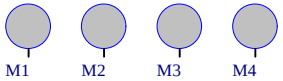
Rev	Description	Date (DD/MM/YY)	Author
1.0	Initial Release.	01/07/20	Yan C. de Azeredo
2.0	Adding fourth PCB "4_iip_closure" and "4_iip_camera" PCBs, updating mouting holes pads, block diagram, SpaceLab logo and layout of Nº3 IIP board.	28/06/21	Yan C. de Azeredo

Revision History

Fiducials

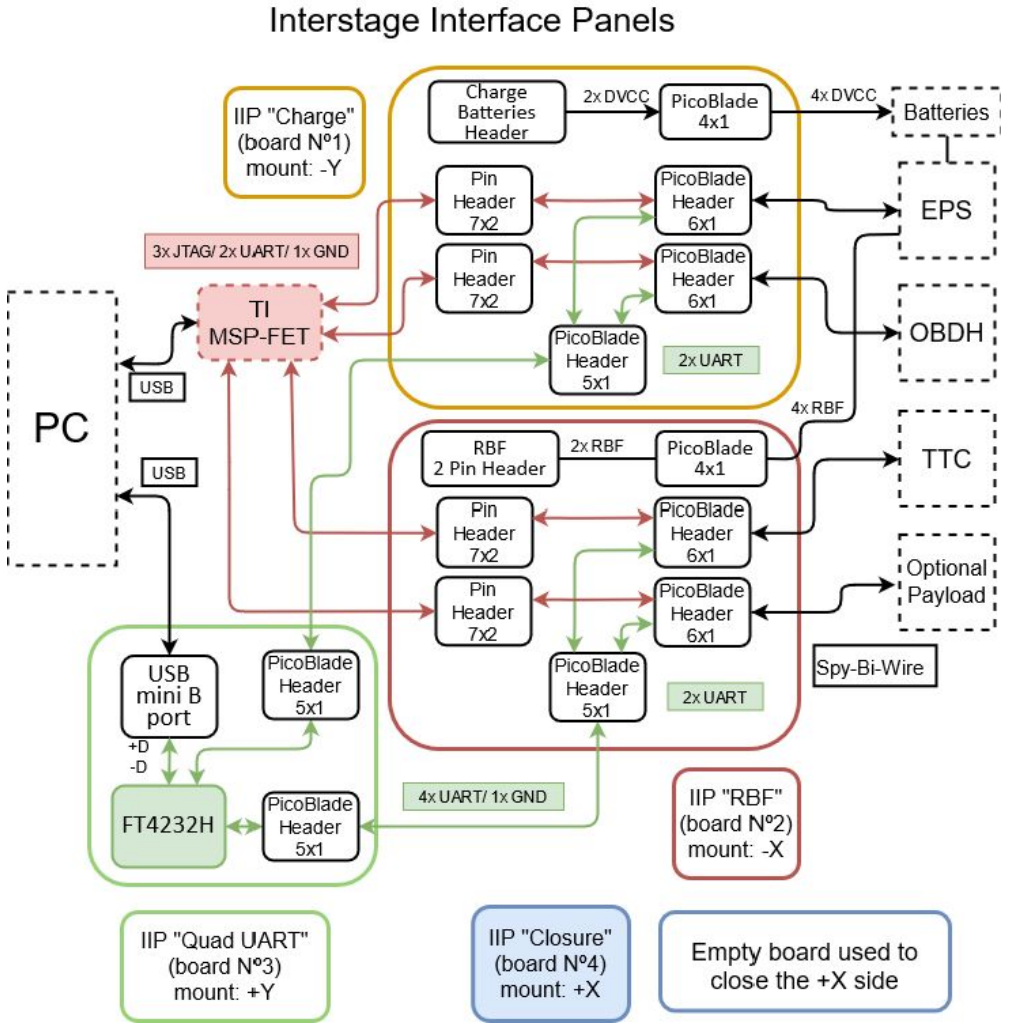
Mechanical Holes



PCB Elements

- Designed by: Yan Castro de Azeredo
- Reviewers: Gabriel M. Marcelino and André M. P. Mattos
- Support: Gabriel M. Marcelino, André M. P. Mattos and Kleber Gouveia
- Mechanical validation: Edemar M. Filho and Caique S. M. Gomes

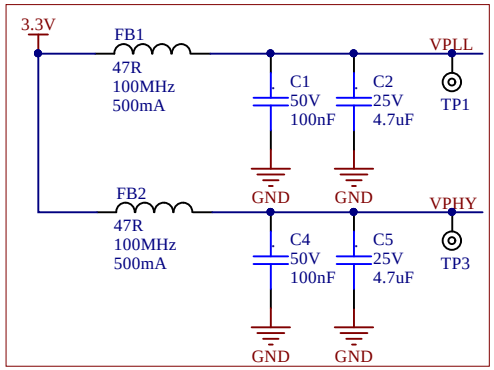
Project Information



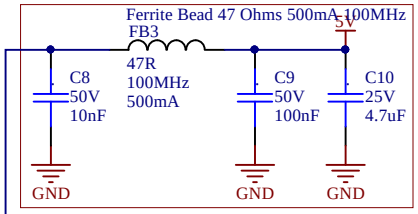
Full System Block Diagram

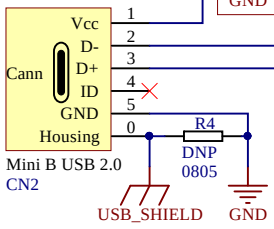
SpaceLab - Federal University of Santa Catarina			
Project: *3_iip_quad_uart.PrjPCB / [No Variations]*			
Title: *IIP Hardware Architecture*			
Designed by: *Yan Castro de Azeredo*			Project Code: *IIP*
Date: 7/1/2021	Revision: *2.0*	Sheet *1* of *2*	Size: A4

Low pass LC filters for VPLL and VPHY

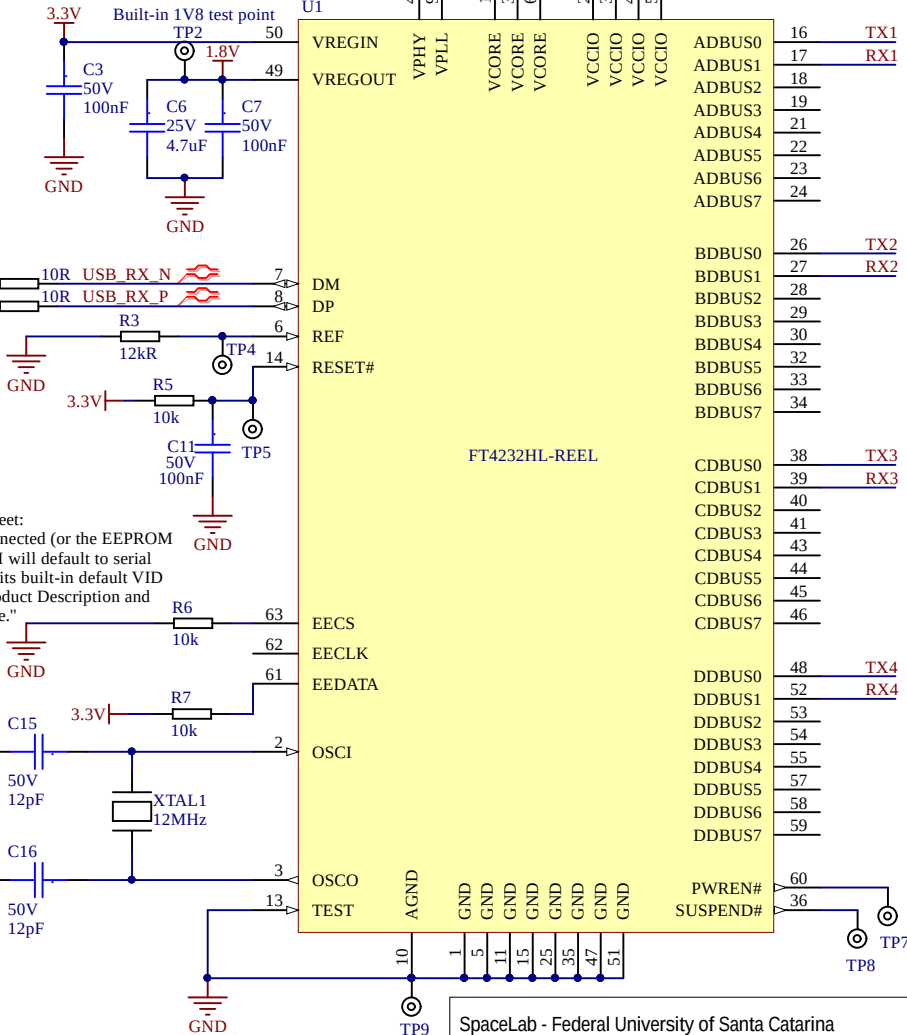


USB VBUS Filter



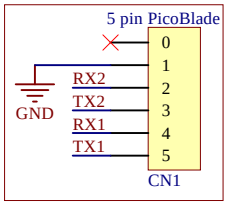


Optional zero-ohm resistor for a DC path, or capacitor for a high-frequency path between shield and signal ground to minimize signal noise and provide EMC compatibility (to be tested if required).

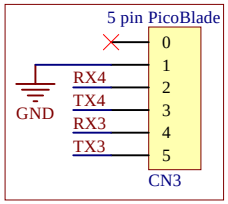


From FT4232H datasheet:
"If no EEPROM is connected (or the EEPROM is blank), the FT4232H will default to serial ports. The device uses its built-in default VID (0403), PID (6011) Product Description and Power Descriptor Value."

Picoblade header for board N.1



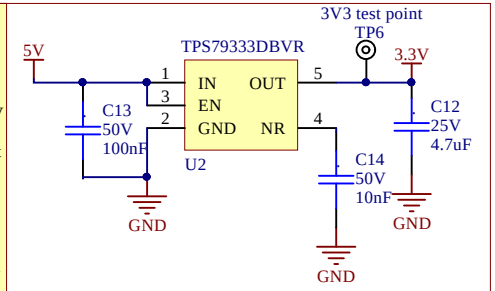
Picoblade header for board N.2



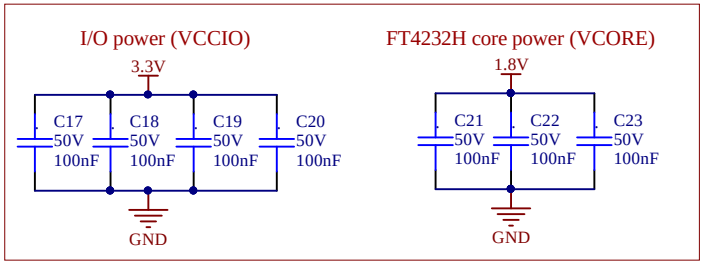
Linear Voltage Regulator for VREGIN (LDO)

LDO specifications:
- DBV Package
- Fixed configuration
- Voltage Input (Min): 2.7 V
- Voltage Input (Max): 5.5V
- Voltage Output (Min): 3.3V
- Current Output: 200mA
- Dropout Voltage 112 mV at 200 mA

Capacitors configuration:
- Cin: 0.1uF (100nF)
- Cinr: 10nF
- Cff: 0F (fixed regulator)
- Cout: 4.7uF (recommended >2.2uF)



Decoupling Capacitors

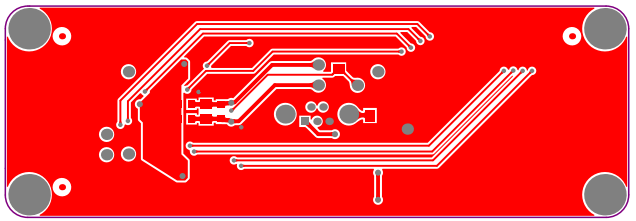


Testpoints for debugging IC

PWREN# = 0: Normal operation.
PWREN# =1: USB SUSPEND mode or device has not been configured.
SUSPEND#: Active low when USB is in suspend mode.

SpaceLab - Federal University of Santa Catarina			
Project: *3_iip_quad_uart.PrjPCB / [No Variations]*			
Title: *IIP N3 Board Interfaces and FT4232 Circuit*			
Designed by: *Yan Castro de Azeredo*			Project Code: *IIPN3*
Date: 7/1/2021	Revision: *2.0*	Sheet *2* of *2*	Size: A4

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.40mil	3.8	
3	Top Layer	Copper	1.40mil		
4	Dielectric 1	FR-4	59.06mil	4.5	
5	Bottom Layer	Copper	1.40mil		
6	Bottom Solder	Solder Resist	0.40mil	3.8	
7	Bottom Overlay				



Fabrication specifications:

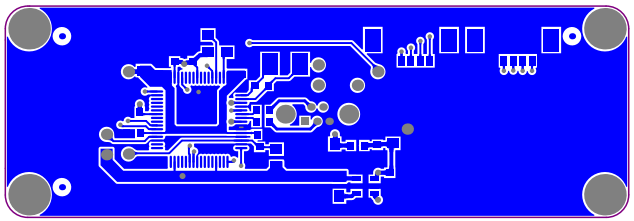
- Copper base: 1oz
- PCB Material: Prepeg FR4-Standard
- PCB Tickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Green
- Vias: Force Complete Tenting
- Stack-up: Table herein included
- Special requirements: None

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom avaliable

SpaceLab - Federal University of Santa Catarina		SPACELAB
Project: Interstage Interface Panel Nº3		
Layer: Top Layer Board edge		
Designed by: Yan C. de Azeredo		Project Code: IIP3
Date: 7/1/2021	Version: v2.0	Size: A4

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.40mil	3.8	
3	Top Layer	Copper	1.40mil		
4	Dielectric 1	FR-4	59.06mil	4.5	
5	Bottom Layer	Copper	1.40mil		
6	Bottom Solder	Solder Resist	0.40mil	3.8	
7	Bottom Overlay				



Fabrication specifications:

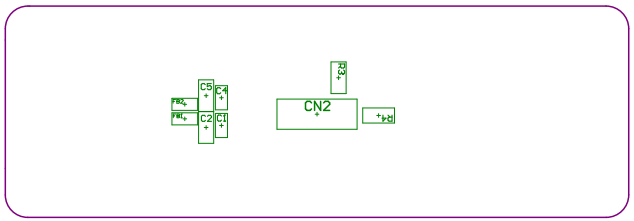
- Copper base: 1oz
- PCB Material: Prepeg FR4-Standard
- PCB Tickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Green
- Vias: Force Complete Tenting
- Stack-up: Table herein included
- Special requirements: None

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom avaliable

SpaceLab - Federal University of Santa Catarina		SPACELAB
Project: Interstage Interface Panel Nº3		
Layer: Bottom Layer Board edge		
Designed by: Yan C. de Azeredo		Project Code: IIP3
Date: 7/1/2021	Version: v2.0	Size: A4

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.40mil	3.8	
3	Top Layer	Copper	1.40mil		
4	Dielectric 1	FR-4	59.06mil	4.5	
5	Bottom Layer	Copper	1.40mil		
6	Bottom Solder	Solder Resist	0.40mil	3.8	
7	Bottom Overlay				



Fabrication specifications:

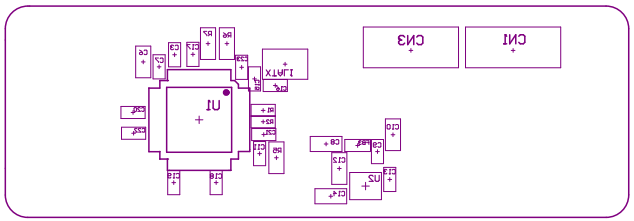
- Copper base: 1oz
- PCB Material: Prepeg FR4-Standard
- PCB Tickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Green
- Vias: Force Complete Tenting
- Stack-up: Table herein included
- Special requirements: None

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom avaliable

SpaceLab - Federal University of Santa Catarina		SPACELAB
Project: Interstage Interface Panel Nº3		
Layer: Top ASM Board edge		
Designed by: Yan C. de Azeredo		Project Code: IIP3
Date: 7/1/2021	Version: v2.0	Size: A4

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.40mil	3.8	
3	Top Layer	Copper	1.40mil		
4	Dielectric 1	FR-4	59.06mil	4.5	
5	Bottom Layer	Copper	1.40mil		
6	Bottom Solder	Solder Resist	0.40mil	3.8	
7	Bottom Overlay				



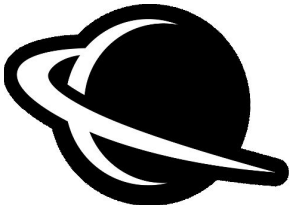
Fabrication specifications:

- Copper base: 1oz
- PCB Material: Prepeg FR4-Standard
- PCB Tickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Green
- Vias: Force Complete Tenting
- Stack-up: Table herein included
- Special requirements: None

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom avaliable

SpaceLab - Federal University of Santa Catarina		SPACELAB
Project: Interstage Interface Panel Nº3		
Layer: Bottom ASM Board edge		
Designed by: Yan C. de Azeredo		Project Code: IIP3
Date: 7/1/2021	Version: v2.0	Size: A4



Bill of Materials

Source Data From:	3_iip_quad_uart.PrjPCB	
Project:	3_iip_quad_uart.PrjPCB	
Variant:	None	
Project Code:	IIPN3	
Report Date:	7/1/2021	12:12:55 AM
Print Date:	01/07/2021	00:13:04

#	Designator	Quantity	mn Name Error:Manufac	Manufacturer Part Number	#Column Name Error:Partnumber	Description	olumn Name Error:Pa	olumn Name Error:Foo	lumn Name Error	Fitted
1	C1, C3, C4, C7, C9, C11, C13, C17, C18, C19, C20, C21, C22, C23	14		C1608X7R1H104K080AA		TDK - C1608X7R1H104K080AA - SMD Multilayer Ceramic Capacitor, 0.1 µF, 50 V, 0603 [1608 Metric], ± 10%, X7R, C Series				Fitted
2	C2, C5, C6, C10, C12	5		C2012X7R1E475K125AB		Ceramic Capacitor SMD Multilayer, 0805 [2012 Metric], 4.7 uF, 25 V, 10%, X7R, C Series				Fitted
3	FB1, FB2, FB3	3		742792608		WURTH ELEKTRONIK 742792608 FERRITE BEAD, 0.1 OHM, 0.5A, 0603				Fitted
4	R5, R6, R7	3		CRCW080510K0FKEA		RES 10.0K OHM 1/8W 1% 0805 SMD				Fitted
5	C8, C14	2		08055C103KAT4A		AVX - 08055C103KAT4A - SMD Multilayer Ceramic Capacitor, 10000 pF, 50 V, 0805 [2012 Metric], ± 10%, X7R				Fitted
6	CN1, CN3	2		53398-0571		Wire-To-Board Connector, Vertical, PicoBlade 53398 Series, Surface Mount, Header, 5, 1.25 mm				Fitted
7	C15, C16	2		CL10C120JB8NNNC		Cap Ceramic 12pF 50VDC C0G 5% SMD 0603 Paper T/R				Fitted
8	R1, R2	2		RC0603FR-0710RL		YAGEO (PHYCOMP) - RC0603FR-0710RL - RES, THICK FILM, 10R, 1%, 0.1W, 0603				Fitted
9	CN2	1		651005136421		WURTH ELEKTRONIK - 651005136421 - Conector USB, Mini USB Tipo B, USB 2.0, Receptáculo, 5 Vías, Montaje de Agujero Pasante, Vertical				Fitted
10	XTAL1	1		AA-12.000MAGE-T		Crystals 12.000MHz 30ppm 12pF -40C to 85C				Fitted
11	R4	1		CRCW08050000Z0EA		VISHAY - CRCW08050000Z0EA - SMD Chip Resistor, Jumper, 0805 [2012 Metric], 0 ohm, CRCW e3 Series, 150 V, Thick Film, 125 mW				Fitted
12	U1	1		FT4232HL-REEL		FTDI - FT4232HL-REEL - USB-UART/MPSSE, 4232, QUAD, 64LQFP				Fitted
13	R3	1		RMCF0805FT12K0		Resistor, SMT, 0805, 12K Ohm, +/-1%, +/-100ppm, Thk Film, T/R Marked				Fitted
14	U2	1		TPS79333DBVR		TEXAS INSTRUMENTS - TPS79333DBVR - IC, V REG, LINEAR, 0.2A, SOT-23-5				Fitted