

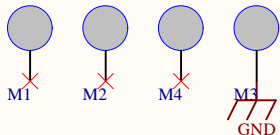
Rev	Description	Date	Author
1.0	Initial release.	26-Fev-2020	Yan C. de Azeredo
1.1	Changes to PCB layout, new sheet hierarchy and added first output, manufacture and BOM files to project.	21-Mar-2020	Yan C. de Azeredo
1.2	PCB design checklist completed and finishing touches in schematic and PCB design.	20-Apr-2020	Yan C. de Azeredo
1.3	Removed GND plane on bottom layer and changed PCB specifications according to JLCPCB production Capabilities.	06-May-2020	Yan C. de Azeredo

Revision History

FIDUTIALS



MECHANICAL HOLES



PCB Elements

OBDH 2.0 to DB_Memory interface connector
1_Interface.SchDoc

OBDH_DVCC	
D BOARD GPIO0	D BOARD GPIO1
D BOARD GPIO2	
SPI CLK	
SPI MISO	
SPI MOSI	
D BOARD SPI CS0	
D BOARD SPI CS1	

Interface connector to motherboard (OBDH 2.0)

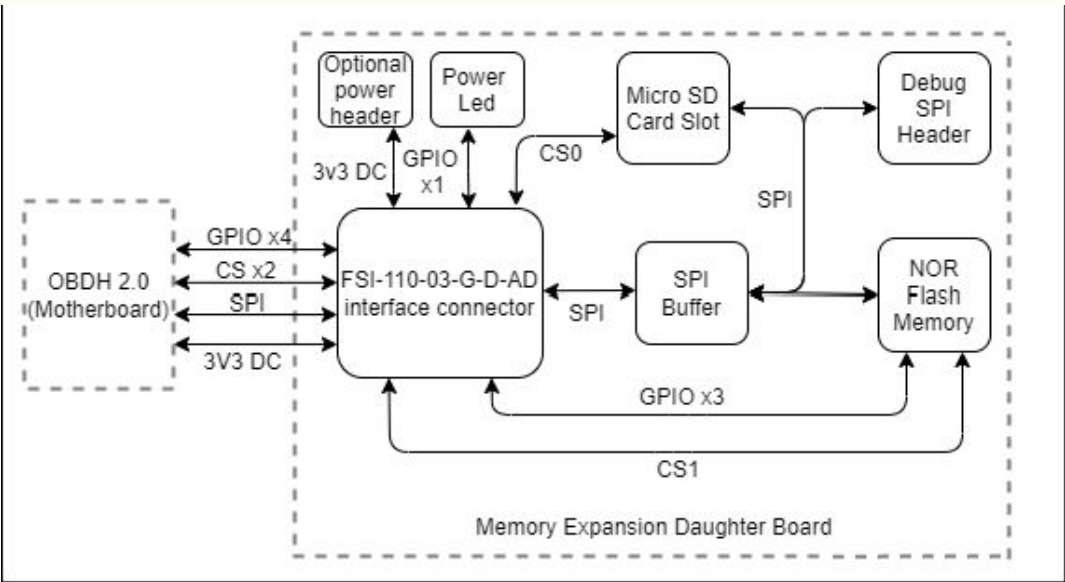
Memory Expansion Daughter Board (DB_Memory) of OBDH 2.0

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- Drawn by: Yan Castro de Azeredo.
- Reviewers: André Martins Pio de Mattos and Gabriel Mariano Marcelino.
- Based on OBDH 2.0 designed by: André Martins Pio de Mattos.
- Support: Kleber Reis Gouveia Júnior.

Project Information

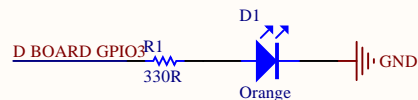


Block Diagram

Title: 0_Architecture.SchDoc			UFSC - SpaceLab	
Size: A4	Project: Memory Expansion Daughterboard	Revision: V1.3	University Campus - Trindade	
Date: 07/05/2020	Time: 11:21:48	Sheet 1 of 4	Dep. of Electrical Engineering - CTC	
Drawn By: Yan Castro de Azeredo		Model: Test Model	Florianópolis, Santa Catarina, Brazil	
			CEP: 88040 - 900	



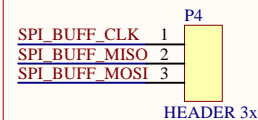
SYSTEM POWER LED



DEBUG SPI HEADERS

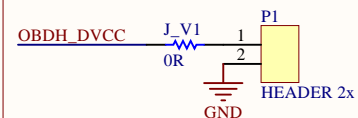


Right angle header pin for debugging SPI signals after buffed

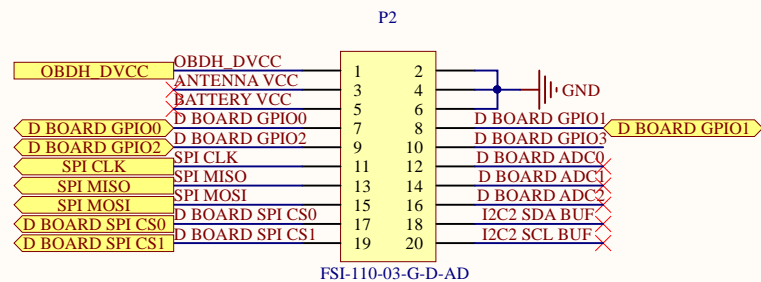


Right angle header pin for debugging SPI signals before buffed

OPTIONAL TESTING POWER SOURCE



Right angle pin header for testing board without been powered by OBDH 2.0

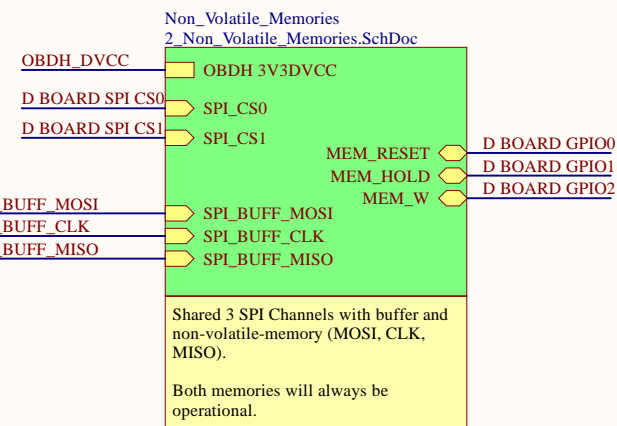
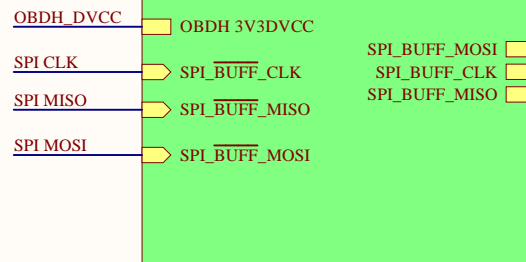
OBDH 2.0 TO DAUGHTER BOARD INTERFACE CONNECTOR
(Memory Expansion Interface)

FSI-110-03-G-D-AD

Not used features of a the generic daughter board interface connector for the Memory Expansion board:

- ANTENNA VCC
- BATTERY VCC
- D BOARD GPIO3, ADC0, ADC1, ADC2, ADC3
- I2C2 SDA BUF
- I2C2 SCL BUF

According to SAMTEC product specification the maximum body height of the connector when pressed with 30 grams of normal force is 0.328 cm.

Communication_Buffers
3_Communication_Buffers.SchDoc

Title: 1_Interface.SchDoc

Size: A4 Project: Memory Expansion Daughterboard Revision: V1.3

Date: 07/05/2020 Time: 11:21:49 Sheet 2 of 4

Drawn By: Yan Castro de Azeredo

Model: Test Model

UFSC - SpaceLab
University Campus - Trindade
Dep. of Electrical Engineering - CTC
Florianópolis, Santa Catarina, Brazil
CEP: 88040 - 900



A

A

B

B

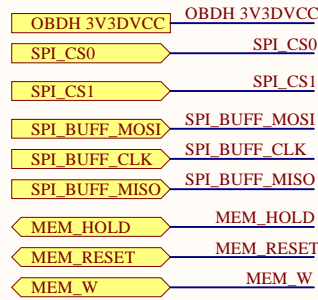
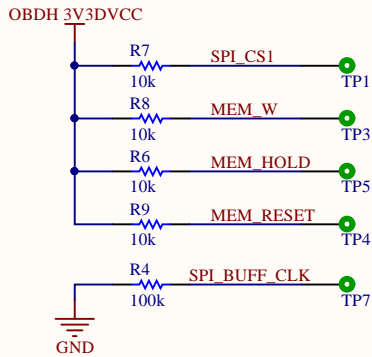
C

C

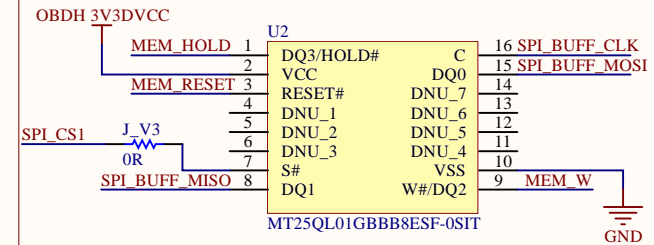
D

D

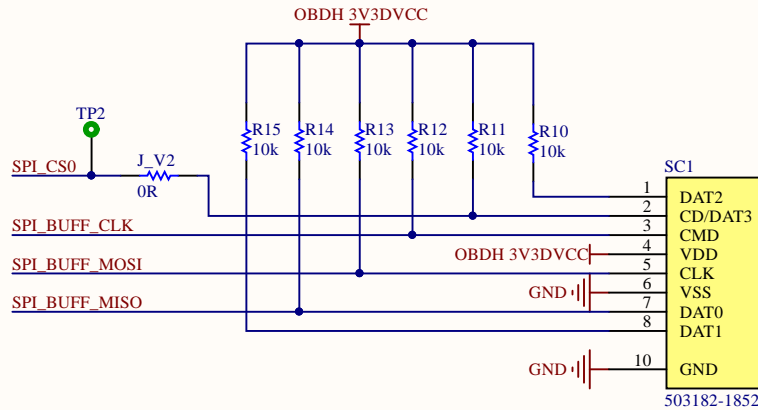
PULL UP AND PULL DOWN RESISTORS



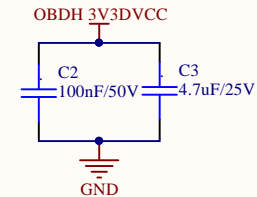
NON-VOLATILE MEMORY

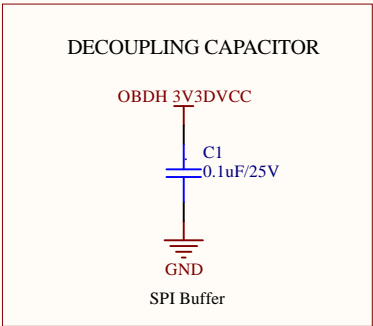
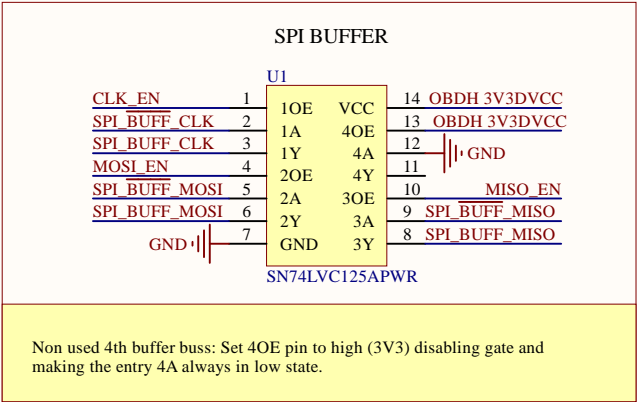
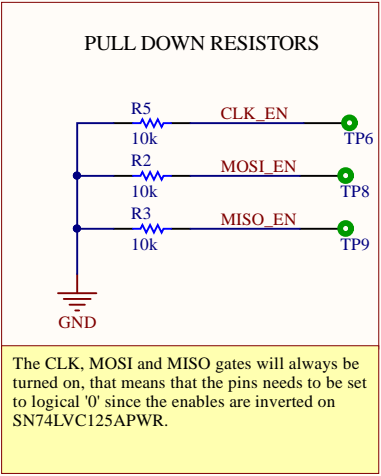
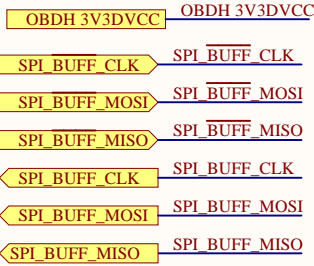


uSDCard

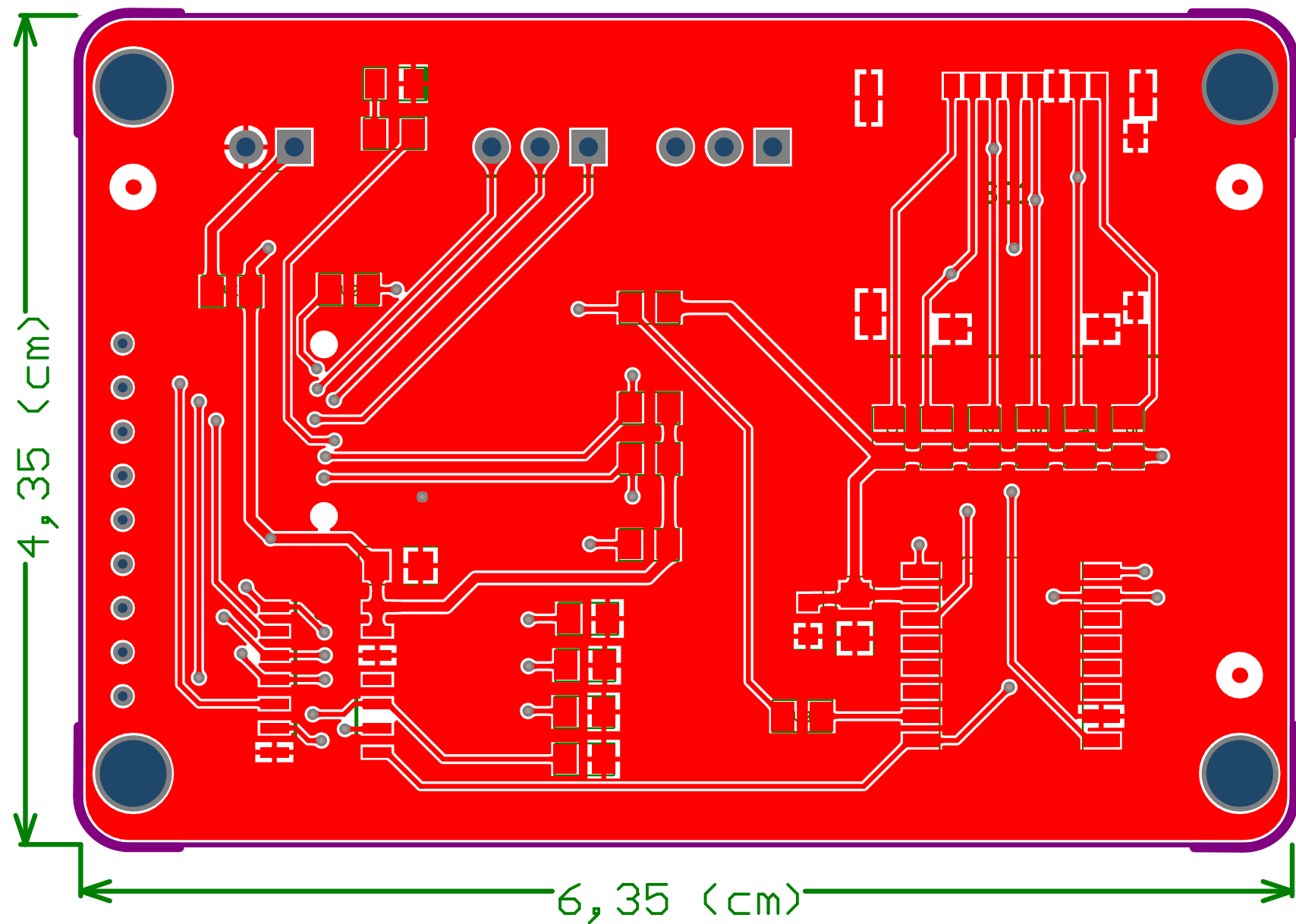


DECOUPLING CAPACITOR



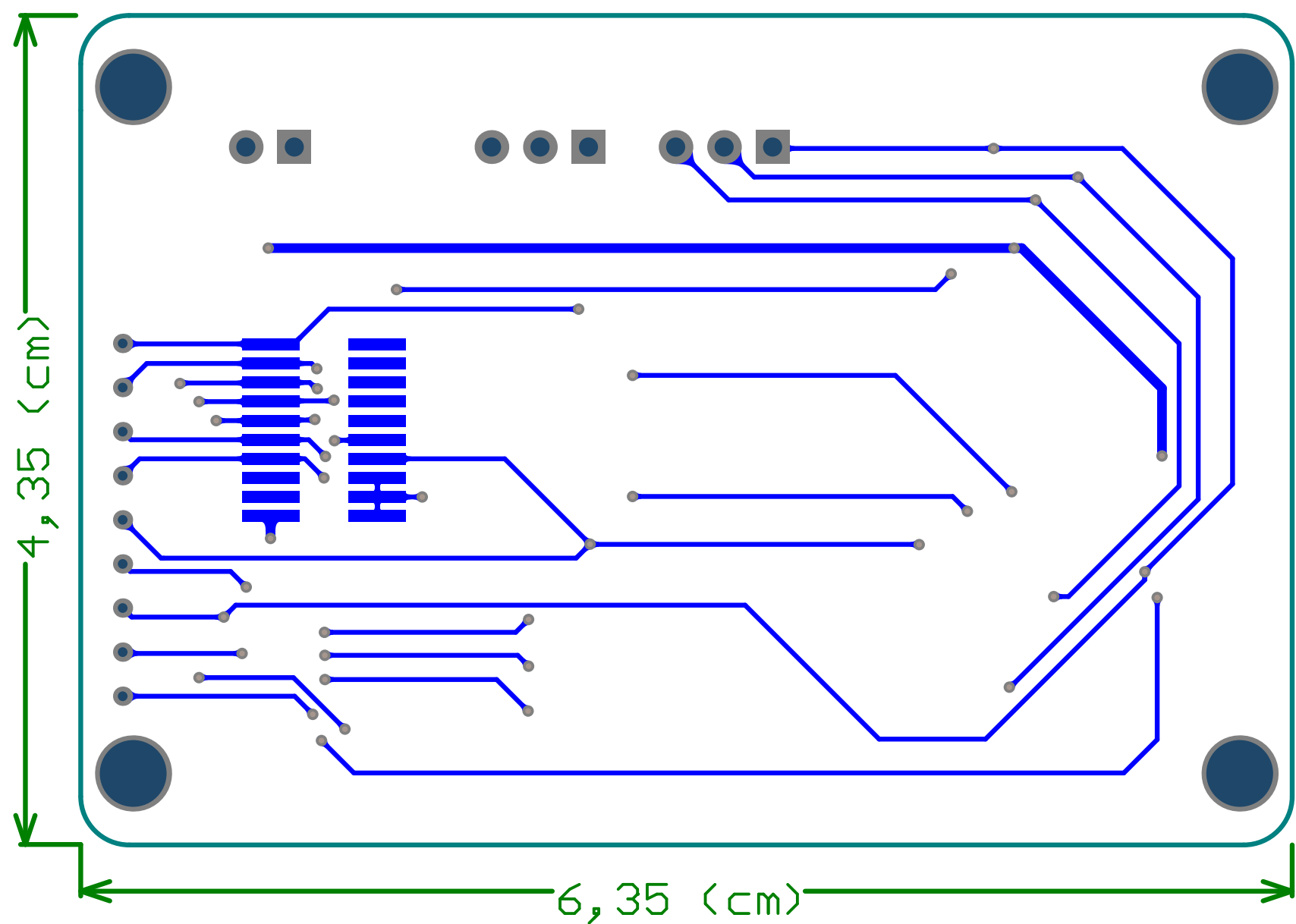


Layer	Name	Material	Thickness	Constant
1	Top Overlay			
2	Top Solder	Solder Resist	0,010mm	3,5
3	Top Layer	Copper	0,036mm	
4	Dielectric 1	FR-4	1,600mm	4,8
5	Bottom Layer	Copper	0,036mm	
6	Bottom Solder	Solder Resist	0,010mm	3,5
7	Bottom Overlay			



TITLE: OBDH 2.0 DAUGHTERBOARD		REV: 1.3	DATE: 06/05/2020
MATERIAL: FR4	Silkscreen color: yellow	Project: DB Memory	
Board Thickness: 1.69mm	Layers: 02	Space Technology Research Laboraty Federal University of Santa Catarina SpaceLab UFSC	
PCB Surface: ENIG	Drawing: Yan C. de Azeredo		

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Board Thickness: 1.69mm	Layers: 02	Space Technology Research Laboratory Federal University of Santa Catarina SpaceLab UFSC	
PCB Surface: ENIG	Drawing: Yan C. de Azeredo		

P1

D1

R1

P3

P4

SC1

J_V1

J_V2

R7

R8

R9

R10

R11

R12

R13

R14

R15

R6

C3 +

U1

R5

R4

R2

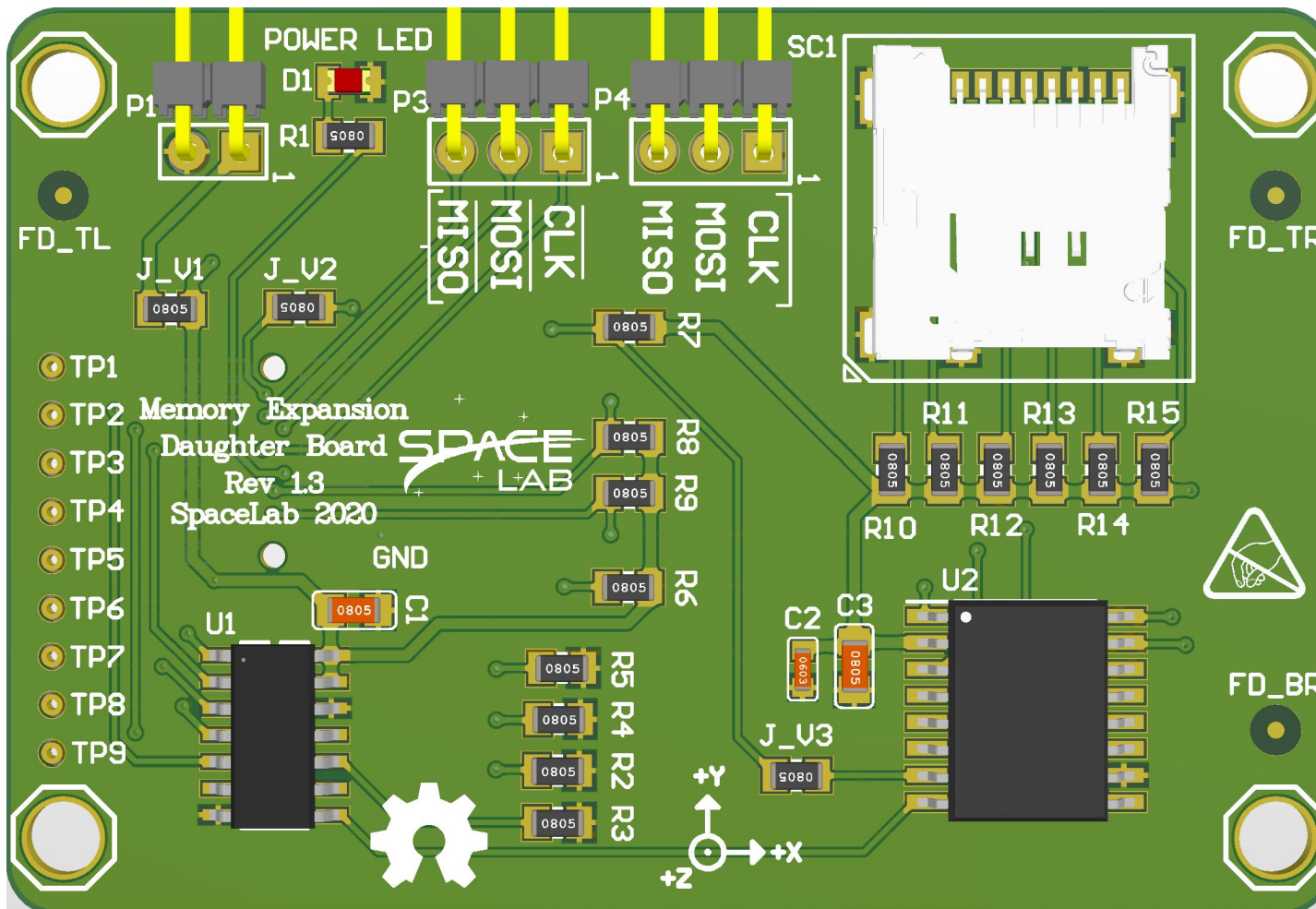
R3

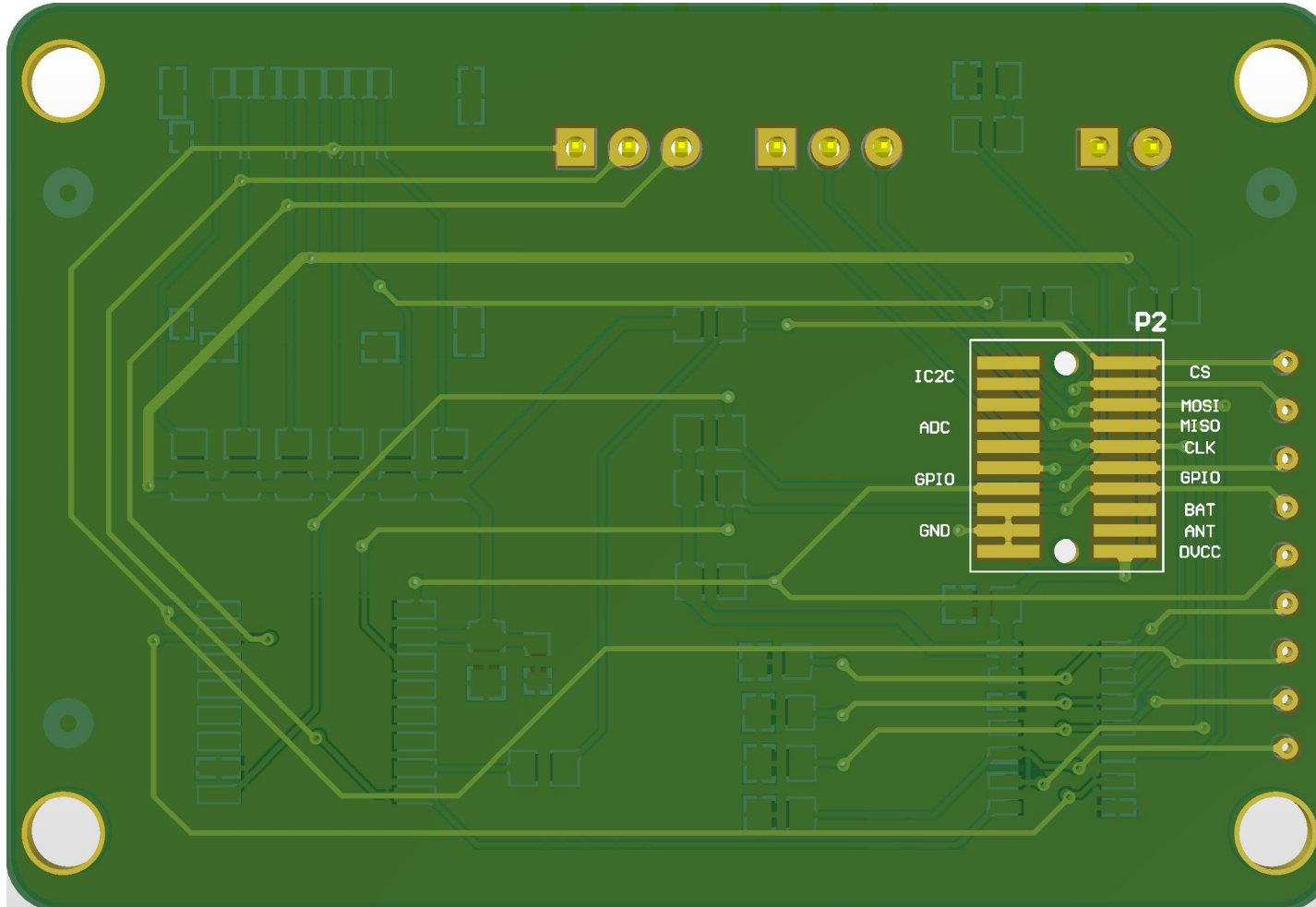
C1 +

C2 +

J_V3

U1







Bill of Materials

Source Data From: DB_Memory.PrjPCB

Project: DB_Memory.PrjPCB

Variant: None

Project Code: <Parameter ProductCode not found>

Report Date: 07/05/2020

11:22:10

Print Date: 07/05/2020

11:22:30

#	Supplier 1	Supplier Part Number 1	Supplier 2	Supplier Part Number 2	Manufacturer	Comment	Description	Quantity	Designator	Column Name Error	Notes
1	Digi-Key	541-10.0KCCT-ND	Mouser	71-CRCW0805-10K-E3	Vishay	10k	RES 10K OHM 1/8W 1% 0805	13	R2, R3, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15		
2	Digi-Key	311-0.0ARCT-ND	Mouser	603-RC0805JR-070RL	Yageo	0R	RES 0R OHM 1/8W JUMPER 0805	3	J_V1, J_V2, J_V3		
3	Mouser	200-TSW10308GSRA	Digi-Key	SAM1039-03-ND	Samtec	HEADER 3x	Conn Unshrouded Header HDR 3 POS 2.54mm Solder RA Thru-Hole Automotive Bulk	2	P3, P4		
4	Digi-Key	160-1413-1-ND	Mouser	859-LTST-C170KFKT	Vishay Lite-On	Orange	SMD Orange LED	1	D1		
5	Digi-Key	296-1222-1-ND	Mouser	595-SN74LVC125APWR	Texas Instruments	SN74LVC125APWR	IC BUF NON-INVERT 3.6V 14TSSOP	1	U1		
6	Digi-Key	311-100KCRCCT-ND	Mouser	603-RC0805FR-07100KL	Yageo	100k	RES 100K OHM 1/8W 1% 0805	1	R4		
7	Digi-Key	311-1141-1-ND	Mouser	603-CC805KRX7R8BB104	Yageo	0.1uF/25V	CAP CER 0.1UF 25V 10% X7R 0805	1	C1		
8	Digi-Key	311-1401-1-ND	Mouser	603-CC201KRX7R9BB101	Yageo	100nF/50V	CAP CER 100nF 50V 0603 10%	1	C2		
9	Digi-Key	587-2990-6-ND	Mouser	963-TMK212AB7475KG-T	Taiyo Yuden	4.7uF/25V	CAP CER 4.7UF 25V 10% X7R 0805	1	C3		
10	Digi-Key	2019-RK73H2ATTD3300FCT-ND	Mouser	660-RK73H2ATTD3300F	KOA Speer	330R	RES 330R OHM 1/4W 1% 0805	1	R1		
11	Mouser	200-FSI11003GDAD	Digi-Key	SAM9412-ND	Samtec	FSI-110-03-G-D-AD	CONN STACKING 20POS SMD GOLD	1	P2		
12	Mouser	200-TSW10208GSRA	Digi-Key	SAM1039-02-ND	Samtec	HEADER 2x	Conn Unshrouded Header HDR 2 POS 2.54mm Solder RA Thru-Hole Automotive Bulk	1	P1		
13	Mouser	340-278808-TRAY	Digi-Key	557-1789-ND	Micron Technology	MT25QL01GBBB8ESF-OSIT	NOR Flash Serial-SPI 3V 1Gbit 1024M/512M/256M x 1bit/2bit/4bit 6ns 16-Pin SOP-II	1	U2		
14	Mouser	538-503182-1852	Digi-Key	WM12834CT-ND	Molex	MicroSD Card Connector	MOLEX - 503182-1852 - Micro SD Normal UltraLowPro8CktEmbsTpPkg RoHS Compliant: Yes	1	SC1		