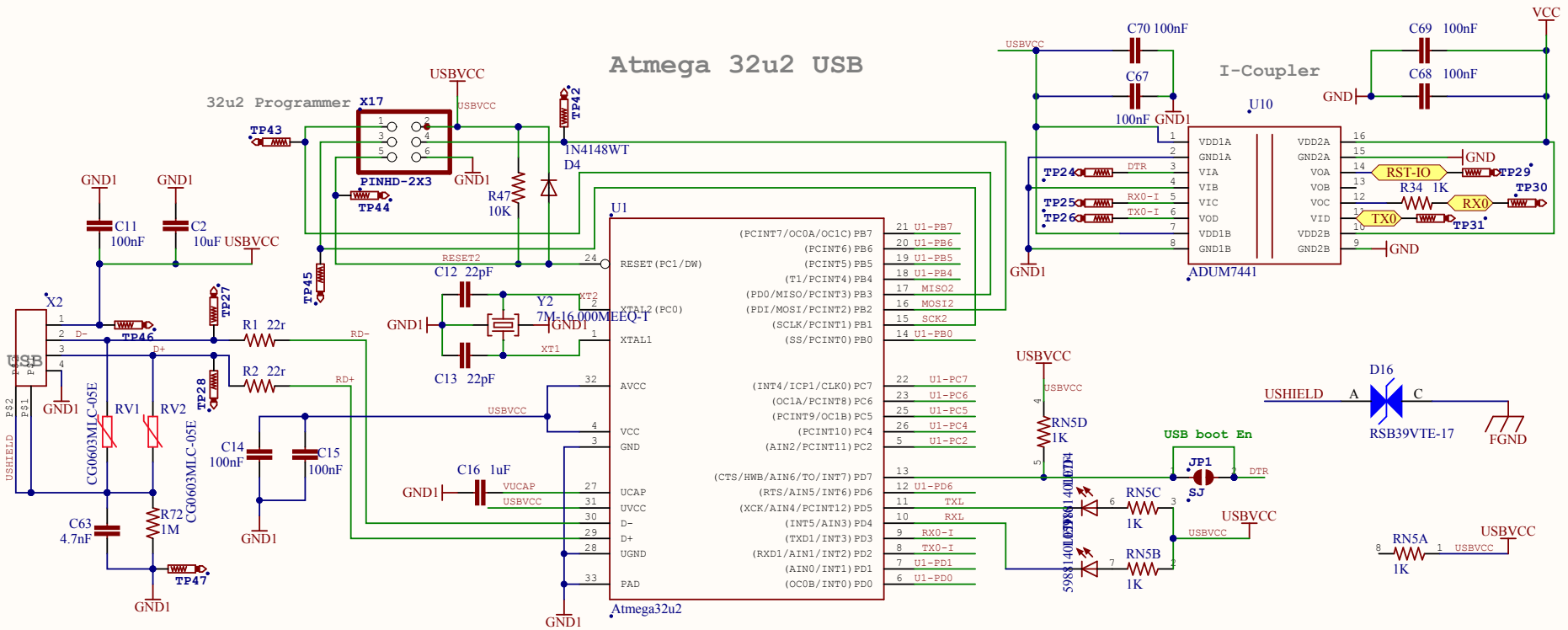


USB to Serial

Atmega 32u2 USB



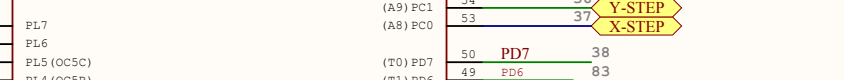
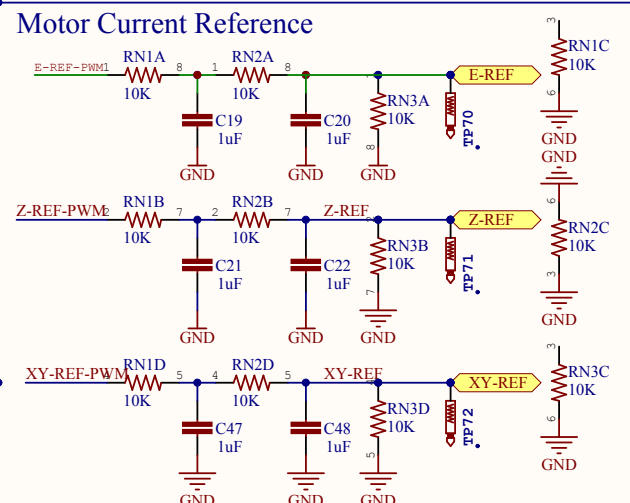
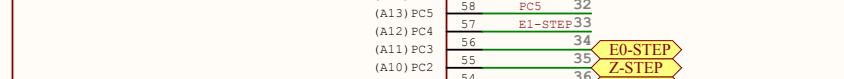
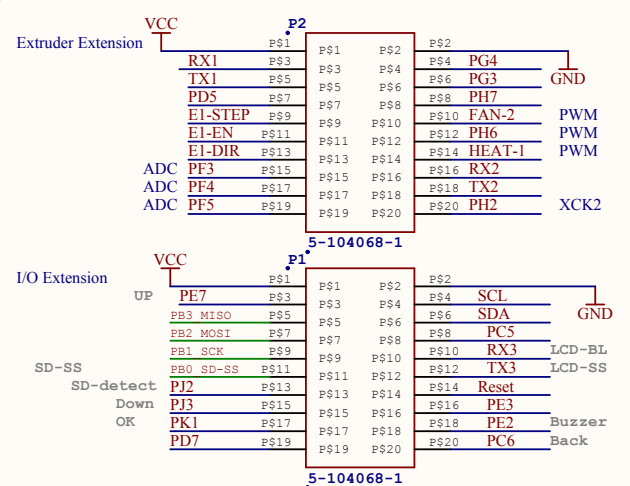
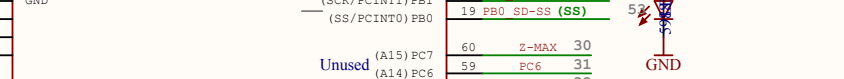
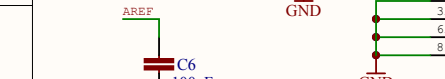
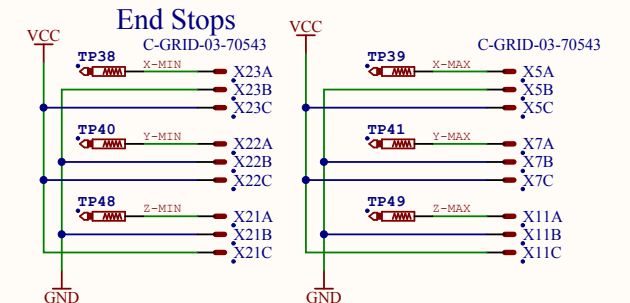
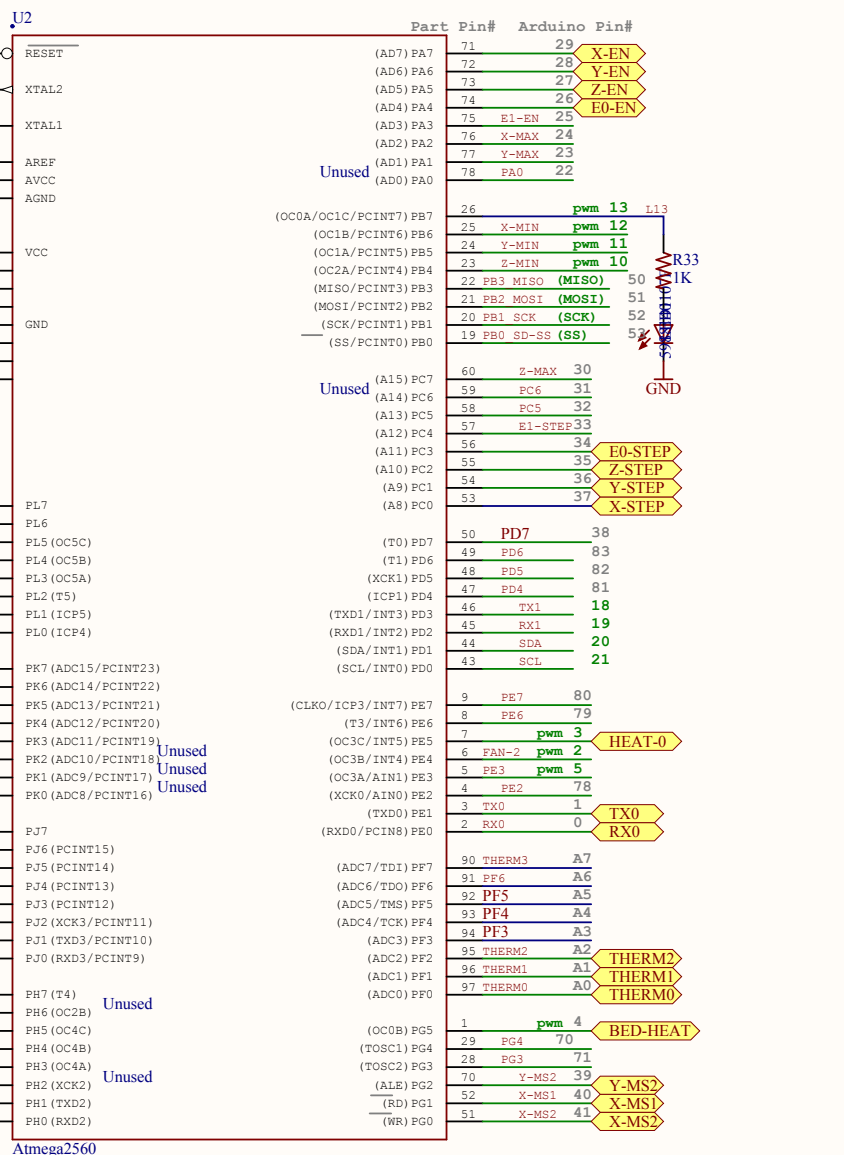
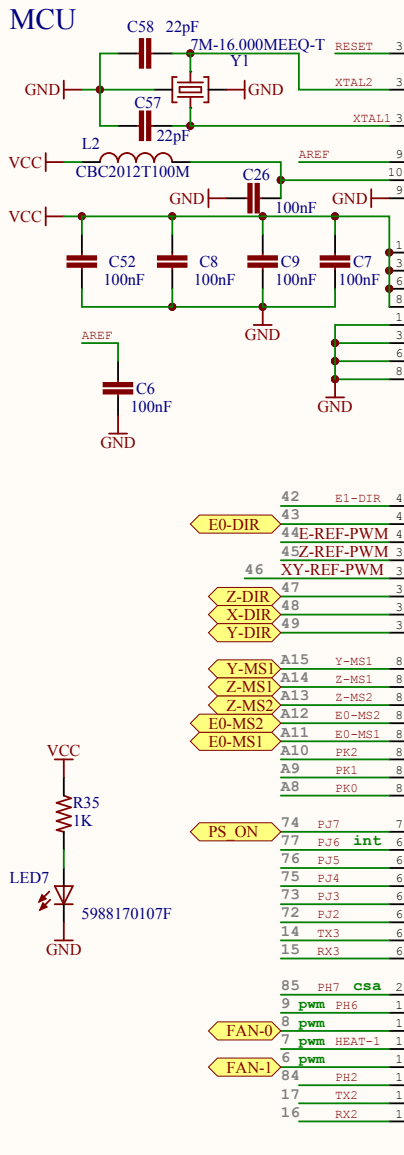
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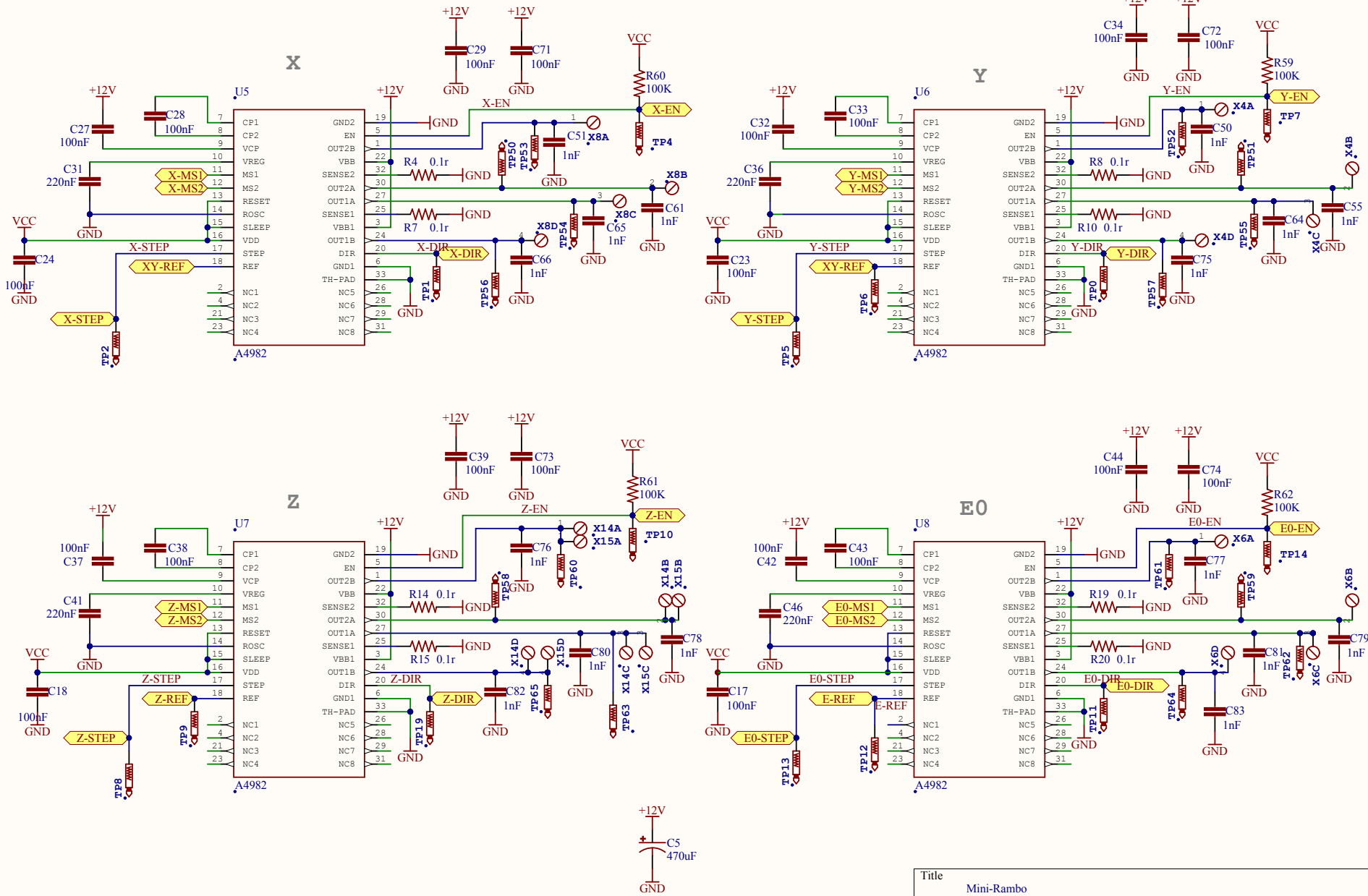
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Mini-Rambo		
Size	Number	Revision
Letter	1.0	a
Date:	11/12/2014	Sheet 1 of 5
File:	C:\Users\A\USBSerialSchDoc	Drawn By: UltiMachine



Mini-Rambo

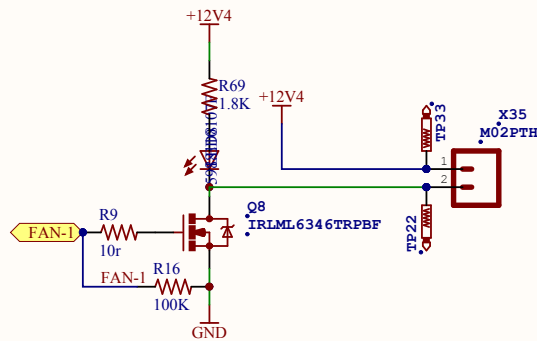
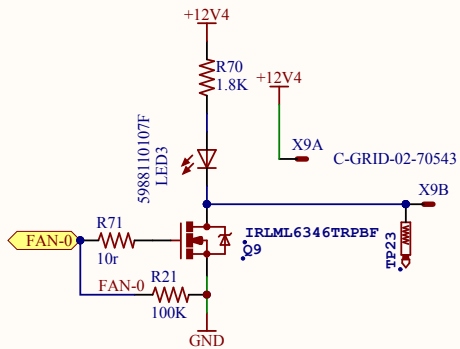
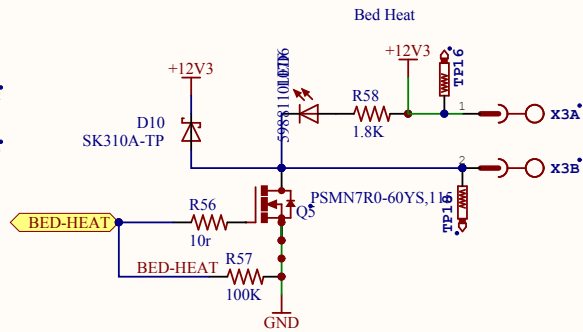
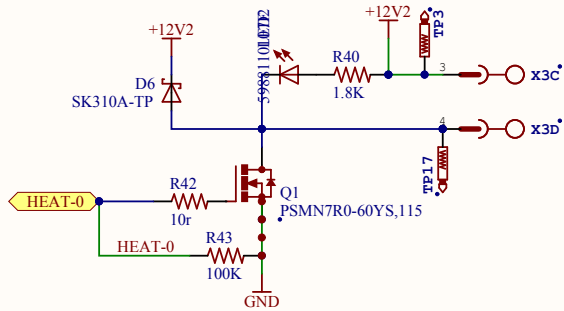
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Size	Number	1.0	Sheet 2 of 5	
Letter			Drawn By: UltiMachine	
Date:	11/12/2014			
File:	C:\Users\...MCU.SchDoc			

Stepper Motor Drivers

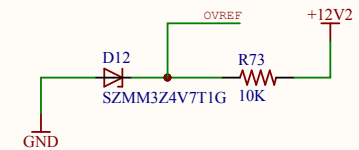
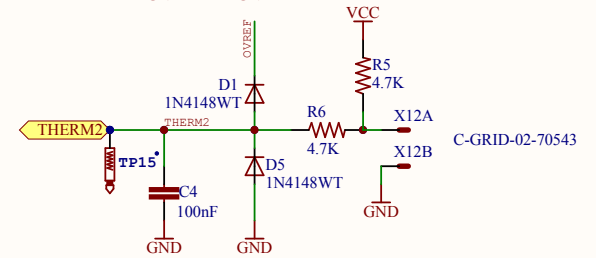
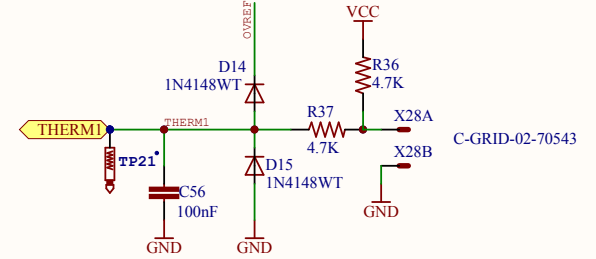
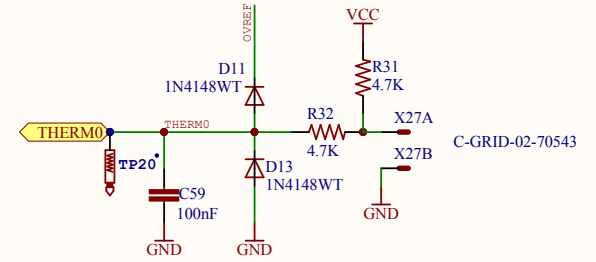


Title			Mini-Rambo		
Size	Number				Revision
Letter	1.0				a
Date:	11/12/2014	Sheet 3 of 5			
File:	C:\Users\...Motors.SchDoc	Drawn By: UltiMachine			

Power Outputs

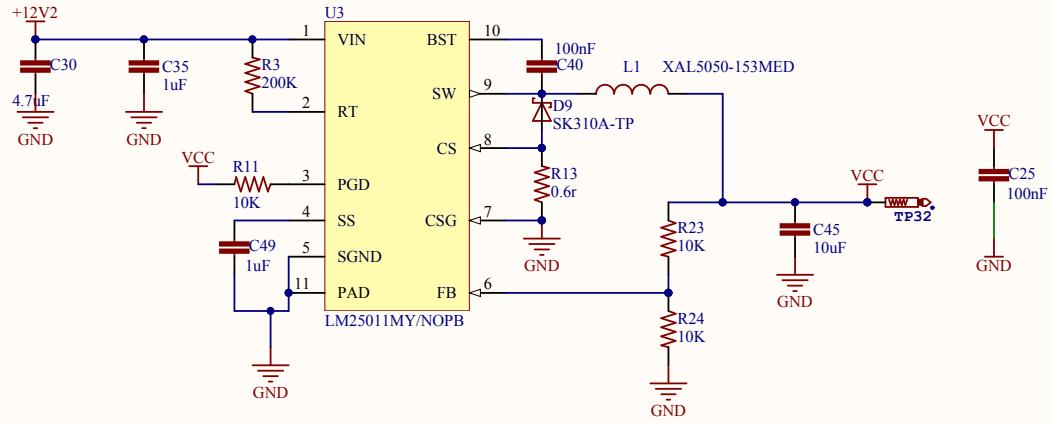


Thermistors

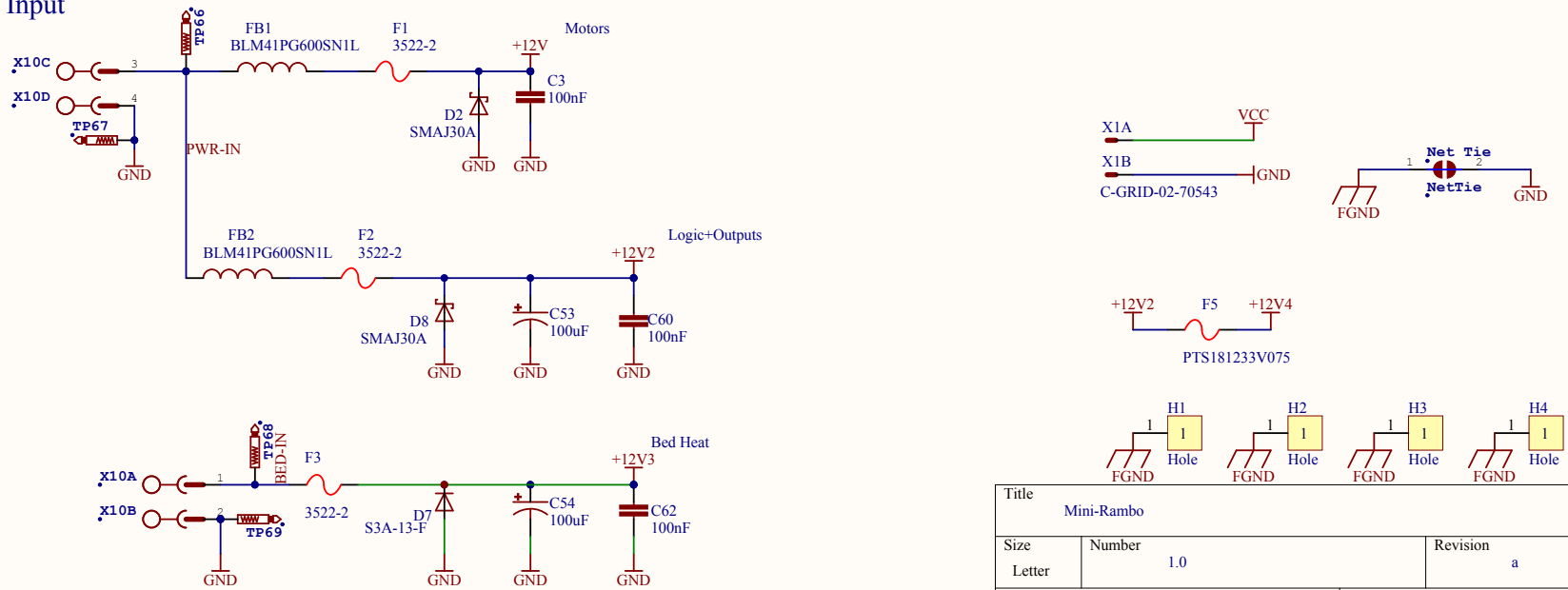


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Size Letter	Number 1.0	Revision a
Date: 11/12/2014	Sheet 4 of 5	
File: C:\Users\...\Heaters.SchDoc	Drawn By: UltiMachine	

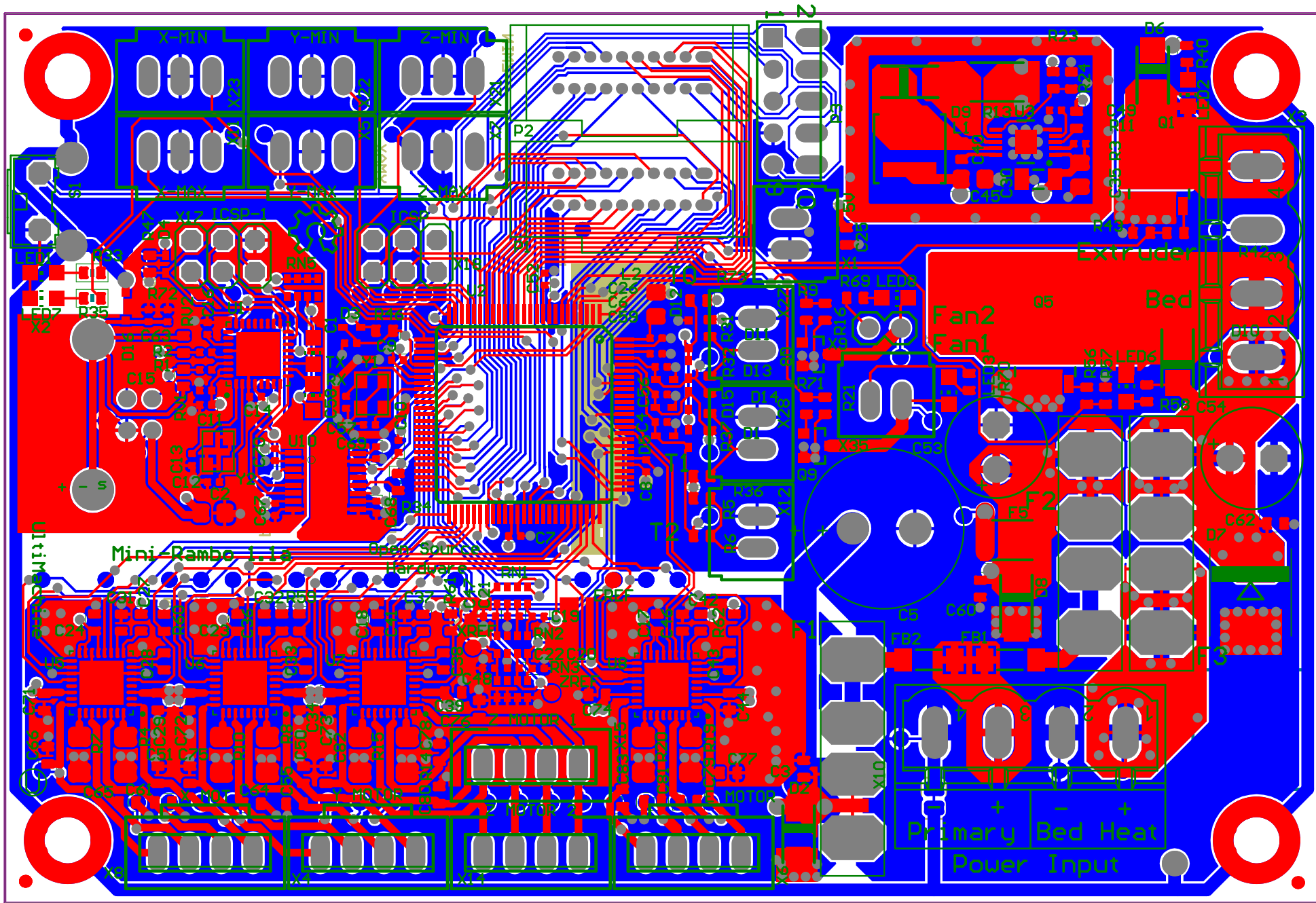
Voltage Regulator



Power Input



Title		
Mini-Rambo		
Size	Number	Revision
Letter	1.0	a
Date:	11/12/2014	Sheet 5 of 5
File:	C:\Users\A\Power-SMPS.SchDoc	Drawn By: UltiMachine



Designator	Manufacturer 1	Manufacturer Part Number 1	Description	Comment	Quantity	LibRef	
C1, C12, C13, C57, C58			CAP CER 0402 22pF 50V 5% COG	22pF	5	04025A220IAT2A	
C2, C45			CAP CER 0805 10uF 10V 10% X5R	10uF	2	C0805C10K68PACTU	
C3, C17, C18, C23, C24, C25, C27, C28, C29, C32, C33, C34, C37, C38, C39, C40, C42, C43, C44, C60, C62, C71, C72, C73, C74			CAP CER 0603 100nF 50V 10% X7R	100nF	25	C0603C104KSRACTU	
C4, C6, C7, C8, C9, C10, C11, C14, C15, C26, C52, C56, C59, C67, C68, C69, C70			CAP CER 0402 100nF 16V 10% X7R	100nF	17	GRM155R71C104K88D	
C5			CAP ALU 470uF 50V 20% CAP CER 0402 1uF 6.3V 10% X5R	470uF	1	UPW1H471MHD1TO	
C16, C19, C20, C21, C22, C47, C48, C49			CAP CER 1206 4.7uF 50V 10% X5R	1uF	8	GRM155R60105KE19D	
C30			CAP CER 1206 4.7uF 50V 10% X5R	4.7uF	1	C1206C475KSPACTU	
C31, C36, C41, C46			CAP CER 0603 220nF 10V 10% X7R	220nF	4	CC0603KRX7R78B224	
C35			CAP CER 0805 1uF 50V 10% X7R	1uF	1	GRM21BR71H105KA12L	
C50, C51, C55, C61, C64, C65, C66, C75, C76, C77, C78, C79, C80, C81, C82, C83			CAP CER 0603 1nF 50V 10% X7R	1nF	16	C0603C102KSRACTU	
C53, C54			CAP ALU 100uF 50V 20% 105C	100uF	2	UVZ1H101MPD1TD	
C63			CAP CER 0402 4.7nF 25V 10% X7R	4.7nF	1	CC0402KRX7R88B472	
D1, D3, D4, D5, D11, D13, D14, D15			DIODE SODS23	1N4148WT	8	1N4148WT	
D2, D8			DIODE TVS 30V SMA	SMAJ30A	2	SMAJ30A	
D6, D9, D10			DIODE Schottky 3A SMA	SK310A-TP	3	SK310A	
D7			DIODE DO-214AB	S3A-13-F	1	S3A-13-F	
D12			Z-Diode	S2MM3ZAV7TLG	1	ZENER-DIODE	
D16			DIODE TVS	RSB39VTE-17	1	RSB39VTE-17	
F1, F2, F3			FUSE FTH ATO	S522-2	3	S522-2	
F5			FUSE 1812 PTC 750mA 6V	PTS181233V075	1	PTS181233V075	
FB1, FB2			FERRITE BEAD 1806 60ohm	BLM41PG600SN1L	2	BLM41PG600SN1L	
FID1, FID2, FID3			Fiducial	FIDUCIAL	3	FIDUCIAL	
L1			IND 15uH 3.9A 20%	XAL5050-153MED	1	XAL5050-153MED	
L2			IND 0805 10uH 240mA 20%	CBC2012T100M	1	CBC2012T100M	
LED1, LED4, LED10			LED 0805 Yellow	5988140107F	3	5988140107F	
LED2, LED3, LED6, LED8			LED 0805 Red	5988110107F	4	5988110107F	
LED7			LED 0805 Green	5988170107F	1	5988170107F	
P1, P2			HDR 20pos Vert Dual Row	S-104068-1	2	S-104068-1	
P3			Mosfet N-channel 60V 35GA 117W 9.3mOhms	Sx2 IDCw	1	Sx2 IDCw	
Q1, Q5			Mosfet N-Channel 30V 3.4A 63mOhm	PSM7N70-60YS,115	2	PSM7N70-60YS,115	
Q8, Q9			RES 0402 22r 62.5mW 1%	IRLML63461RPF	2	IRLML63461RPF	
R1, R2			RES 0402 22r 62.5mW 1%	RC0402FR-0722RL	2	RC0402FR-0722RL	
R3			RES 0402 22r 63mW 1%	1CRCW0402200KFKE	1	1CRCW0402200KFKE	
R4, R7, R8, R10, R14, R15, R19, R20			RES 1206 0.1r 0.5w 1%	0.1r	8	CRML1206-FX-R100ELF	
R5, R6, R31, R32, R36, R37			RES 0603 4.7k 100mW 1%	4.7k	6	ERJ3EK4F701V	
R9, R42, R56, R71			RES 0603 10r 100mW 1%	10r	4	1CRCW060310R0FKEA	
R11, R23, R24, R46, R47, R73			RES 0603 10k 100mW 1%	10k	6	ERJ3EK1002V	
R13			RES 0.06 OHM 1W 1%	2512 SMD	0.6r	1	RL2512FK-070R0GL
R16, R21, R43, R57, R59, R60, R61, R62			RES 100K OHM 1/10W 1%	0603 SMD	100K	8	RC0603FR-07100KL
R33, R34, R35			RES 0603 1k 100mW 1%	1k	3	ERJ3EK1001V	
R40, R58, R69, R70			RES 0603 1.8k 100mW 5%	1.8k	4	RC0603JR-071K8L	
R72			RES 0402 1M 100mW 5%	1M	1	ERJ2GE1105X	
RN1, RN2, RN3			RES ARRAY 4 RES 10K 1206 62.5mW 5%	10K	3	CAV16-103J4LF	
RN5			RES ARRAY 4 RES 1K 1206 62.5mW 5%	1K	1	CAV16-102J4LF	
RV1, RV2			VAR 0603 5V	CG0603MLC-05E	2	CG0603MLC-05E	
S1	TE Connectivity	1571610-2	SWTCH Momentary Washable	1571610-2	1	1571610-2	
TP3, TP16, TP17, TP18, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP34, TP35, TP36, TP37, TP38, TP39, TP40, TP41, TP42, TP43, TP44, TP45, TP46, TP47, TP48, TP49, TP50, TP51, TP52, TP53, TP54, TP55, TP56, TP57, TP58, TP59, TP60, TP61, TP62, TP63, TP64, TP65, TP66, TP67, TP68, TP69, TP70, TP71, TP72			Test Point	TestPoint	55	TestPoint	
U1	Atmel	ATMEGA32U2-MUR	Atmega32u2	Atmega32u2	1	ATMEGA32U2-MU2	
U2	Atmel	ATMEGA2560-16AUR	Atmega2560	Atmega2560	1	ATMEGA2560AU	
U3			REG BUCK	LM25011MY/NOPB	1	LM25011	
U5, U6, U7, U8	Alliegro MicroSystems, LLC	A4982SETR-T	Stepper Driver - Fully Integrated, Control and Power Stage	A4982	4	A4982QFN32	
U10			4ch iCoupler	ADUM7441	1	ADUM7441	
X1, X9, X12, X27, X28			Connector 2pos 2.54mm locking	C-GRID-02-70543	5	C-GRID-02-70543	
X2			USB connector B PTH	USB-B	1	USB-B	
X3, X10			PHOENIX	9395211004	2	MSTBV4	
X4, X6, X8, X14, X15			PHOENIX CONNECTOR	MPT4	5	MPT4	
X5, X7, X11, X21, X22, X23			Connector 2pos 2.54mm locking	C-GRID-03-70543	6	C-GRID-03-70543	
X17, X18			PIN HEADER	PNHD-2X3	2	PNHD-2X3	
X35			Connector 2x1 2.54mm PTH	M02PTH	1	M02PTH	
Y1, Y2			Crystal 16MHz 10ppm 10pF	7M-16.000M	2	7M-16.000MEEQ-T	