

**MotionFire, FireDriver**  
**Schematics and bill of material**  
**Rev.A**



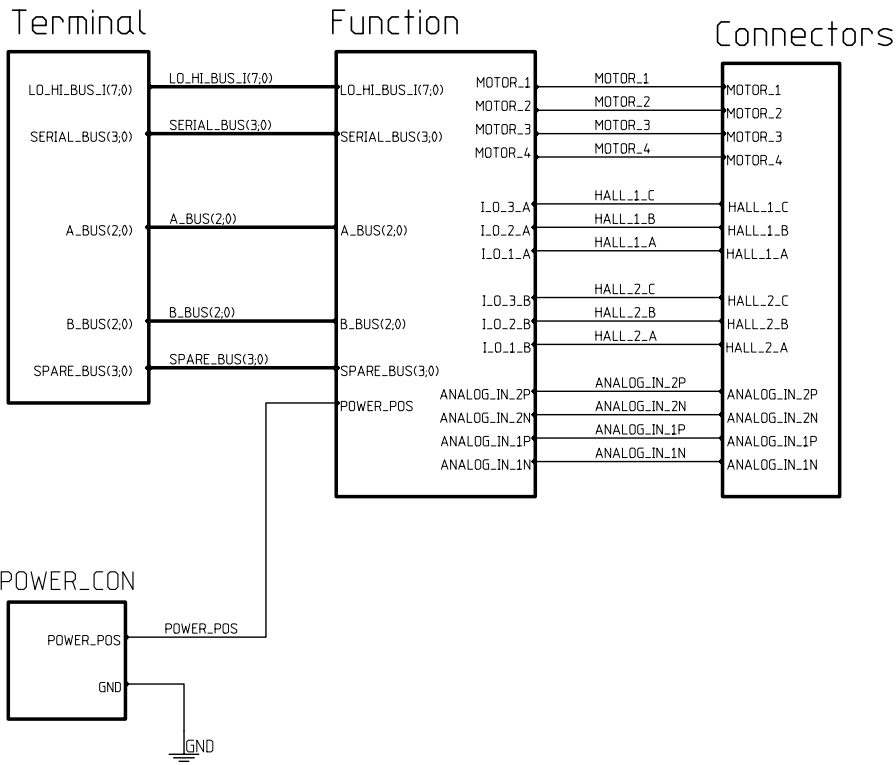
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Revision History		
Version	Date	Updates
1.0	080529	Initial Release

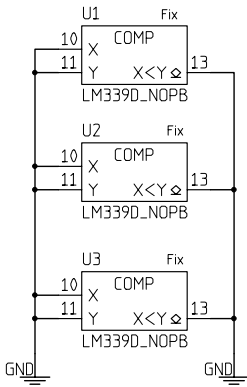
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Arrow Europe Reference Boards, Timmernabben, Sweden



## Spares:

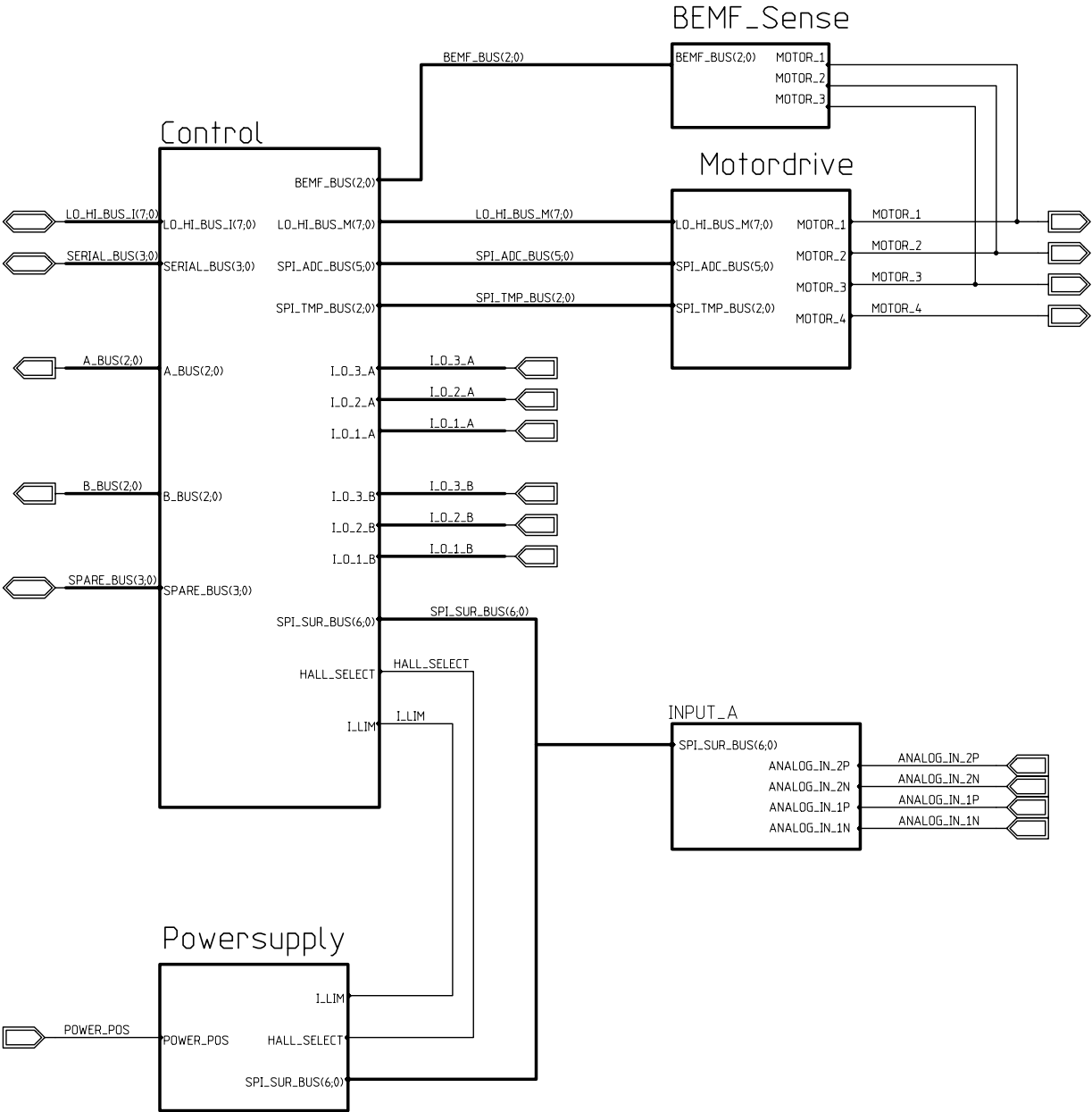


## Mechanics

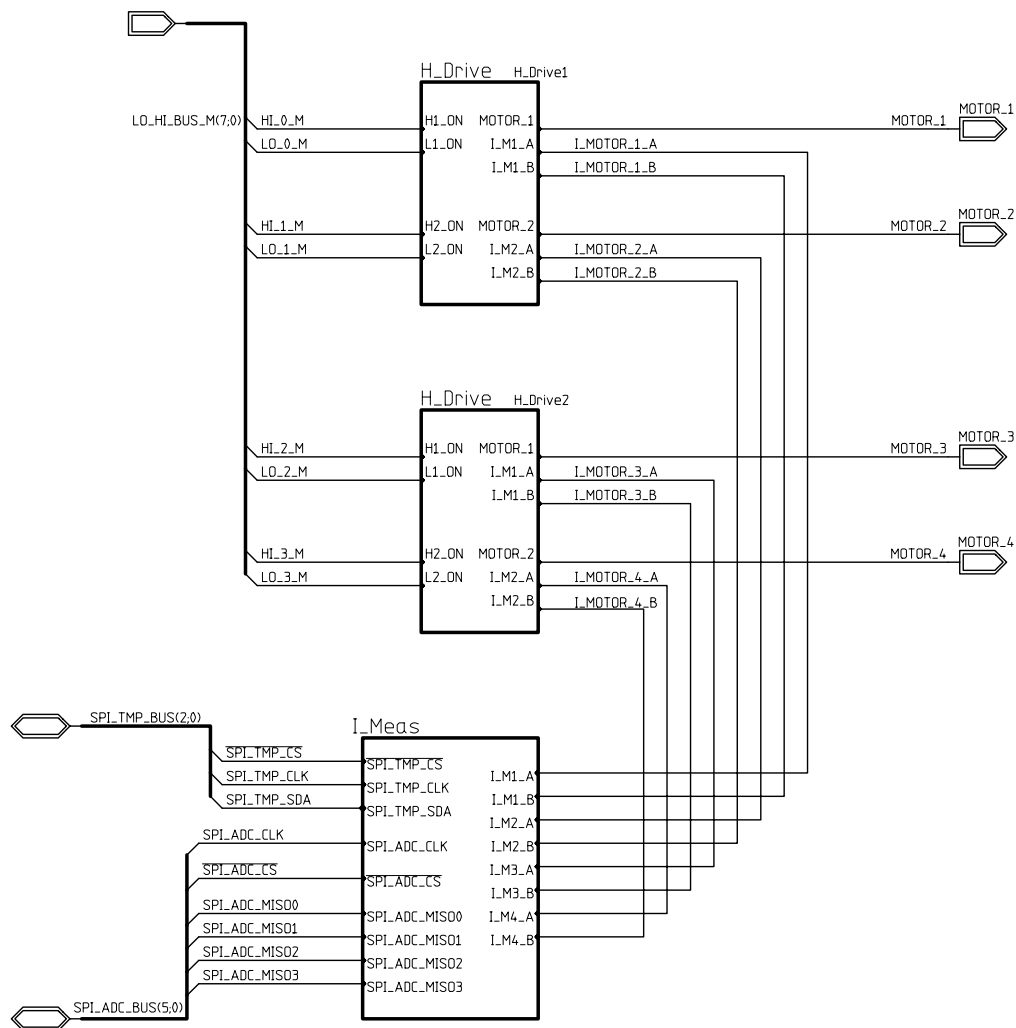
- 4 M3 mounting holes for fastening
- 3 additional M3 mounting holes for isolated Heat sink

			Last mod time	Rev
			10:36:59	PB3
A3P	Uppgjord - Prepared JM	Fäktansv - Subject resp JM	Godkänd - Approved JM	Filename - Filename Top.sbk
Unjo AB Bergslösgatan 3 B SE-431 35 Molndal Sweden		Benämning - Title FireDriver Motordrive 4 x 10A Top		Datum - Date 2008-02-07
				Sida - Page 1 (18)
		Nr - No CDIAG-200:01 061		

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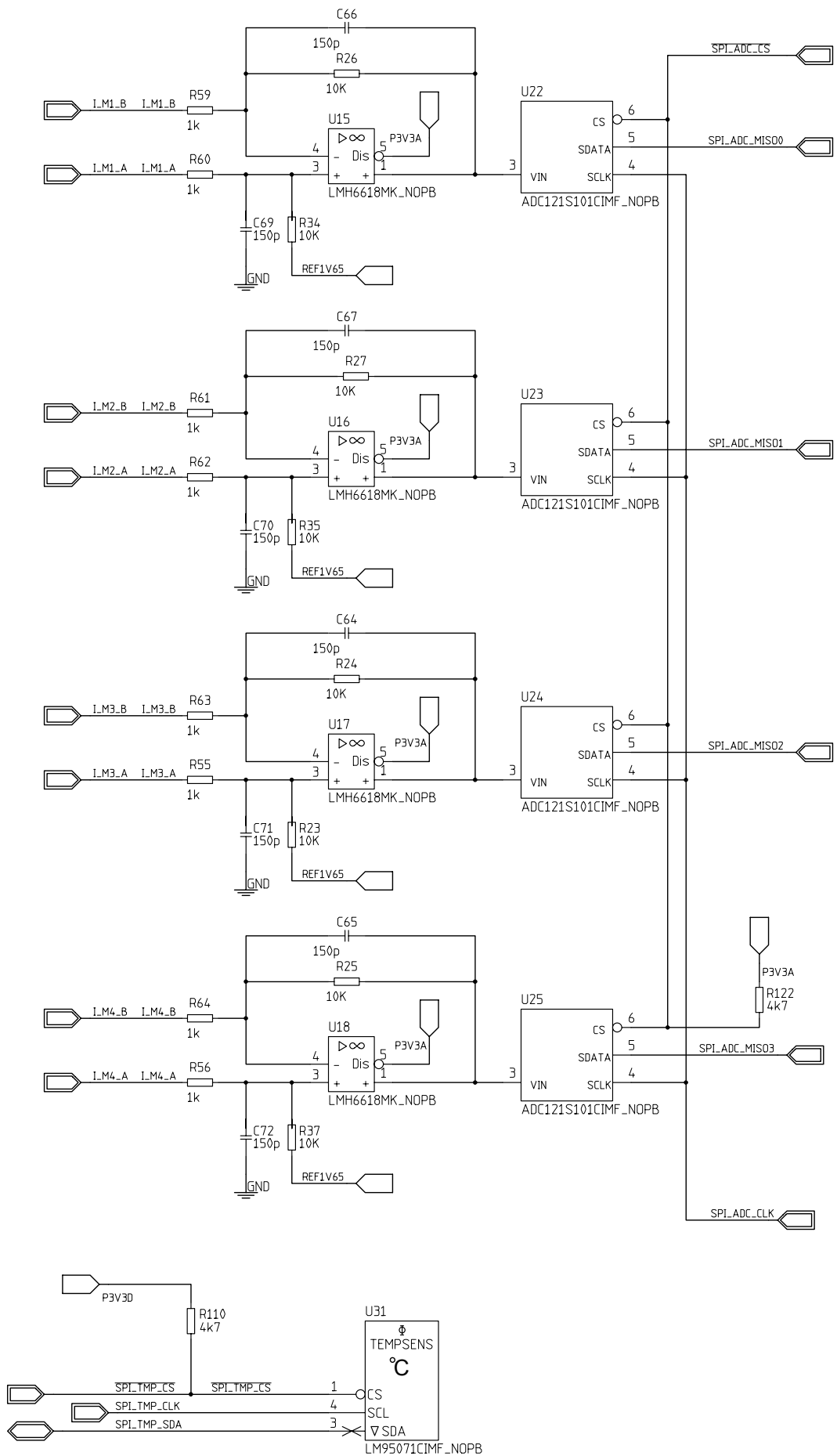


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Unjo AB Bergsjösgatan 3 B SE-431 35 Molndal Sweden		Benämning - Title FireDriver Motordrive 4 x 10A Function		Datum - Date 2008-02-07	Sida - Page 2 (18)
				Nr - No CDIAG-200:01 061	



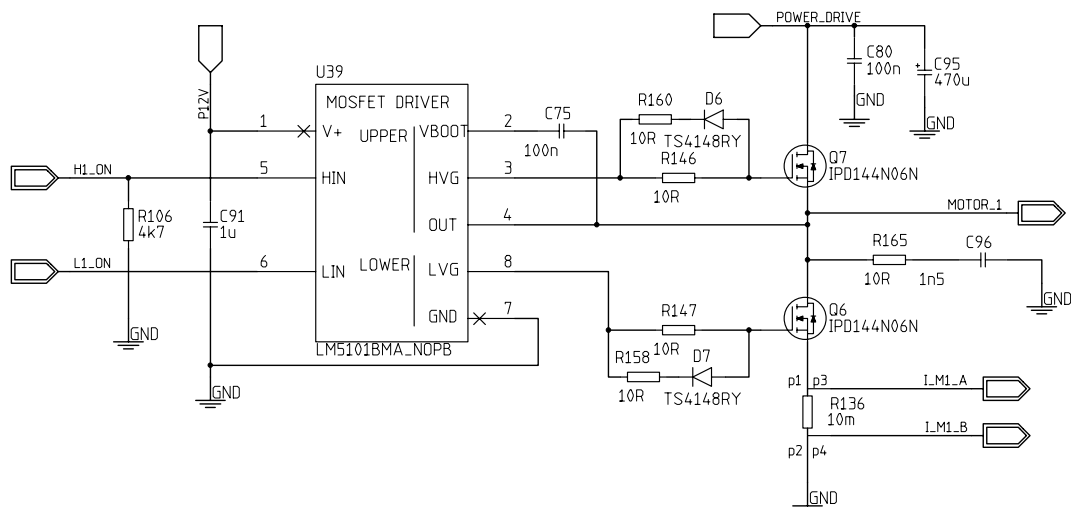
				Last mod time 11:43:31	Rev PB3
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Unjo AB Bergölsgratan 3 B SE-431 35 Mölndal Sweden		Beteckning - Title FireDriver Motordrive 4 x 10A Motordrive		Datum - Date 2008-02-05	Sida - Page 3 (18)
				Nr - No CDIAG-200:01 061	

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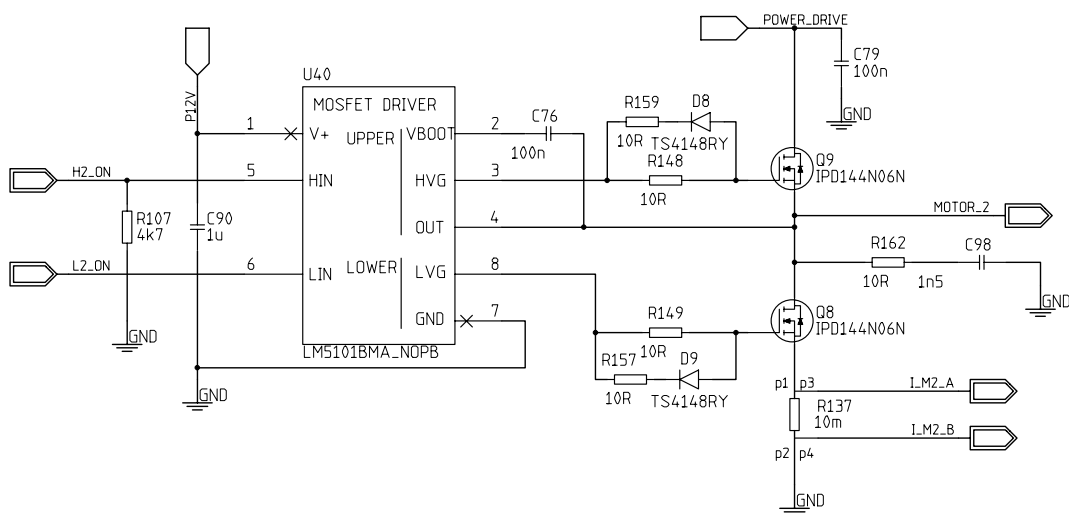


				Last mod time	Rev
	Uppgjord - Prepared	Fäktansv - Subject resp	Godkänd - Approved	11:01:31	PB3
A3P	JM	JM	JM	Filnamn - Filename	I_MEAS.sbk
Unjo AB Bergfötagatan 3 B SE-431 35 Mölndal Sweden		Beteckning - Title FireDriver Motordrive 4 x 10A I_MEAS		Datum - Date	Sida - Page
				2008-02-07	4 (18)
				Nr - No CDIAG-200:01 061	

CHANNEL 3



## CHANNEL 4



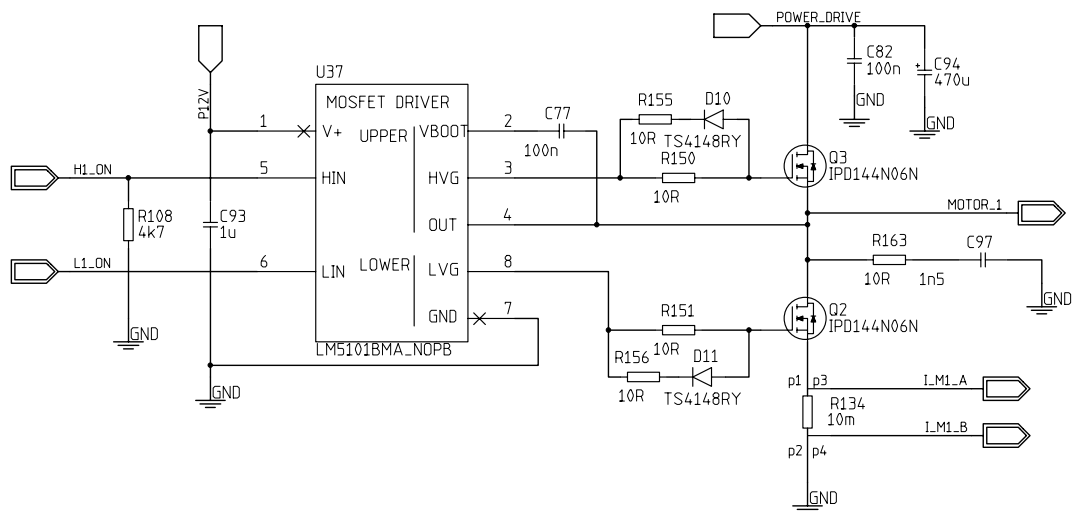
H\_DRIVE2

				Last mod time 09:35:39	Rev PB3
A3P	Uppgjord - Prepared JM	Faktaaarsv - Subject resp JM	Godkänd - Approved JM	Filenamn - Filename H_Drive.sbk	
<b>Unjo AB</b> Bergsgatan 3 B SE-431 35 Mölndal Sweden		Benämning - Title FireDriver		Datum - Date 2008-02-07	Sida - Page 5 (18)
		Motordriv 4 x 10A H Drive		Nr - No CDIAG-200:01 061	

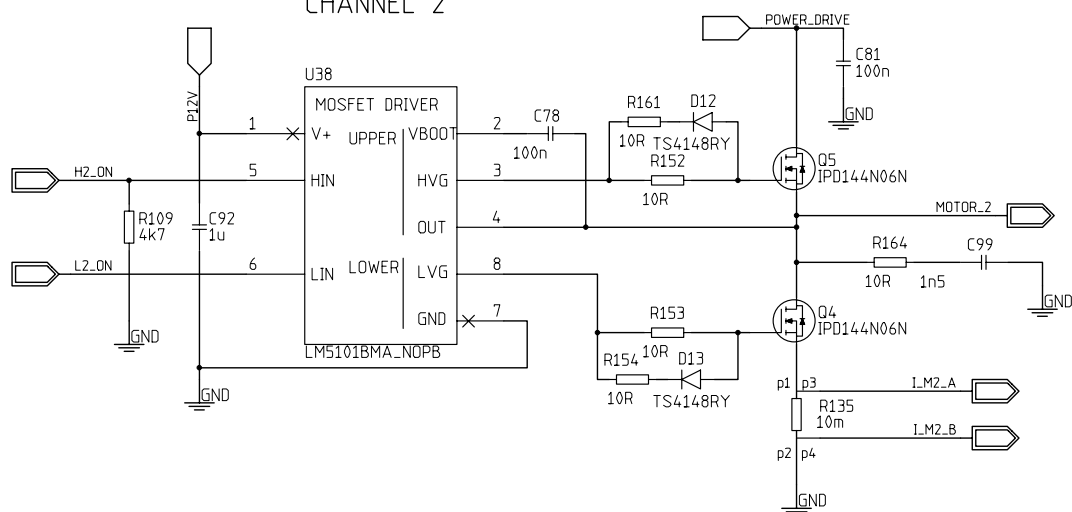


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CHANNEL 1

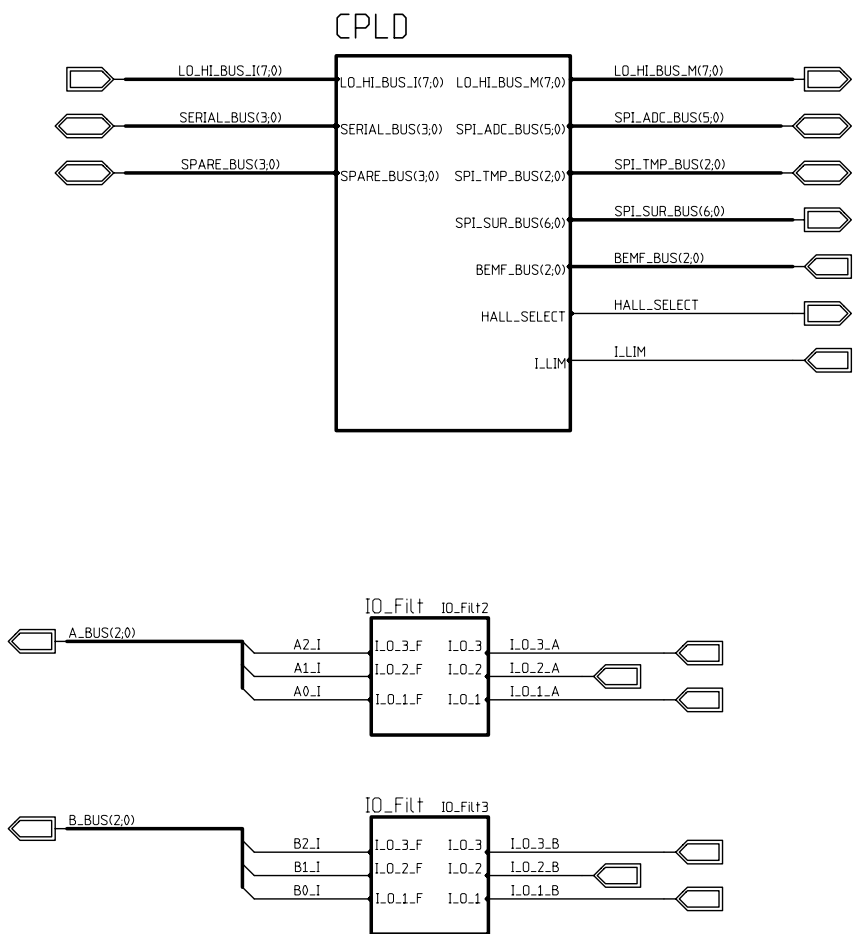


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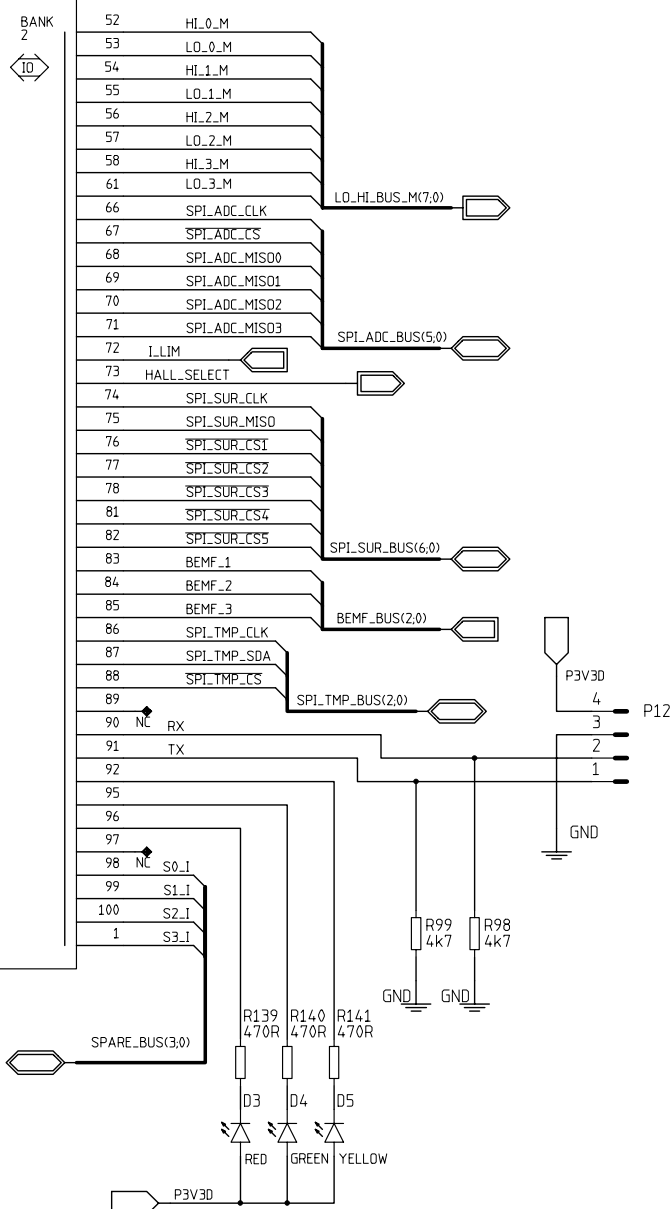
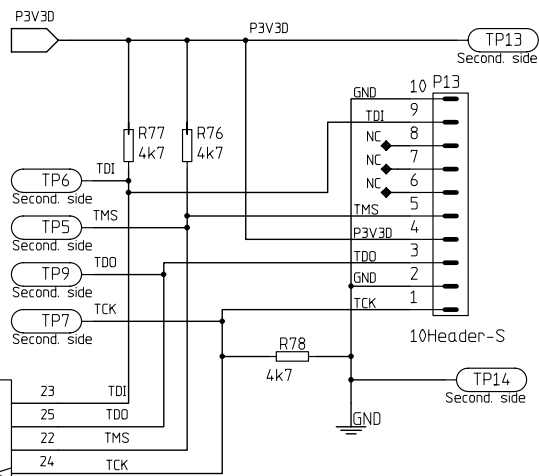
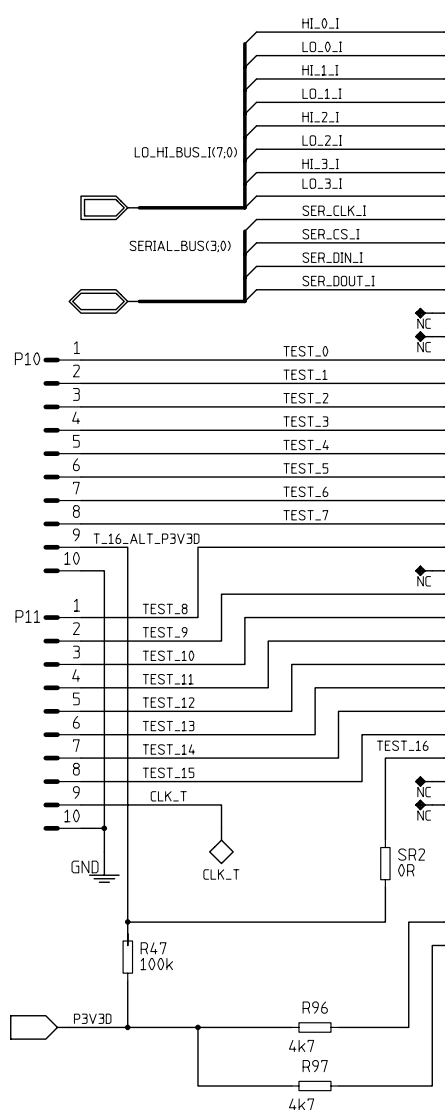
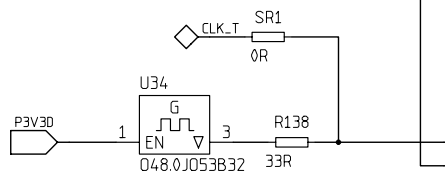


H\_DRIVE1

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	JM	JM	JM	Finam - Filename	
				H_Drive.sbk	
Unjo AB Bergfötsgratan 3 B SE-431 35 Mölndal Sweden		Bemärkning - Title		Datum - Date	
		FireDriver		2008-02-07	Sida - Page
		Motordrive 4 x 10A			6 (18)
		H_Drive		Nr - No	
				CDIAG-200:01 061	



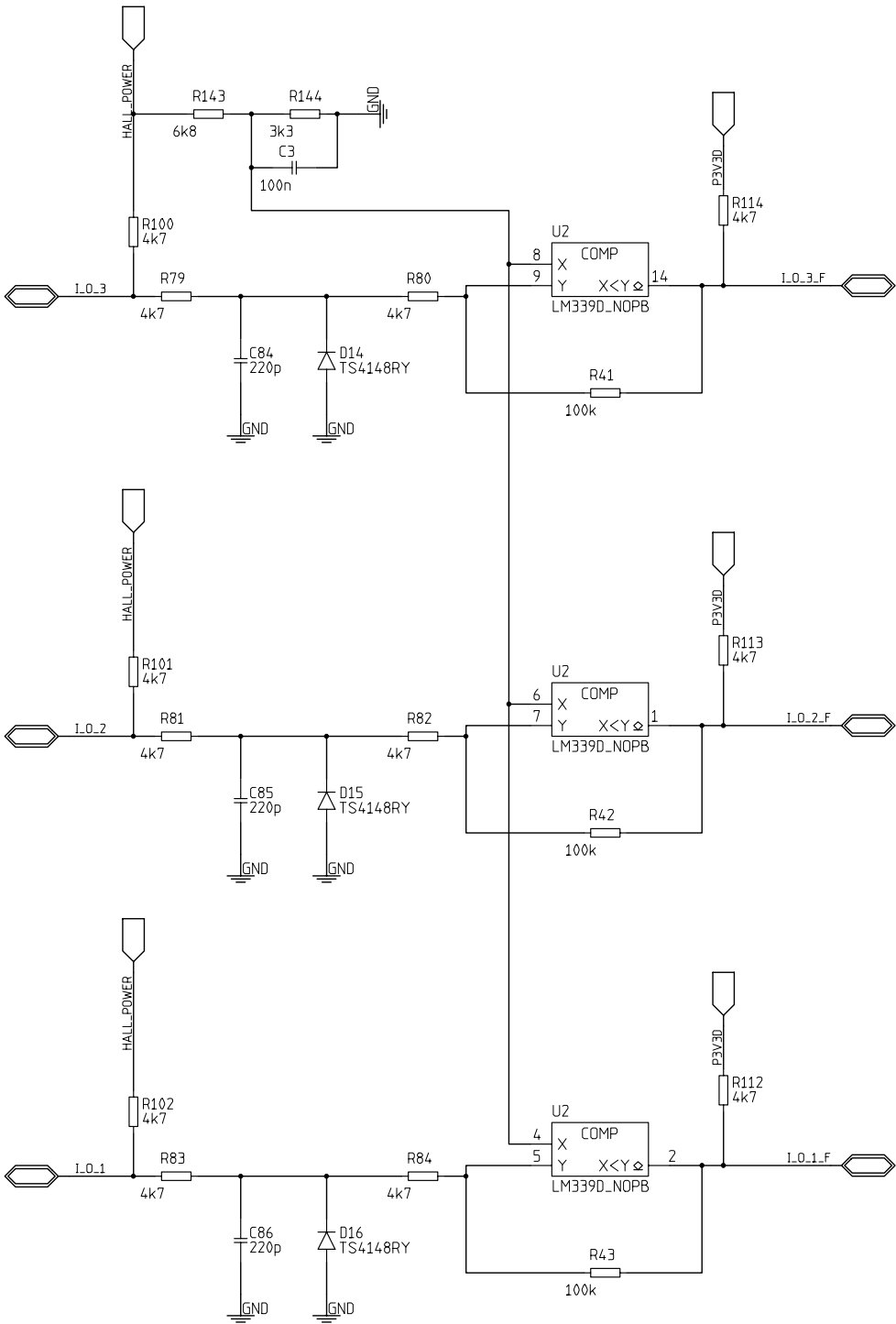
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A3P	JM	JM	JM	Filnamn - Filename Control.sbk	
Unjo AB Bergfotsgatan 3 B SE-431 35 Mölndal Sweden		Benämning - Title FireDriver Motordrive 4 x 10A Control		Datum - Date	Sida - Page
				2008-02-05	7 (18)
				Nr - No CDIAG-200:01 061	



				Last mod time	Rev
A3P	Uppgjord - Prepared JM	Faktaaarsv - Subject resp JM	Godkänd - Approved JM	11:01:33	PB3
<b>Unjo AB</b> Bergsgatan 3 B SE-431 35 Mölndal Sweden		Benämning - Title FireDriver Motordrev 4 x 10A CPLD		Filnamn - Filename CPLD.sbk	Datum - Date 2008-02-07
				Sida - Page 8 (18)	
				Fil- No CDIAG-200:01 061	

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I/O CHANNEL B

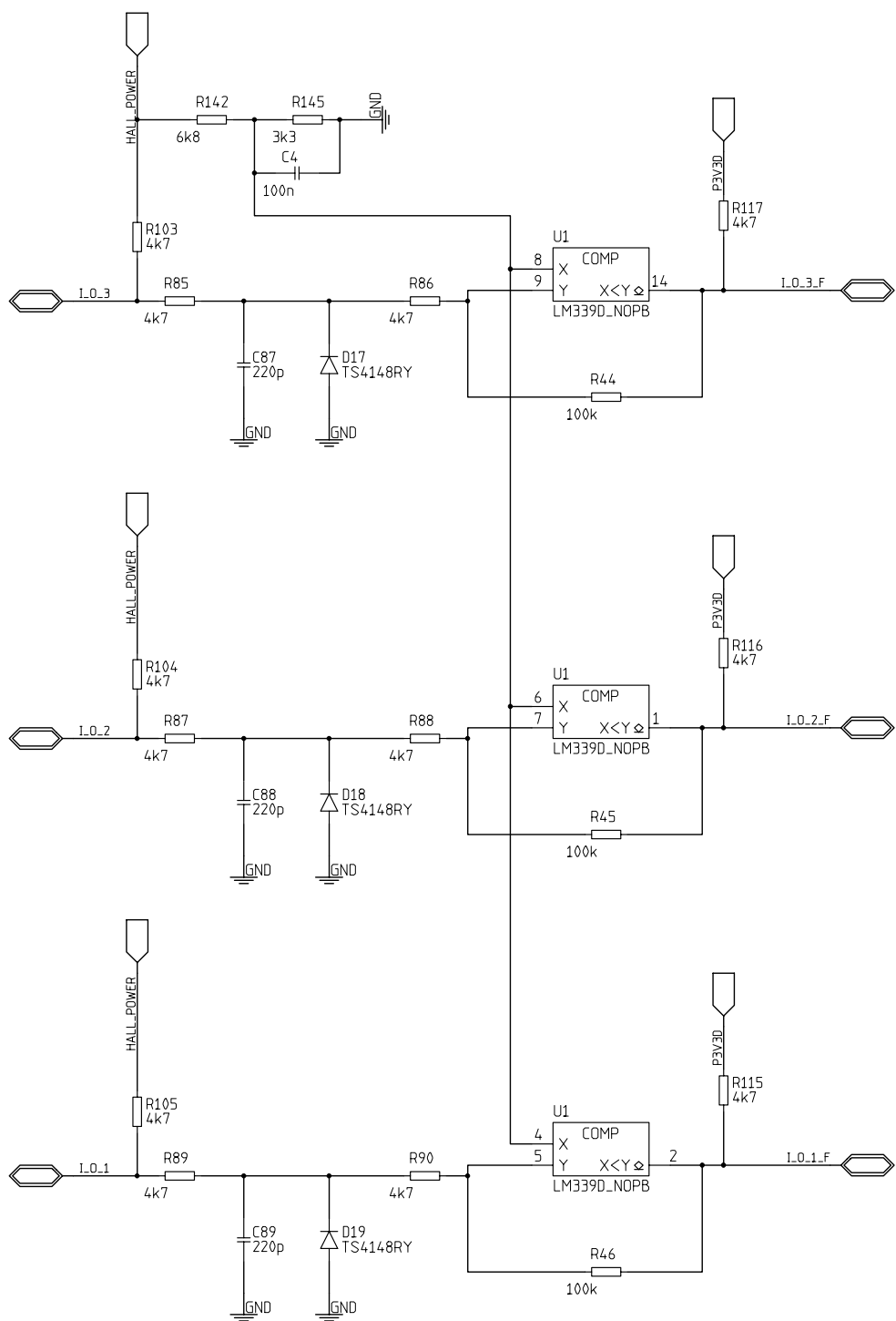


I/O\_Filt3

				Last mod time	Rev
	Uppgjord - Prepared	Fäktansv - Subject resp	Godkänd - Approved	14:19:10	PB3
A3P	JM	JM	JM	Filenam - Filename	IO_Filt.sbk
Unjo AB Bergfötagatan 3 B SE-431 35 Mölndal Sweden	Bordenning - Title		Datum - Date		
	FireDriver		2007-07-11		
	Motordrive 4 x 10A		Sida - Page		
	IO_Filt		9 (18)		
			Nr - No		
	CDIAG-200:01 061				

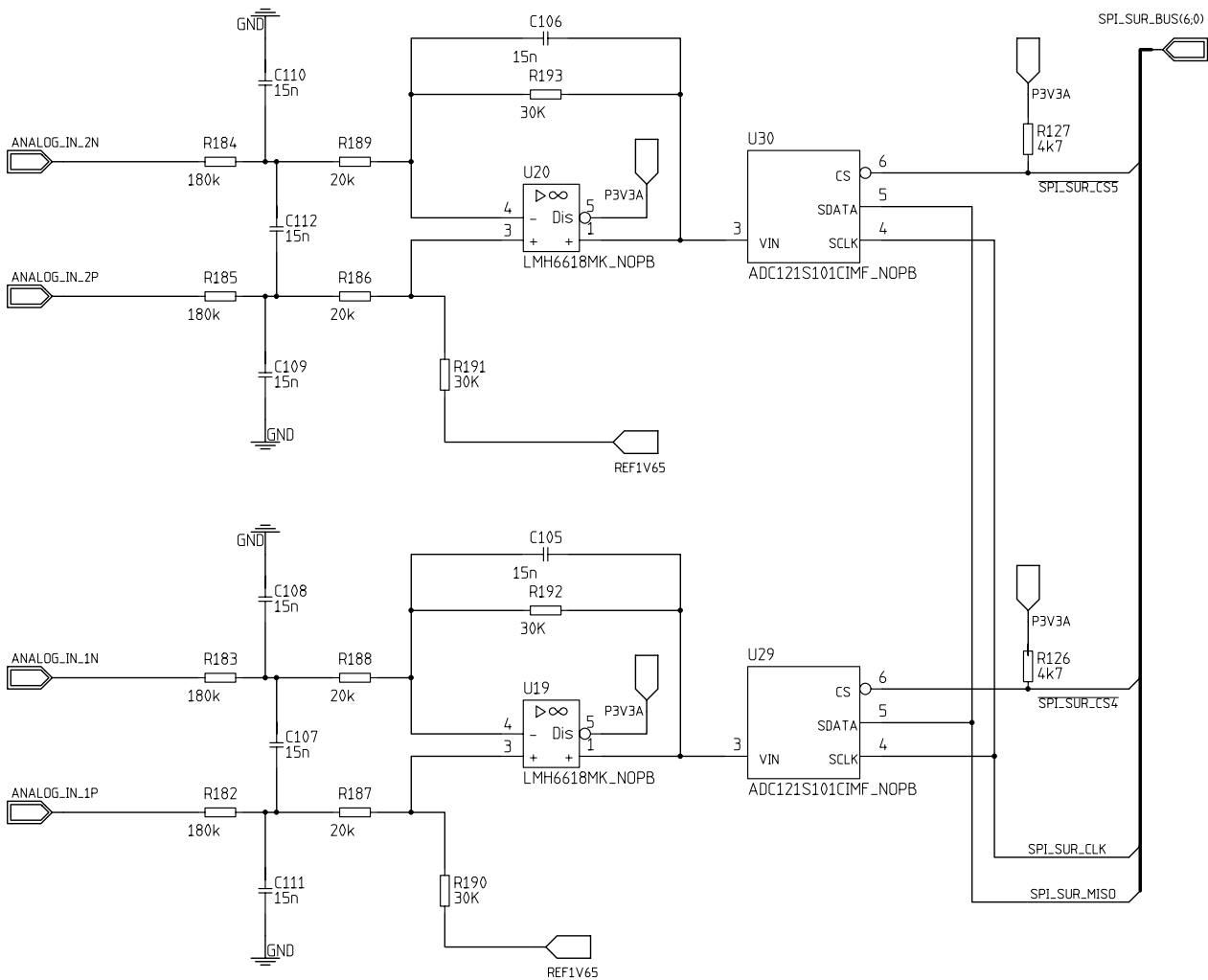
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I/O CHANNEL A



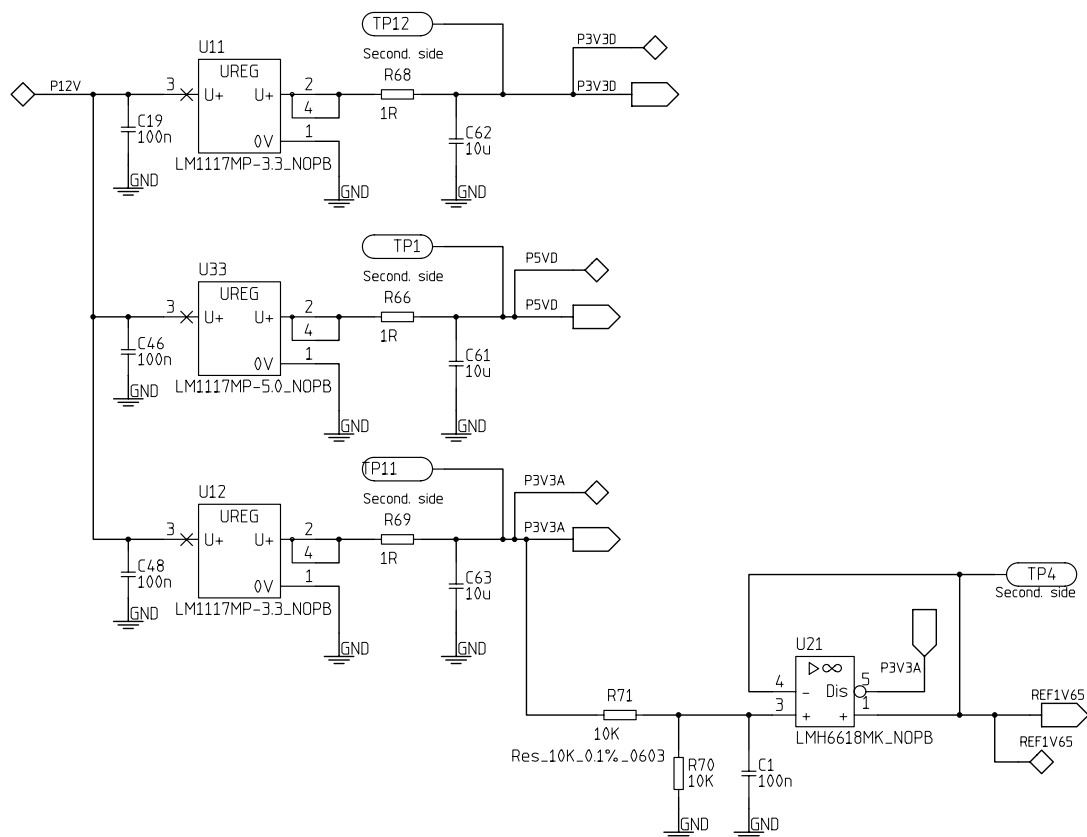
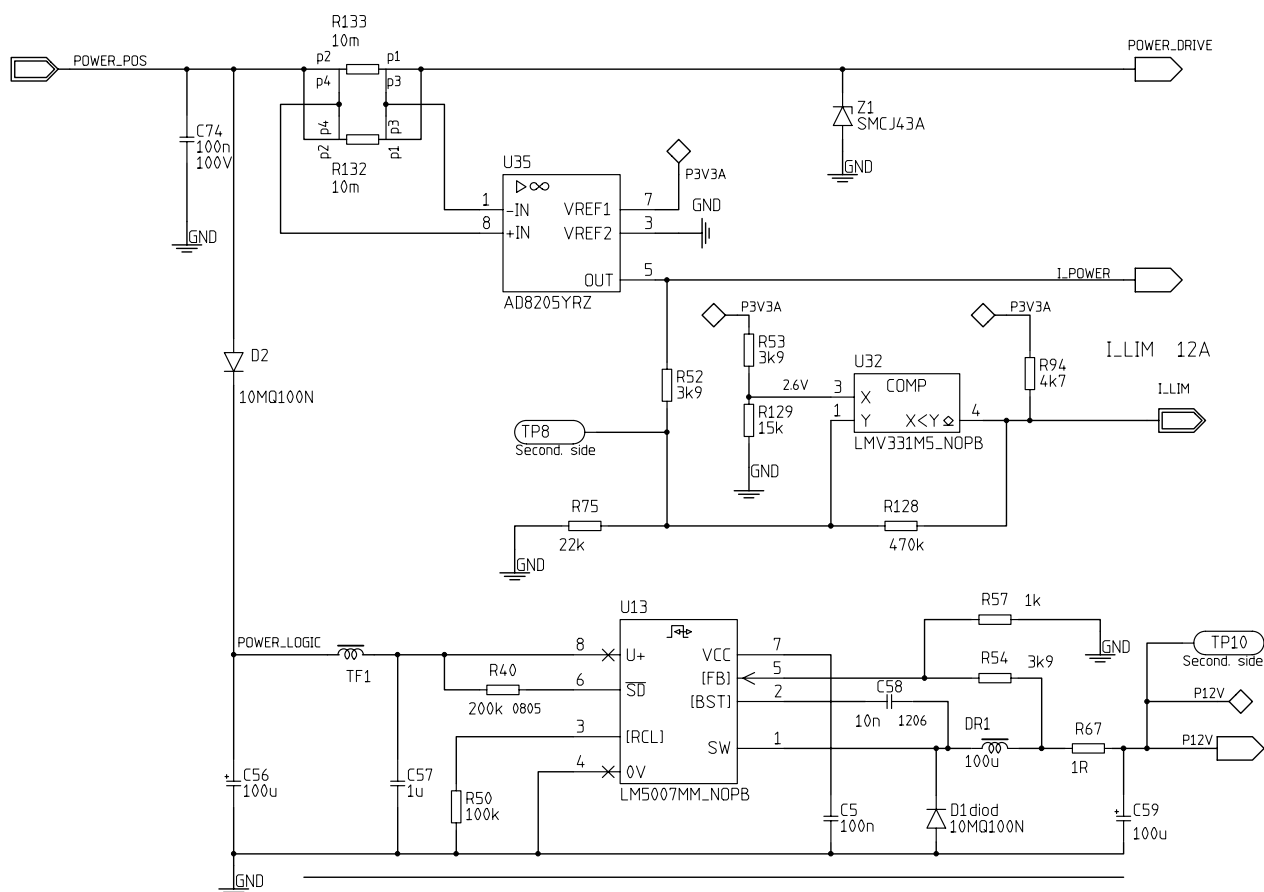
I/O\_Filt2

			Last mod time	Rev
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Unjo AB Bergslösgatan 3 B SE-431 35 Molndal Sweden		Bemärkning - Title FireDriver Motordrive 4 x 10A IO_Filt		
		Datum - Date 2007-07-11 Nr - No CDIAG-200:01 061		Sida - Page 10 (18)



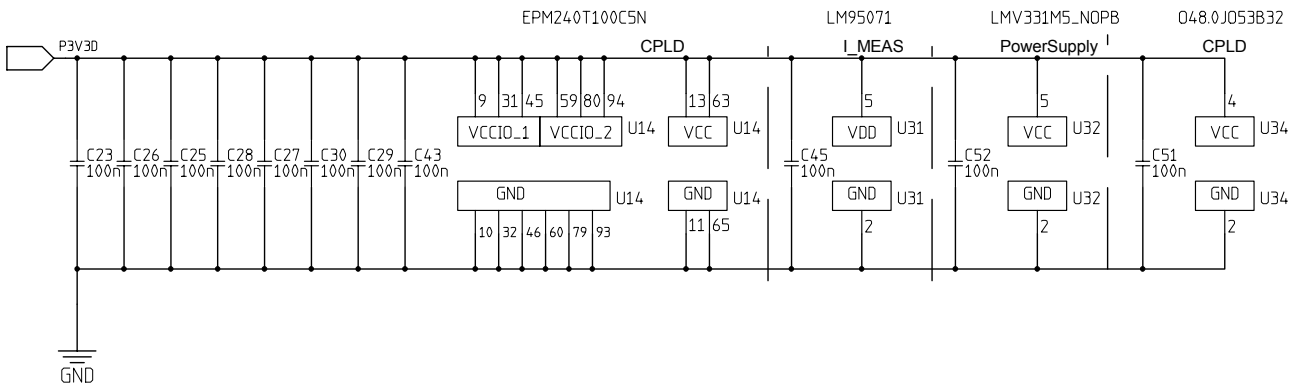
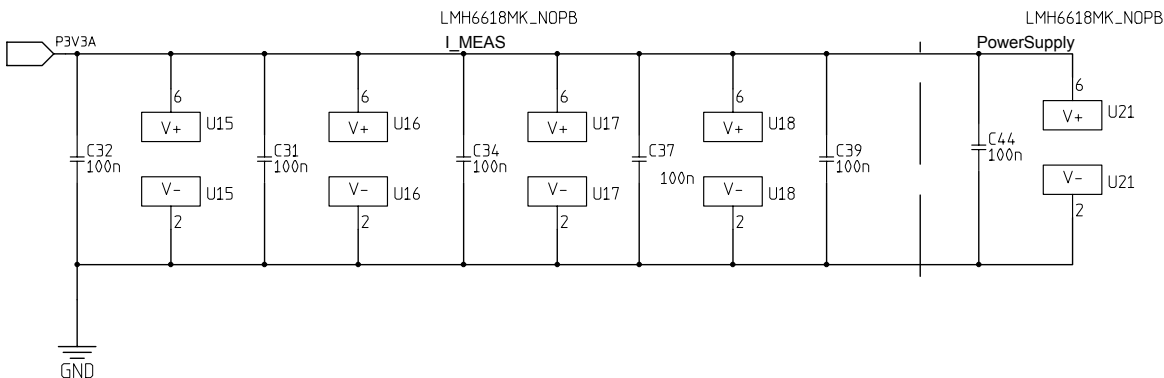
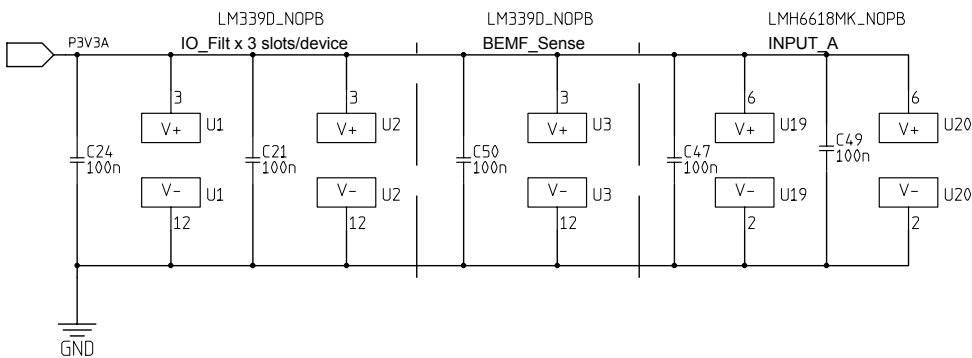
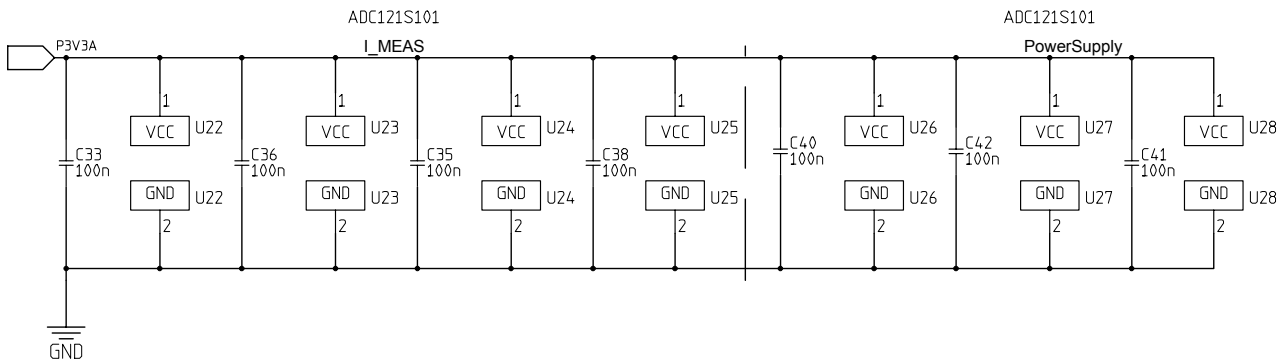
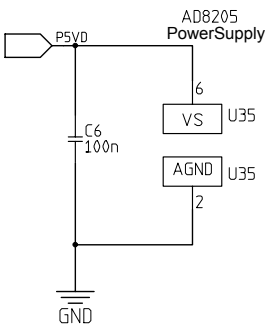
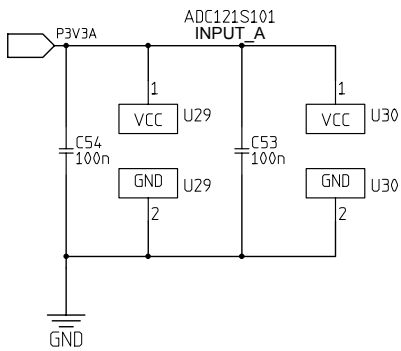
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A3P	Uppgjord - Prepared JM	Fäktansiv - Subject resp JM	Godkänd - Approved JM	Finns - Filename INPUT_A.sbk	
Unjo AB Berglöfsgatan 3 B SE-431 35 Mölndal Sweden		Benämning - Title FireDriver Motordrive 4 x 10A INPUT_A		Datum - Date	Sida - Page
				2008-02-07	11 (18)
				CDIAG-200:01 061	

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			Last mod time	Rev
			11:03:41	PB3
A3P	Uppgjord - Prepared	Fäktansv - Subject resp	Förnamn - Filename	
JM	JM	JM	PowerSupply.sbk	
Unjo AB		Beräkning - Title	Datum - Date	Sida - Page
Bergsjösgatan 3 B		FireDriver	2008-02-07	12 (18)
SE-431 35 Molndal		Motordrive 4 x 10A	Nr - No	
Sweden		PowerSupply	CDIAG-200:01 061	

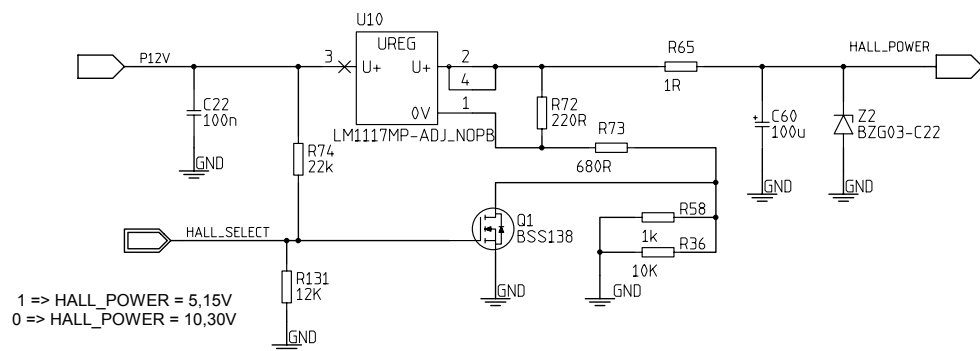
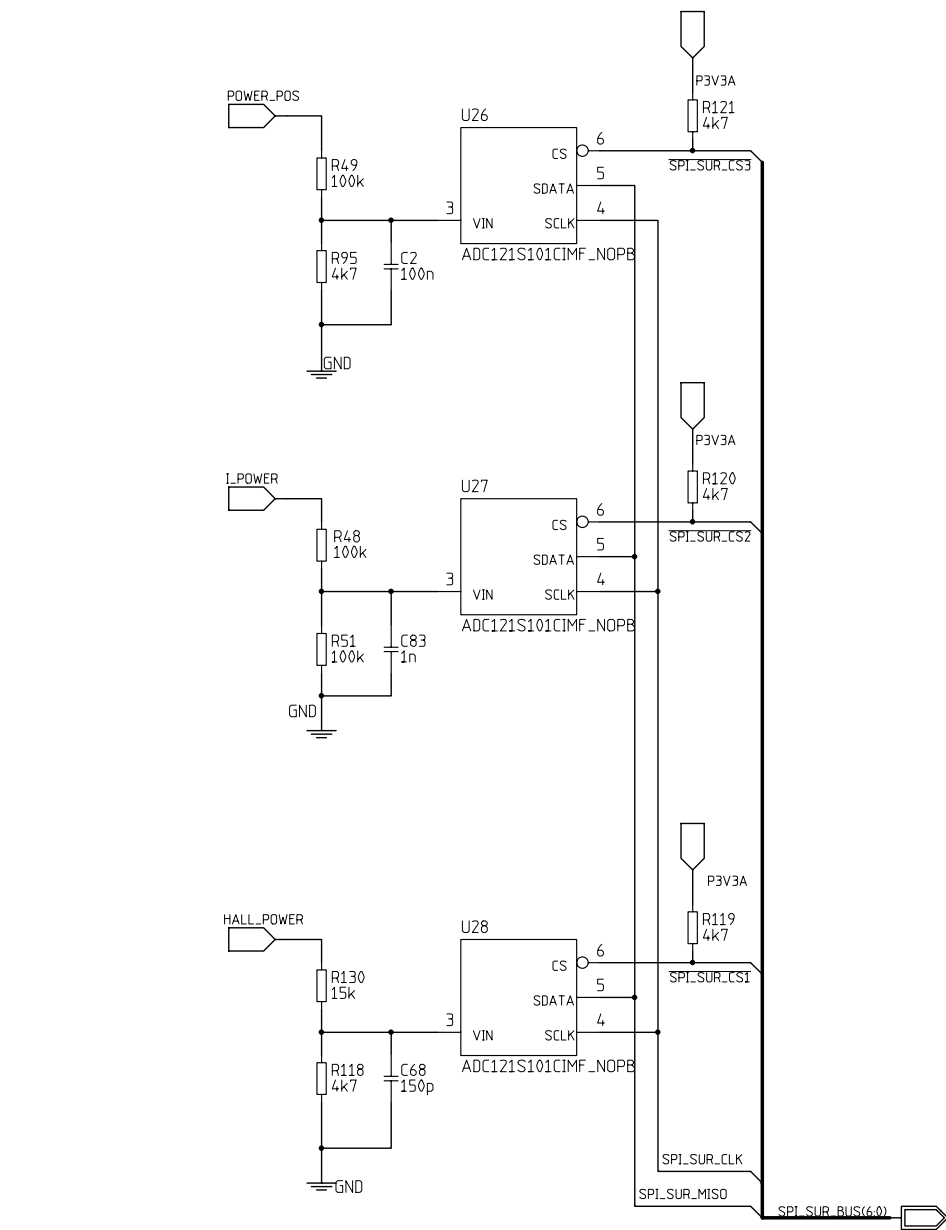
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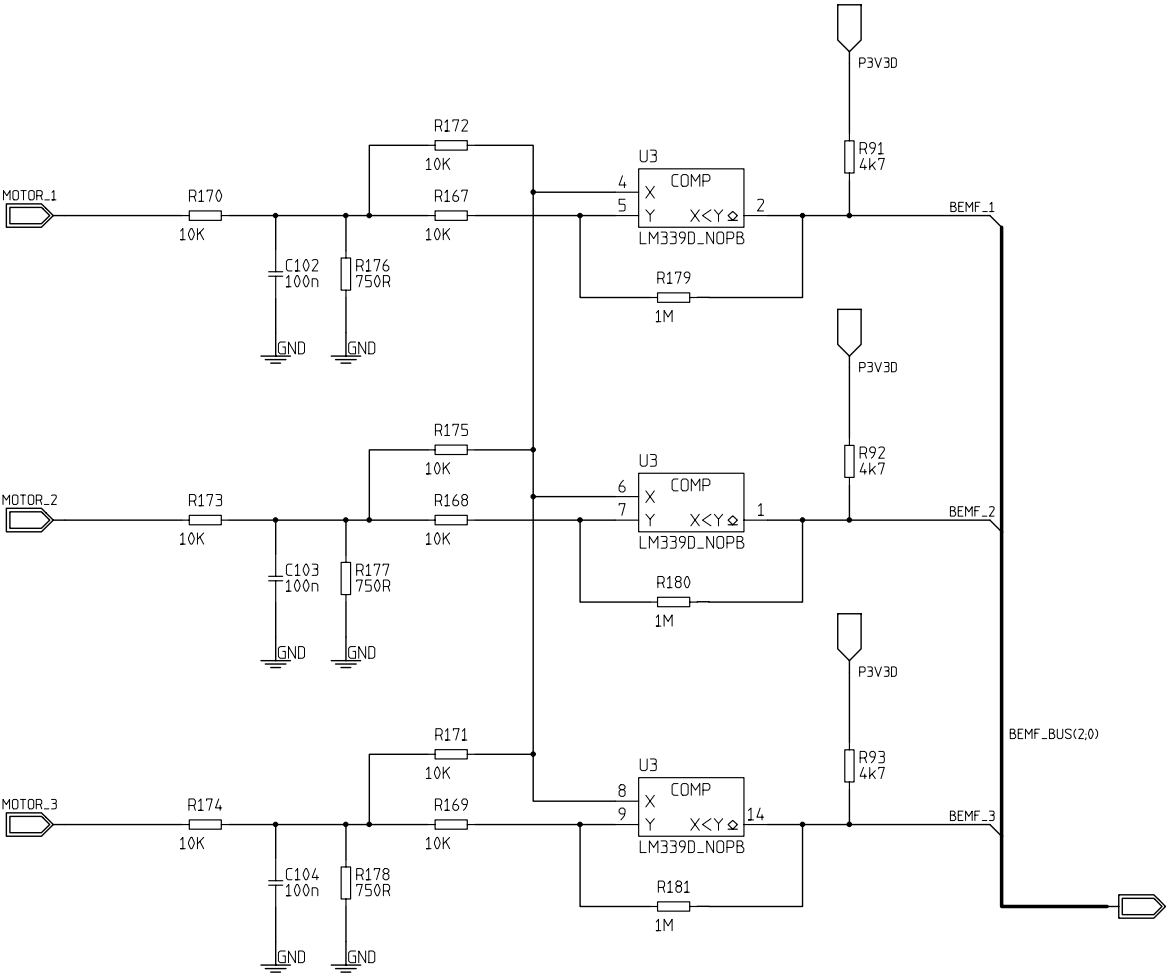
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JM	JM	JM	PowerSupply.sbk	
Unjo AB		Beröring - Title	Datum - Date	Sida - Page
Berglötsgratan 3 B		FireDriver	2008-02-07	13 (18)
SE-431 35 Molndal		Motordrive 4 x 10A	Nr - No	
Sweden		PowerSupply	CDIAG-200:01 061	



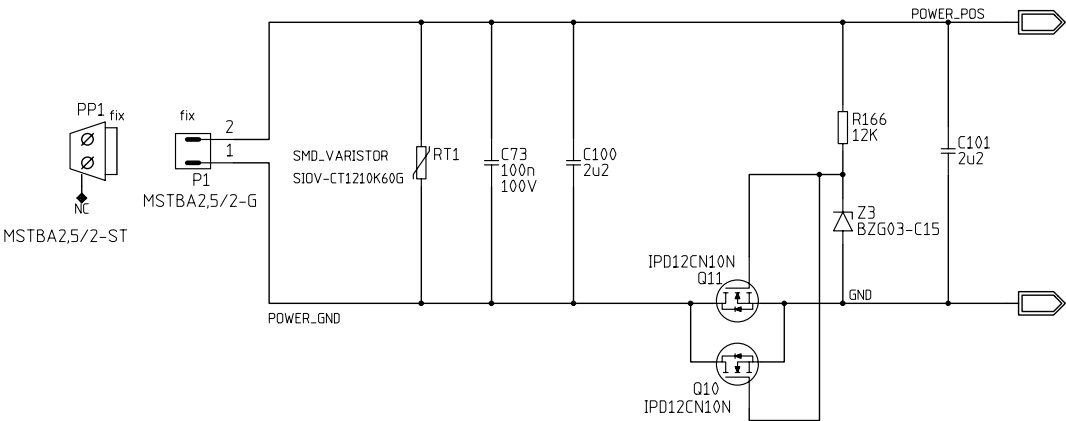
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				Last mod time 11:03:41	Rev PB3
A3P	Uppgjord - Prepared JM	Faktsansv - Subject resp JM	Godkänd - Approved JM	Fileravn - Filename PowerSupply.sbk	
Unjo AB Stora Badhusgatan 12 SE-411 21 Göteborg Sweden		Benämning - Title FireDriver Motordrive 4 x 10A PowerSupply		Datum - Date 2008-02-07	Sida - Page 14 (18)
				Nr - No CDIAG-200:01 061	

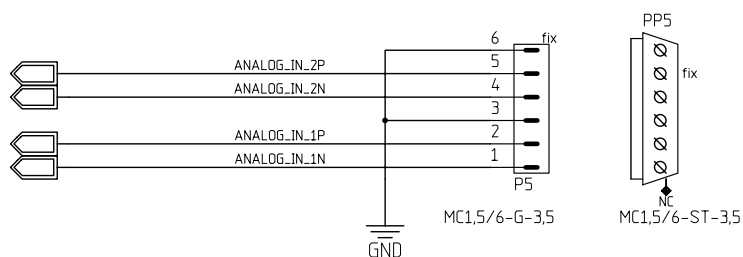
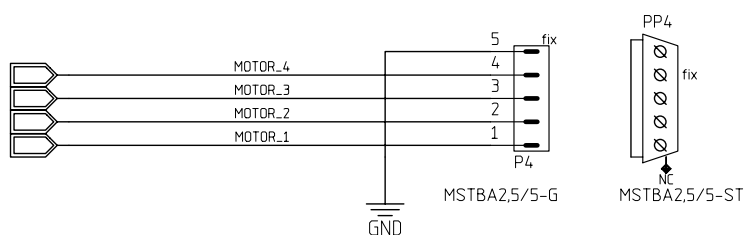
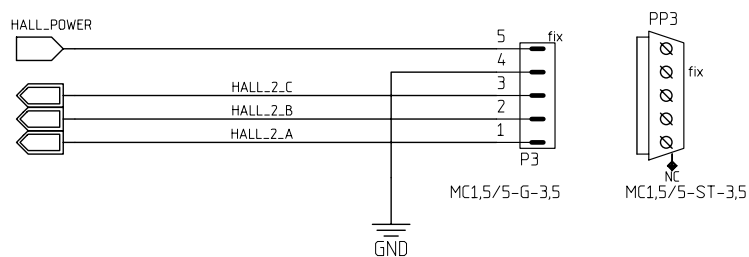
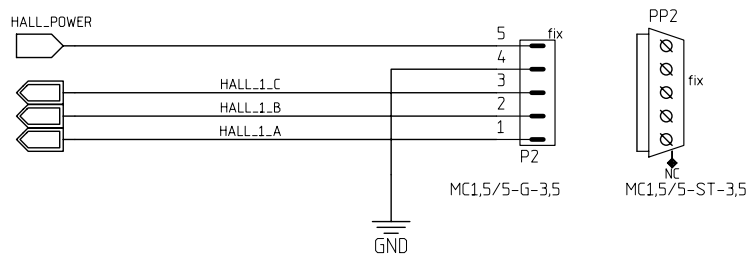


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A3P	JM	JM	JM	Filnamn - Filename	
<b>Unjo AB</b> Berglötsgatan 3 B SE-431 35 Mölndal Sweden				BEMF_Sense.sbk	
				Datum - Date	Sida - Page
				2008-02-07	15 (18)
				Nr - No	
				CDIAG-200:01 061	



			Last mod time	Rev
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A3P	Uppgjord - Prepared JM	Fäktansv - Subject resp JM	Godkänd - Approved JM	Finnsn - Filename POWER_CON.sbk
Unjo AB Bergslagsatan 3 B SE-431 35 Molndal Sweden		Benämning - Title FireDriver Motordrive 4 x 10A POWER_CON		Datum - Date 2008-02-07
				Sida - Page 16 (18)
				Nr - No CDIAG-200:01 061

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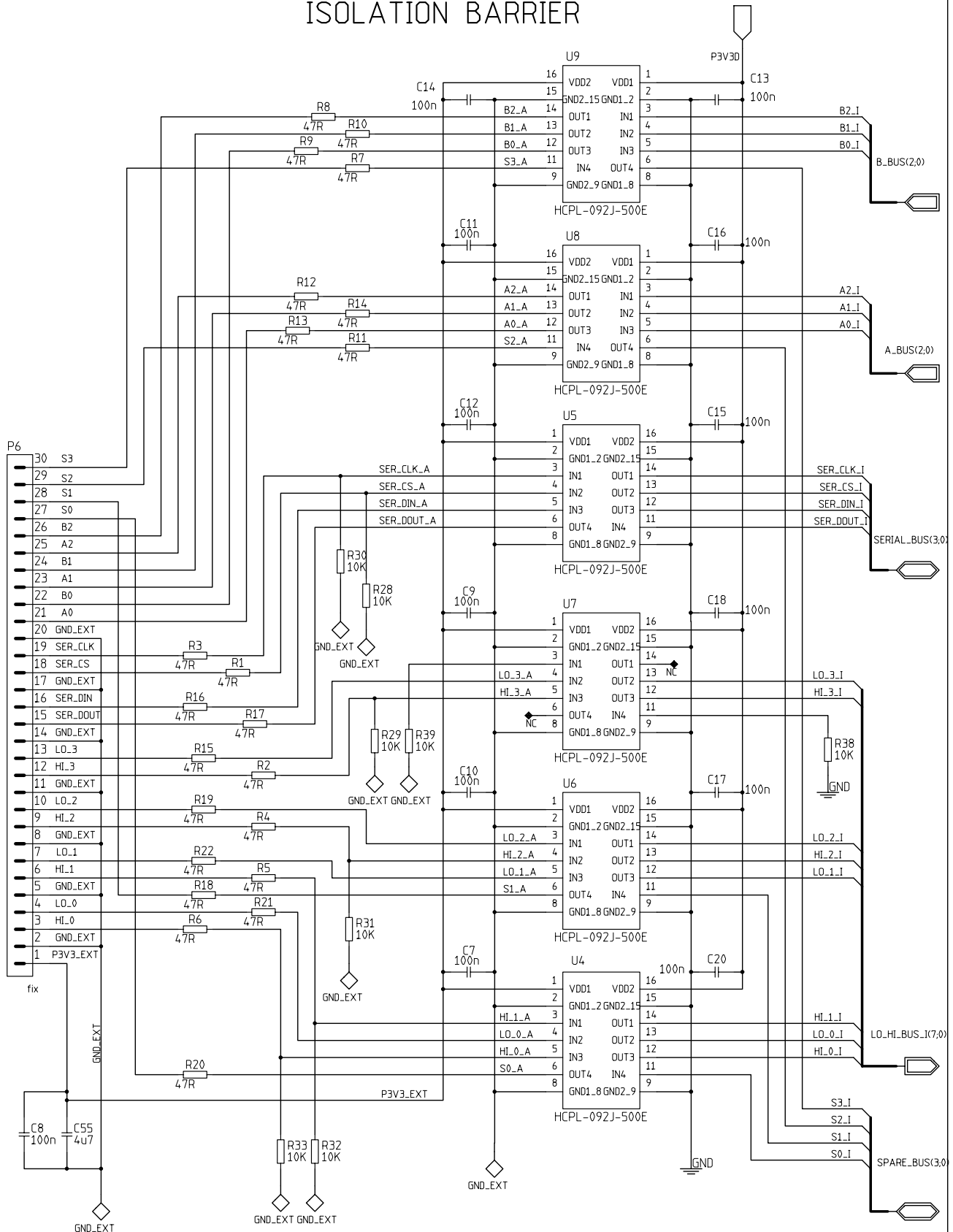
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A3P	JM	JM	Godkänd - Approved	
			Finns - Filename	
			Connectors.sbk	
			Datum - Date	Sida - Page
			2008-02-07	17 (18)
			Nr - No	
			CDIAG-200:01 061	

**Unjo AB**  
Bergslagsgatan 3 B  
SE-431 35 Molndal  
Sweden

Beskrivning - Title  
FireDriver  
Motordrive 4 x 10A  
Connectors

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# ISOLATION BARRIER



Uppgjord - Prepared		Fäktasriv - Subject resp		Godkänd - Approved		Last mod time	Rev
A3P JM		JM		JM		11:01:38	PB3
Unjo AB		Bergsjösgatan 3 B		FireDriver		Terminal.sbk	
SE-431 35 Molndal		Sweden		Motordrive 4 x 10A		Datum - Date	Sida - Page
				Terminal		2008-02-07	18 (18)
						Nr - No	
						CDIAG-200:01 061	

Dok. Nr.	utgåva	Datum	Detaljförteckning
DF-200:01 061	PB1	2008-03-03	FIRE DRIVER 4x10A
ROHS			



item	references	qty	part number	part label	description	ROHS	Kommentar/ alternativ	
1	MK	1	ARWPCB-FD-A	210:01 050	Mönsterkort storlek 90 x 140 mm, 4-kopparlager, FR4	JA		
2	C1-C54	54	Cer_100nF_0603/16V	603	Cer Cap 100nF/16V X7R	JA		
3	C100-C101	2	Cer_2.2uF_1812/100V	1812	SMD Cer 2.2uF/100V X7R (Murata)	JA		
4	C102-C104	3	Cer_100nF_0603/50V	603	Cer Cap 100nF/50V X7R	JA		
5	C105-C112	8	Cer_15nF_0603/50V	603	SMD Cer 15nF/50V X7R (Ph.)	JA		
6	C55	1	Cer_4.7uF_0805/6.3V	805	SMD Cer 4.7uF/6.3V X5R 15% (Murata)	JA		
7	C56	1	Elyt_100uF/63V	EC2104	Elyt cap 100uF/63V, H12.5 D10 RM5 , Elna RE3	JA		
8	C57	1	Cer_1uF_1210/100V	1210	SMD Cer 1uF/100V X7R (Murata)	JA		
9	C58	1	Cer_10nF_1206_1	1206	Cer Cap 10nF/100V X7R (Ph.)	JA		
10	C59-C60	2	Elyt_100uF/25V_SMD	6.3x7.7	Sanyo, CE-AX, Elyt 100uF/25V, D=6.3mm, H=7.7, smd_alu	25CE100AX		
11	C61-C63	3	Cer_10uF_0805/10V	805	SMD Cer 10uF/10V X5R 10% (Murata)	JA		
12	C64-C72	9	Cer_150pF_0603	603	SMD Cer 150pF/50V NPO (Ph.)	JA		
13	C73-C82	10	Cer_100nF_1206_1	1206	Cer Cap 100nF/100V X7R (Ph.)	JA		
14	C83	1	Cer_1000pF_0603	603	SMD Cer 1000pF/50V X7R (Ph.)	JA		
15	C84-C89	6	Cer_220pF_0603	603	SMD Cer 220pF/50V NP0 (Ph.)	JA		
16	C90-C93	4	Cer_1uF_0805/25V	805	SMD Cer 1uF/25V Y5V (AVX components)	JA		
17	C94-C95	2	Elyt_470uF/63V	EC3107	Elyt cap 470uF/63V, H20 D16 RM7.5 , EEUF1J471 (Panasonic)	JA		
18	C96-C99	4	Cer_1500pF_1206	1206	SMD Cer 1500pF/100V NP0 (Ph.)	JA		
19	D1-D2	2	10MQ100N	SMA	Schottky, <2.1A dc, 100V (IR)	JA		
20	D3	1	EL19-21SRC	el19_21src	LED SMD,red/660nm,19mcd 20mA (Everlight)	JA		
21	D4	1	EL19-21UGC	el19_21ugc	LED SMD,green/570nm,15mcd 20mA (Everlight)	JA		
22	D5	1	EL19-21UYC	el19_21uyc	LED SMD,yellow/590nm,55mcd 20mA (Everlight)	JA		
23	D6-D19	14	TS4148RY	D0805	Switchdiod 150mA, 75V (TSC)	JA		
24	DR1	1	SLF7045T-101MR50	slf7045	Shielded inductor 100 uH,0.25 Ohm, 0.5A (TDK)	JA		
25	P1	1	CCA 2,5/ 2-G-5,08 P26THRR3	MSTBA500L02	MSTBA2,5/2-G, Header, Phoenix	JA		
26	P10-P11	2	BM10B-SRSS-TB	SMD_1x10R_SR_JST	10-pol rak header,smd, 1mm, SR (JST BM10B-SRSS-TB)	BM10B-SRSS-TB(LF)(SN)	CH110M1VR0	CVI-LUX
27	P12	1	BM04B-SRSS-TB	SMD_1x4R_SR_JST	4-pol rak header,smd, 1mm, SR (JST BM04B-SRSS-TB)	BM04B-SRSS-TB(LF)(SN)	CH1104M1VR0	CVI-LUX
28	P13	1	10Header-S	FS10S	10-pos, Male, dual row, Straight, 2.54, Goldpl. DIN41651	JA		
29	P2-P3	2	MC 1,5/ 5-G-3,5 THT-R56	MC350L05	skruvplint 5pol, 3,5mm, MC1,5/5-G-3,5	JA		
30	P4	1	CCA 2,5/ 5-G-5,08 P26THRR5	MSTBA500L05	MSTBA2,5/5-G, Header, Phoenix	JA		
31	P5	1	MC 1,5/ 6-G-3,5 THT	MC350L06	skruvplint 6pol, 3,5mm, MC1,5/6-G-3,5	JA		
32	P6	1	10056844-130LF	10056844-130ALF	Header, 30 stift, vertikal, 2.54 mm	JA		
33	PP1	1	MSTB 2,5/ 2-ST BK	TPAD10	Plugg till MSTBA2,5/2-G, Phoenix	JA		Monteras i P1
34	PP2-PP3	2	MC 1,5/ 5-ST-3,5 BK	TPAD10	Plugg till MC1,5/6-G-3,5, Phoenix	JA		Monteras i P2, P3
35	PP4	1	MSTB 2,5/ 5-ST BK	TPAD10	Plugg till MSTBA2,5/5-G, Phoenix	JA		Monteras i P4
36	PP5	1	MC 1,5/ 6-ST-3,5 BK	TPAD10	Plugg till MC1,5/6-G-3,5, Phoenix	JA		Monteras i P5
37	Q1	1	BSS138	SOT23	NMOS, 50V, 0.22A, SOT23 (Fairchild)	JA		
38	Q10-Q11	2	IPD12CN10N	TO252P2	Power N-mos, 100V, 67A, 12.4mOhm, TO252 (Infineon)	JA		
39	Q2-Q9	8	IPD144N06N	TO252P2	Power N-mos, 60V, 50A, 14.4mOhm, TO252 (Infineon)	JA		
40	R1-R22	22	Res_47_0603	603	Res Chip0603 47 1% 0.1W (Ph RC22H)	JA		
41	R128	1	Res_470K_0603	603	Res Chip0603 470K 1% 0.1W (Ph RC22H)	JA		
42	R129-R130	2	Res_15K_0603	603	Res Chip0603 15K 1% 0.1W (Ph RC22H)	JA		
43	R131	1	Res_12K_0603	603	Res Chip0603 12K 1% 0.1W (Ph RC22H)	JA		
44	R132-R137	6	Res_dw_R010_1W	1218ME	Res Chip1218 0.010 5% 1W 4-tråd anslutning (Ph. PRC201)	JA		
45	R138	1	Res_33_0603	603	Res Chip0603 33ohm 1% 0.1W (Ph RC22H)	JA		
46	R139-R141	3	Res_470_0603	603	Res Chip0603 470R 1% 0.1W (Ph RC22H)	JA		
47	R142-R143	2	Res_6K8_0603	603	Res Chip0603 6K8 1% 0.1W (Ph RC22H)	JA		
48	R144-R145	2	Res_3K3_0603	603	Res Chip0603 3K3 1% 0.1W (Ph RC22H)	JA		
49	R146-R161	16	Res_10_0805	805	Res Chip0805 10R 1% 0.125W (Ph RC12H)	JA		
50	R162-R165	4	Res_10_1206	1206	Res Chip1206 10ohm 1% 0.25W	JA		
51	R166	1	Res_12K_1206	1206	Res Chip1206 12K 1% 0.25W (Ph RC02H)	JA		
52	R167-R175	9	Res_10K_0805	805	Res Chip0805 10k 1% 0.125W (Ph RC12H)	JA		
53	R176-R178	3	Res_750_0603	603	Res Chip0603 750 1% 0.1W (Ph RC22H)	JA		
54	R179-R181	3	Res_1MEG_0603	603	Res Chip0603 1 Mega 1% 0.1W (Ph RC22H)	JA		
55	R182-R185	4	Res_180K_0805	805	Res Chip0805 180K 1% 0.125W (Ph RC12H)	JA		
56	R186-R189	4	Res_20K_0603	603	Res Chip0603 20k 1% 0.1W (Ph RC22H)	JA		
57	R190-R193	4	Res_30K_0603	603	Res Chip0603 30K 1% 0.1W (Ph RC22H)	JA		
58	R23-R39	17	Res_10K_0603	603	Res Chip0603 10K 1% 0.1W (Ph RC22H)	JA		
59	R40	1	Res_200K_0805	805	Res Chip0805 200k 1% 0.125W (Ph RC12H)	JA		
60	R41-R51	11	Res_100K_0603	603	Res Chip0603 100k 1% 0.1W (Ph RC22H)	JA		
61	R52-R54	3	Res_3K9_0603	603	Res Chip0603 3K9 1% 0.1W (Ph RC22H)	JA		
62	R55-R64	10	Res_1K_0603	603	Res Chip0603 1K 1% 0.1W (Ph RC22H)	JA		

63	R65-R69	5	Res_1_0603	603	Res Chip0603 1 1% 0.1W (Ph RC22H)	JA			
64	R70-R71	2	Res_10K_0.1%_0603	603	Res Chip0603 10K 0.1% 0.1W (Yageo RT0603BRD0710KL)	JA			
65	R72	1	Res_220_0603	603	Res Chip0603 220 1% 0.1W (Ph RC22H)	JA			
66	R73	1	Res_680_0603	603	Res Chip0603 680 1% 0.1W (Ph RC22H)	JA			
67	R74-R75	2	Res_22K_0603	603	Res Chip0603 22k 1% 0.1W (Ph RC22H)	JA			
68	R76-R110,R112-R122,R126-R127	48	Res_4K7_0603	603	Res Chip0603 4K7 1% 0.1W (Ph RC22H)	JA			
69	RT1	1	SIOV-CT1210K60G	1210	Varistor SMD 60VAC/85VDC (Epcos)	JA		SIOV-CN1210K60G	
70	SR1-SR2	2	Res_0_0603	603	Res Chip0603 0 ohm (Ph RC21)	JA			
71	TF1	1	EMI_742792031	805	Chip ferrite bead SMD 350 Ohm vid 200MHz, 3A, dcR: 0.05 Ohm (WE)	JA			
72	U1-U3	3	LM339D_NOPB	SO-14	Quad comparator, SO-14	JA			
74	U10	1	LM1117MP-ADJ_NOPB	SOT223	Low dropout lin reg, ADJ, 800mA (NS)	JA			
75	U11-U12	2	LM1117MP-3.3_NOPB	SOT223	Low dropout lin reg, 3.3 V, 800mA (NS)	JA			
76	U13	1	LM5007MM_NOPB	MSOP8	Switchreg, Steppedown, 80V, Adjust. 0.7A (NS)	JA			
77	U14	1	EPM240T100C5N	TQFP100	MAX II EPM240T100C5N, TQFP100, CPLD, 100pin	JA			
78	U15-U21	7	LMH6618MK_NOPB	SOT23-6	OPAm, RRIO, 130MHz, SOT23-6 (NS)	JA			
79	U22-U30	9	ADC121S101CIMF_NOPB	SOT23-6	ADC, 12-Bit , serial SPI , 1MS/s, SOT23-6	JA			
80	U31	1	LM95071CIMF_NOPB	SOT23-5	Tempsens -40->+150 *C, SPI, (NS)	JA			
81	U32	1	LMV331M5_NOPB	SOT23-5	Single, low voltage gen purpose comp, SOT23-5 (NS)	JA			
82	U33	1	LM1117MP-5.0_NOPB	SOT223	Low dropout lin reg, 5.0 V, 800mA (NS)	JA			
83	U34	1	O48.0JO53B32	JO53_48M	Chrystal oscillator SMD 48 MHz 3.3V (Jauch)	JA		RAKON Replacement	
84	U35	1	AD8205YRZ	SO-8	High CMM voltage single sup. DiffAmp (AD)	JA			
85	U36	1	LM3722EM5-3.08_NOPB	SOT23-5	Reset circuit, 3.08V, reset_n, (NS)	JA			
86	U37-U40	4	LM5101BMA_NOPB	SO-8	High and Low side driver 100V, 2A (NS)	JA			
87	U4-U9	6	HCPL-092J-500E	SO16	Digital isolator, Quad, 1/3 Bi-directional, SO16 (Avago)	JA			
88	Z1	1	SMCJ43A	SMC	TVS, SMD 43VBR, Unidirect, 1500W (GS)	JA			
89	Z2	1	BZG03-C22	do214ac	Zener SMD 22V, 5%, 3W/ 600W (Vishay)	JA			
90	Z3	1	BZG03-C15	do214ac	Zener SMD 15V, 5%, 3W/ 600W (Vishay)	JA			
Total Parts Used		395							

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Notes: