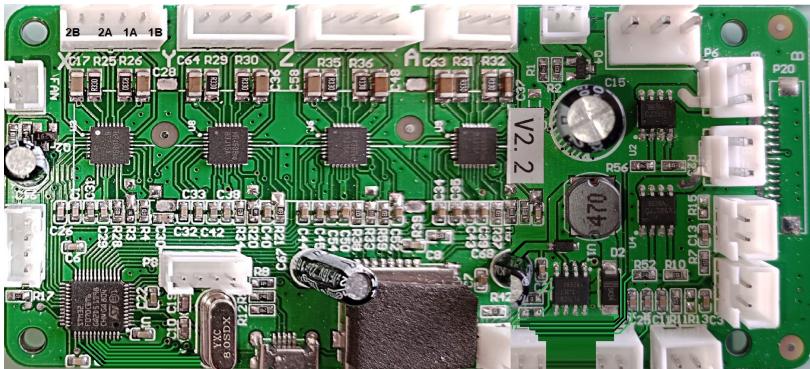


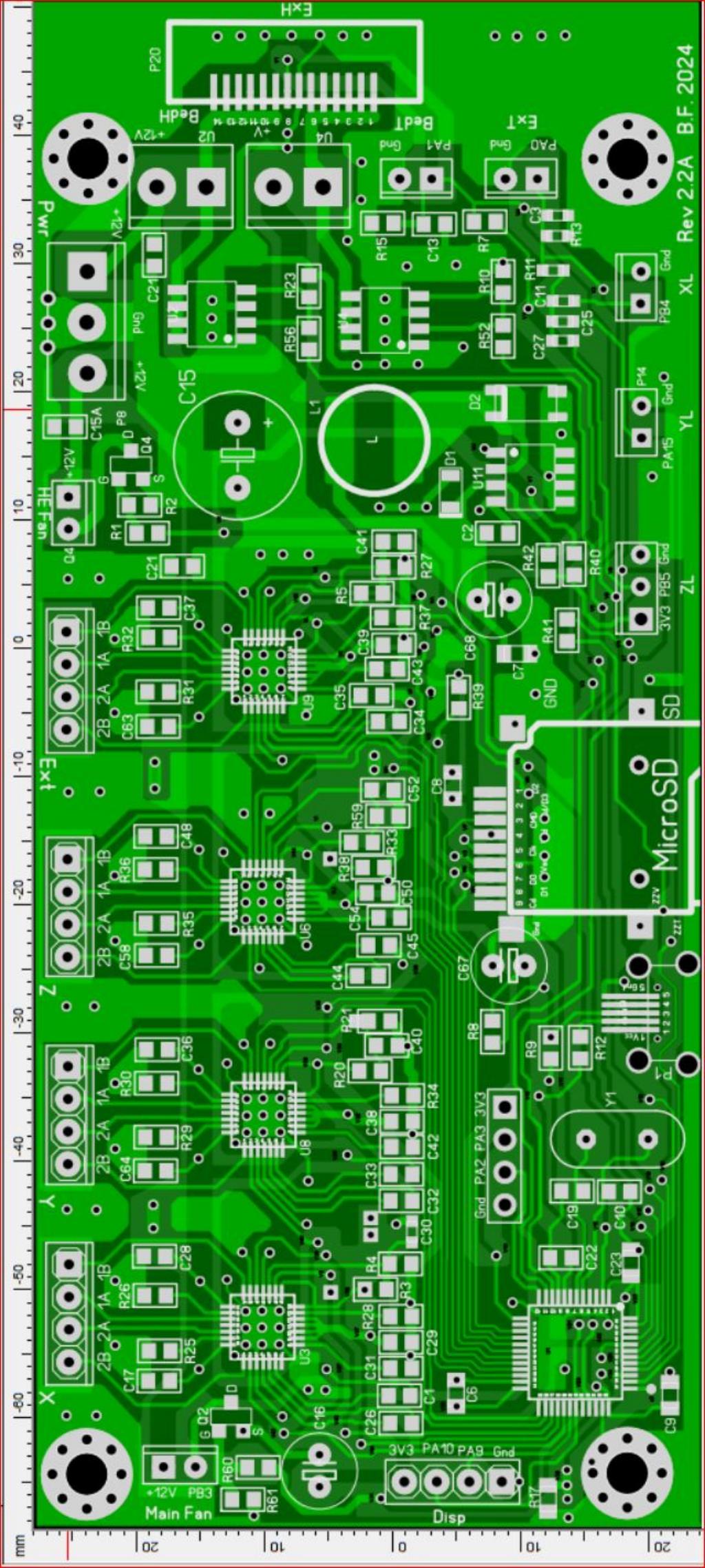
MPSM M200 V2.2 Motion Control Board Schematics/Layout

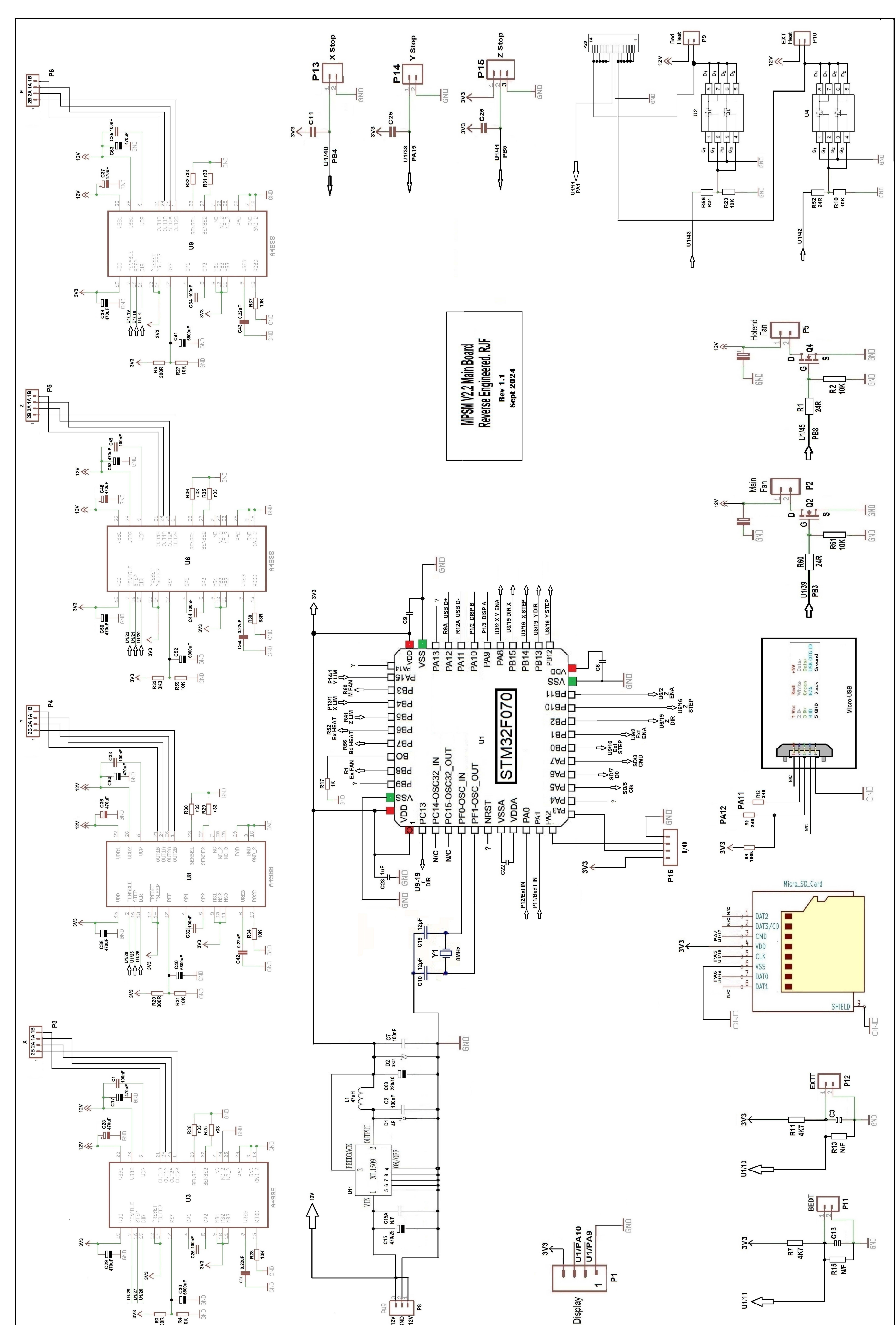


This document was produced after I had obtained a number of faulty M200 printers from Ebay over the past 6 years. The lack of online technical information made it necessary to produce schematics and PCB layouts in order to ease the board diagnostics and repair process. I recently created these drawings from my original hand drawn diagrams to make things look a little less amateurish.

I realise the M200 is now somewhat dated, but there are plenty of faulty units out there, and they still can produce reasonable prints after a bit of TLC.

Please use with caution, as there are undoubtedly some errors.





N1	DEVICE	FUNCT	N2	N3	N4	N5	LABEL	VIA 1	VIA 2	VIA 3	VIA 4
U1-1	CPU	VDD					3V3	V20			
U1-2	CPU	PC13	U9-19				Ext DIR	V15	VR	VB	VZ
U1-3	CPU	PC14/OSC32IN	N/C								
U1-4	CPU	PC15/OSC32OUT	N/C								
U1-5	CPU	PFO/OSCIN	C10-A	Y1-A							
U1-6	CPU	PF1/OSCOUT	C19-A	Y1-B							
U1-7	CPU	NRST	?								
U1-8	CPU	VSSA	C22-A								
U1-9	CPU	VDDA	C22-B	C19-B							
U1-10	CPU	PA0	P12-1	R11	R13	C3	ExtT IN	V4	V2		
U1-11	CPU	PA1	P11-1	R7	R15	C13	BedT IN	V3	VW		
U1-12	CPU	PA2	P16-3				P16-3				
U1-13	CPU	PA3	P16-2				P16-2	V13			
U1-14	CPU	PA4	N/C								
U1-15	CPU	PA5	SD-5				CLK	VM	VP		
U1-16	CPU	PA6	SD-7	R39A			D0	VN	VG		
U1-17	CPU	PA7	SD-3				CMD				
U1-18	CPU	PBO	U9/16				STEP EXT	VD	V45		
U1-19	CPU	PB1	U9-2				ENABLE EXT				
U1-20	CPU	PB2	U6-19				DIR Z				
U1-21	CPU	PB10	U6-16				STEP Z				
U1-22	CPU	PB11	U6-2				ENABLE Z				
U1-23	CPU	VSS	C6-B				GND				
U1-24	CPU	VDD	C6-A				3V3				
U1-25	CPU	PB12	U8-16				STEP Y	V35	V34		
U1-26	CPU	PB13	U8-19				DIR Y				
U1-27	CPU	PB14	U3-16				STEP X	V43	V3		
U1-28	CPU	PB15	U3-19				DIR X	V44	V39		
U1-29	CPU	PA8	U3-2	U8-2			ENABLE X Y	A40	V42		
U1-30	CPU	PA9	P1-3				DISP A				
U1-31	CPU	PA10	P1-2				DISP B				
U1-32	CPU	PA11	R12A				USB D-	V21	V12		
U1-33	CPU	PA12	R9A				USB D+	V22	V11		
U1-34	CPU	PA13	?					V25	V26		
U1-35	CPU	VSS					GND				
U1-36	CPU	VDD					3V3				
U1-37	CPU	PA14	?								
U1-38	CPU	PA15	P14/1				Y LIMIT	ZZT			
U1-39	CPU	PB3	R60/A				MAIN FAN ON	V24	V31		
U1-40	CPU	PB4	P13-1	C11/A			X LIMIT	V10	V7	V9	
U1-41	CPU	PB5	R41/A				(Z LIMIT)	V19	ZZV		
U1-42	CPU	PB6	R52/A				EX HEAT ON	V18	V6		
U1-43	CPU	PB7	R56/A				BED HEAT ON	V17	V5		
U1-44	CPU	BOOT0	R17/A					V25	V26		
U1-45	CPU	PB8	R1				EX FAN ON	V16	VS	VA	VX
U1-46	CPU	PB9	?								
U1-47	CPU	VSS					GND				
U1-48	CPU	VDD					3V3				
<hr/>											
SD-1	MICRO SD	D2	N/C				N/C				
SD-2	MICRO SD	CD/D3	N/C				N/C				
SD-3	MICRO SD	CMD	U1/17				PA7				
SD-4	MICRO SD	VDD	3V3				VDD				
SD-5	MICRO SD	CLK	U1/15				PA5	VP	VM		
SD-6	MICRO SD	VSS	GND				VSS				
SD-7	MICRO SD	D0	U1/16				PA6	VN	VG		
SD-8	MICRO SD	D1	?				N/C				
SD-9	MICRO SD	CD	?				N/C				
<hr/>											
USB-1	MICRO USB	V+	N/C				V+				
USB-2	MICRO USB	D-	R12				PA11				
USB-3	MICRO USB	D+	R9				PA12				
USB-4	MICRO USB	ID	N/C				N/C				
USB-5	MICRO USB	GND					GND				
<hr/>											
U2-1	9926A	S1	GND				GND				
U2-2	9926A	G1	R56	R23			BED HEAT ON				
U2-3	9926A	S2	GND				GND				
U2-4	9926A	G2	R56	R23			BED HEAT ON				
U2-5	9926A	D2	P9/2				BED FEED				

U2-6	9926A	D2	P9/2				BED FEED		
U2-7	9926A	D1	P9/2				BED FEED		
U2-8	9926A	D1	P9/2				BED FEED		
U4-1	9926A	S1	GND				GND		
U4-2	9926A	G1	R52	R10			EX HEAT ON		
U4-3	9926A	S2	GND				GND		
U4-4	9926A	G2	R52	R10			EX HEAT ON		
U4-5	9926A	D2	P10/2				EX FEED		
U4-6	9926A	D2	P10/2				EX FEED		
U4-7	9926A	D1	P10/2				EX FEED		
U4-8	9926A	D1	P10/2				EX FEED		
U11-1	XL1509	VIN	P8/1/3	R40/A			VIN	VT	VU
U11-2	XL1510	OUT	D2/K	L1/A			OUT		
U11-3	XL1511	FEEDBACK	D1/K	L1/B			FEEDBACK		
U11-4	XL1512	ON/OFF	GND				ON/OFF		
U11-5	XL1513	GND					GND		
U11-6	XL1514	GND					GND		
U11-7	XL1515	GND					GND		
U11-8	XL1516	GND					GND		
U3-1	4988	OUT 2B	P3/4				2B		
U3-2	4988	ENABLE	U1/29				ENABLE STEPS	V42	
U3-3	4988	GND							
U3-4	4988	CP1	C26/A						
U3-5	4988	CP2	C26/B						
U3-6	4988	VCP	C1/A						
U3-7	4988	N/C							
U3-8	4988	VREG	C31/A						
U3-9	4988	MS1	3V3						
U3-10	4988	MS2	3V3						
U3-11	4988	MS3	3V3						
U3-12	4988	RESET	3V3						
U3-13	4988	ROSC	R28/A						
U3-14	4988	SLEEP	3V3						
U3-15	4988	VDD	3V3						
U3-16	4988	STEP	U1/27				X STEP	V3	V43
U3-17	4988	REF	R4/A	R3/A	C30/A				
U3-18	4988	GND							
U3-19	4988	DIR	U1/28				X STEP DIRECTION	V39	V44
U3-20	4988	N/C	GND						
U3-21	4988	OUT1B	P3/1				1B		
U3-22	4988	VBB	12V	C28/A					
U3-23	4988	SENSE1	R26/A						
U3-24	4988	OUT1A	P3/2				1A		
U3-25	4988	N/C							
U3-26	4988	OUT2A	P3/4				2A		
U3-27	4988	SENSE2	R25/A						
U3-28	4988	VBB2	12V						
U6-1	4988	OUT 2B	P5/4				2B		
U6-2	4988	ENABLE	U1/22				ENABLE STEPS		
U6-3	4988	GND							
U6-4	4988	CP1	C44/A						
U6-5	4988	CP2	C44/B						
U6-6	4988	VCP	C45/A						
U6-7	4988	N/C							
U6-8	4988	VREG	C54/A						
U6-9	4988	MS1	3V3						
U6-10	4988	MS2	3V3						
U6-11	4988	MS3	3V3						
U6-12	4988	RESET	3V3						
U6-13	4988	ROSC	R20/A						
U6-14	4988	SLEEP	3V3						
U6-15	4988	VDD	3V3						
U6-16	4988	STEP	U1/21				Z STEP	VI	VH
U6-17	4988	REF	R59/A	C52/A	R33/A				
U6-18	4988	GND							
U6-19	4988	DIR	U1/20				Z STEP DIRECTION		
U6-20	4988	N/C	GND						

U6-21	4988	OUT1B	P5/1				1B				
U6-22	4988	VBB	12V								
U6-23	4988	SENSE1	R36/A								
U6-24	4988	OUT1A	P5/2				1A				
U6-25	4988	N/C									
U6-26	4988	OUT2A	P5/6				2A				
U6-27	4988	SENSE2	R35/A								
U6-28	4988	VBB2	12V								
<hr/>											
U8-1	4988	OUT 2B	P4/4				2B				
U8-2	4988	ENABLE	U1/29				ENABLE STEPS	V40	V42		
U8-3	4988	GND									
U8-4	4988	CP1	C32/A								
U8-5	4988	CP2	C32/B								
U8-6	4988	VCP	C33/A								
U8-7	4988	N/C									
U8-8	4988	VREG	C54/A								
U8-9	4988	MS1	3V3								
U8-10	4988	MS2	3V3								
U8-11	4988	MS3	3V3								
U8-12	4988	RESET	3V3								
U8-13	4988	ROSC	R34/A								
U8-14	4988	SLEEP	3V3								
U8-15	4988	VDD	3V3								
U8-16	4988	STEP	U1/25				Y STEP	V34	V35		
U8-17	4988	REF	R21/A	R20/A	C40/A						
U8-18	4988	GND									
U8-19	4988	DIR	U1/26				Y STEP DIRECTION				
U8-20	4988	N/C	GND								
U8-21	4988	OUT1B	P4/1				1B				
U8-22	4988	VBB	12V								
U8-23	4988	SENSE1	R30/A								
U8-24	4988	OUT1A	P4/2				1A				
U8-25	4988	N/C									
U8-26	4988	OUT2A	P4/4				2A				
U8-27	4988	SENSE2	R29/A								
U8-28	4988	VBB2	12V								
<hr/>											
U9-1	4988	OUT 2B	P6/4				2B				
U9-2	4988	ENABLE	U1/19				ENABLE STEPS				
U9-3	4988	GND									
U9-4	4988	CP1	C34/A								
U9-5	4988	CP2	C34/B								
U9-6	4988	VCP	C35/A								
U9-7	4988	N/C									
U9-8	4988	VREG	C43/A								
U9-9	4988	MS1	3V3								
U9-10	4988	MS2	3V3								
U9-11	4988	MS3	3V3								
U9-12	4988	RESET	3V3								
U9-13	4988	ROSC	R37/A								
U9-14	4988	SLEEP	3V3								
U9-15	4988	VDD	3V3								
U9-16	4988	STEP	U1/18				EXT STEP	V45	VD		
U9-17	4988	REF	C41/A	R5/A	R27/A						
U9-18	4988	GND									
U9-19	4988	DIR	U1/2				EXT STEP DIRECTION	VZ	VB	VR	V15
U9-20	4988	N/C	GND								
U9-21	4988	OUT1B	P6/1				1B				
U9-22	4988	VBB	12V								
U9-23	4988	SENSE1	R32/A								
U9-24	4988	OUT1A	P6/2				1A				
U9-25	4988	N/C									
U9-26	4988	OUT2A	P6/3				2A				
U9-27	4988	SENSE2	R31/A								
U9-28	4988	VBB2	12V								
<hr/>											
P16-1	AUX	3V3					3V3				
P16-2	AUX	PA3	U1/13								
P16-3	AUX	PA2	U1/12								
P16-4	AUX	GND					GND				

R12	24R								
R13	N/F								
R15	N/F								
R17	1K0								
R20	?								
R20	88R								
R21	10k								
R23	10K								
R25	R33								
R26	R33								
R27	?								
R28	10K								
R29	R33								
R30	R33								
R31	R33								
R32	R33								
R33	3K3								
R34	10K								
R35	R33								
R36	R33								
R37	10K								
R39	10k								
R40	N/F								
R41	OR	ORPHAN							
R42	OR								
R52	24R								
R56	24R								
R59	10k								
R60	24R								
R61	10k								
SD	MICRO SD								
U2	9926A								
U3	4988								
U4	9926A								
U6	4988								
U8	4988								
U9	4988								
U11	XL1509 3.3v								
USB	MICRO USB								
Y1	8.0MHz SWX								

* Partlist from file: "Bobs V2.2 MPSM.lay6.lay6" [Board 1] / 21/09/2024 10:11:51

* Name Value Comment

*

C1 100nF

C2 100nF

C3 ? 4200uF ????

C6 ? 100uF

C7 100nF

C8 10uF

C9 100uF

C10 12pF

C11 ? 420uF

C13 ? 4200uF

C15 470uF/25V

C16 22/16

C17 100uF

C19 12pF

C21 N/F

C21 N/F

C22 560uF

C23 3200uF

C25 6u3

C26 0.1uF

C27 420nF

C28 100uF

C29 1uF

C30 100nF

C31 0.22uF

C32 0.1uF

C33 100nF

C34 0.1uF

C35 85uF

C36 100uF

C37 100uF

C38 1uF

C39 500uF

C40 100nF

C41 6700uF

C42 0.22uF

C43 0.22uF

C44 0.1uF

C45 100nF

C48 100uF

C50 0.22uF

C52 100nF

C54 0.22uF

C58 100uF

C63 100uF

C64 100uF

C67 22/16

C68 22/16

C15A N/F

D1 4F
D2 SK34

HOLE 1
HOLE 2

HOLE 3
HOLE 4

L1 470

P1

Q2 A29T

Q4 A29T

R1 24R

R2 10k

R3 380r

R4 10K

R5 2k2

R7 4k7

R8 100K

R9 24R

R10 10k

R11 4K7

R12 24R

R13 N/F

R15 N/F

R17 1K0

R20 380R maybe 880r or 680r

R21 10k

R23 10K

R25 R33

R26 R33

R27 10k

R28 10K

R29 R33

R30 R33

R31 R33

R32 R33

R33 3k3

R34 10K

R35 R33

R36 R33

R37 10K

R38 88R

R39 10k

R40 N/F

R41 0R

R42 0R

R52 24R

R56 24R

R59 10k

R60 24R

R61 10k

SD MICRO SD

U2 9926A

U3 4988

U4 9926A

U6 4988

U8 4988

U9 4988

U11 XL1509 3.3v

Y1 8.0MHz SWX

