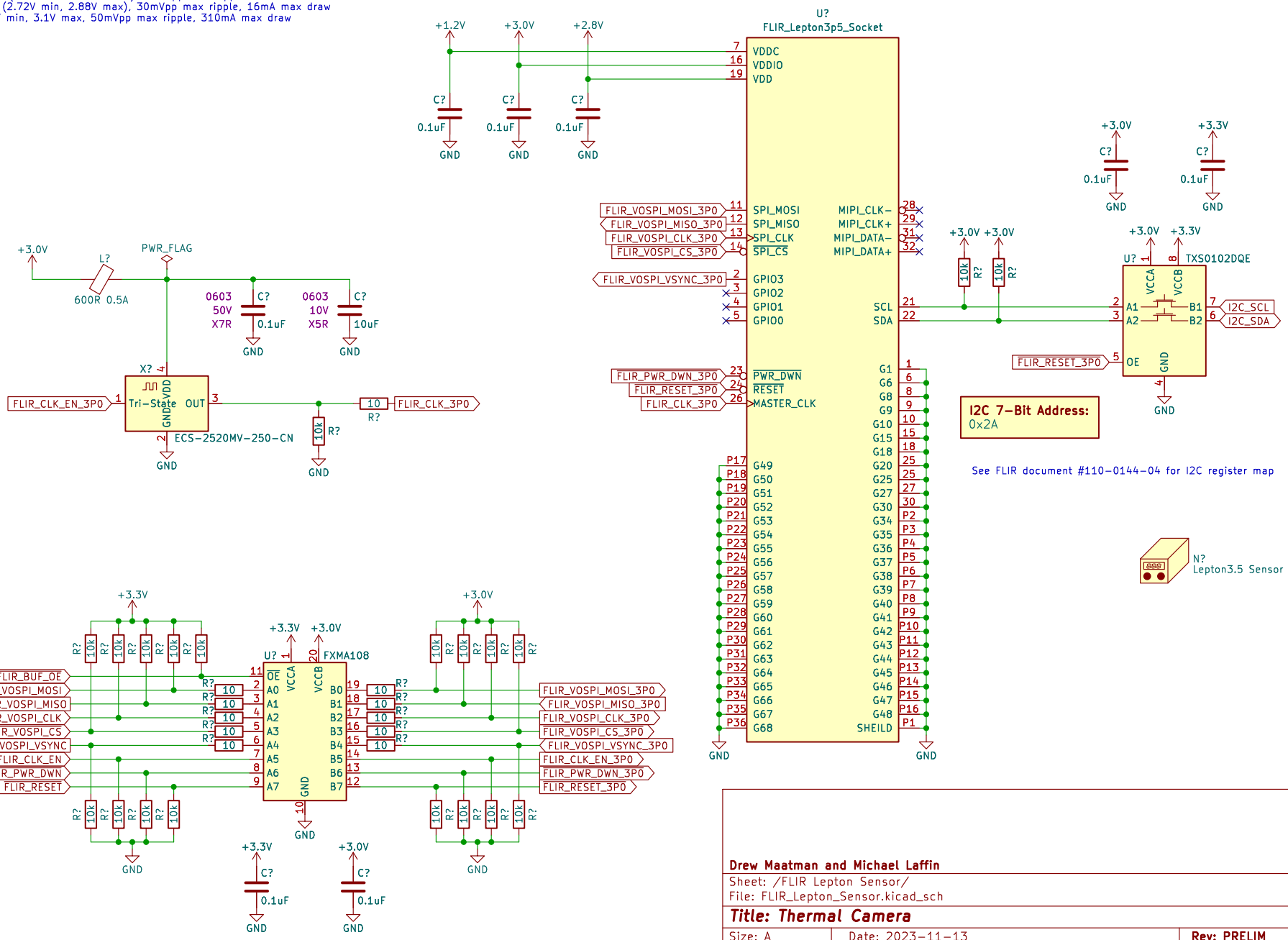
Sheet: /Elapsed Time Counter/
File: Elapsed_Time_Counter.kicad_sch

Title: Thermal Camera

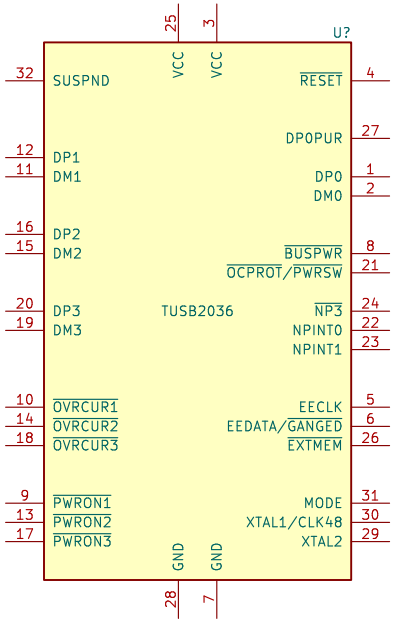
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 25/30

CAUTION: +3.0V I/O

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



Drew Maatman and Michael Laffin		
Sheet: /FLIR Lepton Sensor/		
File: FLIR_Lepton_Sensor.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023–11–13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 26/30

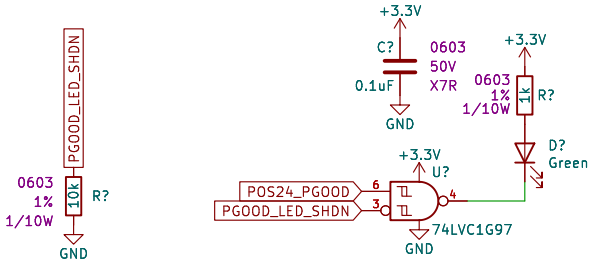


Drew Maatman and Michael Laffin

Sheet: /USB Hub/
File: USB_Hub.kicad_sch

Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 27/30



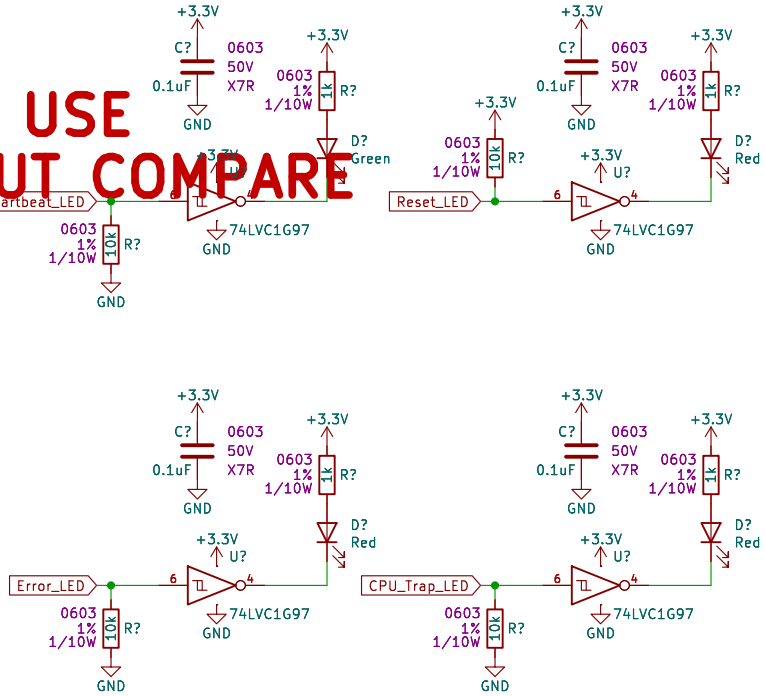
Drew Maatman and Michael Laffin

Sheet: /PGOOD LEDs/
File: PGOOD_LEDs.kicad_sch

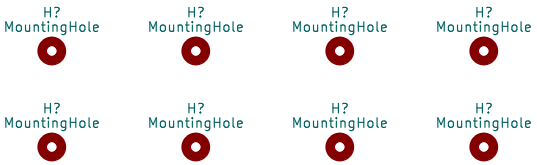
Title: Thermal Camera

Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 28/30

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	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 29/30



Drew Maatman and Michael Laffin

Sheet: /Mechanical/
File: Mechanical.kicad_sch

Title: Thermal Camera

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