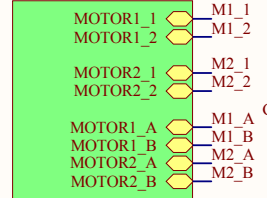
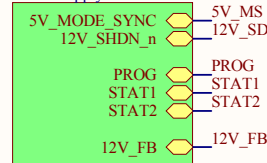
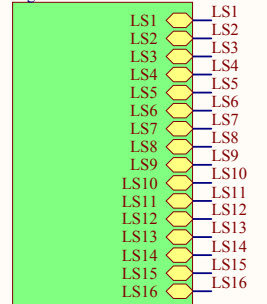
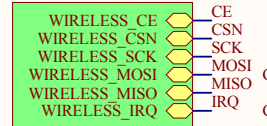
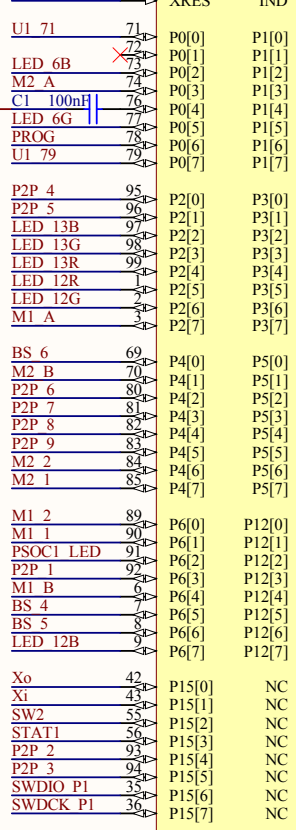
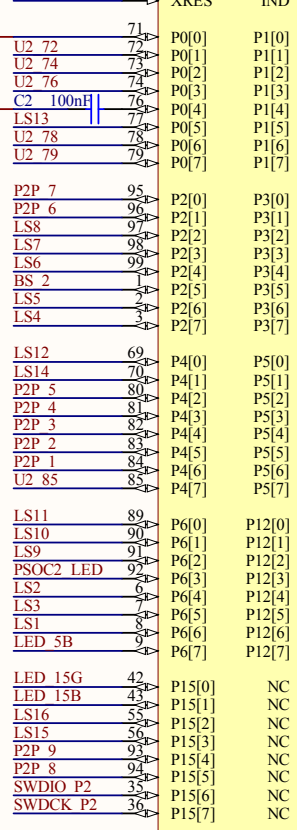
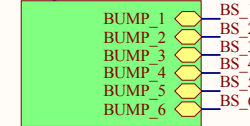
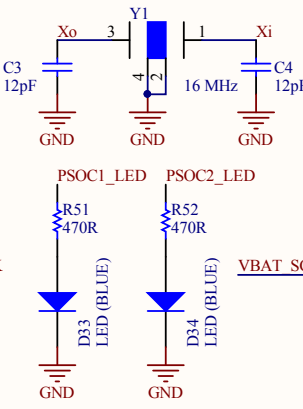
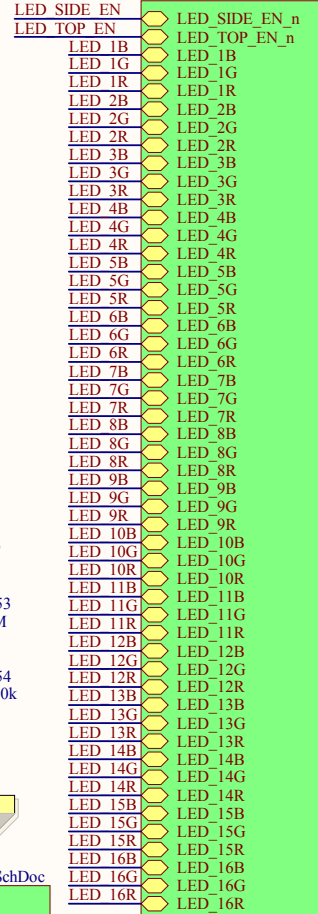
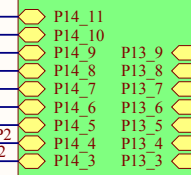


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SS7  
DC Motors.SchDocSS6  
Power Supply.SchDocSS8  
Light Sensors.SchDocSS11  
Wireless.SchDocU1A  
CY8C5888AXI-LP096U2A  
CY8C5888AXI-LP096SS10  
Bump Sensors.SchDocSS9  
LCD.SchDocSS5  
LEDs.SchDocSS12  
Expansion Header.SchDoc

Title		
PSoC.SchDoc		
Size	Number	Revision
A4	1	B
Date:	3/26/2015	Sheet of 13
File:	C:\Users\...\PSoC.SchDoc	Drawn By: Nick D'Ademo

1

2

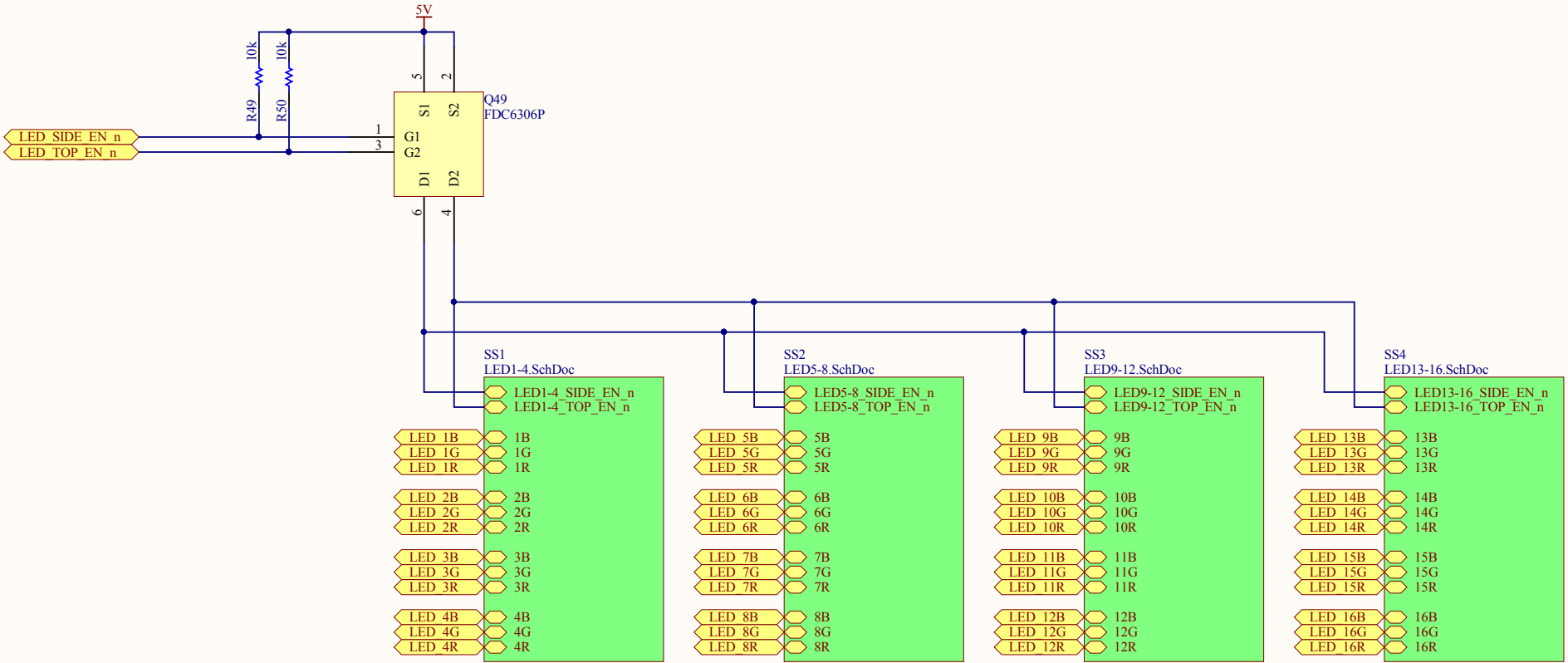
3

4

▲ All LEDs have been set to 20mA forward current for 5V via:  
RED: R=150R  
GREEN: R=91R  
BLUE: R=91R

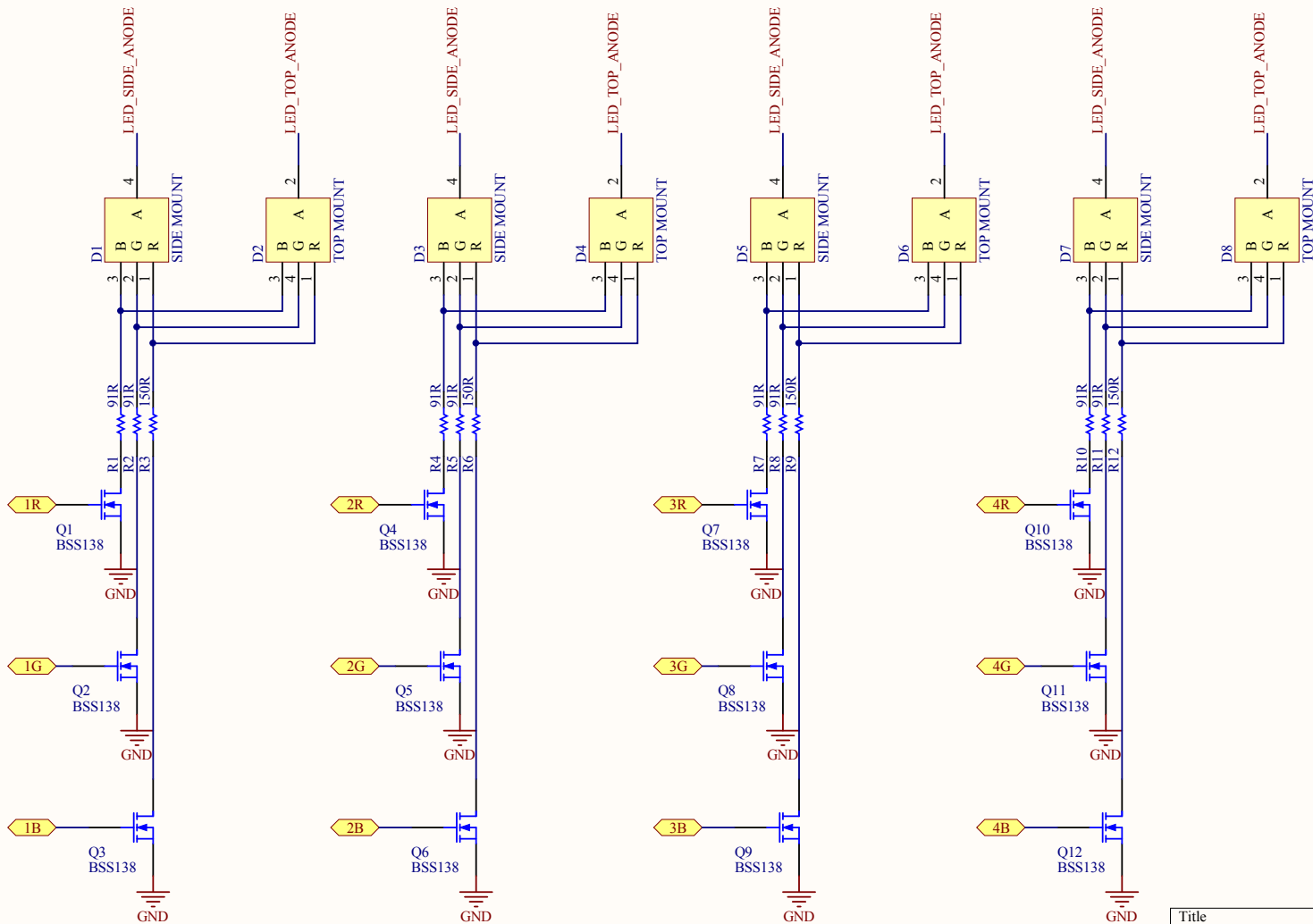
▲ SIDE LED:  
Vf @ If=20mA (Min->Typ->Max):  
RED: 1.8~2.0~2.4V  
GREEN: 3.0~3.3~3.6V  
BLUE: 3.0~3.3~3.6V

▲ TOP LED:  
Vf @ If=20mA (Avg->Max):  
RED: 2.0~2.6V  
GREEN: 3.2~4.0V  
BLUE: 3.2~4.0V  
CLV1A-FKB-CJ1M1F1BB7R4S3: 675mcd Red, 1055mcd Green, 337mcd Blue  
CLV1A-FKB-CK1N1G1BB7R4S3: 730mcd Red, 1150mcd Green, 365mcd Blue

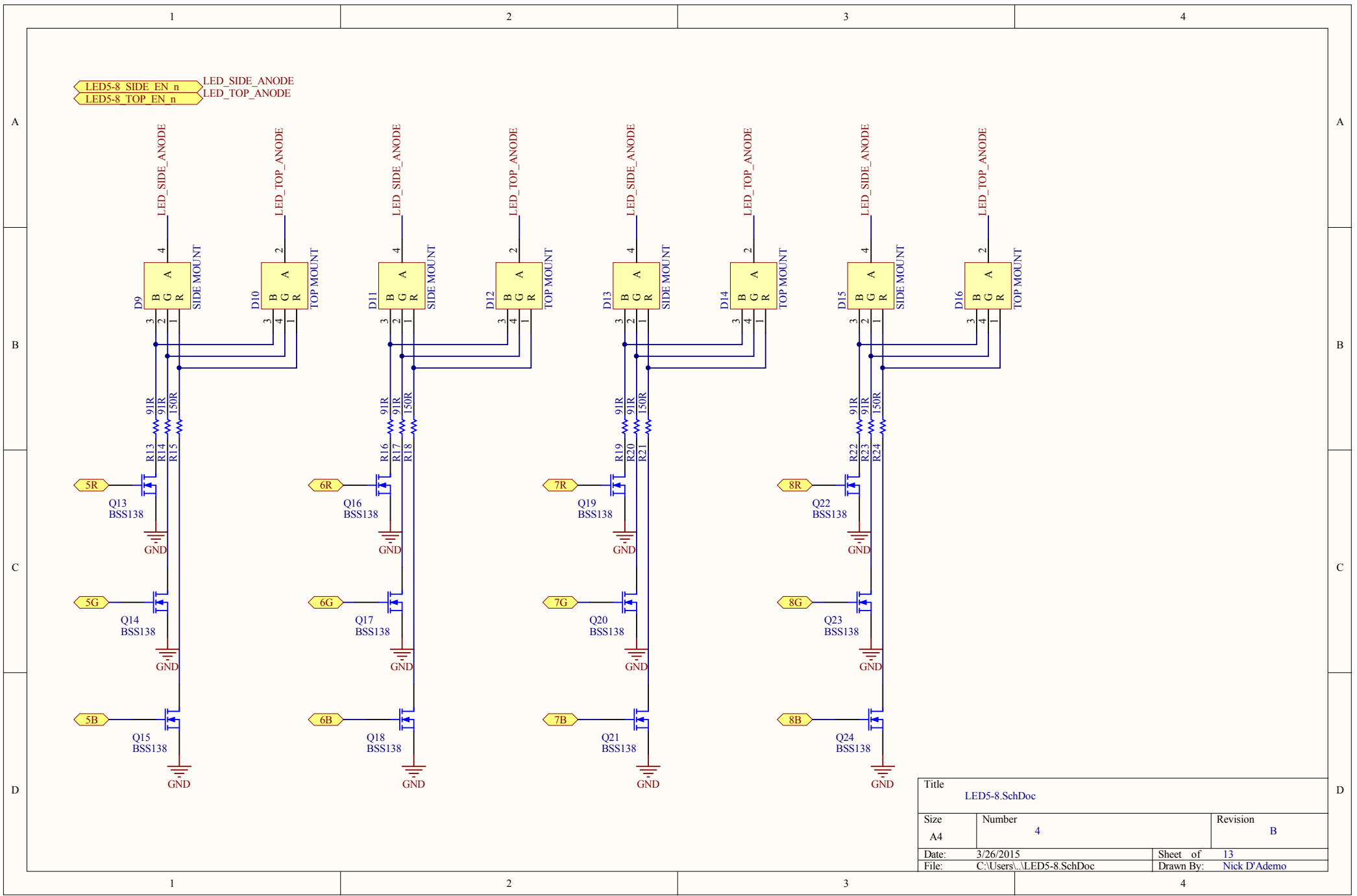


Title LEDs.SchDoc		
Size A4	Number 2	Revision B
Date: 3/26/2015	Sheet of 13	
File: C:\Users\...\LEDs.SchDoc	Drawn By: Nick D'Ademo	

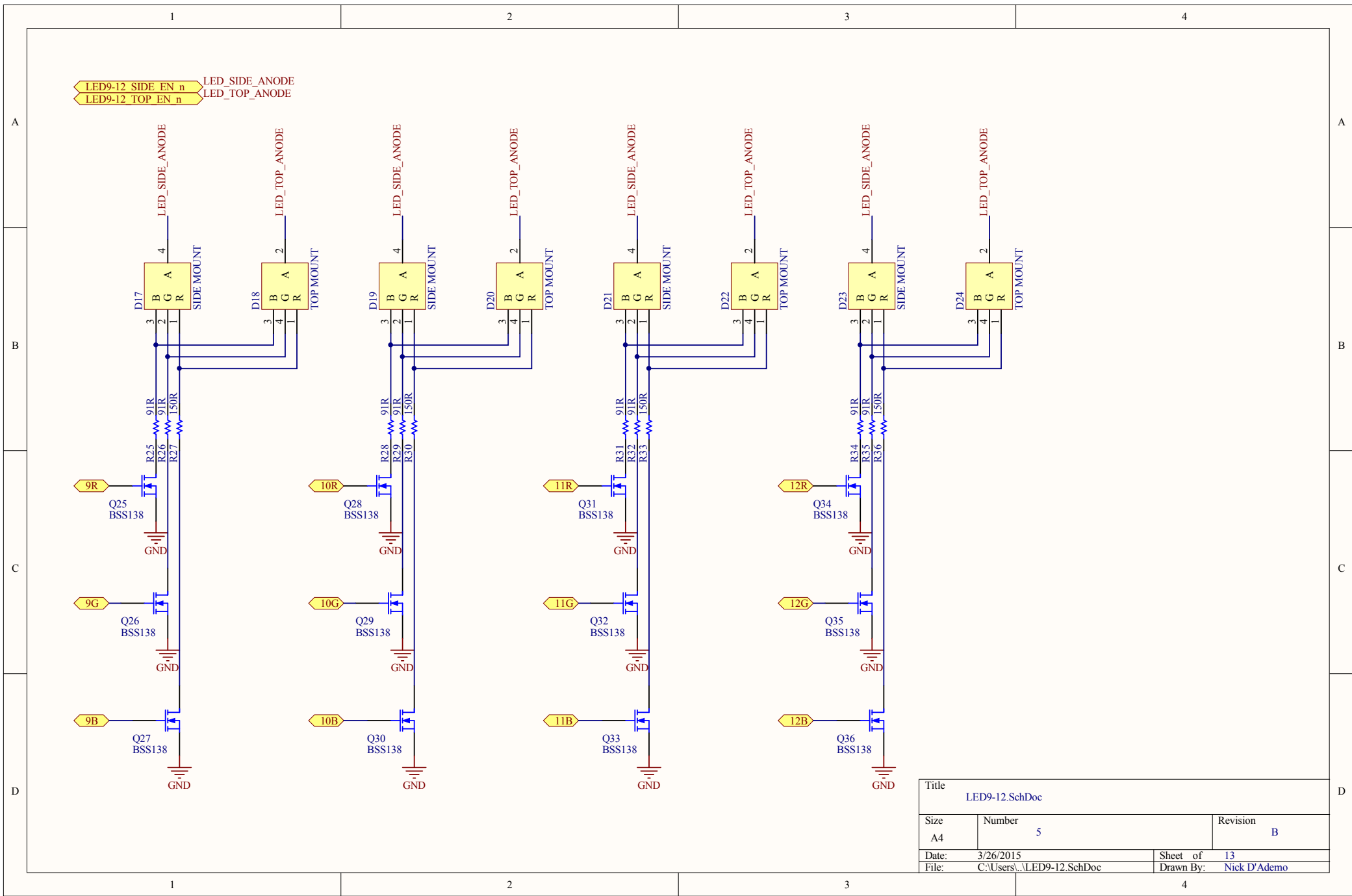
LED1-4 SIDE\_EN n LED\_SIDE\_ANODE  
LED1-4 TOP\_EN n LED\_TOP\_ANODE

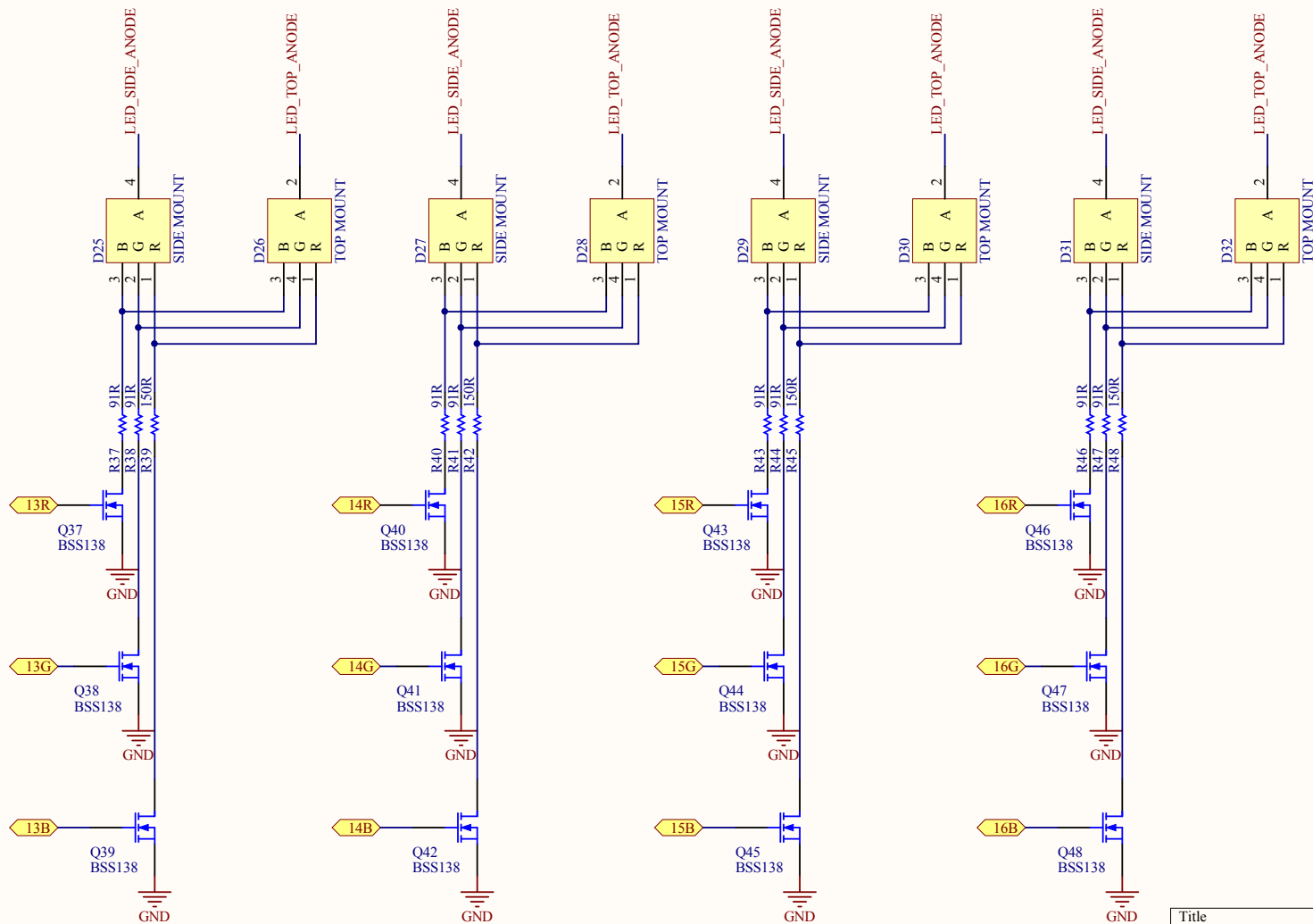


Title LED1-4.SchDoc		
Size A4	Number 3	Revision B
Date: 3/26/2015	Sheet of 13	
File: C:\Users\...\LED1-4.SchDoc	Drawn By: Nick D'Ademo	

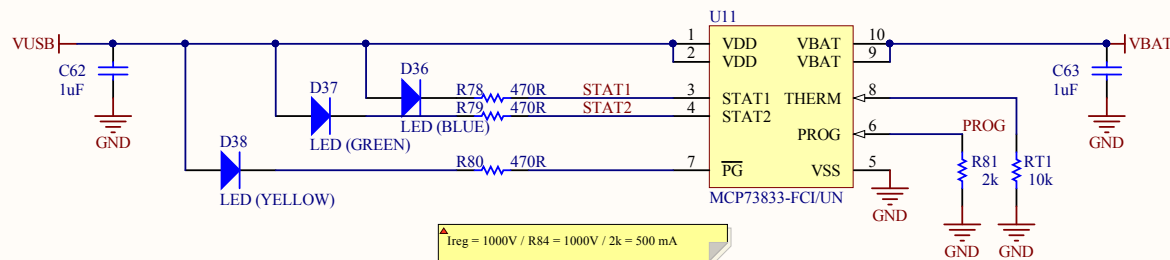
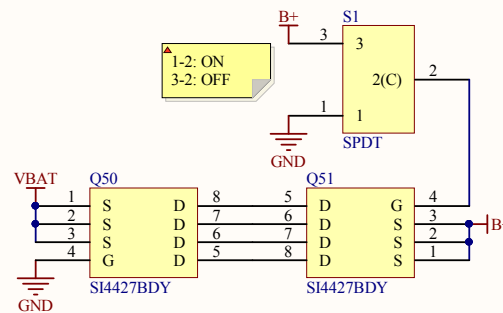
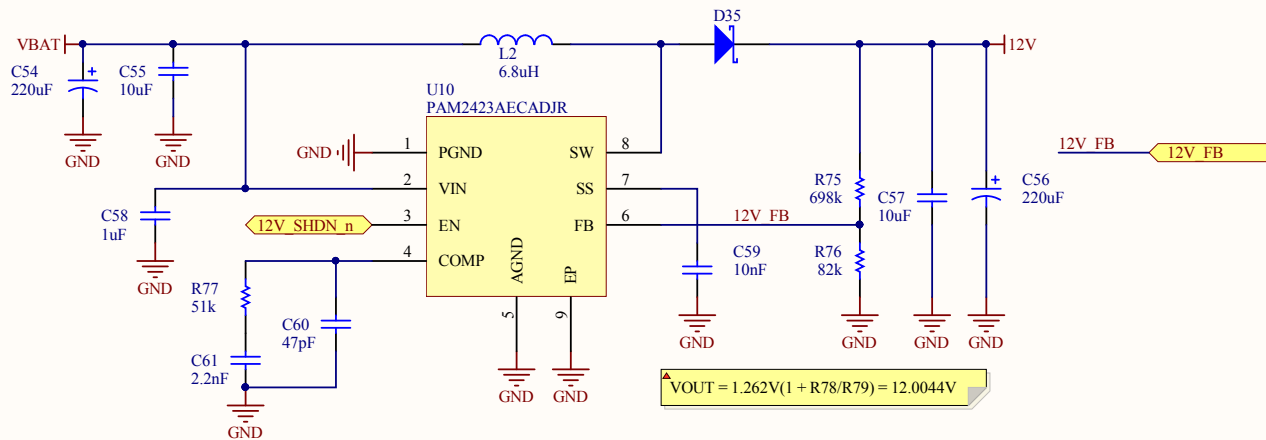
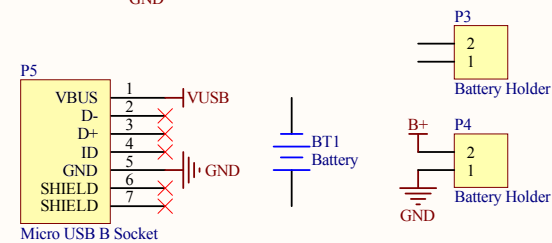
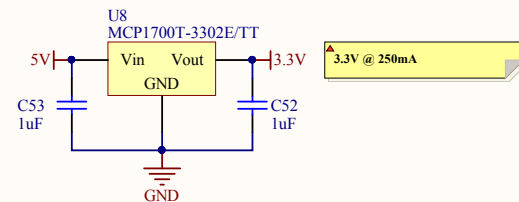
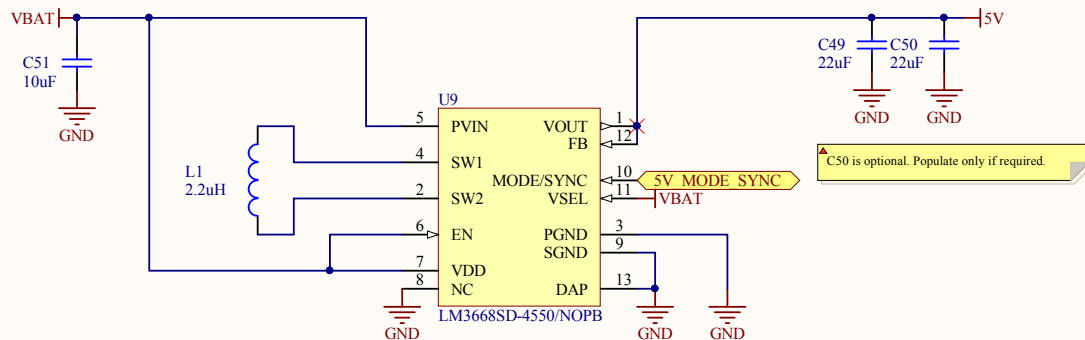


Title			LED5-8.SchDoc
Size	Number	Revision	
A4	4	B	
Date:	3/26/2015	Sheet of	13
File:	C:\Users\...\LED5-8.SchDoc	Drawn By:	Nick D'Ademo





Title <b>LED13-16.SchDoc</b>			
Size <b>A4</b>	Number <b>6</b>	Revision <b>B</b>	
Date:	3/26/2015	Sheet of	<b>13</b>
File:	C:\Users\...\LED13-16.SchDoc	Drawn By:	<b>Nick D'Ademo</b>

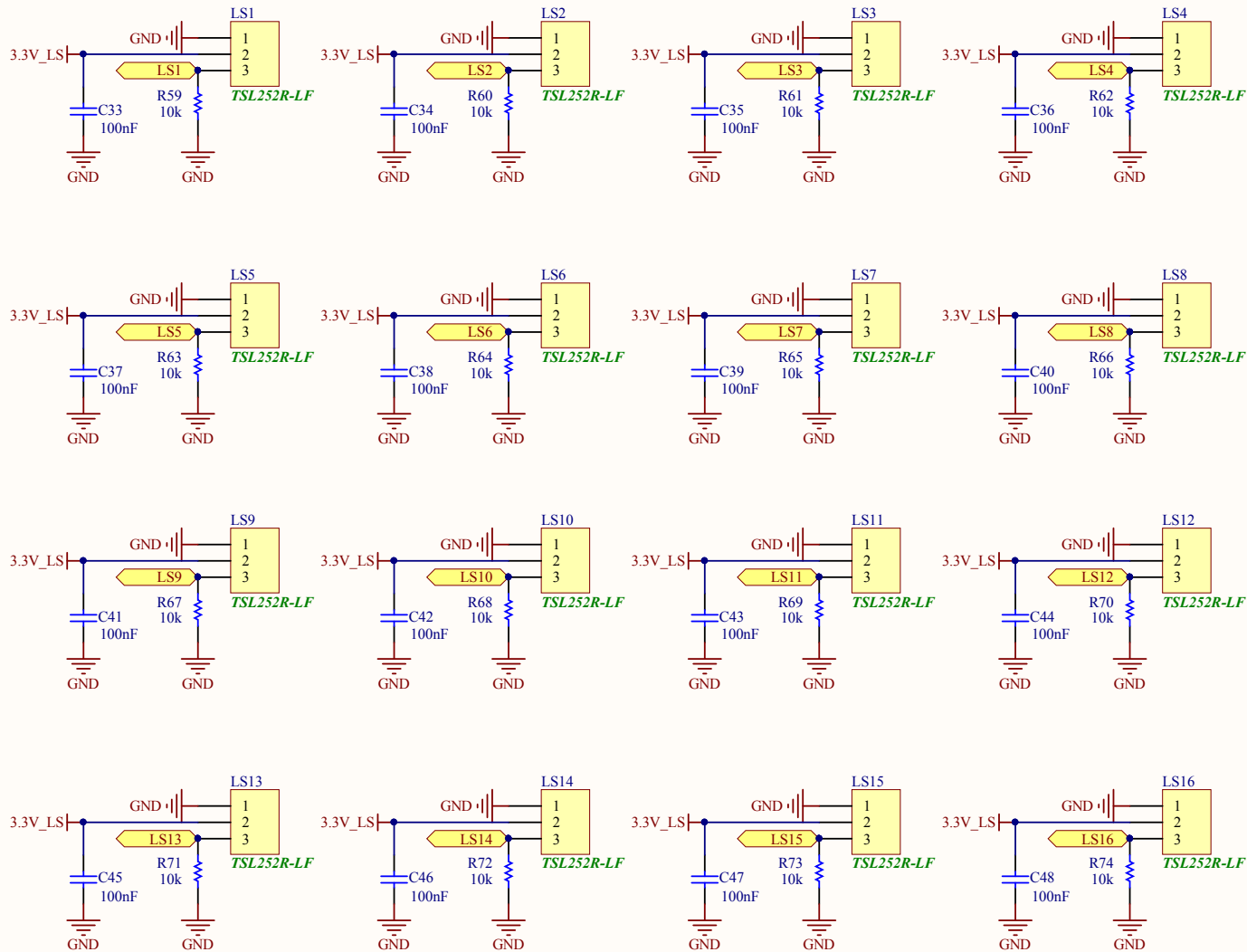


Title		
Power Supply.SchDoc		
Size	Number	Revision
A4	7	B
Date:	3/26/2015	Sheet of 13
File:	C:\Users\...\Power Supply.SchDoc	Drawn By: Nick D'Ademo

▲ AMS light sensors (www.ams.com) have the following pin-outs:  
GND - 1  
VDD - 2  
OUT - 3

▲ Light-to-Frequency parts:  
TSL235  
TSL237  
TSL245 (IR light)  
  
Light-to-Voltage parts:  
TSL12S  
TSL13S  
TSL14S  
TSL250R  
TSL251R  
TSL252R  
TSL253R  
TSL254R  
TSL257  
TSL260R (IR light)  
TSL261R (IR light)  
TSL262R (IR light)  
TSL267 (IR light)

▲ Only install R59 to R74 if Light-to-Voltage parts are used.

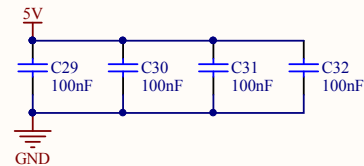
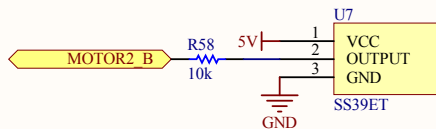
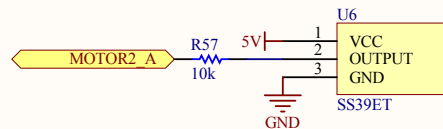
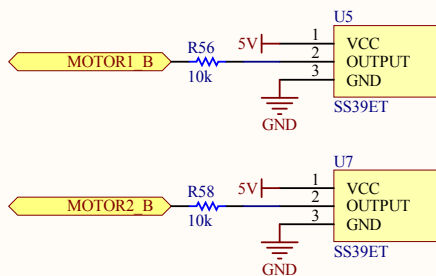
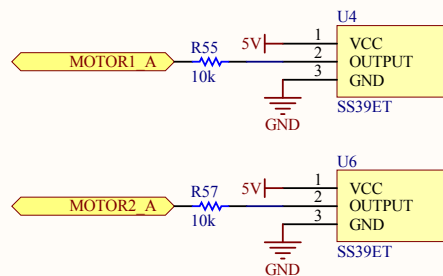
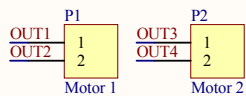
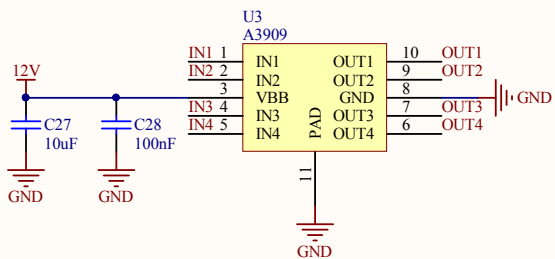


Title Light Sensors.SchDoc		
Size A4	Number 8	Revision B
Date: 3/26/2015		Sheet of 13
File: C:\Users\...\Light Sensors.SchDoc		Drawn By: Nick D'Ademo

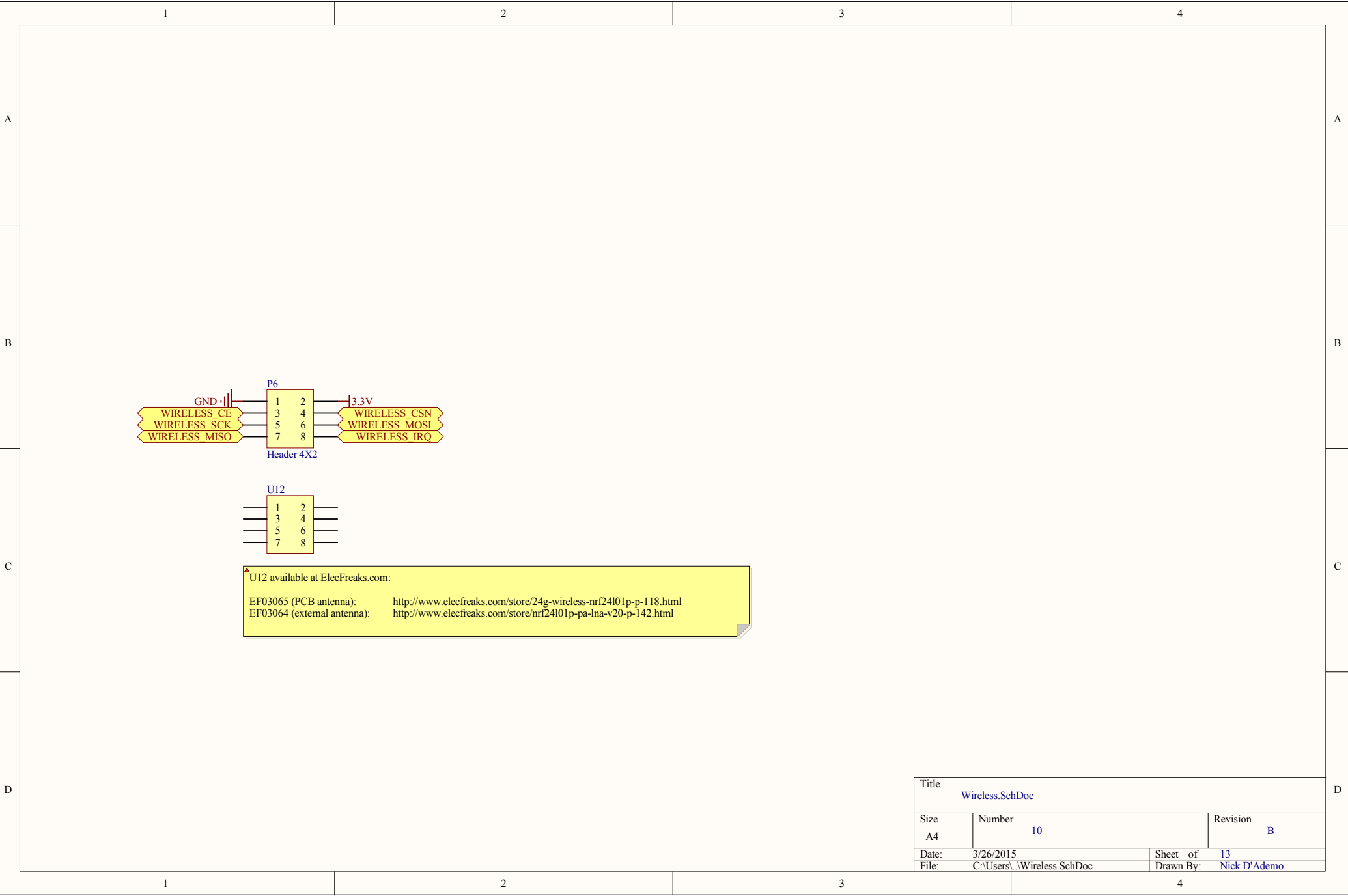


MOTOR1 1 IN1  
MOTOR1 2 IN2

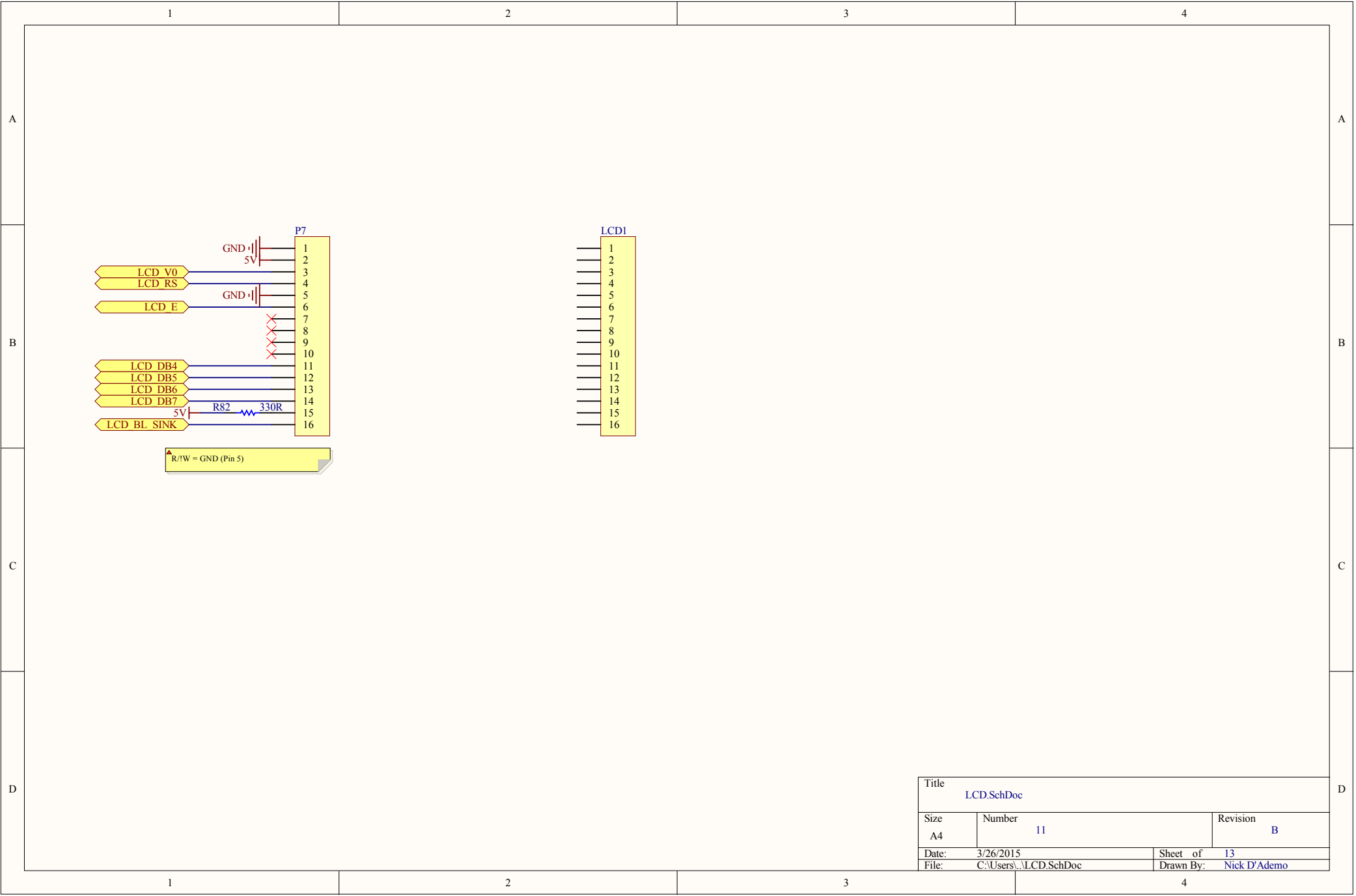
MOTOR2 1 IN3  
MOTOR2 2 IN4



Title DC Motors.SchDoc		
Size A4	Number 9	Revision B
Date: 3/26/2015	Sheet of 13	
File: C:\Users\...\DC Motors.SchDoc	Drawn By: Nick D'Ademo	



Title			Wireless.SchDoc
Size	Number	Revision	
A4	10	B	
Date:	3/26/2015	Sheet of	13
File:	C:\Users\...\Wireless.SchDoc	Drawn By:	Nick D'Ademo



1

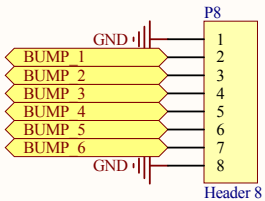
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A

A



B

B

C

C

D

D

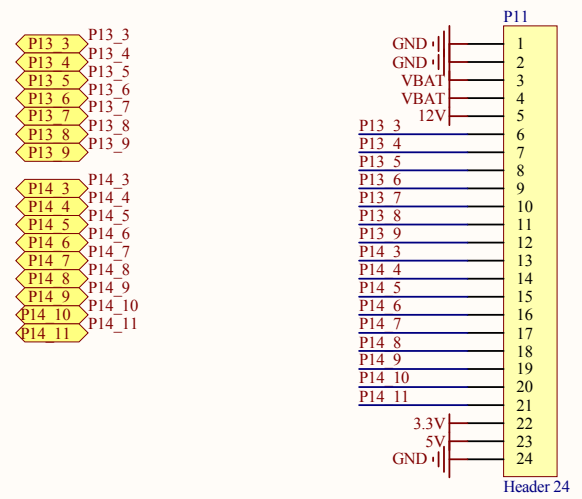
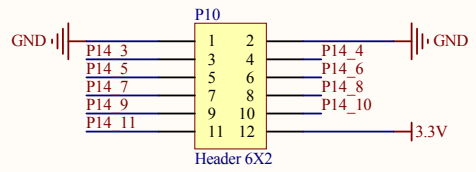
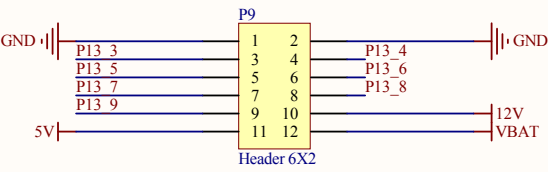
Title			Bump Sensors.SchDoc		
Size	Number		Revision		
A4	12		B		
Date:	3/26/2015		Sheet of	13	
File:	C:\Users\...\Bump Sensors.SchDoc		Drawn By:	Nick D'Ademo	

1

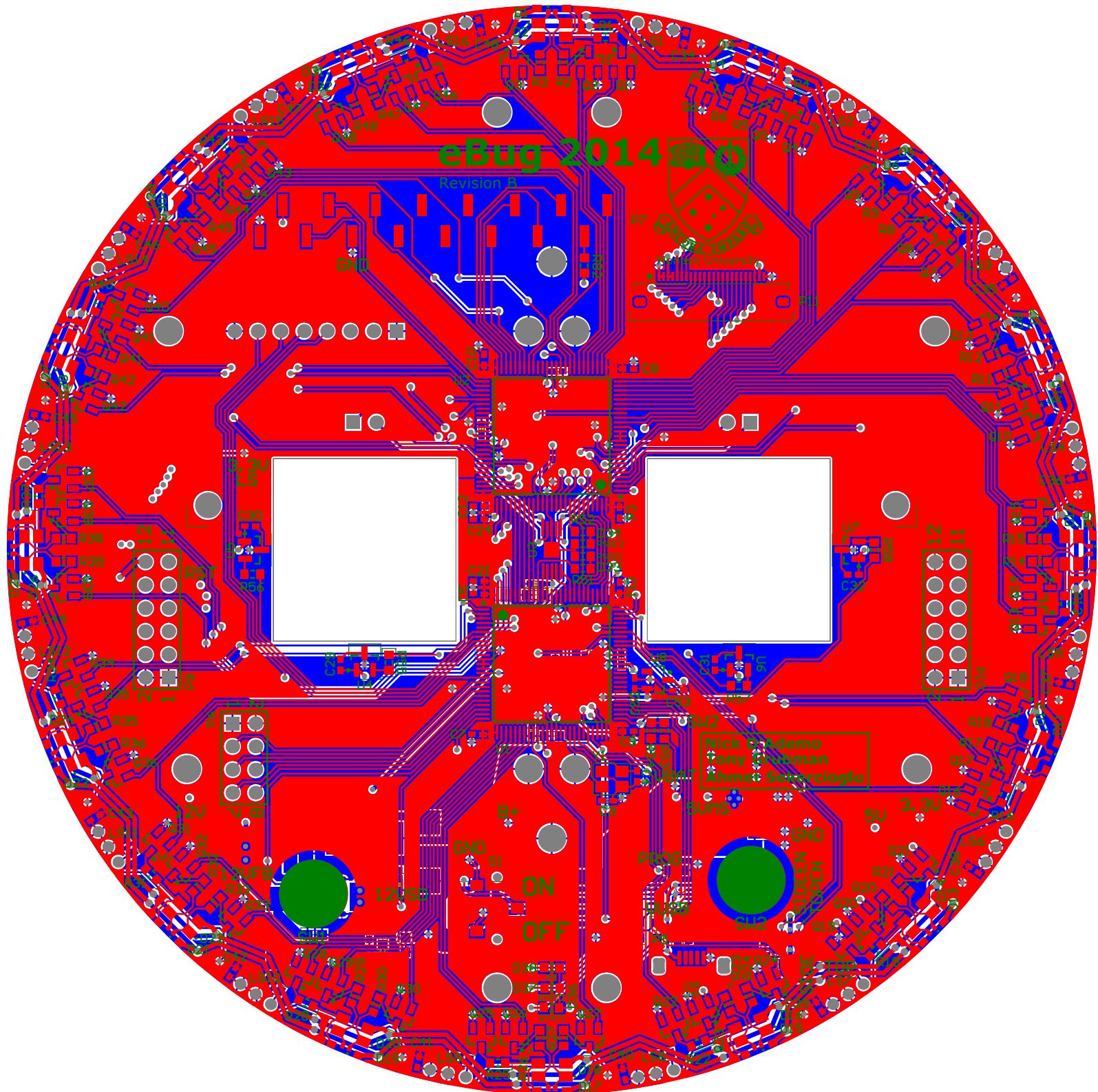
2

3

4



Title Expansion Header.SchDoc		
Size A4	Number 13	Revision B
Date: 3/26/2015		Sheet of 13
File: C:\Users\...\Expansion Header.SchDoc		Drawn By: Nick D'Ademo



Description	Designator	Footprint	Quantity	Value
18650 1-Cell Lithium Ion Battery	B1		1	
	C1, C2, C5, C6, C7, C8, C9, C10, C11, C12, C16, C19, C22, C23, C25, C26, C28, C49, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48			
Capacitor, X7R, ±10%, 16V, 0402	C3, C4	CAPC1005N	37	100nF
Capacitor, NP0, ±2%, 25V, 0402	C13, C14, C15, C17, C18, C20, C41, C24, C52, C53, C58, C62, C63	CAPC1005N	2	12pF
Capacitor, X5R, ±10%, 10V, 0402	C27, C55, C57	CAPC1005N	13	1uF
TAIYO YUDEN - EMI1078B1106MA-T - CAP CER 10UF 16V 20% X5R 0603	C49, C50	CAPC2012N	1	10uF
TAIYO YUDEN - LM62128J26MG-T - CAPACITOR CERAMIC 22UF, 10V, X5R, 0805	C51	CAPC2012N	2	22uF
TAIYO YUDEN - LM6212 8J106MG-T - CAP. MLCC, X5R, 10UF, 10V, 0805	C54, C56	TC7343-2917	1	10uF
KEMET - T491D227K016AT - CAP TANT 220UF 16V 10% 2917	C59	CAPC1005N	2	220uF
Capacitor, X7R, ±10%, 16V, 0402	C60	CAPC1005N	1	10nF
Capacitor, NP0, ±5%, 25V, 0402	C61	CAPC1005N	1	47pF
Capacitor, X7R, ±10%, 16V, 0402	D4, D3, D5, D7, D9, D11, D13, D15, D17, D19, D21, D23, D25, D27, D29, D31, DE	OVSRRGBCC3_SI	16	
OPTOK - OVSRRGBCC3 - LED RED/GRN/BLUE 1204 SMD	D2, D4, D6, D8, D10, D12, D14, D16, D18, D20, D22, D24, D26, D28, D30, D32	PLCC4	16	
CREE - CLV1A-FXB-CKIN1G1887R453 - LED RGB 3-IN-1 3.2X2.8MM 4PLCC	D33, D34, D36	LED, 0603	3	
ROHM - SML128C7786Q - LED, 0603, LO-CUR, BLU	D35	DO-214AB	1	
VISHAY - SS34-E3/57T - DIODE SCHOTTKY 40V 3A DO214AB	D37	LED, 0603	1	
KINGBRIGHT - KP-1608MGC - LED, 0603, GREEN, 70MCD, 568NM	D38	LED, 0603	1	
KINGBRIGHT - KP-1608SYC - LED, SMD, 0603, YELLOW	L1	COILCRAFT_LPS4 018	1	1.2 2uH
COILCRAFT - LPS4018-222MRB - INDUCTOR, SHLD, 2.2uH, 20%, 1.5A, SMD	L2	SRP7028A	1	16.8uH
BOURNS - SRP7028A-6R8M - FIXED IND 6.8uH 4.5A 60 MOHM SMD	LC01		1	
SHENZHEN EONE ELECTRONICS CO.,LTD - IM120424015 - EONE High 16x2 1602) Characters LCD	LS1, LS2, LS3, LS4, LS5, LS6, LS7, LS8, LS9, LS10, LS11, LS12, LS13, LS14, LS15, LS16		16	
AMS - TL252R-4F - IC LIGHT TO VOLTAGE SENSOR 3PIN	P1, P2	HDR1X2	2	
MOLEX INC - 0022272021 - CONN HEADER 2POS, 100 VERT TIN	P3, P4	54	2	
KEYSTONE ELECTRONICS - 54 - BATTERY CLIP 18MM 18650 CELL		USB3140-30-0170-1-C - CONNECTOR, USB 2.0 MICRO B, RCPT, SPOS, SMT	1	
GLOBAL CONNECTOR TECHNOLOGY - USB3140-30-0170-1-C - CONNECTOR, USB 2.0 MICRO B, RCPT, SPOS, SMT	P5	C-MODIFIED	1	
SAMTEC - SSW-116-22-F-S-V5 - Conn Socket Strip SKT 16 POS 2.54mm Solder ST SMD Tube	P7	Samtec-SSW-116-22-F-S-V5	1	
Header, 8-Pin	P8	HDR1X8	1	
SAMTEC - SSW-106-01-T-D - SOCKET, 2.54MM, 2X6WAY	P9, P10	SSW-106-01-X-D	2	
GLOBAL CONNECTOR TECHNOLOGY - FFC2810-24-T - FFC/PC CONNECTOR, RECEPTACLE, 24POS, 1ROW	P11	FFC2810	1	
	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43, Q44, Q45, Q46, Q47, Q48			
FAIRCHILD SEMICONDUCTOR - BS5138 - MOSFET N-CH 50V 220MA SOT-23	Q49	SOT85P230-3N	48	
FAIRCHILD SEMICONDUCTOR - FDC6306P - MOSFET 2P-CH 20V 1.9A S5OT6	Q49	SOT-6	1	
VISHAY SILICONIX - SI4427BDY-EL-E3 - MOSFET P-CH 30V 9.7A B-SOIC	Q50, Q51	SOIC127P600-BAN	2	
	R1, R2, R4, R5, R7, R8, R10, R11, R13, R14, R16, R17, R19, R20, R22, R23, R25, R26, R28, R29, R31, R32, R34, R35, R37, R38, R40, R41, R43, R44, R46, R47	RESC1608N	32	91R
Resistor, ±1%, 0.1W, 0603	R3, R6, R9, R12, R15, R18, R21, R24, R27, R30, R33, R36, R39, R42, R45, R48	RESC1608N	16	150R
Resistor, ±1%, 0.1W, 0603	R49, R50, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74	RESC1608N	22	10k
Resistor, ±1%, 0.1W, 0603	R51, R52, R78, R79, R80	RESC1608N	5	470R
Resistor, ±1%, 0.1W, 0603	R53	RESC1608N	1	1M
Resistor, ±1%, 0.1W, 0603	R54	RESC1608N	1	470k
Resistor, ±1%, 0.1W, 0603	R75	RESC1608N	1	698k
Resistor, ±1%, 0.1W, 0603	R76	RESC1608N	1	82k
Resistor, ±1%, 0.1W, 0603	R77	RESC1608N	1	51k
Resistor, ±1%, 0.1W, 0603	R81	RESC1608N	1	12k
Resistor, ±1%, 0.1W, 0603	R82	RESC1608N	1	330R
MURATA - NCF18XH103J03RB - THERMISTOR, NTC, 10K, 5%, SMD	RT1	RESC1608N	1	10k
COPAL ELECTRONICS INC - CL-SB-128-01T - SWITCH SLIDE SPDT 0.2A GULL 12V	S1	CL-SB-128-01T	1	
PSoC Programmable System-on-Chip, 256 KB Flash, 62 GPIOs, 1.71 to 5.5 V, 100 Pin TQFP (AX100), Tray	U1, U2	CYP-AX100_L	2	
ALLEGRO - A3999GLVTR-T - IC MOTOR DRIVER PAR 10MSOP	U3	MSOP-10	1	
HONEYWELL SAC - SS3NET - SENSOR, HALL EFFECT, LINEAR, SOT23-3	U4, U5, U6, U7	SOT23-3N	4	
MICROCHIP - MCP1207T-3302E/TT - IC REG LDO 1.3V 0.35A SOT23-3	U8	SOT85P230-3N	1	
1A, High Efficiency Dual Mode Single Inductor Buck-Boost DC/DC Converter, 12-pin LLP, Pb-Free	U9	SDF12A	1	
DIODES INCORPORATED - PAM2423AECADIR - IC REG BOOST ADJ 5 SA RSOIC	U10	SOIC127P600-BEN	1	
MICROCHIP - MCP73833-FC4UN - IC L3-ION/L3-POLY CTRLR 10MSOP	U11	MSOP-LIN10, N	1	
NORDIC SEMICONDUCTOR - nRF24L01+	U12	HDR2X4	1	
NDK - NX3225SA-16.000MHZ-STD-CSR-1 - CRYSTAL 16MHZ 8PF SMD	V1	NX3225SA	1	