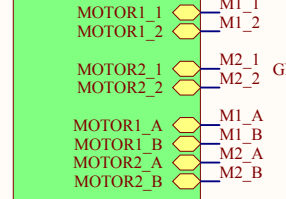


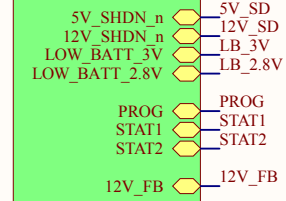
SS7

DC Motors.SchDoc



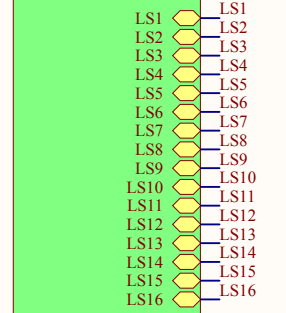
SS6

Power Supply.SchDoc



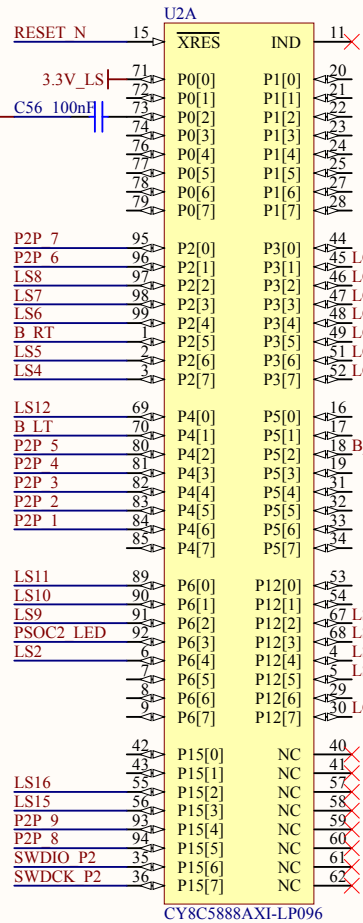
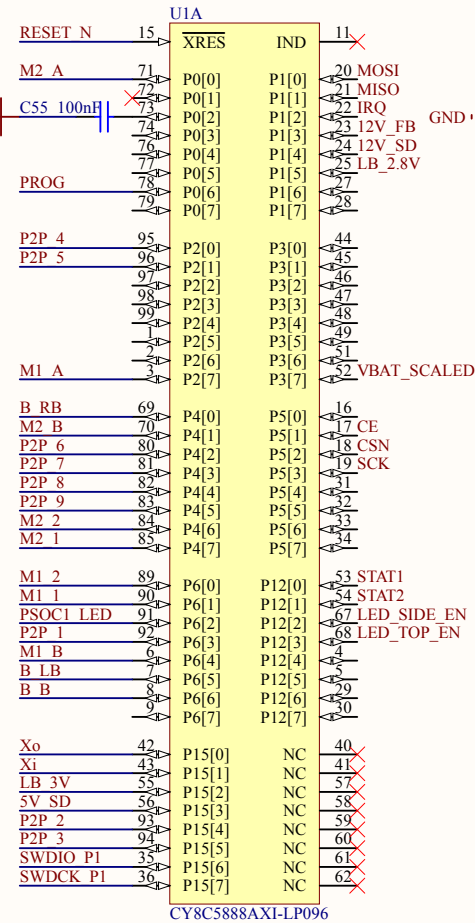
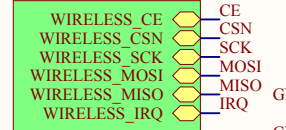
SS8

Light Sensors.SchDoc



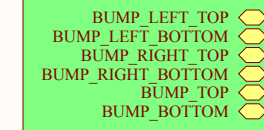
SS11

Wireless.SchDoc



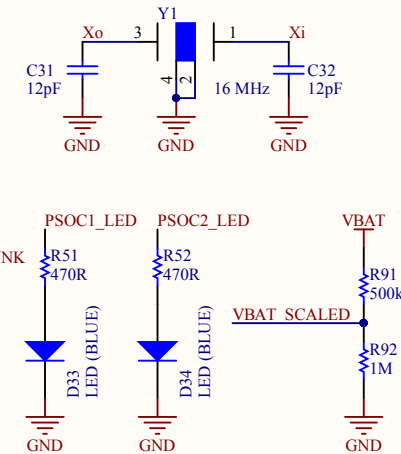
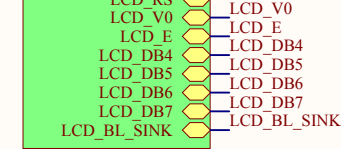
SS10

Bump Sensors.SchDoc



SS9

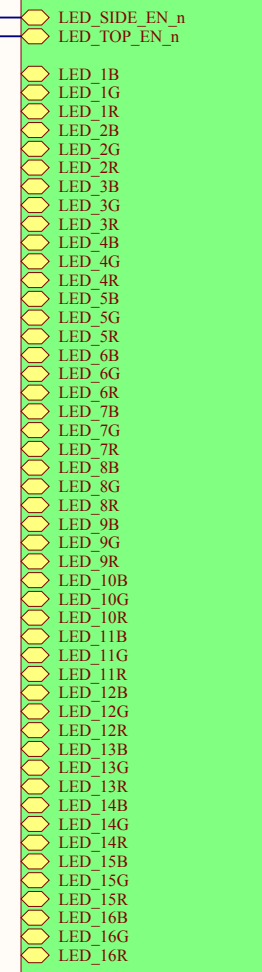
LCD.SchDoc



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

SS5

LEDs.SchDoc



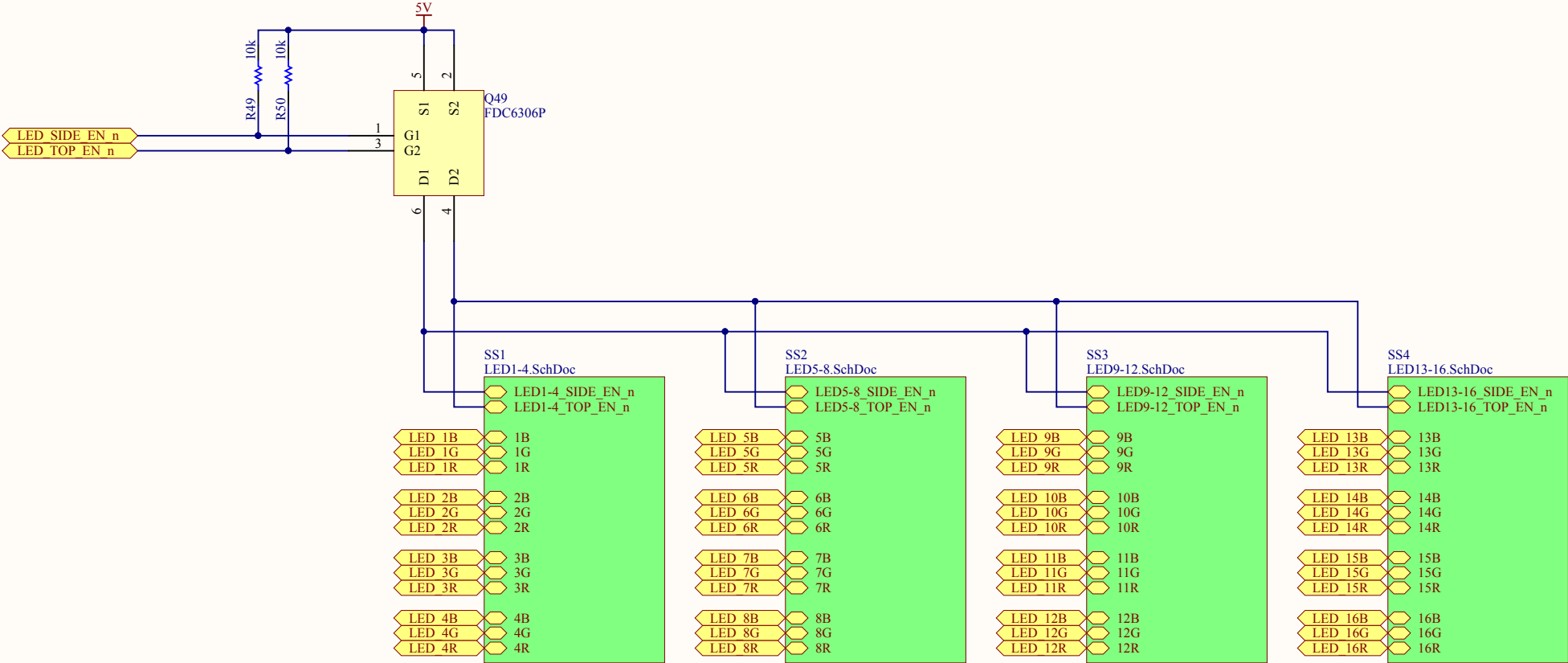
Title		
PSoC.SchDoc		
Size	Number	Revision
A4	1	A
Date:	29/11/2014	Sheet of 12
File:	C:\Users\...\PSoC.SchDoc	Drawn By: Nick D'Ademo

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

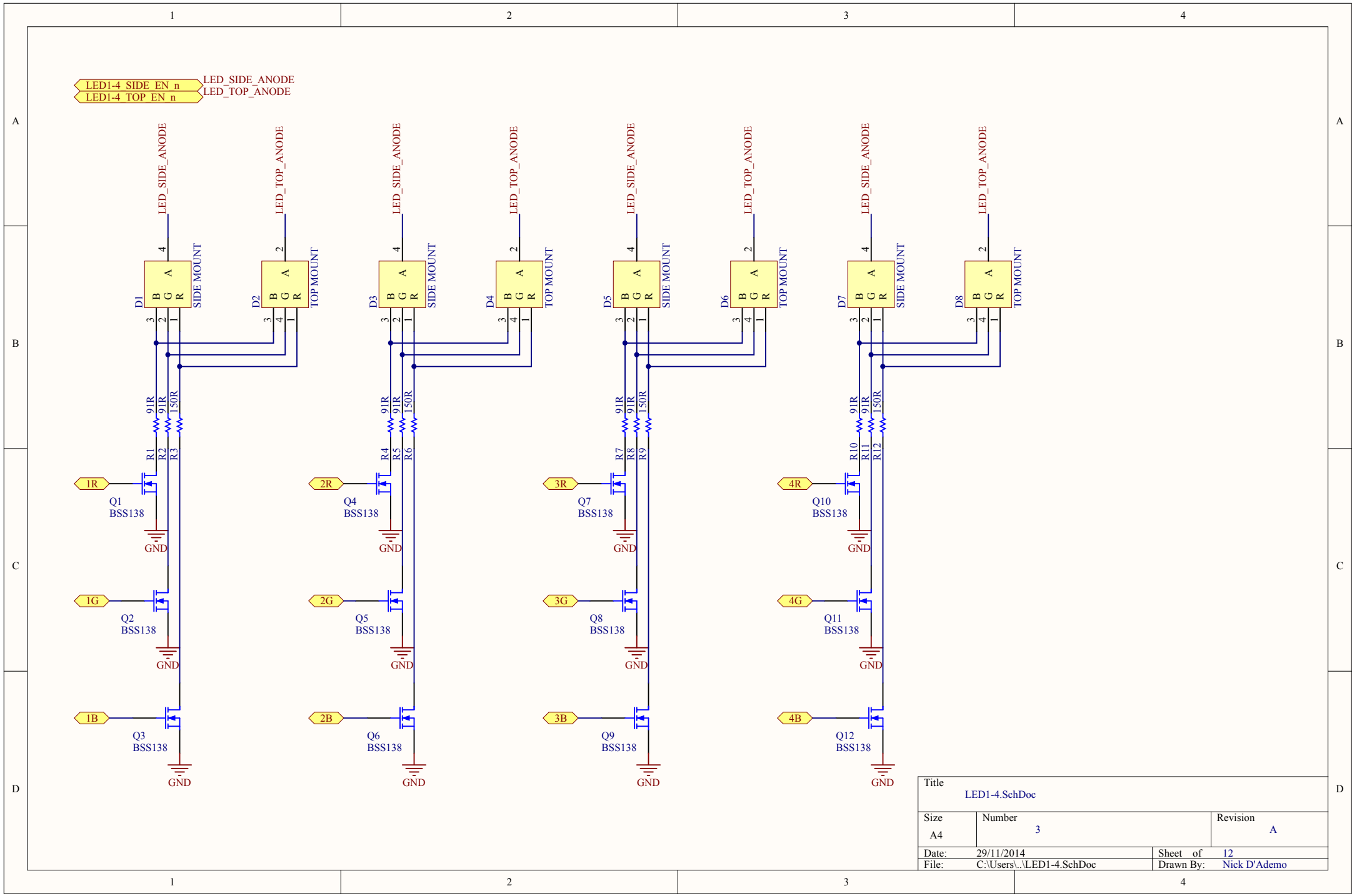
▲ SIDE LED:
Vf @ If=20mA (Min->Typ->Max):
RED: 1.8->2.0->2.4V
GREEN: 3.0->3.3->3.6V
BLUE: 3.0->3.3->3.6V

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

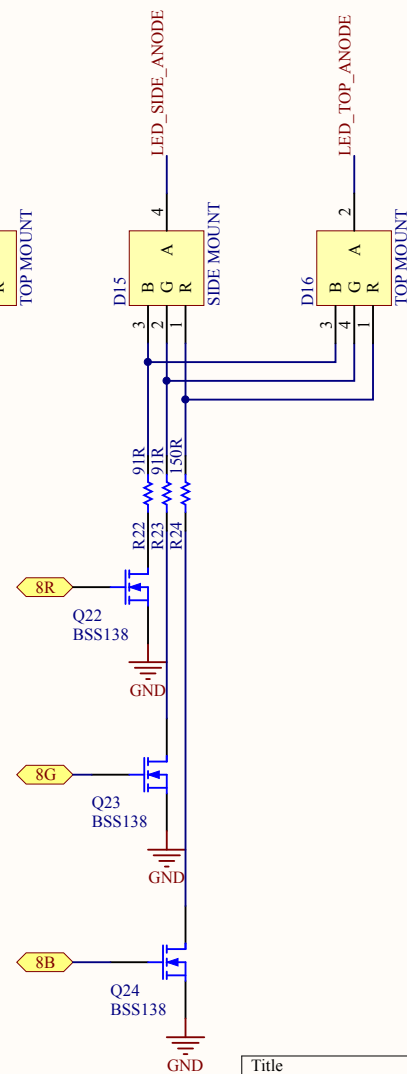
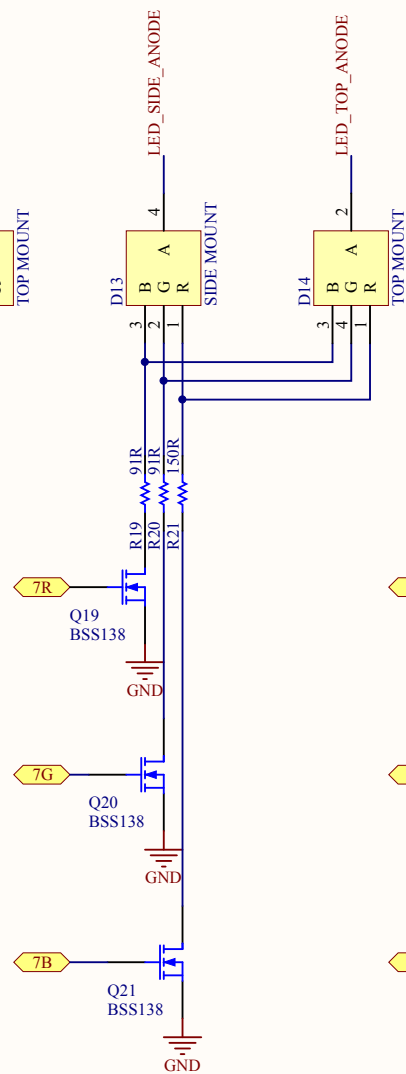
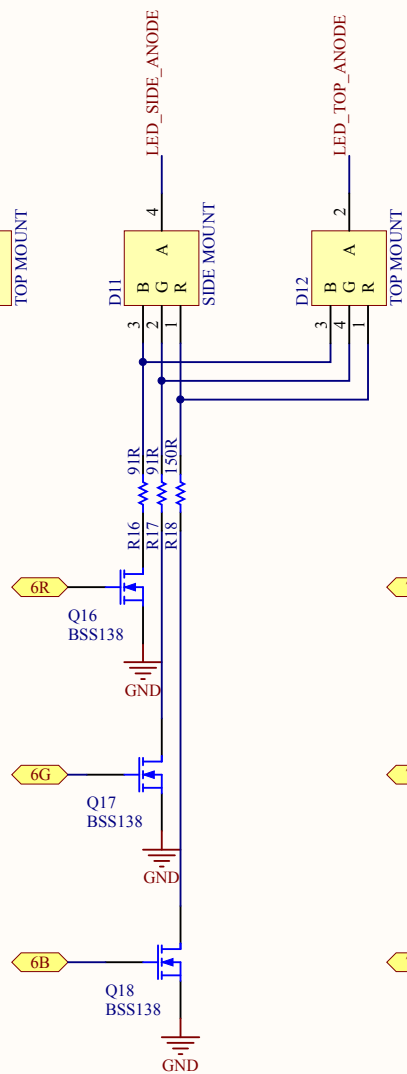
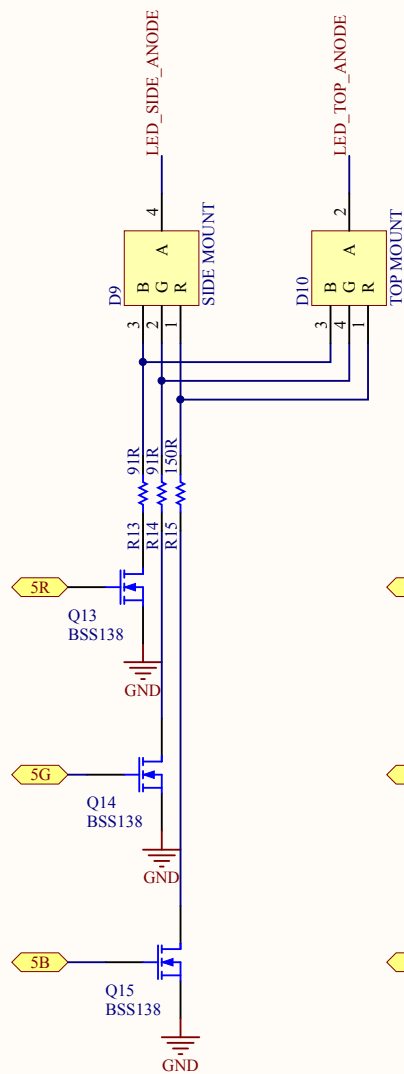
CLV1A-FKB-CJ1M1F1BB7R4S3: 675med Red, 1055med Green, 337med Blue
CLV1A-FKB-CK1N1G1BB7R4S3: 730med Red, 1150med Green, 365med Blue



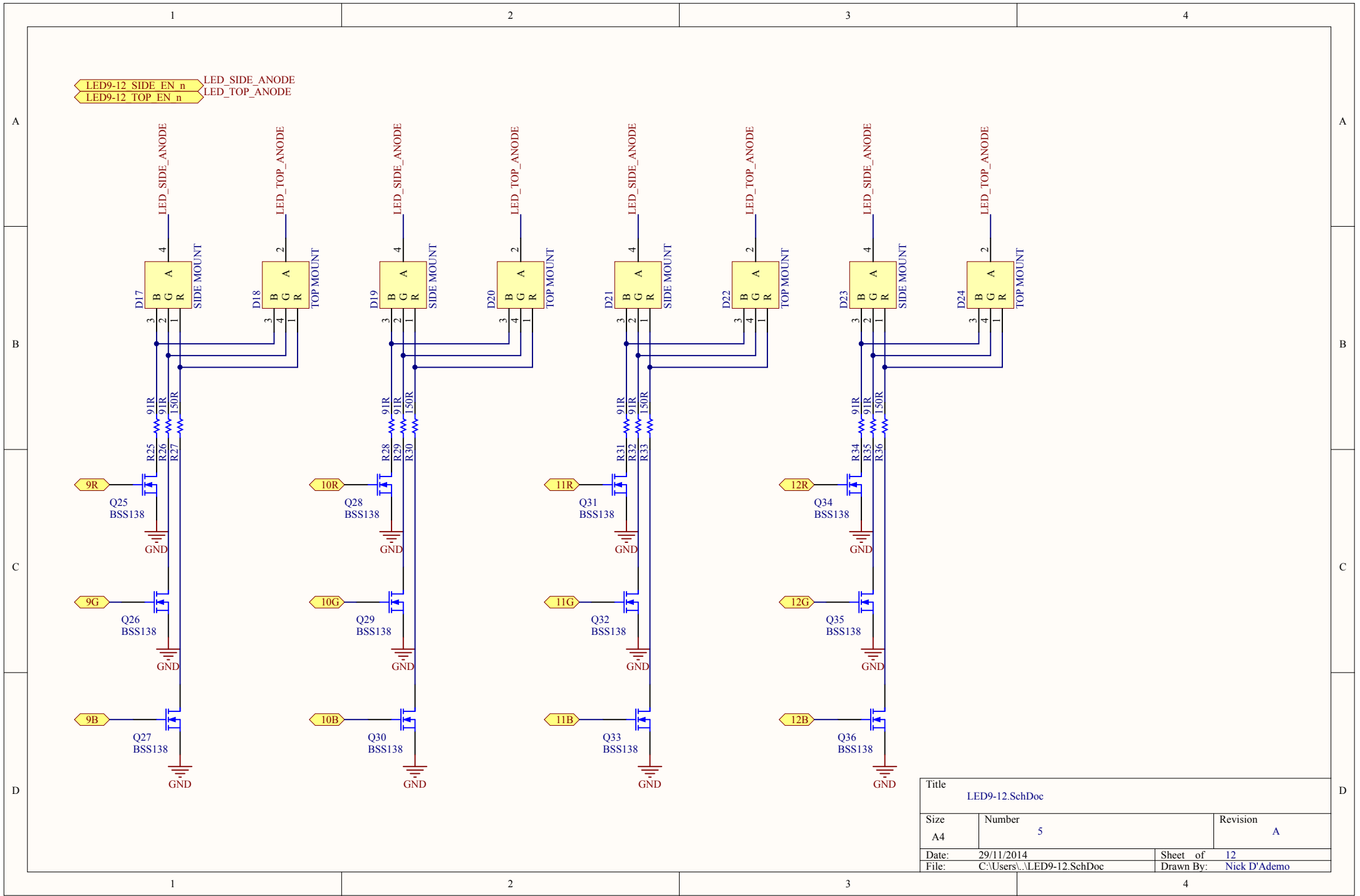
Title LEDs.SchDoc		
Size A4	Number 2	Revision A
Date: 29/11/2014	Sheet of 12	
File: C:\Users\...\LEDs.SchDoc	Drawn By: Nick D'Ademo	

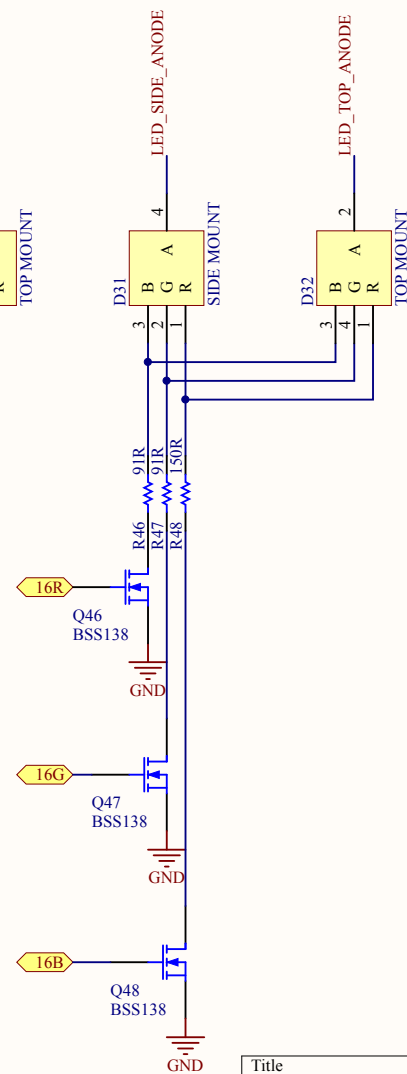
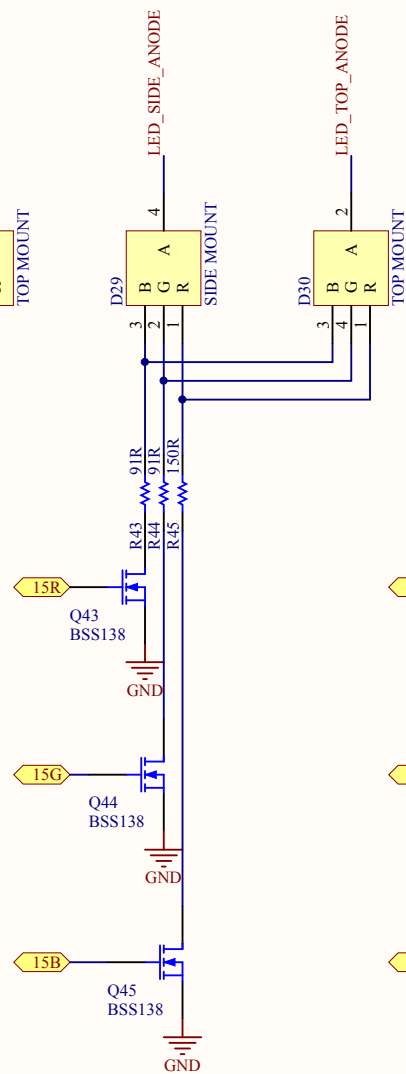
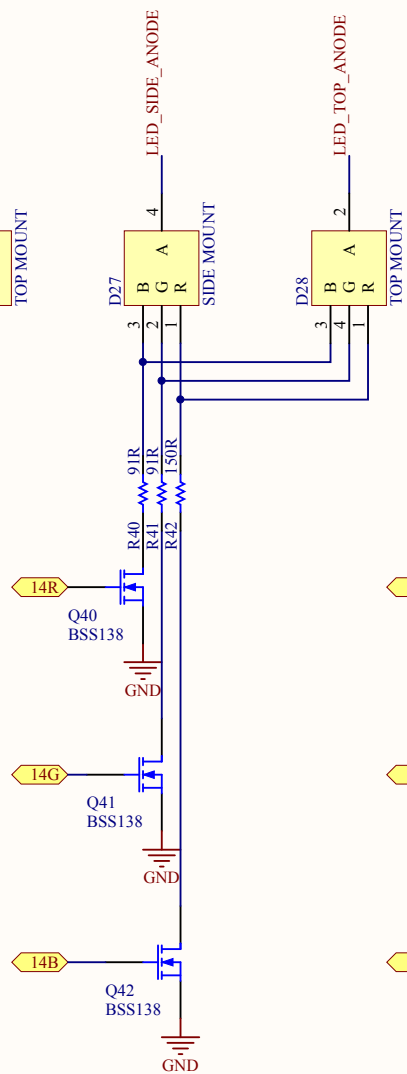
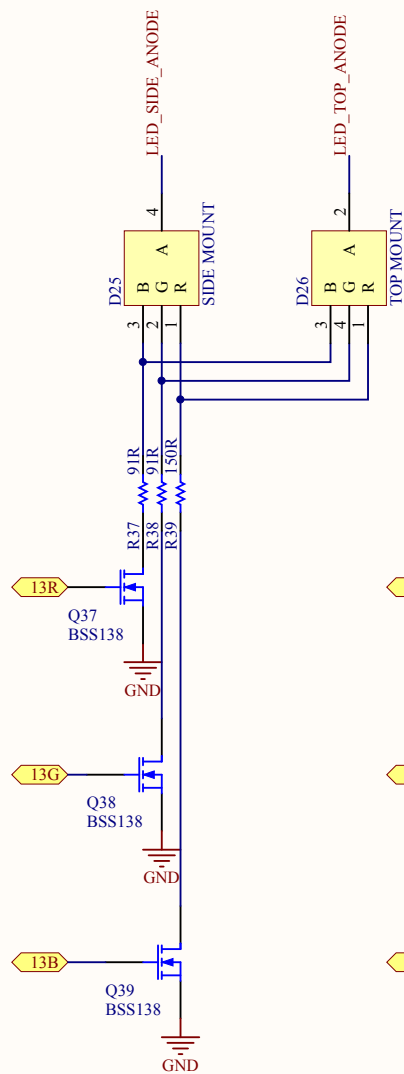


Title		
LED1-4.SchDoc		
Size	Number	Revision
A4	3	A
Date:	29/11/2014	Sheet of 12
File:	C:\Users\...\LED1-4.SchDoc	Drawn By: Nick D'Ademo



Title LED5-8.SchDoc			
Size A4	Number 4		Revision A
Date:	29/11/2014	Sheet of	12
File:	C:\Users\...\\LED5-8.SchDoc	Drawn By:	Nick D'Ademo





Title LED13-16.SchDoc			
Size A4	Number 6		Revision A
Date:	29/11/2014	Sheet of	12
File:	C:\Users\...LED13-16.SchDoc	Drawn By:	Nick D'Ademo

1

2

3

4

A

B

C

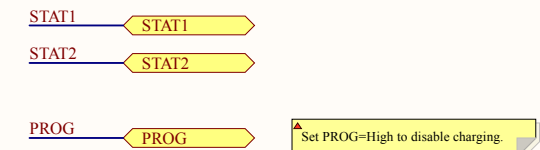
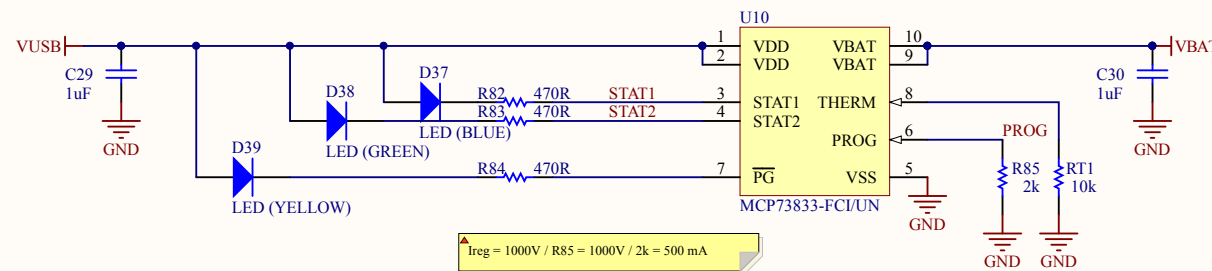
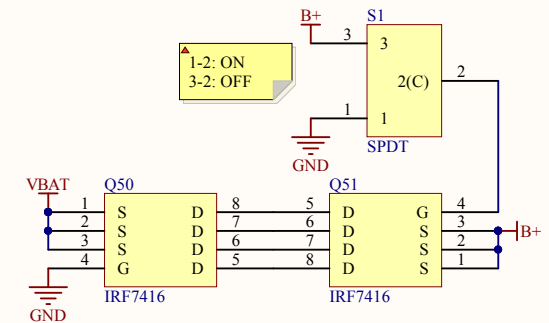
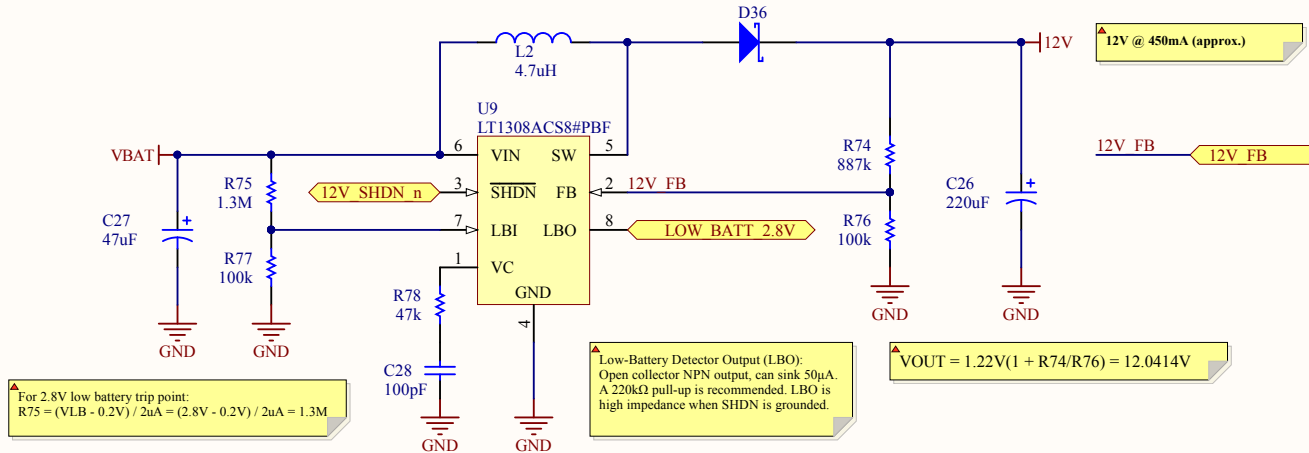
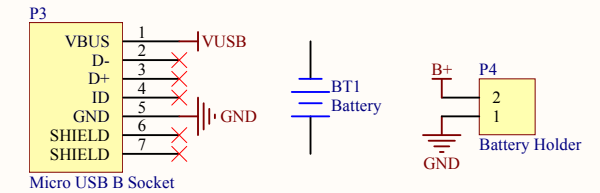
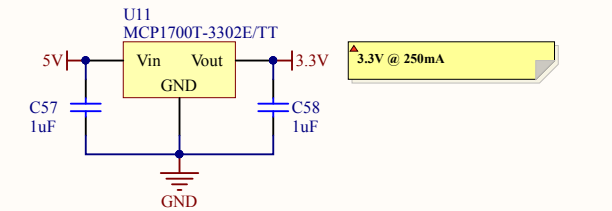
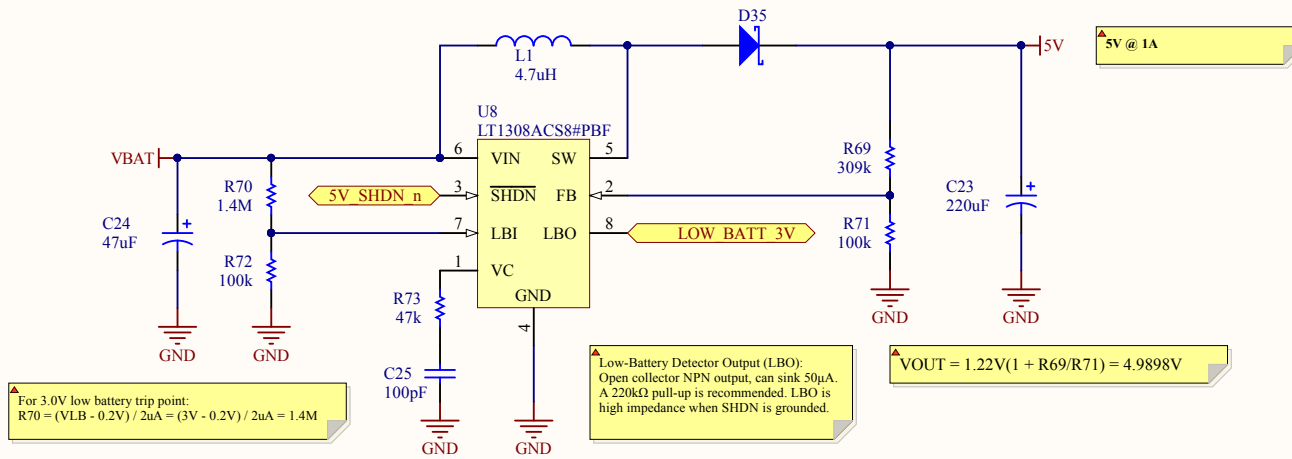
D

A

B

C

D



Title		
Power Supply.SchDoc		
Size	Number	Revision
A4	7	A
Date:	29/11/2014	Sheet of 12
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

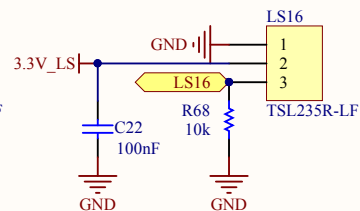
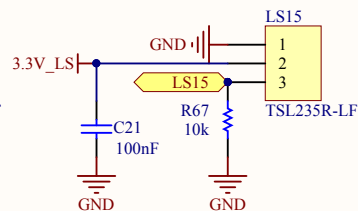
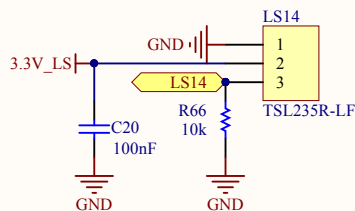
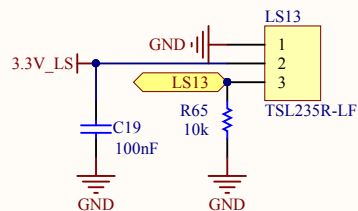
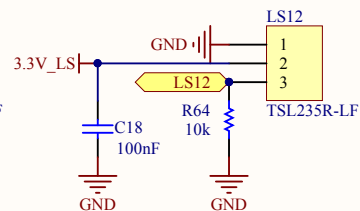
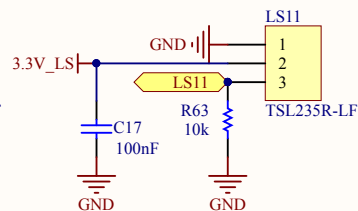
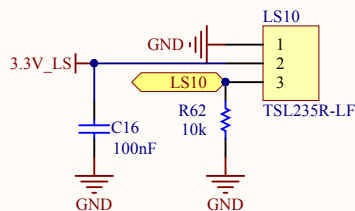
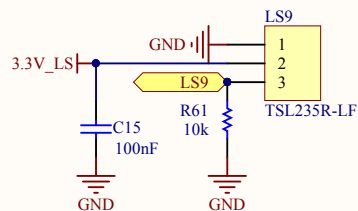
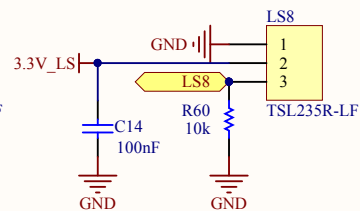
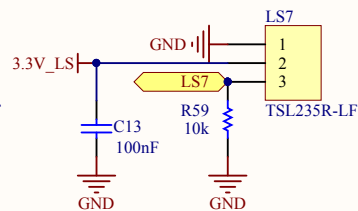
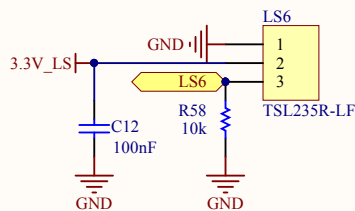
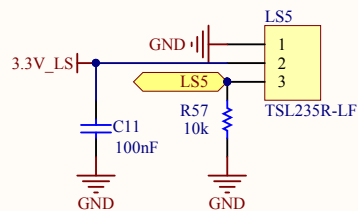
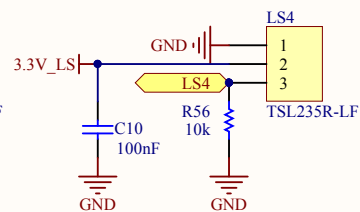
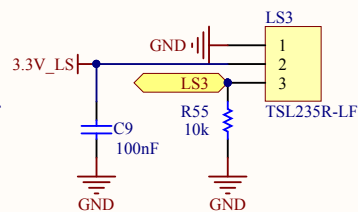
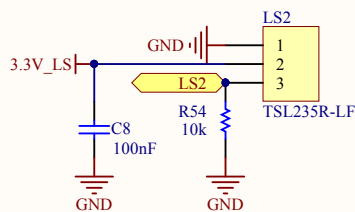
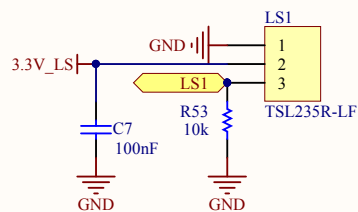
Light-to-Frequency parts:

TSL235
TSL237
TSL245 (IR light)

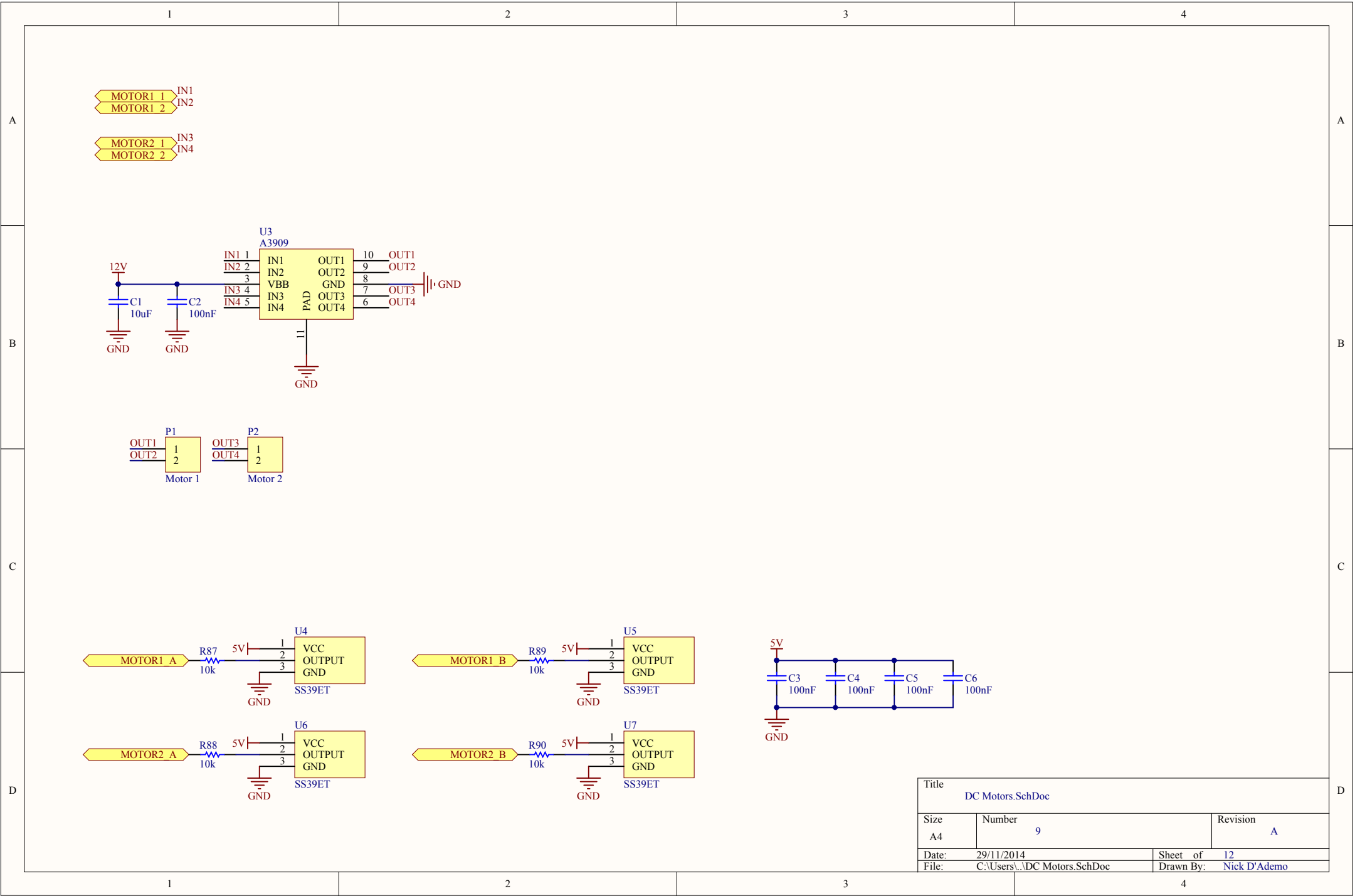
Light-to-Voltage parts:

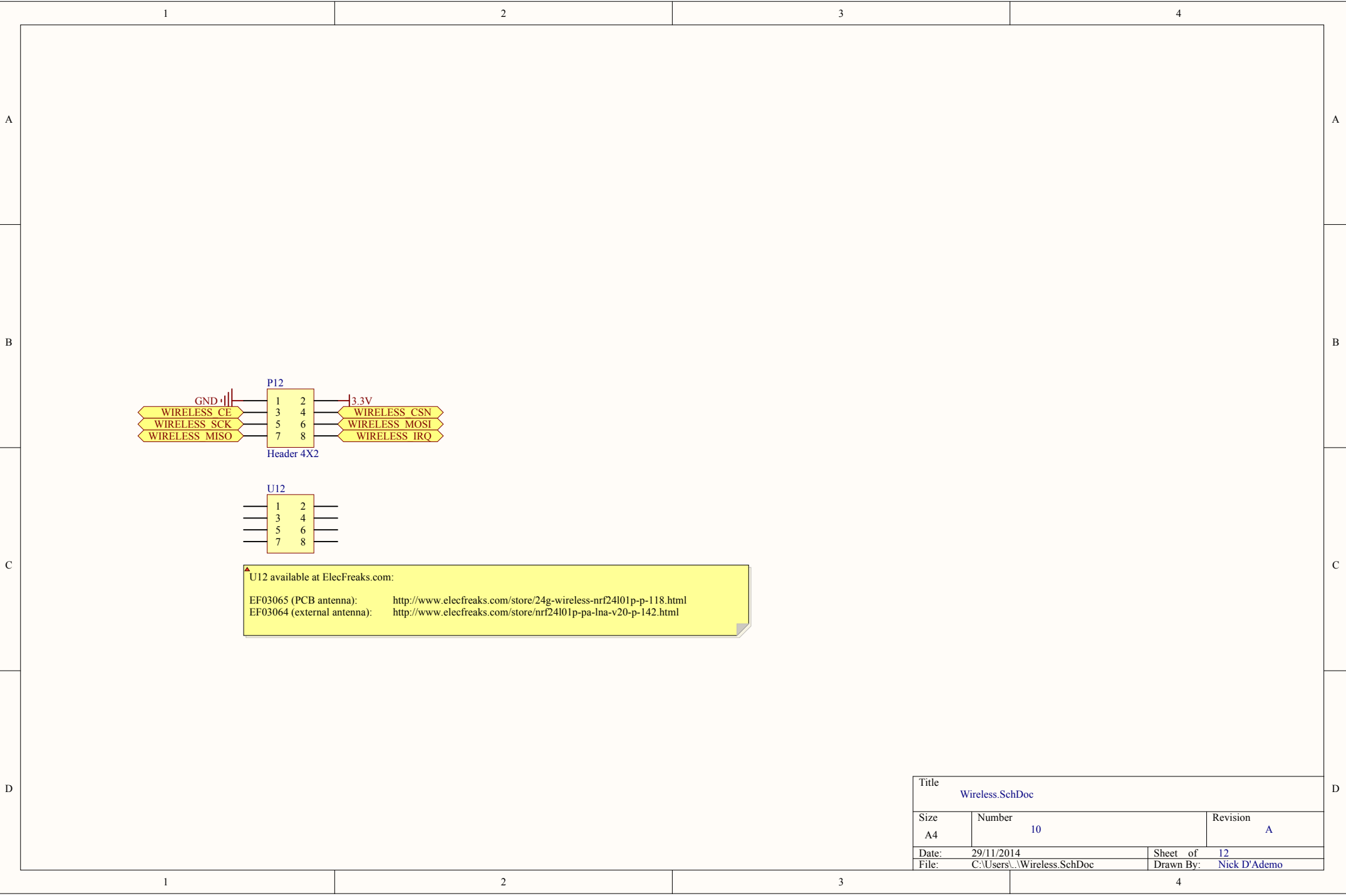
TSL125
TSL135
TSL145
TSL250R
TSL251R
TSL252R
TSL253R
TSL254R
TSL257
TSL260R (IR light)
TSL261R (IR light)
TSL262R (IR light)
TSL267 (IR light)

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

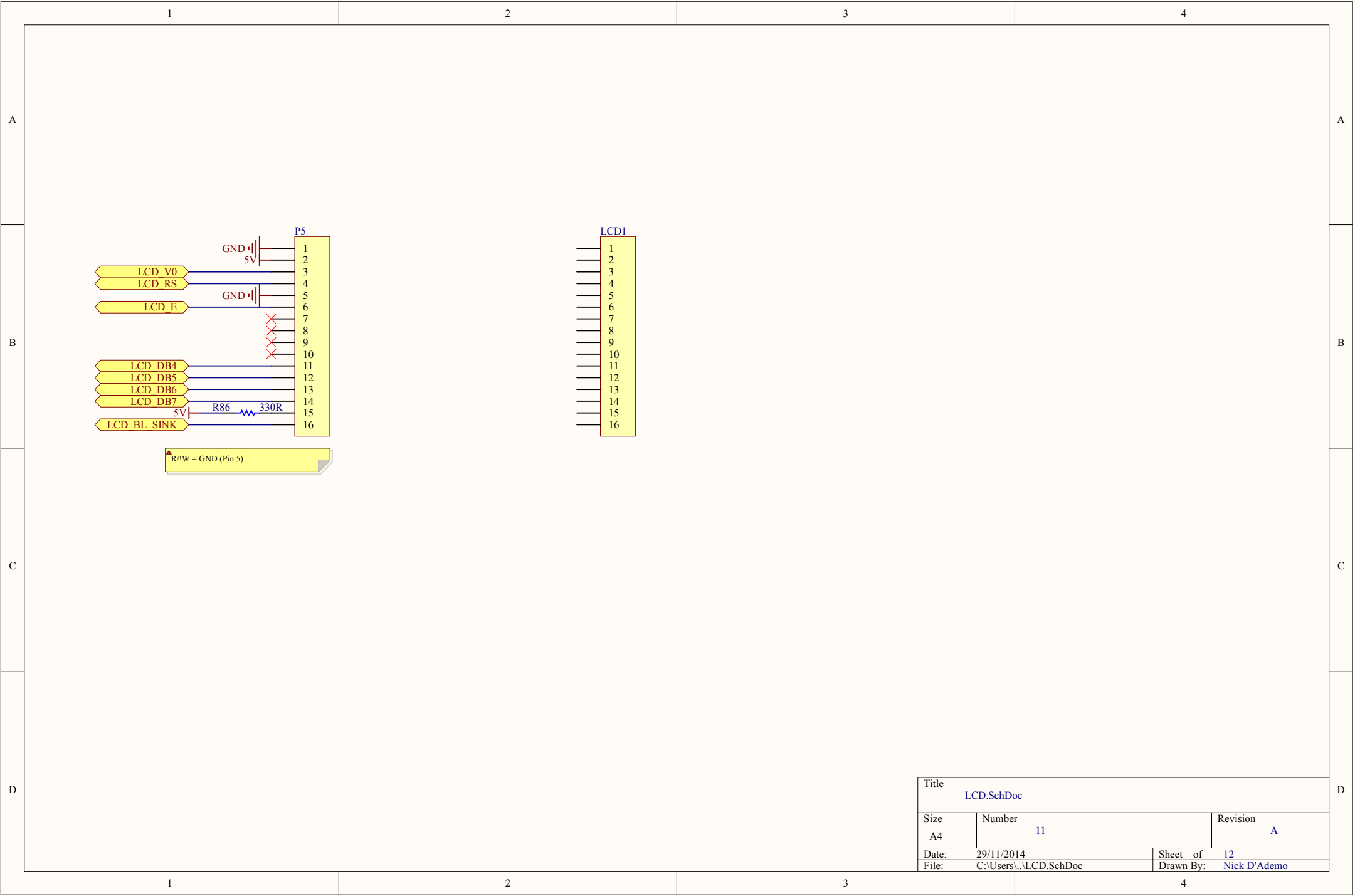


Title Light Sensors.SchDoc		
Size A4	Number 8	Revision A
Date: 29/11/2014	Sheet of 12	
File: C:\Users\...\Light Sensors.SchDoc	Drawn By: Nick D'Ademo	

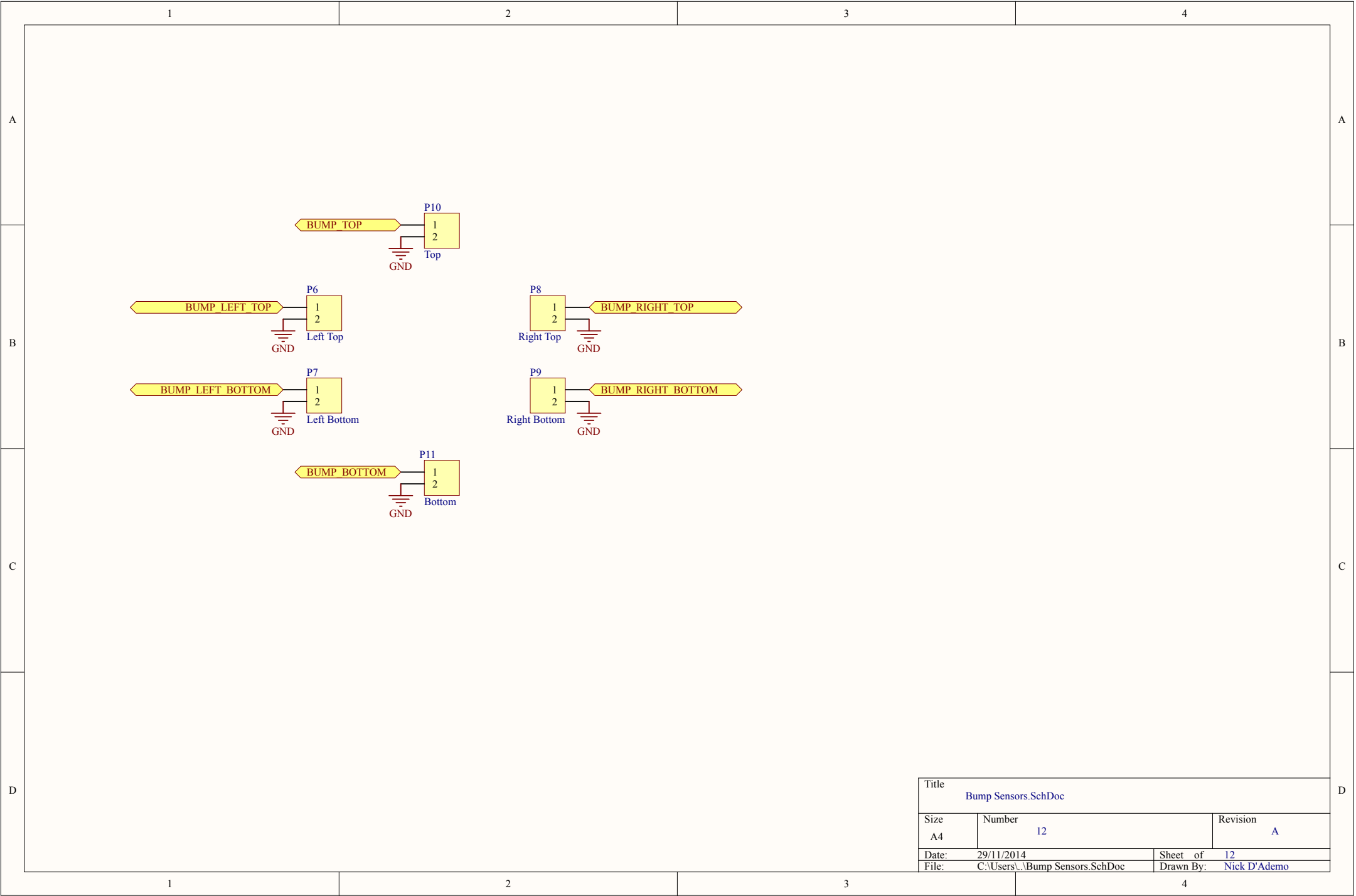


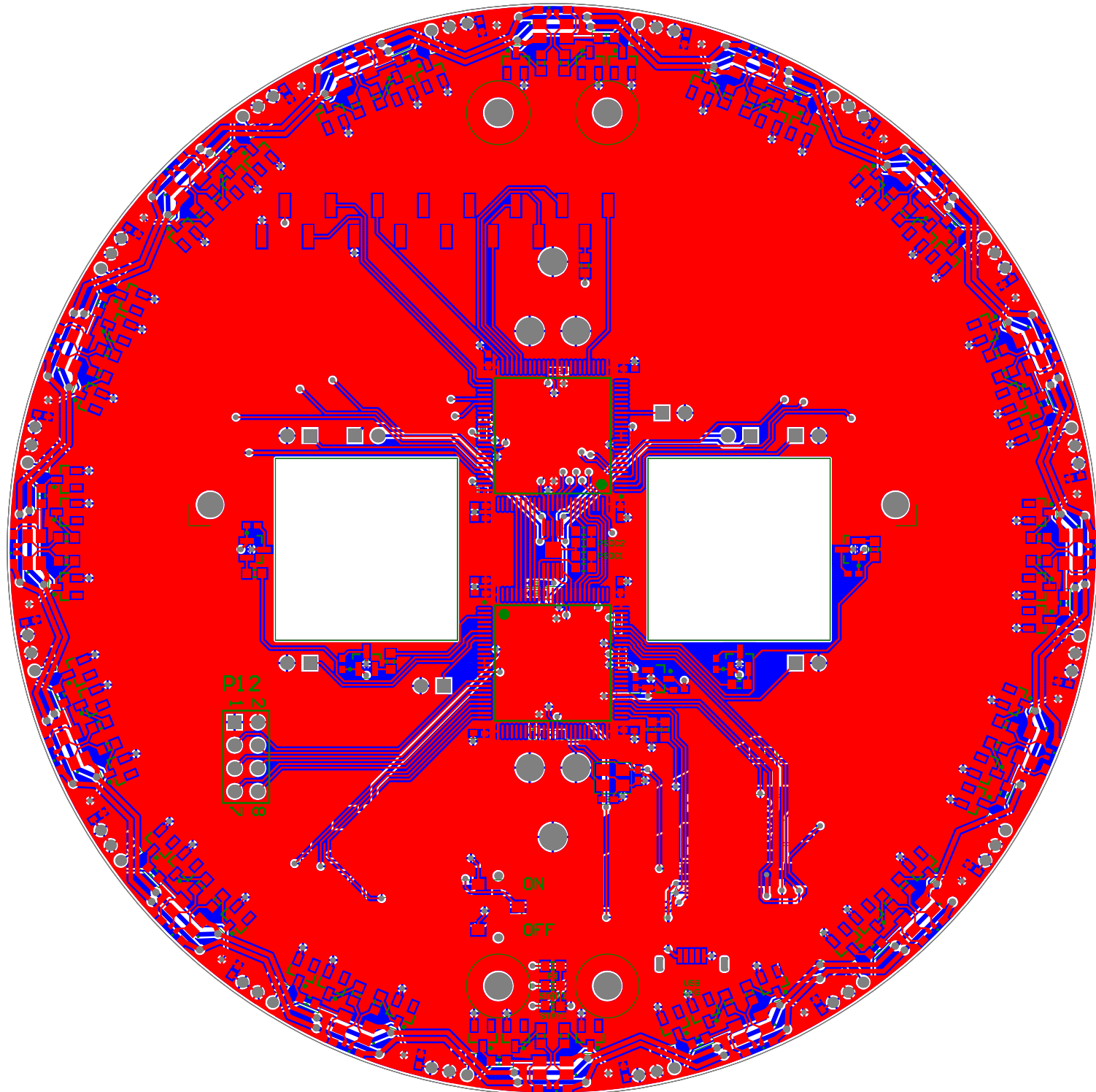


Title			
Wireless.SchDoc			
Size	Number	Revision	
A4	10	A	
Date:	29/11/2014	Sheet of	12
File:	C:\Users\...\Wireless.SchDoc	Drawn By:	Nick D'Ademo



Title			LCD.SchDoc
Size	Number	Revision	
A4	11	A	
Date:	29/11/2014	Sheet of	12
File:	C:\Users\...\LCD.SchDoc	Drawn By:	Nick D'Ademo





Description	Designator	Footprint	Quantity	Value
18650 1-Cell Lithium Ion Battery	BT1		1	
TAYO YUDEN - EMK107BB106MA-T - CAP CER 10UF 16V 20% XSR 0603	C1	CAPC1005N	1	10uF
Capacitor, XSR, ±10%, 16V, 0402	C2, C3, C4, C5, C6	CAPC1005N	5	100nF
Capacitor, X7R, ±10%, 6.3V, 0402	C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C27, C38, C39, G40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C55, C56			
KEMET - T491D227K016AT - CAP TANT 220UF 16V 10% 2917	C23, C26	TC7443-2917	2	220uF
KEMET - T491B4760D10AT - CAP TANT 47UF 10V 10% 1411	C24, C27	TC1528-1411	2	47uF
Capacitor, NP0, ±10%, 6.3V, 0402	C25, C28	CAPC1005N	2	100pF
Capacitor, X5R, ±10%, 6.3V, 0402	C29, C30	CAPC1005N	2	1uF
Capacitor, NP0, ±2%, 25V, 0402	C31, C32	CAPC1005N	2	12pF
Capacitor, X5R, ±10%, 10V, 0402	C33, C34, C35, C36, C51, C52, C53, C54, C57, C58	CAPC1005N	10	1uF
OPTOK - OVSRG8CC3 - LED, RED/GRN/BLUE 1204 SMD	D1, D3, D5, D7, D9, D11, D13, D15, D17, D18, D21, D23, D25, D27, D29, D31	OVSRG8CC3_S1 D6	16	
CREE - CLV1A-FXB-CK1N1G18B7R453 - LED RGB 3-IN-1 3.2X2.8MM 4PLCC	D7, D4, D6, D8, D10, D12, D14, D16, D18, D20, D22, D24, D26, D28, D30, D32	PLCC4	16	
ROHM - SMLE128CTT86Q - LED, 0603, LO-CUR, BLU	D33, D34, D37	LED, 0603	3	
VISHAY SEMICONDUCTOR - VS-MBR5130TRPBF - DIODE SCHOTTKY 30V 1A DO-214AA	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	
TAYO YUDEN - NR6028T487M - INDUCTOR 4.7UH 2.7A 20% SMD	L1, L2	TV_NIR	2	4.7uH
SHENZHEN EONE ELECTRONICS CO.,LTD - IM1204240T5 - EONE High 16x2 (1602) Characters LCD	LCD1		1	
AMS - TSL235R-4F - IC LIGHT TO FREQUENCY CONV 3PIN	L31, L32, L33, L34, L35, L36, L37, L38, L39, L510, L511, L512, L513, L514, L515, L516	AMS_5_3PIN	16	
MOLEX INC - 0022272021 - CONN HEADER 2POS .100 VERT TIN	P1, P2, P6, P7, P8, P9, P10, P11	HDR 1X2	8	
GLOBAL CONNECTOR TECHNOLOGY - USB3140-30-0170-1-C - CONNECTOR, USB 2.0 MICRO B, RCPT, SPOS, SMT	P3	USB3140-30-0170-1-C	1	
KEYSTONE ELECTRONICS - 54 - BATTERY CLIP 18MM 18650 CELL	P4	54	1	
SANTEC - SSW-116-22-F-5-V5 - Conn Socket Strip SMT 16 POS 2.54mm Solder ST SMD Tube	P5	Samtec.SSW-116-22-F-5-V5	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 2P-CH 20V 1.9A SSO76	Q49	SOT-6	1	
INTERNATIONAL RECTIFIER - IRF7416TRPBF - MOSFET P-CH 30V 10A B-SOIC	Q50, Q51	SOIC127P600-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, R16, 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, R67, R68, R69, 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	39k
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	687k
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	130R
Resistor, ±1%, 0.1W, 0603	R91	RESC1608N	1	500k
Resistor, ±1%, 0.1W, 0603	R92	RESC1608N	1	1M
MURATA - NCP18BH10J301R8 - THERMISTOR, NTC, 10K, 5% SMD	R71	RESC1608N	1	10k
COPAL ELECTRONICS INC - CL-S8-128-01T - SWITCH SLIDE SPDT 0.2A GULL 12V P50C Programmable System-on-Chip, 256 KB Flash, 62 GPIOs, 1.71 to 5.5 V, 100 Pin TQFP (AX100), Tray	S1	CL-S8-128-01T	1	
ALLEGRO - A3909GLVIR-T - IC MOTOR DRIVER PAR 10MSOP	U1, U2	CMP-AX100_L	2	
HONEYWELL S&C - SS3RET - SENSOR, HALL EFFECT LINEAR, SOT23-3	U3	MSOP-10	1	
LINEAR TECHNOLOGY - LT1308AC58P#PBF - IC REG BOOST SV 1A RSOIC	U4, U5, U6, U7	SOT23-3N	4	
MICROCHIP - MCP73833-FCIUUN - IC U-I/ON-U-POLY CTRLR 10MSOP	U8, U9	LT-S8-B_N	2	
MICROCHIP - MCP71700T-3302E/TT - IC REG LDO 3.3V 0.25A SOT23-3	U10	SOT23-3N	1	
NORDIC SEMICONDUCTOR - nRF24LD1+	U11	MSOP-UN10_N	1	
NDK - NX3225SA-16.000MHZ-STD-CS8-1 - CRYSTAL 16MHZ 8PF SMD	U12	SOT95P230-3N	1	
	U1	HDR2X4	1	
	Y1	NX3225SA	1	