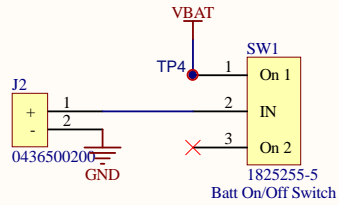
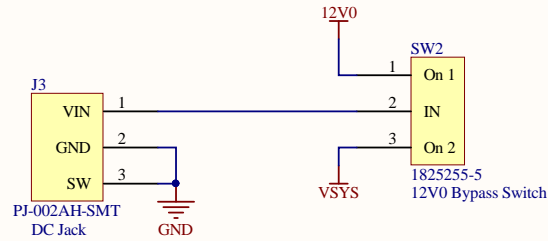


1		2		3			4		
A	<div>1 - Table of Contents 2 - Connectors 3 - Battery Manager 4 - Motor and MCU Power Supplies 5 - Motor Drivers</div>			4/1/16	MV	A	Initial Full Design		A
				4/2/16	MV	A.1	Fixed non-plated through hole footprints		
				4/2/16	MV	A.2	Fixed clearance violations on motor drivers		
				4/3/16	MV	A.3	Fixed title block/board info, aligned vias		
				4/3/16	MV	A.4	Final DRC, Added header pinout silk screen		
				4/3/16	MV	A.5	Added I sense wires and moved to 30 pin header		
				4/4/16	MV	A.6	Corrected DFM errors		
				4/4/16	MV	1.0	RELEASE VERSION		
B									B
C									C
D									D
1		2		3			4		
				Title <i>Table of Contents</i>		Senior Design Project Prosthetic Hand Matthew Varas Rachel Mertz Donnell Jones		Cannot open file E:\OneDrive\Documents \Website\Logos\MV_Hu ge.png	
Size: A4		Number: 1		Revision: 1.0					
Date: 4/4/2016		Time: 11:34:49 AM		Sheet 1 of 5					
File: C:\Users\mvara\Dropbox\Senior Design Team Folder\PCB Projects\Hand Motor Driver Test Board\TOC.SchDoc									

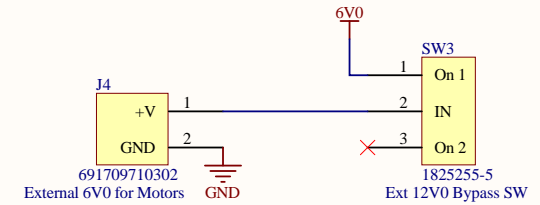
Battery Connection



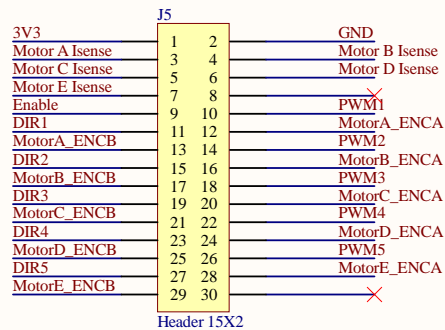
DC Input



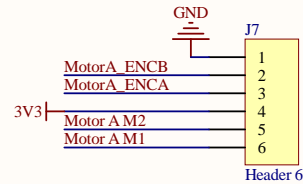
External 6V0 Motor Power



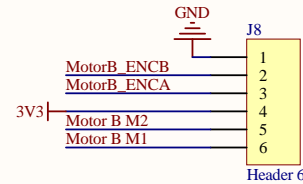
Main MCU Header



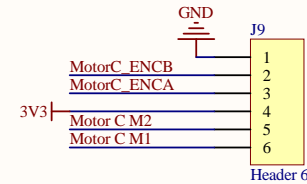
Motor A Header



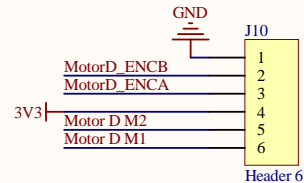
Motor B Header



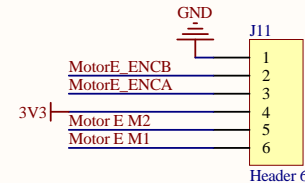
Motor C Header



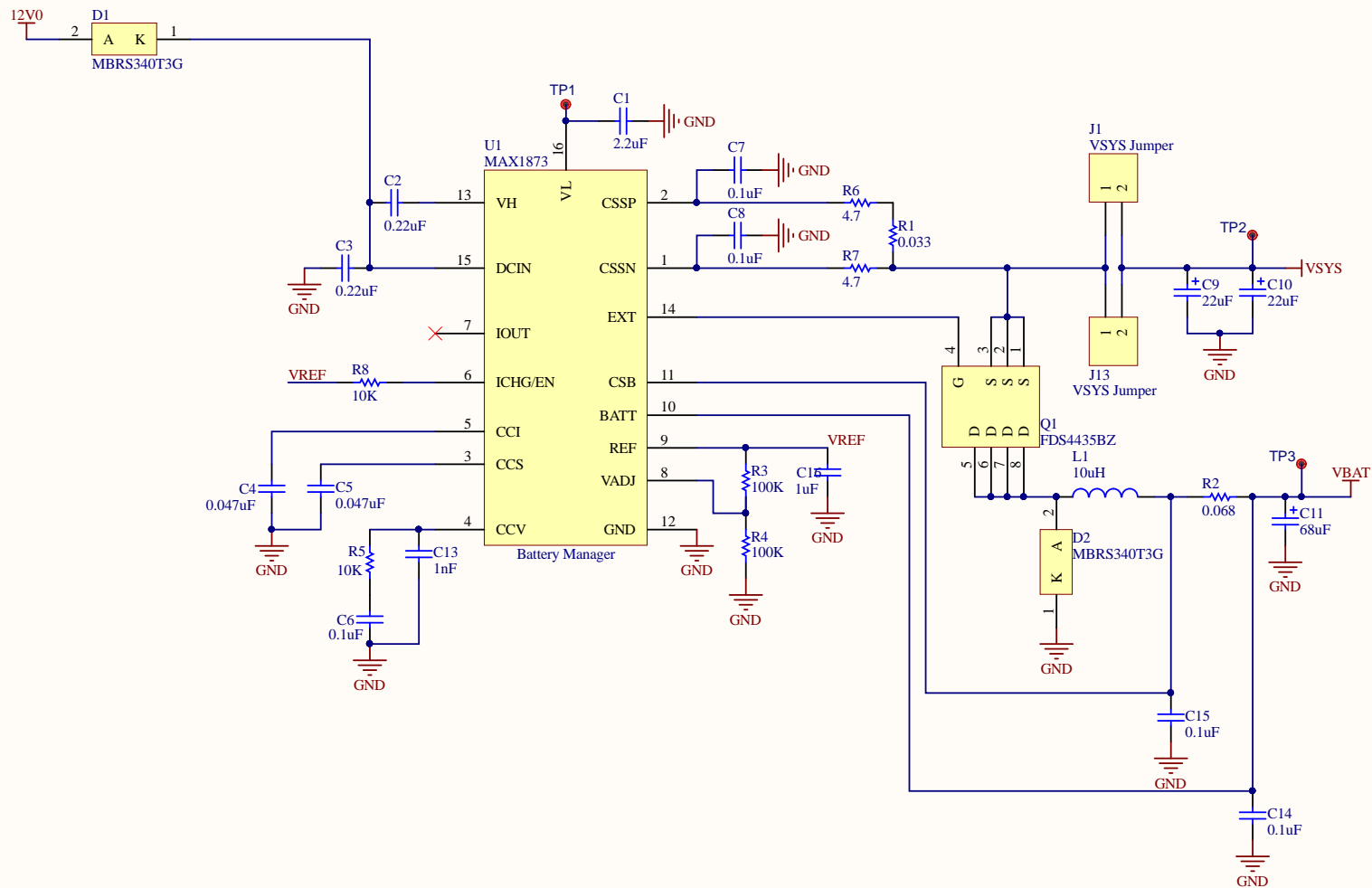
Motor D Header



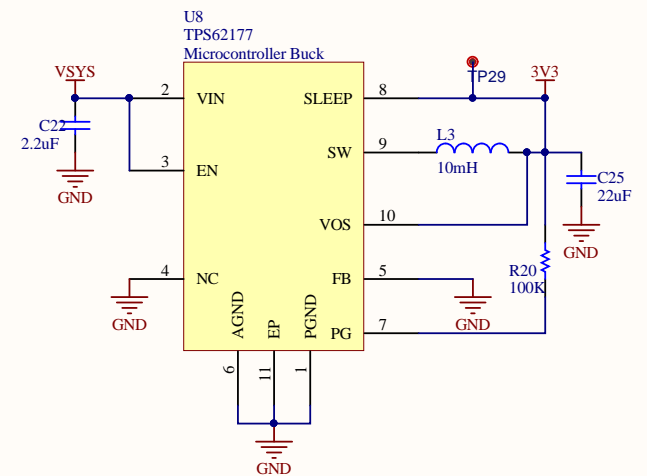
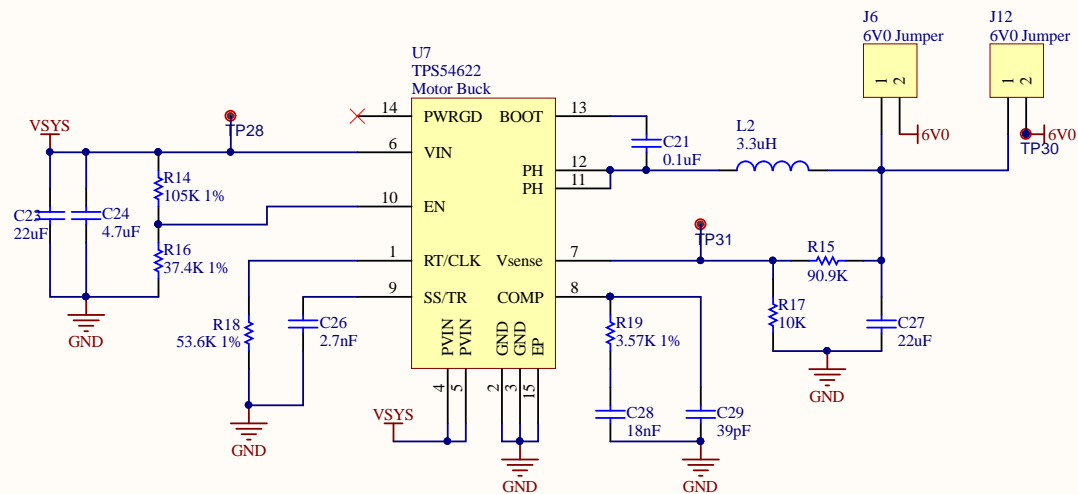
Motor E Header



Title Connectors			Senior Design Project Prosthetic Hand		Cannot open file E:\OneDrive\Documents \Website\Logos\MV_Hu ge.png
Size: A4	Number: 2	Revision: 1.0	Matthew Varas Rachel Mertz Donnell Jones		
Date: 4/4/2016	Time: 11:34:49 AM		Sheet 2 of 5		
File: C:\Users\mvvara\Dropbox\Senior Design Team Folder\PCB Projects\Hand Motor Driver Test Board\Connectors.SchDoc					

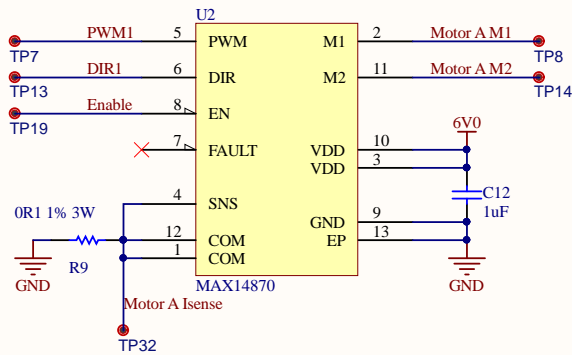


Title Battery Manager			Senior Design Project Prosthetic Hand Matthew Varas Rachel Mertz Donnell Jones		Cannot open file E:\OneDrive\Documents (Website\Logos)\MV_Hu ge.png
Size: A4	Number: 3	Revision: 1.0			
Date: 4/4/2016	Time: 11:34:49 AM	Sheet 3 of 5			
File: C:\Users\mvara\Dropbox\Senior Design Team Folder\PCB Projects\Hand Motor Driver Test Board\Battery Manager.SchDoc					

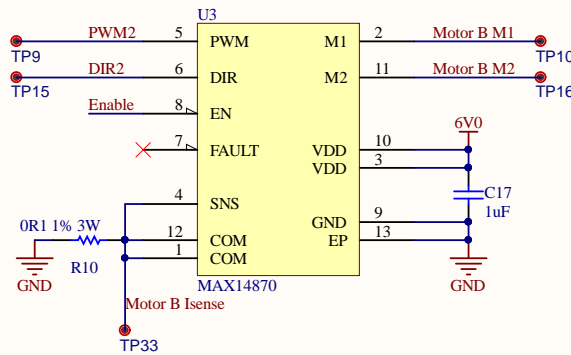


Title <i>Power Supply</i>			Senior Design Project <i>Prosthetic Hand</i> <i>Matthew Varas</i> <i>Rachel Mertz</i> <i>Donnell Jones</i>	Cannot open file E:\OneDrive\Documents (Website\Logos)\MV_Hu ge.png
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Date: 4/4/2016	Time: 11:34:49 AM	Sheet 4 of 5		
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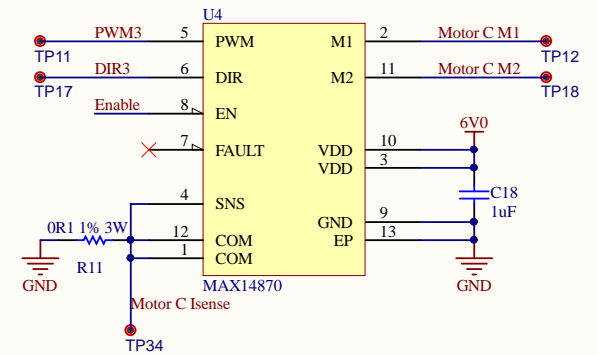
Motor Driver A



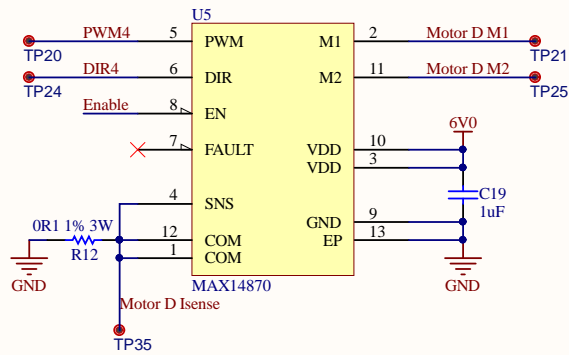
Motor Driver B



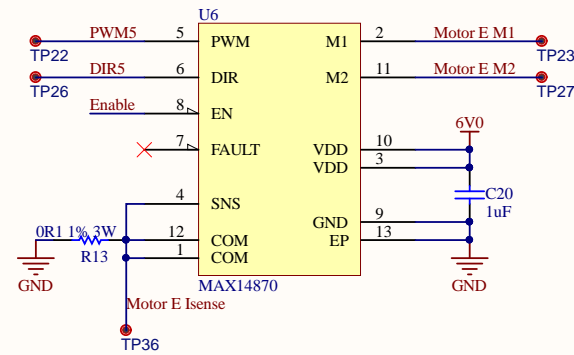
Motor Driver C



Motor Driver D



Motor Driver E



Title <i>Motor Drivers</i>			Senior Design Project Prosthetic Hand Matthew Varas Rachel Mertz Donnell Jones	Cannot open file E:\OneDrive\Documents \Website\Logos\MV_Hu ge.png
Size: A4	Number: 5	Revision:1.0		
Date: 4/4/2016	Time: 11:34:49 AM Sheet 5 of 5			
File: C:\Users\mvara\Dropbox\Senior Design Team Folder\PCB Projects\Hand Motor Driver Test Board\Motor_Drivers.SchDoc				

Motor Driver and PSU Test Board
REV 1.0

2 Layer FR4

TOP LAYER COMPONENT

BOTTOM LAYER COMPONENT

All Layers 1oz Copper

Total Board thickness : .062

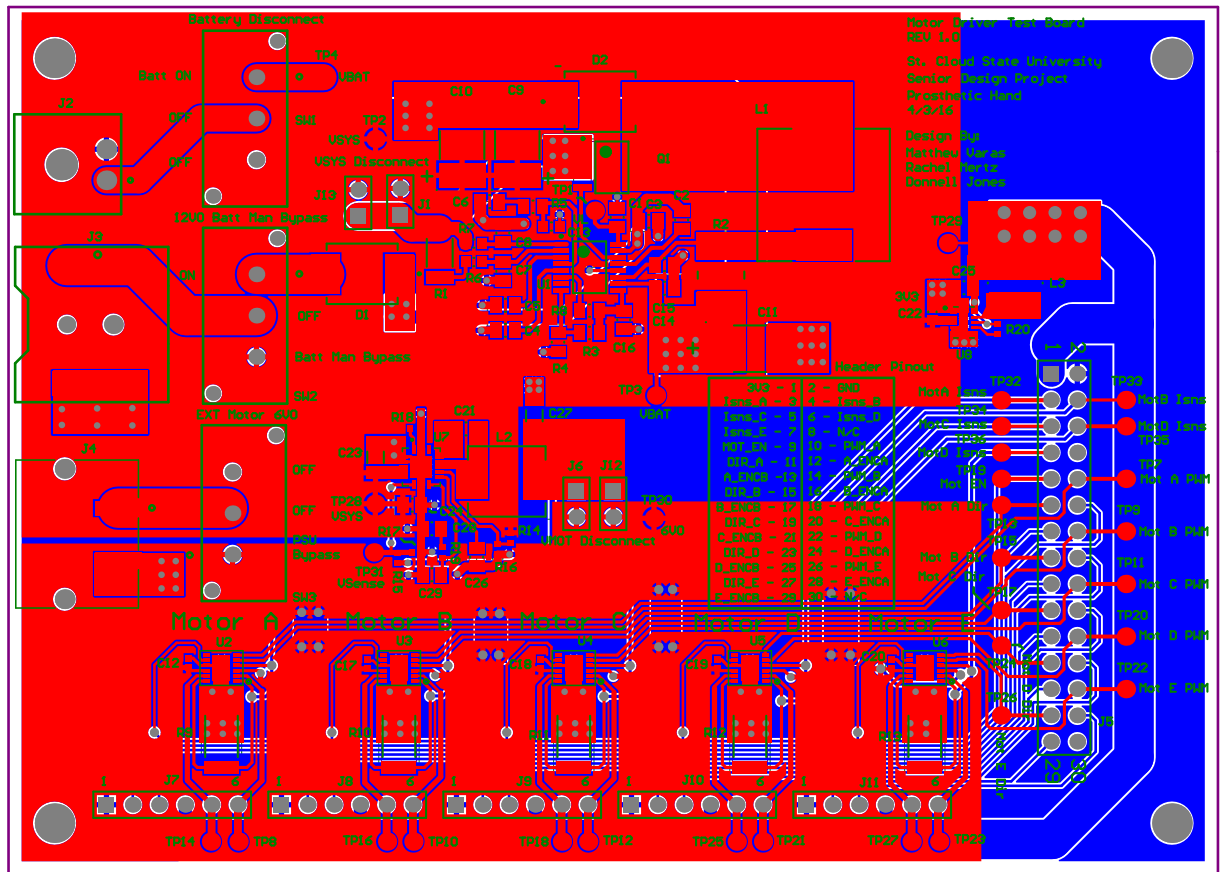
Top & Bottom Solder mask Green

Top Overlay White, No Bottom Overlay

Lead Free

Finish = ENIG

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.40mil	3.5	
3	Top Layer	Copper	1.40mil		
4	Dielectric 1	FR-4	58.00mil	4.2	
5	Bottom Layer	Copper	1.40mil		
6	Bottom Solder	Solder Resist	0.40mil	3.5	
7	Bottom Overlay				



Top Layer

Bill of Materials

BOM Rev: 1.0

Project: Hand Motor Driver Test Board.PrjPcb
Source Data From: Hand Motor Driver Test Board.PrjPcb
Variant: None



Report Date: 4/4/2016 11:34:52 AM
Print Date: 04-Apr-16 11:35:12 AM

Matthew V. BOM Template Rev 2.0

#	Designator	MFG_NAME01	MFG_PN01	DIGI_PN01	Value	Case-EIA	Description	Quantity
1	C1	TDK	C2012X5R1H225K085AB	445-14407-1-ND	2.2uF	0805	CAP CER 2.2UF 50V X5R 0805	1
2	C2, C3	Taiyo Yuden	GMK212BJ224KG	587-3366-1-ND	220nF	0805	CAP CER 0.22UF 35V X5R 0805	2
3	C4, C5	Murata	GCM21BR71H473KA37L	490-8050-1-ND	47nF	0805	CAP CER 0.047UF 50V X7R 0805	2
4	C6, C7, C8, C14, C15	TDK	C2012X7R1H104K125AM	445-6045-1-ND	100nF	0805	CAP CER 0.1UF 50V X7R 0805	5
5	C9, C10	AVX	TPSD226K035R0200	478-3356-1-ND	22uF	2917	CAP TANT 22UF 35V 10% 2917	2
6	C11	AVX	TPSE686M025R0125	478-4152-1-ND	68uF	2917	CAP TANT 68UF 25V 20% 2917	1
7	C12, C17, C18, C19, C20	Murata	GRT155R61C105KE01D	490-12255-1-ND	1uF	0402	CAP CER 1UF 16V X5R 0402	5
8	C13	Murata	GRM188R71H102KA01D	490-1494-1-ND	1nF	0603	CAP CER 1000PF 50V X7R 0603	1
9	C16	TDK	C2012X7R1E105K125AB	445-1354-1-ND	1uF	0805	CAP CER 1UF 25V X7R 0805	1
10	C21	AVX	08053C104KAT2A	478-3755-1-ND	0.1uF	0805	CAP CER 0.1UF 25V X7R 0805	1
11	C22	Murata	GRM188R61C225KE15D	490-3296-1-ND	2.2uF	0603	CAP CER 2.2UF 16V X5R 0603	1
12	C23	Murata	GRM31CR61C226ME15L	490-4739-1-ND	22uF	1206	CAP CER 22UF 16V X5R 1206	1
13	C24	Murata	GRM21BR61E475KA12L	490-3335-1-ND	4.7uF	0805	CAP CER 4.7UF 25V X5R 0805	1
14	C25	Murata	GRM21BR60J226ME39L	490-1719-1-ND	22uF	0805	CAP CER 22UF 6.3V X5R 0805	1
15	C26	Yageo	CC0805KRX7R9BB272	311-1130-1-ND	2.7nF	0805	CAP CER 2700PF 50V X7R 0805	1
16	C27	Murata	GRM31CR61A226KE19L	490-6510-1-ND	22uF	1206	CAP CER 22UF 10V X5R 1206	1
17	C28	Yageo	CC0805KRX7R9BB183	311-1137-1-ND	18nF	0805	CAP CER 0.018UF 50V X7R 0805	1
18	C29	Yageo	CC0805JRNPO9BN390	311-1106-1-ND	39pF	0805	CAP CER 39PF 50V NPO 0805	1
19	D1, D2	ON Semiconductor	MBRS340T3G	MBRS340T3GOSCT-ND		DO-214AB SMC	DIODE SCHOTTKY 40V 4A SMC	2
20	J1, J13	Sullins Connector Solutions	PEC02SAAN	S1012E-02-ND			CONN HEADER .100 INGL STR 2POS	2
21	J2	Molex	43650-0200	WM1860-ND			CONN HEADER 2POS 3MM RT ANG TIN	1
22	J3	CUI Inc.	PJ-002AH-SMT-TR	CP-002AHPJCT-ND			CONN POWER JACK 2.1X5.5MM HI CUR	1
23	J4	Würth Electronics Inc	691709710302	1297-1108-1-ND			CONN TERM BLOCK 2POS 5MM BLACK	1
24	J5	Samtec Inc	SSW-115-01-T-D	SAM1212-15-ND			30 Position Receptacle Connector 0.100" (2.54mm) Through Hole Tin	1
25	J6, J12	Sullins Connector Solutions	PEC02SAAN	S1012E-02-ND			PEC02SAAN	2
26	J7, J8, J9, J10, J11	TE Connectivity	3-644456-6	A31116-ND			CONN HEADER VERT 6POS .100 TIN	5
27	L1	Bourns	SRR1260A-100M	SRR1260A-100MCT-ND	10uH		FIXED IND 10UH 5.5A 20 MOHM SMD	1
28	L2	Bourns	SRP6540-3R3M	SRP6540-3R3MCT-ND	3.3uH		FIXED IND 3.3UH 6.5A 23 MOHM SMD	1
29	L3	Bourns	SDR0503-100ML	SDR0503-100MLCT-ND	10mH		FIXED IND 10UH 1.3A 130 MOHM SMD	1
30	Q1	Fairchild Semiconductor	FDS4435BZ	FDS4435BZCT-ND		8-SOIC	MOSFET P-CH 30V 8.8A 8-SOIC	1
31	R1	Murata	WSL2010R0330FEA18	WSLF-.033CT-ND	0.033	2010	RES SMD 0.033 OHM 1% 1W 2010	1
32	R2	Vishay Dale	WSL2816R0680FEH	WSLK-.068CT-ND	0.068	2816	RES SMD 0.068 OHM 1% 2W 2816	1
33	R3, R4	Yageo	RC0805FR-07100KL	311-100KCRCT-ND	100K	0805	RES SMD 100K OHM 1% 1/8W 0805	2
34	R5, R8	Yageo	RC0805FR-0710KL	311-10.0KCRCT-ND	10K	0805	RES SMD 10K OHM 1% 1/8W 0805	2
35	R6, R7	Samsung	RC1608F4R7CS	1276-4486-1-ND	4.70 Ohm	0603	RES SMD 4.7 OHM 1% 1/10W 0603	2
36	R9, R10, R11, R12, R13	Bourns	CRA2512-FZ-R100ELF	CRA2512-FZ-R100ELFCT-ND	0.1 Ohm	2512	RES SMD 0.1 OHM 1% 3W 2512	5
37	R14	Vishay Dale	CRCW0402105KFKE	541-105KLCT-ND	105k	0402	RES SMD 105K OHM 1% 1/16W 0402	1
38	R15	Vishay Dale	CRCW040290K9FKE	541-90.9KLCT-ND	90.9K	0402	RES SMD 90.9K OHM 1% 1/16W 0402	1
39	R16	Vishay Dale	CRCW040237K4FKE	541-37.4KLCT-ND	37.4K	0402	RES SMD 37.4K OHM 1% 1/16W 0402	1
40	R17	Vishay Dale	CRCW040210K0FKE	541-10.0KLCT-ND	10K	0402	RES SMD 10K OHM 1% 1/16W 0402	1
41	R18	Vishay Dale	CRCW040253K6FKE	541-53.6KLCT-ND	53.6K	0402	RES SMD 53.6K OHM 1% 1/16W 0402	1
42	R19	Vishay Dale	CRCW04023K57FKE	541-3.57KLCT-ND	3.57K	0402	RES SMD 3.57K OHM 1% 1/16W 0402	1
43	R20	Vishay Dale	CRCW0402100KFKE	541-100KLCT-ND	100k	0402	RES SMD 100K OHM 1% 1/16W 0402	1
44	SW1, SW2, SW3	TE Connectivity	1825255-5	450-1569-ND			SWITCH SLIDE SPDT 300MA 125V	3
45	TP1, TP2, TP3, TP4, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP34, TP35, TP36	DNP	DNP				Test Pad	34
46	U1	Maxim Integrated	MAX1873REEE+T	MAX1873REEE+TCT-ND		16-SSOP	IC CNTRLR CHARGE Li+ 16-QSOP	1
47	U2, U3, U4, U5, U6	Maxim Integrated	MAX14870ETC+T	MAX14870ETC+CT-ND		12-WDFN	IC MOTOR DVR DC FULL BR 12TDFN	5
48	U7	Texas Instruments	TPS54622RHLLR	296-29204-1-ND		14-VQFN	IC REG BUCK ADJ 6A SYNC 14QFN	1
49	U8	Texas Instruments	TPS62177DQCR	296-41856-1-ND		10-WDFN	IC REG BUCK BST 3.3V 0.8A 10WSON	1
Approved		Notes					Total Components:	113