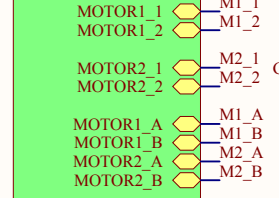


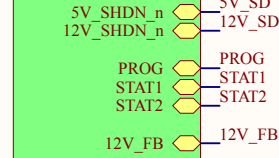
SS7

DC Motors.SchDoc



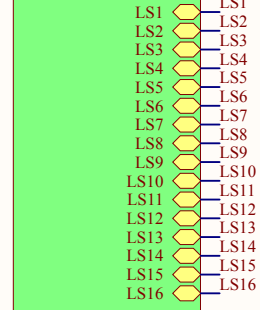
SS6

Power Supply.SchDoc



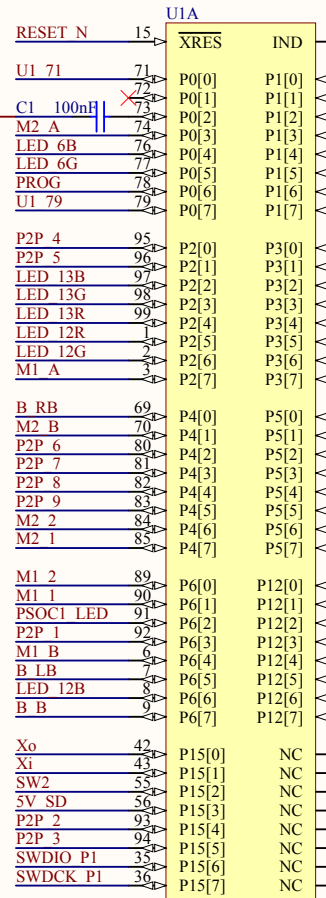
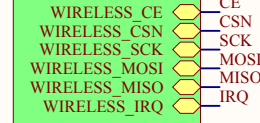
SS8

Light Sensors.SchDoc

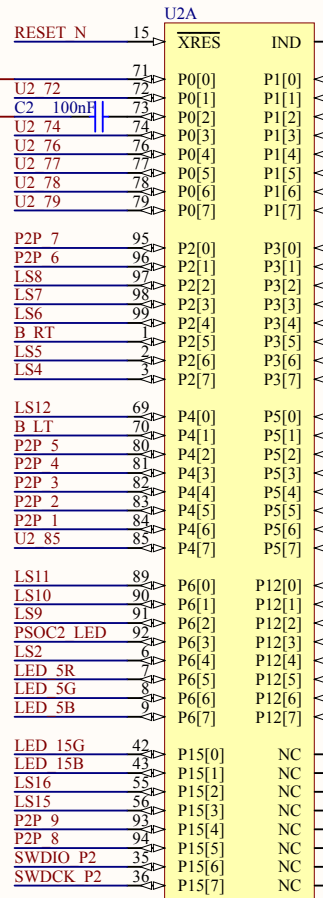


SS11

Wireless.SchDoc



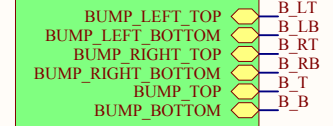
CY8C5888AXI-LP096



CY8C5888AXI-LP096

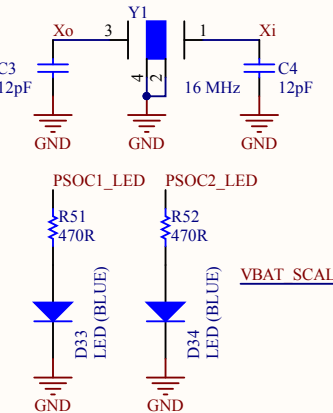
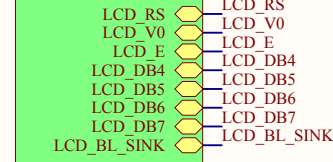
SS10

Bump Sensors.SchDoc



SS9

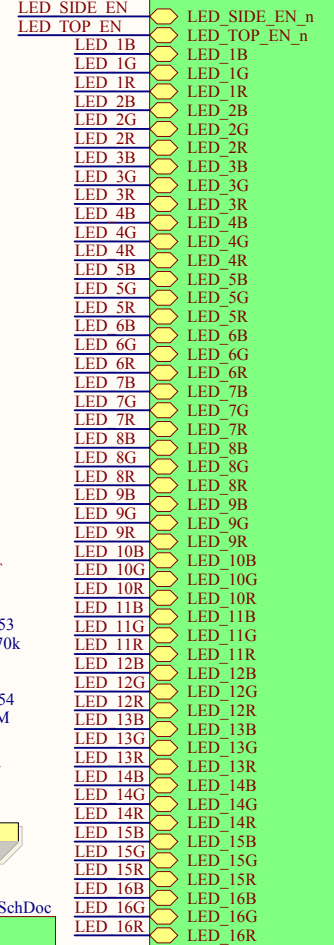
LCD.SchDoc



VBAT_SCALED = 0.68*VBAT

SS5

LEDs.SchDoc



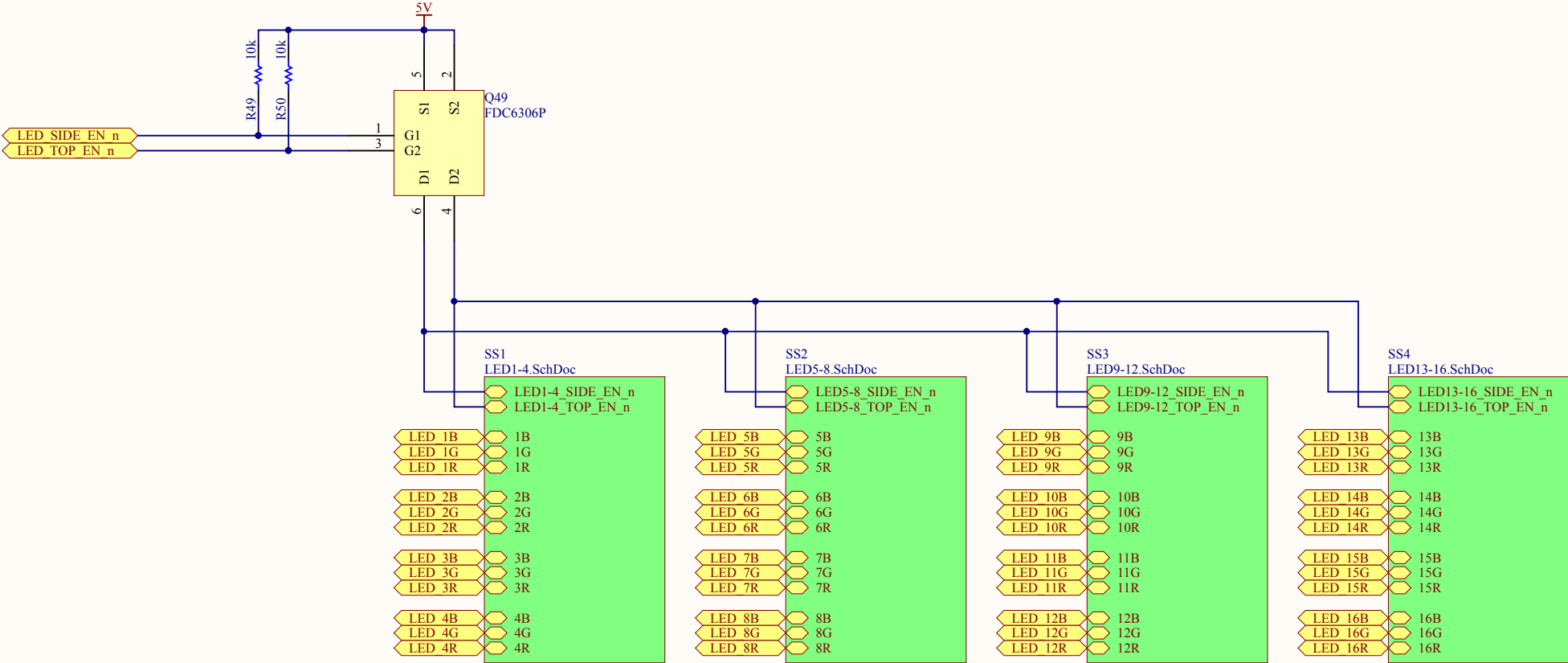
Title		
PSoC.SchDoc		
Size	Number	Revision
A4	1	A
Date:	19/12/2014	Sheet of 13
File:	C:\Users\...\PSoC.SchDoc	Drawn By: Nick D'Ademo

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

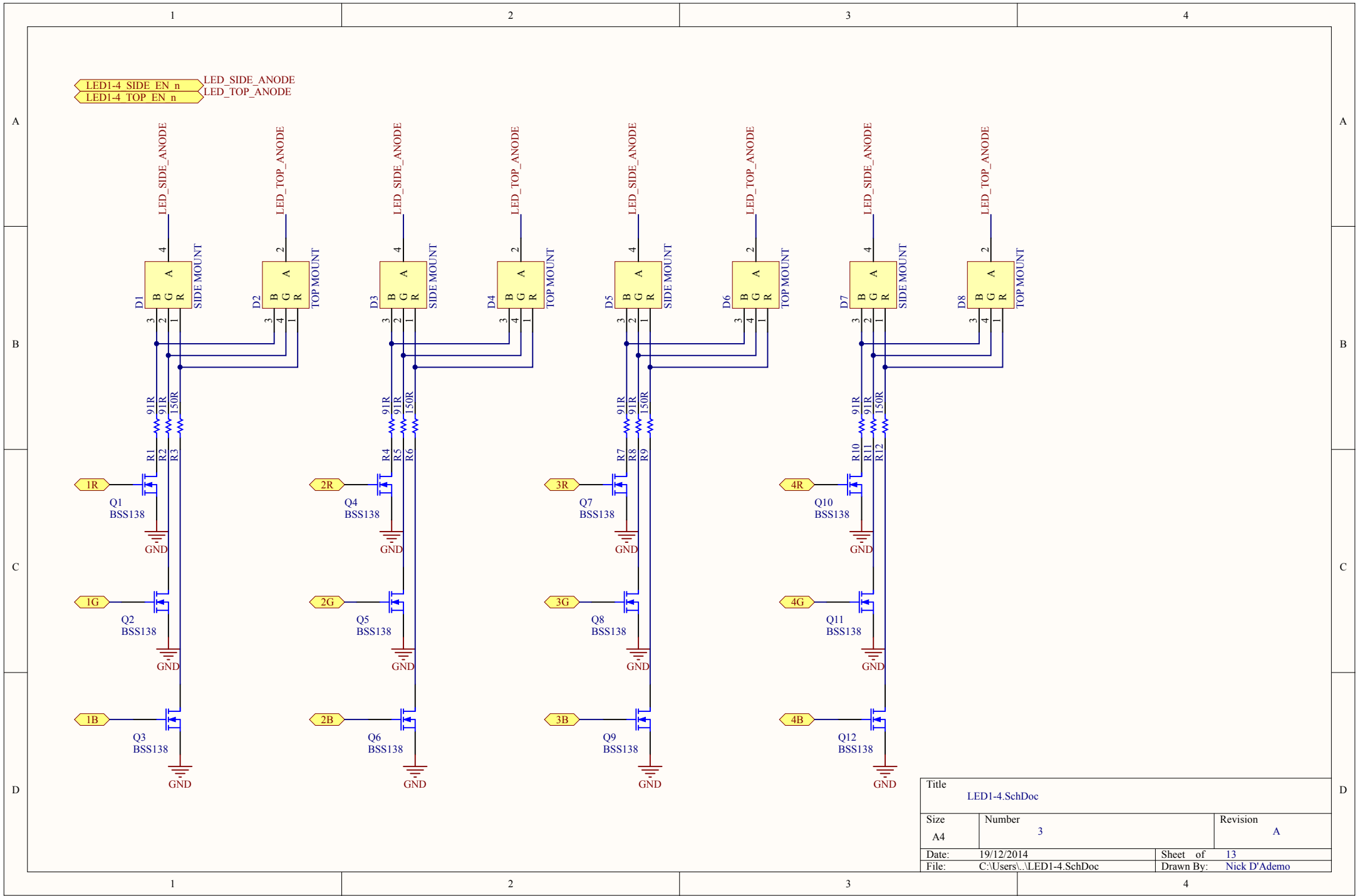
▲ SIDE LED:
Vf @ If=20mA (Min->Typ->Max):
RED: 1.8->2.0->2.4V
GREEN: 3.0->3.3->3.6V
BLUE: 3.0->3.3->3.6V

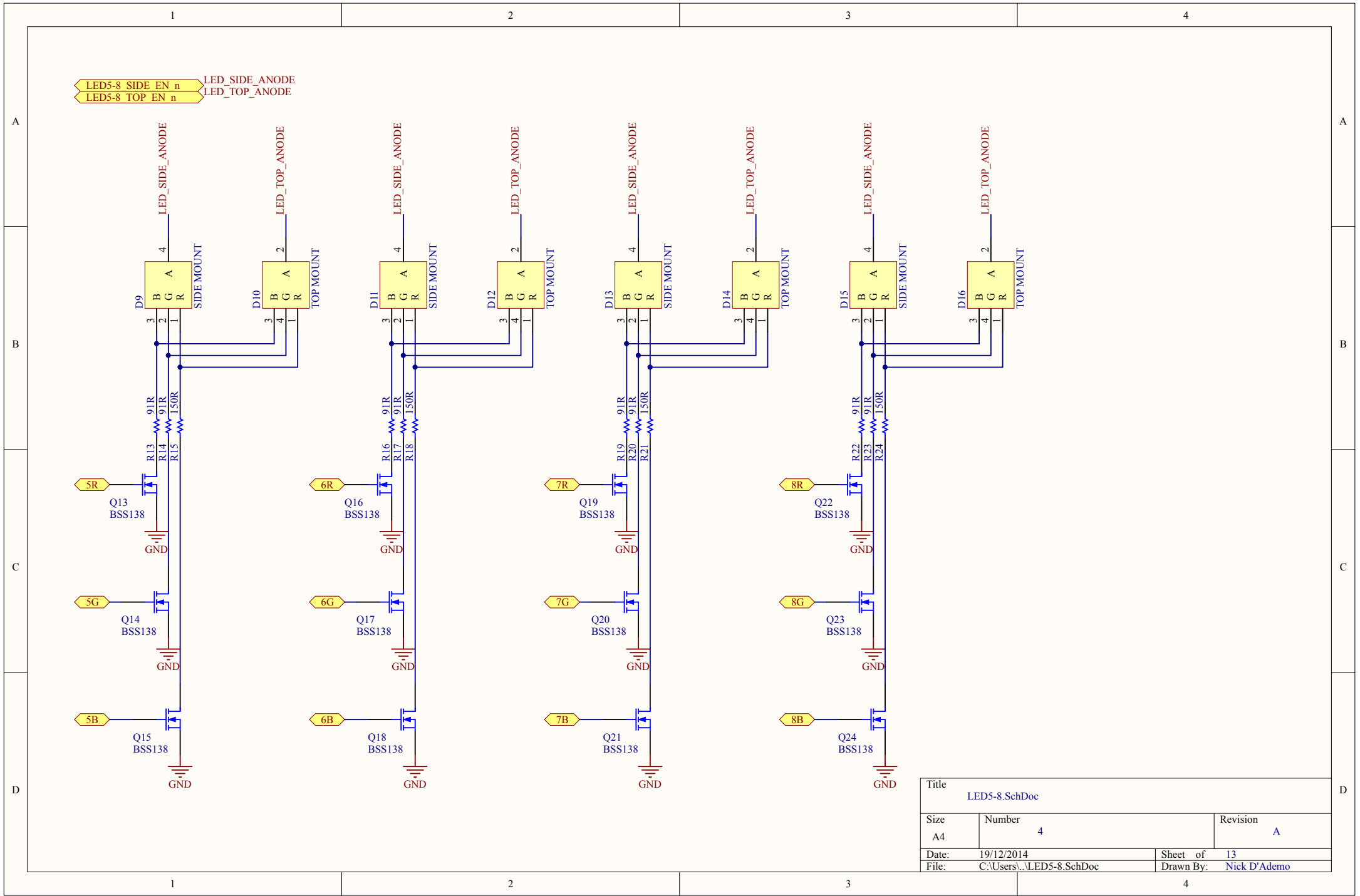
▲ TOP LED:
Vf @ If=20mA (Avg->Max):
RED: 2.0->2.6V
GREEN: 3.2->4.0V
BLUE: 3.2->4.0V

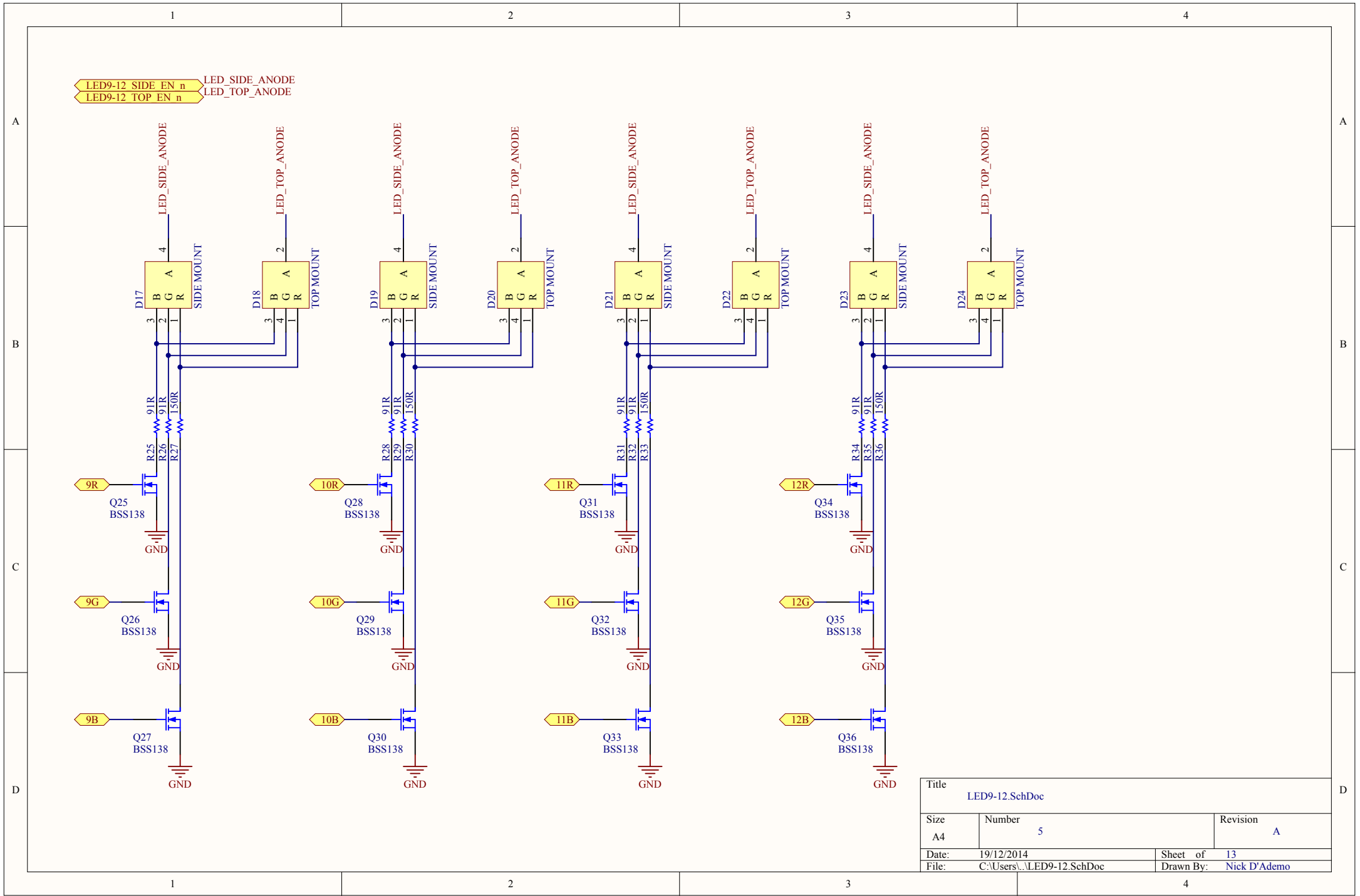
CLV1A-FKB-CJ1M1F1BB7R4S3: 675med Red, 1055med Green, 337med Blue
CLV1A-FKB-CK1N1G1BB7R4S3: 730med Red, 1150med Green, 365med Blue



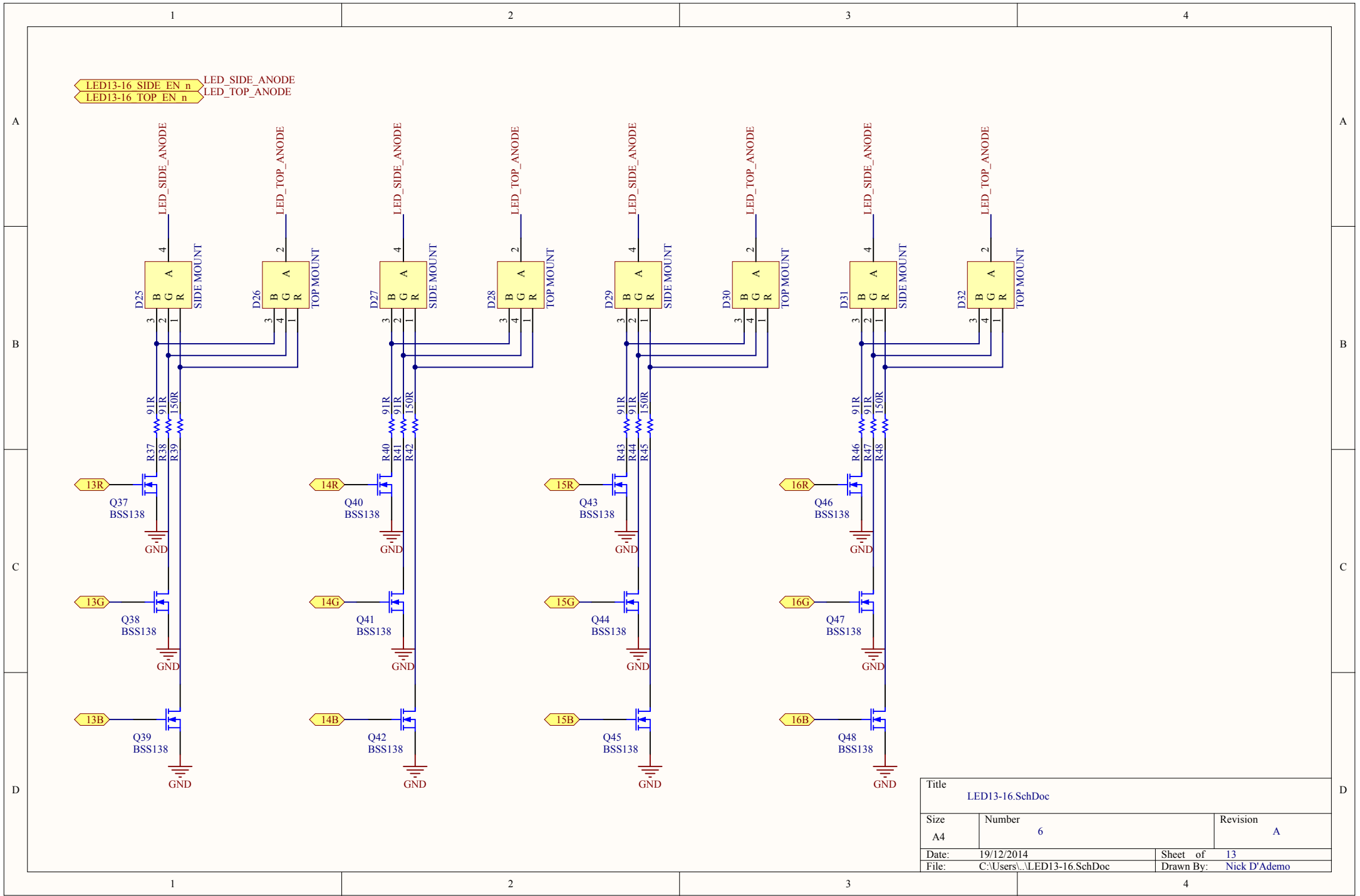
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Size A4	Number 2	Revision A	
Date:	19/12/2014	Sheet of	13
File:	C:\Users\...\LEDs.SchDoc	Drawn By:	Nick D'Ademo

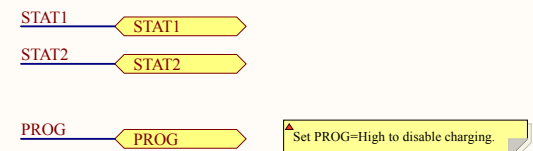
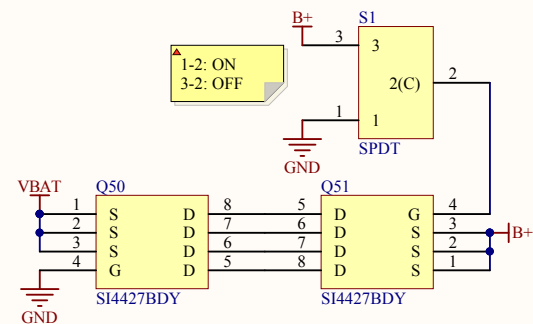
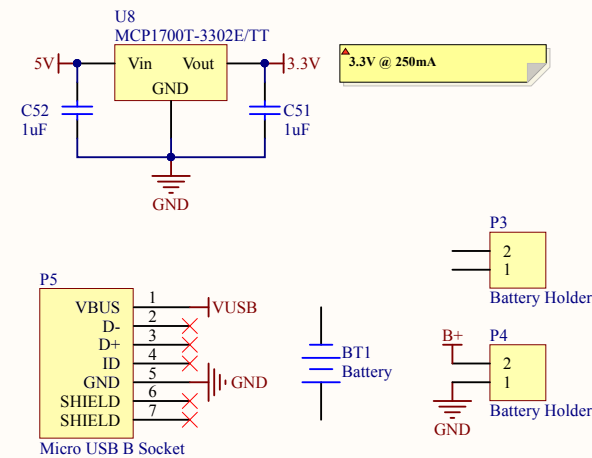
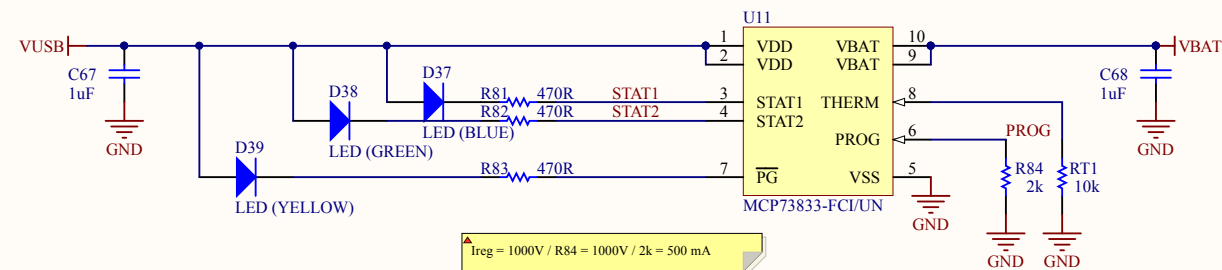
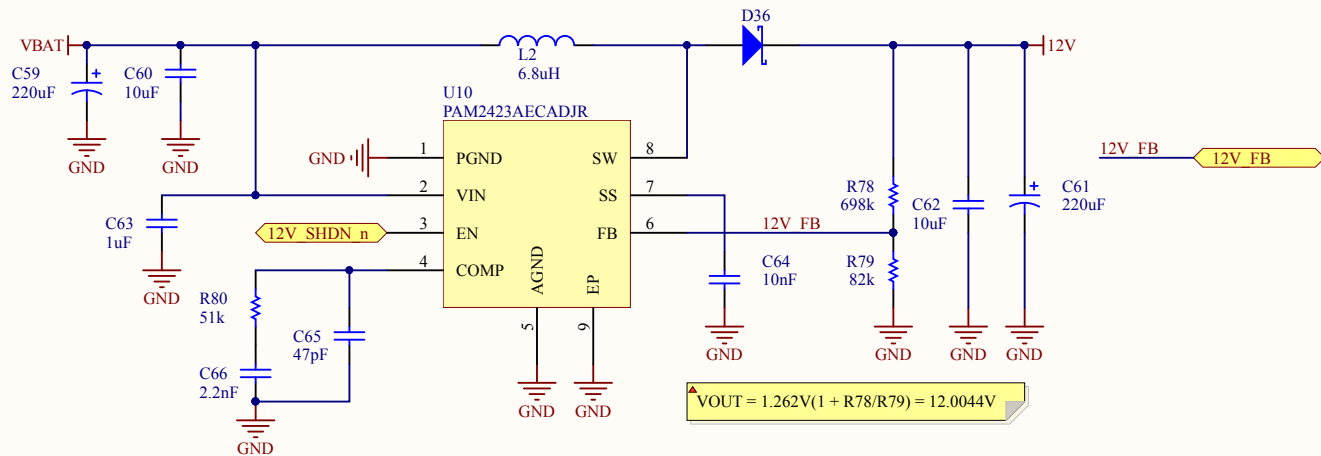
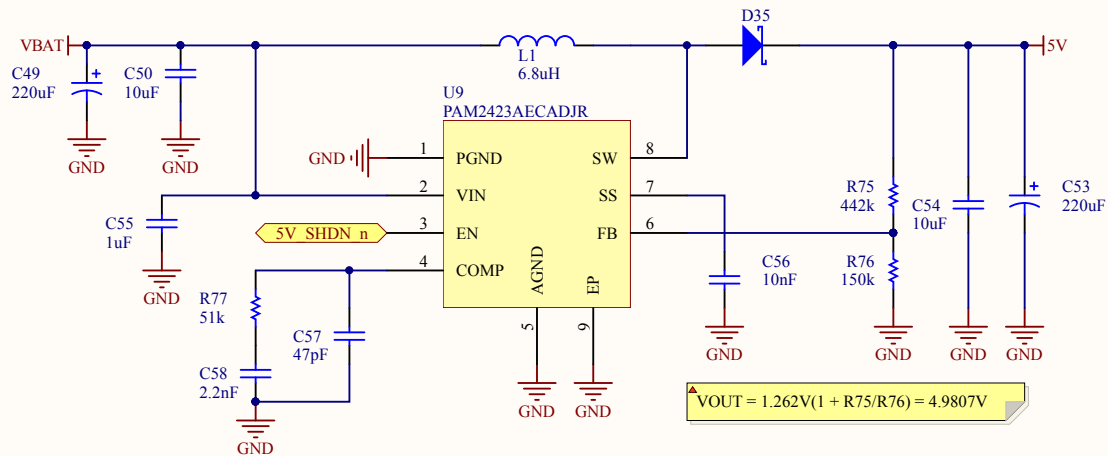






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LED9-12.SchDoc		
Size	Number	Revision
A4	5	A
Date:	19/12/2014	Sheet of 13
File:	C:\Users\...\LED9-12.SchDoc	Drawn By: Nick D'Ademo





Title Power Supply.SchDoc		
Size A4	Number 7	Revision A
Date: 19/12/2014	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

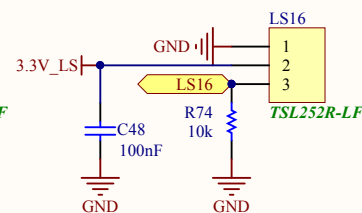
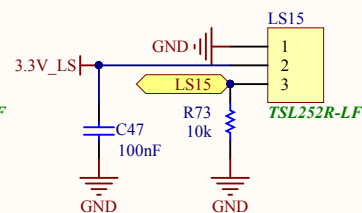
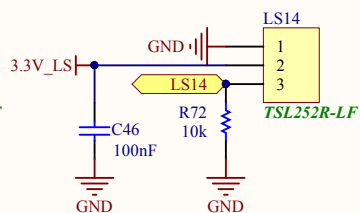
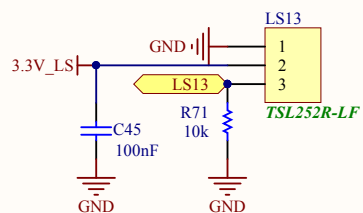
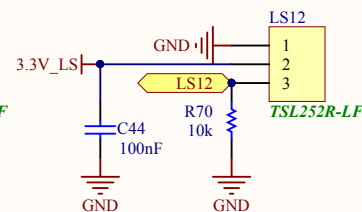
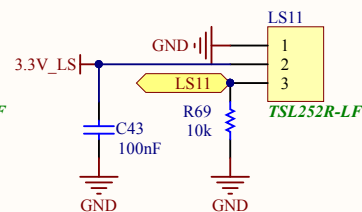
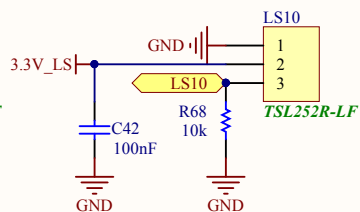
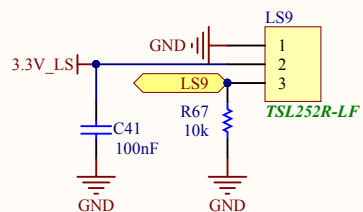
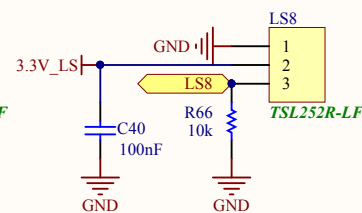
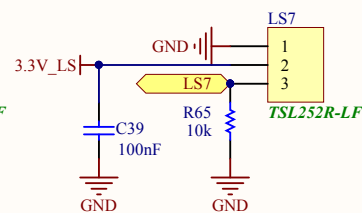
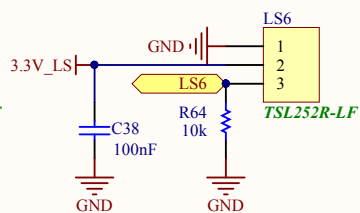
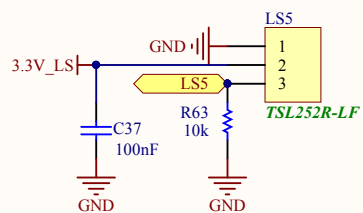
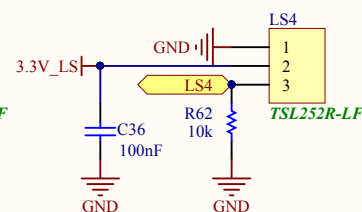
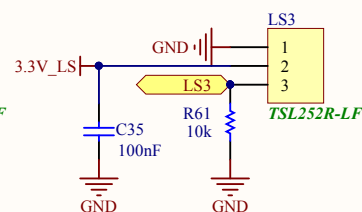
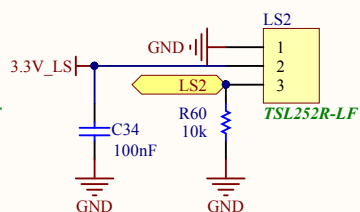
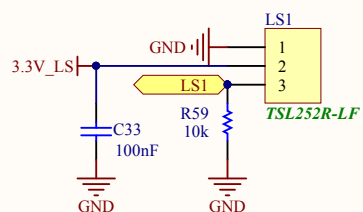
Light-to-Frequency parts:

TSL235
TSL237
TSL245 (IR light)

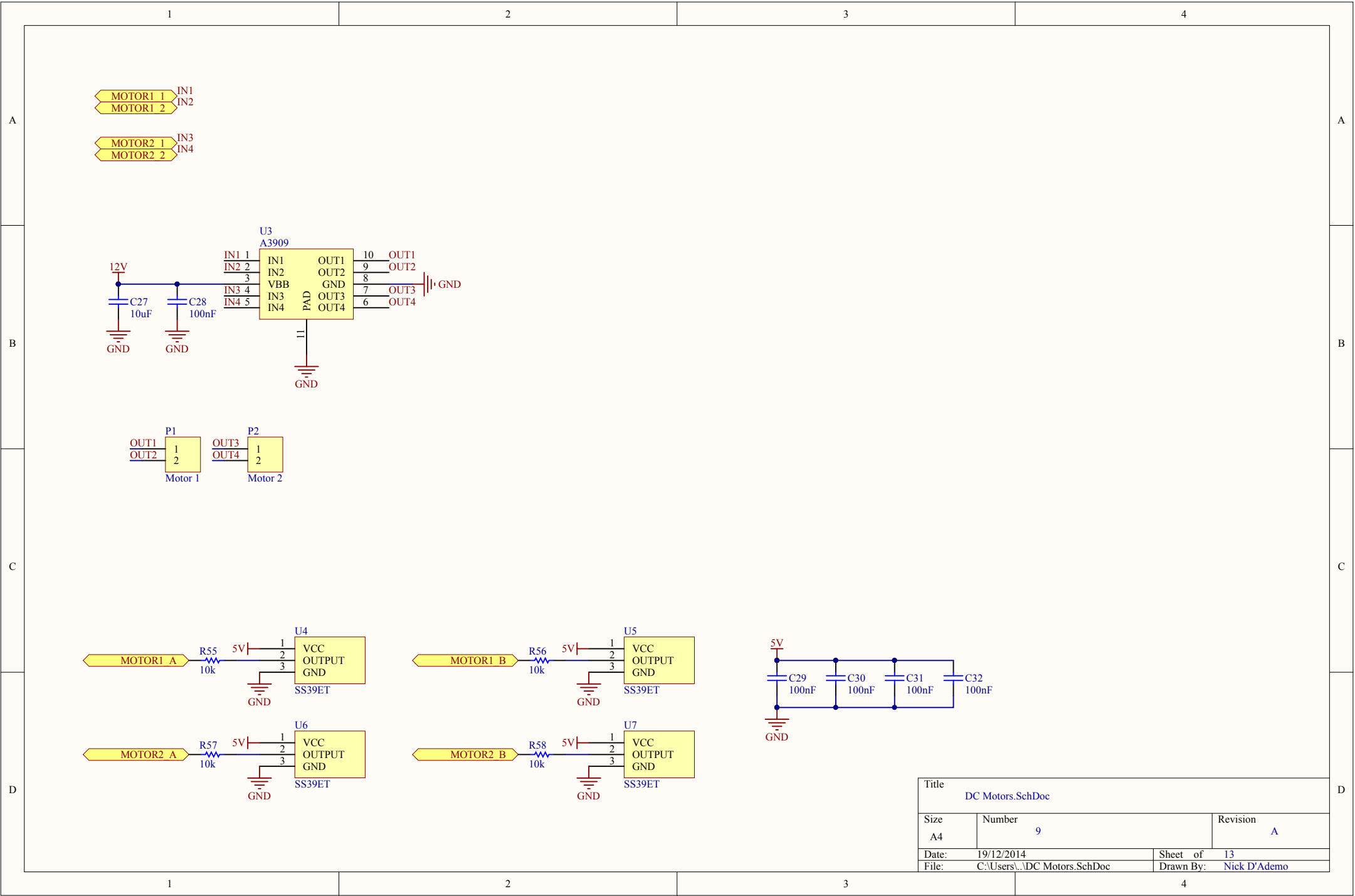
Light-to-Voltage parts:

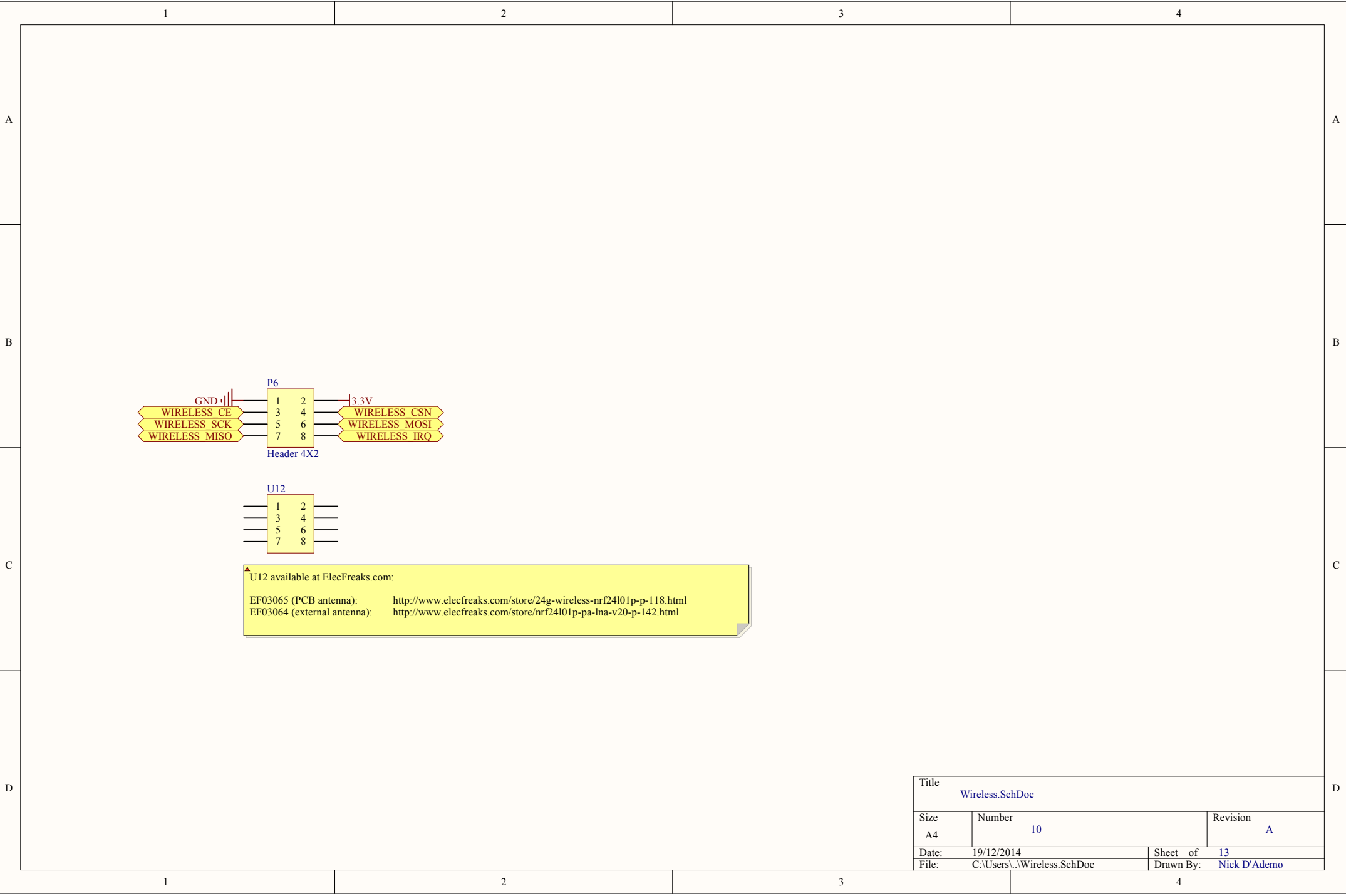
TSL125
TSL135
TSL145
TSL250R
TSL251R
TSL252R
TSL253R
TSL254R
TSL257
TSL260R (IR light)
TSL261R (IR light)
TSL262R (IR light)
TSL267 (IR light)

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

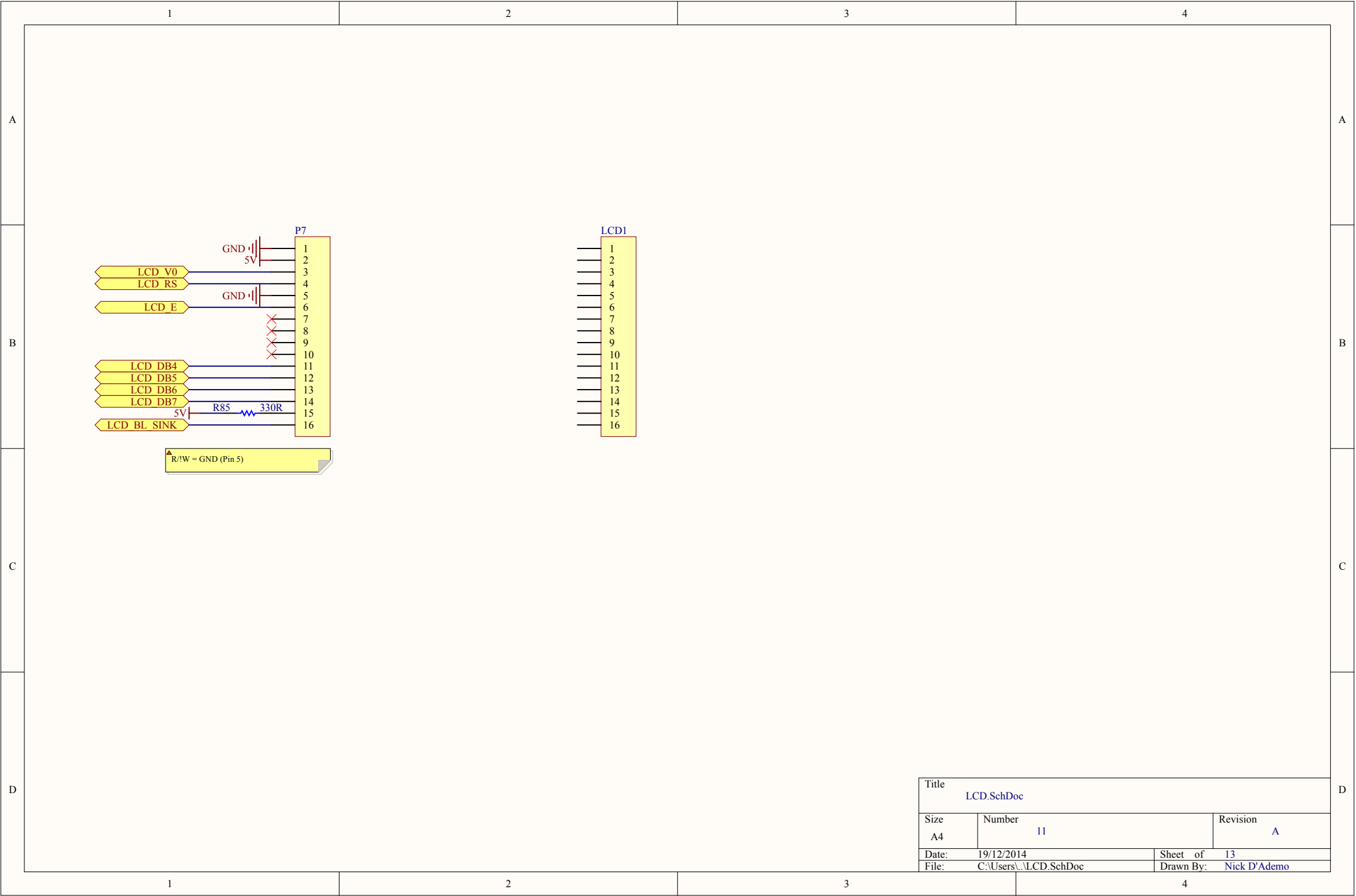


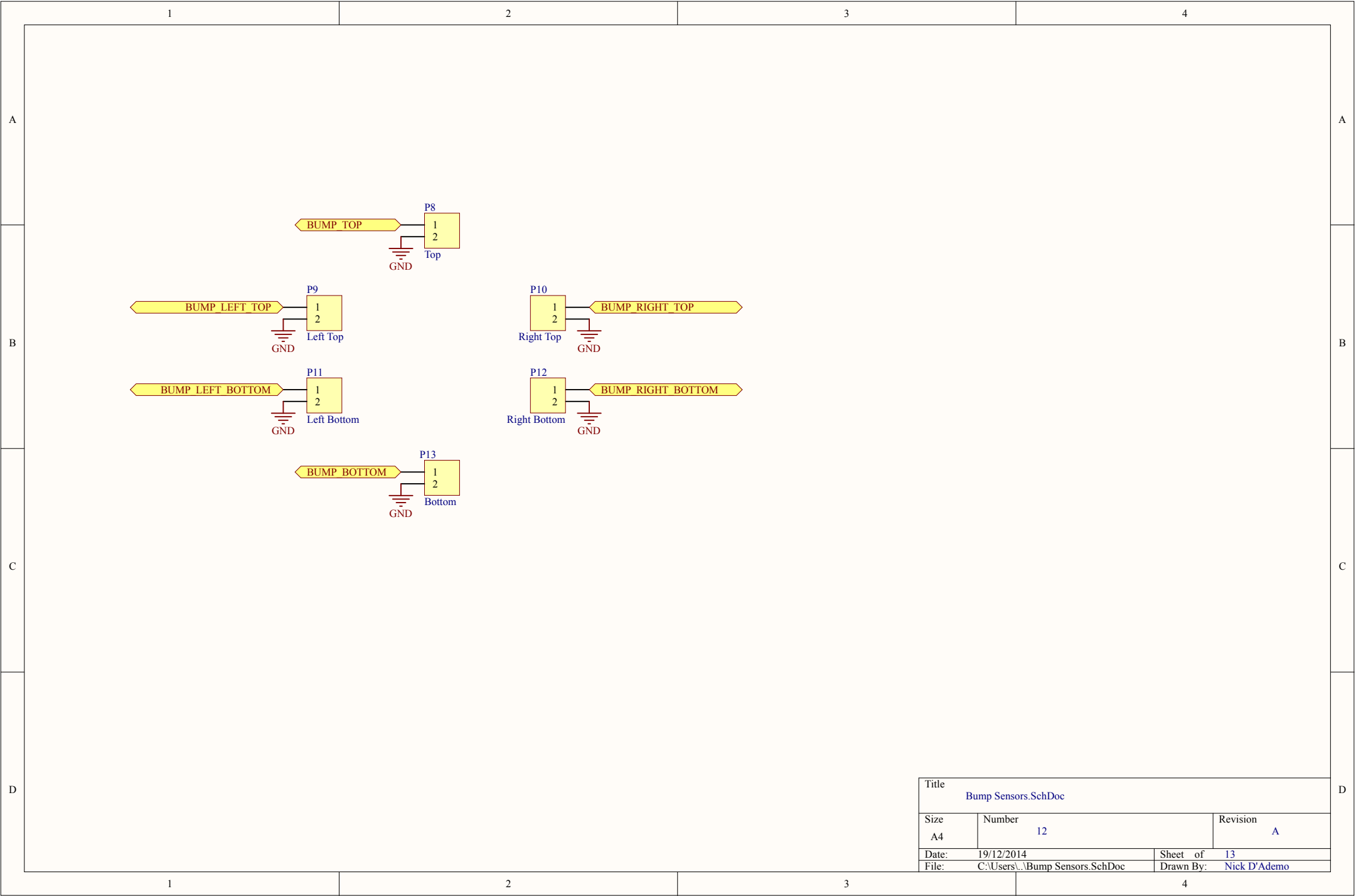
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File: C:\Users\...\Light Sensors.SchDoc	Drawn By: Nick D'Ademo	

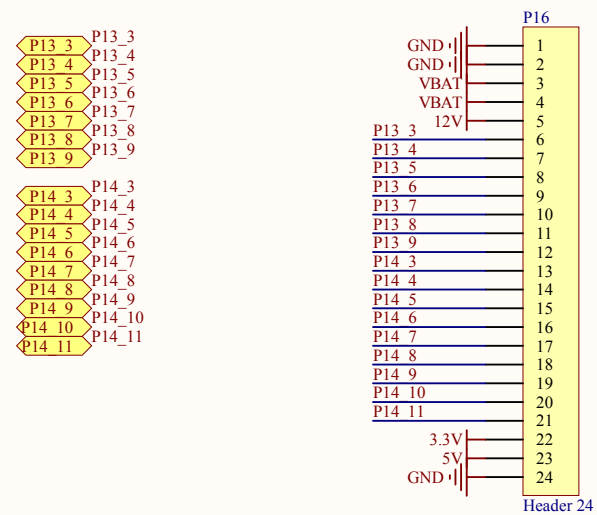
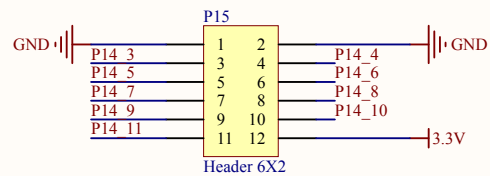
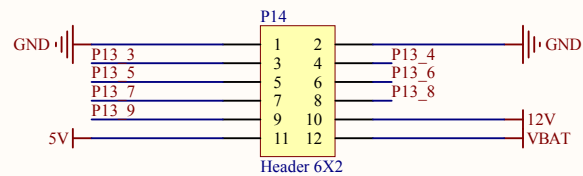




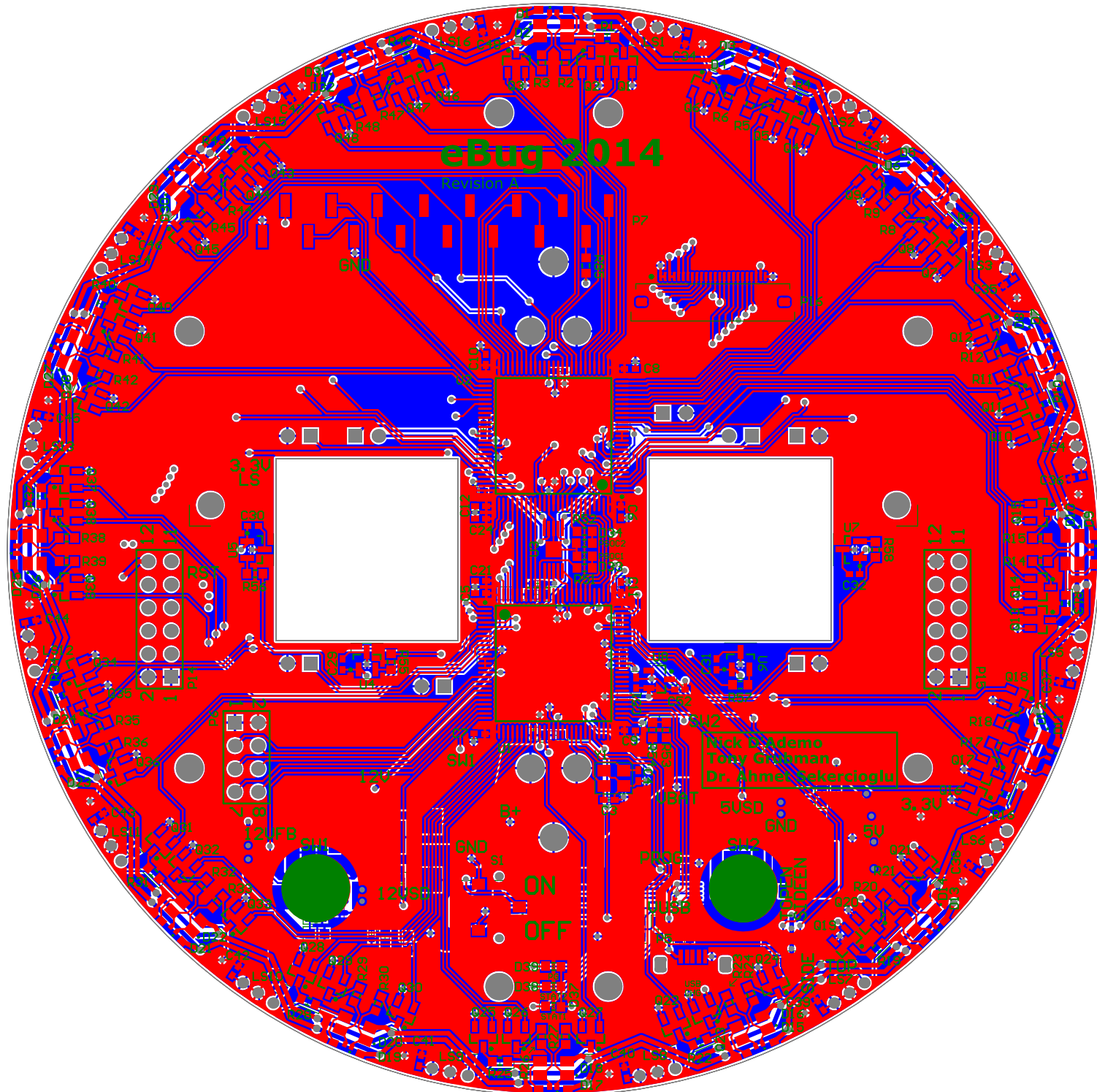
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Wireless.SchDoc			
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Date:	19/12/2014	Sheet of	13
File:	C:\Users\...\Wireless.SchDoc	Drawn By:	Nick D'Ademo







Title Expansion Header.SchDoc			
Size A4	Number 13	Revision A	
Date:	19/12/2014	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	B11		1	
Capacitor, X7R, ±10%, 16V, 0402	C1, C2, C5, C6, C7, C8, C9, C10, C11, C12, C16, C19, C22, C23, C25, C26, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48	CAPC1005N	37	100nF
Capacitor, NP0, ±2%, 25V, 0402	C3, C4	CAPC1005N	2	12pF
Capacitor, X5R, ±10%, 10V, 0402	C13, C14, C15, C17, C18, C20, C21, C24, C51, C52, C55, C63, C67, C68	CAPC1005N	14	1uF
TAIYO YUDEN - EMK107BBJ106MA-T - CAP CER 10uF 16V 20% X5R 0603	C27, C50, C54, C60, C62	CAPC1608N	5	10uF
HEMET - T491D227K016AT - CAP TANT 220uF 16V 10% 2917	C49, C53, C59, C61	TC7349-2917	4	220uF
Capacitor, X7R, ±10%, 16V, 0402	C56, C64	CAPC1005N	2	10nF
Capacitor, NP0, ±5%, 25V, 0402	C57, C65	CAPC1005N	2	47pF
Capacitor, X7R, ±10%, 16V, 0402	C58, C66	CAPC1005N	2	2.2nF
OPTIK - OV5SRGBCC3 - LED RED/GRN/BLU/E 1204 SMD	D1, D3, D5, D7, D9, D11, D13, D15, D17, D19, D21, D23, D25, D27, D29, D31	OV5SRGBCC3, SMD	16	
CREE - CLV1A-FKB-CKIN1G18B7R453 - LED RGB 3-IN-1 3.2X2.8MM 4PLCC	D3, D4, D6, D8, D10, D12, D14, D16, D18, D20, D22, D24, D26, D28, D30, D32	PLCC4	16	
ROHM - 5M1E12BC7T786Q - LED, 0603, LO-CUR, BLU	D33, D34, D37	LED_0603	3	
VISHAY - SS34-E3/GT - DIODE SCHOTTKY 40V 3A DO214AB	D35, D36	DO-214AB	2	
KINGBRIGHT - KP-1608MGC - LED, 0603, GREEN, 70MCD, 568NM	D38	LED_0603	1	
KINGBRIGHT - KP-1608SYC - LED, SMD, 0603, YELLOW	D39	LED_0603	1	
BOURNS - SRP702BA-6R8M - FIXED IND 6.8uH 4.5A 60 MOHM SMD	L1, L2	SRP702BA	2	6.8uH
SHENZHEN EONE ELECTRONICS CO.,LTD - NM120424015 - EONE High 16x2 (1602) Characters LCD	LCD1		1	
AMS - TSL252R-LF - IC LIGHT TO VOLTAGE SENSOR 3PIN	LS1, LS2, LS3, LS4, LS5, LS6, LS7, LS8, LS9, LS10, LS11, LS12, LS13, LS14, LS15, LS16	AMS_5_3PIN	16	
MOLEX INC - 0022272021 - CONN HEADER 2POS .100 VERT TIN	P1, P2, P8, P9, P10, P11, P12, P13	HDR1X2	8	
KEYSTONE ELECTRONICS - 54 - BATTERY CLIP 18MM 18650 CELL	P3, P4	54	2	
GLOBAL CONNECTOR TECHNOLOGY - USB3140-30-0170-1-C - CONNECTOR, USB 2.0 MICRO B, RCPT, SPOS, SMT	P5	USB3140-30-0170-1-C_MODIFIED	1	
SAMTEC - SSW-116-22-F-S-V5 - Conn Socket Strip SKT 16 POS 2.54mm Solder SV SMD Tube	P7	Samtec-SSW-116-22-F-S-V5	1	
SAMTEC - SSW-106-01-T-D - SOCKET, 2.54MM, 2X6WAY	P14, P15	SSW-106-01-X-D	2	
GLOBAL CONNECTOR TECHNOLOGY - FFC2810-24-T - FFC/FFC CONNECTOR, RECEPTACLE, 24POS, 1ROW	P16	FFC2810	1	
FAIRCHILD SEMICONDUCTOR - BSS138 - MOSFET N-CH 50V 220MA SOT-23	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	SOT95P230-3N	48	
FAIRCHILD SEMICONDUCTOR - FDC6306P - MOSFET P-CH 20V 1.9A SSO16	Q49	SOT-6	1	
VISHAY SILICONIX - SI4427BDY-IT-E3 - MOSFET P-CH 30V 9.7A B-50IC	Q50, Q51	SGHC127P600-BAN	2	
Resistor, ±1%, 0.1W, 0603	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, R16, 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		
Resistor, ±1%, 0.1W, 0603	R51, R52, R81, R82, R83	RES1608N	5	470R
Resistor, ±1%, 0.1W, 0603	R53	RES1608N	1	470k
Resistor, ±1%, 0.1W, 0603	R54	RES1608N	1	1M
Resistor, ±1%, 0.1W, 0603	R75	RES1608N	1	442k
Resistor, ±1%, 0.1W, 0603	R76	RES1608N	1	150k
Resistor, ±1%, 0.1W, 0603	R77, R80	RES1608N	2	51k
Resistor, ±1%, 0.1W, 0603	R78	RES1608N	1	698k
Resistor, ±1%, 0.1W, 0603	R79	RES1608N	1	82k
Resistor, ±1%, 0.1W, 0603	R84	RES1608N	1	2k
Resistor, ±1%, 0.1W, 0603	R85	RES1608N	1	330R
MURATA - NCP18BH103J038B - THERMISTOR, NTC, 10K, 5%, SMD	R71	RES1608N	1	10k
COPAL ELECTRONICS INC - CL-S8-128-01T - SWITCH SLIDE SPOT 0.2A GULL 12V P50k, Programmable System-on-Chip, 256 KB Flash, 62 GPIOs, 1.71 to 5.5 V, 10Pin TQFP (AX100), Tray	S1	CL-S8-128-01T	1	
ALLEGRO - A3909GLYR-T - IC MOTOR DRIVER PAIR 10MSOP	U1, U2	CYP-AX100_L	2	
HONEYWELL S&C - SS39ET - SENSOR, HALL EFFECT, LINEAR, SOT23-3	U3	MSOP-10	1	
MICROCHIP - MCP1700T-3302E/TT - IC REG LDO 3.3V 0.25A SOT23-3	U4, U5, U6, U7	SOT23-3N	4	
DIODES INCORPORATED - PAM2423AECADJR - IC REG BOOST ADJ 5.5A 850IC	U8	SOT95P230-3N	1	
MICROCHIP - MCP73833-FCU/LN - IC LU-I2C/LU-POLY CTRLR 10MSOP	U9, U10	SOIC127P600-RON	2	
NORDIC SEMICONDUCTOR - nRF24L01+	U11	MSOP-UIN10 N	1	
NDK - NQ3225SA-16.000MHZ-STD-CSR-1 - CRYSTAL 16MHZ 8PF SMD	U12	HDR204	1	
	Y1	NQ3225SA	1	