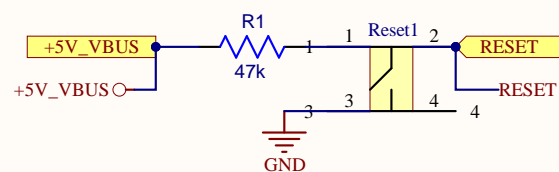


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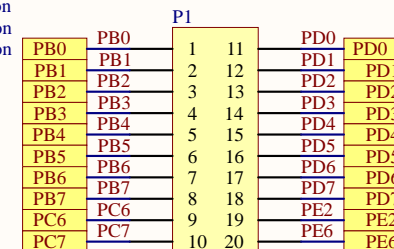
A



PF0 in RS485_handler
PF1 in RS485_handler
PF4 in rs485_handler
PF6 in Display
PF7 in Display

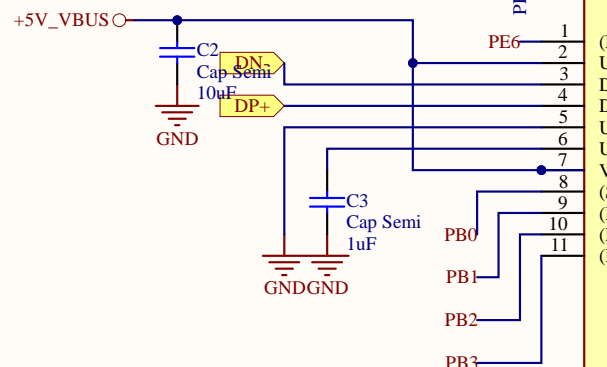
Atmega32u4

PB6 used as Button
PB5 used as Button
PD2 used as Button
PD3 used as Button

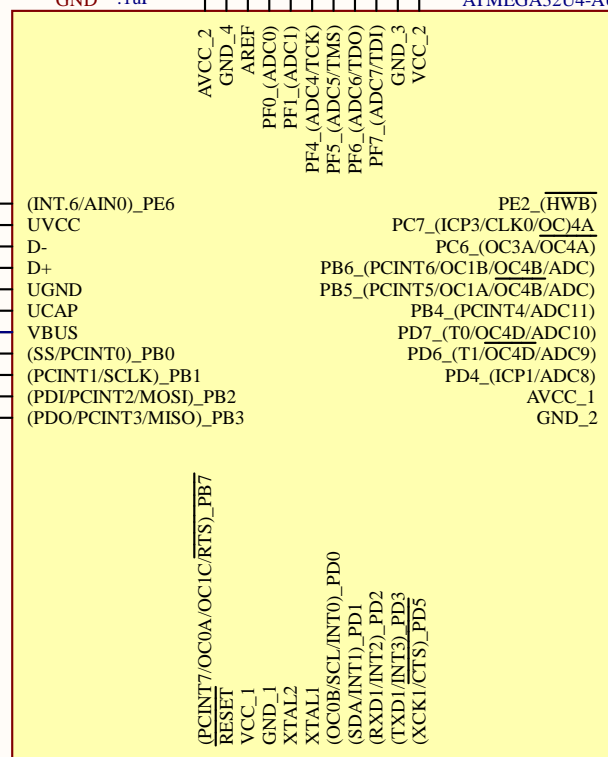


Header 10X2A

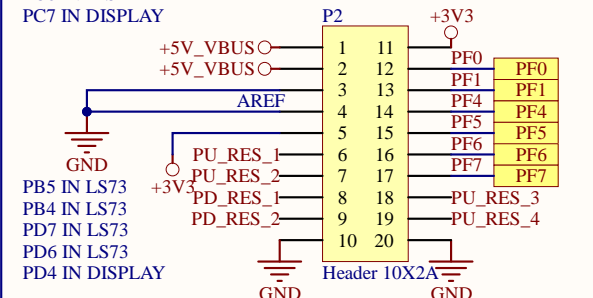
Serial resistors on USB
Data lines must have 22
Ohms value. Configure
traces to match 22 ohms



PE6 Analog encoder

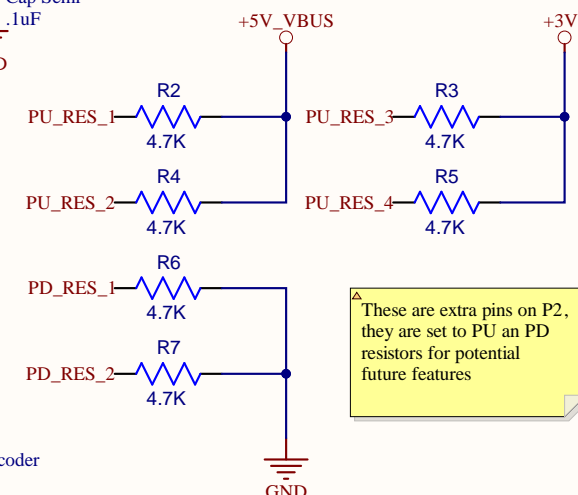


PC6 IN DISPLAY
PC7 IN DISPLAY



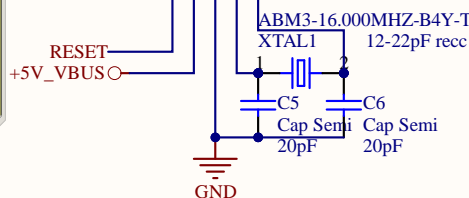
Header 10X2A

AGND, separate this from other



These are extra pins on P2,
they are set to PU an PD
resistors for potential
future features

PD0 PWM encoder



To reduce external components
count and BOM cost, the USB
module can be configured to
operate in low-speed mode with
internal RC oscillator as input
source clock for the PLL

D

D

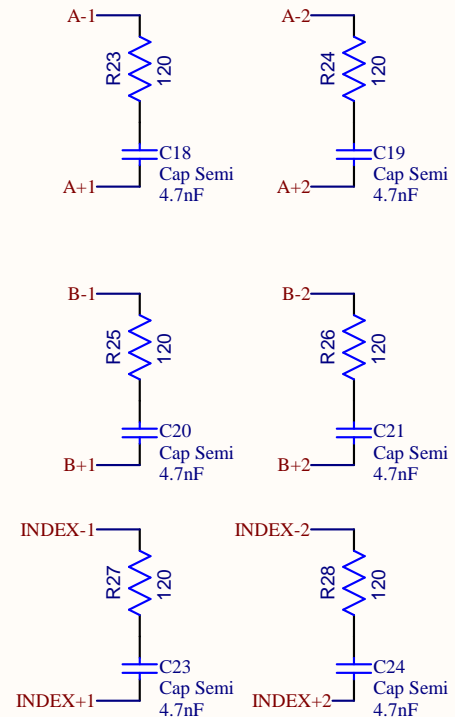
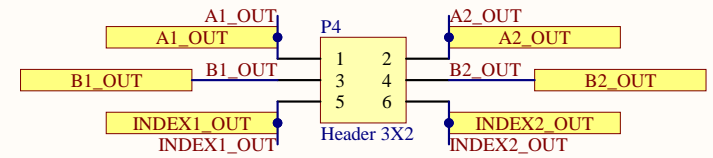
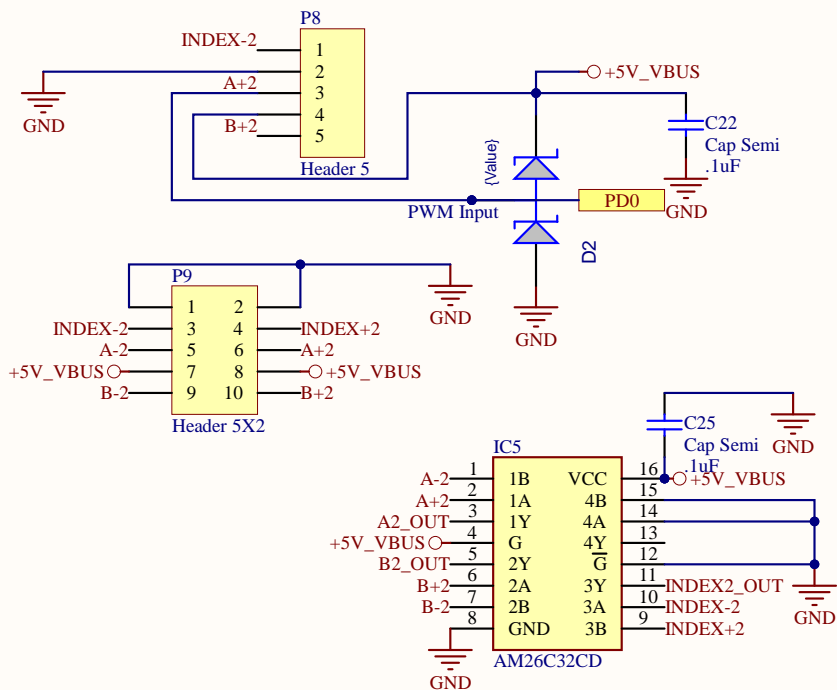
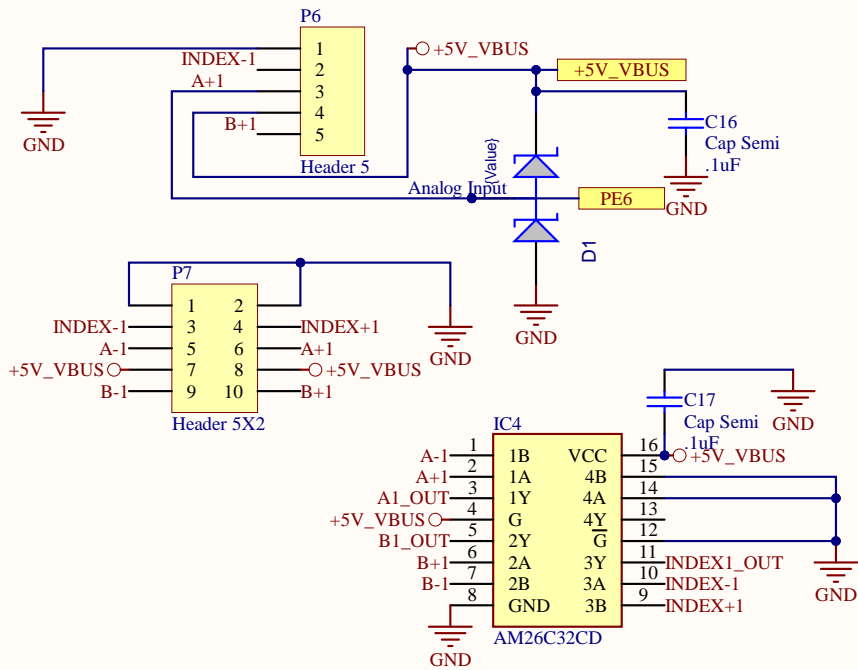
Title		
Size	Number	Revision
A		
Date:	3/28/2021	Sheet of
File:	F:\All Engineering\...\Atmega32u4.SchDoc	Drawn By:

A

B

C

D



Snubber

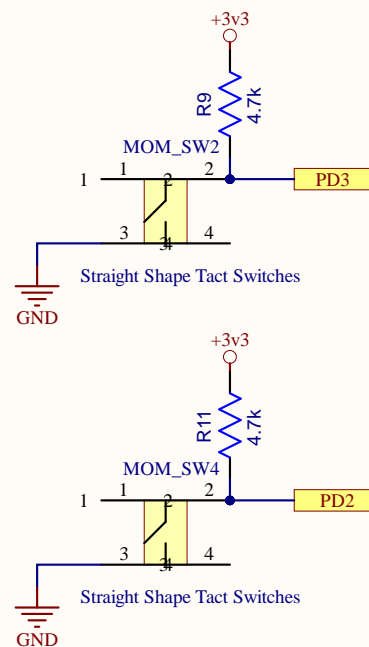
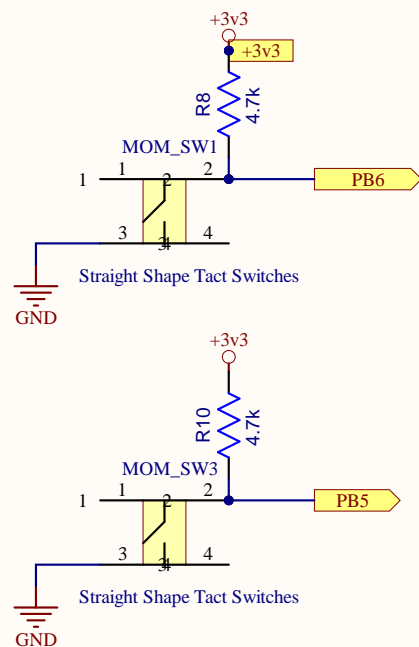
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A		
Date:	3/28/2021	Sheet of
File:	F:\All Engineering\...AM26C32_handler.SchDoc	Drawn By:

A

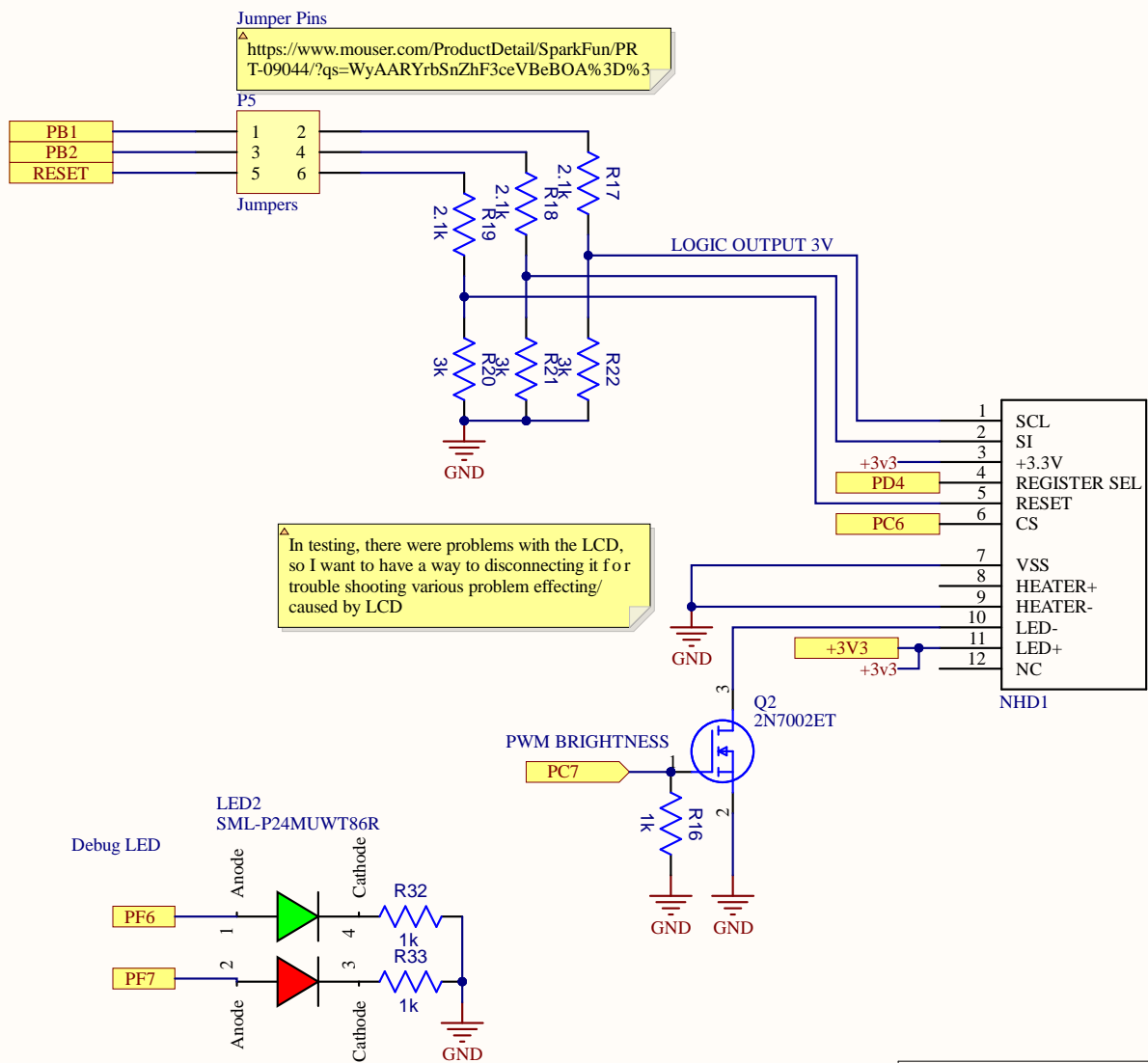
B

C

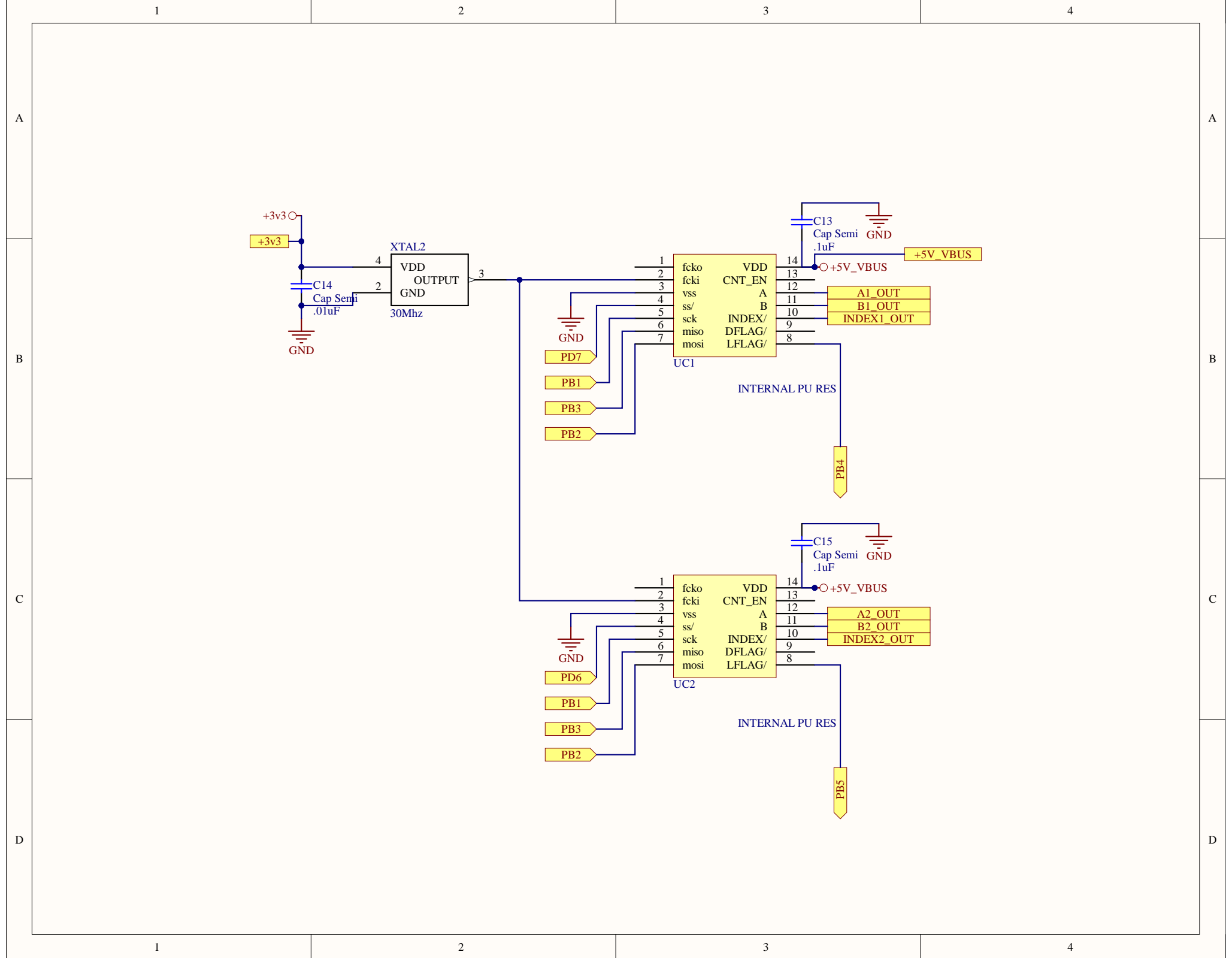
D



Title		
Size	Number	Revision
A		
Date:	3/28/2021	Sheet of
File:	F:\All Engineering\...\Buttons.SchDoc	Drawn By:



Title		
Size	Number	Revision
A		
Date:	3/28/2021	Sheet of
File:	F:\All Engineering\...\Display.SchDoc	Drawn By:



A

A

B

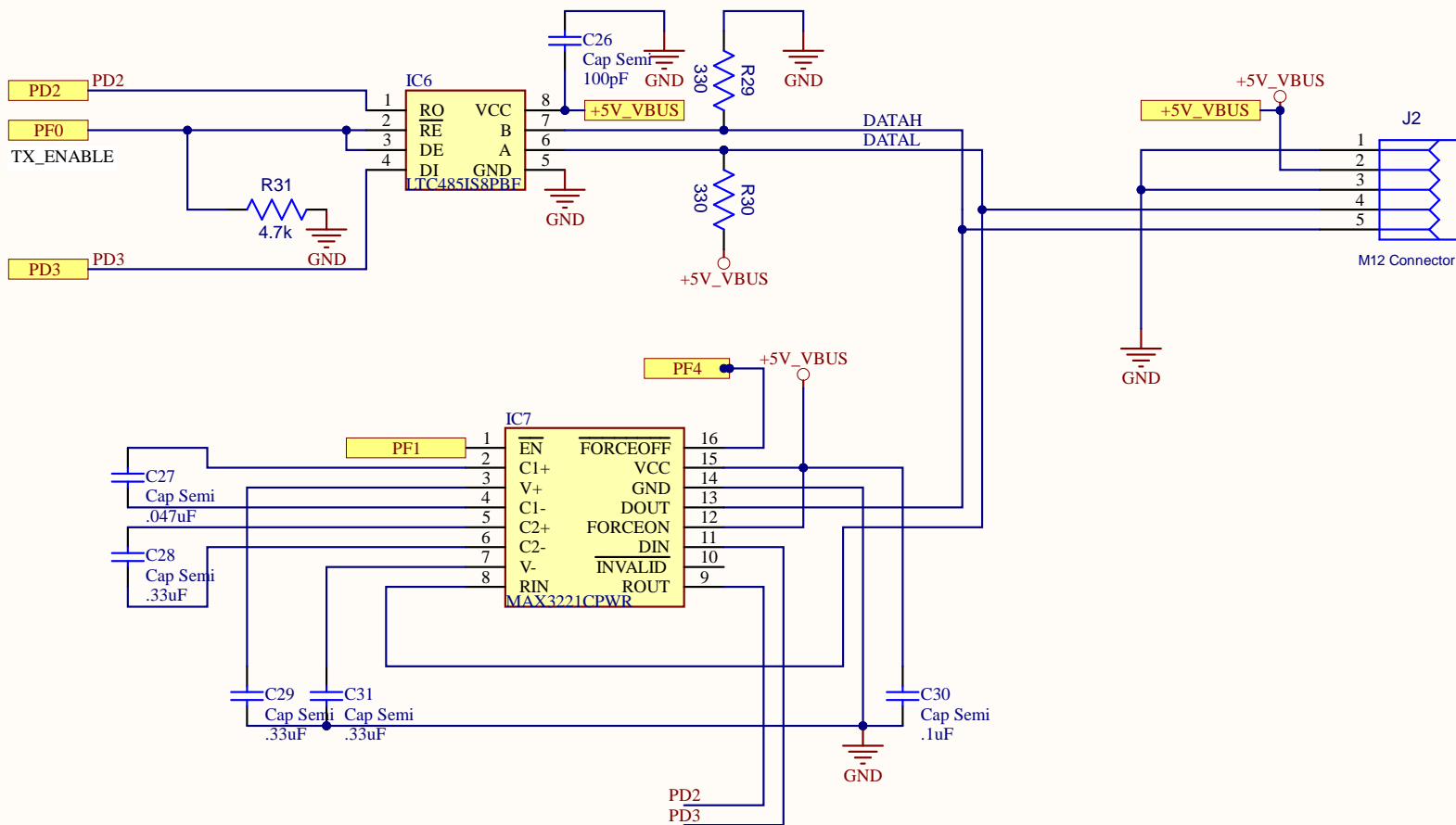
B

C

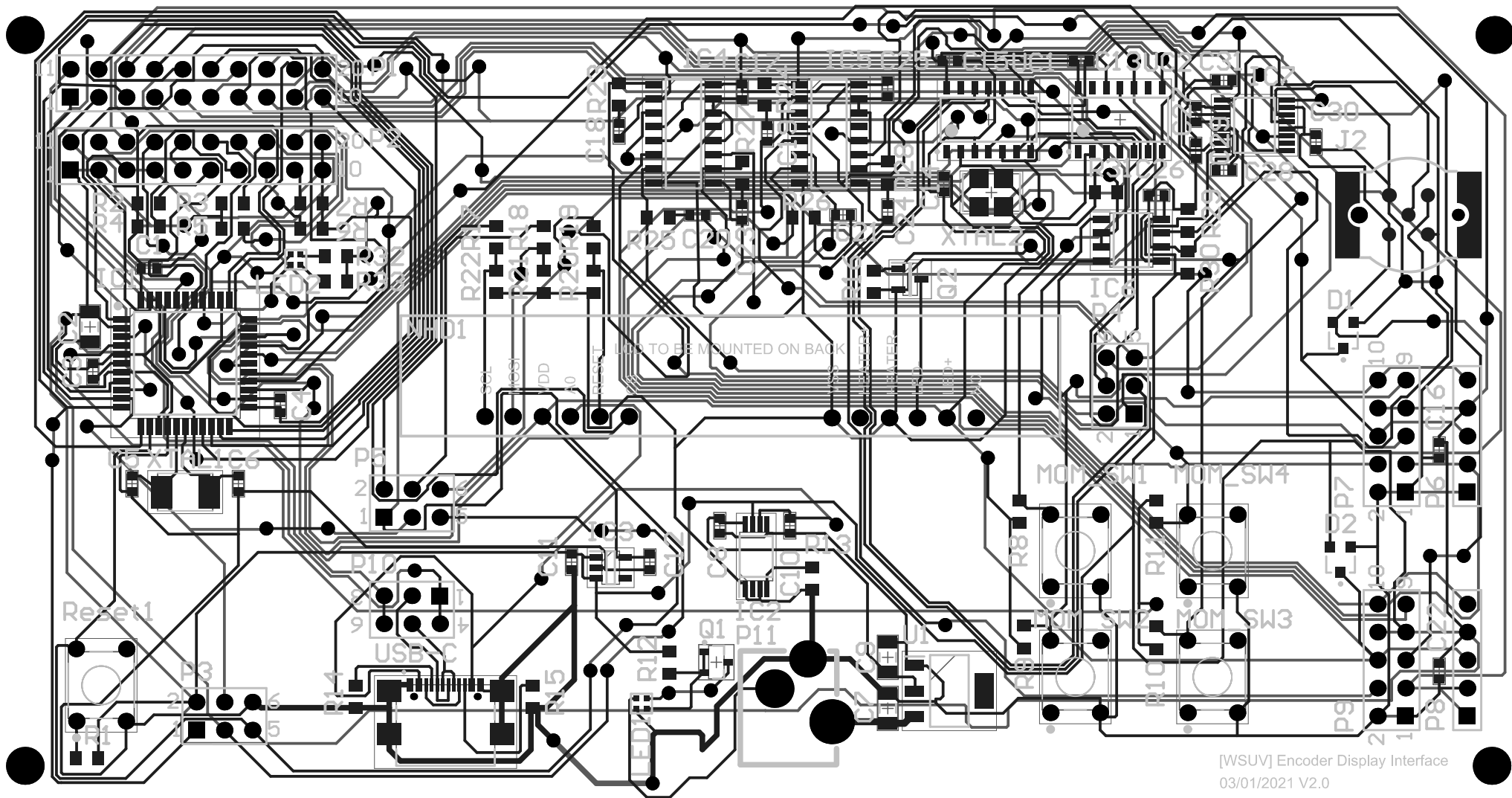
C

D

D



Title		
Size	Number	Revision
A		
Date:	3/28/2021	Sheet of
File:	F:\All Engineering\...\rs485_handler.SchDoc	Drawn By:



[WSUV] Encoder Display Interface
03/01/2021 V2.0

NOTES (UNLESS OTHERWISE SPECIFIED):
1: DIMENSIONS ARE IN MIL
2: MATERIAL: NEMA FR-4 OR EQUIVALENT, 0.062 THICKNESS
3: FINISHED HOLE TOLERANCE +/- 0.003.
4: FINISHED COPPER THICKNESS 1 OZ.
5: BOARD MUST BE LEAD FREE AND RCHS COMPLIANT
6: COAT ALL CONDUCTORS WITH LEAD-FREE SOLDER AND HOT AIR LEVEL
7: GREEN SOLDER MASK BOT HSIDES. WHITE SILK SCREEN TOP ONLY
8: PLATED THROUGH HOLES, 2 LAYERS, SIMPLE VIAS
9: SMALLEST LINES 0.010, SMALLEST SPACES 0.005
10: MANUFACTURER LOGO IN SILK SCREEN ON BOTTOM SIDE

Item #	Designator	Description	Name	Quantity	Manufacturer 1	Manufacturer Part Number 1	Footprint	LibRef	Note
1	C1, C4, C8, C10, C13, C15, C16, C17, C22, C25, C30	Capacitor (Semiconductor SIM Model)	Cap Semi	11	Vishay	VJ0603Y104KXJCW1BC	1608[0603]	Cap Semi	
2	C2, C7, C9	Capacitor (Semiconductor SIM Model)	Cap Semi	3	Samsung	CL10A106MQ8NNNC	C1206	Cap Semi	
3	C3, C11	Capacitor (Semiconductor SIM Model)	Cap Semi	2	Samsung	CL10B105KP8NNNC	1608[0603]	Cap Semi	
4	C5, C6	Capacitor (Semiconductor SIM Model)	Cap Semi	2	Vishay	VJ0805Y471KXACW1BC	1608[0603]	Cap Semi	
5	C12	Capacitor (Semiconductor SIM Model)	Cap Semi	1	Samsung	CL10A225K08NNNC	1608[0603]	Cap Semi	
6	C14	Capacitor (Semiconductor SIM Model)	Cap Semi	1	Vishay	VJ0603Y103KXACW1BC	1608[0603]	Cap Semi	
7	C18, C19, C20, C21, C23, C24	Capacitor (Semiconductor SIM Model)	Cap Semi	6	Samsung	CL21B472KBANNNC	1608[0603]	Cap Semi	
8	C26	Capacitor (Semiconductor SIM Model)	Cap Semi	1	Samsung	CL05C101JB5NNNC	1608[0603]	Cap Semi	
9	C27	Capacitor (Semiconductor SIM Model)	Cap Semi	1	KEMET	C0402C473K3RACAUTO	1608[0603]	Cap Semi	
10	C28, C29, C31	Capacitor (Semiconductor SIM Model)	Cap Semi	3	Murata	GRM188R71C334KA01D	1608[0603]	Cap Semi	
11	D1, D2	BAT54S	BAT54S	2	USDigital	-	SOT23	BAT54S	
12	IC1	Integrated Circuit	ATMEGA32U4-AU	1	Microchip / Atmel	ATMEGA32U4-AU	QFP80P1200X1200X120-44N	ATMEGA32U4-AU	
13	IC2	Integrated Circuit	TPS2114APW	1	Texas Instruments	TPS2114APWR	SOP65P640X120-8N	TPS2114APW	
14	IC3	Integrated Circuit	ZXCL330E5TA	1	Diodes Zetex	ZXCL330E5TA	SOT95P285X140-5N	ZXCL330E5TA	
15	IC4, IC5	Integrated Circuit	AM26C32CD	2	Texas Instruments	AM26C32CD	SOIC127P600X175-16N	AM26C32CD	
16	IC6	Integrated Circuit	LTC485IS8PBF	1	Analog Devices / Linear Technology	LTC485IS8#PBF	SOIC127P599X175-8N	LTC485IS8PBF	
17	IC7	Integrated Circuit	MAX3221CPWR	1	Texas Instruments	MAX3221CPWR	SOP65P640X120-16N	MAX3221CPWR	
18	J2	CON_M12-5P	CON_M12-5P	1	USDigital	-	CON_M12	CON_M12-5P	
19	LED1, LED2		SML-P24MUWT86R	2	Rohm	SML-P24MUWT86R	SML-P24MUWT86R	SML-P24MUWT86R	
20	MOM_SW1, MOM_SW2, MOM_SW3, MOM_SW4	6 mm Tact Switches	Straight Shape Tact Switches	4	USDigital	-	SW_FSM8JH	PTS645SL702LFS	
21	NHD1		NHD-C12864A1Z-FSW-FBW-HTT	1	Newhaven Display	NHD-C12864A1Z-FSW-FBW-HTT	PCBComponent_1	NHD-C12864A1Z-FSW-FBW-HTT	
22	P1, P2	Header, 10-Pin, Dual row	Header 10X2A	2	Pololu	1020	HDR2X10_CEN	Header 10X2A	
23	P3	Header, 3-Pin, Dual row	ISP HEADER	1			HDR2X3	Header 3X2	
24	P4	Header, 3-Pin, Dual row	Header 3X2	1			HDR2X3	Header 3X2	
25	P5	Header, 3-Pin, Dual row	Jumpers	1	METZ CONNECT	PR20203VBDN	HDR2X3	Header 3X2	
26	P6, P8	Header, 5-Pin	Header 5	2			HDR1X5	Header 5	
27	P7, P9	Header, 5-Pin, Dual row	Header 5X2	2	METZ CONNECT	PR20C05VBDN	HDR2X5	Header 5X2	
28	P10	Header, 3-Pin, Dual row	Header 3X2A	1	METZ CONNECT	PR20203VBDN	HDR2X3_CEN	Header 3X2A	
29	P11	VERTMINIPWRJACKSLOTTED	VERTMINIPWRJACKSLOTTED	1	USDigital	-	VERTMINIPWRJACK	VERTMINIPWRJACKSLOT TED	
30	Q1	NPN Bipolar Transistor	QNPN	1	Central Semiconductor	CMPT2222A TR PBFFREE	SOT-23B_L	QNPN	
31	Q2	MOSFET (N-Channel)	2N7002ET	1	ON Semiconductor	2N7002ET1G	SOT95P237X101-3N	2N7002ET	
32	R1	RES 0805	RES 0805	1	Panasonic	ERJ-1GNF4702C	805	RES 0805	
33	R2, R3, R4, R5, R6, R7	RES 0805	RES 0805	6	Panasonic	ERJ-6ENF4701V	805	RES 0805	
34	R8, R9, R10, R11, R31	RES 0805	RES 0805	5	Panasonic	ERJ-6ENF4701V	805	RES 0805	
35	R12	RES 0805	RES 0805	1	Panasonic	ERJ-6ENF8660V	805	RES 0805	
36	R13, R14, R15, R16, R32, R33	RES 0805	RES 0805	6	Panasonic	ERJ-6ENF1001V	805	RES 0805	
37	R17, R18, R19	RES 0805	RES 0805	3	Panasonic	ERJ-6ENF2101V	805	RES 0805	
38	R20, R21, R22	RES 0805	RES 0805	3	Panasonic	ERJ-6GEYJ302V	805	RES 0805	
39	R23, R24, R25, R26, R27, R28	RES 0805	RES 0805	6	Panasonic	ERJ-6ENF1200V	805	RES 0805	
40	R29, R30	RES 0805	RES 0805	2	Panasonic	ERJ-6GEYJ331V	805	RES 0805	
41	Reset1	6 mm Tact Switches	Straight Shape Tact Switches	1	USDigital	-	SW_FSM8JH	PTS645SL702LFS	
42	U1	Undefined or Miscellaneous	LM1117IMPX-5.0_NOPB	1	TI National Semiconductor	LM1117IMPX-5.0/NOPB	SOT230P700X180-4N	LM1117IMPX-5.0_NOPB	
43	UC1, UC2		LS7366R	2	USDigital	-	LS7366R-S	LS7366R	
44	USB-C	USB-C_USB TYPE-C_ USB 2.0 Receptacle Connector 24 _16+8 Dummy_ Position Surface Mount, Right Angle; Through Hole	USB4110-GF-A	1	Global Connector Technology	USB4110-GF-A	GCT_USB4110-GF-A	USB4110-GF-A	
45	XTAL1	16MHz Δ ±30ppm Crystal 18pF 40 Ohms 2-SMD, No Lead	ABM3-16.000MHZ-B4Y-T	1	Abracon	ABM3-16.000MHZ-B4Y-T	XTAL500X320X130N	ABM3-16.000MHZ-B4Y-T	
46	XTAL2		30Mhz_Crystal_Os cillator	1	Abracon	ASFL1-30.000MHZ-EC-T	DFN254P330X130-4N	30Mhz_Crystal_Oscillator	