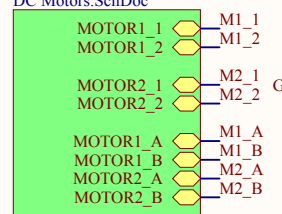
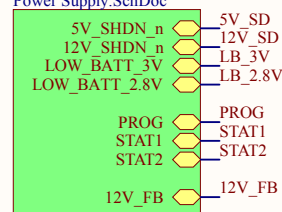
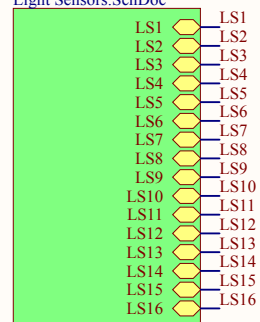
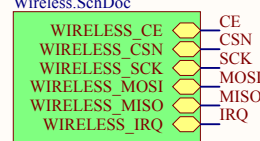
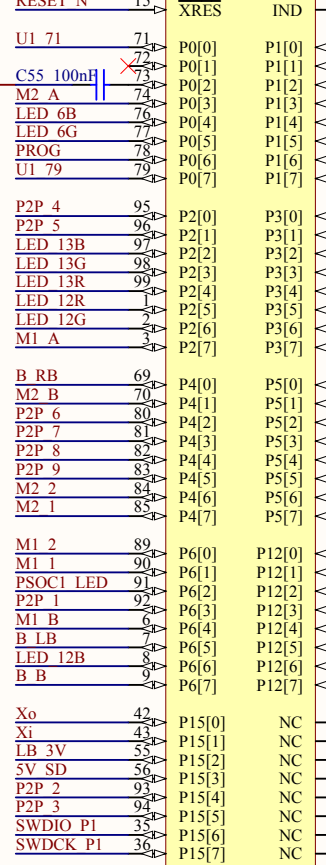
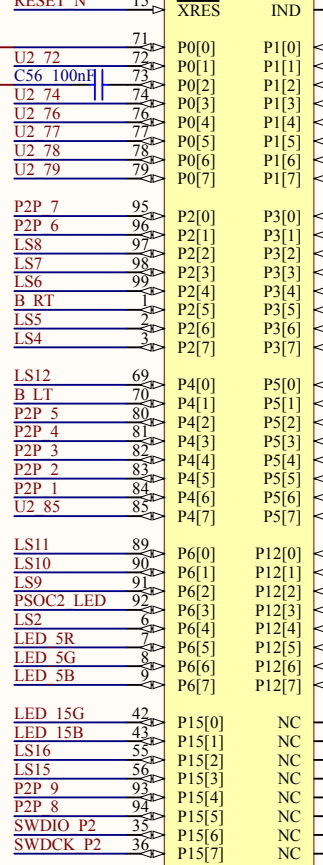
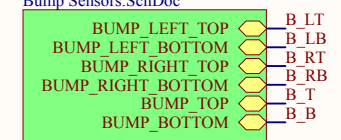
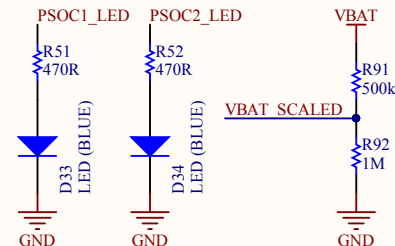
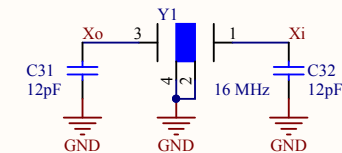
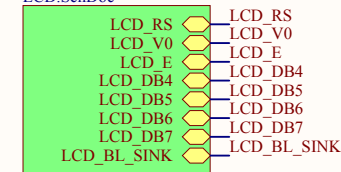
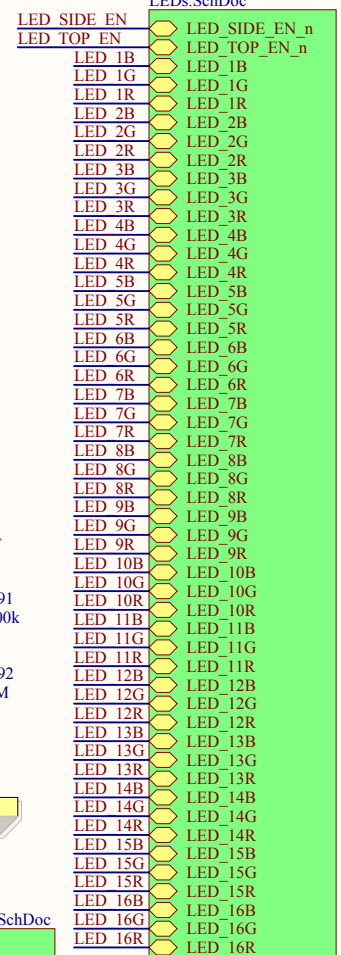
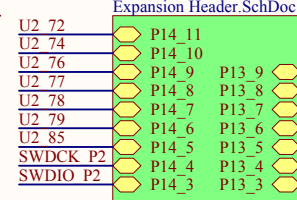


SS7
DC Motors.SchDocSS6
Power Supply.SchDocSS8
Light Sensors.SchDocSS11
Wireless.SchDocU1A
CY8C5888AXI-LP096U2A
CY8C5888AXI-LP096SS10
Bump Sensors.SchDocSS9
LCD.SchDoc

$$VBAT_SCALED = (2/3) * VBAT$$

SS5
LEDs.SchDocSS12
Expansion Header.SchDoc

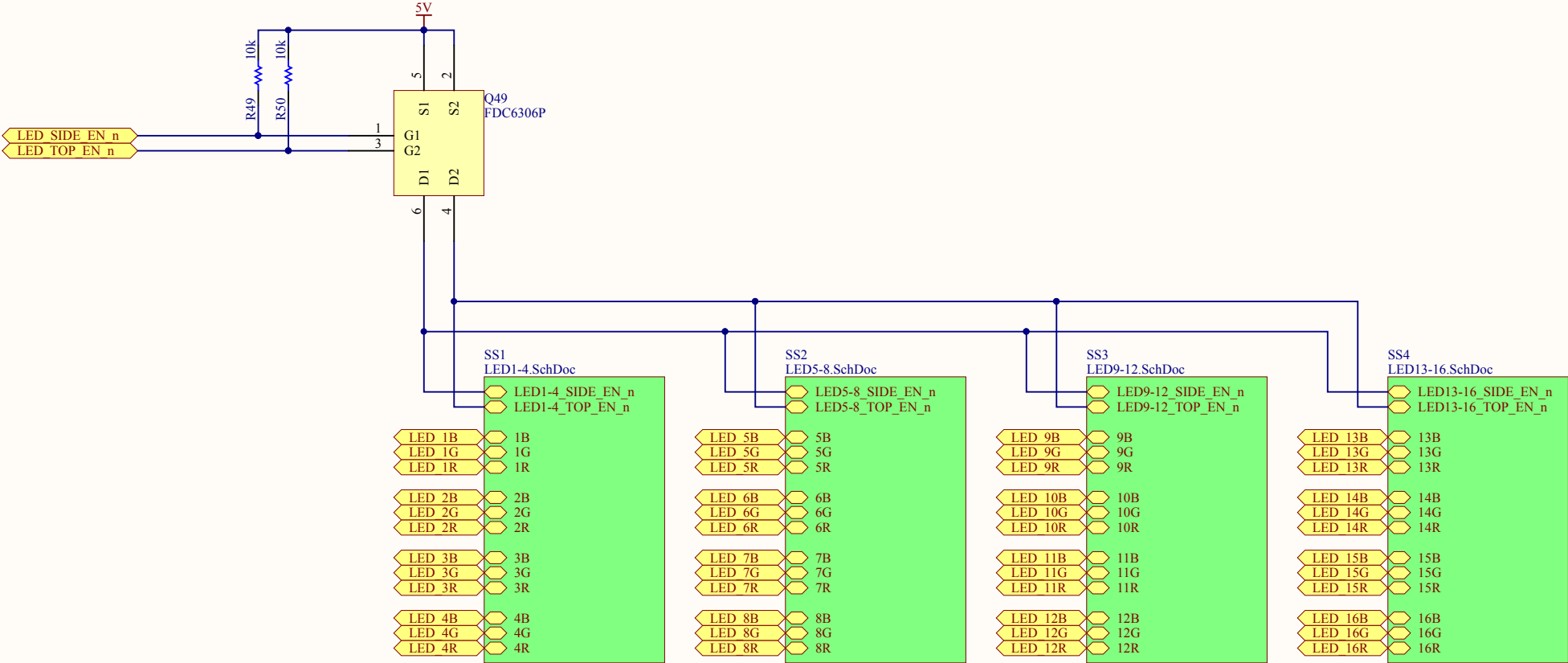
Title		
PSoC.SchDoc		
Size	Number	Revision
A4	1	A
Date:	1/12/2014	Sheet of 13
File:	C:\Users\...\PSoC.SchDoc	Drawn By: Nick D'Ademo

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

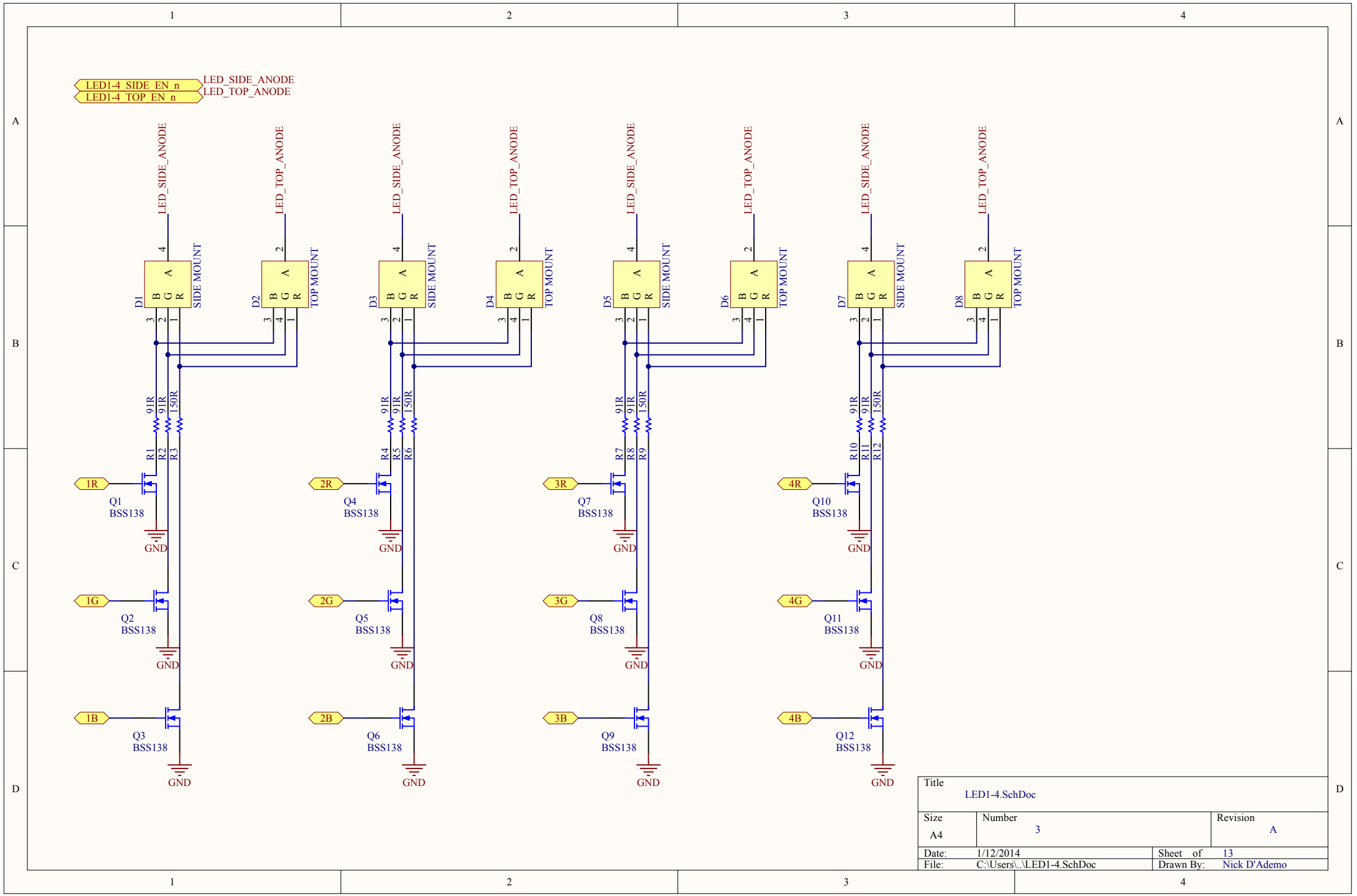
▲ SIDE LED:
Vf @ If=20mA (Min->Typ->Max):
RED: 1.8->2.0->2.4V
GREEN: 3.0->3.3->3.6V
BLUE: 3.0->3.3->3.6V

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

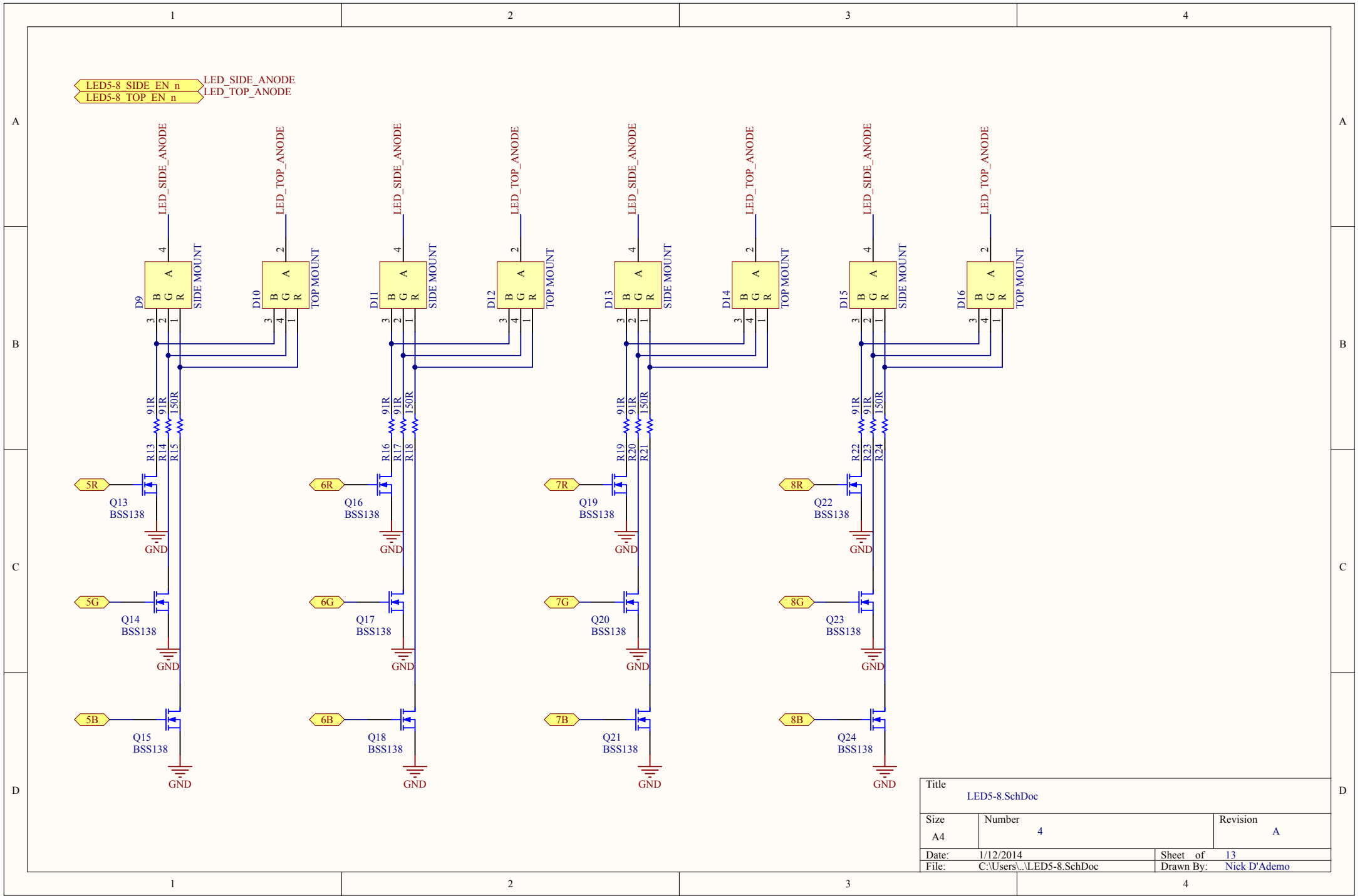
CLV1A-FKB-CJ1M1F1BB7R4S3: 675med Red, 1055med Green, 337med Blue
CLV1A-FKB-CK1N1G1BB7R4S3: 730med Red, 1150med Green, 365med Blue

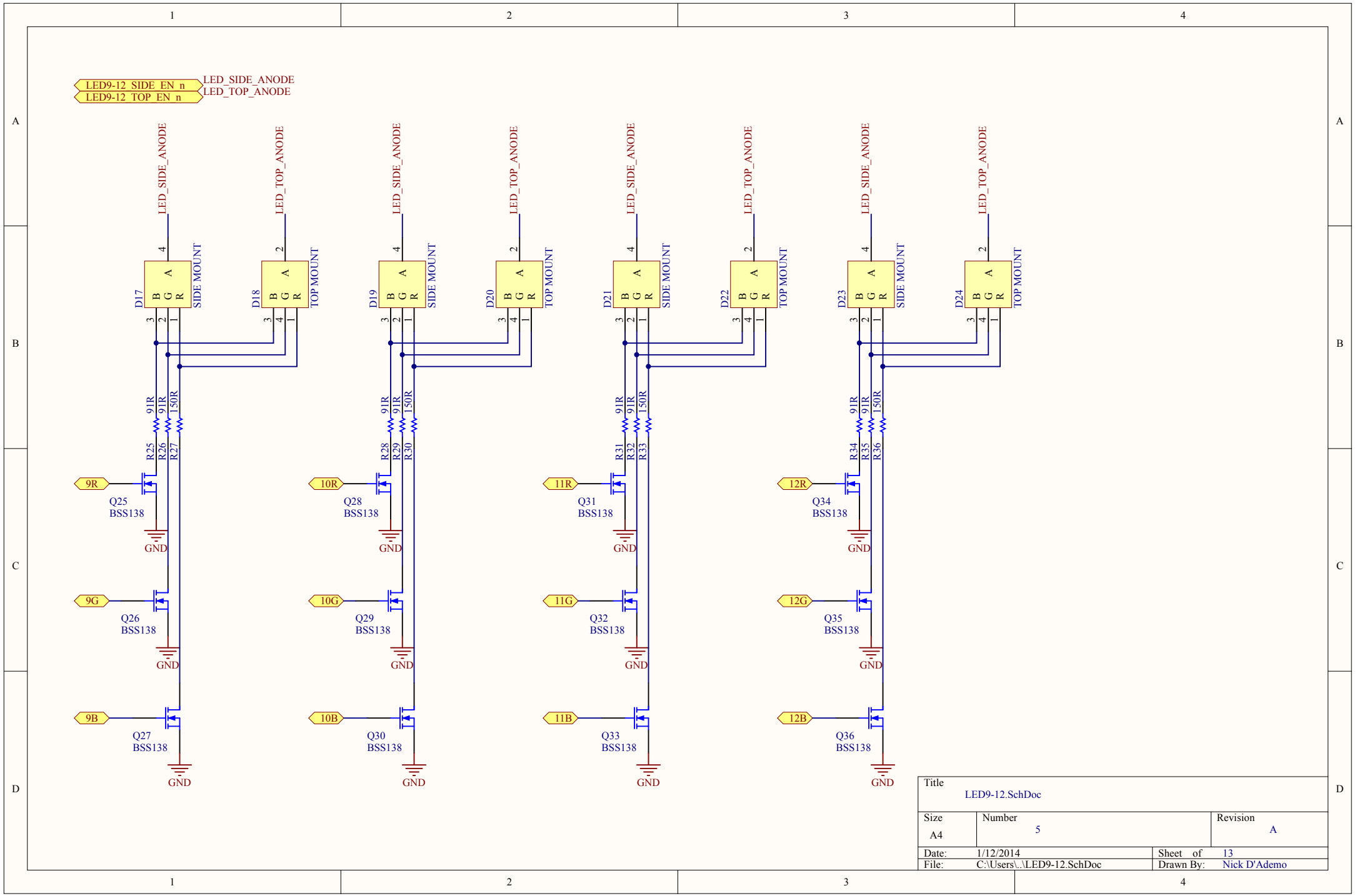


Title			
LEDs.SchDoc			
Size	Number	Revision	
A4	2	A	
Date:	1/12/2014	Sheet of	13
File:	C:\Users\...\LEDs.SchDoc	Drawn By:	Nick D'Ademo

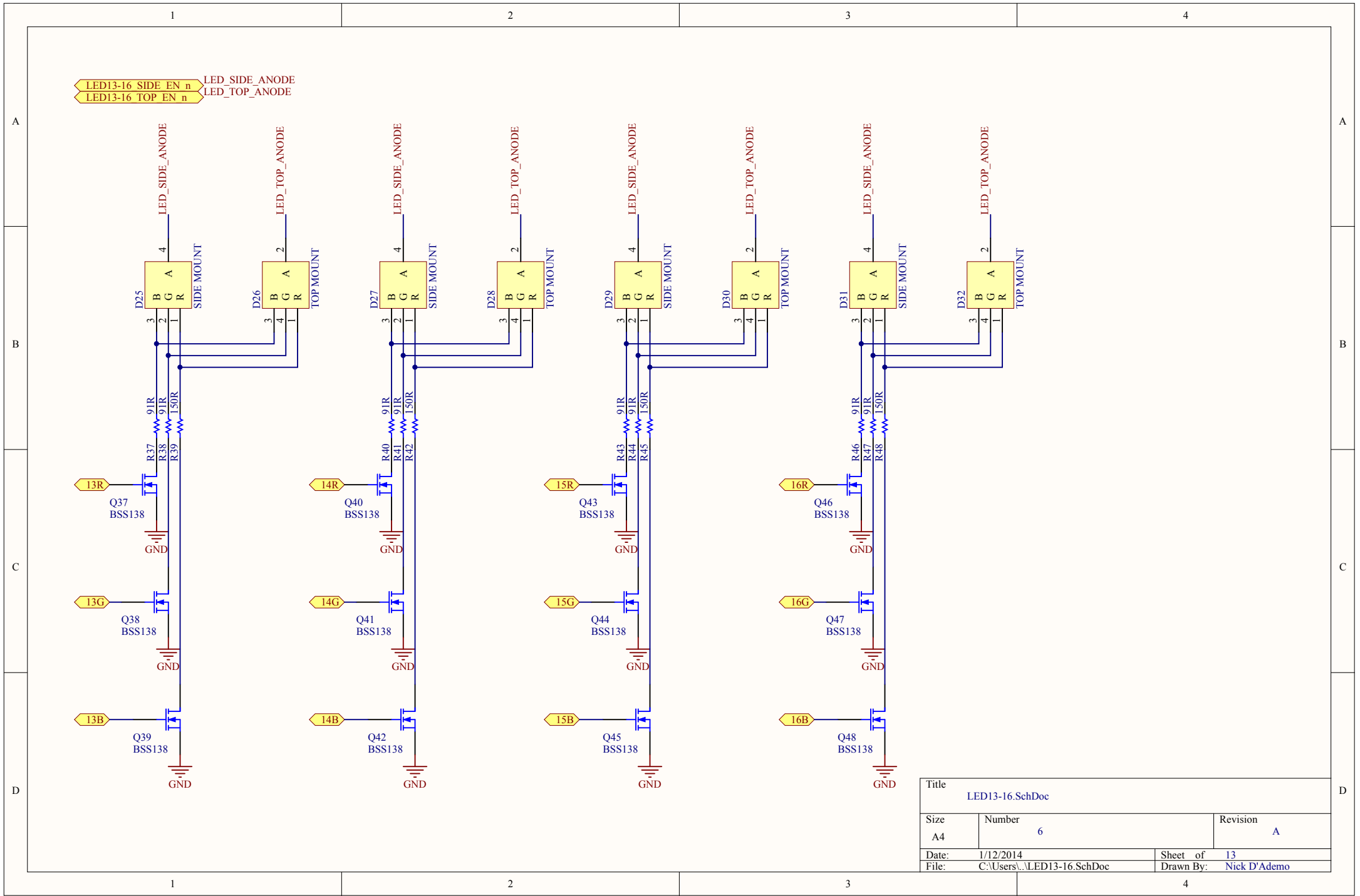


Title			LED1-4.SchDoc
Size	Number	Revision	
A4	3	A	
Date:	1/12/2014	Sheet of	13
File:	C:\Users\...\LED1-4.SchDoc	Drawn By:	Nick D'Ademo





Title		
LED9-12.SchDoc		
Size	Number	Revision
A4	5	A
Date:	1/12/2014	Sheet of 13
File:	C:\Users\...\LED9-12.SchDoc	Drawn By: Nick D'Ademo

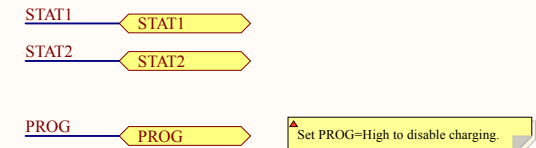
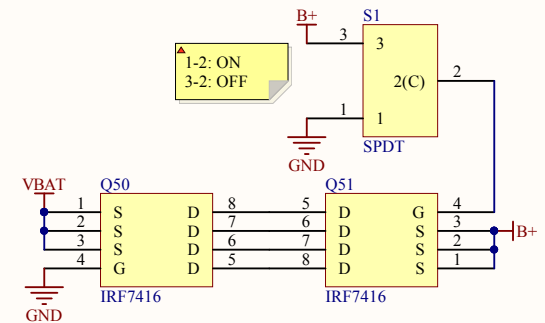
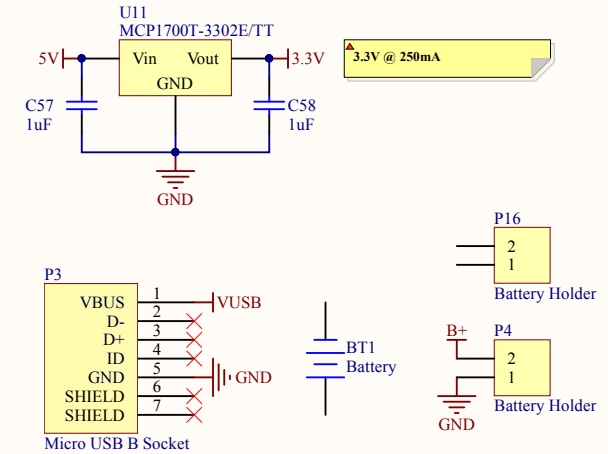
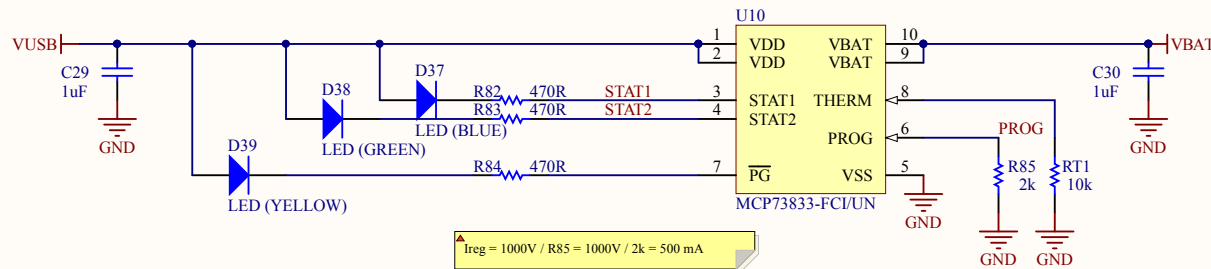
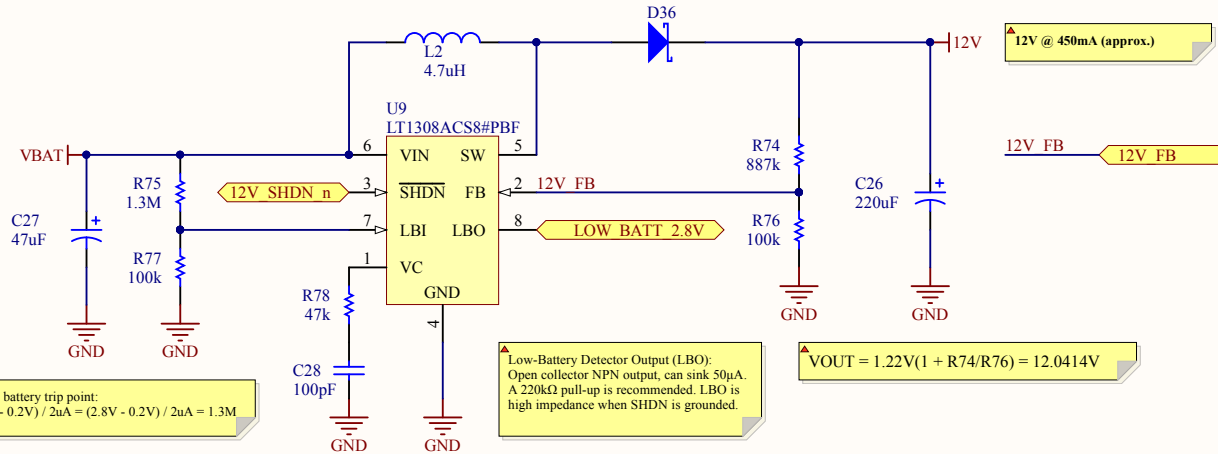
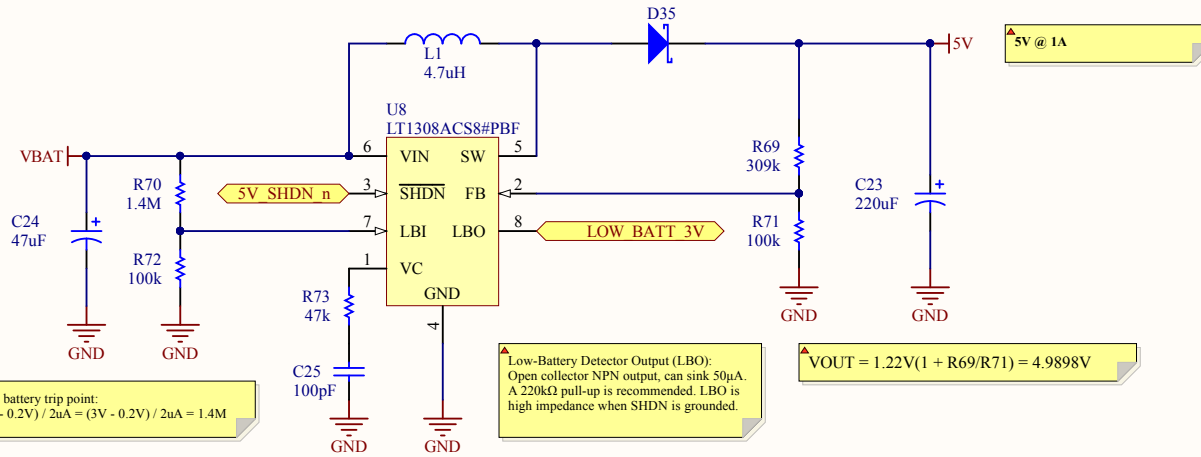


1

2

3

4



Title		
Power Supply.SchDoc		
Size	Number	Revision
A4	7	A
Date:	1/12/2014	Sheet of 13
File:	C:\Users\...\Power Supply.SchDoc	Drawn By: Nick D'Ademo

1

2

3

4

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

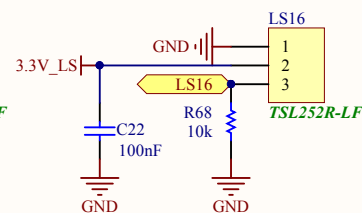
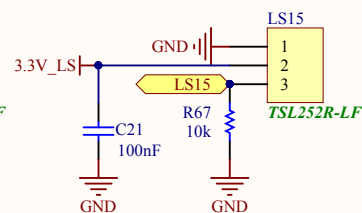
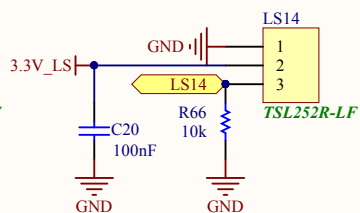
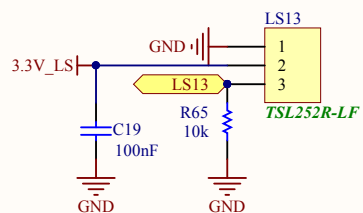
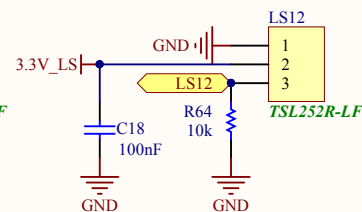
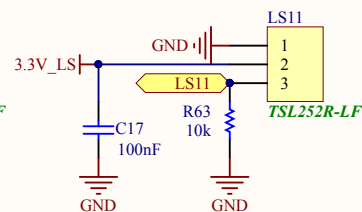
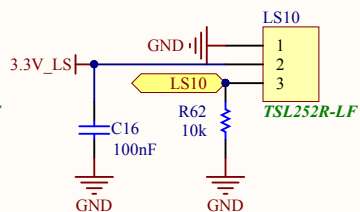
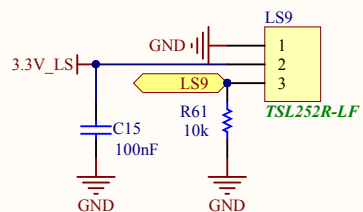
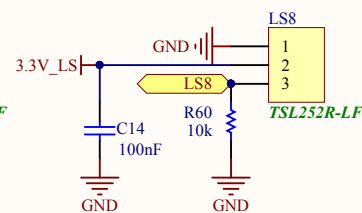
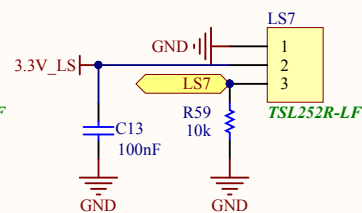
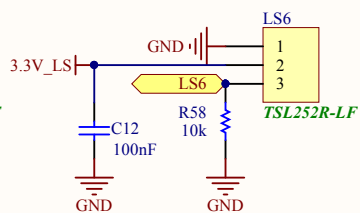
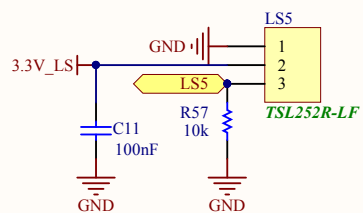
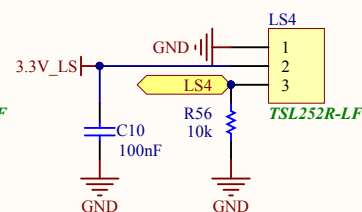
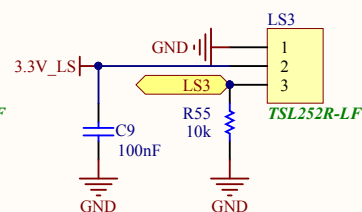
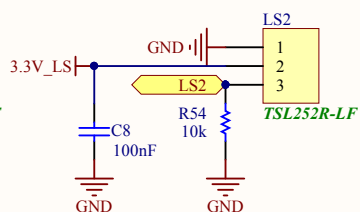
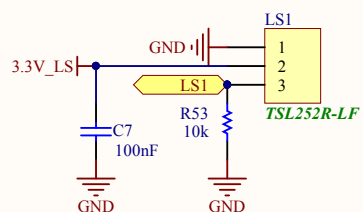
Light-to-Frequency parts:

TSL235
TSL237
TSL245 (IR light)

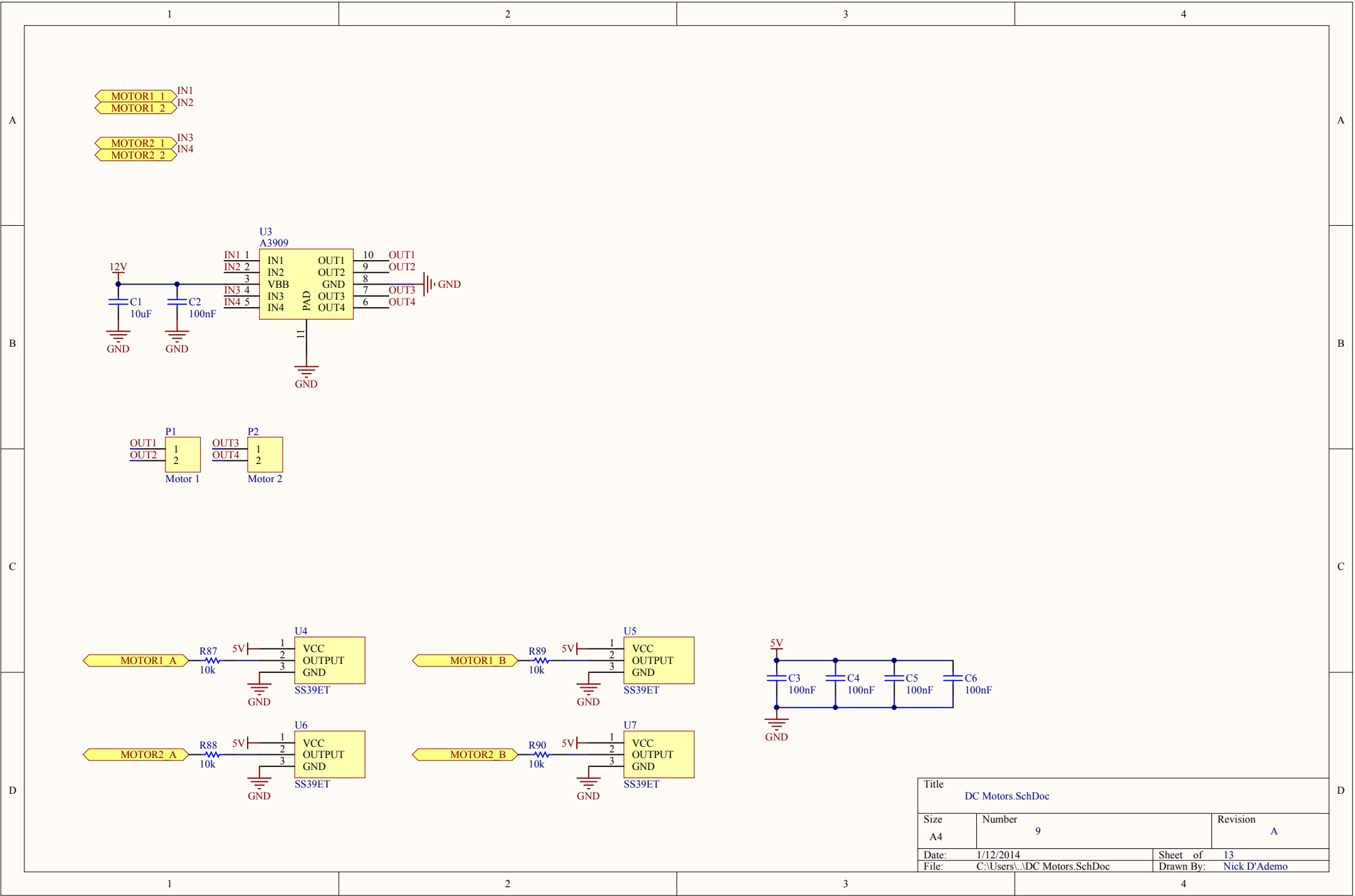
Light-to-Voltage parts:

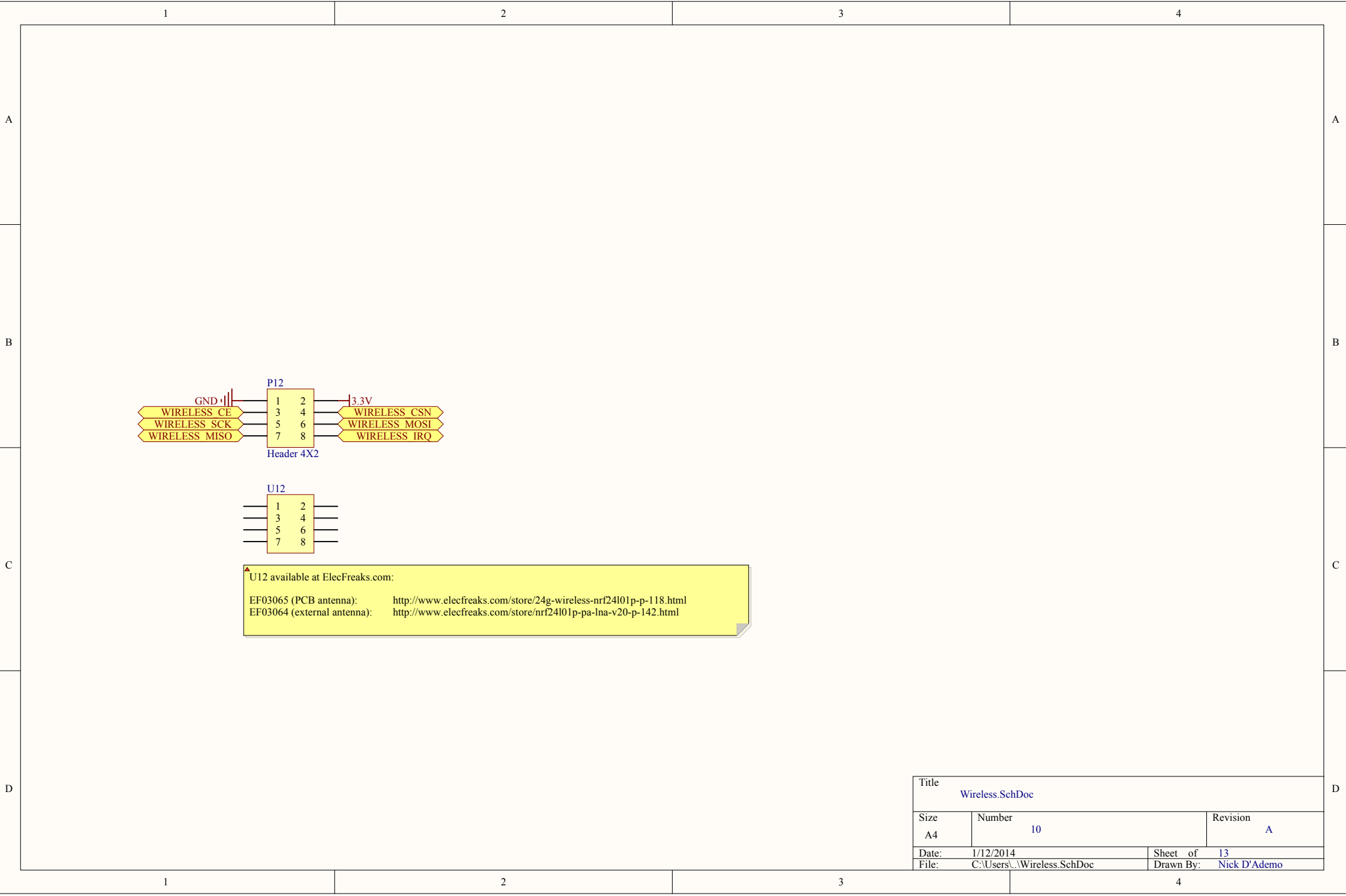
TSL125
TSL135
TSL145
TSL250R
TSL251R
TSL252R
TSL253R
TSL254R
TSL257
TSL260R (IR light)
TSL261R (IR light)
TSL262R (IR light)
TSL267 (IR light)

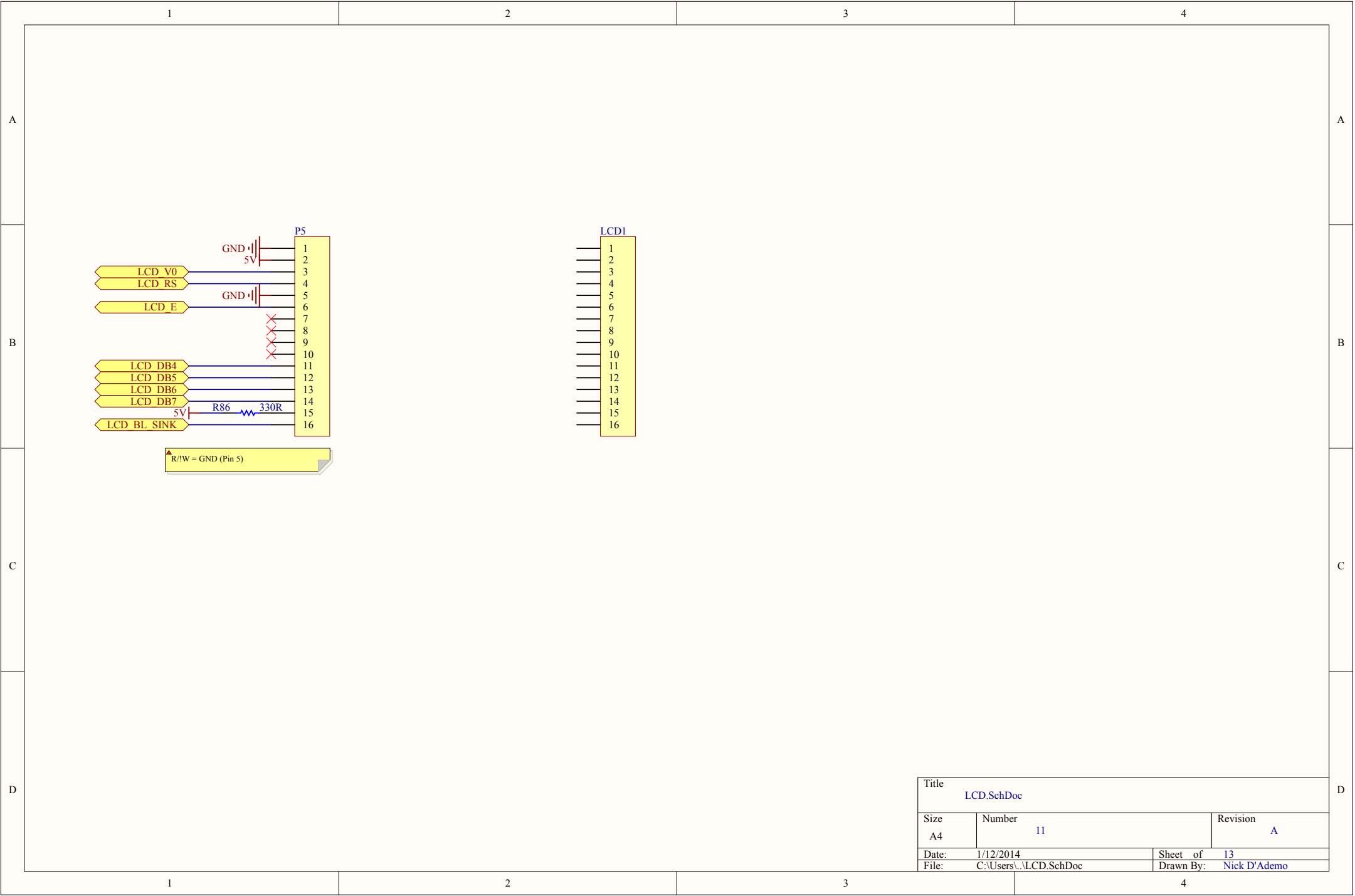
▲ Only install R53 to R68 if Light-to-Voltage parts are used.



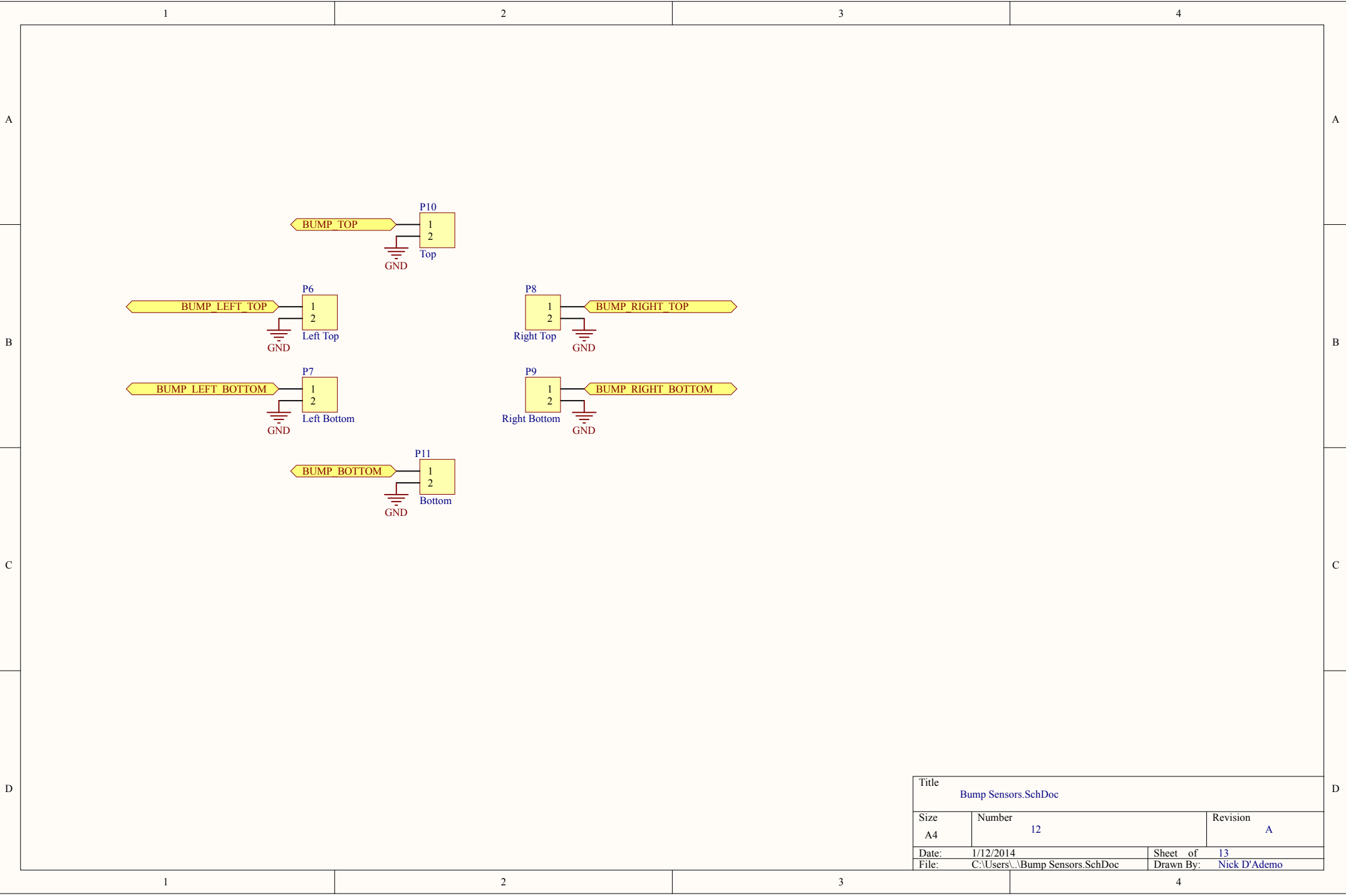
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Size A4	Number 8	Revision A
Date: 1/12/2014	Sheet of 13	Drawn By: Nick D'Ademo
File: C:\Users\...\Light Sensors.SchDoc		



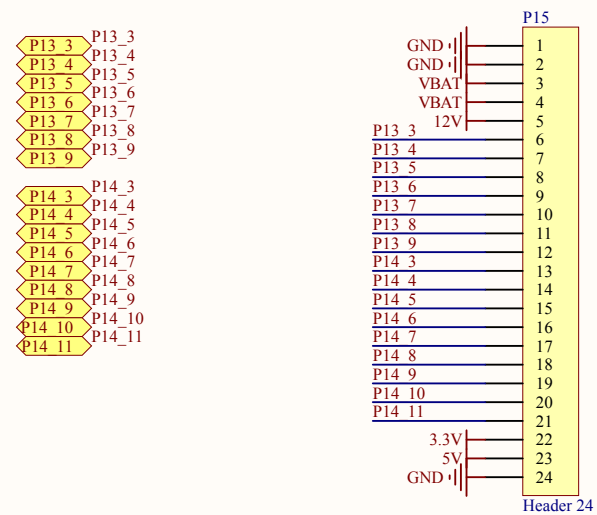
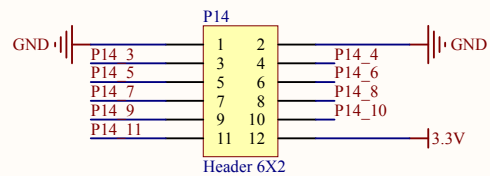
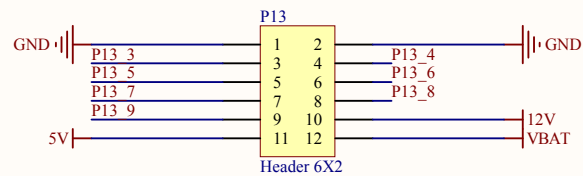




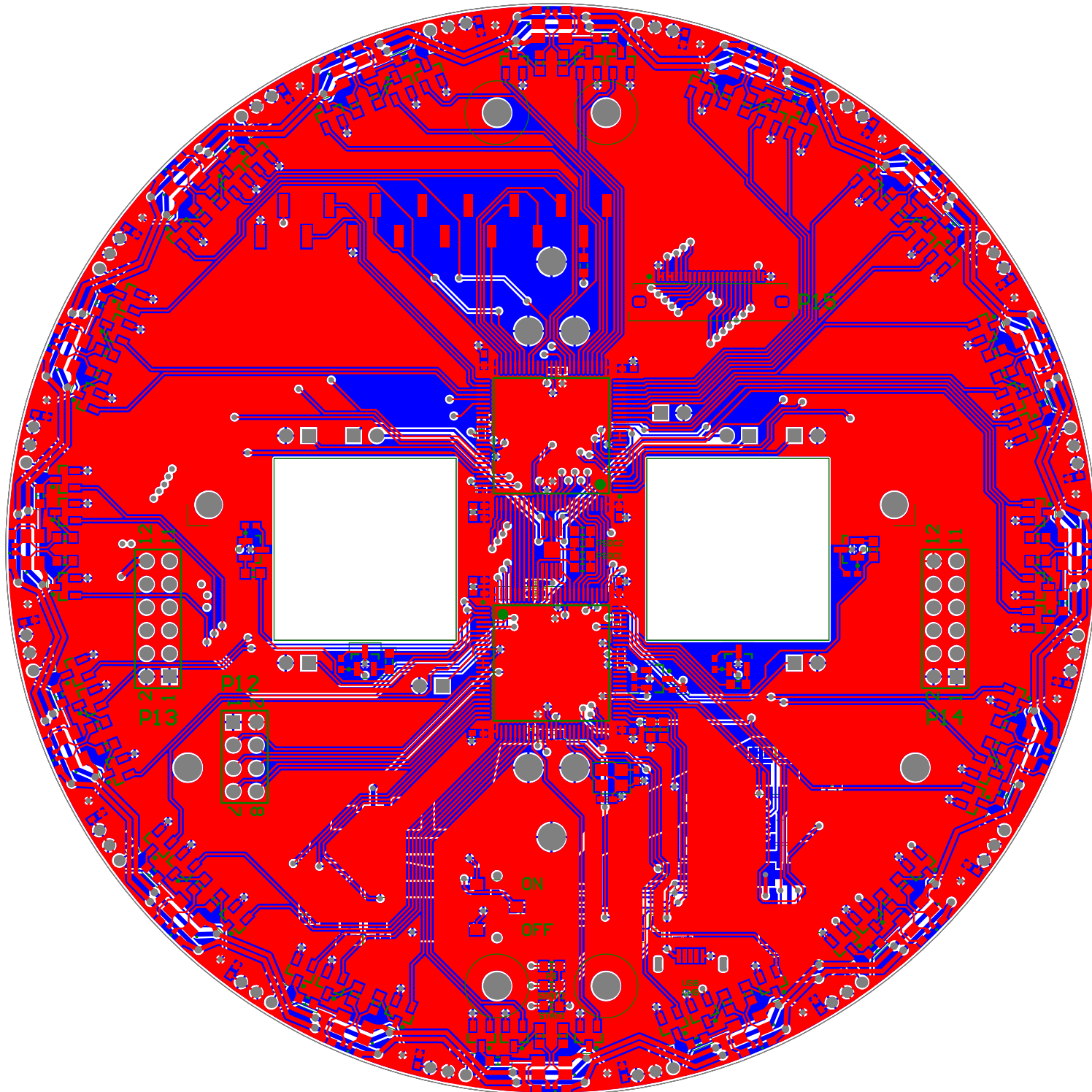
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Size	Number	Revision		
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Date:	1/12/2014	Sheet of	13	
File:	C:\Users\...\LCD.SchDoc	Drawn By:	Nick D'Ademo	



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



Title Expansion Header.SchDoc			
Size A4	Number 13	Revision A	
Date:	1/12/2014	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	BT1		1		
TAIYO YUDEN - EMK107BBJ106MA-T - CAP CER 10UF 16V 20% XSR 0603	C1	CAPC1005N	1	10uF	
Capacitor, X7R, ±10%, 16V, 0402	C2, C3, C4, C5, C6, 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	37	100nF	
	KEMET - TAP1D227K016AT - CAP TANT 220UF 16V 10% 2917	C23, C26	TC7343-2917	2	220uF
	KEMET - T491B47K010AT - CAP TANT 47UF 10V 10% 1411	C24, C27	TC3528-1411	2	247uF
	Capacitor, NP0, ±10%, 25V, 0402	C25, C28	CAPC1005N	2	100pF
	Capacitor, X5R, ±10%, 10V, 0402	C29, C30, C33, C34, C35, C36, C51, C52, C53, C54, C57, C58	CAPC1005N	12	1uF
	Capacitor, NP0, ±2%, 25V, 0402	C31, C32	CAPC1005N	2	12pF
	OPTEK - OVSRRGBCC3 - LED RED/GN/BLUE 1204 SMD	D1, D3, D5, D7, D9, D11, D13, D15, D17, D19, D21, D23, D25, D27, D29, D31	OVSRRGBCC3_SIDE	16	
	CREE - CLVIA-PWB-KY1W1GB879653 - LED RGB 3-IN-1 3.2X2.8MM 4-PLCC	D02, D4, D6, D8, D10, D12, D14, D16, D18, D20, D22, D24, D26, D28, D30, D32	PLCC4	16	
	ROHM - SML12BCTTB6Q - LED, 0603, LO-CUR, 8LU	D33, D34, D37	LED_0603	3	
	VISHAY SEMICONDUCTOR - VS-MBR5130TRPBF - DIODE SCHOTTKY 30V 1A DO214AA	D35, D36	SMB_DIODE	2	
KINGBRIGHT - KP-1608BMGC - LED, 0603, GREEN, 70MCD, 56NM	D38	LED_0603	1		
KINGBRIGHT - KP-1608YIC - LED, SMD, 0603, YELLOW	D39	LED_0603	1		
TAIYO YUDEN - NR6028T487M - INDUCTOR 4.7UH 27A 20% SMD	L1, L2	TV_NIR	2	4.7uH	
SHENZHEN EONE ELECTRONICS CO.,LTD - IM120424015 - EONE High 16x2 (1602) Characters LCD	LCD1		1		
AMS - TSL252R-LF - IC LIGHT TO VOLTAGE SENSOR 3PIN	L51, L52, L53, L54, L55, L56, L57, L58, L59, L510, L511, L512, L513, L514, L515, L516	AMS_5_3PIN	16		
MOLEX INC - 0032272021 - CONN HEADER 2POS .100 VERT TIN	P1, P2, P6, P7, P8, P9, P10, P11	HDR1X2	8		
GLOBAL CONNECTOR TECHNOLOGY - USB3140-3D-0170-1-C - CONNECTOR, USB 2.0 MICRO B, RCPT, SPOS, SMT	P3	USB3140-3D-0170-1-C	1		
KEYSTONE ELECTRONICS - S4 - BATTERY CLIP 18MM 18650 CELL	P4, P16	S4	2		
SAMTEC - SSW-116-22-F-S-V5 - Conn Socket Strip SKT 16 POS 2.54mm Solder St SMD Tube	P5	Samtec SSW-116-22-F-S-V5	1		
SAMTEC - SSW-106-01-T-D - SOCKET 2.54MM, 2X6WAY	P13, P14	SSW-106-01-X-D	2		
GLOBAL CONNECTOR TECHNOLOGY - FFC2810-24-T - FFC/FPC CONNECTOR, RECEPTACLE, 24POS, 18ROW	P15	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	50V95P230-3N	48		
	FAIRCHILD SEMICONDUCTOR - FDC6306P - MOSFET 2P-CH 20V 1.9A SSO76	Q49	SOT14	1	
	INTERNATIONAL RECTIFIER - IRF7416TRPBF - MOSFET P-CH 30V 10A 8-SOIC	Q50, Q51	SOT127P600-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			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, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, 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 - NCP180X103J038B - THERMISTOR, NTC, 10K, 5%, SMD	R11	RESC1608N	1	10k	
POSC ELECTRONICS INC - CL-S8-128-01T - SWITCH SLIDE SPDT 0.2A GULZ 12V 100PF Programmable System-on-Chip, 256 KB Flash, 8 GPIO, 1.71 to 5.5 V, 12V Pin I2CP (AK101), Tray	U1	CL-S8-128-01T	1		
ALLEGRO - AN8904PLT-T - IC MOTOR DRIVER PAR 10MSPD	U1, U2	CWP-AN8904	2		
HOWENWELL S&C - S378ET - SENSOR, HALL EFFECT, LINEAR, SOT23-3	U3	M5OP-19	1		
LINEAR TECHNOLOGY - LT130A38SPBF - IC REG BOOST VS 1A 8SOIC	U8, U9	LT38-1N	2		
MICROCHIP - MCP73833-F3DZ/UM - IC U-LON/LV-POLY CTRLR 10MSPD	U10	M5OP-UN10-N	1		
MICROCHIP - MCP1700T-33DZ/TF - IC REG LDO 3.3V 0.25A SOT23-3	U11	50V95P230-3N	1		
NORDIC SEMICONDUCTOR - nRF24L01+ -	U12	HDR2X4	1		
NDK - N322X55A-16.000MHz-S2-CSR-1 - CRYSTAL 16MHz 8PF SMD	Y1	N0322X55A	1		