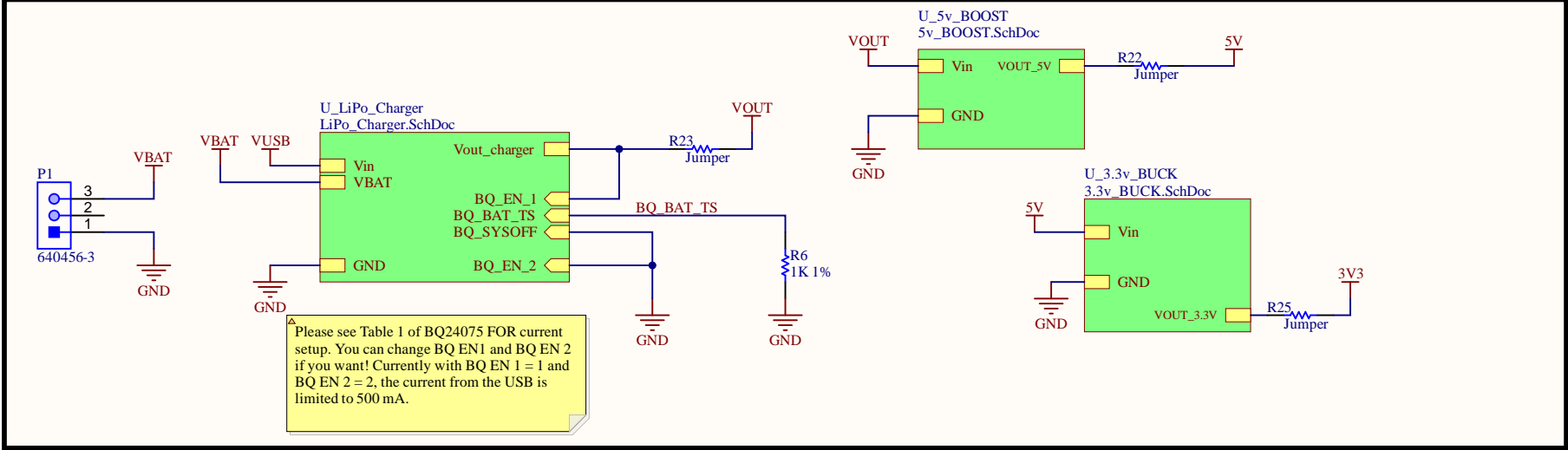


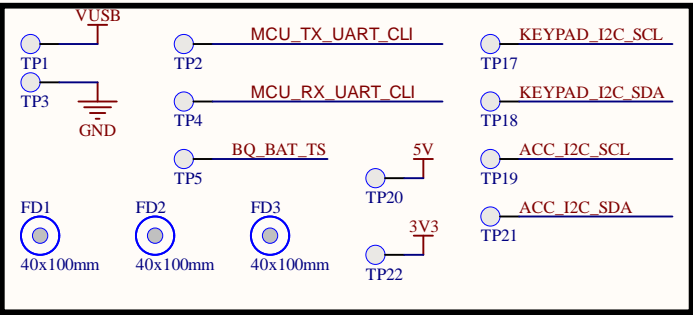
POWER SUPPLY



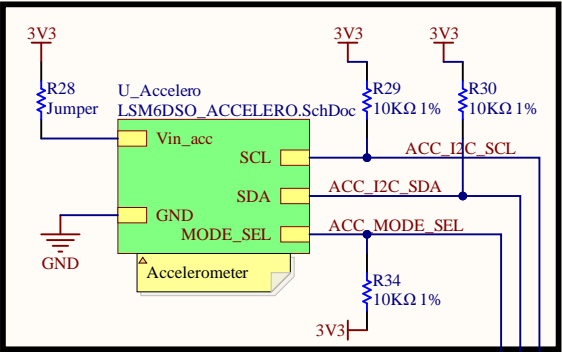
NOTES

Section to add version notes or any other general information

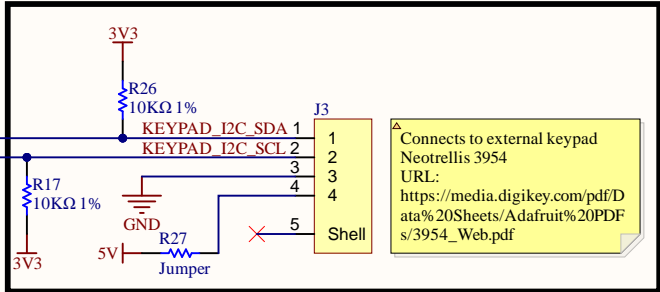
TEST POINTS AND FIDUCIALS



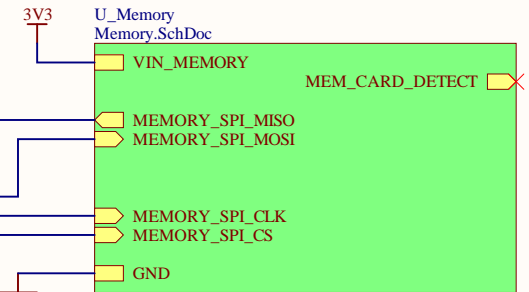
ACCELEROMETER



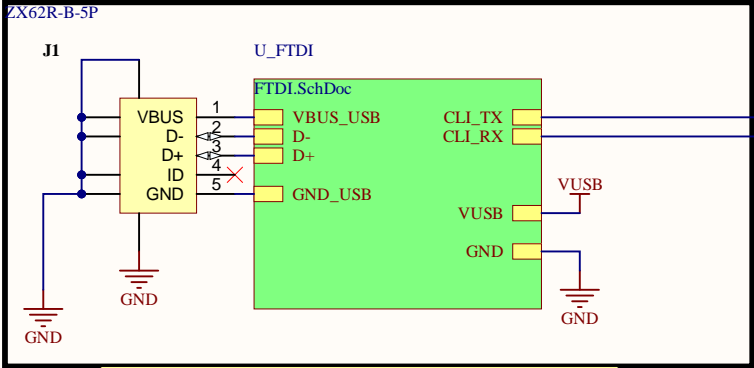
KEYPAD



SD CARD MEMORY

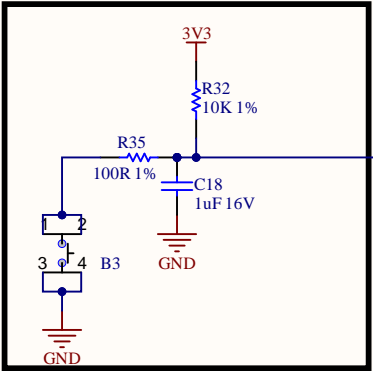


USB CONNECTOR + FTDI

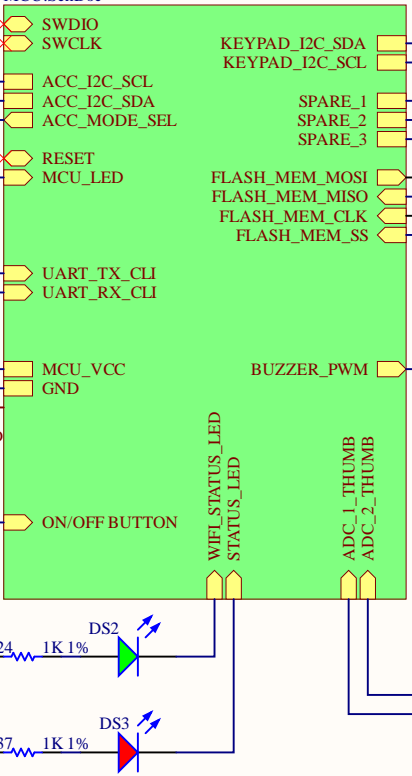


NOTE:
The FTDI Chip is an useful chip that allows us to convert USART cmessages into USB signals. It allows us to connect the MCU directly to the USB port of a computer and use the serial terminal (it is the same bridge used on the SAMW25 Xplained Board).The FTDI device also contains protection circuitry for the USB.

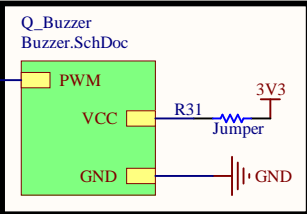
ON/OFF BUTTON



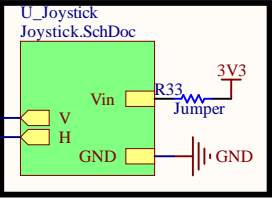
MCU




BUZZER



JOYSTICK



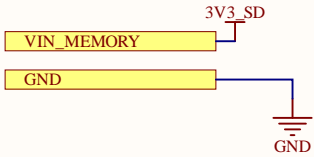
APPROVALS		DATE		PROJECT		 <div>Penn Engineering <small>290 S 33rd Street Detkin Lab Philadelphia PA 19104</small></div>	
ENG: SP, PS				Shipwars			
DSN: SP, PS				PROJECT REVISION:		DOCUMENT REVISION:	
CHK: SP, PS						DESIGN ITEM:	
REFERENCE DOCUMENTS				TITLE			
BOM:				Shipwars Main Schematic			
ASSY DWG:				SIZE		CAGE CODE	
FAB DWG:				B		DWG NO.	
PCB DWG:				SCALE:		FILE NAME	
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				SHEET		1 OF 10	

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REVISION	DESCRIPTION	DATE	APPROVED

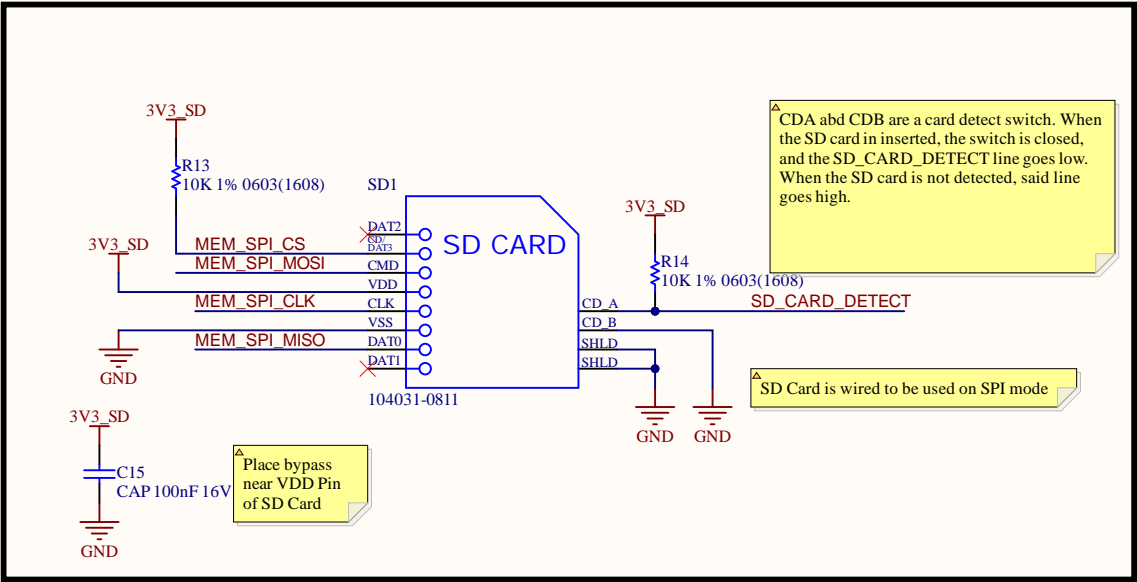
MEMORY_SPI_MOSI	MEM_SPI_MOSI
MEMORY_SPI_MISO	MEM_SPI_MISO
MEMORY_SPI_CLK	MEM_SPI_CLK
MEMORY_SPI_CS	MEM_SPI_CS
MEM_CARD_DETECT	SD_CARD_DETECT




TESTPOINTS

TP6	3V3_SD
TP7	SD_CARD_DETECT
TP8	MEM_SPI_MOSI
TP9	MEM_SPI_MISO
TP10	MEM_SPI_CLK
TP11	MEM_SPI_CS

SD CARD

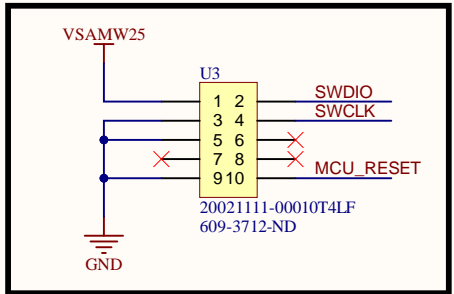
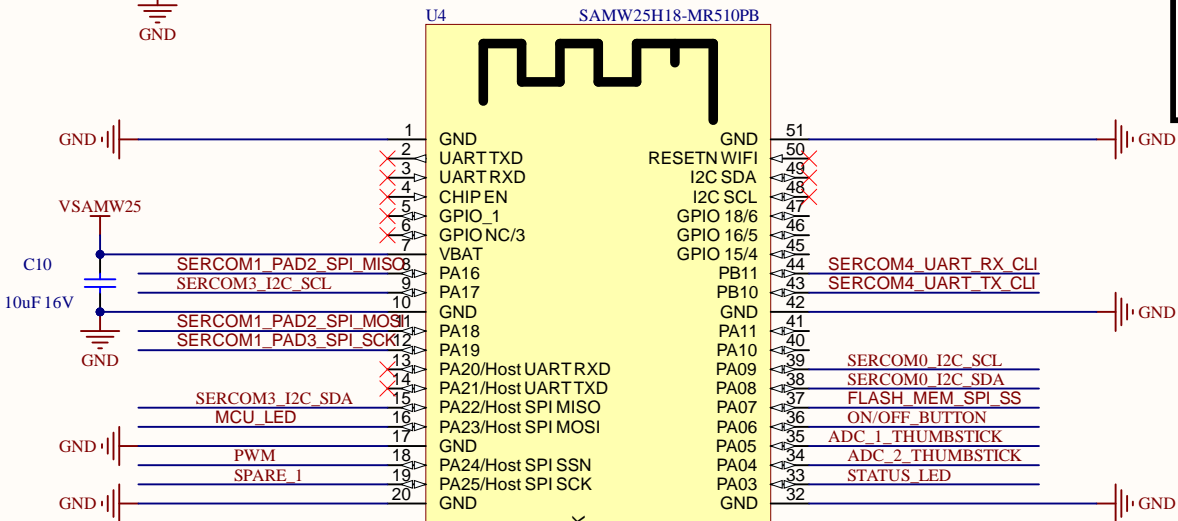
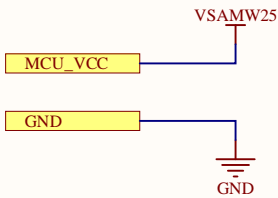


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DSN: SP, PS				PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:			
CHK: SP, PS				TITLE							
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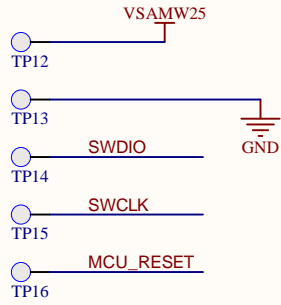
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REV. 1/2020

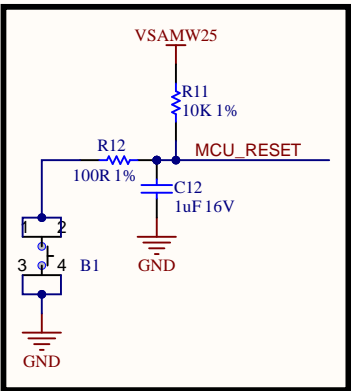
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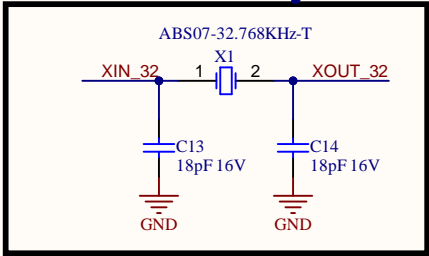
DEBUGGER PORT



Reset Button



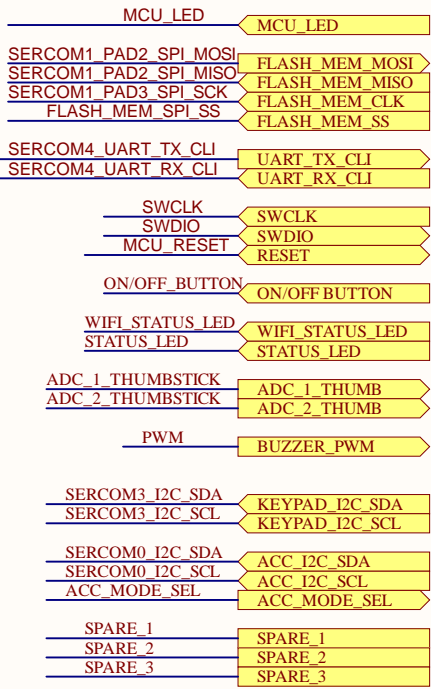
32.768 Crystal



Calculation of crystal load capacitors:
 $C_{ext} = 2 \times (C_{crystal} - C_{para} - C_{pcb})$

Crystal = 12.5pF (from crystal datasheet)
Cpara = 3.15pF (from MCU datasheet)
Cpcb = 0.5pF (estimate)

 $C_{ext} = 2 \times (12.5pF - 3.15pF - 0.5pF) = 17.7pF$



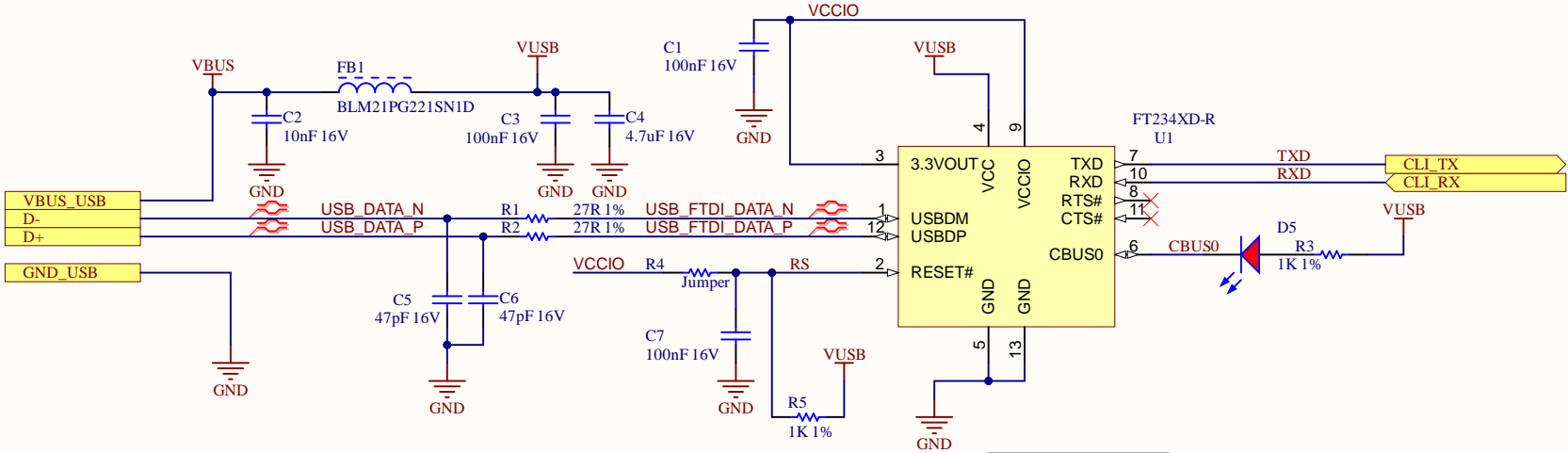
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ENG: SP, PS		Shipwars	Penn Engineering		
DSN: SP, PS		PROJECT REVISION:	DOCUMENT REVISION:	DESIGN ITEM:	
CHK: SP, PS		TITLE Shipwars MCU Schematic			
REFERENCE DOCUMENTS		SIZE B	CAGE CODE	DWG NO.	REV .1.0.0
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ASSY DWG:					
FAB DWG:					
PCB DWG:		SCALE:	FILE NAME MCU.SchDoc	SHEET 3	OF 10

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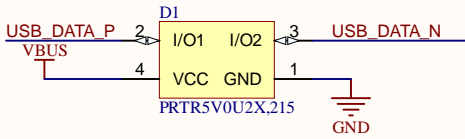
DWG. NO. 1.0.00
REV. 1/21


REVISION	DESCRIPTION	DATE	APPROVED

FTDI CHIP



USB ESD PROTECTION

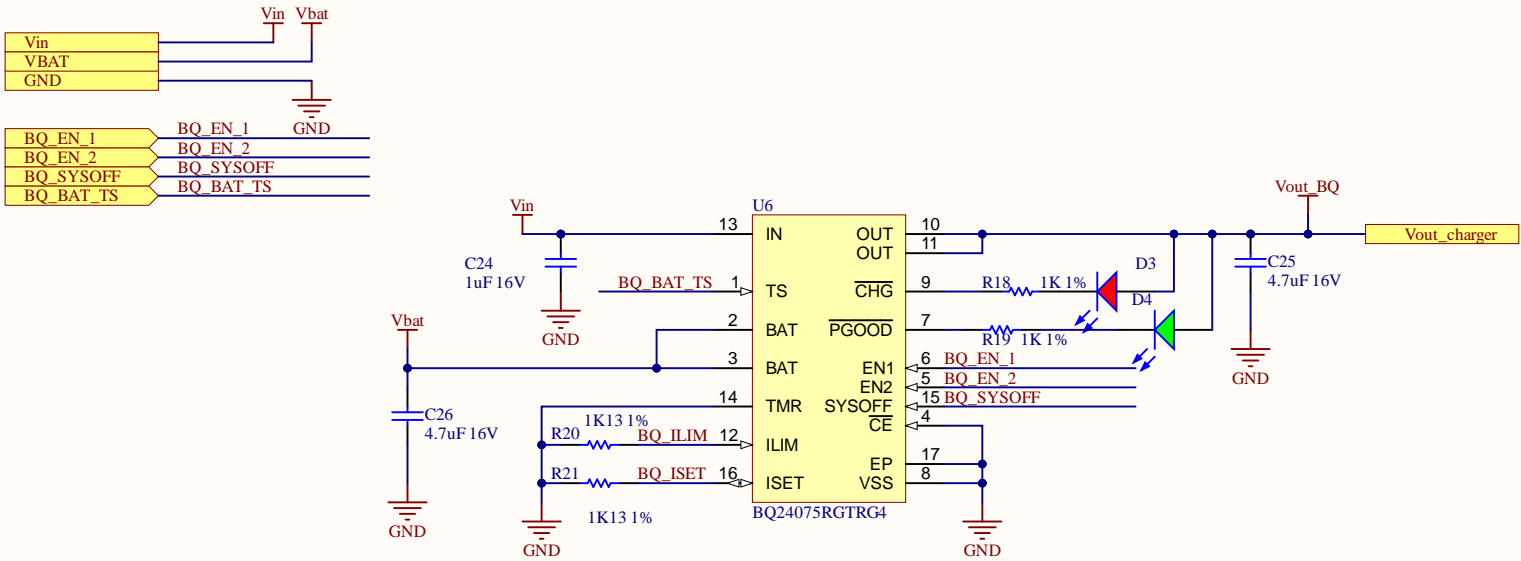


APPROVALS		DATE	PROJECT		 <div>Penn Engineering <small>ANALYSIS AND PROTECTION</small></div>		290 S 33rd Street Detkin Lab Philadelphia PA 19104		
ENG:	SP, PS		Shipwars						
DSN:	SP, PS		PROJECT REVISION:				DOCUMENT REVISION:		DESIGN ITEM:
CHK:	SP, PS		TITLE						
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REV. SHEET

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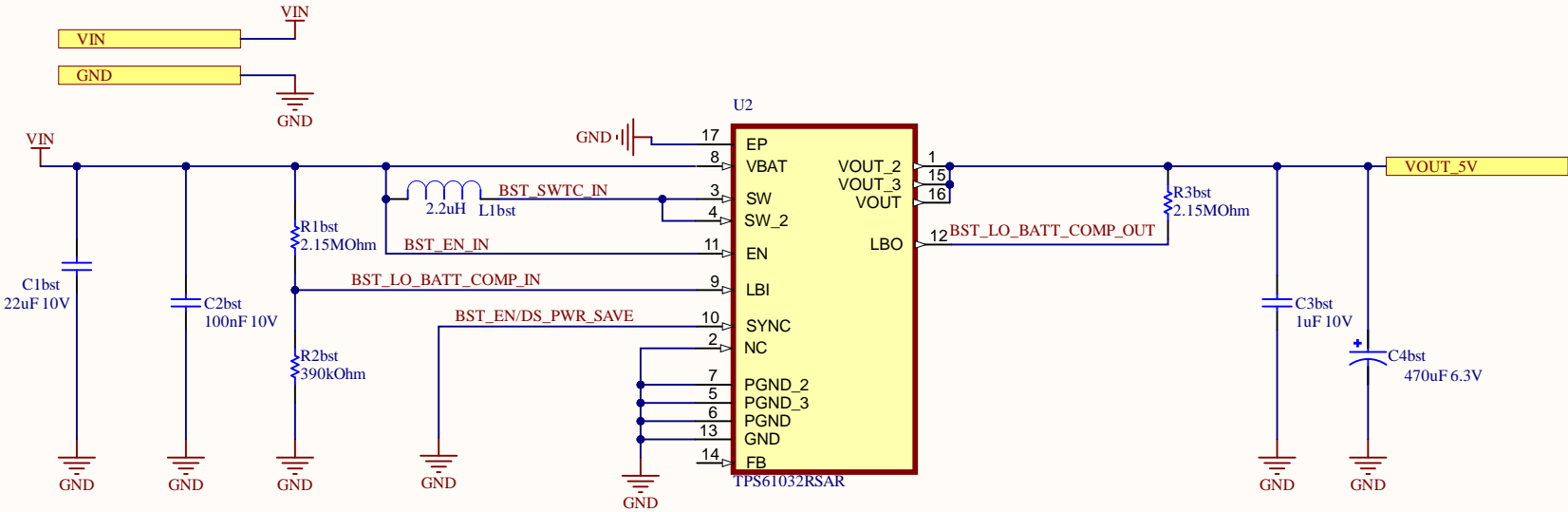


ilim = Kilim/Rilim #NAME? 1610/1130 = 1.42A (if EN2=1, EN1=0)

ISET = Kiset/Rset #NAME? 890/1130 = 0.788A

APPROVALS		DATE	PROJECT		290 S 33rd Street Detkin Lab Philadelphia PA 19104	
ENG:	SP, PS		Shipwars			
DSN:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:	
CHK:	SP, PS				DESIGN ITEM:	
REFERENCE DOCUMENTS			TITLE			
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PCB DWG:			SCALE:	FILE NAME	LiPo_Charger.SchDoc	SHEET 5 OF 10


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TPS61032
VIN: 3.3V to 5V
OUT: 5V up to 2A
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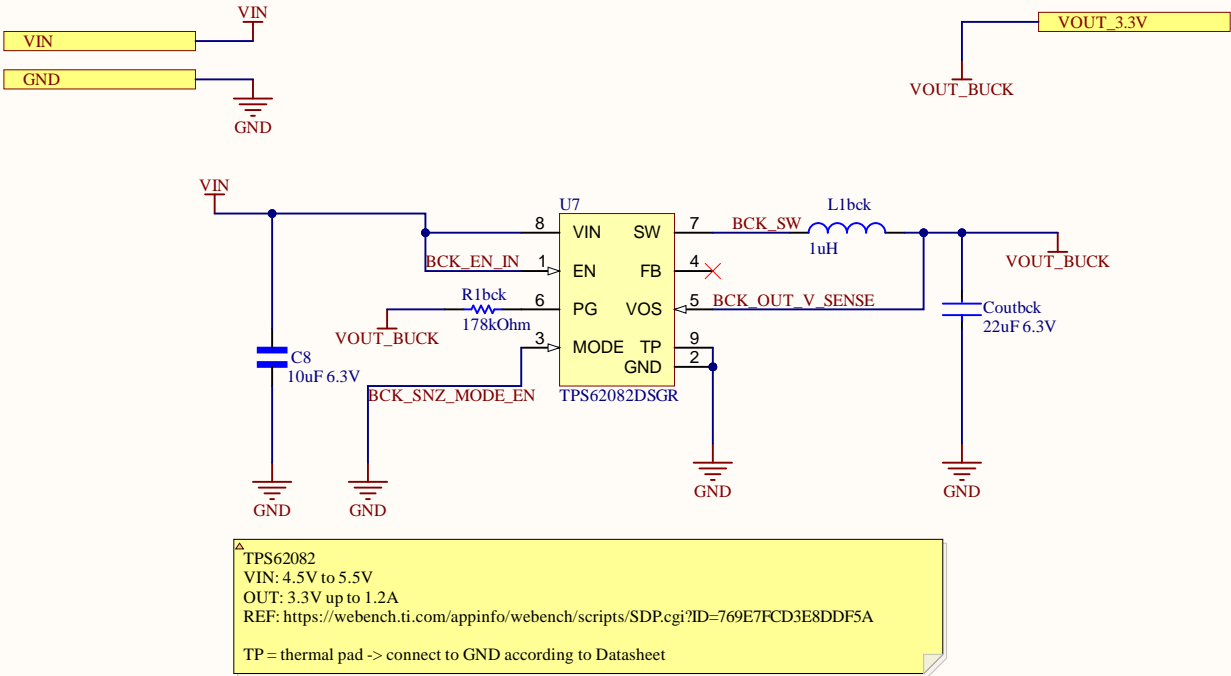
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REV. SHIT


REVISION	DESCRIPTION	DATE	APPROVED

APPROVALS		DATE	PROJECT		 <div>Penn Engineering <small>ANALYSIS AND PROTECTION</small></div>		200 S 33rd Street Detkin Lab Philadelphia PA 19104	
ENG:	SP, PS		Shipwars					
DSN:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
CHK:	SP, PS		TITLE					
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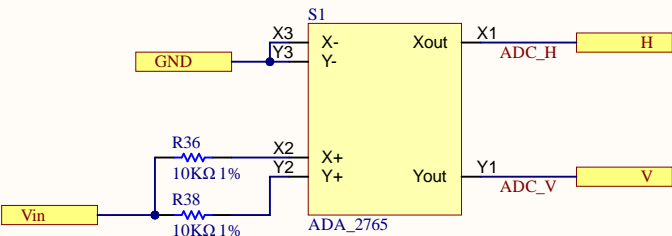
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APPROVALS		DATE		PROJECT		 <div> <div>290 S 33rd Street</div> <div>Detkin Lab</div> <div>Philadelphia</div> <div>PA 19104</div> </div>	
ENG:	SP, PS			Shipwars			
DSN:	SP, PS			PROJECT REVISION:		DOCUMENT REVISION:	
CHK:	SP, PS					DESIGN ITEM:	
REFERENCE DOCUMENTS				TITLE			
BOM:				Shipwars Buck Schematic			
ASSY DWG:				SIZE	CAGE CODE	DWG NO.	REV
FAB DWG:				B			1.0.0
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					3.3v_BUCK.SchDoc	7	10

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Δ Sparkfun COM-09032 Thumb Joystick

REF:
<http://cdn.sparkfun.com/datasheets/BreakoutBoards/Joystick-Breakout-v12b.pdf>

pin reference in :

DWG. NO. 1.0.0
REV. SHEET

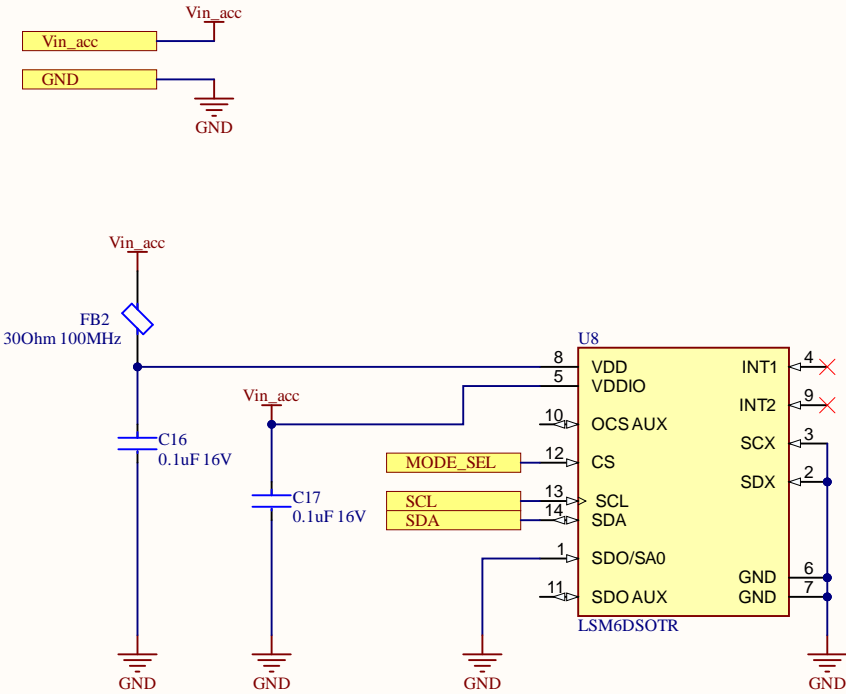
REVISION	DESCRIPTION	DATE	APPROVED

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DSN:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
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FAB DWG:			B					.1.0.0
PCB DWG:			SCALE:	FILE NAME			SHEET	OF
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Text




SLM6DSOTR ACCELEROMETER

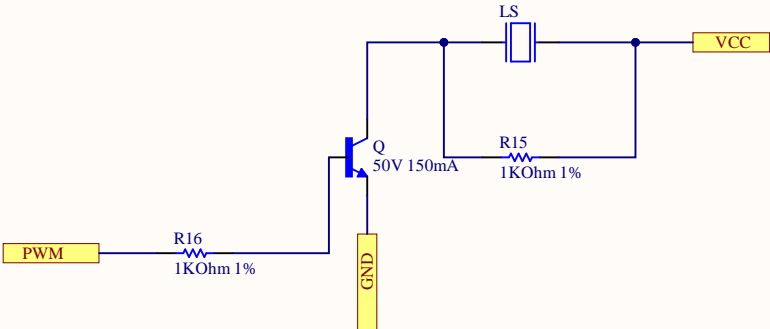
REF: https://cdn.sparkfun.com/assets/3/1/6/b/c/SparkFun_Qwiic_6DoF_LSM6DSO_Schematic.pdf

OR

REF: <https://www.st.com/resource/en/datasheet/lsm6dso.pdf> (Page35)

APPROVALS		DATE		PROJECT				290 S 33rd Street Detkin Lab Philadelphia PA 19104	
ENG: SP, PS				Shipwars					
DSN: SP, PS				PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
CHK: SP, PS				TITLE					
REFERENCE DOCUMENTS				Shipwars Accelero Schematic					
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								SHEET 9 OF 10	

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PS1240P02BT 3 V 4kHz buzzer

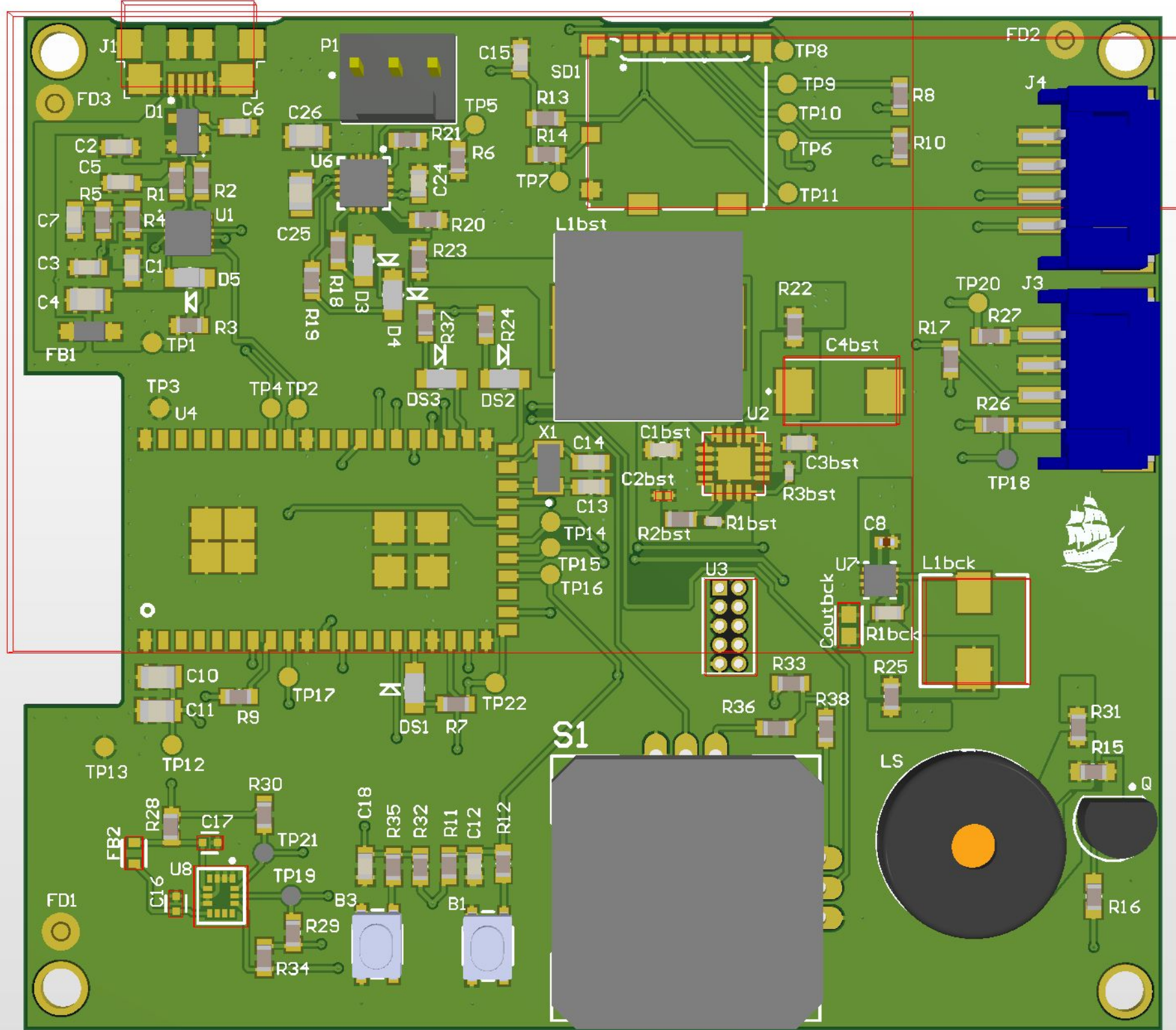
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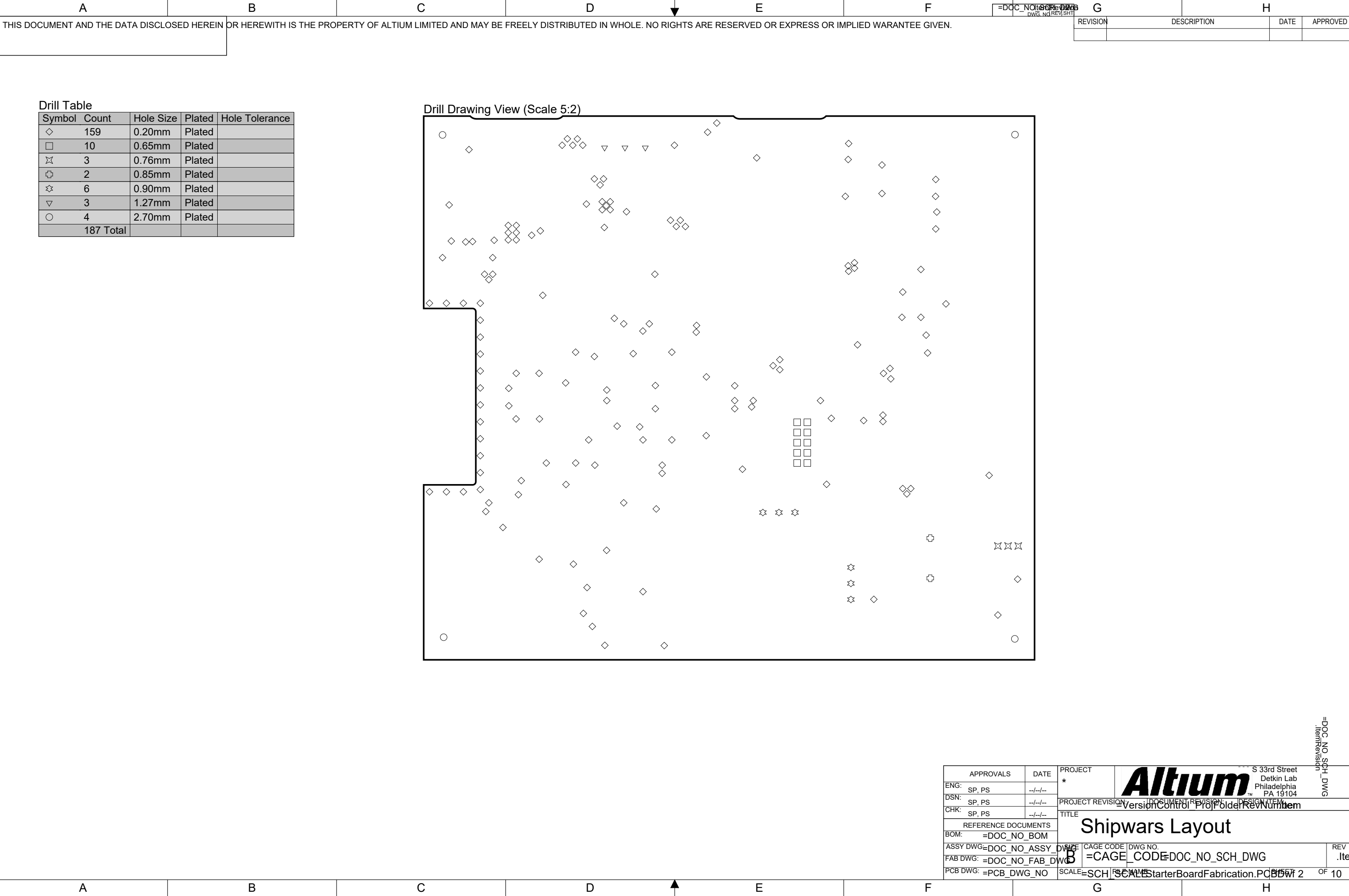
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REV. SH1

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ENG:	SP, PS		Shipwars										
DSN:	SP, PS		PROJECT REVISION:				DOCUMENT REVISION:		DESIGN ITEM:				
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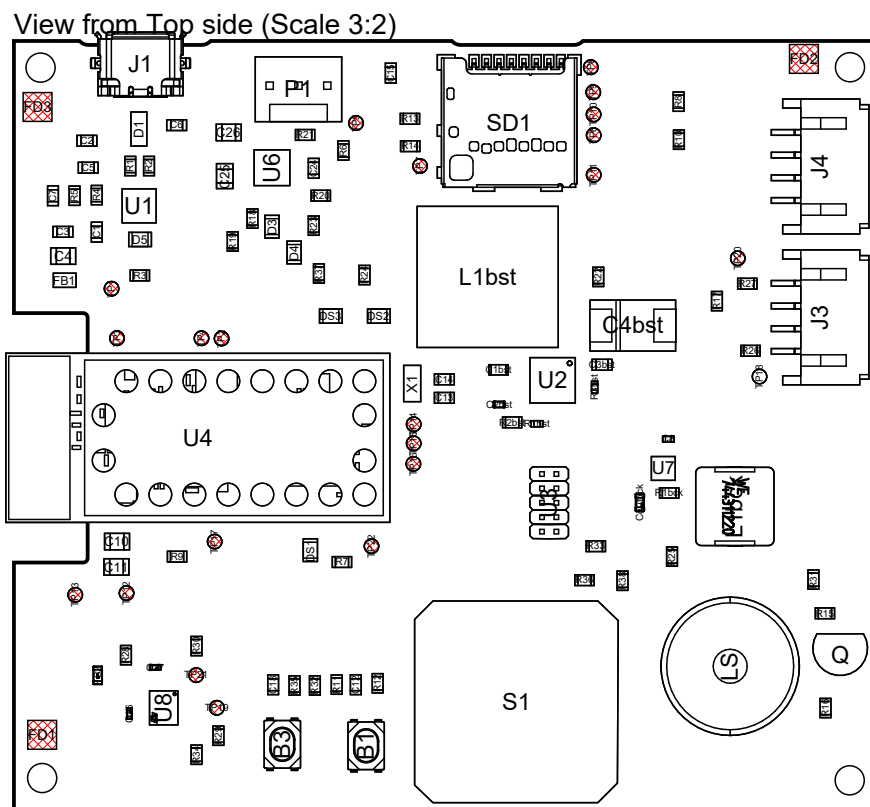







~~=DOC_NO_SCH_DWG
.ItemRevision~~

NOTES:
1. THIS ITEM IS ELECTROSTATIC SENSITIVE
AND SHALL BE HANDLED ACCORDINGLY



Right side (e)

APPROVALS		DATE		PROJECT		S 33rd Street Detkin Lab Philadelphia PA 19104		SCH DWG
ENG:	SP, PS	--/--/--	*					
DSN:	SP, PS	--/--/--	PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
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