Thermal Camera

https://github.com/drewsum/Thermal_Camera

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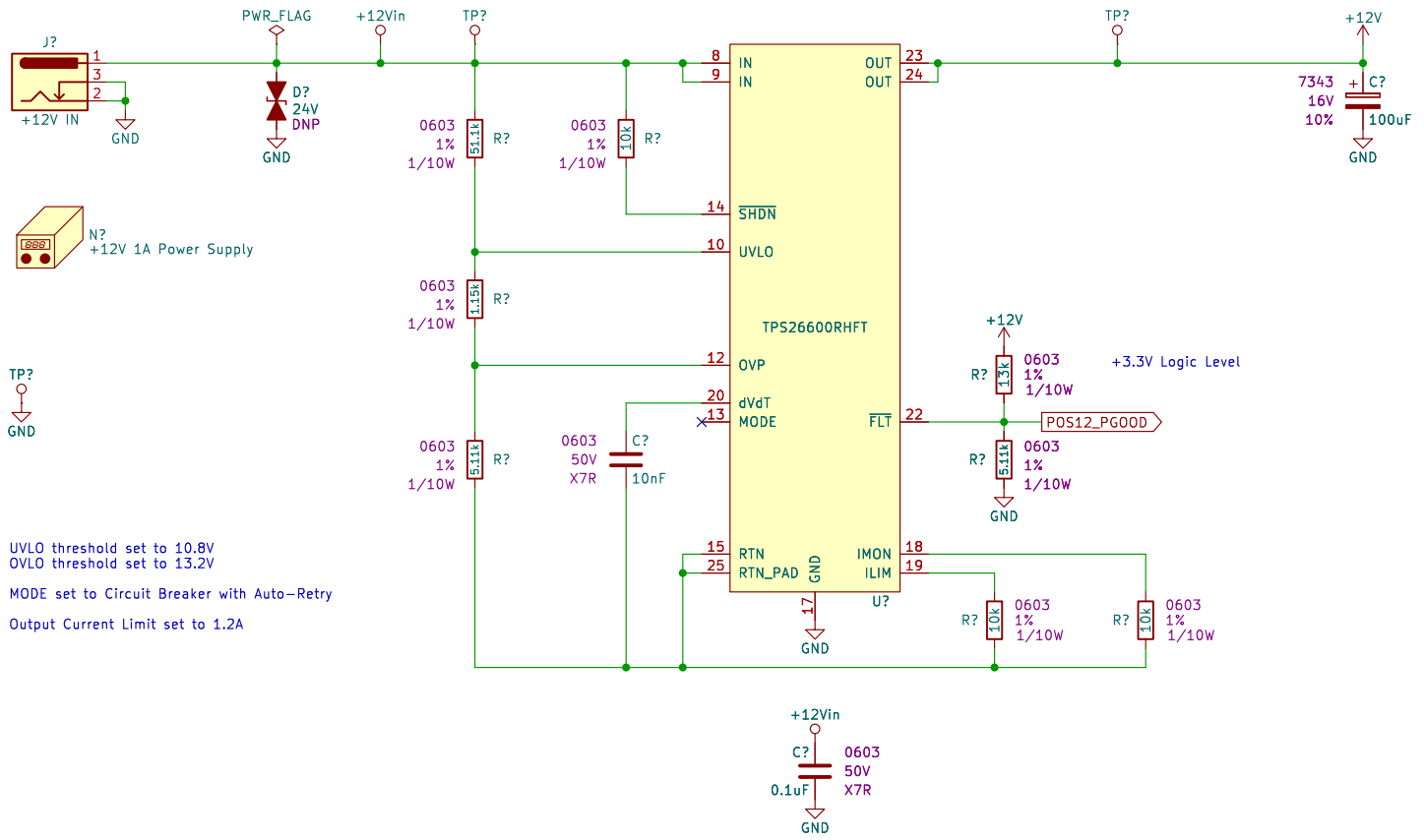
Sheet: /
File: Thermal_Camera.kicad_sch

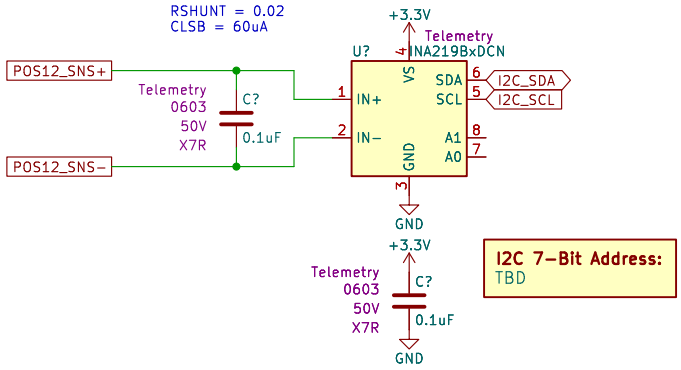
Title: Thermal Camera

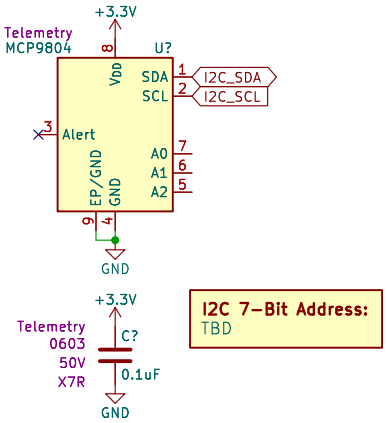
Size: A | Date: 2023-11-13 | Rev: PRELIM

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



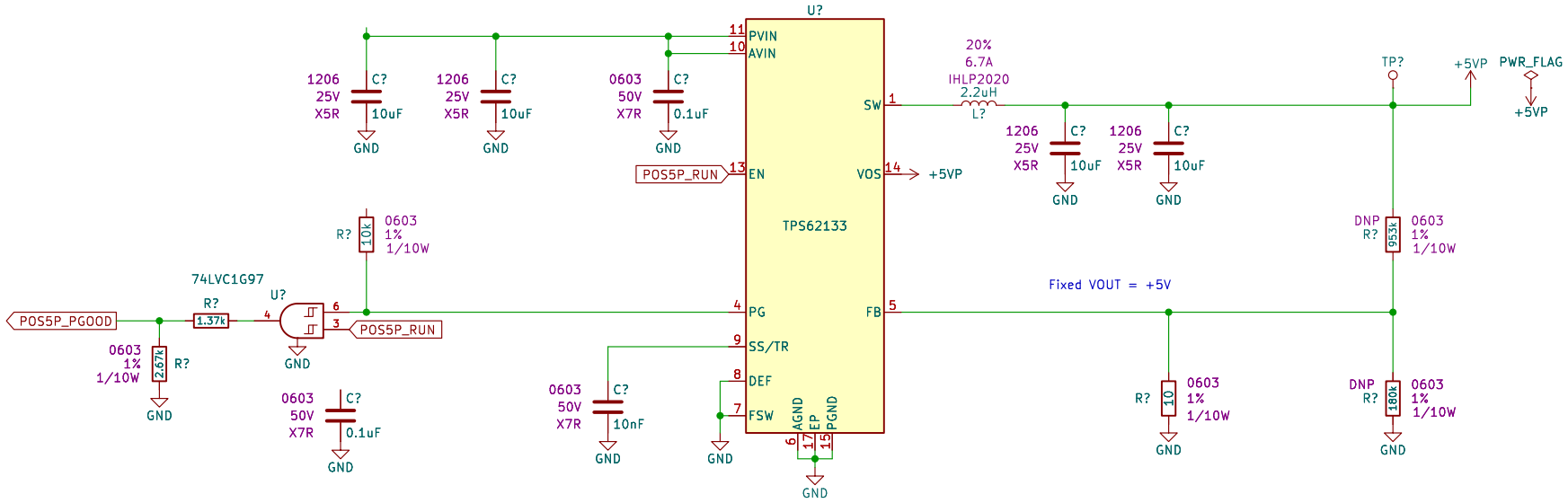
Drew Maatman and Michael Laffin		
Sheet: /POS12_Input/		
File: POS12_Input.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 2/30

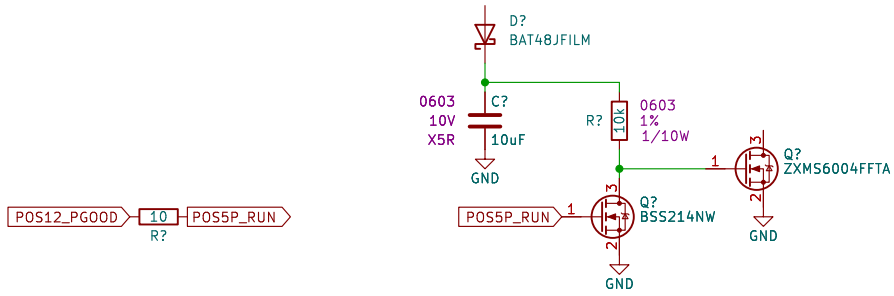




Drew Maatman and Michael Laffin		
Sheet: /POS12 Telemetry/		
File: POS12_Telemetry.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023−11−13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 3/30

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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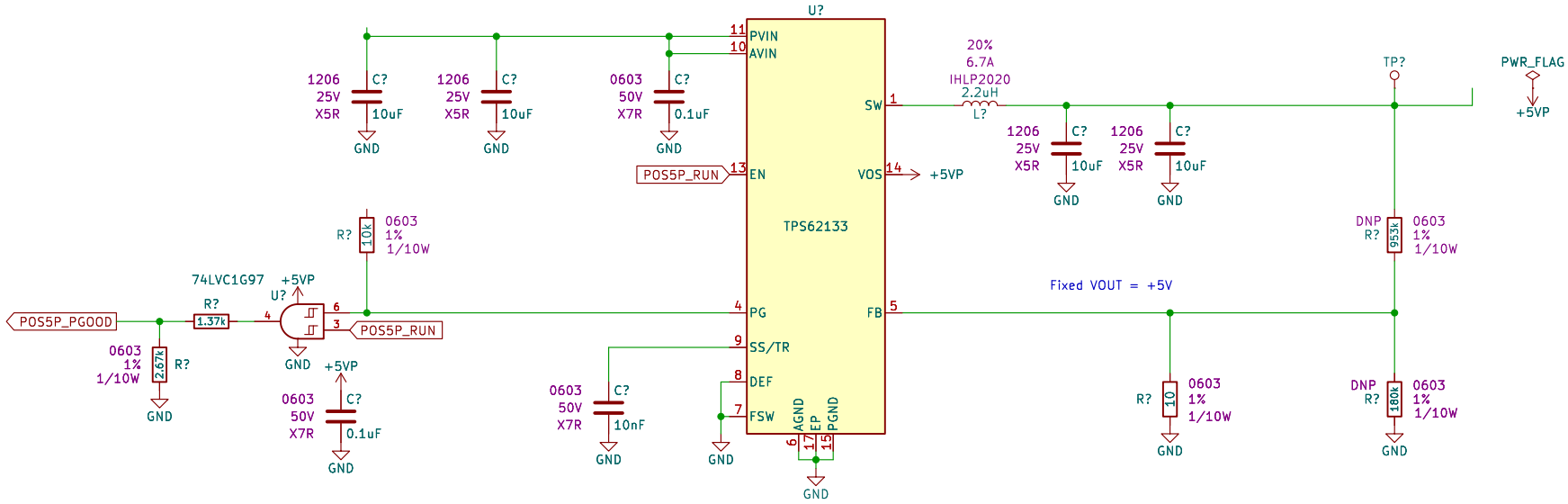
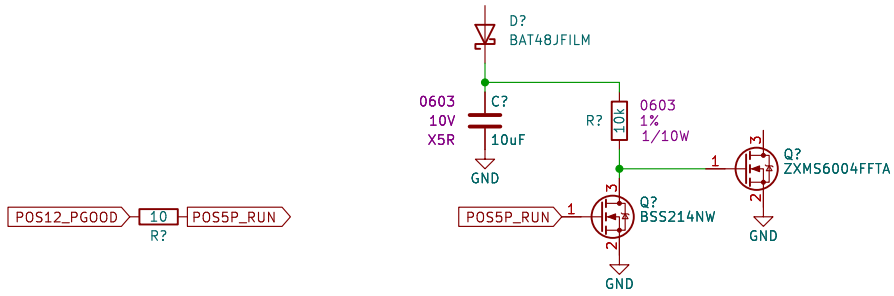
Sheet: /POS3P3 Telemetry/
File: POS3P3_Telemetry.kicad_sch

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

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

Drew Maatman and Michael Laffin

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

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

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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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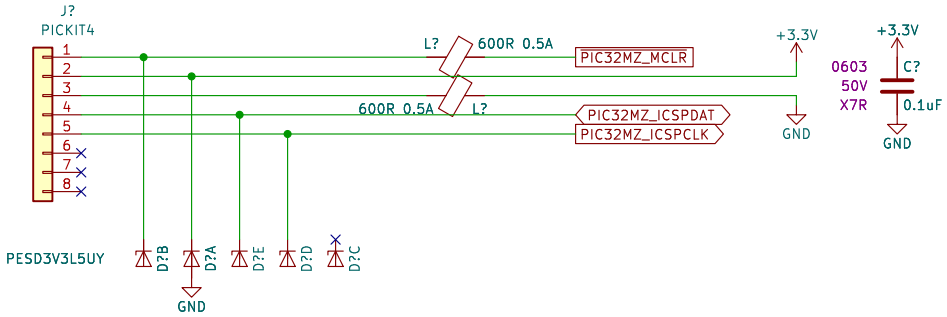
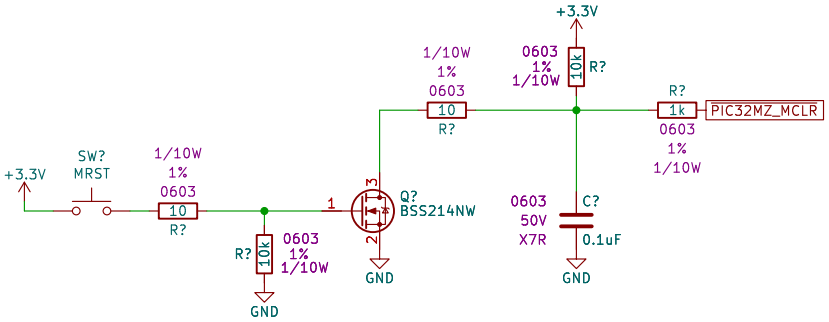
Sheet: /Battery Management/
File: Battery_Management.kicad_sch

Title: Thermal Camera

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

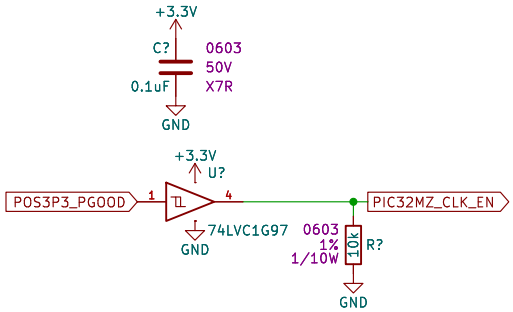
COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA
CONSIDER REMOVING BEADS

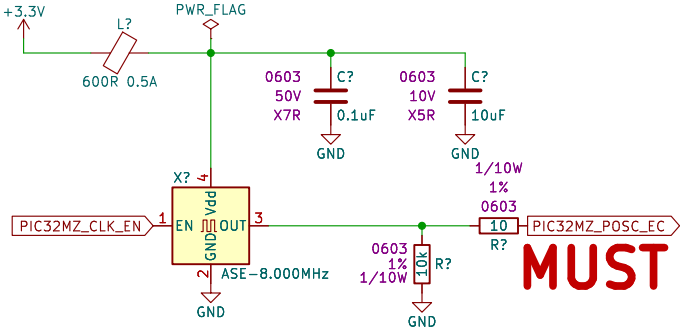




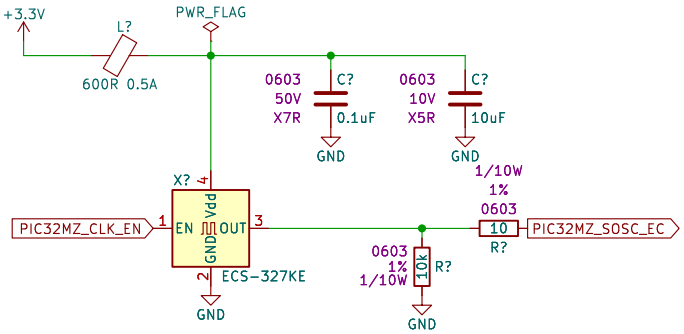
Drew Maatman and Michael Laffin		
Sheet: /PIC32MZ DA Programming/		
File: PIC32MZ_DA_Programming.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 17/30

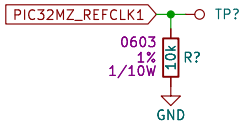
COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA





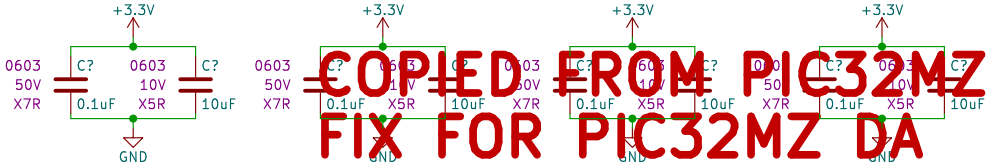
MUST BE 24MHZ

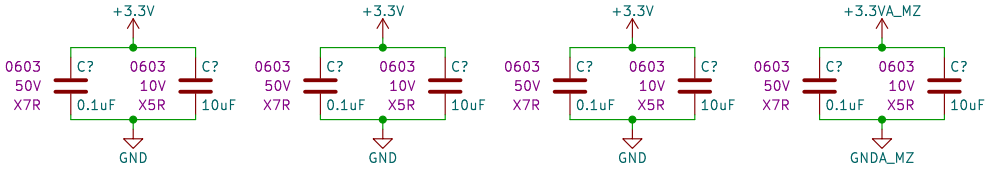




Drew Maatman and Michael Laffin		
Sheet: /PIC32MZ DA Clocking/		
File: PIC32MZ_DA_Clocking.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 18/30

COPIED FROM PIC32MZ EF
FIX FOR PIC32MZ DA





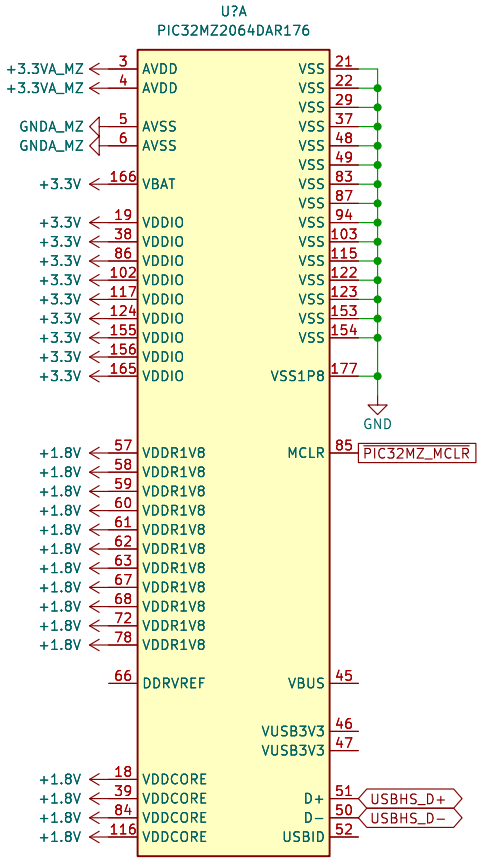


FIGURE OUT HOW TO USE THIS

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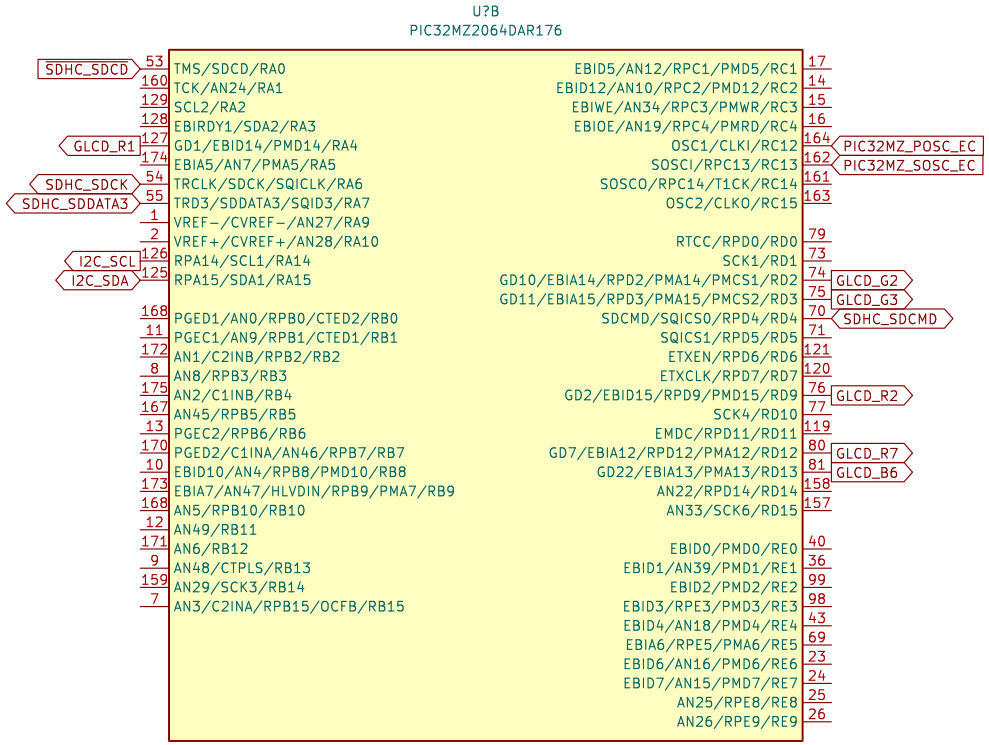
Sheet: /PIC32MZ DA Power/
File: PIC32MZ_DA_Power.kicad_sch

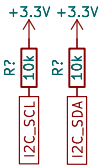
Title: Thermal Camera

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



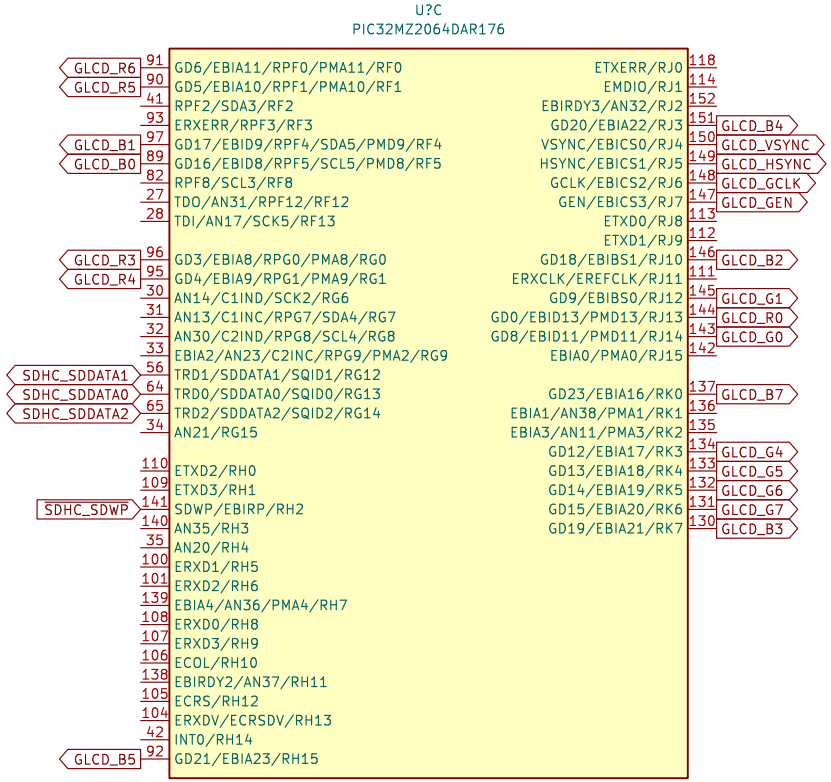
Drew Maatman and Michael Laffin

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

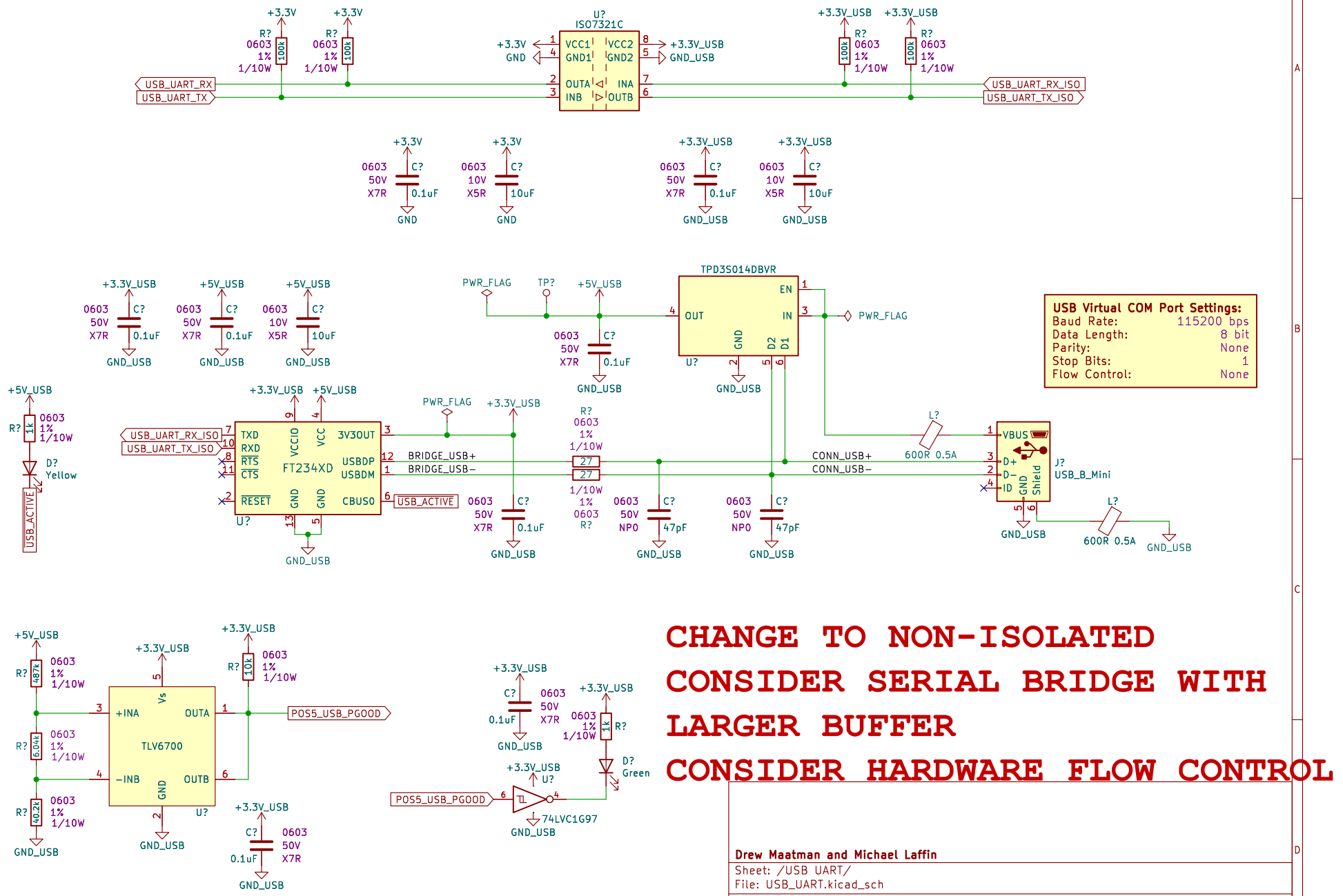
GLCD_B0
GLCD_B1
GLCD_B2
GLCD_B3
GLCD_B4
GLCD_B5
GLCD_B6
GLCD_B7

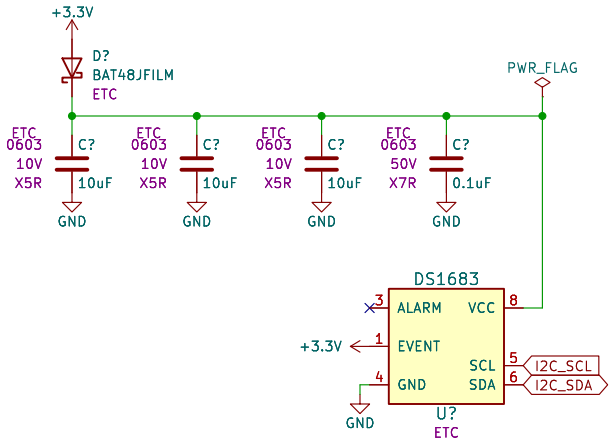
Drew Maatman and Michael Laffin

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
U?
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
BRIDGE_USB+
BRIDGE_USB−
CONN_USB+
CONN_USB−
USB_ACTIVE
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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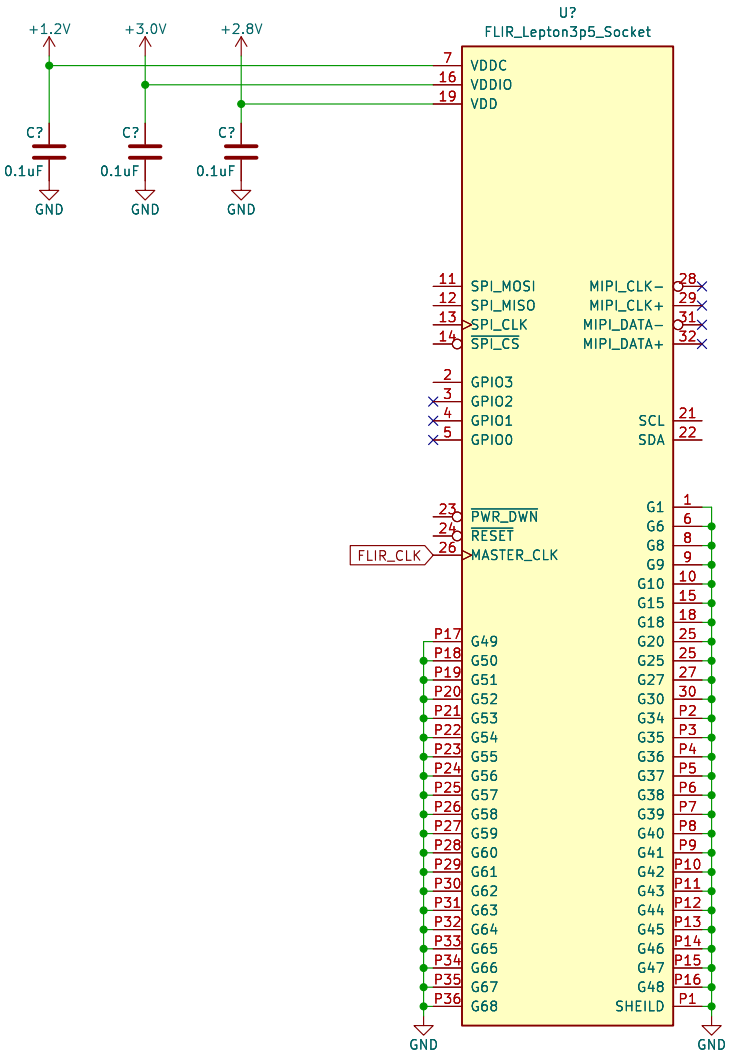
Sheet: /Elapsed Time Counter/
File: Elapsed_Time_Counter.kicad_sch

Title: Thermal Camera

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

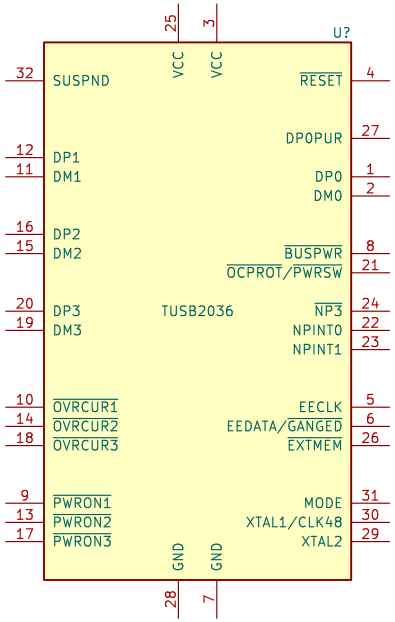
CAUTION: +3.0V I/O

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



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

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

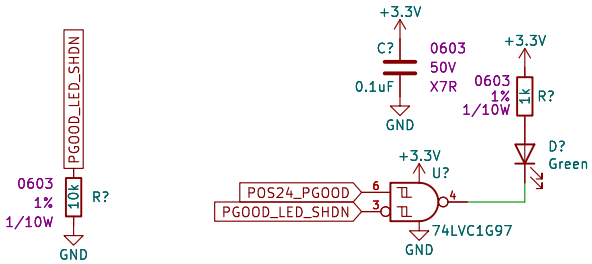


Drew Maatman and Michael Laffin

Sheet: /USB Hub/
File: USB_Hub.kicad_sch

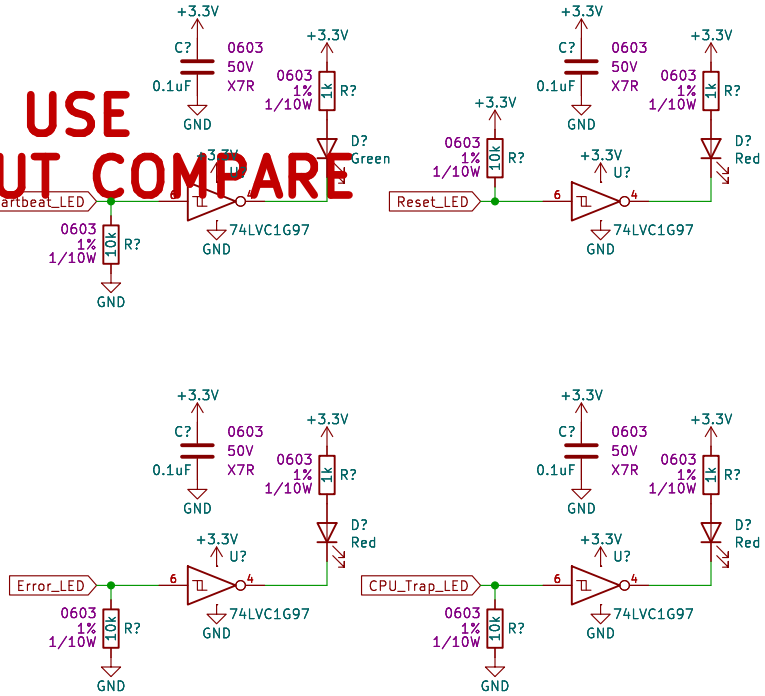
Title: Thermal Camera

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

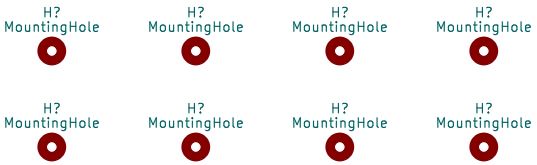


Drew Maatman and Michael Laffin		
Sheet: /PGOOD LEDs/		
File: PGOOD_LEDs.kicad_sch		
Title: Thermal Camera		
Size: A	Date: 2023-11-13	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.9		Id: 28/30

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