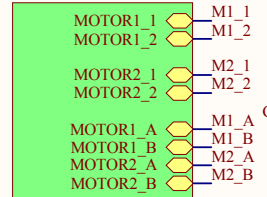
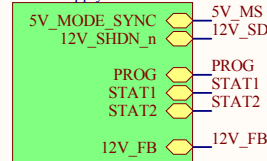
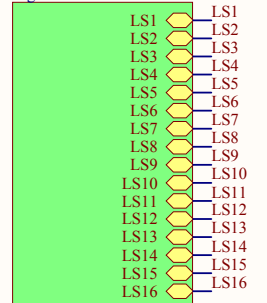
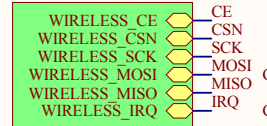


SS7
DC Motors.SchDocSS6
Power Supply.SchDocSS8
Light Sensors.SchDocSS11
Wireless.SchDoc

RESET_N

U1 71

LED 6B

M2 A

C1 100nF

LED 6G

U1 79

P2P 4

P2P 5

LED 13B

LED 13G

LED 13R

LED 12R

LED 12G

M1 A

BS 6

M2 B

P2P 6

P2P 7

P2P 8

P2P 9

M2 2

M2 1

M1 2

M1 1

PSOC1_LED

P2P 1

M1 B

BS 4

BS 5

LED 12B

Xo

Xi

SW2

STAT1

P2P 2

P2P 3

SWDIO P1

SWDCK P1

P15[0]

P15[1]

P15[2]

P15[3]

P15[4]

P15[5]

P15[6]

P15[7]

VBOOST

VBAT

VCCA

VDDA

VSSA

VCCD

VCCD

VDDDD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

XRES

IND

P0[0]

P0[1]

P0[2]

P0[3]

P0[4]

P0[5]

P0[6]

P0[7]

P2[0]

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P12[7]

P15[0]

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P15[2]

P15[3]

P15[4]

P15[5]

P15[6]

P15[7]

VDDIO0

VDDIO1

VDDIO2

VDDIO3

VSSB

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

MOSI

MISO

IRQ

12V_FB

12V_SD

SWT

LED_11G

LED_11B

LED_8R

LED_8G

LED_8B

LED_7R

LED_7G

LED_7B

LED_6R

VBAT_SCALED

LED_11R

CE

CSN

SCK

LED_10B

LED_9R

LED_9G

LED_9B

5V_MS

STAT2

LED_SIDE_EN

LED_TOP_EN

U1_4

U1_5

LED_10R

LED_10G

NC

NC

NC

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3.3V_LS

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P0[3]

P0[4]

P0[5]

P0[6]

P0[7]

P2[0]

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P15[0]

P15[1]

P15[2]

P15[3]

P15[4]

P15[5]

P15[6]

P15[7]

VDDIO0

VDDIO1

VDDIO2

VDDIO3

VSSB

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

VSSD

3.3V_LS

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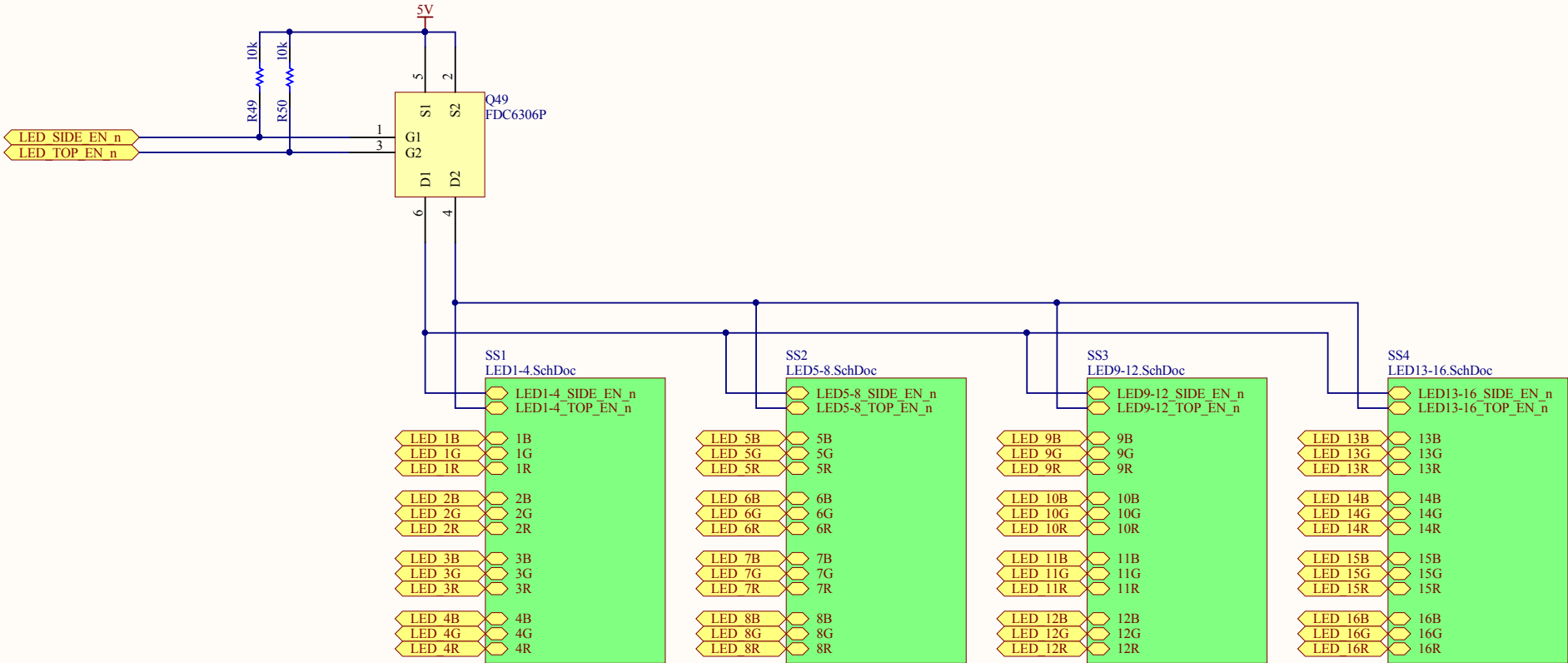
GND

GND

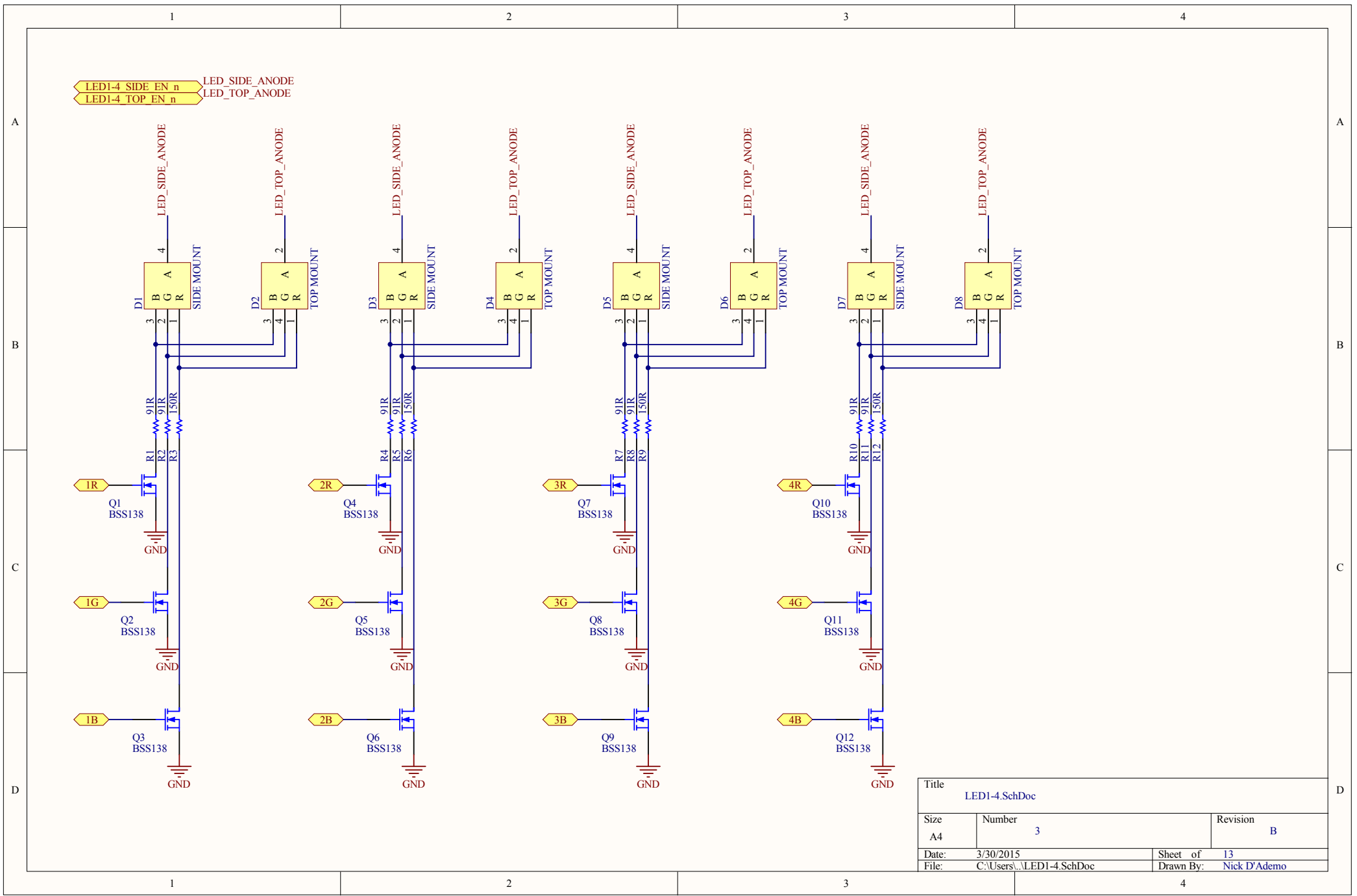
▲ All LEDs have been set to 20mA forward current for 5V via:
RED: R=150R
GREEN: R=91R
BLUE: R=91R

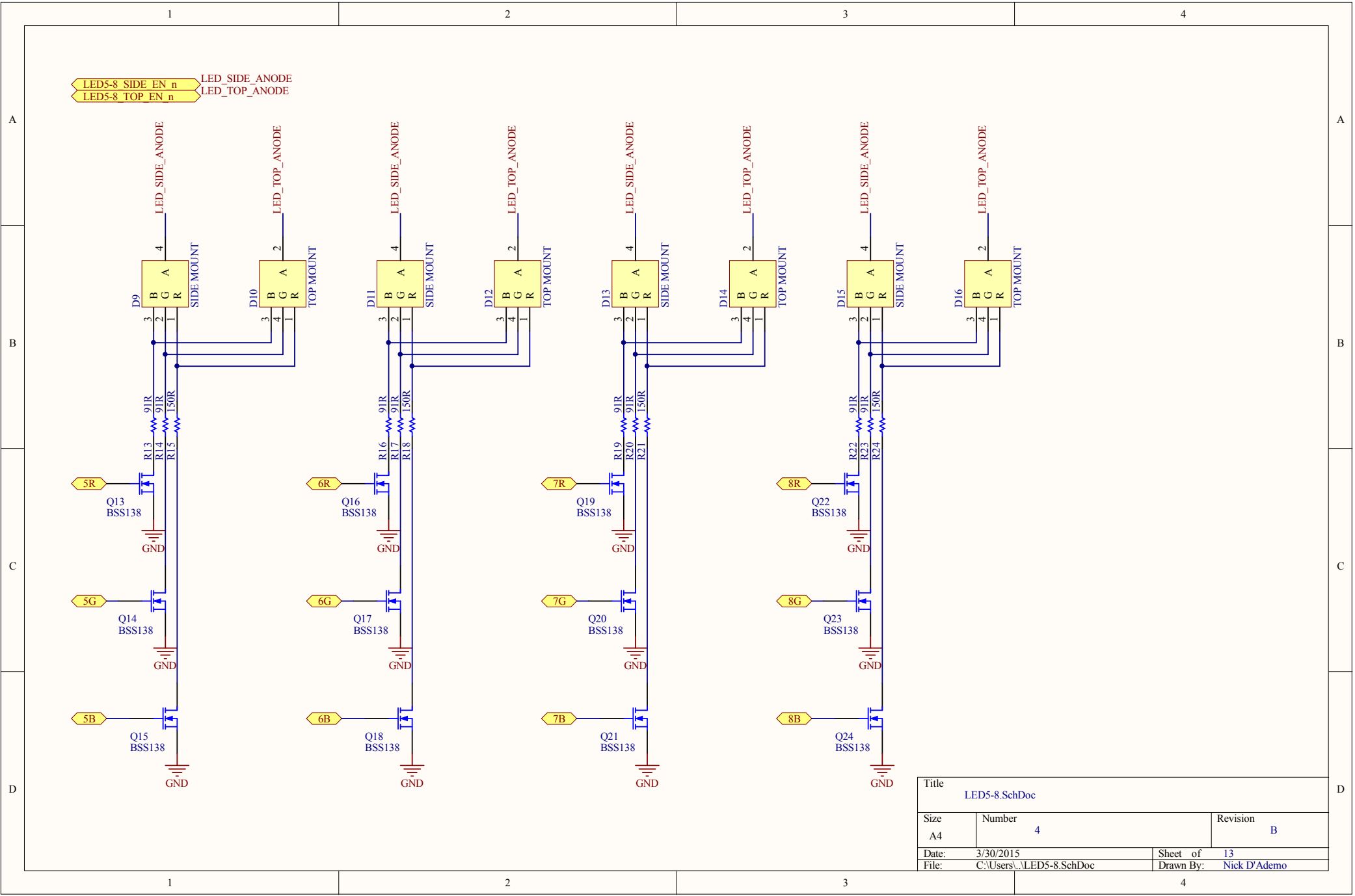
▲ SIDE LED:
Vf @ If=20mA (Min->Typ->Max):
RED: 1.8~2.0~2.4V
GREEN: 3.0~3.3~3.6V
BLUE: 3.0~3.3~3.6V

▲ 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

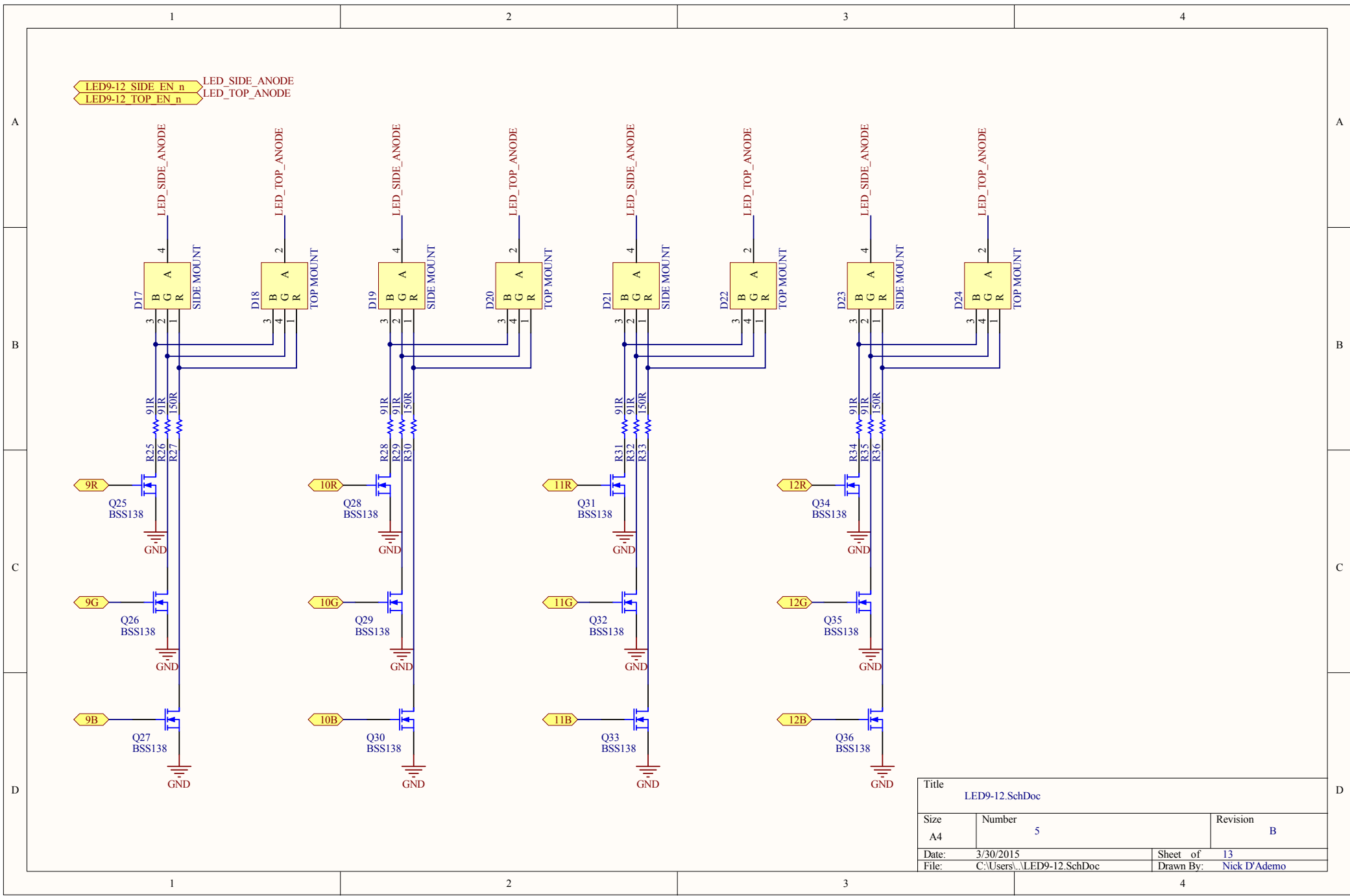


Title LEDs.SchDoc		
Size A4	Number 2	Revision B
Date: 3/30/2015	Sheet of 13	
File: C:\Users\...\LEDs.SchDoc	Drawn By: Nick D'Ademo	

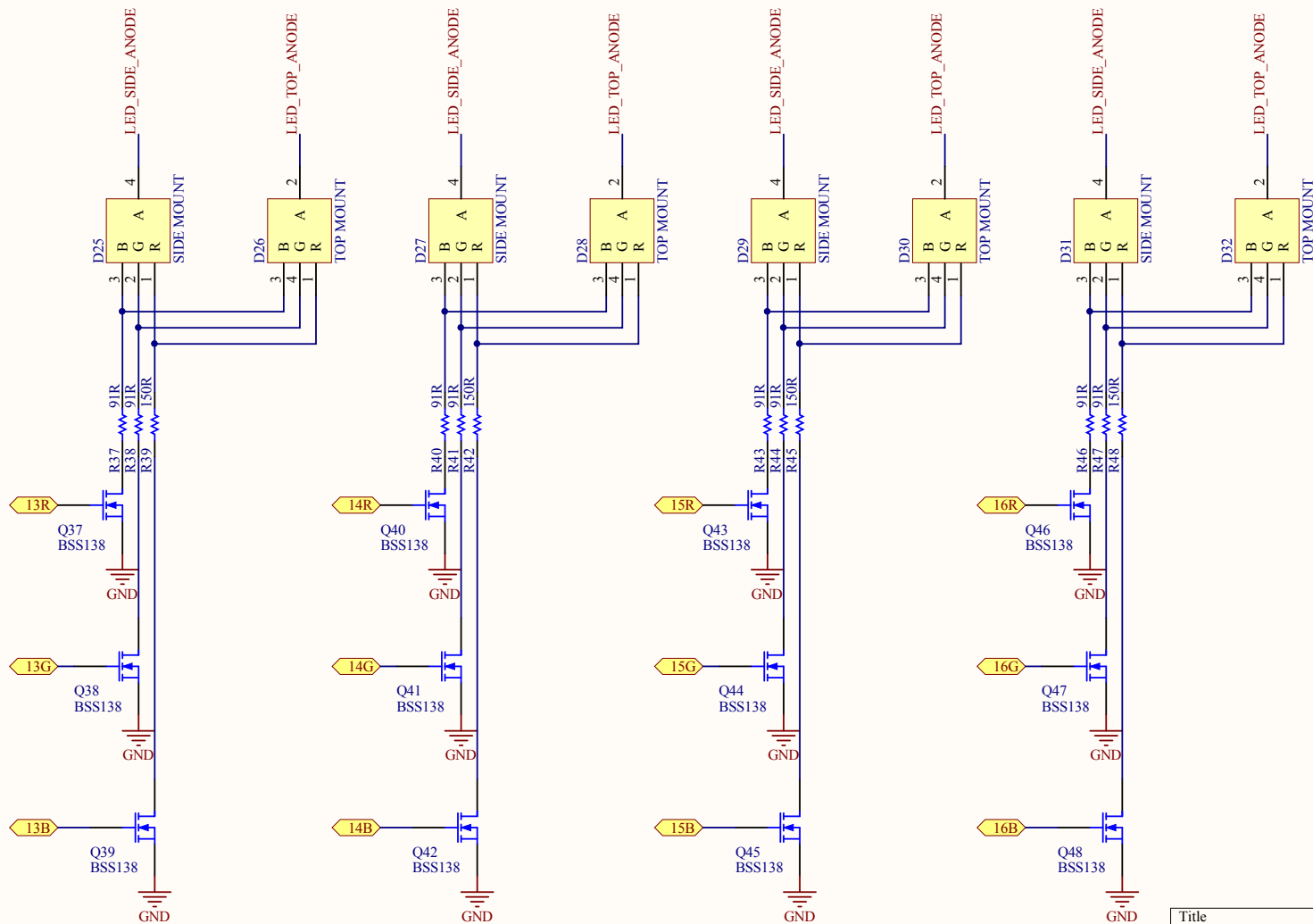




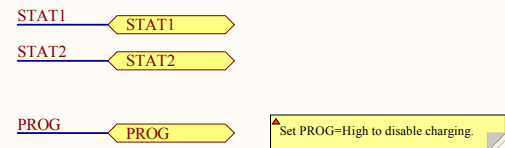
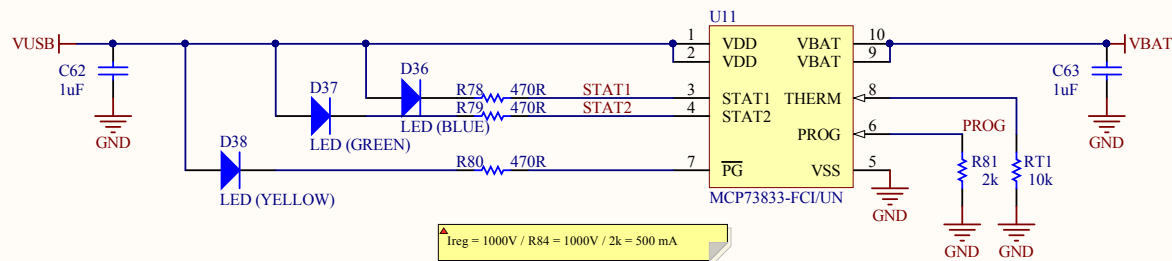
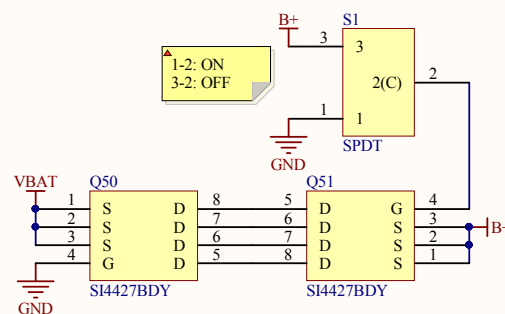
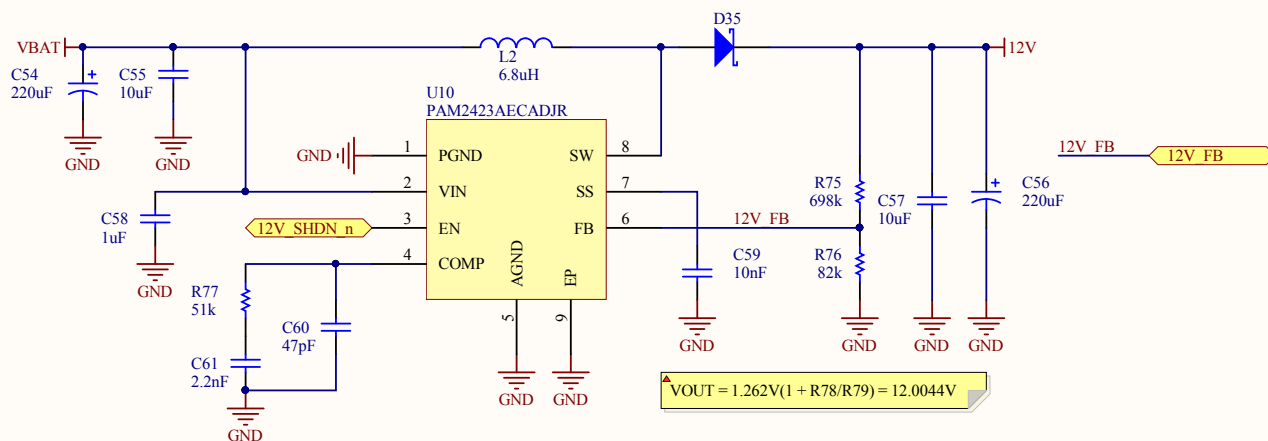
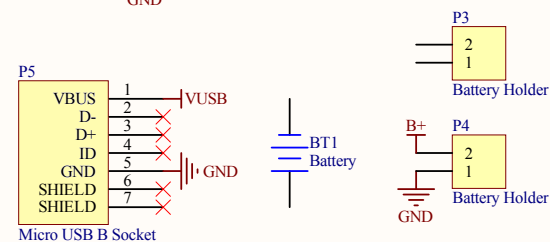
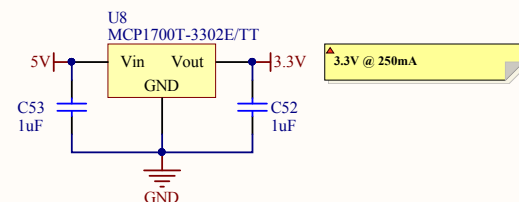
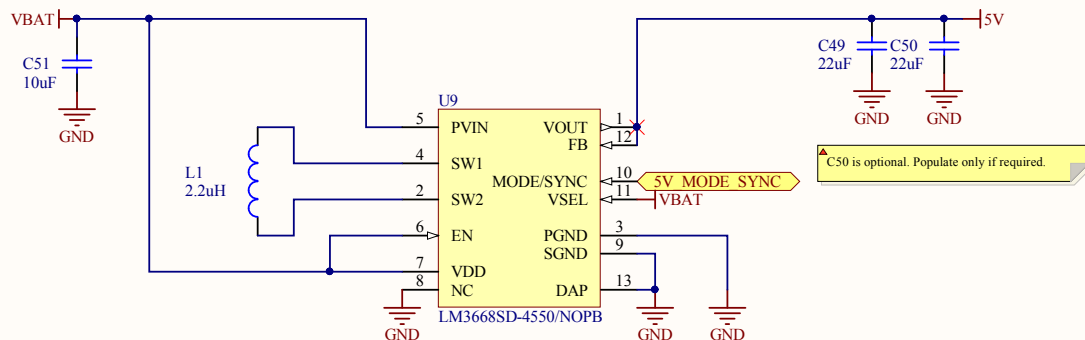
Title LED5-8.SchDoc		
Size A4	Number 4	Revision B
Date: 3/30/2015	Sheet of 13	
File: C:\Users\...\LED5-8.SchDoc	Drawn By: Nick D'Ademo	



Title			LED9-12.SchDoc
Size	Number	Revision	
A4	5	B	
Date:	3/30/2015	Sheet of	13
File:	C:\Users\...\LED9-12.SchDoc	Drawn By:	Nick D'Ademo



Title LED13-16.SchDoc			
Size A4	Number 6		Revision B
Date:	3/30/2015	Sheet of	13
File:	C:\Users\...\LED13-16.SchDoc	Drawn By:	Nick D'Ademo



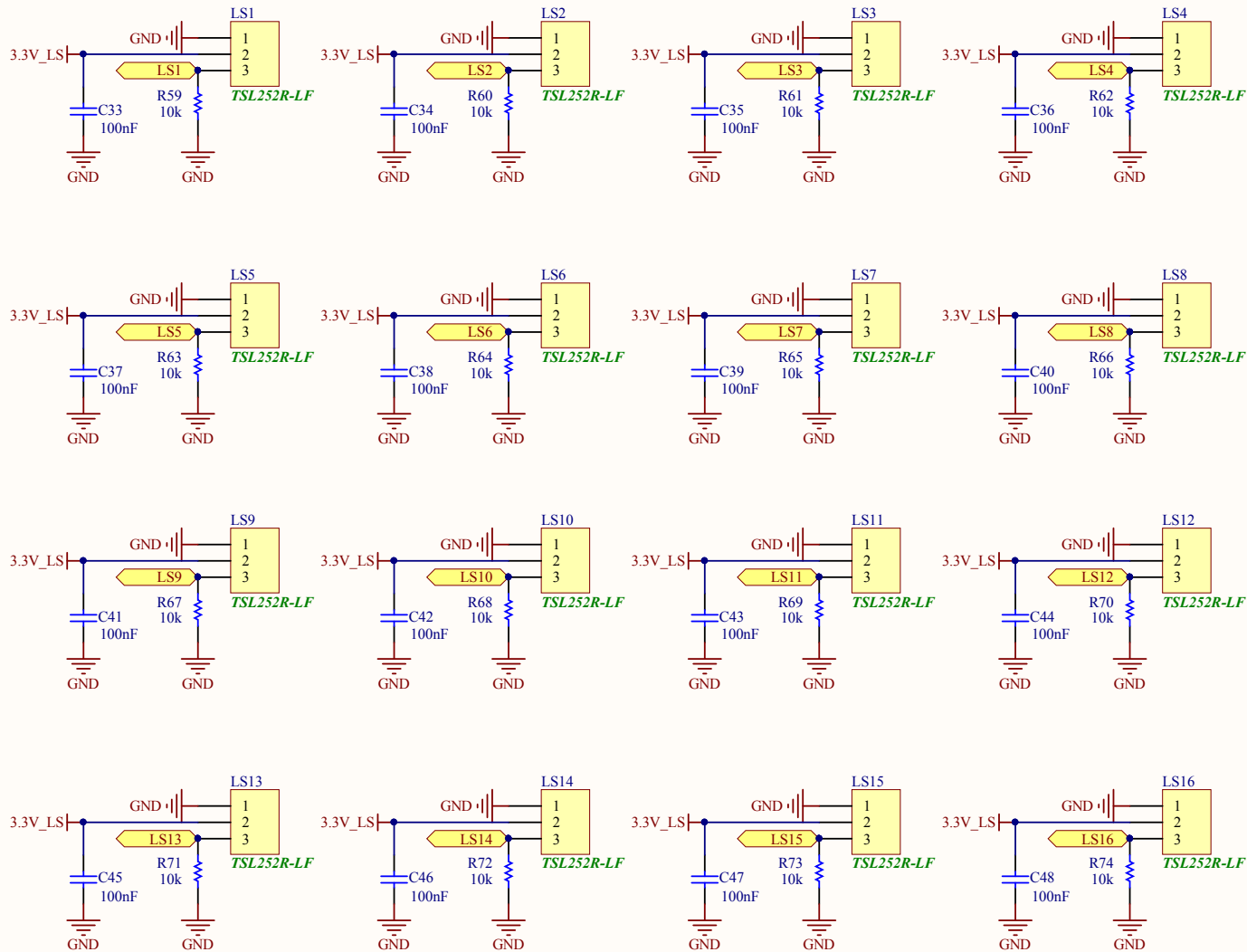
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Power Supply.SchDoc		
Size	Number	Revision
A4	7	B
Date:	3/30/2015	Sheet of 13
File:	C:\Users\...\Power Supply.SchDoc	Drawn By: Nick D'Ademo

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)

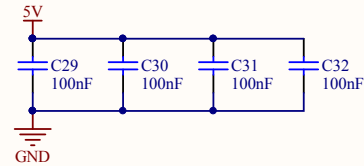
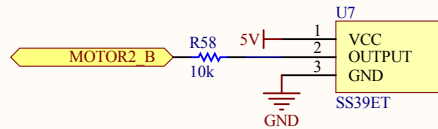
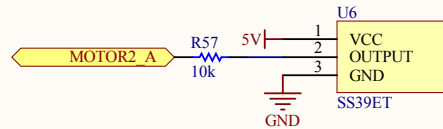
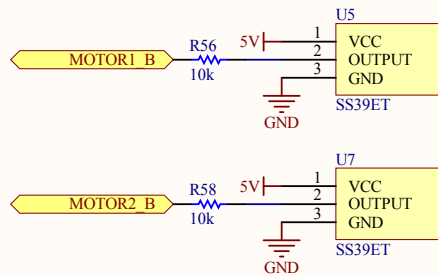
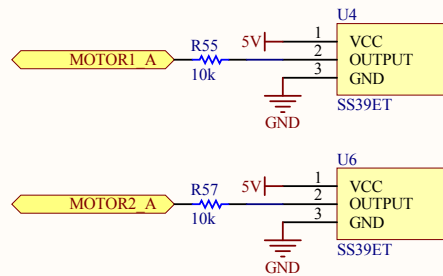
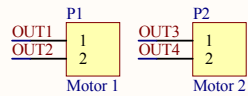
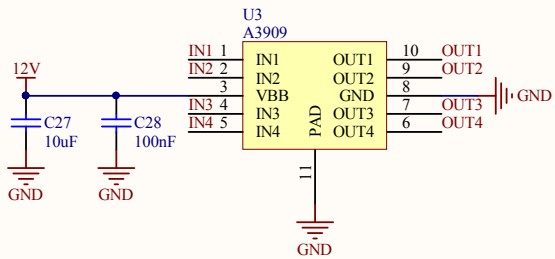
Only install R59 to R74 if Light-to-Voltage parts are used.



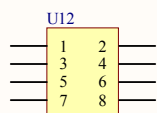
Title Light Sensors.SchDoc		
Size A4	Number 8	Revision B
Date: 3/30/2015		Sheet of 13
File: C:\Users\...\Light Sensors.SchDoc		Drawn By: Nick D'Ademo

MOTOR1 1 IN1
MOTOR1 2 IN2

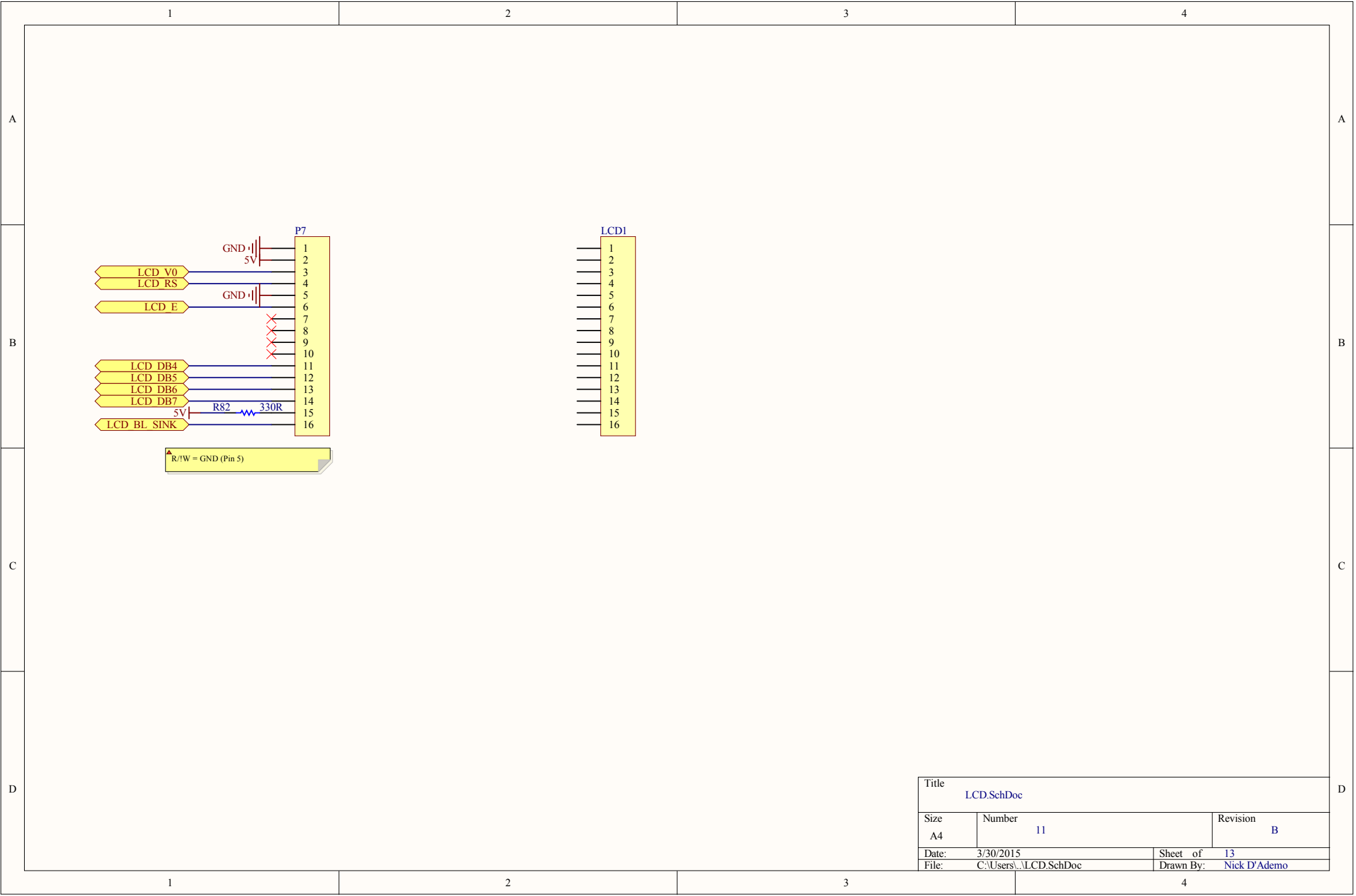
MOTOR2 1 IN3
MOTOR2 2 IN4



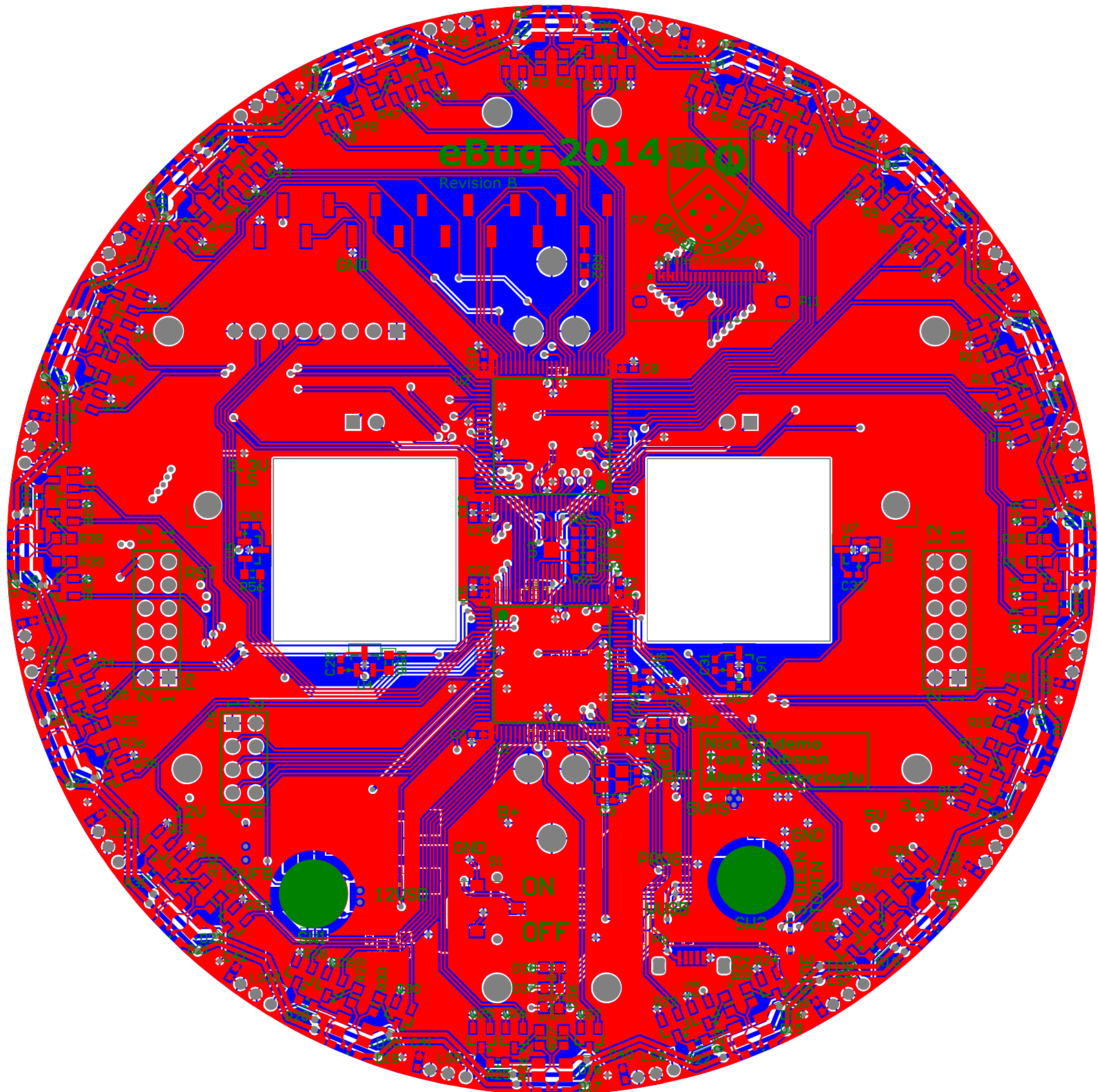
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Size A4	Number 9	Revision B
Date: 3/30/2015	Sheet of 13	
File: C:\Users\...\DC Motors.SchDoc	Drawn By: Nick D'Ademo	



Title				Wireless.SchDoc			
Size A4		Number 10			Revision B		
Date: 3/30/2015				Sheet of 13			
File: C:\Users\... Wireless SchDoc				Drawn By: Nick D'Ademo			



Title Expansion Header.SchDoc		
Size A4	Number 13	Revision B
Date: 3/30/2015	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 - LM6212B1236MG-T - CAPACITOR CERAMIC 22UF, 10V, X5R, 0805	C51	CAPC2012N	2	22uF
TAIYO YUDEN - LM6212 B106MG-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, D32, D34, D36, D38, D30, D32	OVSRRGBCC3_SI DE	16	1.2, 2nF
OPTEK - 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-CKX1NLG1887R453 - 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-E3/5T7 - 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	6.8uH
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	P5	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	P7	C-MODIFIED SAMTEC-SSW-116-22-F-S-V5	1	
SAMTEC - SSW-116-22-F-S-V5 - Conn Socket Strip SKT 16 POS 2.54mm Solder ST SMD Tube	P8	HDR1X8	1	
MOLEX INC - 22-27-2081 - HEADER, SQUARE PIN, 0.1", 8WAY	P9, P10	SSW-106-01-X-D	2	
SAMTEC - SSW-106-01-T-D - SOCKET, 2.54MM, 2X6WAY	P11	FFC2810	1	
GLOBAL CONNECTOR TECHNOLOGY - FFC2810-24-T - FFC/FPC CONNECTOR, RECEPTACLE, 24POS, 1ROW	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		48	
FAIRCHILD SEMICONDUCTOR - BS5138 - MOSFET N-CH 50V 220MA SOT-23	Q49	SOT-6	1	
FAIRCHILD SEMICONDUCTOR - FDC6306P - MOSFET 2P-CH 20V 1.9A S5OT6	Q50, Q51	SOIC127P600-BAN	2	
VISHAY SILICONIX - SI4427BDY-ET-E3 - MOSFET P-CH 30V 9.7A B-SOIC	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	RES1608N	32	91R
Resistor, ±1%, 0.1W, 0603	R3, R6, R9, R12, R15, R18, R21, R24, R27, R30, R33, R36, R39, R42, R45, R48	RES1608N	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	RES1608N	22	10k
Resistor, ±1%, 0.1W, 0603	R51, R52, R78, R79, R80	RES1608N	5	470R
Resistor, ±1%, 0.1W, 0603	R53	RES1608N	1	1M
Resistor, ±1%, 0.1W, 0603	R54	RES1608N	1	470k
Resistor, ±1%, 0.1W, 0603	R75	RES1608N	1	698k
Resistor, ±1%, 0.1W, 0603	R76	RES1608N	1	82k
Resistor, ±1%, 0.1W, 0603	R77	RES1608N	1	51k
Resistor, ±1%, 0.1W, 0603	R81	RES1608N	1	2k
Resistor, ±1%, 0.1W, 0603	R82	RES1608N	1	330R
MURATA - NCF18XH103J03RB - THERMISTOR, NTC, 10K, 5%, SMD	RT1	RES1608N	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 - SS58T - 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	SOT95P230-3N	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 U3IONA3-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	