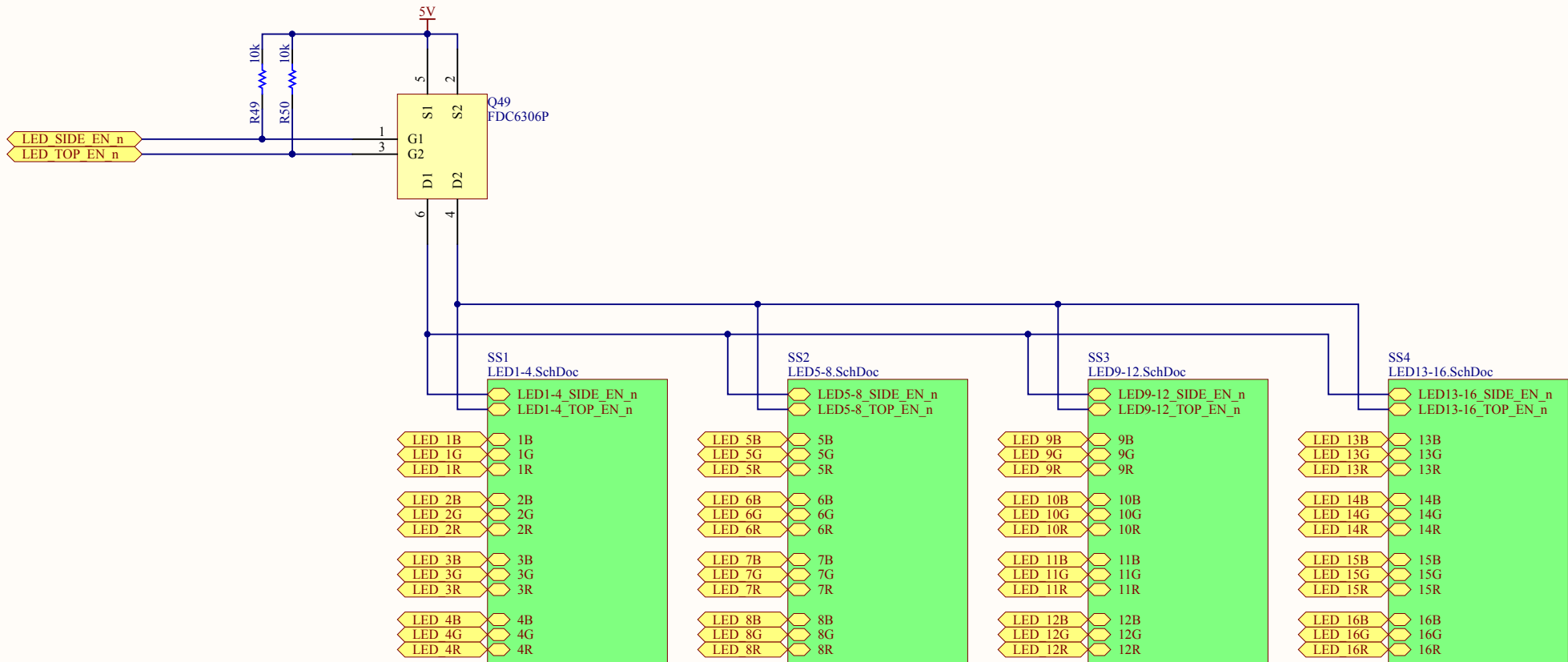


▲ All LEDs have been set to 20mA forward current for 5V via:
RED: R=150R
GREEN: R=91R
BLUE: R=91R

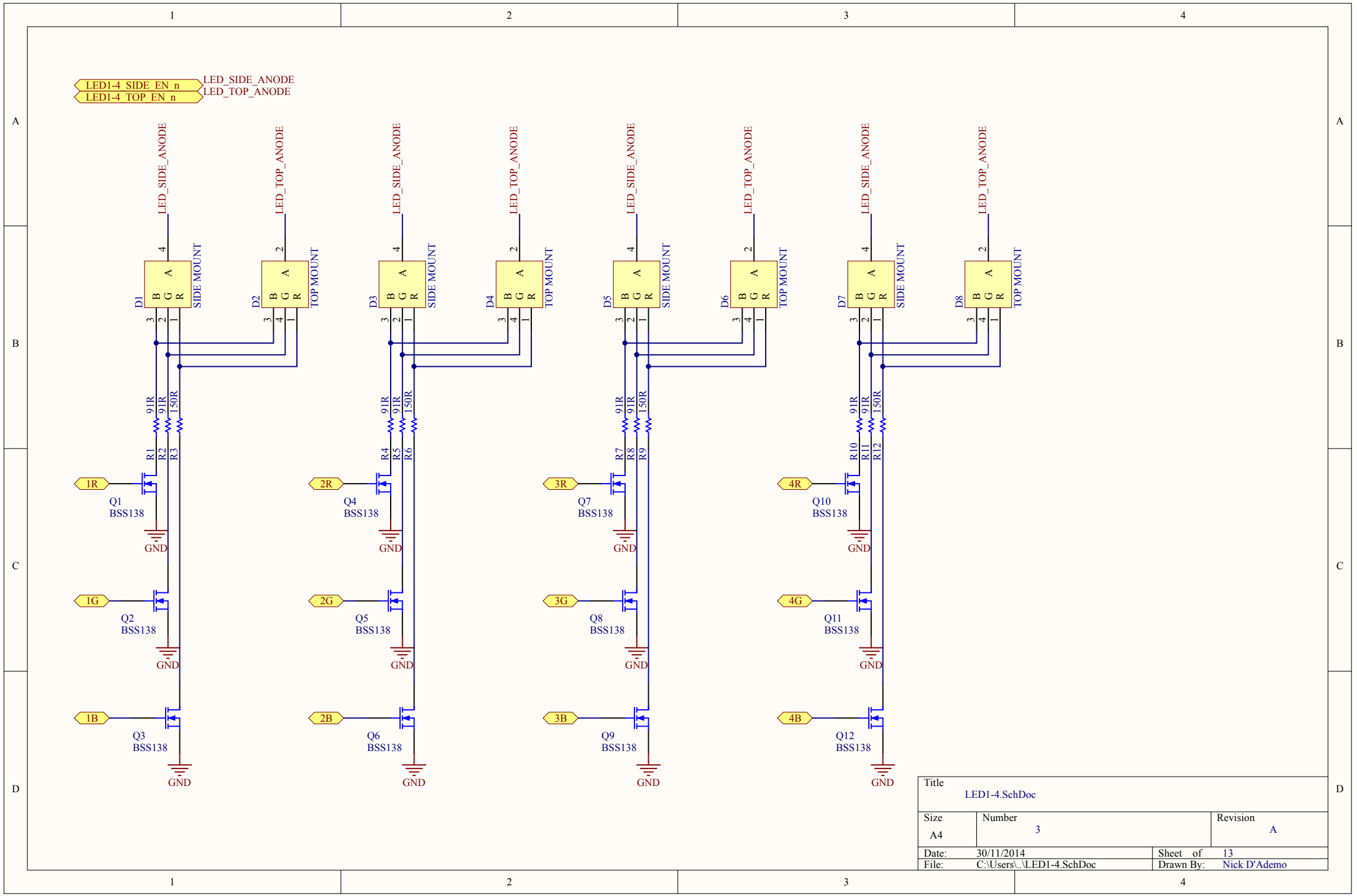
▲ SIDE LED:
Vf @ If=20mA (Min->Typ->Max):
RED: 1.8->2.0->2.4V
GREEN: 3.0->3.3->3.6V
BLUE: 3.0->3.3->3.6V

▲ 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



Title		
LEDs.SchDoc		
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A4	2	A
Date:	30/11/2014	Sheet of 13
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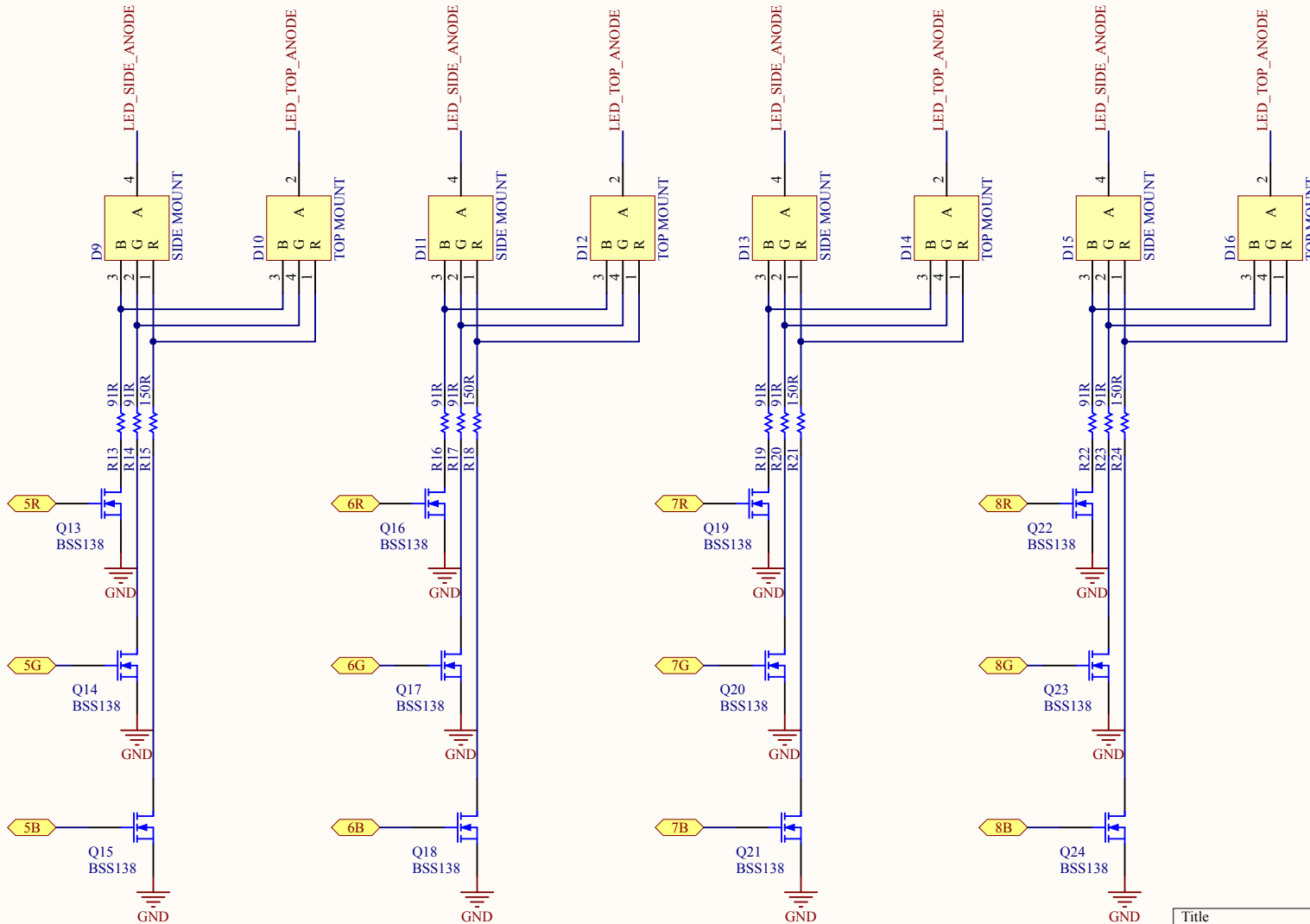
1

2

3

4

LED5-8 SIDE EN n LED_SIDE_ANODE
LED5-8 TOP EN n LED_TOP_ANODE



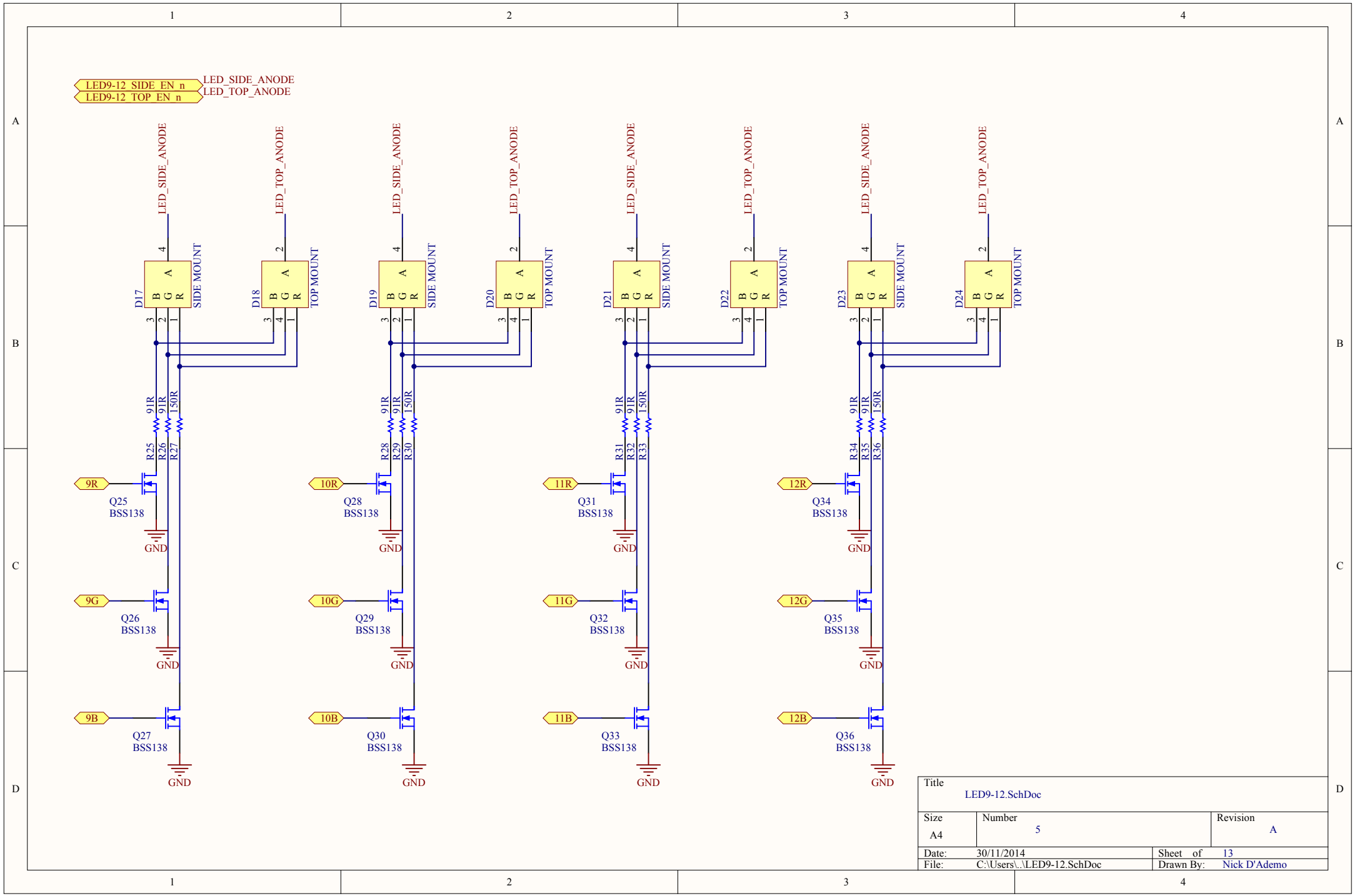
Title LED5-8.SchDoc		
Size A4	Number 4	Revision A
Date: 30/11/2014	Sheet of 13	
File: C:\Users\...\LED5-8.SchDoc	Drawn By: Nick D'Ademo	

1

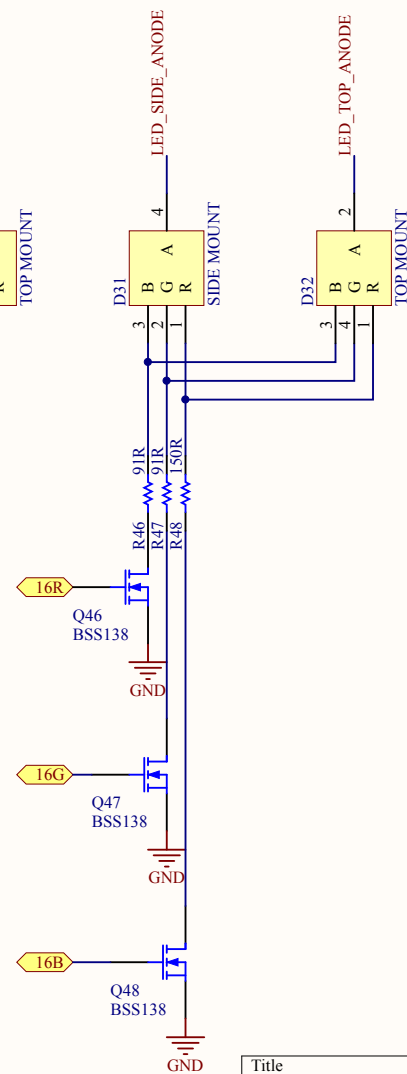
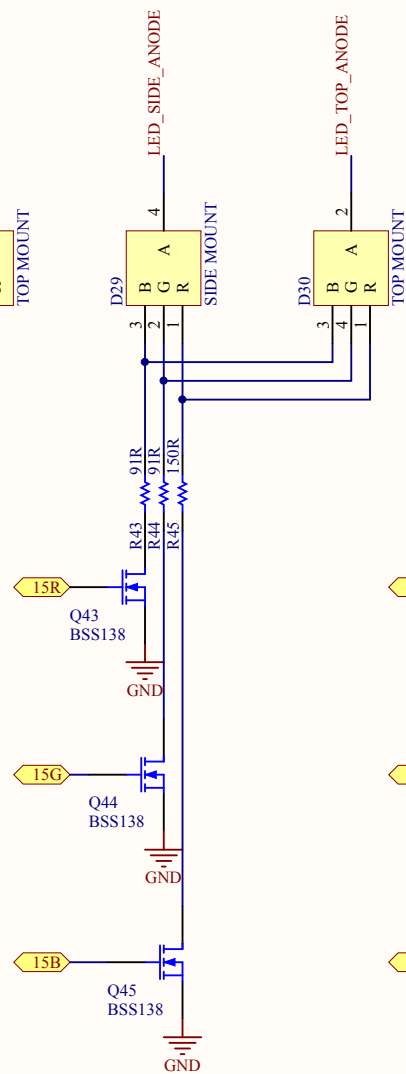
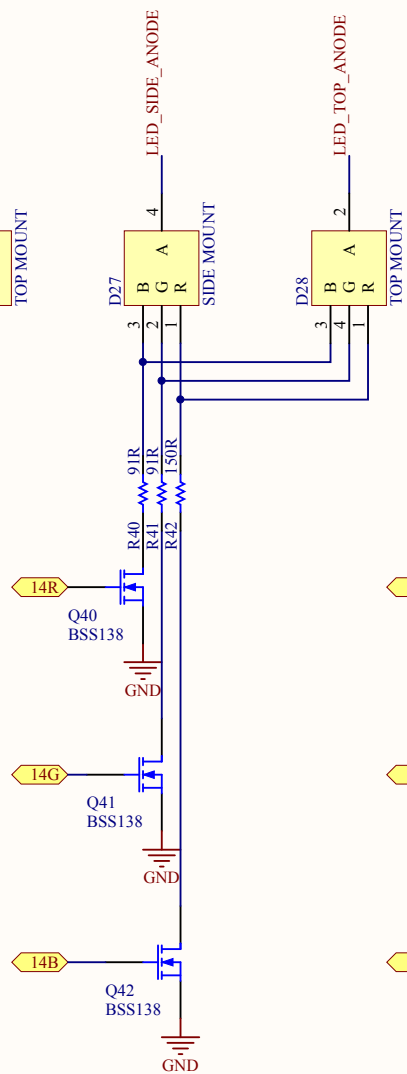
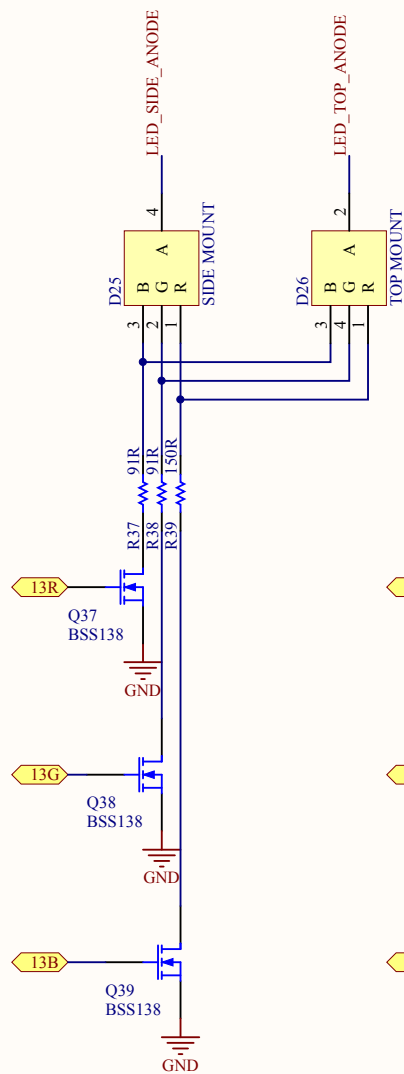
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3

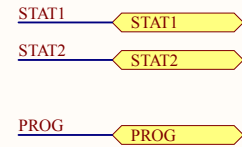
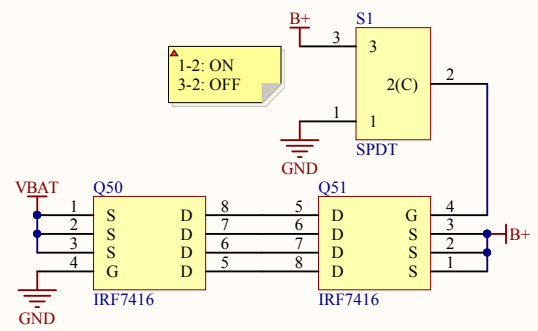
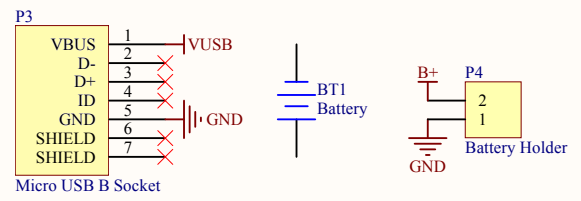
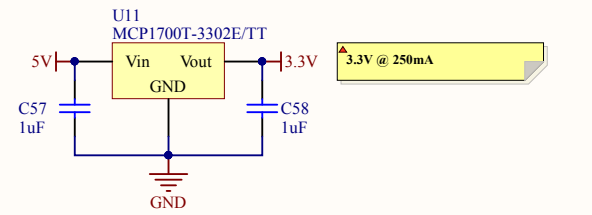
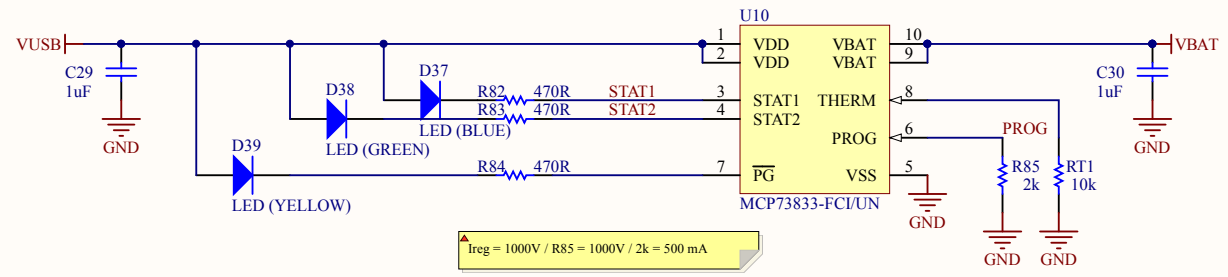
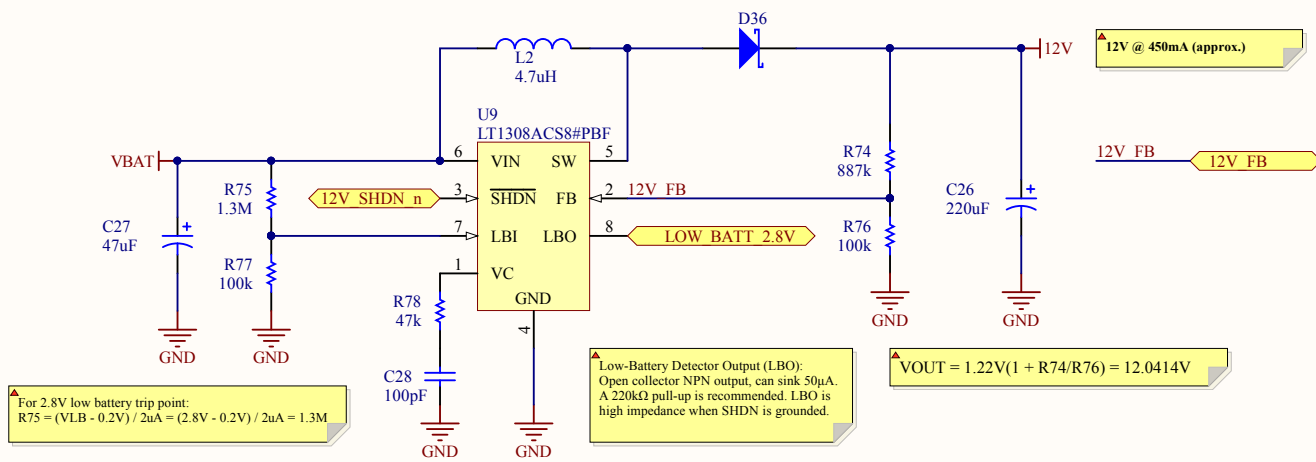
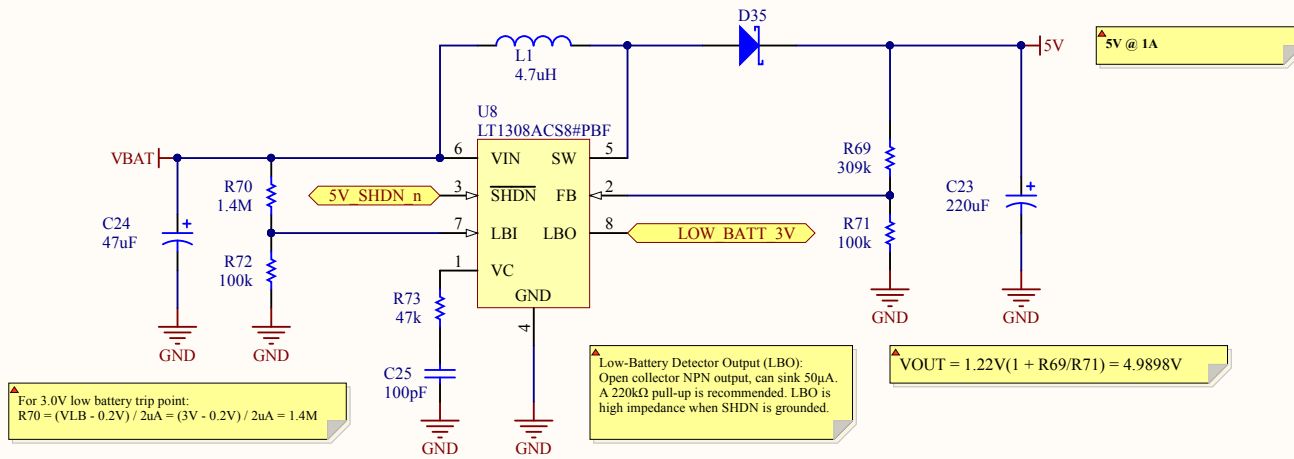
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Title LED9-12.SchDoc		
Size A4	Number 5	Revision A
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File: C:\Users\...\LED9-12.SchDoc		



Title LED13-16.SchDoc			
Size A4	Number 6		Revision A
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File:	C:\Users\...LED13-16.SchDoc	Drawn By:	Nick D'Ademo



Title			Power Supply.SchDoc		
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A4	7	A			
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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

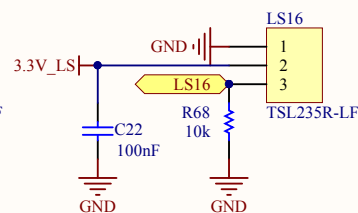
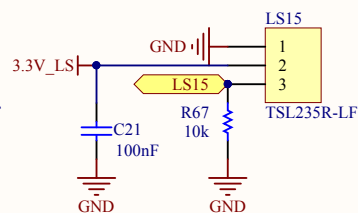
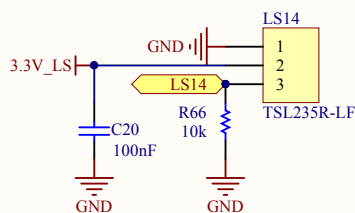
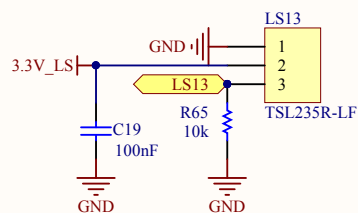
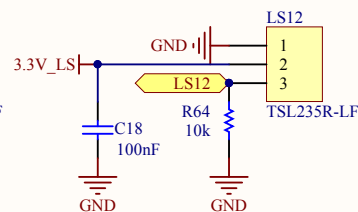
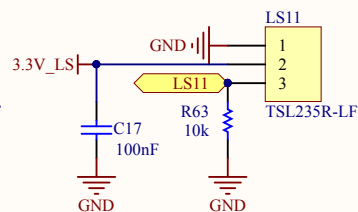
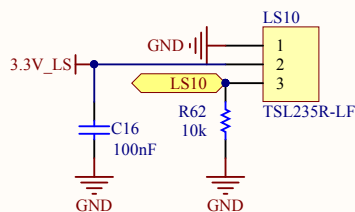
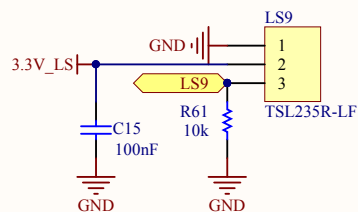
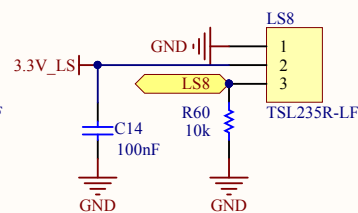
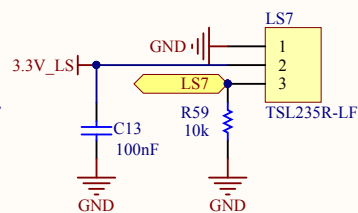
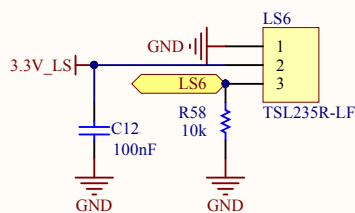
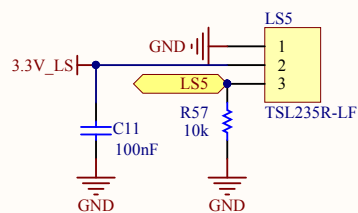
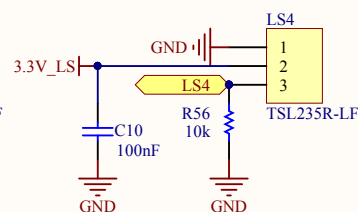
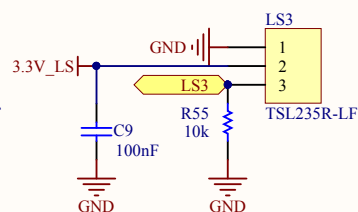
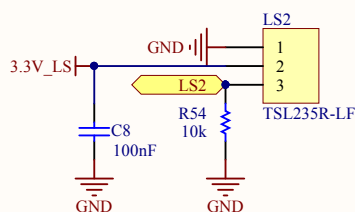
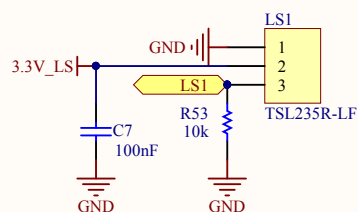
Light-to-Frequency parts:

TSL235
TSL237
TSL245 (IR light)

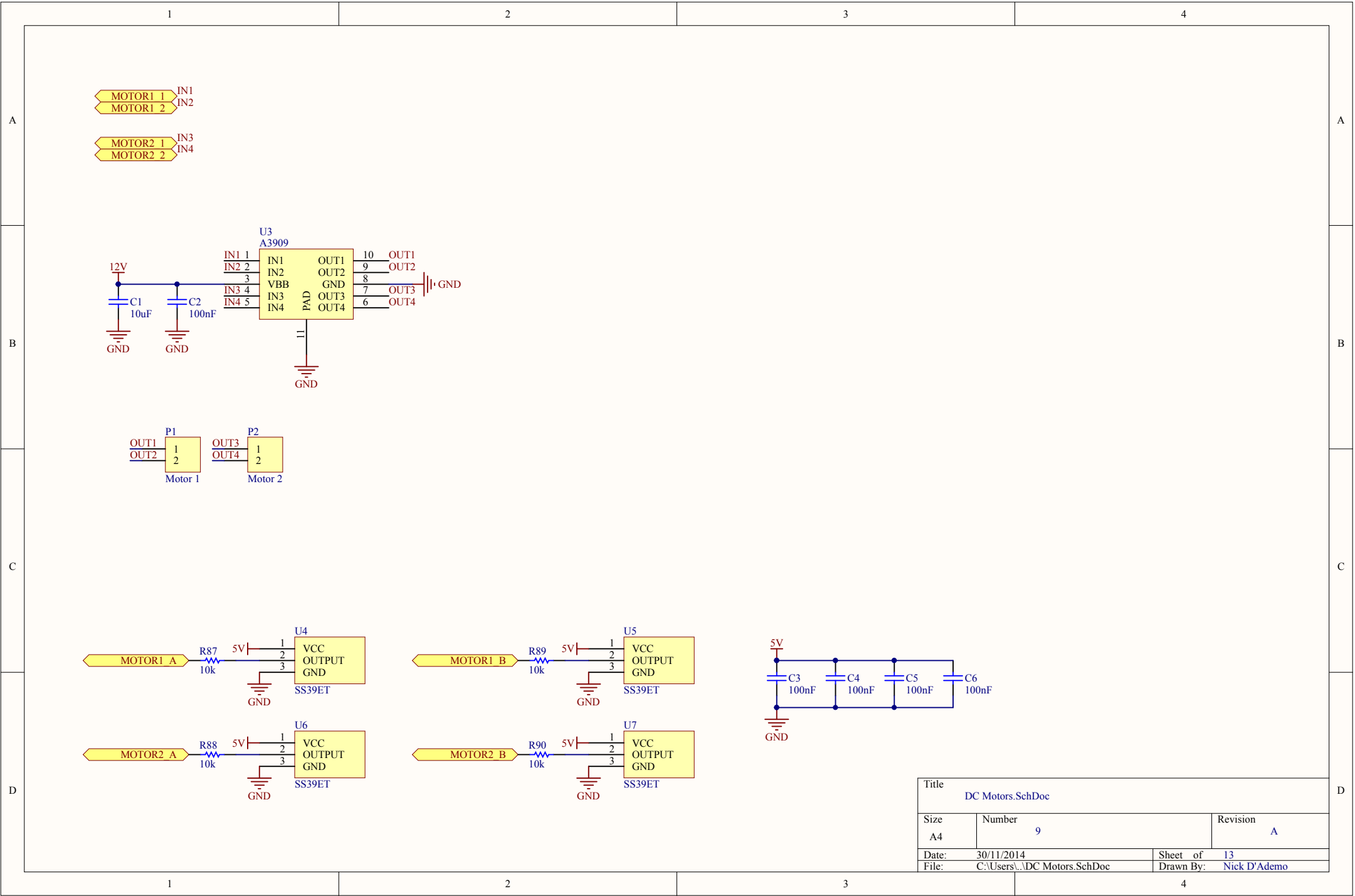
Light-to-Voltage parts:

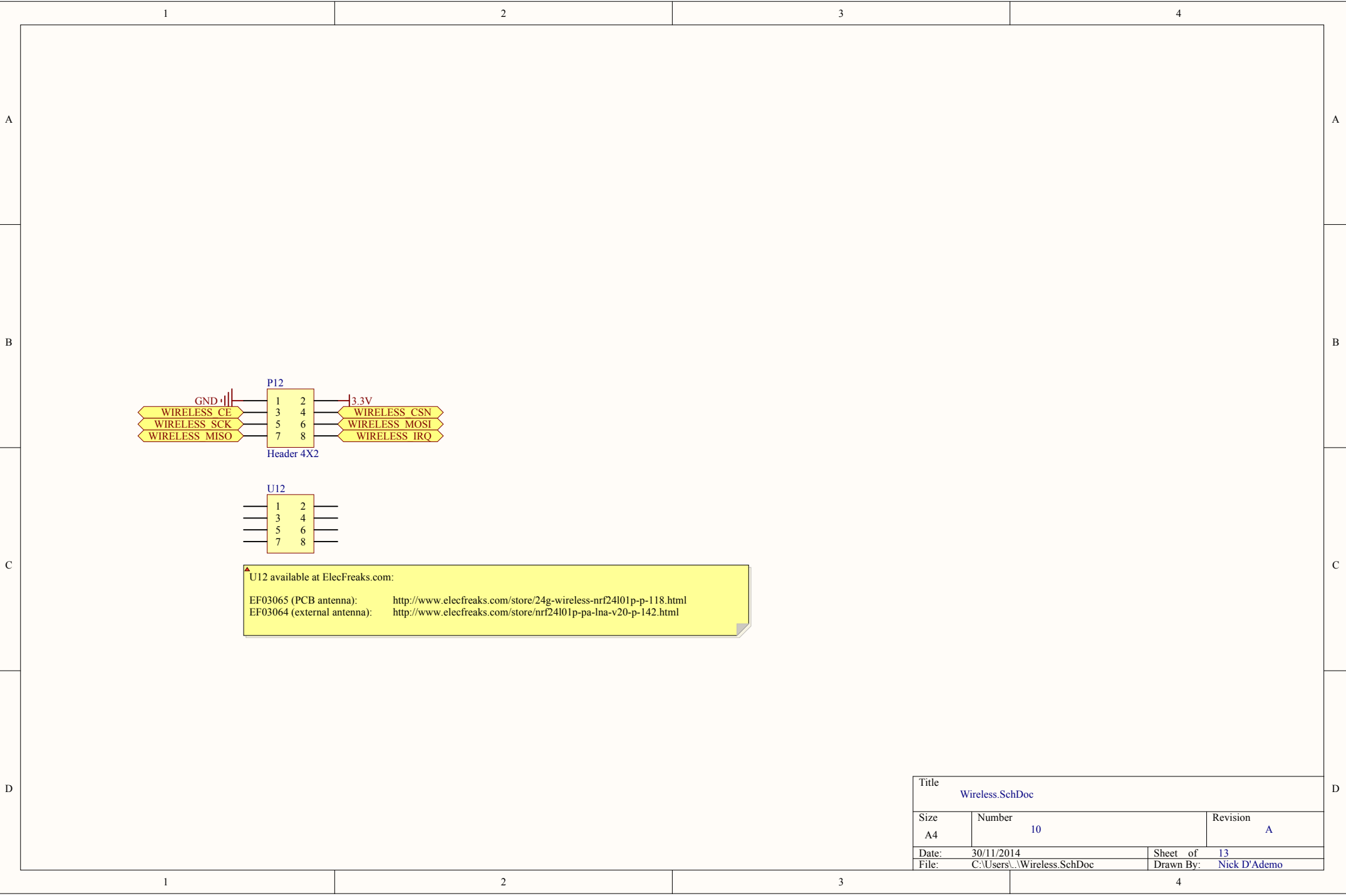
TSL125
TSL135
TSL145
TSL250R
TSL251R
TSL252R
TSL253R
TSL254R
TSL257
TSL260R (IR light)
TSL261R (IR light)
TSL262R (IR light)
TSL267 (IR light)

▲ Only install R53 to R68 if Light-to-Voltage parts are used.

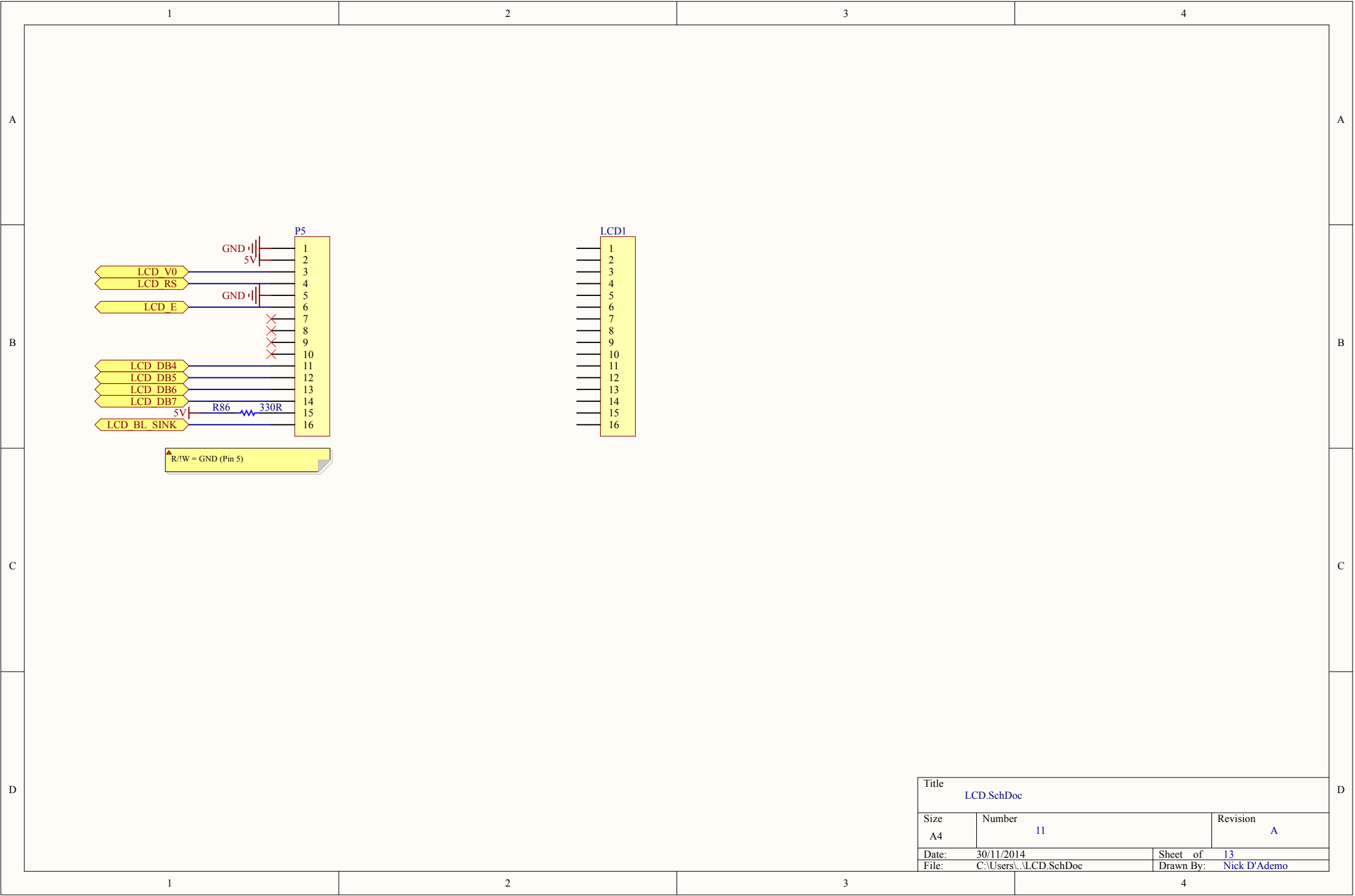


Title Light Sensors.SchDoc		
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File: C:\Users\...\Light Sensors.SchDoc	Drawn By: Nick D'Ademo	

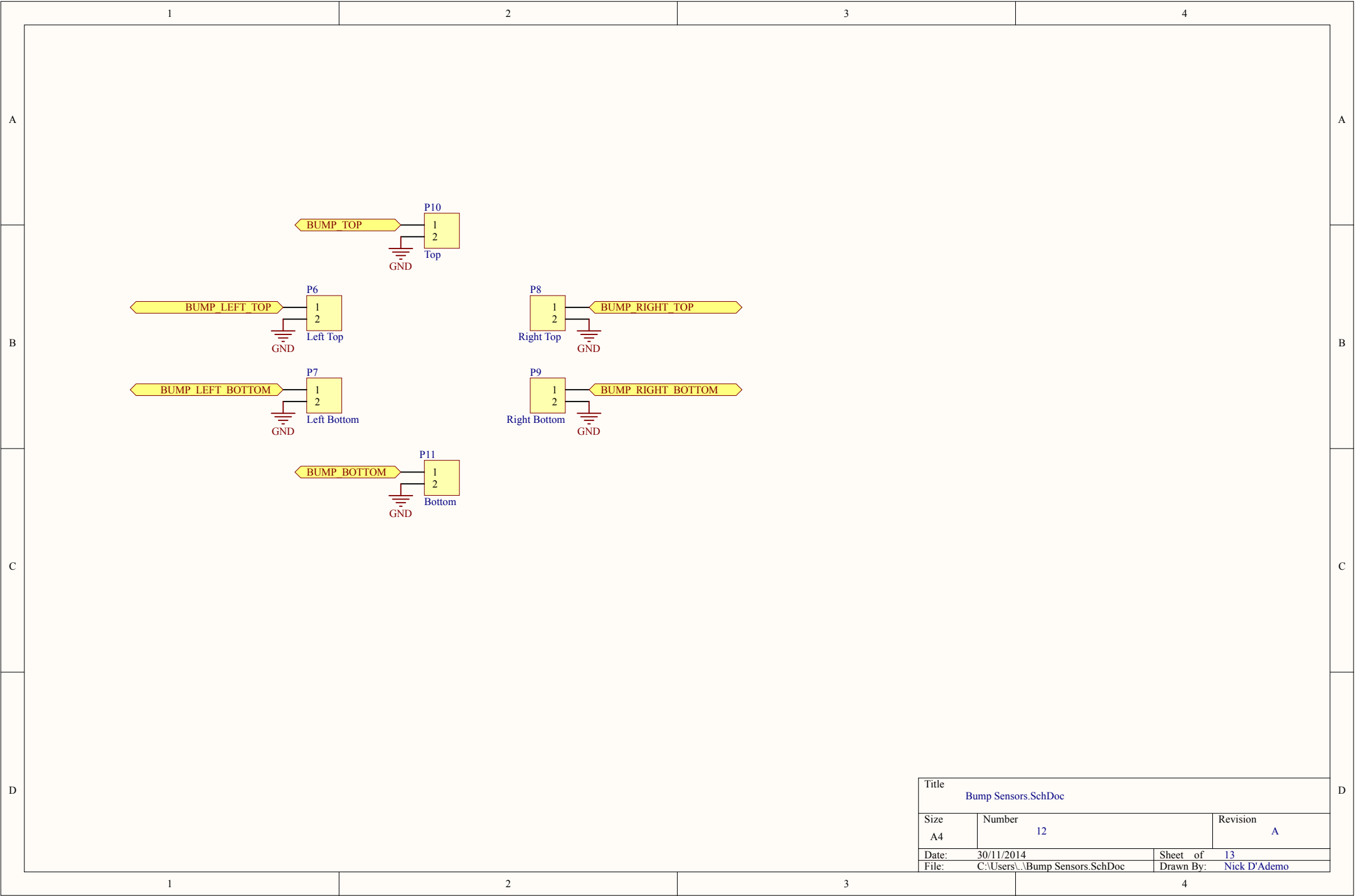


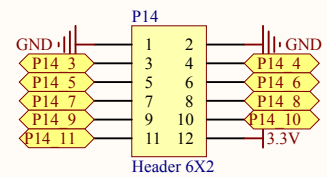
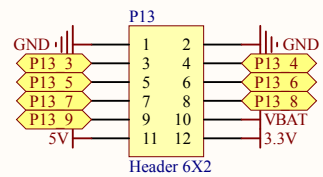


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Date:	30/11/2014	Sheet of	13
File:	C:\Users\...\Wireless.SchDoc	Drawn By:	Nick D'Ademo

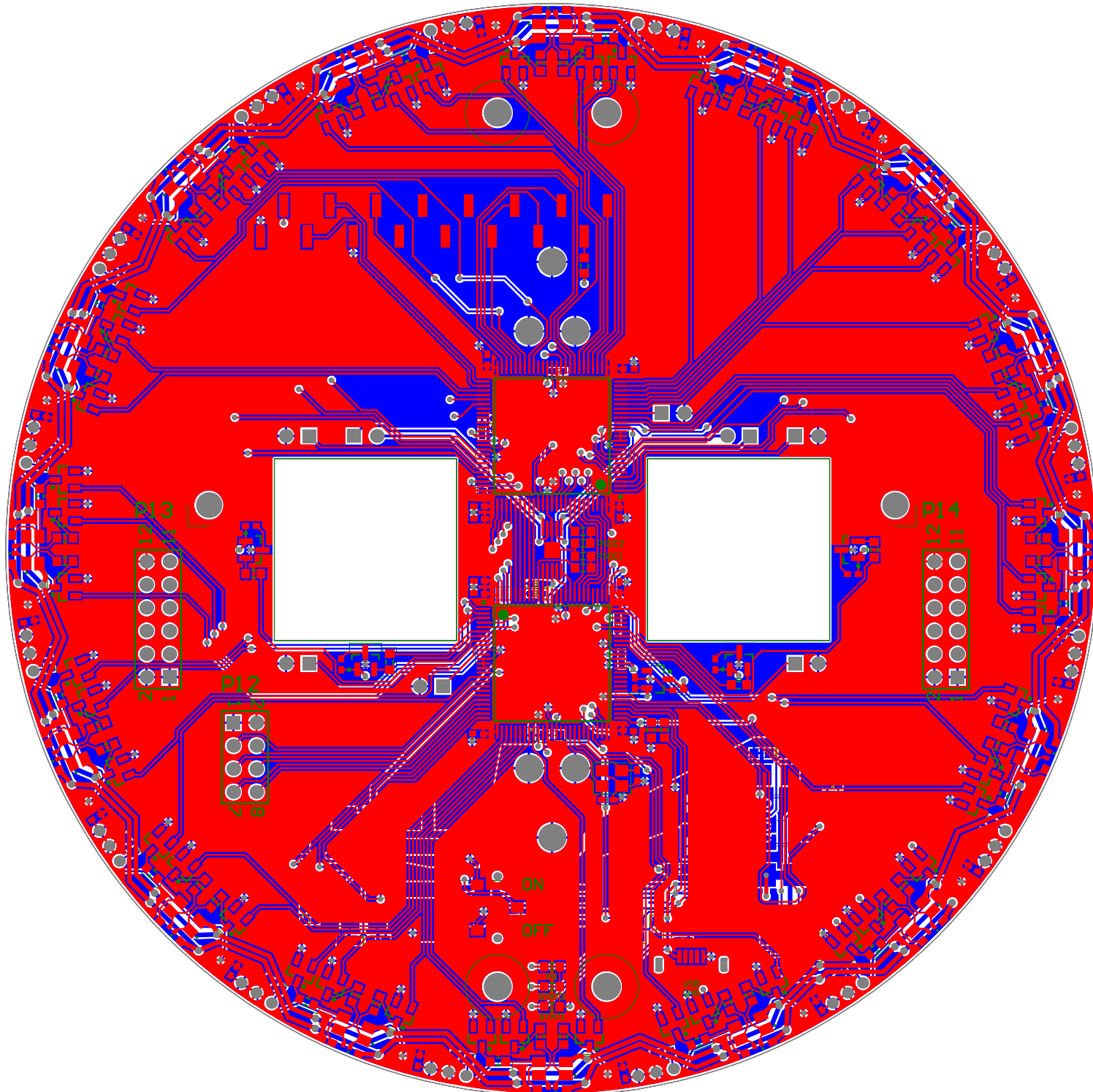


Title		
LCD.SchDoc		
Size	Number	Revision
A4	11	A
Date:	30/11/2014	Sheet of 13
File:	C:\Users\...\LCD.SchDoc	Drawn By: Nick D'Ademo





Title Expansion Header.SchDoc		
Size A4	Number 13	Revision A
Date: 30/11/2014	Sheet of 13	File: C:\Users\...\Expansion Header.SchDoc
Drawn By:		Nick D'Ademo



Description	Designator	Footprint	Quantity	Value
1850 1-Cell Lithium Ion Battery	BT1		1	
TAIYO YUDEN - EMK107BB/106MA-T - CAP CER 100UF 16V 20% XSR 0603	C1	CAPC1005N	1	10uF
Capacitor, XSR, ±10%, 16V, 0402	C2, C3, C4, C5, C6	CAPC1005N	5	100nF
Capacitor, XTR, ±10%, 6.3V, 0402	C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C55, C56	CAPC1005N	32	100nF
KEMET - T491D2227K016AT - CAP TANT 220uF 16V 10% 2917	C23, C26	TC743-2917	2	220uF
KEMET - T491B476K010AT - CAP TANT 47uF 10V 10% 1411	C24, C27	TC528-1411	2	47uF
Capacitor, NPO, ±10%, 6.3V, 0402	C25, C28	CAPC1005N	2	100pF
Capacitor, XSR, ±10%, 6.3V, 0402	C29, C30	CAPC1005N	2	1uF
Capacitor, NPO, ±2%, 25V, 0402	C31, C32	CAPC1005N	2	12pF
Capacitor, XSR, ±10%, 10V, 0402	C33, C34, C35, C36, C51, C52, C53, C54, C57, C58	CAPC1005N	10	1uF
OPTEK - OV5RRGBCC3 - LED RED/GRN/BLU 1204 SMD	D1, D3, D5, D7, D9, D11, D13, D15, D17, D19, D21, D23, D25, D27, D29, D31	OV5RRGBCC3_S10E	16	
CREE - CLV1A-F8B-CK1N1G18B7R453 - LED RGB 3-IN-1 3.2X2.8MM 4PLCC	D2, D4, D6, D8, D10, D12, D14, D16, D18, D20, D22, D24, D26, D28, D30, D32	PLCC4	16	
ROHM - 5M1E12BCTT8RQ - LED, 0603, LO-CUR, BLU	D33, D34, D37	LED, 0603	3	
VEYAW SEMICONDUCTOR - VS-MBR3130TRPBF - DIODE SCHOTTKY 30V 1A DO214AA	D35, D36	SMB_DIODE	2	
KINGBRIGHT - KP-1608MGC - LED, 0603, GREEN, 70MCD, 568NM	D38	LED, 0603	1	
KINGBRIGHT - KP-1608SYC - LED, SMD, 0603, YELLOW	D39	LED, 0603	1	
TAIYO YUDEN - NR6028T487M - INDUCTOR 4.7uH 2.7A 20% SMD	L1, L2	TV_NR	2	4.7uH
SHENZHEN EONE ELECTRONICS CO.,LTD - IM120424015 - EONE High 16x2 11603 Characters LCD	LCD1		1	
AMS - TSL235R-LF - IC LIGHT TO FREQUENCY CONV 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	PT, P2, P6, P7, P8, P9, P10, P11	HDR1X2	8	
GLOBAL CONNECTOR TECHNOLOGY - USB3140-30-0170-1-C - CONNECTOR, USB 2.0 MICRO B, RCPT, 2POS, SMT	P3	USB3140-30-0170-1-C	1	
KEYSTONE ELECTRONICS - 54 - BATTERY CLIP 18MM 18650 CELL	R4	54	1	
SAMTEC - SSW-116-22-F-5-V5 - Conn Socket Strip SKY 16 POS 2.54mm Solder ST SMD Tube	P5	Samtec-SSW-116-22-F-5-V5	1	
SAMTEC - SSW-106-01-T-D - SOCKET, 2.54MM, 2X6WAY	P13, P14	SSW-106-01-X-D	2	
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	5079SP230-3N	48	
FAIRCHILD SEMICONDUCTOR - FDC6306P - MOSFET 2P-CH 20V 1.9A SSOT6	Q49	SOT-6	1	
INTERNATIONAL RECTIFIER - IRF7416TRPBF - MOSFET P-CH 30V 10A 8-SOIC	Q50, Q51	SOIC1279600-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	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, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R88, R89, R90	RESC1608N	22	10k
Resistor, ±1%, 0.1W, 0603	R51, R52, R82, R83, R84	RESC1608N	5	470R
Resistor, ±1%, 0.1W, 0603	R69	RESC1608N	1	309k
Resistor, ±1%, 0.1W, 0603	R70	RESC1608N	1	1.4M
Resistor, ±1%, 0.1W, 0603	R71, R72, R76, R77	RESC1608N	4	100k
Resistor, ±1%, 0.1W, 0603	R73, R78	RESC1608N	2	47k
Resistor, ±1%, 0.1W, 0603	R74	RESC1608N	1	887k
Resistor, ±1%, 0.1W, 0603	R75	RESC1608N	1	1.3M
Resistor, ±1%, 0.1W, 0603	R85	RESC1608N	1	2k
Resistor, ±1%, 0.1W, 0603	R86	RESC1608N	1	330R
Resistor, ±1%, 0.1W, 0603	R91	RESC1608N	1	500k
Resistor, ±1%, 0.1W, 0603	R92	RESC1608N	1	1M
MURATA - NCP18XH103J03RB - THERMISTOR, NTC, 10K, 5%, SMD	RT1	RESC1608N	1	10k
COPAL ELECTRONICS INC - CL-SB-128-01T - SWITCH SLIDE SPDT 0.2A GULL 12V P5oC Programmable System-on-Chip, 256 KB Flash, 62 GPIOs, 1.71 to 5.5 V, 100 Pin TOPP (AX100), Tray	S1	CL-SB-128-01T	1	
ALLEGRO - A1909GLYTR-T - IC MOTOR DRIVER PAR 10MSOP	U1, U2	CMP-AX100_3	2	
HONEYWELL SMC - 5538ET - SENSOR, WALL EFFECT, LINEAR, SOT23-3	U4, U5, U6, U7	SOT23-3N	4	
LINEAR TECHNOLOGY - LT1308ACS4PBF - IC REG BOOST SV 1A 8SOIC	U8, U9	LT-SB-8-N	2	
MICROCHIP - MCP73833-FCUUN - IC LI-ION/AI-POLY CTRLR 10MSOP	U10	M5OP-LIUN10_N	1	
MICROCHIP - MCP1700T-3302E/TT - IC REG LDO 3.3V 0.25A SOT23-3	U11	5079SP230-3N	1	
NORDIC SEMICONDUCTOR - nRF2401+	U12	HDR2K4	1	
NDK - NK32255A-16.000MHZ-STD-CSR-1 - CRYSTAL 16MHZ 8PF SMD	V1	NK32255A	1	