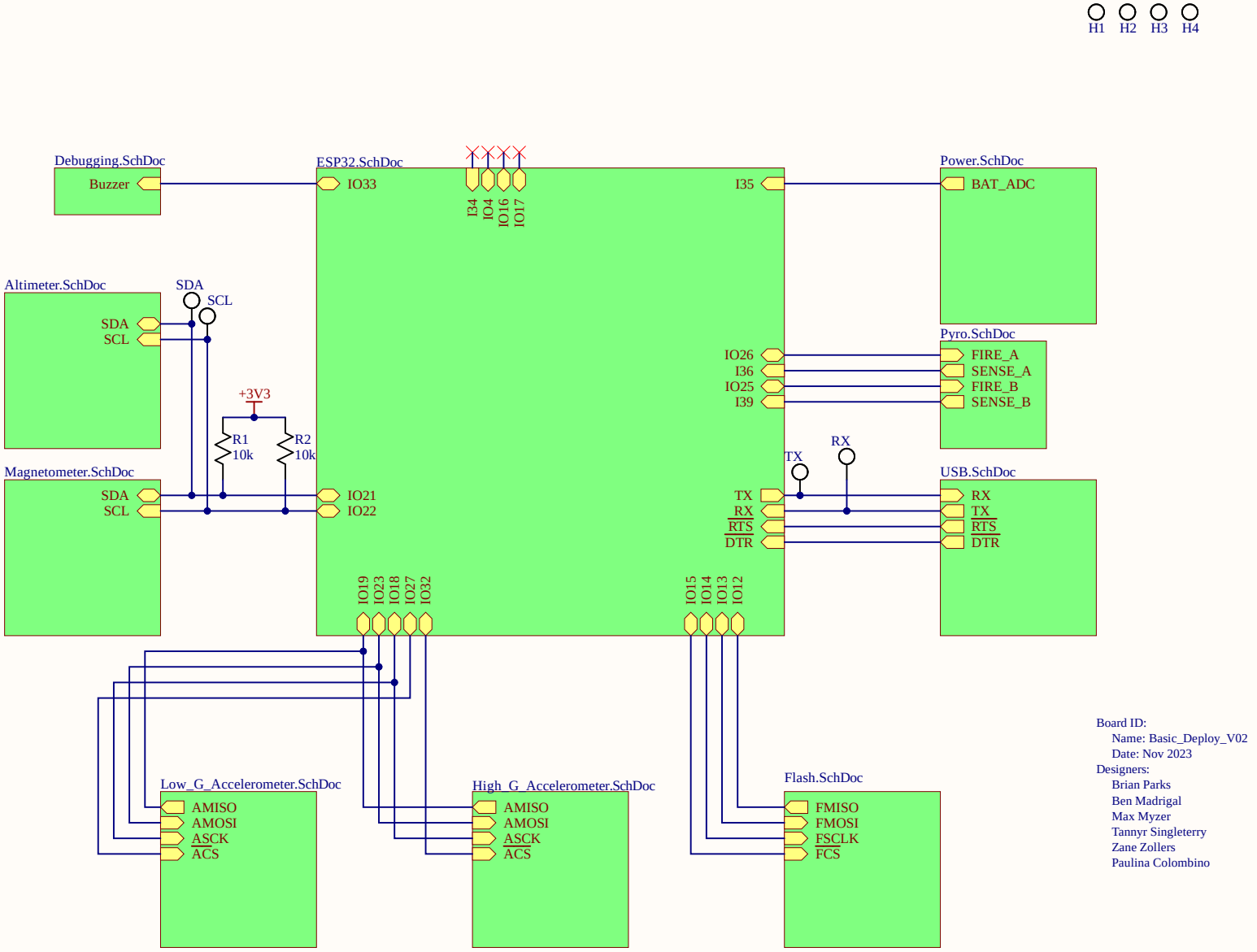
WRFCI: Basic Deploy
Revision: 2.0

Revision History

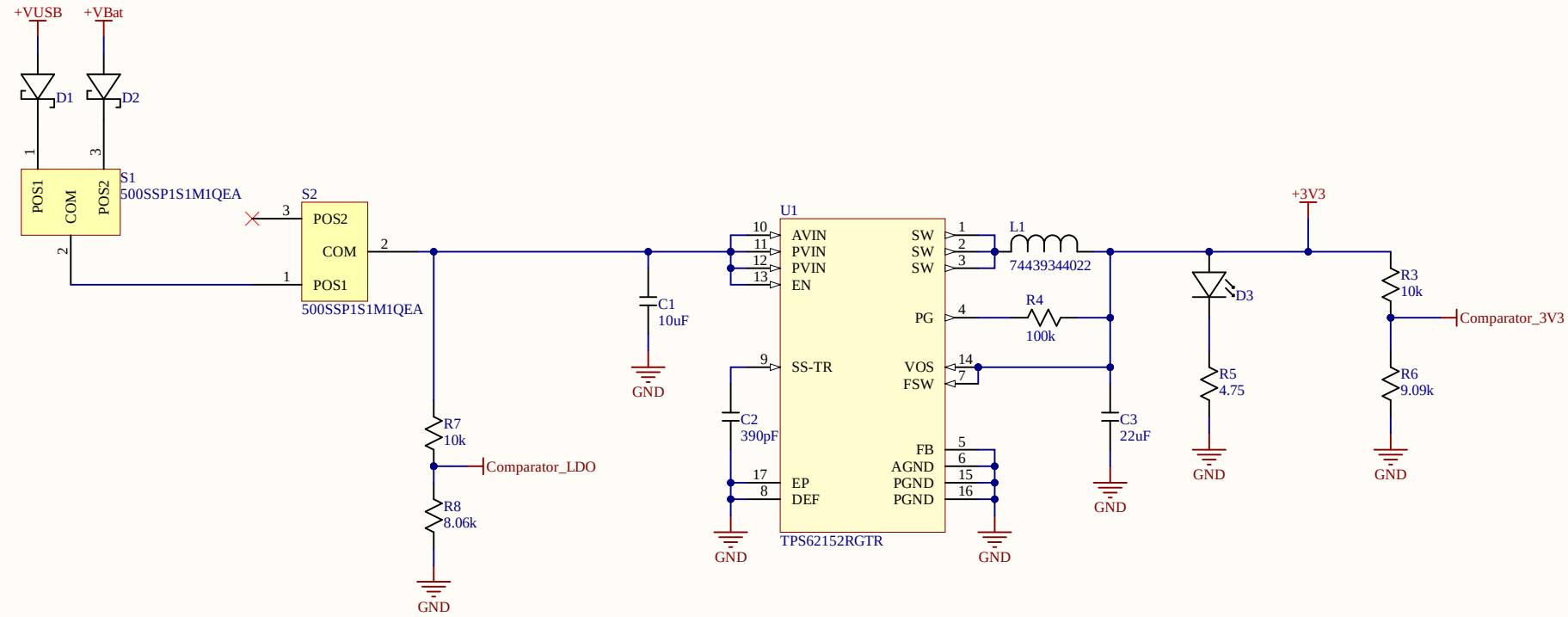
Release	Description
1.0	Initial Release
2.0	New Sensors, New Layout
2.1	Post-Order Cleanup

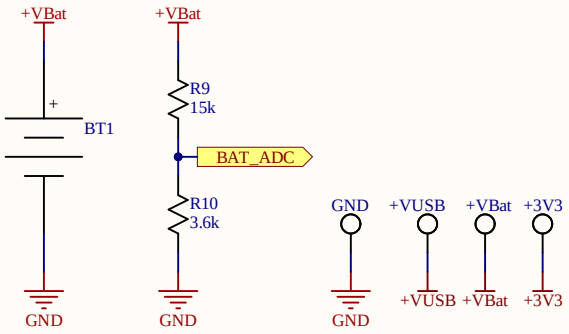
Project:	Basic_Deploy.PrjPcb
Revision:	2.0
Project Lead:	Brian Parks
Organization:	Wildcat Rocketry
Date:	9/12/2024



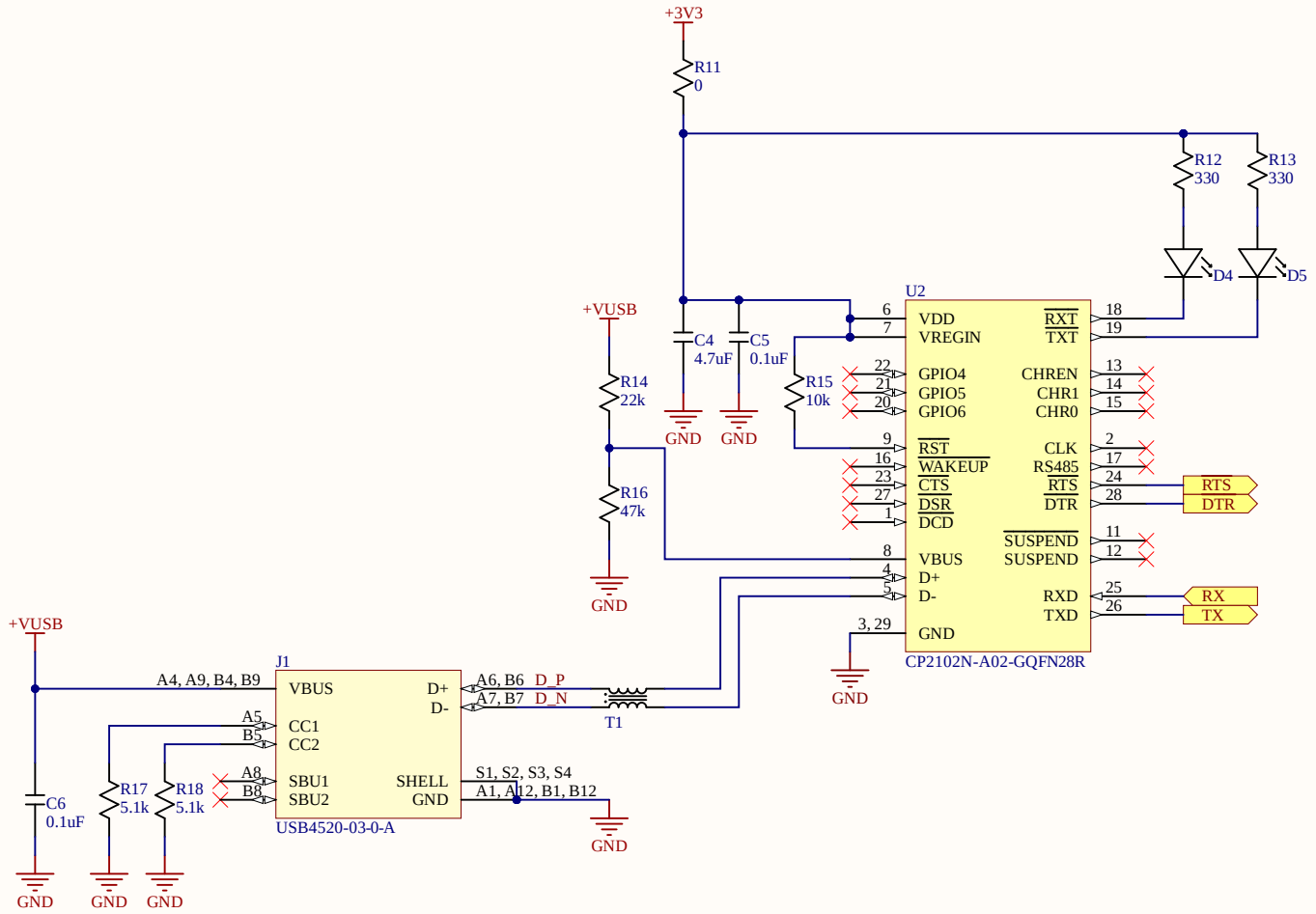
Board ID:
Name: Basic_Deploy_V02
Date: Nov 2023
Designers:
Brian Parks
Ben Madrigal
Max Myzer
Tannyr Singleterry
Zane Zollers
Paulina Colombino

Schematic Title:	1.0 Basic_Deploy	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Brian Parks	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 2

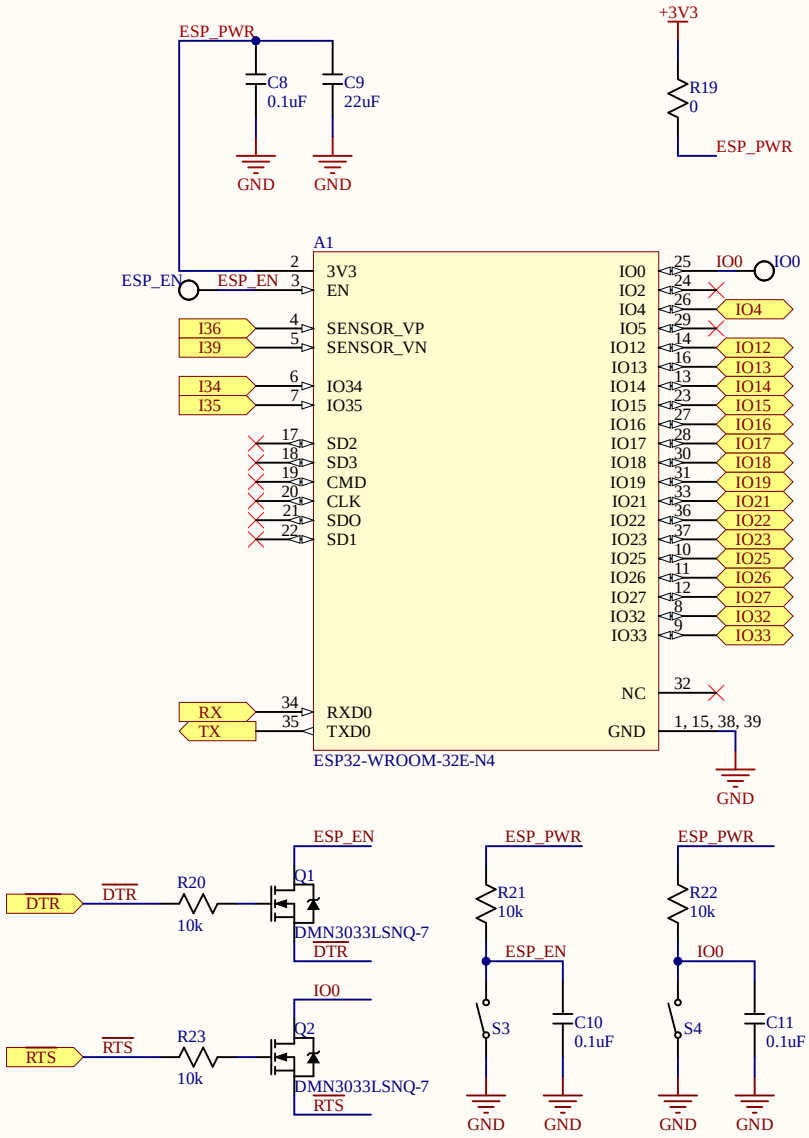




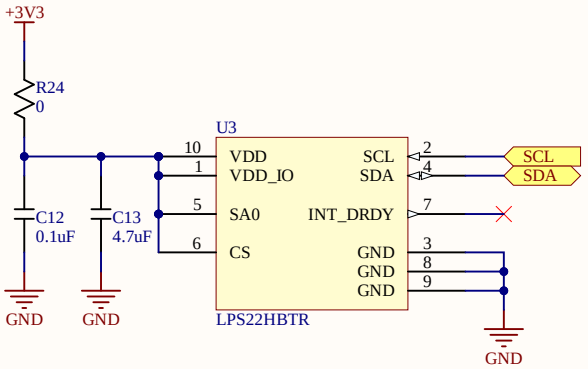
Schematic Title:	1.1 Power	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Paulina Colombino	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 3



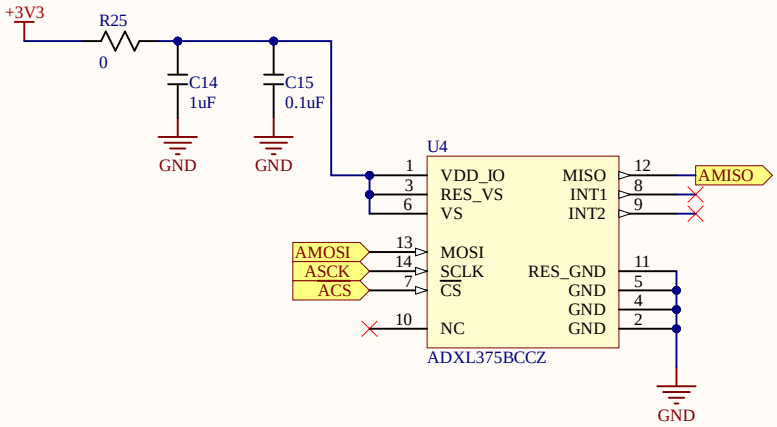
Schematic Title:	1.2 USB	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Brian Parks	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 4



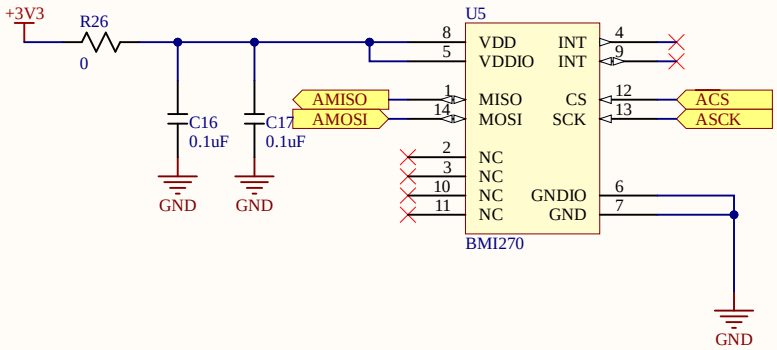
Schematic Title:	1.3 ESP32	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Brian Parks	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 5



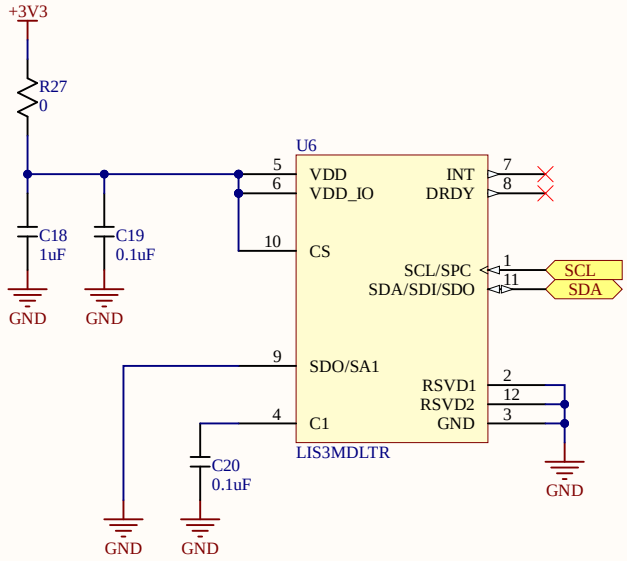
Schematic Title:	1.4 Altimeter	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Max Myzer	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 6



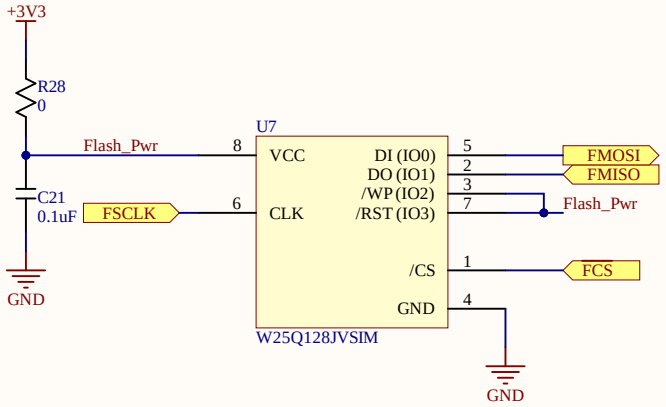
Schematic Title:	1.5 High_G_Accelerometer	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Zane Zollers	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 7



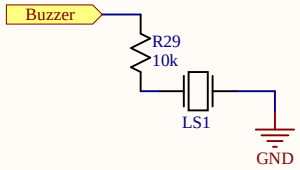
Schematic Title:	1.6 Low_G_Accelerometer	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Zane Zollers	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 8



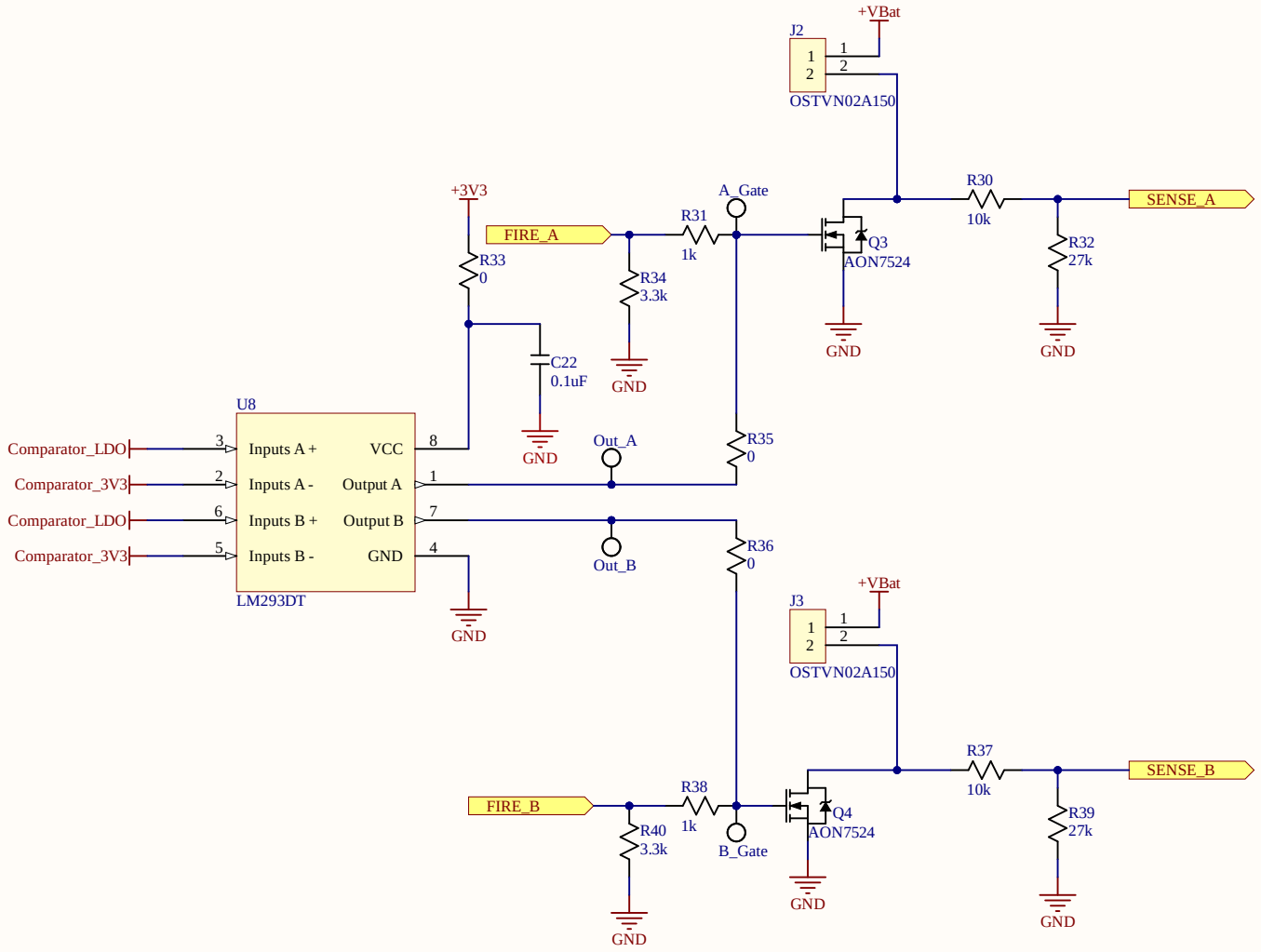
Schematic Title:	1.7 Magnetometer	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Tannyr Singleterry	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 9



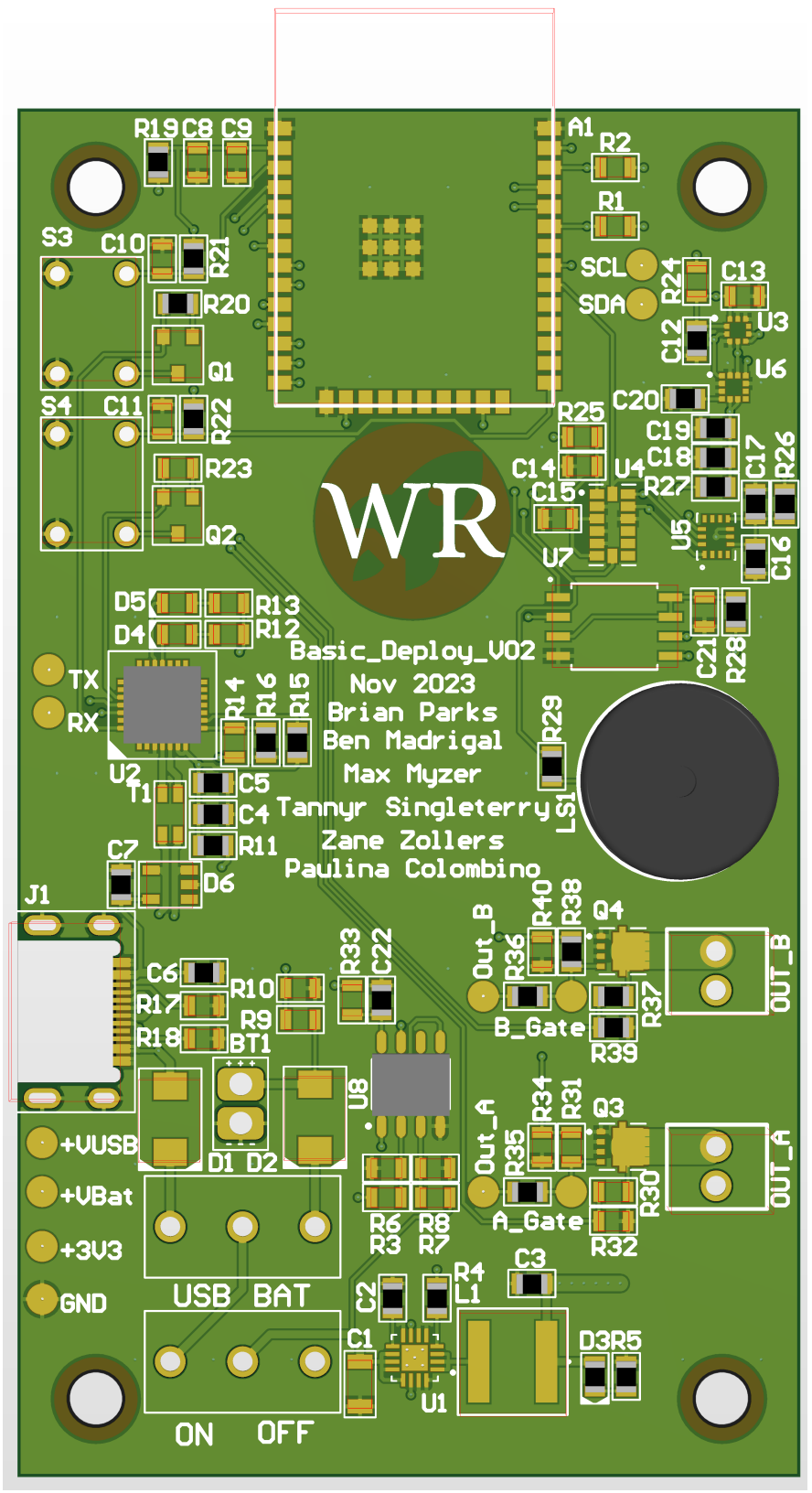
Schematic Title:	1.8 Flash	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Max Myzer	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 10

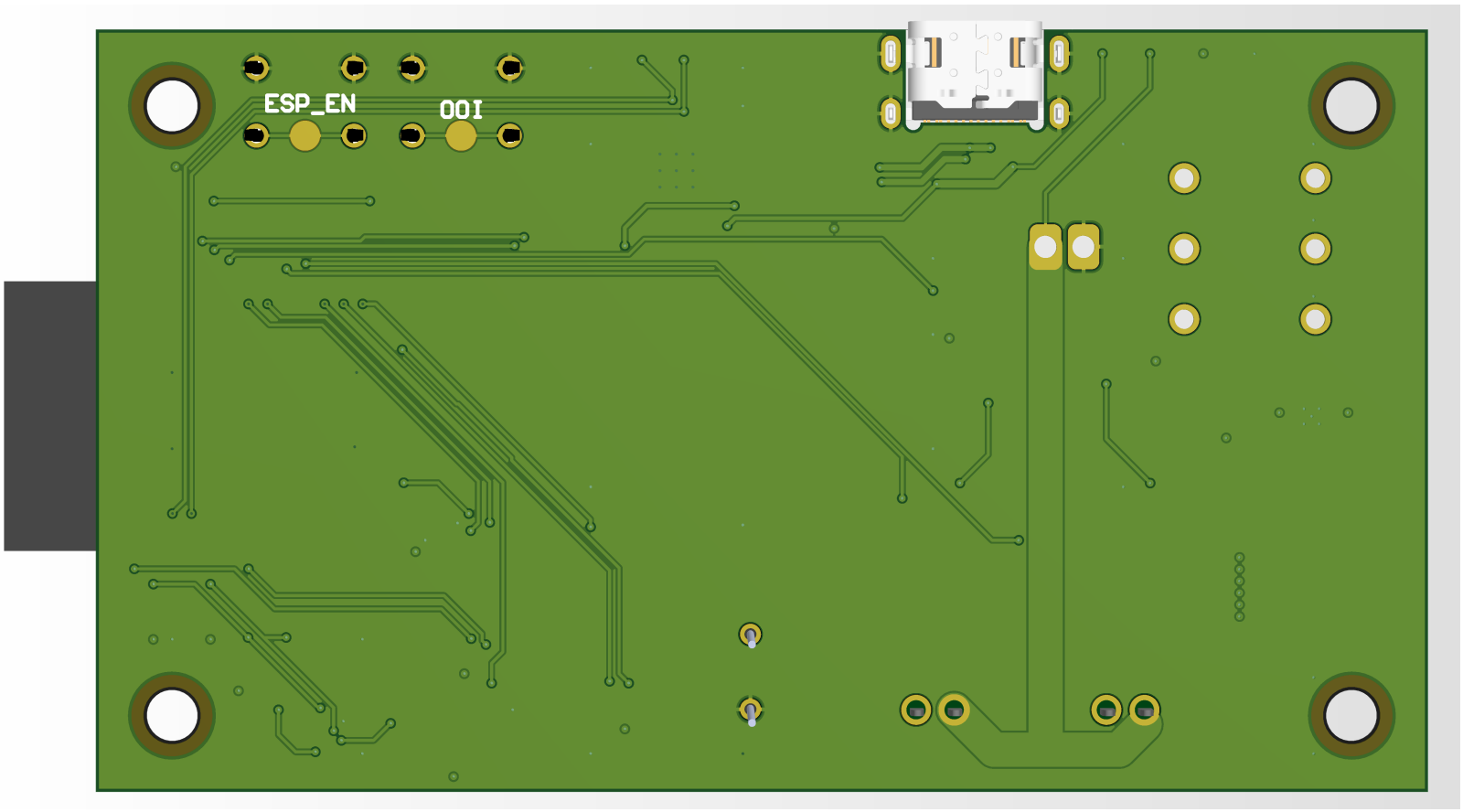


Schematic Title:	1.9 Debugging	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Tannyr Singleterry	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 11



Schematic Title:	1.10 Pyro	
Project:	Basic_Deploy.PrjPcb	
Engineer:	Brian Parks	
Organization:	Wildcat Rocketry	
Date:	9/12/2024	Page: 12


R19 C8 C9
A1
R2
R1
S3
C10
R21
R20
Q1
SCL
SDA
R24
C13
U3
C12
U6
S4
C11
R22
R23
Q2
C20
R25
C19
C18
R27
C14
C15
U4
U7
U5
C17
R26
C16
WR
D5
D4
R13
R12
Basic_Deploy_V02
Nov 2023
Brian Parks
Ben Madrigal
Max Myzer
Tannyr Singleterry
Zane Zollers
Paulina Colombino
C21
R28
TX
RX
R14
R16
R15
U2
T1
C5
C4
R11
R29
LS1
C7
D6
J1
C6
R17
R18
R10
R9
BT1
R33
C22
Out_B
R36
R40
R38
Q4
B_Gate
R39
R37
OUT_B
U8
+VUSB
+VBat
+3V3
GND
D1
D2
Out_A
R35
R34
R31
Q3
A_Gate
R32
R30
OUT_A
R6
R3
R8
R7
USB
BAT
C2
R4
L1
C3
C1
U1
D3
R5
ON
OFF


ESP_EN
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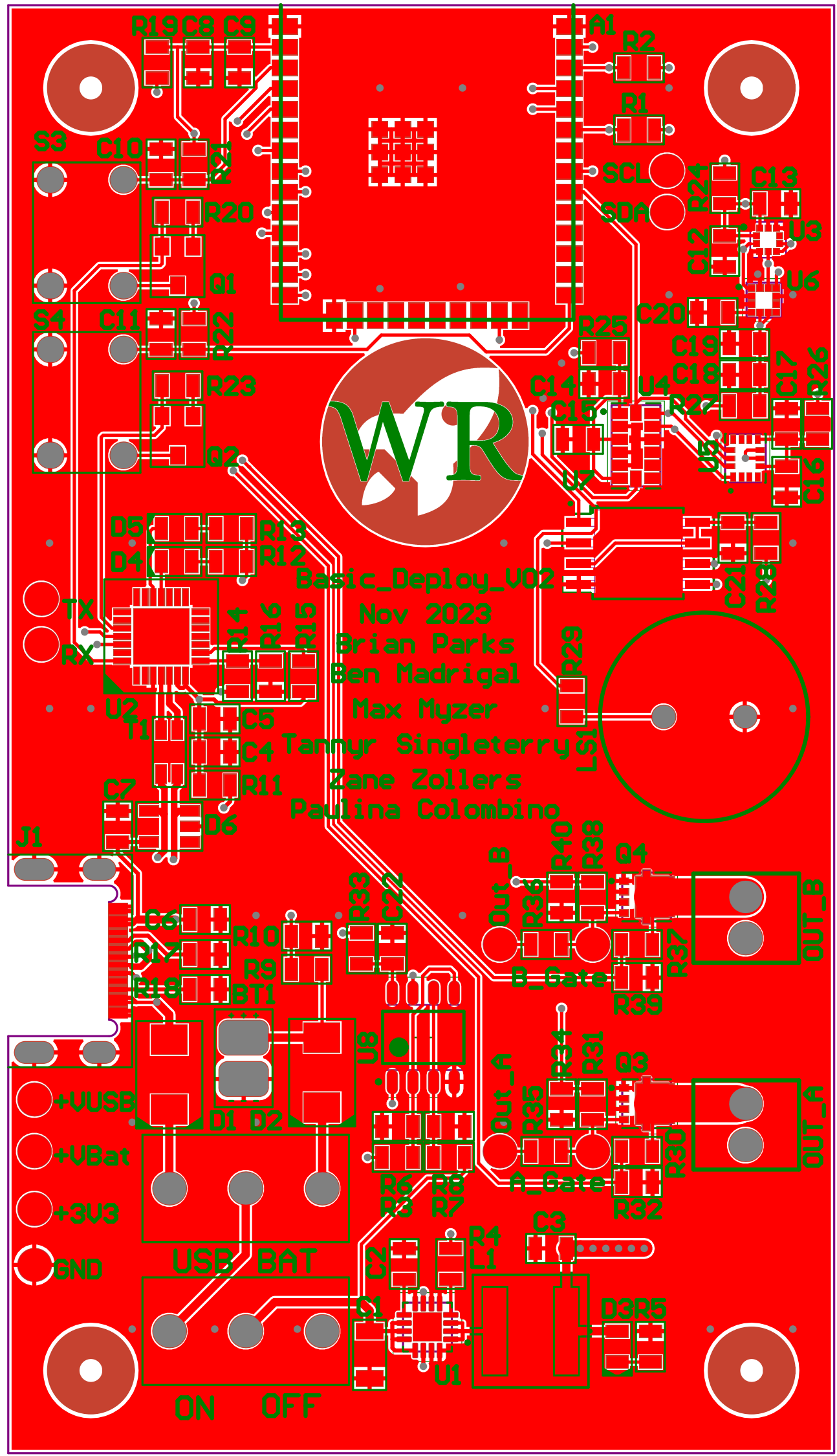
R19 C8 C9
A1
R2
R1
S3
C10
R21
SCL
SDA
R24
C13
U3
C12
U6
R20
Q1
S4
C11
R22
C20
R25
C19
C18
C17
R26
C14
U4
R23
C15
R27
U5
C16
Q2
U7
D5
D4
R13
R12
C21
R28
Basic_Deploy_V02
Nov 2023
Brian Parks
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Tannyr Singleterry
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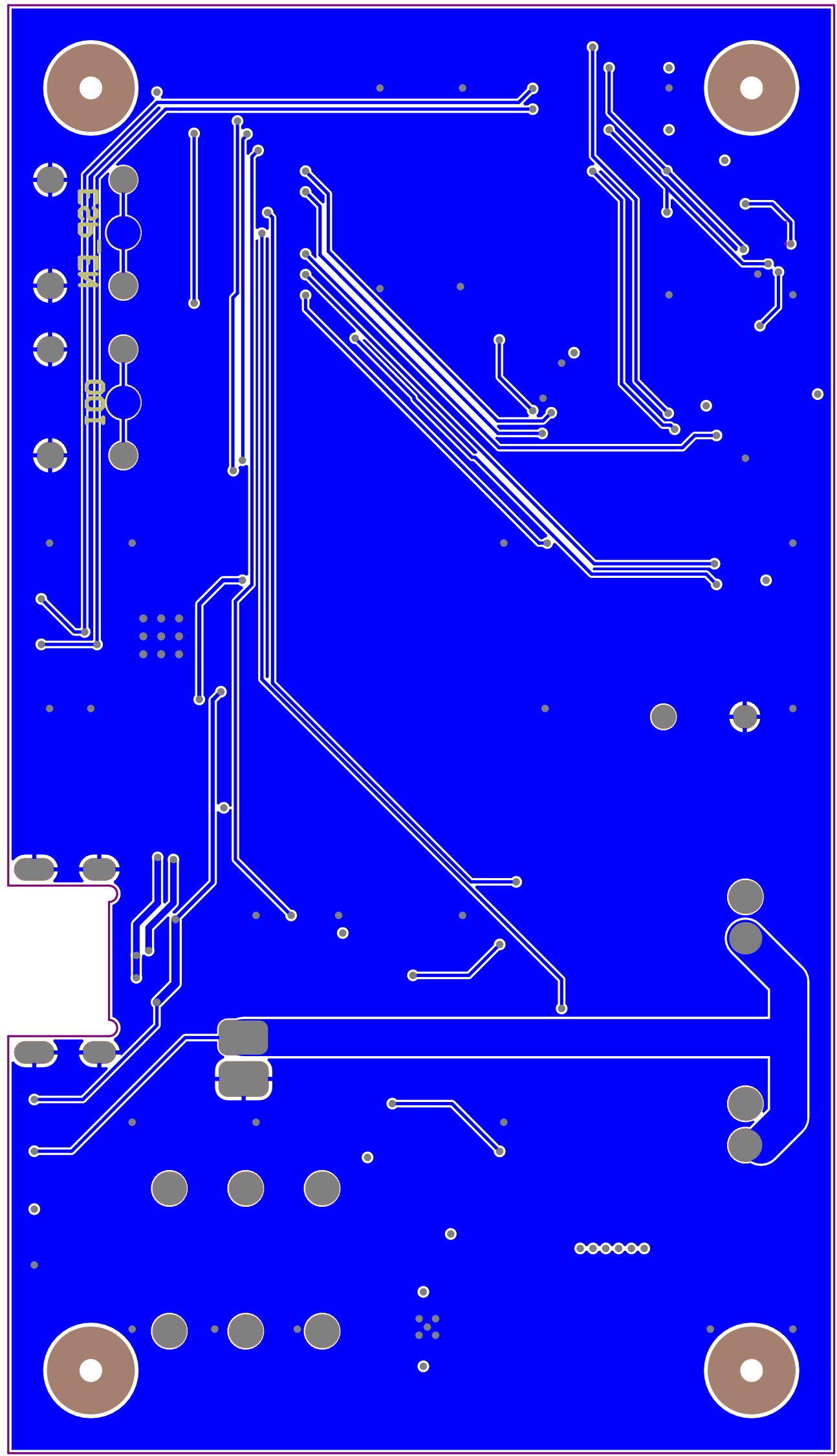
Paulina Colombino
TX
RX
R14
R16
R15
U2
T1
C5
C4
R11
R29
LS1
C7
D6
J1
C6
R10
R33
C22
R40
R38
Q4
Out_B
R36
R37
B_Gate
R39
OUT_B
R17
R9
R18
BT1
U8
R34
R31
Q3
+VUSB
D1
D2
Out_A
R35
R30
OUT_A
+VBat
R6
R8
A_Gate
R32
R3
R7
+3V3
C3
R4
L1
GND
USB
BAT
C2
Q1
D3
R5
U1
ON
OFF



Design Rules Verification Report

Filename : C:\Users\Gannon Bird\Documents\Git\WRFCI\Altium\Boards\Basic_Deploy\Basic_Deploy.PcbDoc

Warnings 0
Rule Violations 28

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=5mil) (All),(All)	14
Short-Circuit Constraint (Allowed=No) (All),(All)	14
Un-Routed Net Constraint ((All))	0
Modified Polygon (Allow modified: No), (Allow shelved: No)	0
Width Constraint (Min=4mil) (Max=200mil) (Preferred=8mil) (All)	0
SMD To Corner (Distance=5mil) (Not InPadClass('SMD-EXEMPT'))	0
SMD Entry (Side = Allowed) (Corner = Allowed) (Any Angle = Not Allowed) (Ignore First Corner = Allowed)	0
Power Plane Connect Rule(Relief Connect)(Expansion=20mil) (Conductor Width=10mil) (Air Gap=10mil) (Entries=4)	0
Minimum Annular Ring (Minimum=11.811mil) (IsPad)	0
Minimum Annular Ring (Minimum=5.118mil) (All)	0
Acute Angle Constraint (Minimum=44.990) (All)	0
Hole Size Constraint (Min=7.874mil) (Max=248.031mil) (IsVia)	0
Hole Size Constraint (Min=27.559mil) (Max=250mil) (IsPad)	0
Hole Size Constraint (Min=7.874mil) (Max=248.031mil) (All)	0
Hole To Hole Clearance (Gap=19.685mil) (All),(All)	0
Minimum Solder Mask Sliver (Gap=0mil) (Disabled)(HasFootprint('BOARD-ID')),(HasFootprint('BOARD-ID'))	0
Minimum Solder Mask Sliver (Gap=10mil) (Disabled)(All),(All)	0
Silk To Solder Mask (Clearance=5.906mil) (Disabled)(All),(IsText)	0
Silk To Solder Mask (Clearance=0mil) (Disabled)(All),(All)	0
Silk to Silk (Clearance=5.906mil) (Disabled)(All),(All)	0
Net Antennae (Tolerance=0mil) (All)	0
Board Clearance Constraint (Gap=0mil) (OnLayer('Top Overlay') OR OnLayer('Bottom Overlay'))	0
Board Clearance Constraint (Gap=0mil) (All)	0
Board Clearance Constraint (Gap=0mil) ((HasFootprint('ESP32-WROOM-32D (4MB HIGH TEMP)') OR	0
Permitted Layers - (Top Layer, Bottom Layer) (HasFootprint('TEST-POINT'))	0
Permitted Layers - (Top Layer, Bottom Layer) (All)	0
Permitted Layers - (Top Layer, Bottom Layer) (HasFootprint('BOARD-ID'))	0
Height Constraint (Min=0mil) (Max=1000mil) (Prefered=500mil) (All)	0
Total	28

Clearance Constraint (Gap=5mil) (All),(All)
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A1(465.748mil,1521.496mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A12(465.748mil,1258.11mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A4(465.748mil,1490mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A5(465.748mil,1439.213mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A6(465.748mil,1399.843mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A7(465.748mil,1380.158mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A9(465.748mil,1289.606mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B1(465.748mil,1269.528mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B12(465.748mil,1510.079mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B4(465.748mil,1301.024mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B5(465.748mil,1321.102mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B6(465.748mil,1360.473mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B7(465.748mil,1419.528mil) on Top Signal
Clearance Constraint: (Collision < 5mil) Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B9(465.748mil,1478.583mil) on Top Signal

Short-Circuit Constraint (Allowed=No) (All),(All)
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A1(465.748mil,1521.496mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A12(465.748mil,1258.11mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A4(465.748mil,1490mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A5(465.748mil,1439.213mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A6(465.748mil,1399.843mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A7(465.748mil,1380.158mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-A9(465.748mil,1289.606mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B1(465.748mil,1269.528mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B12(465.748mil,1510.079mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B4(465.748mil,1301.024mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B5(465.748mil,1321.102mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B6(465.748mil,1360.473mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B7(465.748mil,1419.528mil) on Top Signal Location : [X = 0mil][Y = 0mil
Short-Circuit Constraint: Between Board Cutout (Multi-Layer)Region (0 hole(s)) Multi-Layer And Pad J1-B9(465.748mil,1478.583mil) on Top Signal Location : [X = 0mil][Y = 0mil

Designator	Description	Quantity	Supplier 1	Supplier Part Number 1
A1	Bluetooth, WiFi 802.11b/g/n, Bluetooth v4.2 +EDR, Class 1, 2 and 3 Transceiver Module 2.4GHz ~ 2.5GHz Integrated, Trace Surface Mount	1	Digi-Key	1965-ESP32-WROOM-32E-N4CT-ND
C1	CAP CER 10uF 25V X7R 1206	1	Digi-Key	311-1959-1-ND
C2	CAP CER 390 pF 16V X7R 0805	1		
C3, C9	CAP CER 22uF 10V X7R 0805	2	Digi-Key	490-GRM21BZ71A226ME15LCT-ND
C4, C13	CAP CER 4.7uF 25V X7R 0805	2	Digi-Key	311-1885-1-ND
C5, C6, C7, C8, C10, C11, C12, C15, C16, C17, C19, C20, C21, C22	CAP CER 0.1uF 16V X7R 0805	14	Digi-Key	311-1142-1-ND
C14, C18	CAP CER 1uF 16V X7R 0805	2	Digi-Key	311-1365-1-ND
D1, D2	DIODE SCHOTTKY 30V 1A SMB	2	Digi-Key	1655-SK13CT-ND
D3	LED BLUE CLEAR 0805 SMD	1	Digi-Key	732-4982-1-ND
D4	LED RED CLEAR 0805 SMD	1	Digi-Key	732-4984-1-ND
D5	LED GREEN CLEAR 0805 SMD	1	Digi-Key	732-4983-1-ND
D6	TVS DIODE 5VWM 8.5VC SOT23-5L	1	Digi-Key	732-4465-1-ND
J1	USB C REC 16P 3U" MID MNT 2.1MM	1	Newark	70AJ0905

Designator	Description	Quantity	Supplier 1	Supplier Part Number 1
J2, J3	TERM BLK 2P SIDE ENT 2.54MM PCB	2	Digi-Key	ED10561-ND
L1	2.2 µH Shielded Drum Core, Wirewound Inductor 8 A 10.5mOhm Nonstandard	1		
LS1	BUZZER PIEZO 1.5V 12.6MM TH	1	Digi-Key	490-4698-1-ND
Q1, Q2	MOSFET N-CH 30V 6A SC59	2	Digi-Key	DMN3033LSNQ-7DICT-ND
Q3, Q4	N-Channel 30 V 25A (Ta), 28A (Tc) 3.1W (Ta), 32W (Tc) Surface Mount 8-DFN-EP (3x3)	2	Digi-Key	785-1634-1-ND
R1, R2, R3, R7, R15, R20, R21, R22, R23, R29, R30, R37	RES 10K OHM 1% 1/8W 0805, RES 100K OHM 1% 1/8W 0805	12	Digi-Key	311-10.0KCRCT-ND, 311-100KCRCT-ND
R4	RES 100K OHM 1% 1/8W 0805	1	Digi-Key	311-100KCRCT-ND
R5	RES 4.75 OHM 1% 1/8W 0805	1	Digi-Key	311-4.75CRCT-ND
R6	RES 9.09K OHM 1% 1/8W 0805	1	Digi-Key	311-9.09KCRCT-ND
R8	RES 8.06K OHM 1% 1/8W 0805	1	Digi-Key	311-8.06KCRCT-ND
R9	RES 15K OHM 1% 1/8W 0805	1	Digi-Key	311-15.0KCRCT-ND
R10	RES 3.6K OHM 1% 1/8W 0805	1	Digi-Key	311-3.60KCRCT-ND
R11, R19, R24, R25, R26, R27, R28, R33, R35, R36	RES 0 OHM JUMPER 1/8W 0805	10	Digi-Key	311-0.0ARCT-ND
R12, R13	RES 330 OHM 1% 1/8W 0805	2	Digi-Key	311-330CRCT-ND

Designator	Description	Quantity	Supplier 1	Supplier Part Number 1
R14	RES 22K OHM 1% 1/8W 0805	1	Digi-Key	311-22.0KCRCT-ND
R16	RES 47K OHM 1% 1/8W 0805	1	Digi-Key	311-47.0KCRCT-ND
R17, R18	RES 5.1K OHM 1% 1/8W 0805	2	Digi-Key	311-5.10KCRCT-ND
R31, R38	RES 1K OHM 1% 1/8W 0805	2	Digi-Key	311-1.00KCRCT-ND
R32, R39	RES 27K OHM 1% 1/8W 0805	2	Digi-Key	311-27.0KCRCT-ND
R34, R40	RES 3.3K OHM 1% 1/8W 0805	2	Digi-Key	311-3.30KCRCT-ND
S1, S2	SWITCH SLIDE SPDT 5A 120V	2	Digi-Key	EG5137-ND
S3, S4	SWITCH TACTILE SPST-NO 0.05A 12V	2	Digi-Key	679-2428-ND
T1	CMC 370MA 2LN 90 OHM SMD	1	Digi-Key	732-1469-1-ND
U1	317V 1A Step-Down Converter in 3x3 QFN package 16-VQFN -40 to 125	1		
U2	IC USB TO UART BRIDGE QFN28	1	Digi-Key	336-5890-1-ND
U3	Pressure Sensor 3.77PSI ~ 18.27PSI (26kPa ~ 126kPa) Absolute 24 b 10-WFLGA	1	Digi-Key	497-16265-1-ND
U4	Accelerometer X, Y, Z Axis ±200g 0.05Hz ~ 1.6kHz 14-LGA (3x5)	1	Digi-Key	505-ADXL375BCCZ-ND
U5	Accelerometer, Gyroscope, 6 Axis Sensor I²C, SPI Output	1	Digi-Key	828-1091-1-ND

Designator	Description	Quantity	Supplier 1	Supplier Part Number 1
U6	Magnetoresistive Sensor X, Y, Z Axis 12-LGA (2x2)	1	Mouser	511-LIS3MDLTR
U7	FLASH - NOR Memory IC 128Mbit SPI - Quad I/O, QPI, DTR 133 MHz 8-SOIC	1	Digi-Key	W25Q128JVSIM-ND
U8	Comparator General Purpose Open-Collector, Open-Drain, Rail-to-Rail 8-SOIC	1	Digi-Key	497-1566-1-ND