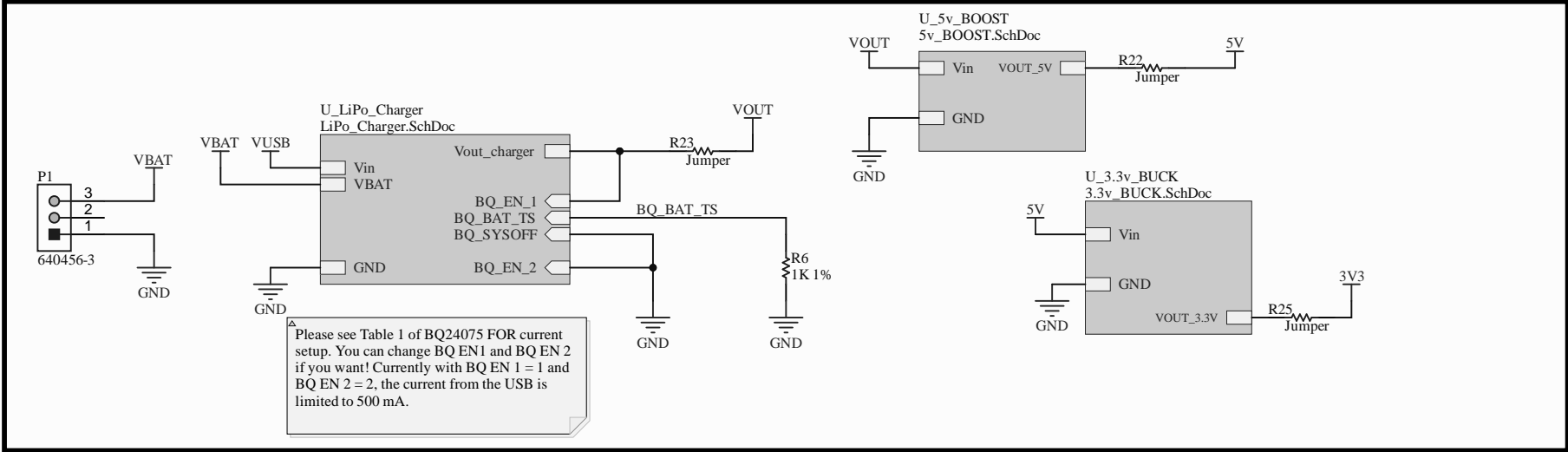


REVISION	DESCRIPTION	DATE	APPROVED

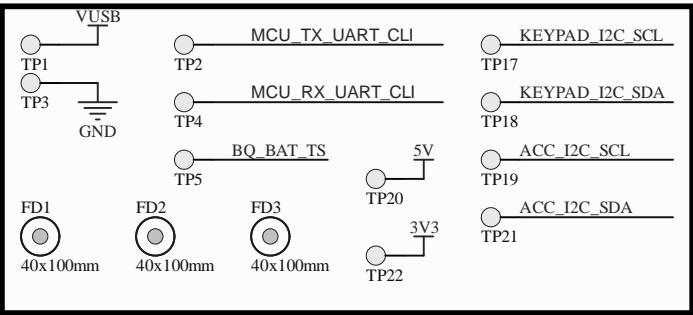
POWER SUPPLY



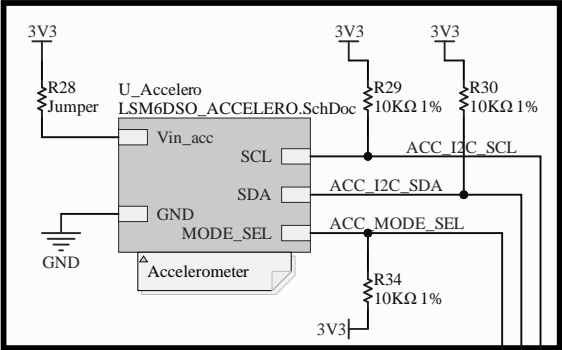
NOTES

Section to add version notes or any other general information

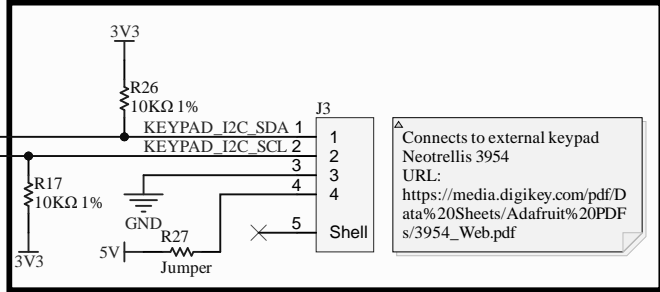
TEST POINTS AND FIDUCIALS



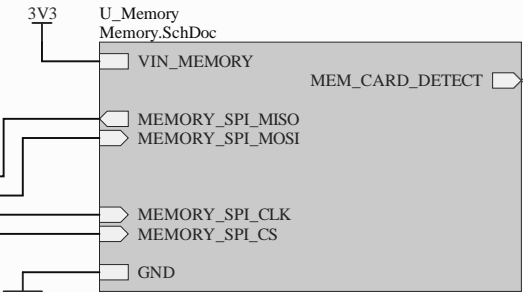
ACCELEROMETER



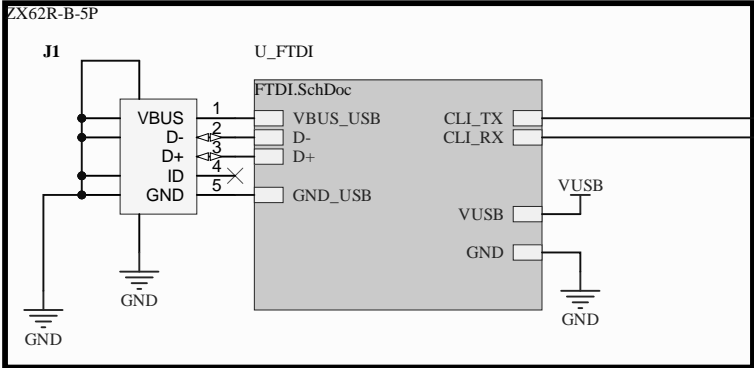
KEYPAD



SD CARD MEMORY

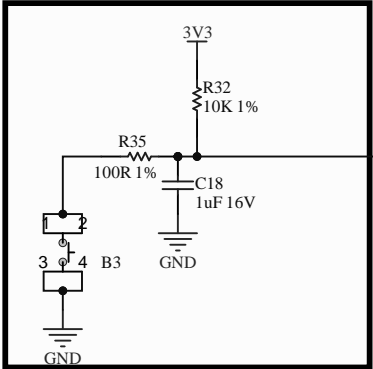


USB CONNECTOR + FTDI

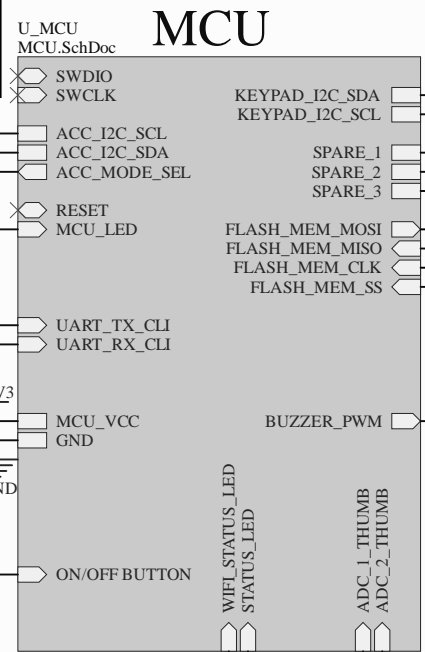


NOTE:
The FTDI Chip is an useful chip that allows us to convert USART cmessages into USB signals. It allows us to connect the MCU directly to the USB port of a computer and use the serial terminal (it is the same bridge used on the SAMW25 Xplained Board).The FTDI device also contains protection circuitry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

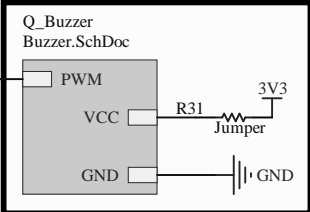
ON/OFF BUTTON



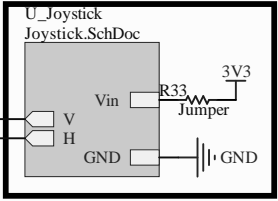
MCU



BUZZER

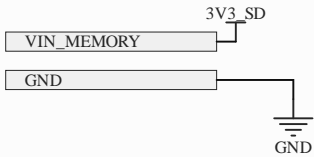
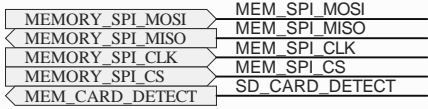


JOYSTICK

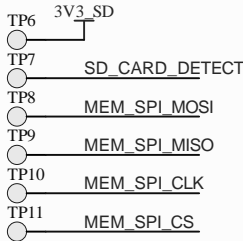


APPROVALS	DATE	PROJECT	260 S 33rd Street Detkin Lab Philadelphia PA 19104	
ENG: SP, PS		Shipwars		
DSN: SP, PS		PROJECT REVISION:	DOCUMENT REVISION:	DESIGN ITEM:
CHK: SP, PS		TITLE		
REFERENCE DOCUMENTS				
BOM:				
ASSY DWG:				
FAB DWG:				
PCB DWG:				
SIZE		CAGE CODE	DWG NO.	REV
B				1.0.0
SCALE:		FILE NAME	SHEET 1 OF 10	
		MAIN.SchDoc		

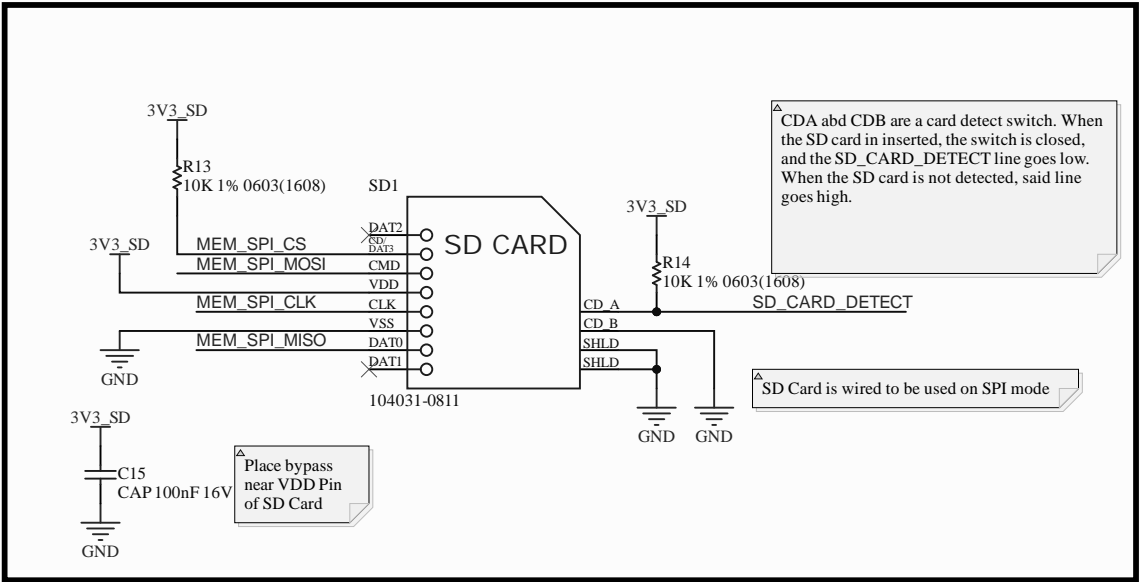
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TESTPOINTS

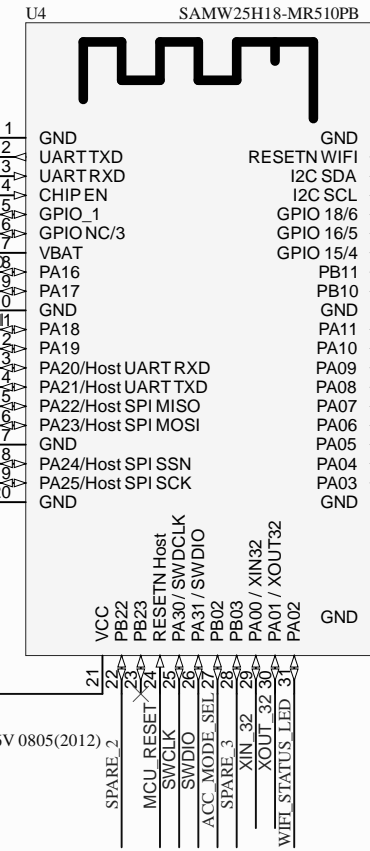
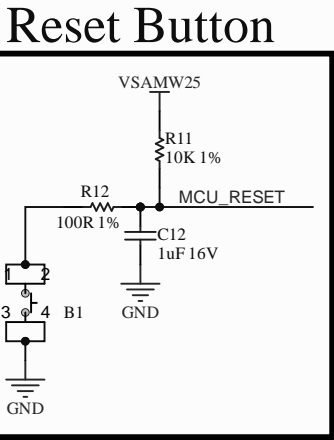
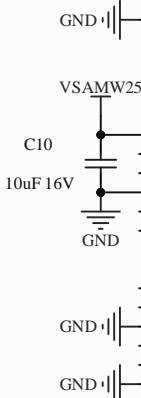
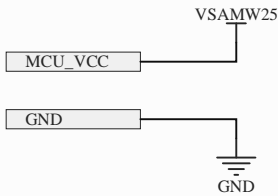


SD CARD

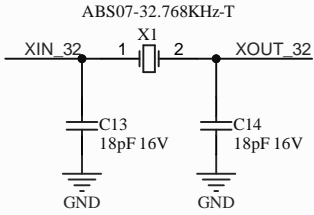


APPROVALS		DATE	PROJECT		<div><div><div><div></div><div>Penn Engineering</div><div>260 S 33rd Street Detkin Lab Philadelphia PA 19104</div></div><div></div></div></div>				
ENG:	SP, PS		Shipwars						
DSN:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:		
CHK:	SP, PS		TITLE		Shipwars Memory Schematic				
REFERENCE DOCUMENTS									
BOM:									
ASSY DWG:			SIZE		CAGE CODE		DWG NO.		REV
FAB DWG:			B						.1.0.0
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REVISION	DESCRIPTION	DATE	APPROVED



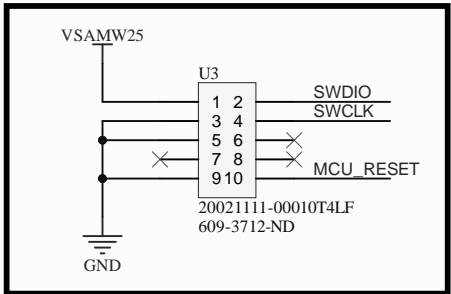
32.768 Crystal



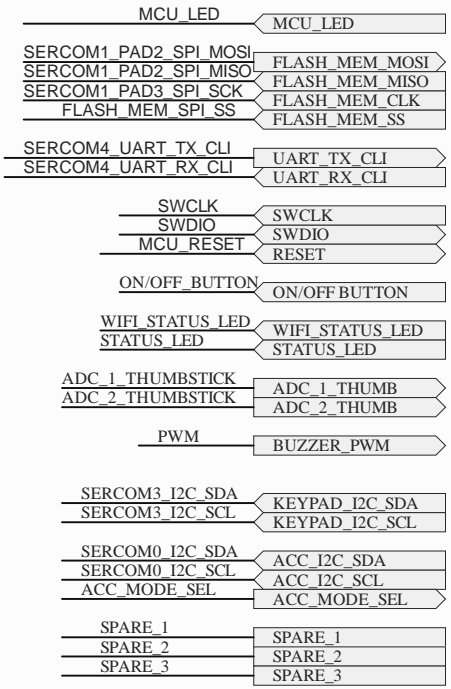
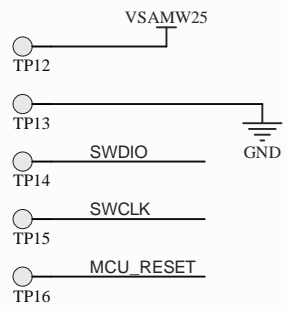
^A Calculation of crystal load capacitors:
Cext = 2x (Ccrystal - Cpara - Cpcb)

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

Cext = 2x(12.5pF - 3.15pF - 0.5pF) = 17.7pF



DEBUGGER PORT



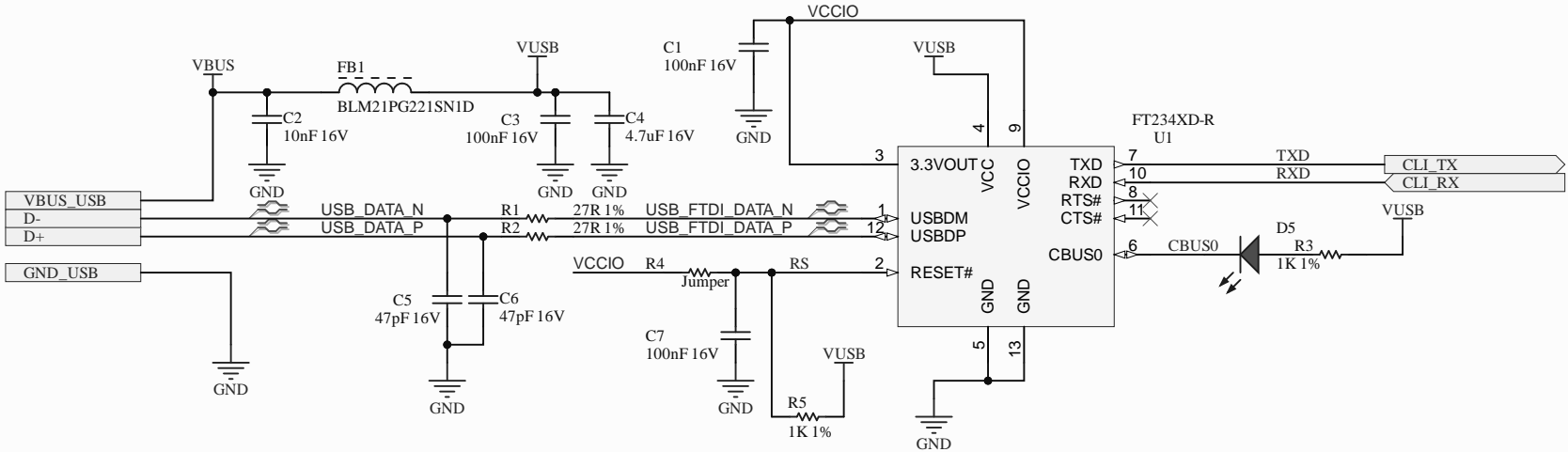
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ENG: SP, PS		Shipwars	Penn Engineering		
DSN: SP, PS		PROJECT REVISION:	DOCUMENT REVISION:	DESIGN ITEM:	
CHK: SP, PS		TITLE			
REFERENCE DOCUMENTS		Shipwars MCU Schematic			
BOM:		SIZE	CAGE CODE	DWG NO.	REV
ASSY DWG:		B			.1.0.0
FAB DWG:		SCALE:	FILE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

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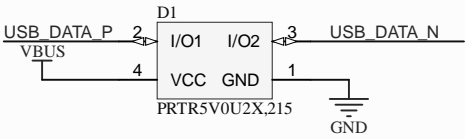
DWG. NO. 1.0.0
REV. 1.0.0

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FTDI CHIP



USB ESD PROTECTION

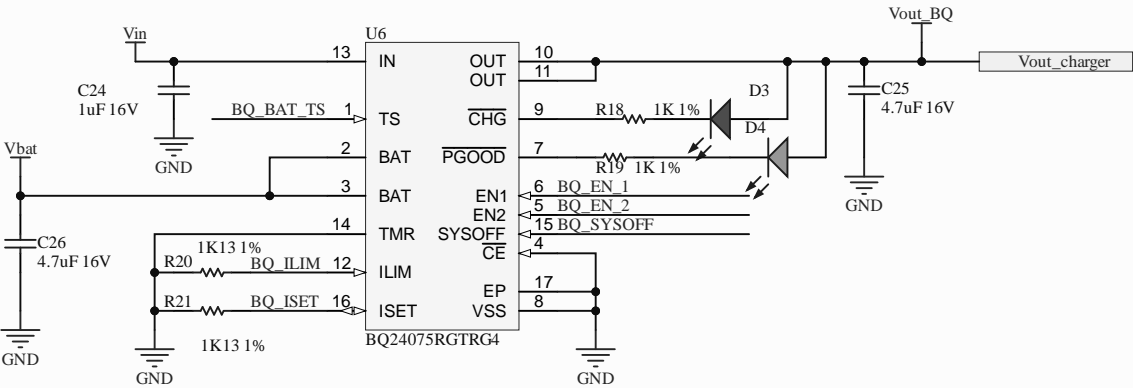
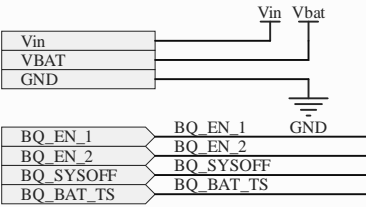


APPROVALS	DATE	PROJECT	Shipwars		
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CHK: SP, PS		Shipwars FTDI Schematic			
REFERENCE DOCUMENTS		SIZE	CAGE CODE	DWG NO.	REV
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ASSY DWG:					
FAB DWG:					
PCB DWG:		SCALE:	FILE NAME	FTDI.SchDoc	SHEET 4 OF 10

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DWG. NO. 1.050
REV.1 SHIT

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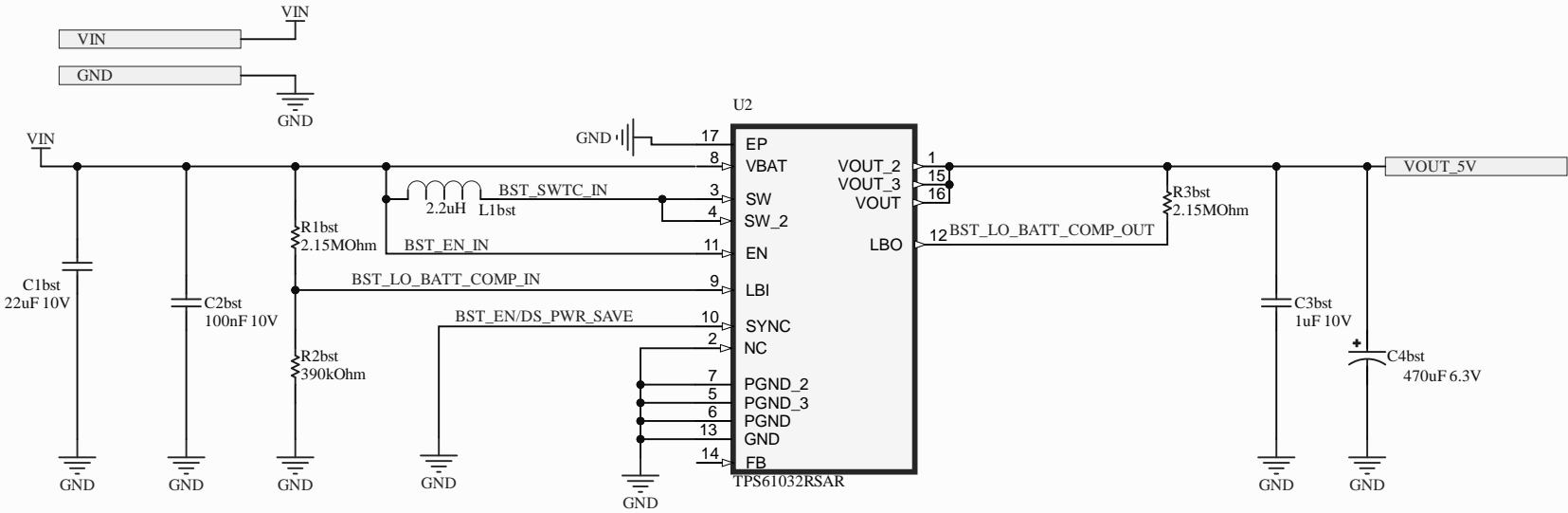


ilim = Kilim/Rilim => 1610/1130 = 1.42A
(if EN2=1, EN1=0)

ISET = Kiset/Rset => 890/1130 = 0.788A

APPROVALS	DATE	PROJECT	Shipwars		
ENG: SP, PS		PROJECT REVISION:	DOCUMENT REVISION:	DESIGN ITEM:	
DSN: SP, PS		TITLE			
CHK: SP, PS		Shipwars Charger Shematic			
REFERENCE DOCUMENTS		SIZE	CAGE CODE	DWG NO.	REV
BOM:		B			.1.0.0
ASSY DWG:					
FAB DWG:					
PCB DWG:		SCALE:	FILE NAME	SHEET	OF
			LiPo_Charger.SchDoc	5	10


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TPS61032
VIN: 3.3V to 5V
OUT: 5V up to 2A
REF: <https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=0929BF869665908F>

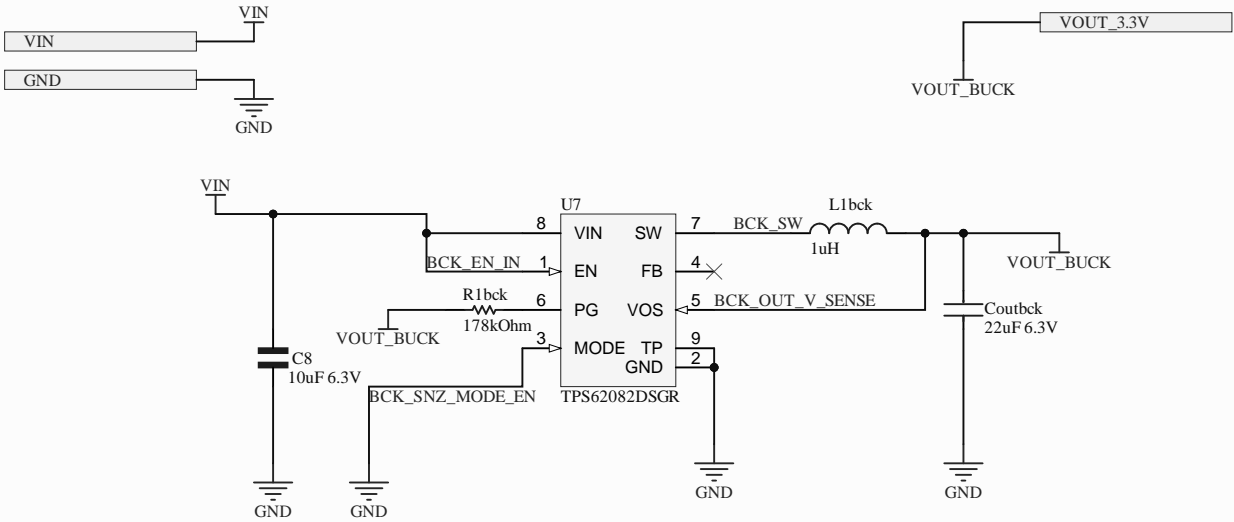
DWG. NO. 1.0.0
REV. 1.0.0

REVISION	DESCRIPTION	DATE	APPROVED

APPROVALS		DATE	PROJECT		 Penn Engineering <small>Quality and Reliability</small>		200 S 33rd Street Detkin Lab Philadelphia PA 19104	
ENG:	SP, PS		Shipwars					
DSN:	SP, PS							
CHK:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
REFERENCE DOCUMENTS			TITLE					
BOM:			Shipwars Boost Schematic					
ASSY DWG:			SIZE	CAGE CODE	DWG NO.			REV
FAB DWG:			B					.1.0.0
PCB DWG:			SCALE:	FILE NAME			SHEET	OF
				5v BOOST.SchDoc			6	10


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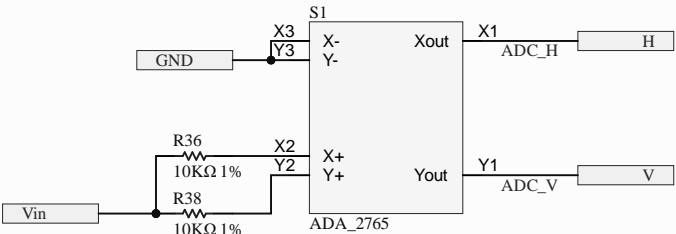


TPS62082
VIN: 4.5V to 5.5V
OUT: 3.3V up to 1.2A
REF: <https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=769E7FCD3E8DDF5A>


TP = thermal pad -> connect to GND according to Datasheet

APPROVALS		DATE		PROJECT		 Penn Engineering <small>INCORPORATED</small>		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				<h1>Shipwars Buck Schematic</h1>					
BOM:									
ASSY DWG:									
FAB DWG:									
PCB DWG:				SIZE	CAGE CODE	DWG NO.			REV
				B					1.0.0
				SCALE:	FILE NAME			SHEET	OF
					3.3v BUCK.SchDoc			7	10

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▲ Sparkfun COM-09032 Thumb Joystick
REF:
<http://cdn.sparkfun.com/datasheets/BreakoutBoards/Joystick-Breakout-v12b.pdf>
pin reference in :

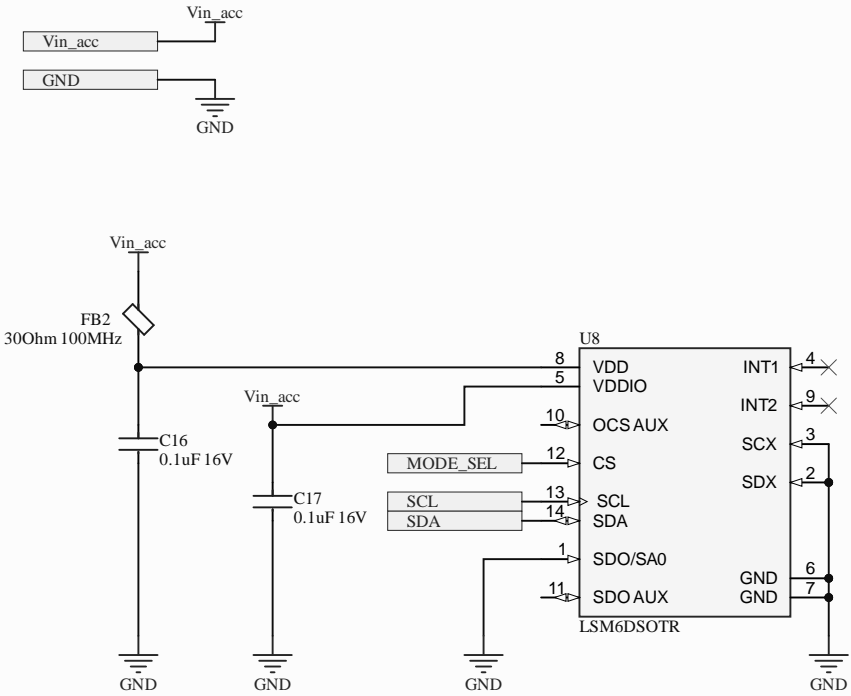
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DSN:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
CHK:	SP, PS		TITLE					
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BOM:								
ASSY DWG:			SIZE	CAGE CODE	DWG NO.			REV
FAB DWG:			B					.1.0.0
PCB DWG:			SCALE:		FILE NAME			SHEET
					Joystick.SchDoc			8 OF 10

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DWG. NO. 1.0.0
REV. 1.0.0

REVISION	DESCRIPTION	DATE	APPROVED

Text



SLM6DSOTR ACCELEROMETER

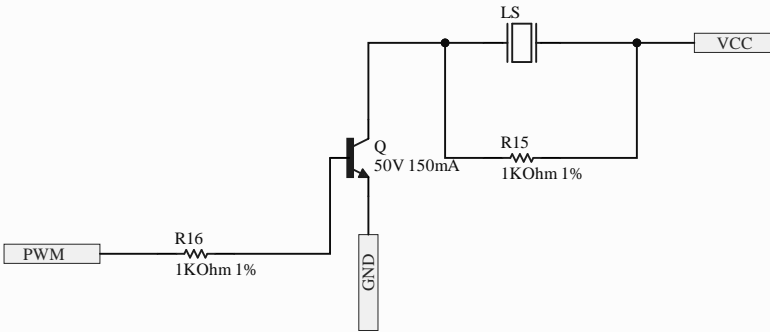
REF: https://cdn.sparkfun.com/assets/3/1/6/b/c/SparkFun_Qwiic_6DoF_LSM6DSO_Schematic.pdf

OR

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

APPROVALS	DATE	PROJECT	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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BOM:		SIZE	CAGE CODE	DWG NO.	REV
ASSY DWG:		B			.1.0.0
FAB DWG:		SCALE:	FILE NAME	SHEET	OF
PCB DWG:			LSM6DSO_ACCELERO.SchDoc	9	10


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△ PS1240P02BT 3V 4kHz buzzer
REF:
<https://www.snapeda.com/parts/PS1240P02BT/TKD%20Corporation/datasheet/> (page 2)

DWG. NO. 1.0.0
REV. SHI

REVISION	DESCRIPTION	DATE	APPROVED

APPROVALS		DATE	PROJECT Shipwars		 <div>Penn Engineering <small>PHILADELPHIA, PA</small></div>		200 S 33rd Street Detkin Lab Philadelphia PA 19104	
ENG:	SP, PS							
DSN:	SP, PS		PROJECT REVISION:		DOCUMENT REVISION:		DESIGN ITEM:	
CHK:	SP, PS							
REFERENCE DOCUMENTS			TITLE					
BOM:			Shipwars Buzzer Schematic					
ASSY DWG:			SIZE	CAGE CODE	DWG NO.			REV
FAB DWG:			B					.1.0.0
PCB DWG:			SCALE:	FILE NAME			SHEET	OF
				Buzzer.SchDoc			10	10