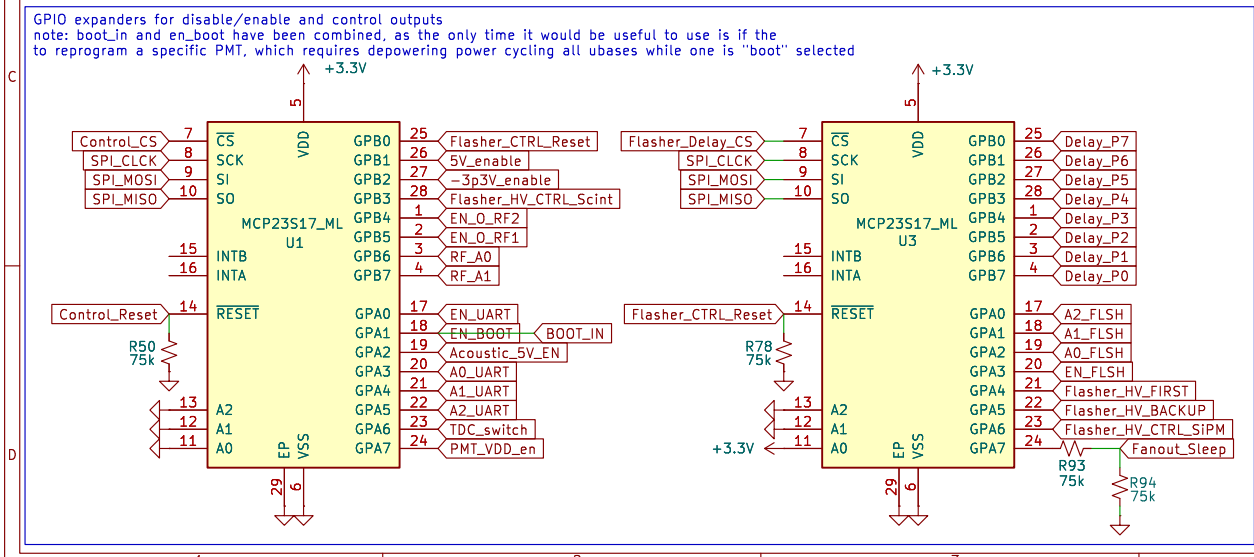


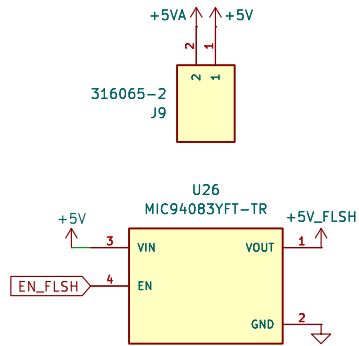
sub-modules

DAC to control values of HV to flashers and SiPM bias voltages and DAC to control threshold voltages for comparators in MIST module	HV_Threshold_control_DACs File: HV_Threshold_control_DACs.kicad_sch
MUXES to route signals for selecting Flasher and provide voltage level from DAC to LDOs. MUXES to route UART TX/RX and control boot for ubases	signal_switch_MUX File: signal_switch_MUX.kicad_sch
Calibration board and acoustic board connections	SiPM and PD and piezo File: SiPM.kicad_sch
Upconvert for 3.3V to 6V and LDO to stable 5V	voltage_sources File: voltage_sources.kicad_sch
Flasher connections and routing of flasher pulse from mainboard and observer channels /SiPM TDC to mainboard	flasher_fingers File: flasher_fingers.kicad_sch
MIST power/HV out and comparators for Analog-Digital LV3p3CMOS of signals	Scintillator File: Scintillator_sch.kicad_sch
Connectors for ubases and clamping diode protection	PMT_fingers File: PMT_fingers.kicad_sch
HV generation and HV LDOs to flasher connectors	Flasher_HV File: Flasher_HV.kicad_sch

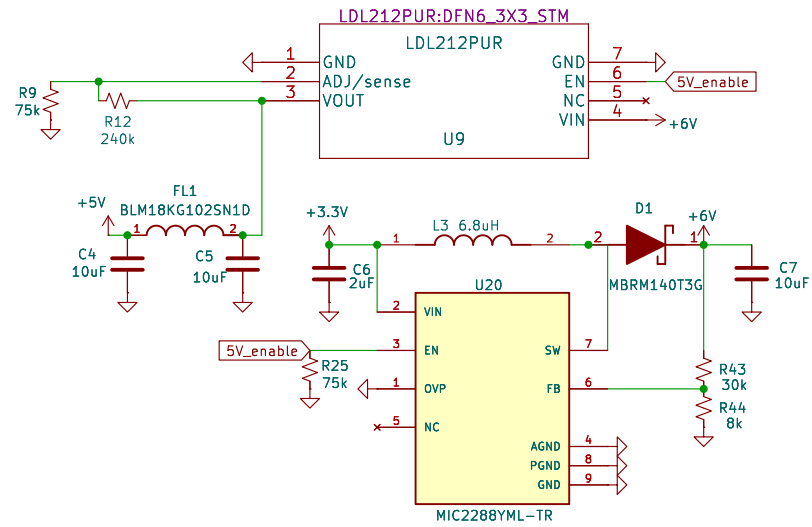


Author: Adam Maunder - amaunder@ualberta.ca
University of Alberta
 Sheet: /
 File: interposer_v5_07_11.kicad_sch
Title: Pone Interposer Board
 Size: A4 Date: 2024-06-17
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 Rev: Rev 4
 Id: 1/25

If during testing 5V from mainboard is found to be stable to a suitable level for calibration then 5V supply from interposer can be removed or disabled and header can be shorted



5V supply – For flashers very stable source is required. Large filtering provided on output from LDO which is sourced from 6V from switching power supply. Supply of 6V required as was not able of be provided from mainboard and supply of 5V from mainboard through LDO was rejected.



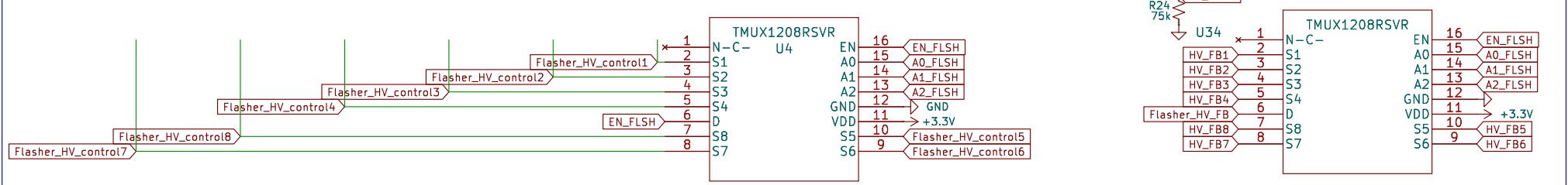
Author: Adam Maunder – amander@ualberta.ca
 University of Alberta
 Sheet: /voltage_sources/
 File: voltage_sources.kicad_sch

Title: Pone Interposer Board

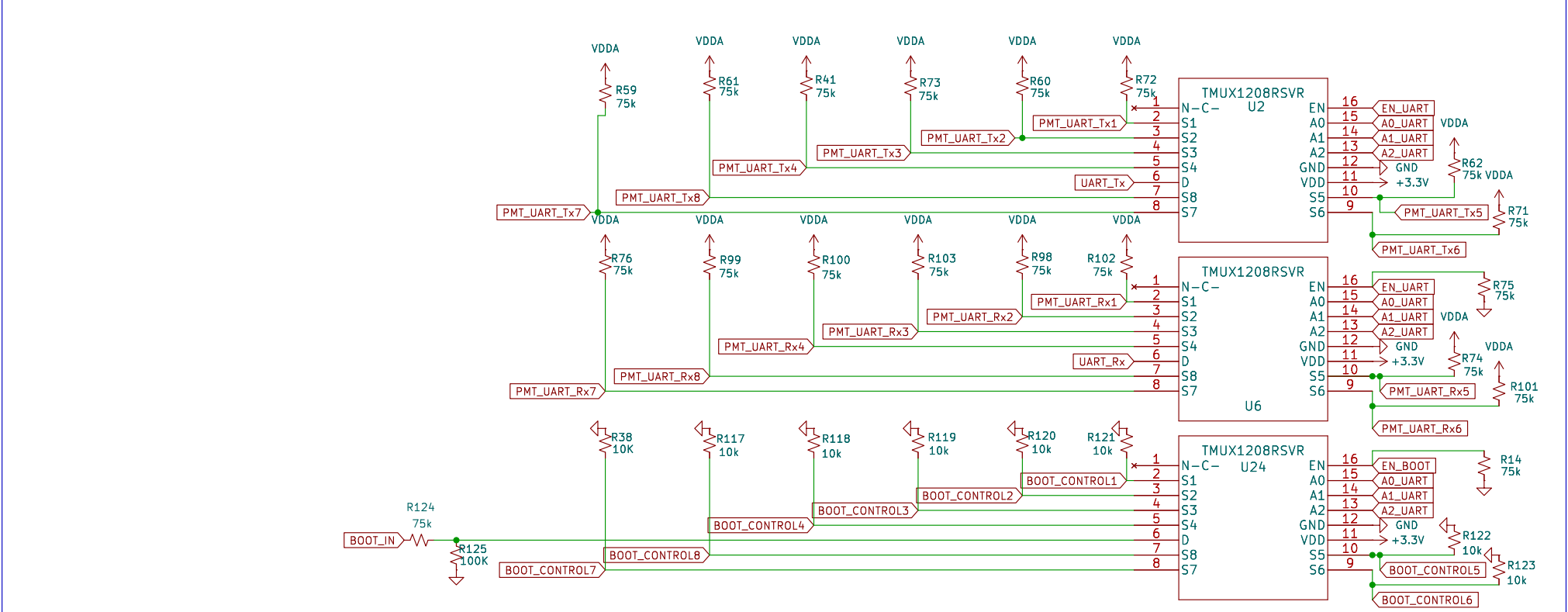
Size: A4 Date: 2024-06-17
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Rev: Rev 4
 Id: 2/25

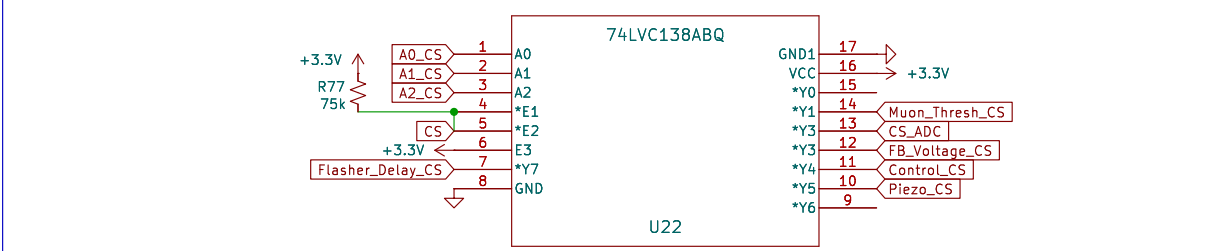
Two muxes route the enable signal to the LDOs that provide HV to flashers and the FB voltage that determines the HV supply level



Muxes to switch between UART TX/RX communication between different (8) microbases per interposer and provide control/boot/reset signal which is controlled through GPIO expanders



SPI CS provided by the mainboard is switched between different chips using A(0-2)_CS control signals also provided by mainboard.

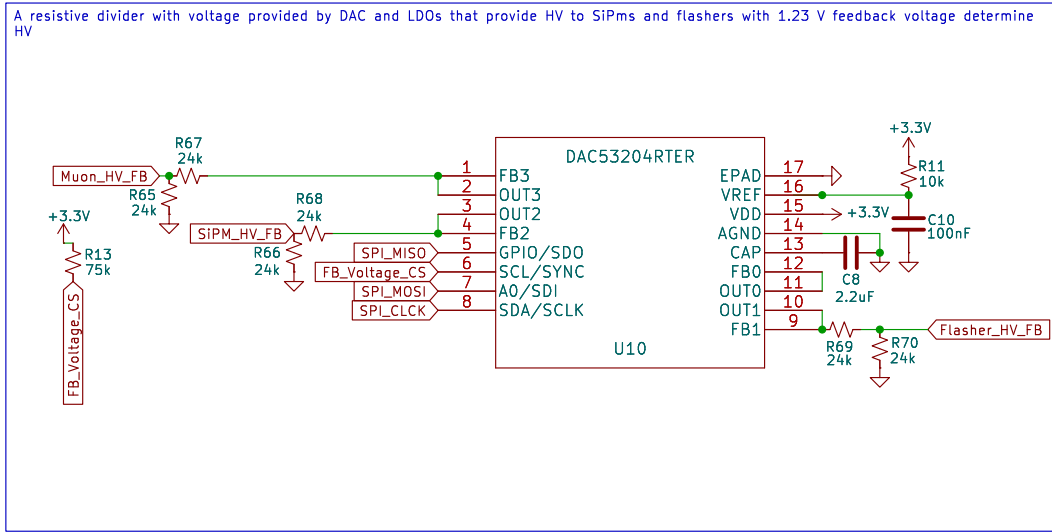
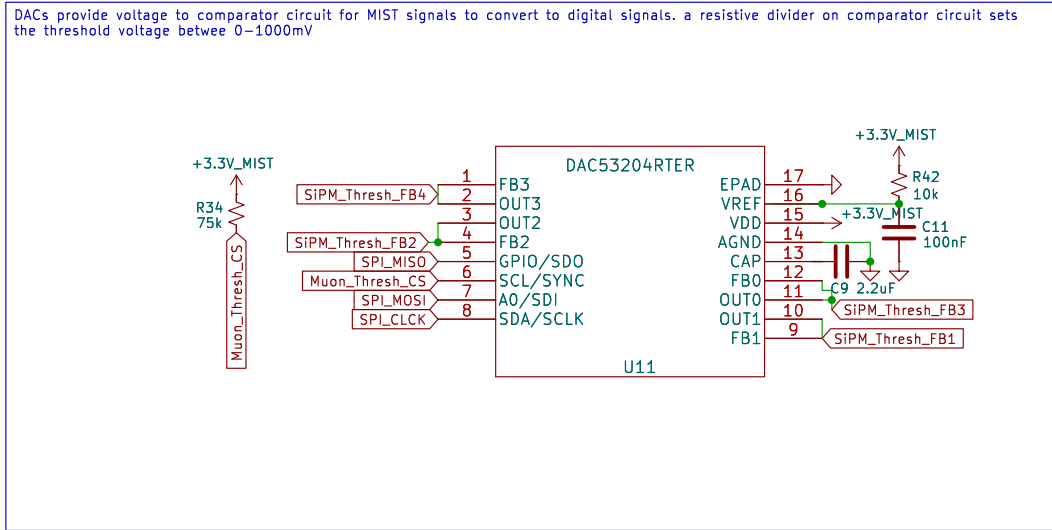


Author: Adam Maunder - amaunder@ualberta.ca
 University of Alberta
 Sheet: /signal_switch_MUX/
 File: signal_switch_MUX.kicad_sch

Title: Pone Interposer Board

Size: A4 Date: 2024-06-17
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Rev: Rev 4
 Id: 3/25



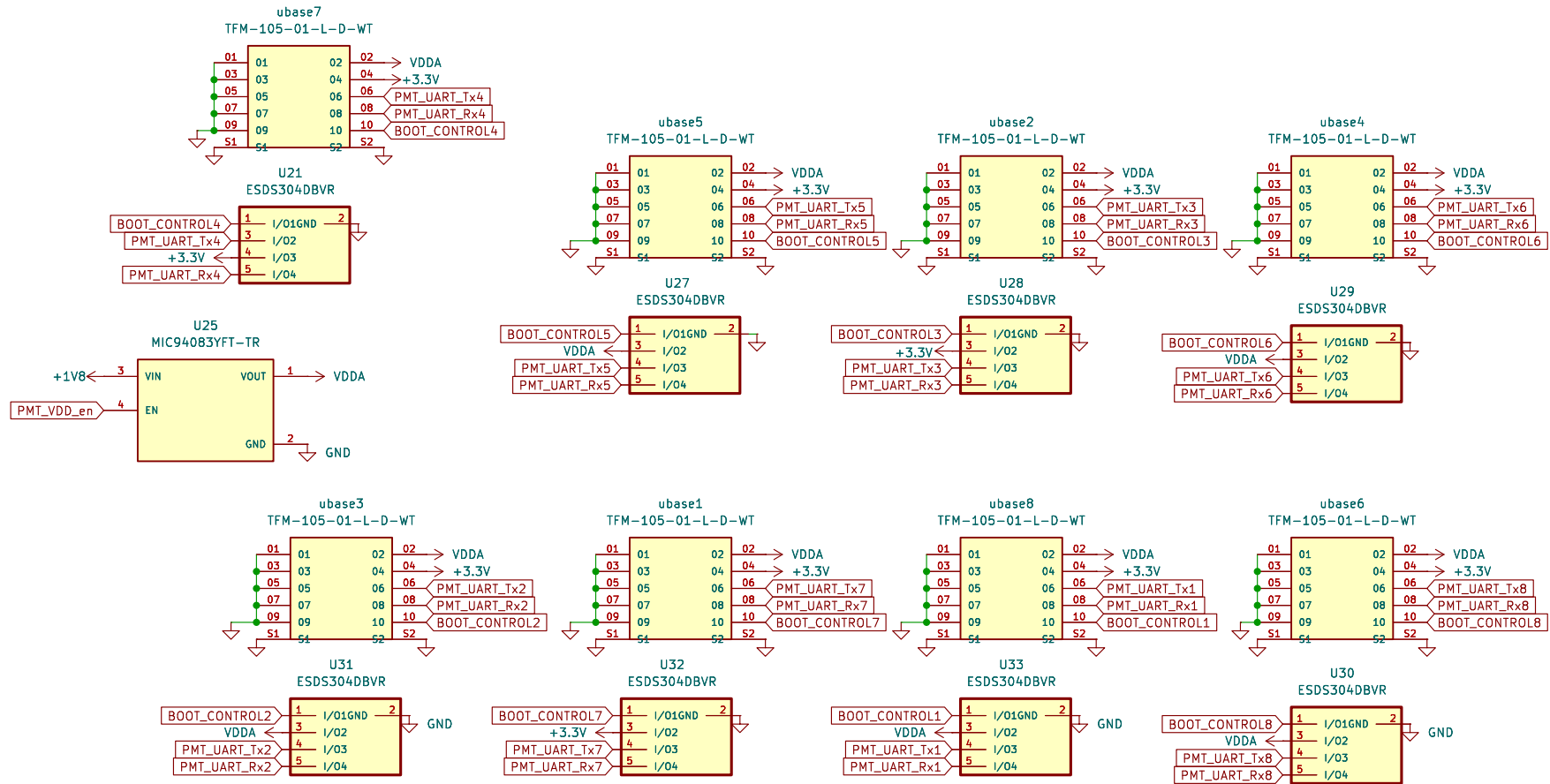
Author: Adam Maunder – amaunder@ualberta.ca
University of Alberta

Sheet: /HV_Threshold_control_DACs/
 File: HV_Threshold_control_DACs.kicad_sch

Title: Pone Interposer Board

Size: A4	Date: 2024-06-17	Rev: Rev 4
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microbase connectors and protection diodes (ESDS304DBVR) for each line, uart and control boot lines are protected on each and alternating 1.8V vs. 3.3V for each conector. ubases are numbered based on the numbering scheme in optical modules, but their UART connection is based on the numbering scheme for the muxes connecting them and the A(0-2)_UART gpio selection number

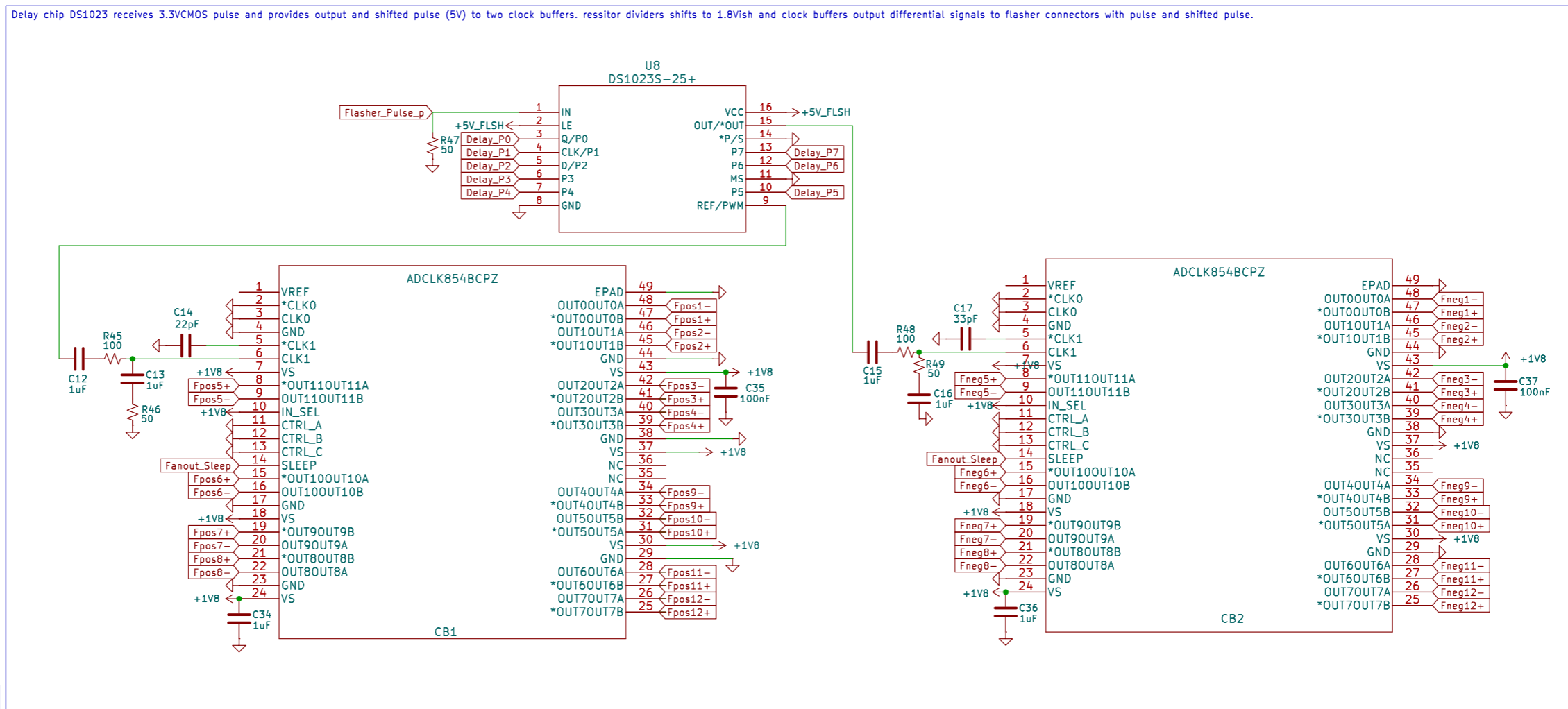


Author: Adam Maunder - amaunder@ualberta.ca
 University of Alberta
 Sheet: /PMT_fingers/
 File: PMT_fingers.kicad_sch

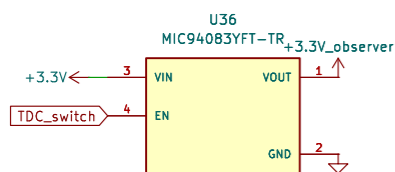
Title: Pone Interposer Board

Size: A4 Date: 2024-06-17
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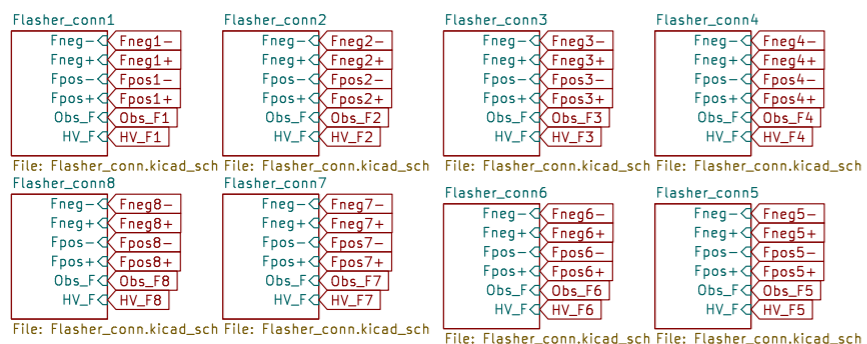
Rev: Rev 4
 Id: 5/25



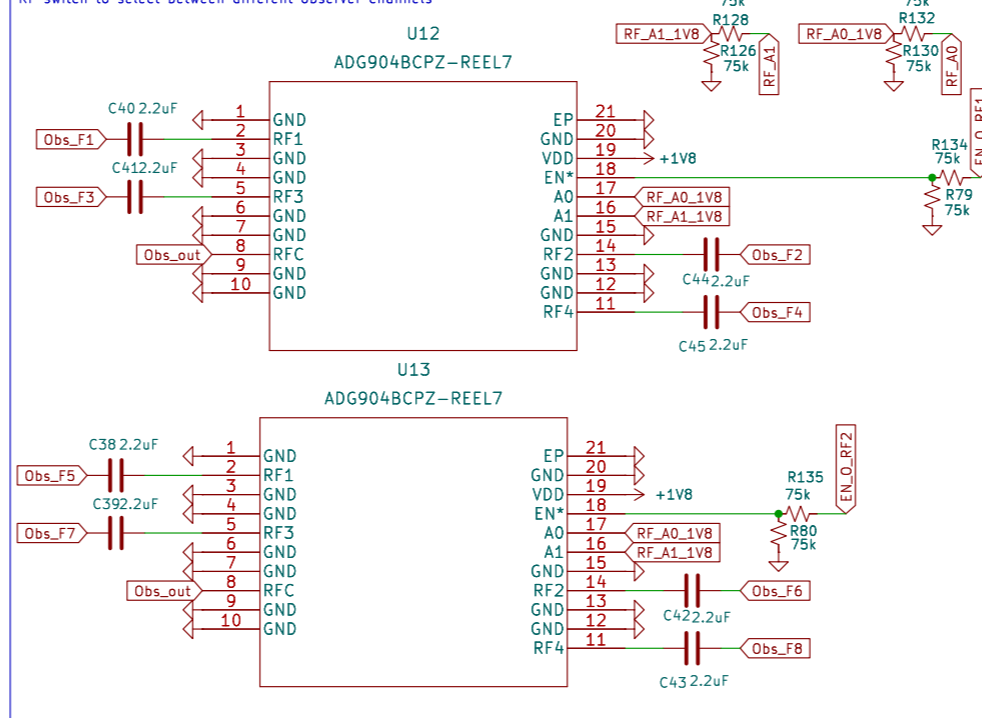
3.3V power to observer_switch



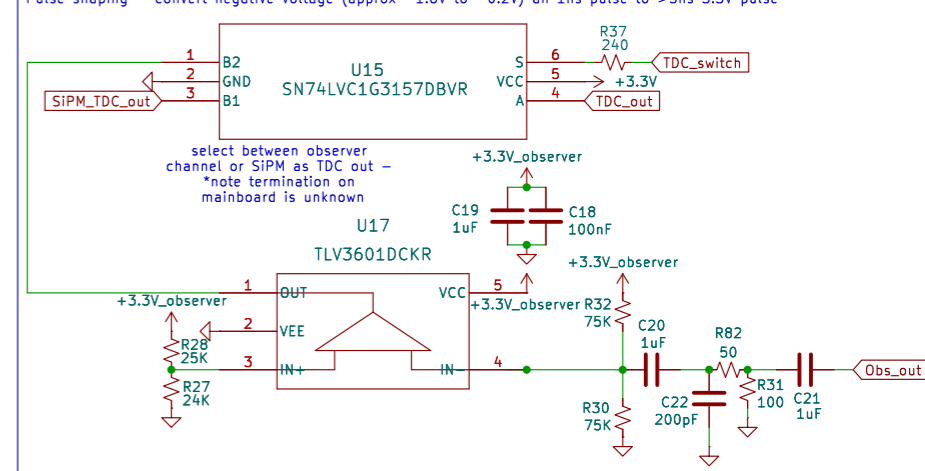
Flasher connectors



RF switch to select between different observer channels



Pulse shaping - convert negative voltage (approx -1.8V to -0.2V) an 1ns pulse to >5ns 3.3V pulse



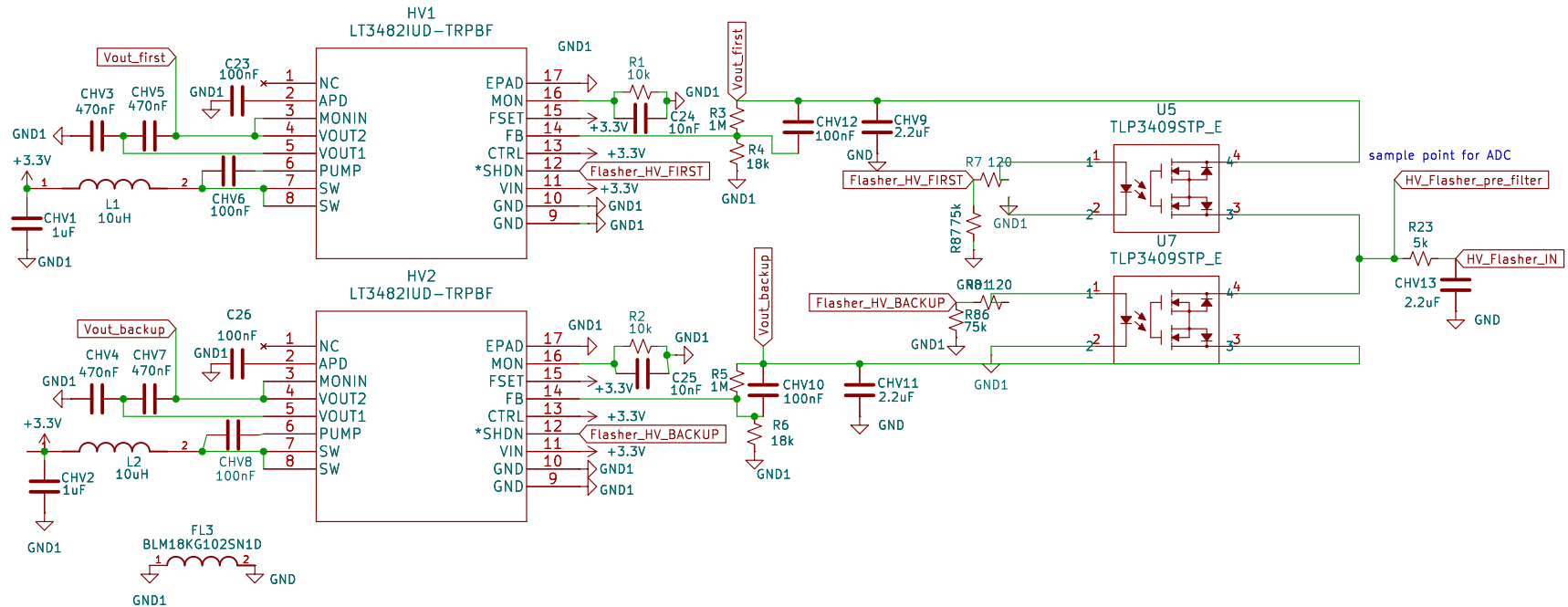
Author: Adam Maunder - amaunder@ualberta.ca
 University of Alberta
 Sheet: /flasher_fingers/
 File: flasher_fingers.kicad_sch

Title: Pone Interposer Board

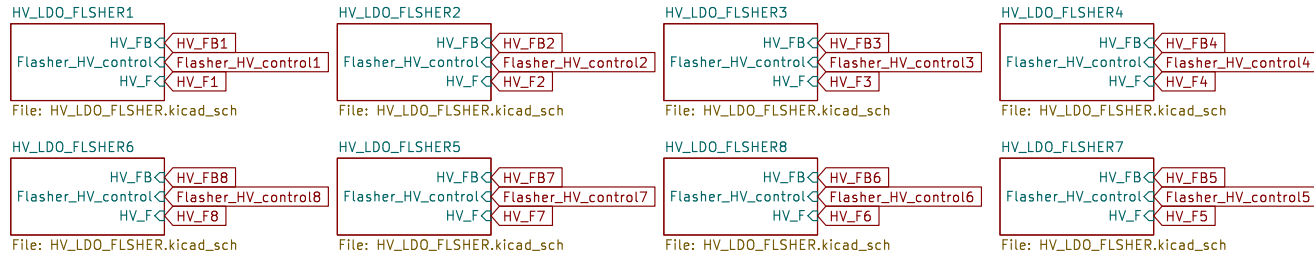
Size: A3 Date: 2024-06-17
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Rev: Rev 4
 Id: 6/25

HV generation (70V). A separate ground is provided to allow high isolation/filtering



LDOs to provide HV to flashers, and be selected/deselected based on flasher choice



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Sheet: /FLasher_HV/

File: FLasher_HV.kicad_sch

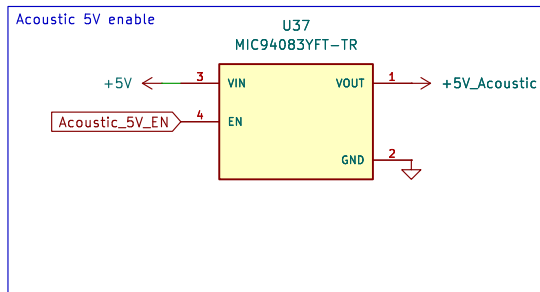
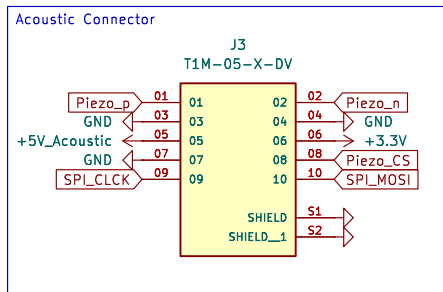
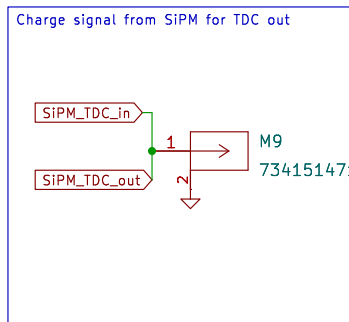
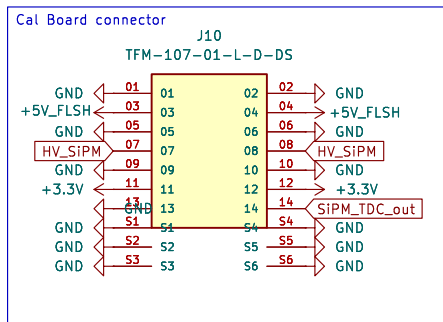
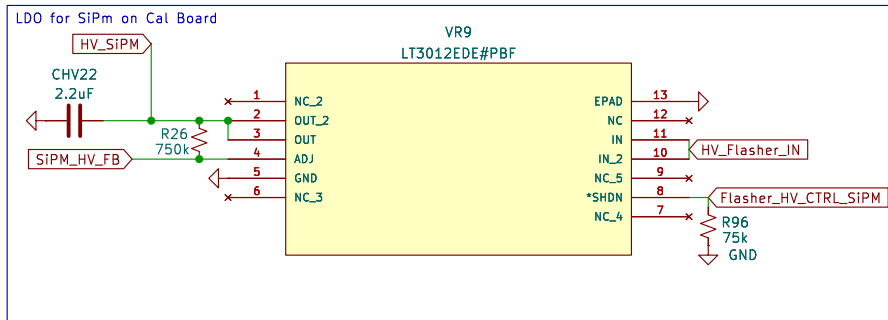
Title: Pone Interposer Board

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 7/25



Author: Adam Maunder - amander@ualberta.ca

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Sheet: /SiPM and PD and piezo/

File: SiPM.kicad_sch

Title: Pone Interposer Board

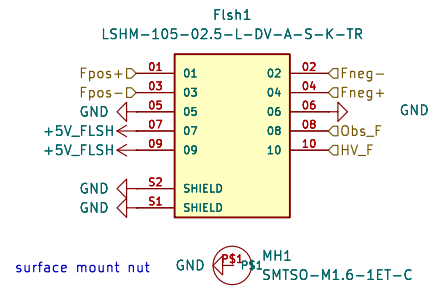
Size: A4

Date: 2024-06-17

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Id: 8/25



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Sheet: /flasher_fingers/Flasher_conn1/
File: Flasher_conn.kicad_sch

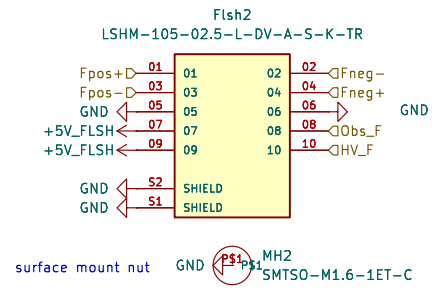
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Id: 8/25



Author: Adam Maunder - amaunder@ualberta.ca
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Sheet: /flasher_fingers/Flasher_conn2/
 File: Flasher_conn.kicad_sch

Title: *Pone Interposer Board*

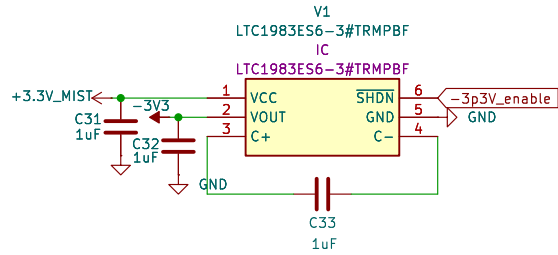
Size: A4 Date: 2024-06-17

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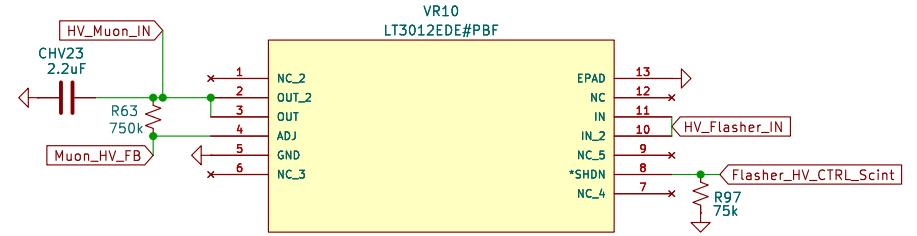
Rev: Rev 4

Id: 9/25

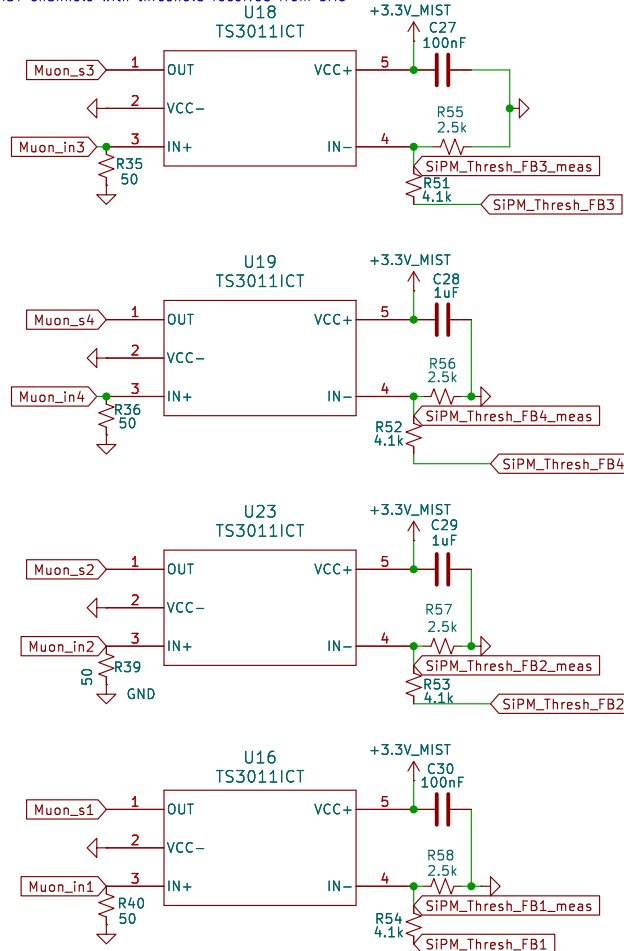
-3.3V generation for Scintillators



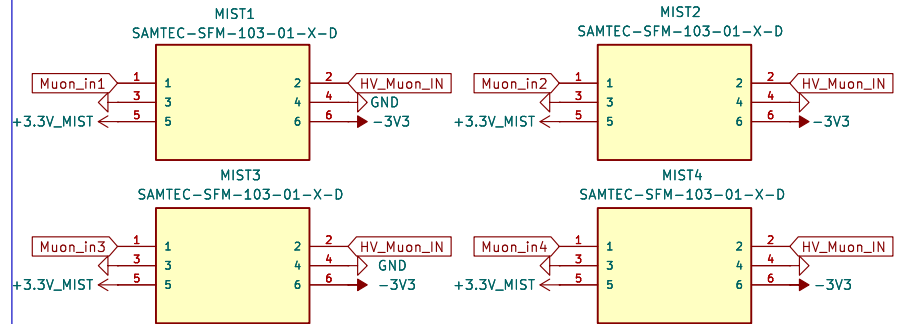
LDO HV for SiPMs on Scintillator/preamp boards



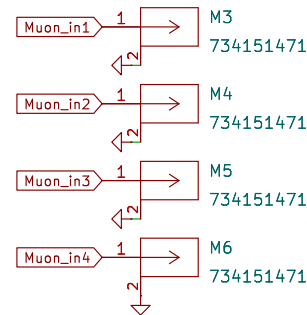
Comparators for MIST channels with threshold received from DAC



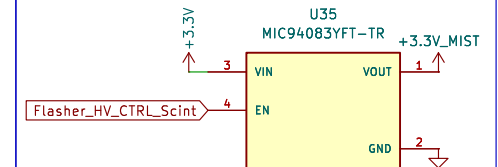
connectors for power to the MIST module as well as signal if people wanted to save \$20,000 and avoid a point of failure and reduce assembly time



alternative signal connection that used mmcx connectors



3.3V power to MIST module



Author: Adam Maunder - amander@ualberta.ca

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Sheet: /Scintillator/

File: Scintillator_sch.kicad_sch

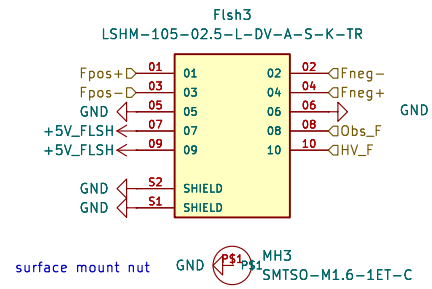
Title: Pone Interposer Board

Size: A4 Date: 2024-06-17

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Id: 9/25



Author: Adam Maunder - amaunder@ualberta.ca

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Sheet: /flasher_fingers/Flasher_conn3/

File: Flasher_conn.kicad_sch

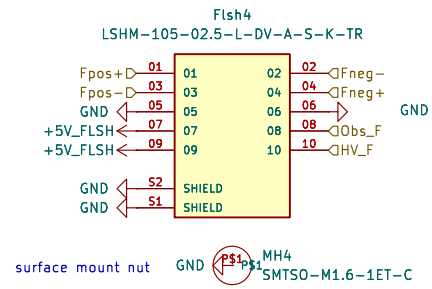
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 10/25



Author: Adam Maunder - amaunder@ualberta.ca
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Sheet: /flasher_fingers/Flasher_conn4/
 File: Flasher_conn.kicad_sch

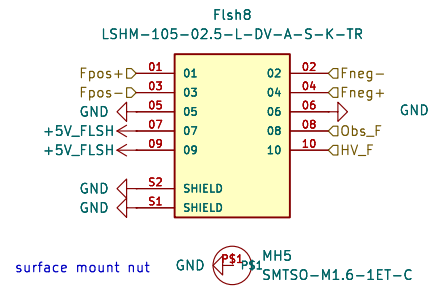
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

KiCad E.D.A. 8.0.1

Rev: Rev 4

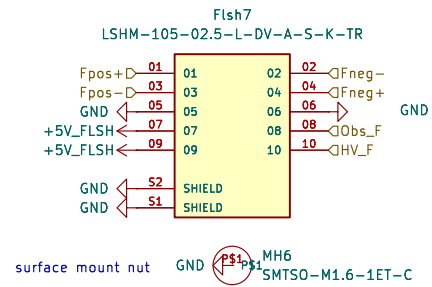
Id: 11/25



Author: Adam Maunder - amaunder@ualberta.ca
University of Alberta
 Sheet: /flasher_fingers/Flasher_conn8/
 File: Flasher_conn.kicad_sch

Title: *Pone Interposer Board*

Size: A4	Date: 2024-06-17	Rev: Rev 4
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Author: Adam Maunder - amaunder@ualberta.ca

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Sheet: /flasher_fingers/Flasher_conn7/

File: Flasher_conn.kicad_sch

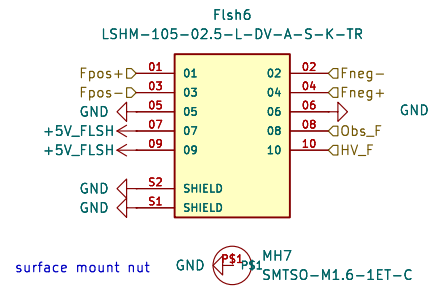
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 13/25



Author: Adam Maunder - amaunder@ualberta.ca
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Sheet: /flasher_fingers/Flasher_conn6/
 File: Flasher_conn.kicad_sch

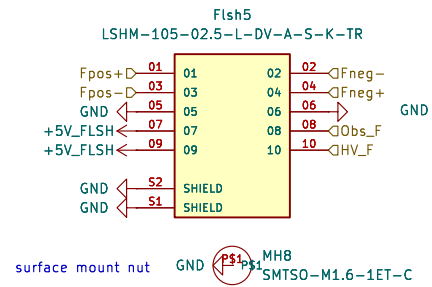
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Id: 14/25



Author: Adam Maunder - amaunder@ualberta.ca
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Sheet: /flasher_fingers/Flasher_conn5/
 File: Flasher_conn.kicad_sch

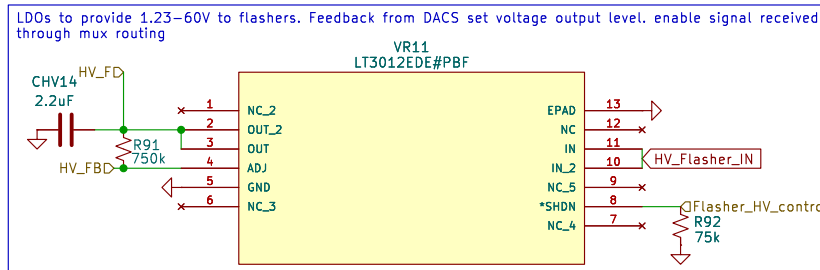
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 15/25



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Sheet: /FLasher_HV/HV_LDO_FLSHER1/
 File: HV_LDO_FLSHER.kicad_sch

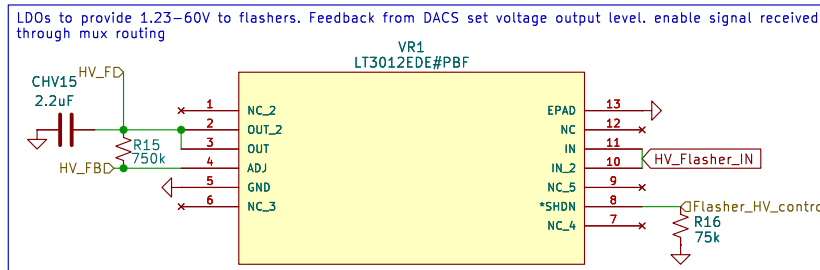
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 16/25



Author: Adam Maunder – amander@ualberta.ca

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Sheet: /FLasher_HV/HV_LDO_FLSHER2/

File: HV_LDO_FLSHER.kicad_sch

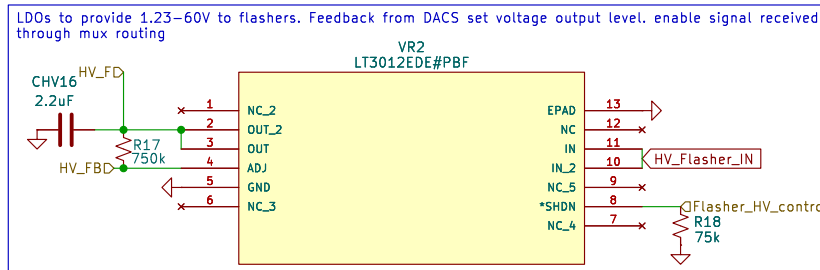
Title: Pone Interposer Board

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 17/25



Author: Adam Maunder – amaunder@ualberta.ca

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Sheet: /FLasher_HV/HV_LDO_FLSHER3/

File: HV_LDO_FLSHER.kicad_sch

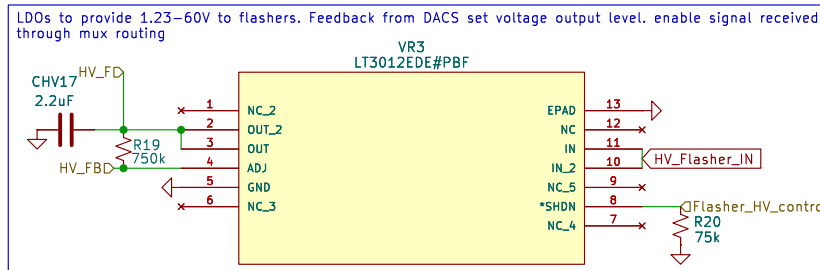
Title: Pone Interposer Board

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 18/25



Author: Adam Maunder – amaunder@ualberta.ca
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Sheet: /FLasher_HV/HV_LDO_FLSHER4/
 File: HV_LDO_FLSHER.kicad_sch

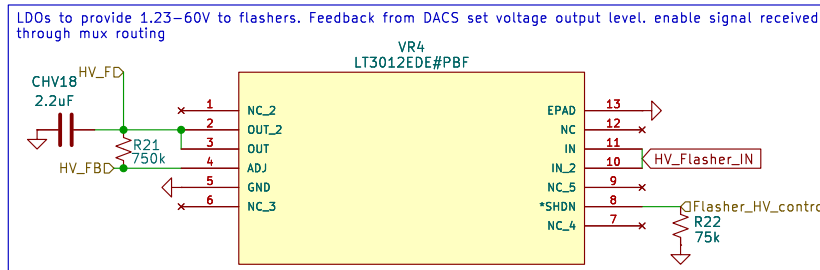
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 19/25



Author: Adam Maunder – amaunder@ualberta.ca
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Sheet: /FLasher_HV/HV_LDO_FLSHER6/
 File: HV_LDO_FLSHER.kicad_sch

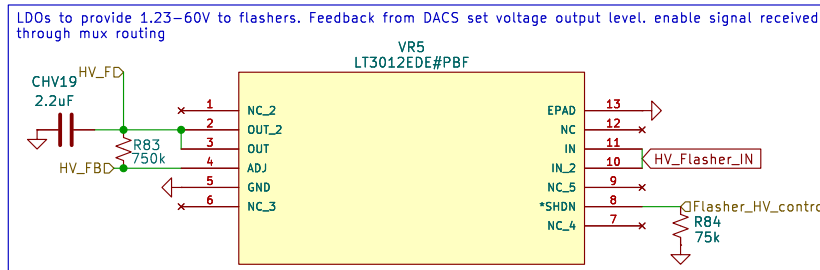
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Id: 20/25



Author: Adam Maunder – amaunder@ualberta.ca
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Sheet: /FLasher_HV/HV_LDO_FLSHER5/
 File: HV_LDO_FLSHER.kicad_sch

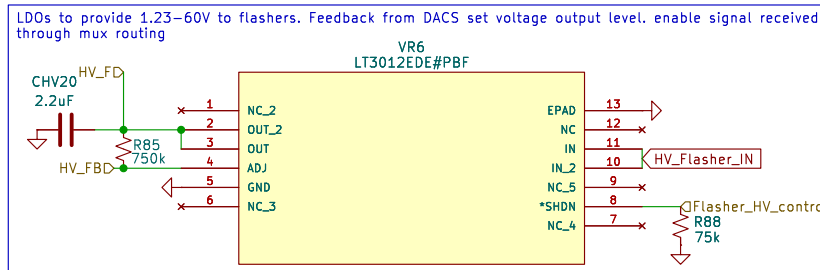
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 21/25



Author: Adam Maunder – amaunder@ualberta.ca
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Sheet: /FLasher_HV/HV_LDO_FLSHER8/
 File: HV_LDO_FLSHER.kicad_sch

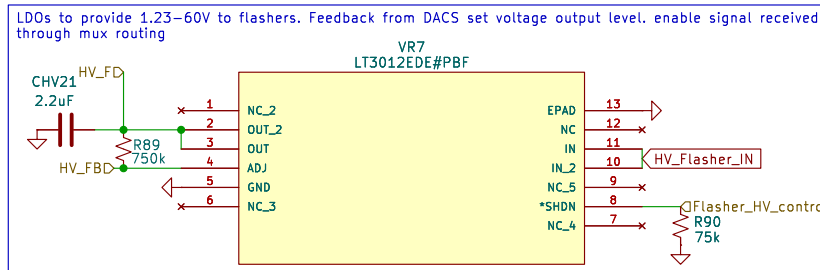
Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

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Rev: Rev 4

Id: 22/25



Author: Adam Maunder – amaunder@ualberta.ca
University of Alberta

Sheet: /FLasher_HV/HV_LDO_FLSHER7/
 File: HV_LDO_FLSHER.kicad_sch

Title: *Pone Interposer Board*

Size: A4 Date: 2024-06-17

KiCad E.D.A. 8.0.1

Rev: Rev 4

Id: 23/25