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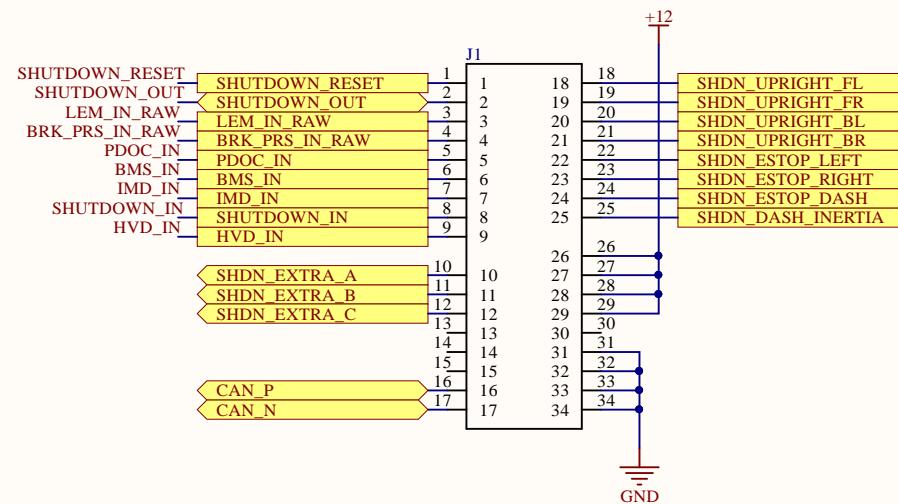
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Title ***QUTMS Shutdown V2 - Connector***

Size: A4 Number: 3 Revision: \*

Date: 12/06/2019 Time: 9:16:00 PM Sheet 3 of 13

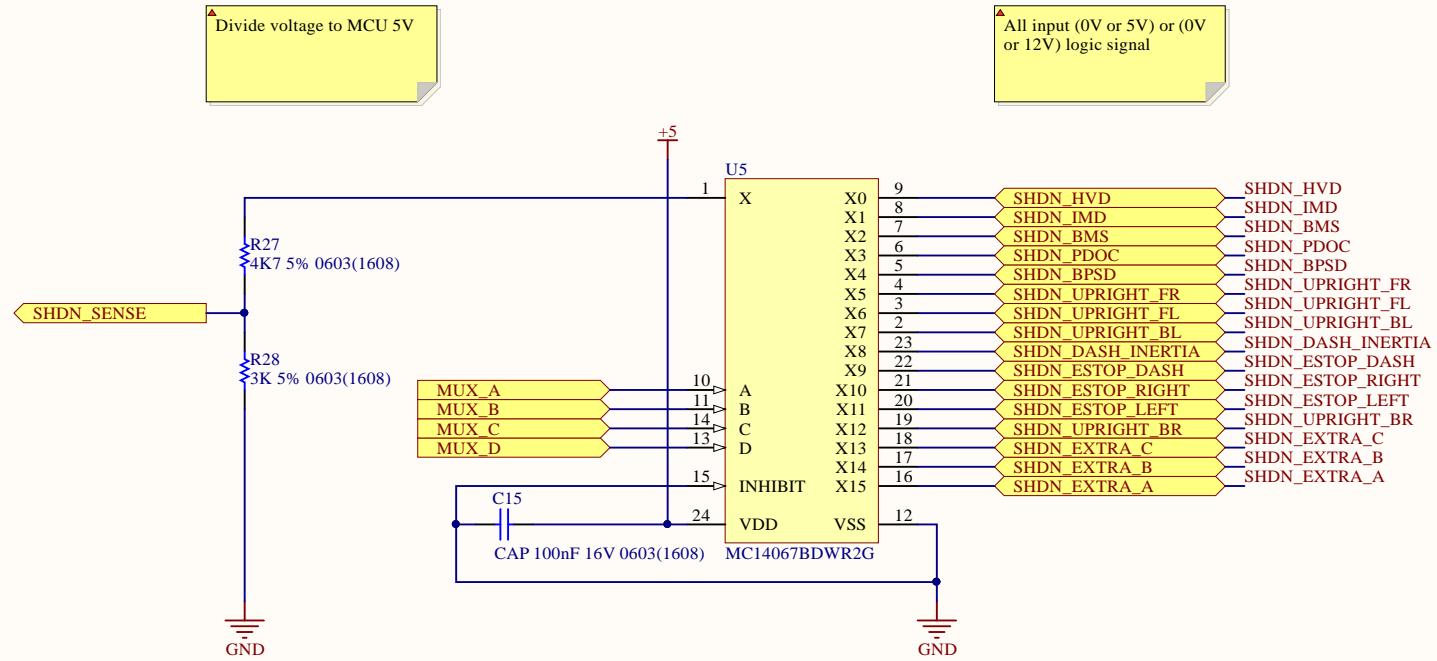
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QUT Motorsport  
O-120  
O Block  
QUT Gardens Point  
Brisbane, 4000



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Title <b>QUTMS Shutdown V2 - Demux</b>		
Size: A4	Number: 4	Revision*: <b></b>
Date: 12/06/2019	Time: 9:16:00 PM	Sheet 4 of 13 <b>Brisbane, 4000</b>
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2.dwg		



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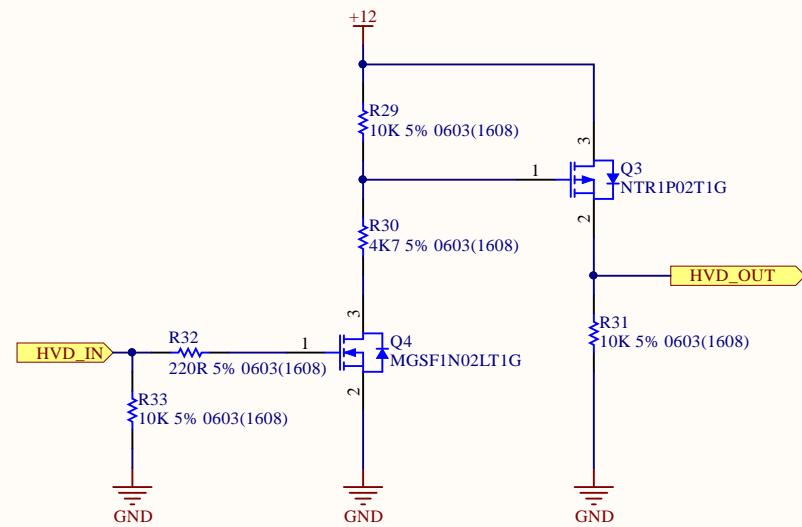
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Title <b><i>QUTMS Shutdown V2 - HVD_Filtering</i></b>			<i>QUT Motorsport O-120 O Block QUT Gardens Point Brisbane, 4000</i>
Size: A4	Number: 5	Revision: *	
Date: 12/06/2019	Time: 9:16:00 PM	Sheet 5 of 13	
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2\QUTMS_ShutdownBoard_V2.dwg			<b><i>QUT MOTORSPORT</i></b>

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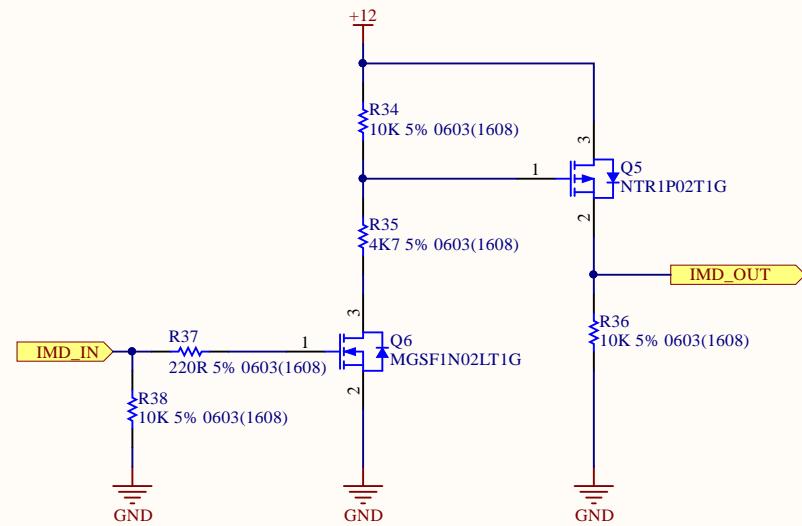
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Title <b><i>QUTMS Shutdown V2 - IMD_Filtering</i></b>			<i>QUT Motorsport O-120 O Block QUT Gardens Point Brisbane, 4000</i>
Size: A4	Number: 6	Revision: *	
Date: 12/06/2019	Time: 9:16:01 PM	Sheet 6 of 13	
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2.dwg			<b><i>QUT MOTORSPORT</i></b>

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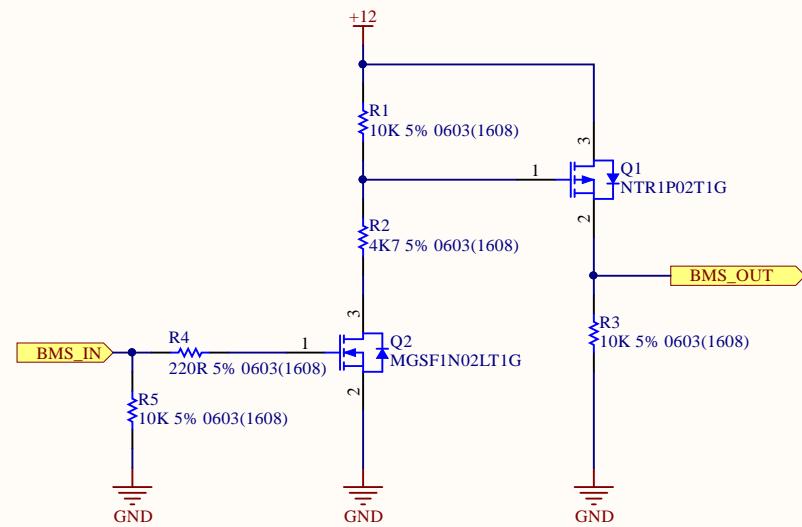
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Title <b><i>QUTMS Shutdown V2 - BMS_Filtering</i></b>			<i>QUT Motorsport O-120 O Block QUT Gardens Point Brisbane, 4000</i>
Size: A4	Number: 7	Revision: *	
Date: 12/06/2019	Time: 9:16:01 PM	Sheet 7 of 13	
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2\QUTMS_ShutdownBoard_V2.dwg			<b><i>QUT MOTORSPORT</i></b>

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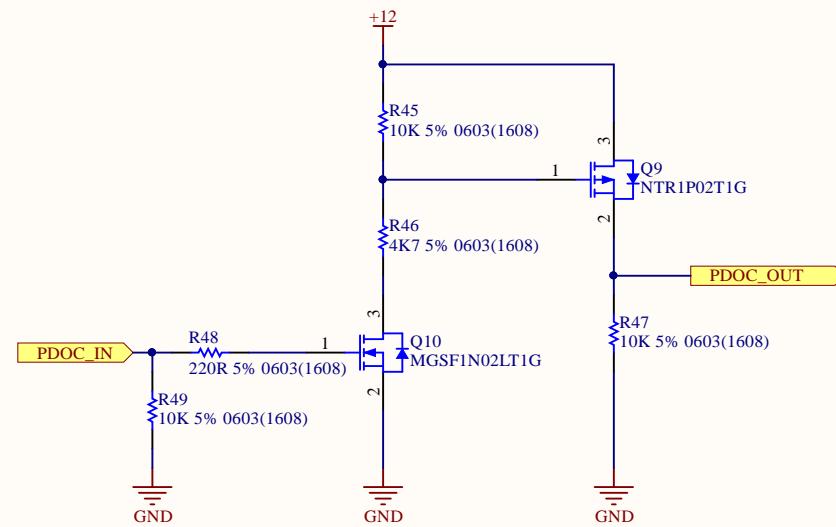
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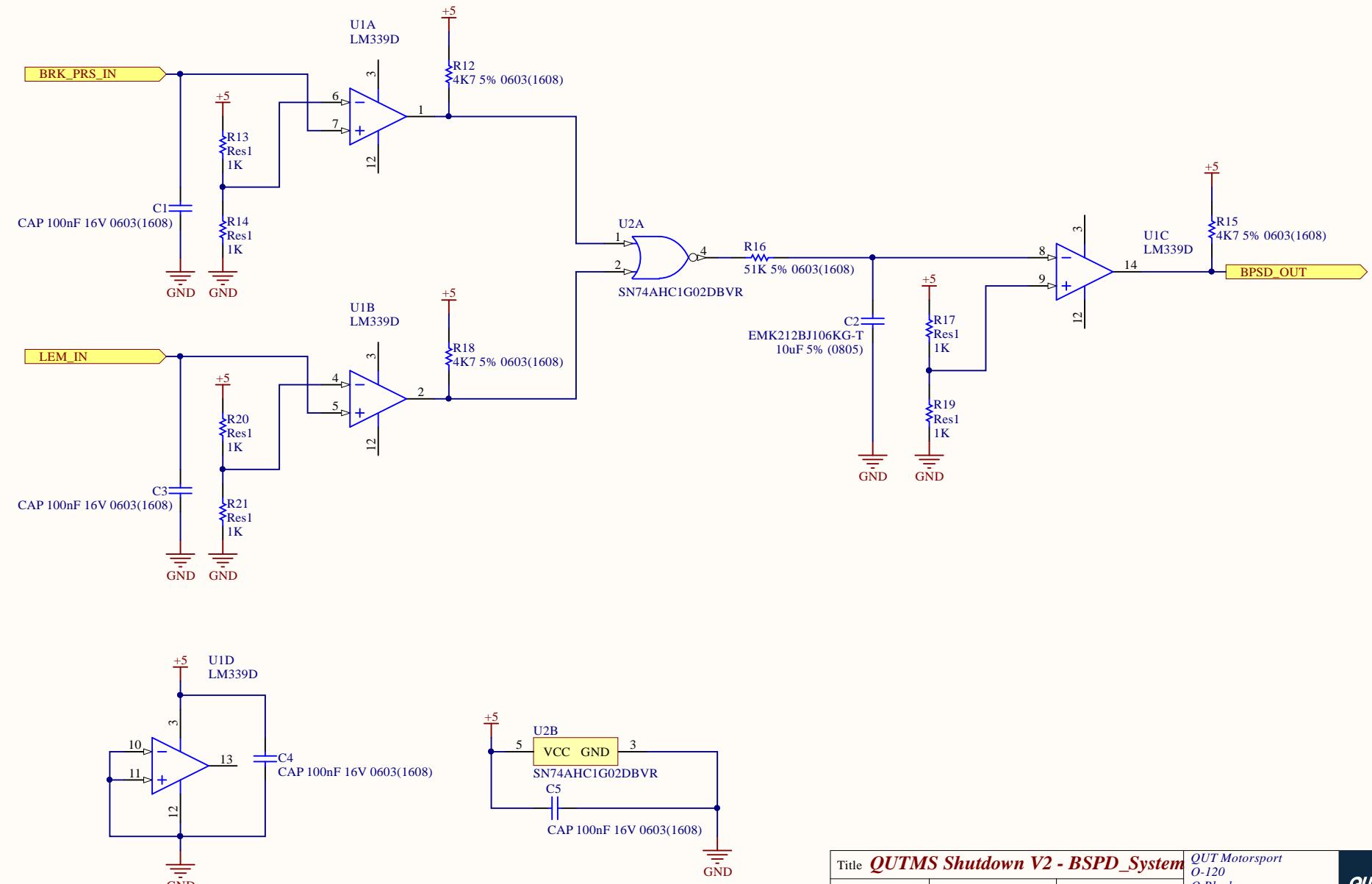
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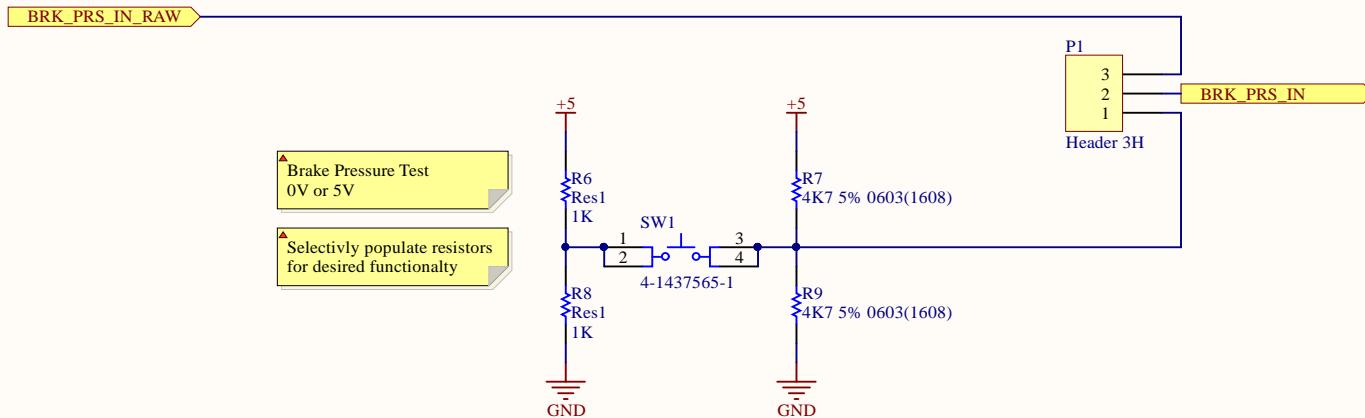


Title <b><i>QUTMS Shutdown V2 - PDOC_Filtering</i></b>			<i>QUT Motorsport O120 O Block QUT Gardens Point Brisbane, 4000</i>
Size: A4	Number: 8	Revision: *	
Date: 12/06/2019	Time: 9:16:01 PM	Sheet 8 of 13	Brisbane, 4000
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2\QUTMS_ShutdownBoard_V2.dwg			<b><i>QUT MOTORSPORT</i></b>



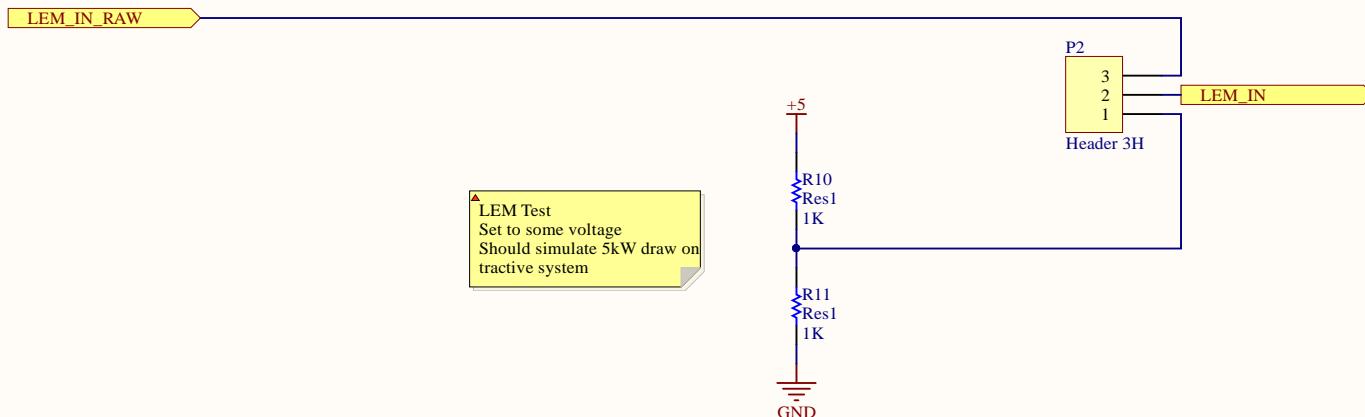
Title <b>QUTMS Shutdown V2 - BSPD System</b>		
Size: A4	Number: 9	Revision: *
Date: 12/06/2019	Time: 9:16:01 PM	Sheet 9 of 13 Brisbane, 4000
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2		

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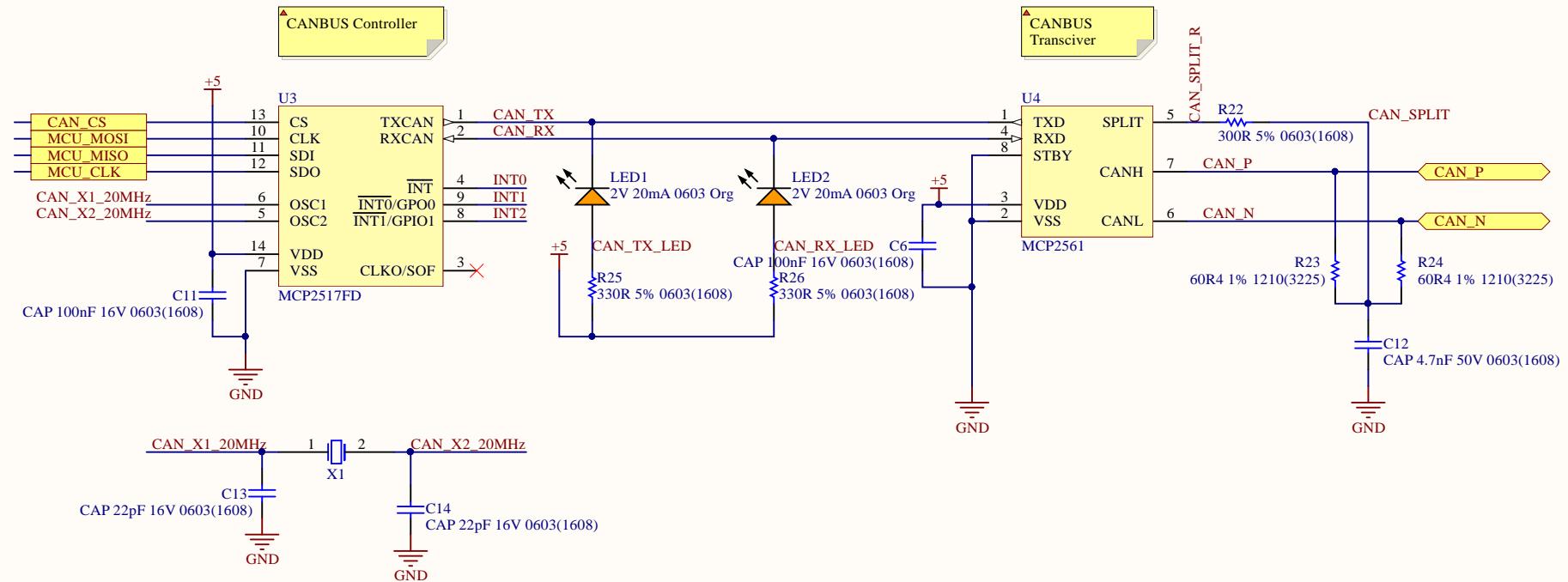
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Title ***QUTMS Shutdown V2 - CANBUS***

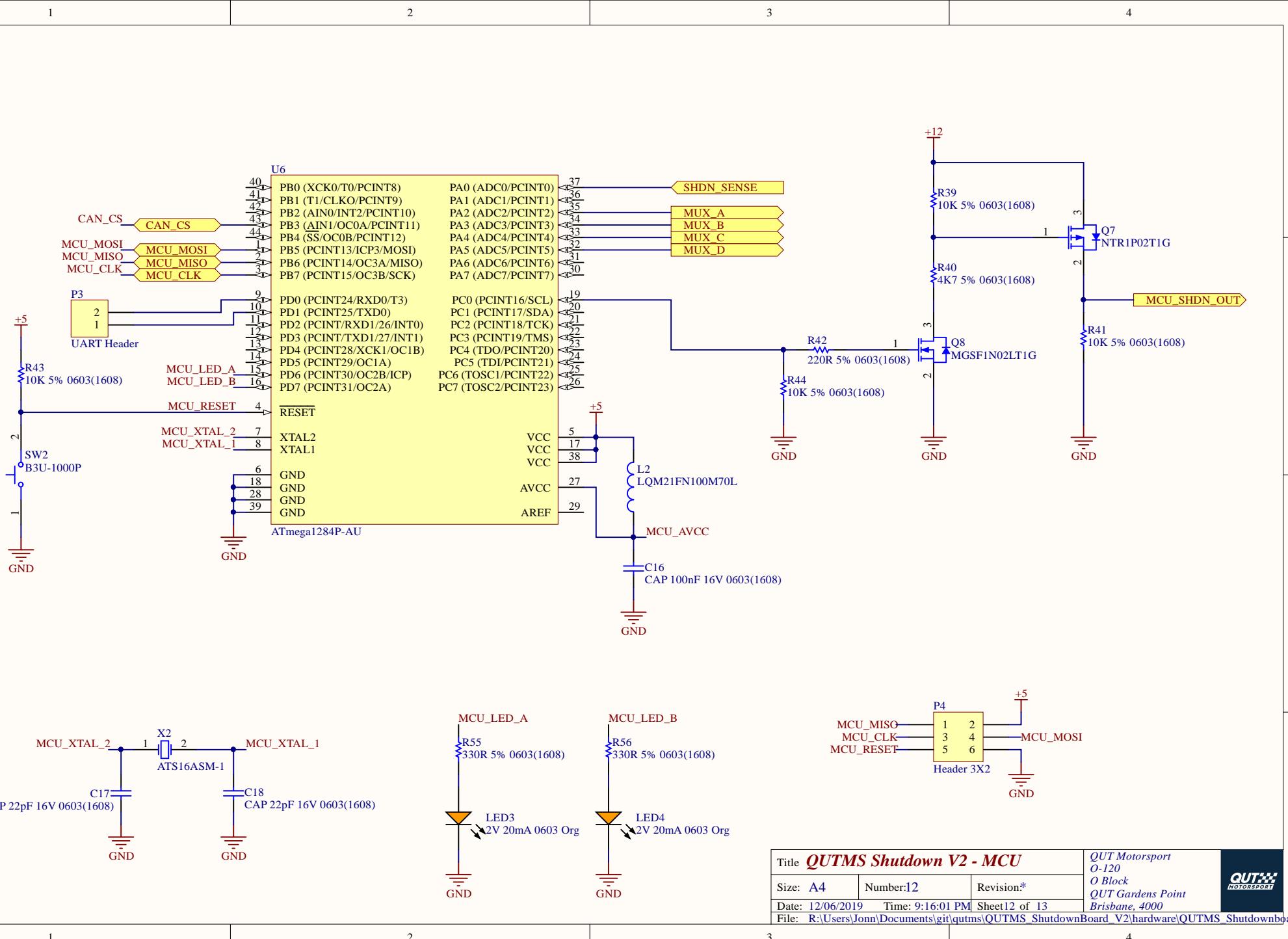
QUT Motorsport  
O-120  
O Block  
QUT Gardens Point  
Brisbane, 4000

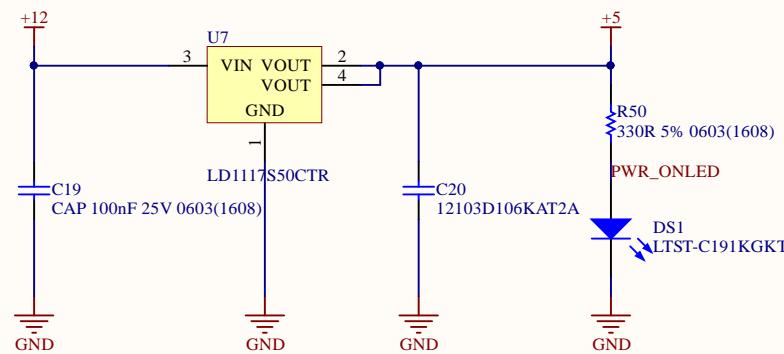


Size: A4 Number:11 Revision:\*

Date: 12/06/2019 Time: 9:16:01 PM Sheet 11 of 13

File: R:\Users\Jonn\Documents\git\qutms\QUTMS\_ShutdownBoard\_V2\hardware\QUTMS\_ShutdownBoard\_V2.dwg





Title <b><i>QUTMS Shutdown V2 - Power</i></b>			QUT Motorsport O-120 O Block QUT Gardens Point Brisbane, 4000
Size: A4	Number:13	Revision:*	
Date: 12/06/2019	Time: 9:16:02 PM	Sheet13 of 13	Brisbane, 4000
File: R:\Users\Jonn\Documents\git\qutms\QUTMS_ShutdownBoard_V2\hardware\QUTMS_ShutdownBoard_V2.dwg			

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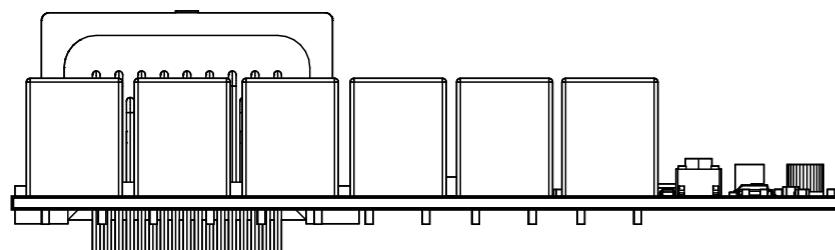
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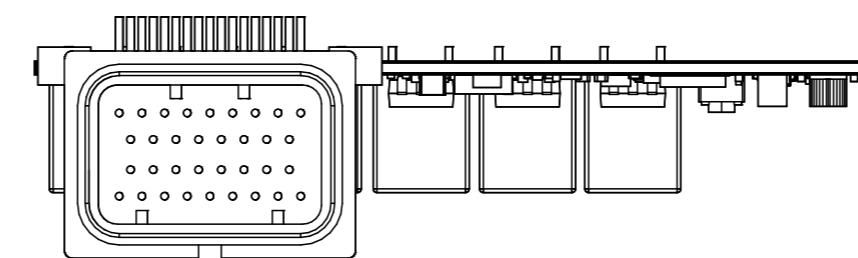
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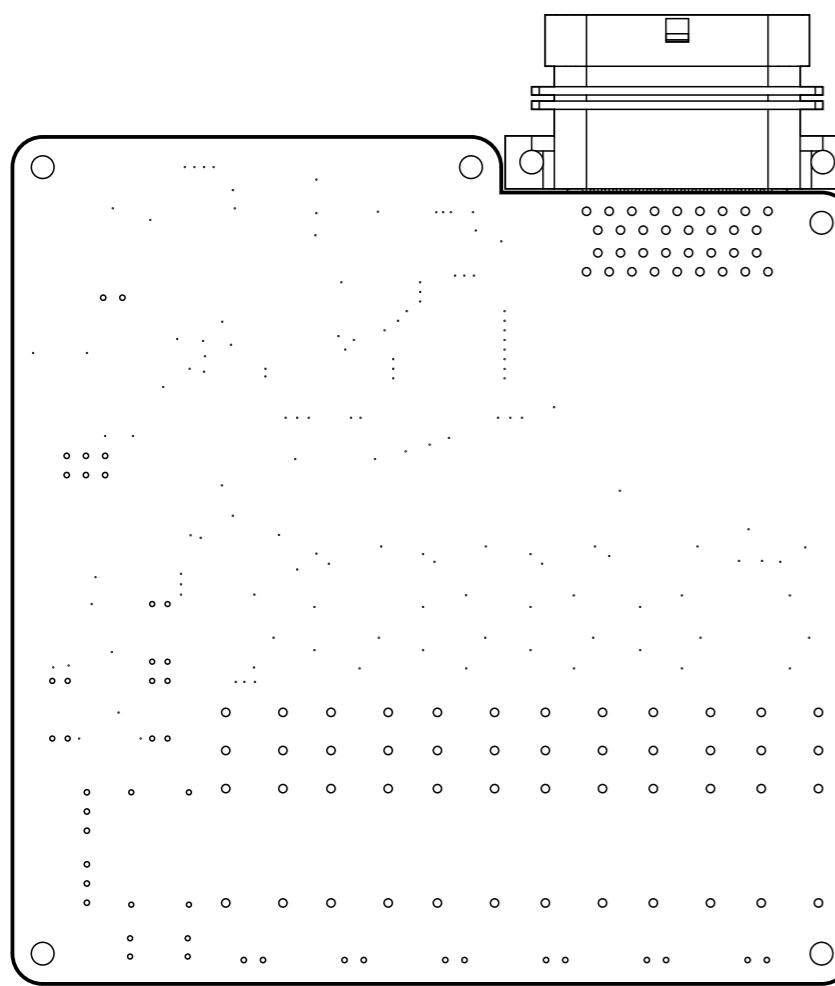
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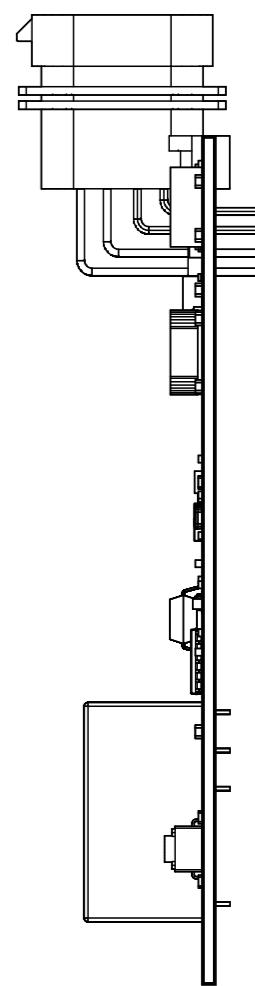
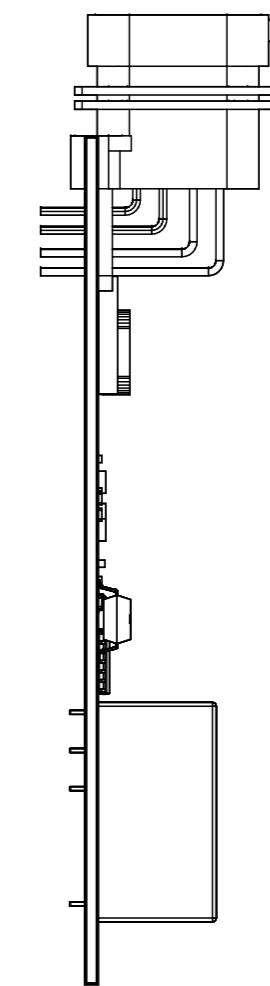
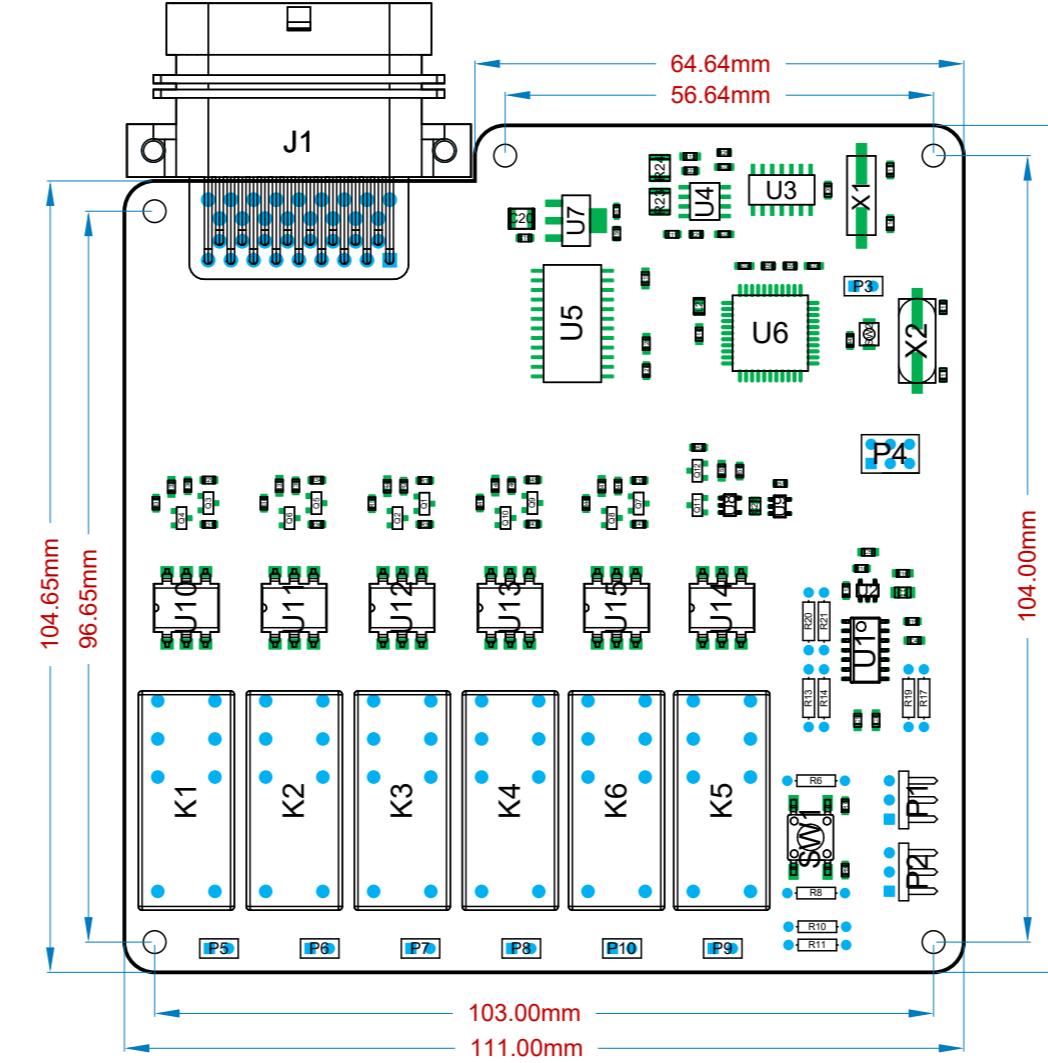
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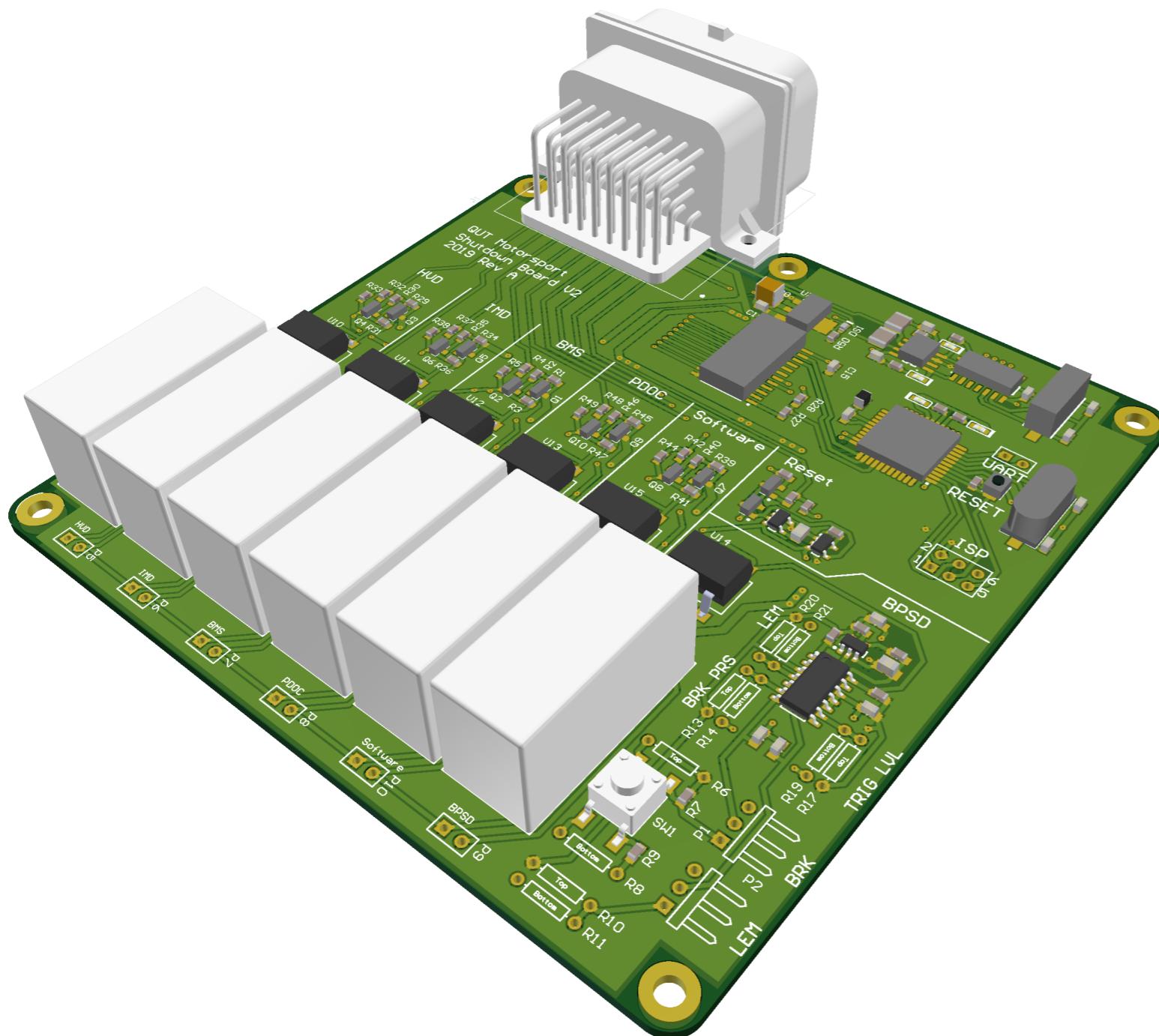
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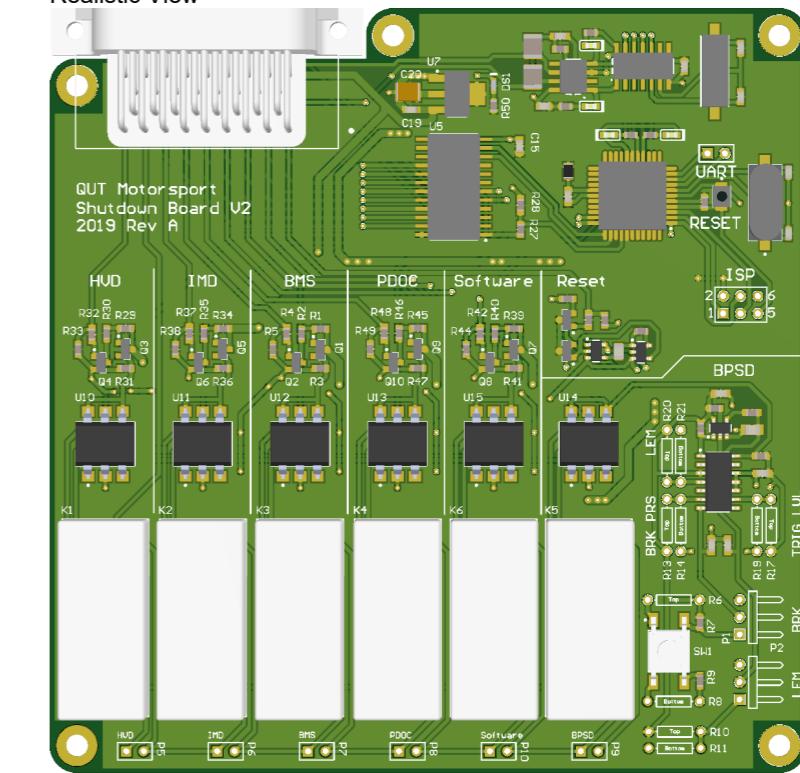
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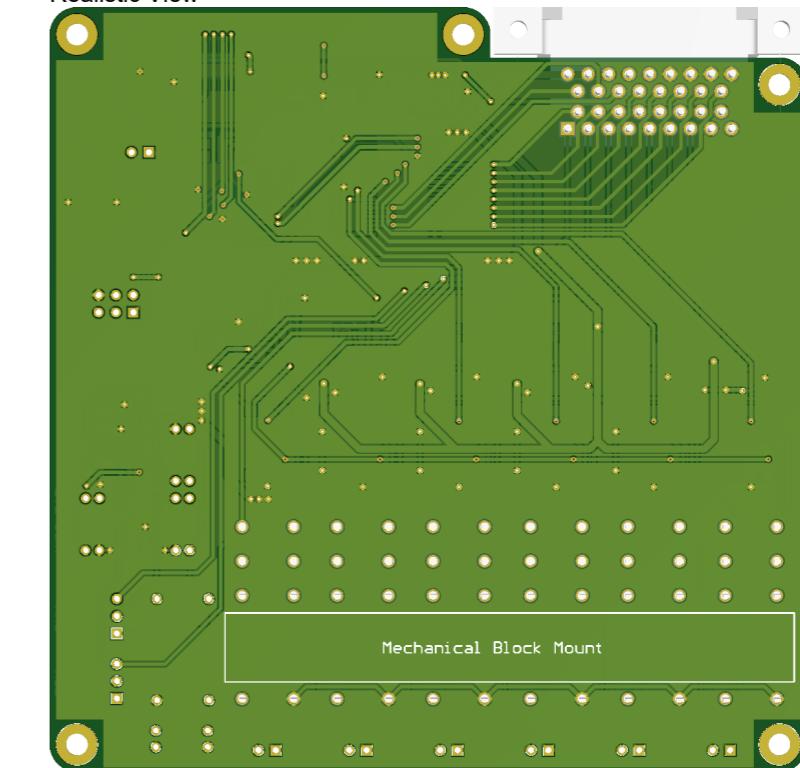
## Realistic View

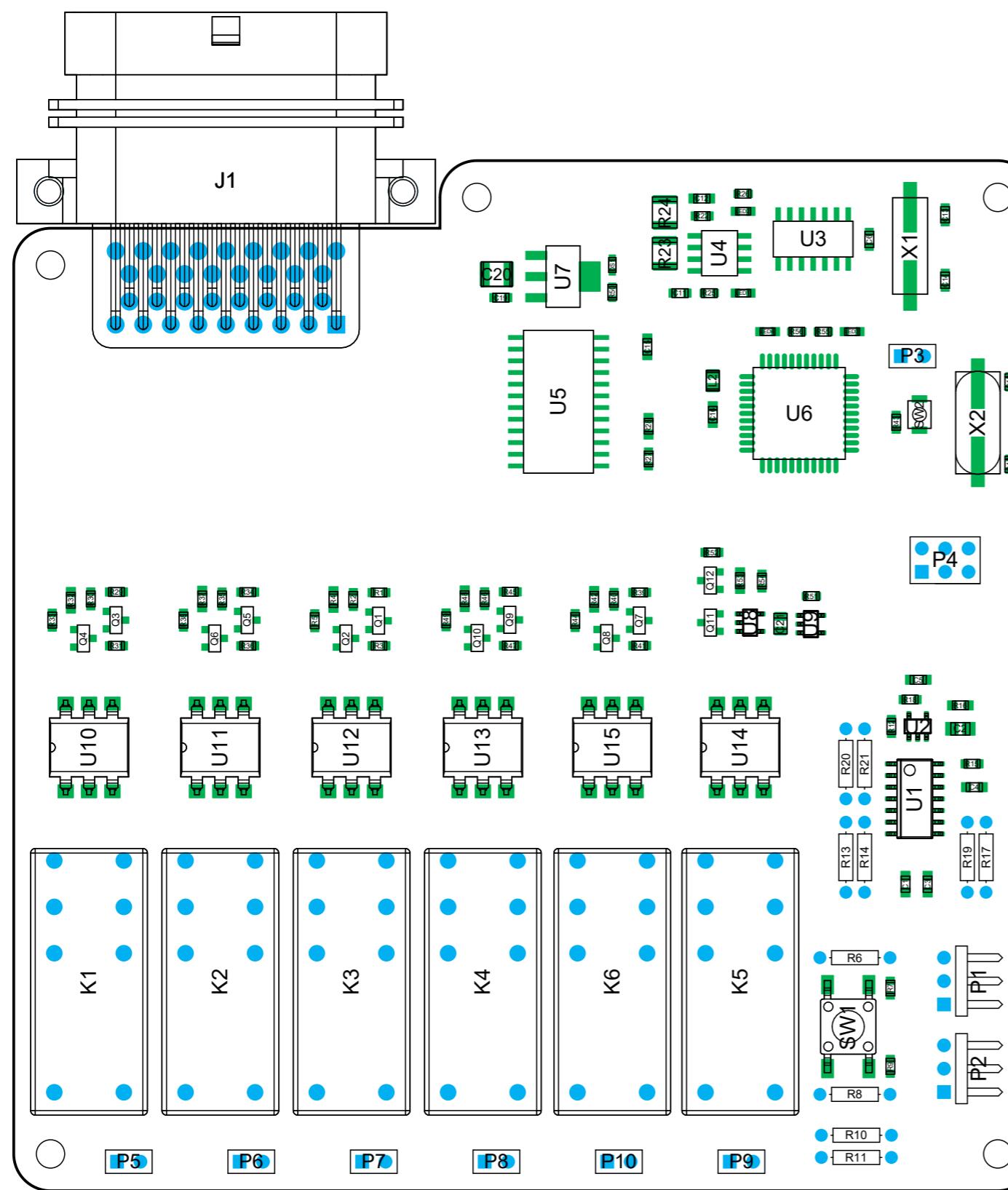


## Realistic View



## Realistic View





Bill Of Materials			
Line #	Designator	Comment	Quantity
1	C1, C3, C4, C5, C15, C16	CAP 100nF 16V 0603(1608)	6
2	C2	EMK212BJ106KG-T	1
3	C6, C11	CAP 100nF 16V 0603(1608)	2
4	C12	CAP 4.7nF 50V 0603(1608)	1
5	C13, C14	CAP 22pF 16V 0603(1608)	2
6	C17, C18	CAP 22pF 16V 0603(1608)	2
7	C19	CAP 100nF 25V 0603(1608)	1
8	C20	12103D106KAT2A	1
9	C21	CAP 10uF 16V 0805(2012)	1
10	DS1	LTST-C191KGKT	1
11	J1	6437288-2	1
12	K1, K2, K3, K4, K5, K6	RT424024	6
13	L2	LQM21FN100M70L	1
14	LED1, LED2, LED3, LED4	2V 20mA 0603 Org	4
15	P1, P2	Header 3H	2
16	P3	UART Header	1
17	P4	Header 3X2	1
18	P5, P6, P7, P8, P9, P10	Header 2	6
19	Q1, Q3, Q5, Q7, Q9	NTR1P02T1G	5
20	Q2, Q4, Q6, Q8, Q10, Q11, Q12	MGSF1N02LT1G	7
21	R1, R3, R5, R29, R31, R33, R34, R36, R38, R39, R41, R43, R44, R45, R47, R49, R54	10K 5% 0603(1608)	17
22	R2, R7, R9, R12, R15, R18, R27, R30, R35, R40, R46, R52	4K7 5% 0603(1608)	12
23	R4, R32, R37, R42, R48, R53	220R 5% 0603(1608)	6
24	R6, R8, R10, R11, R13, R14, R17, R19, R20, R21	Res1	10
25	R16	51K 5% 0603(1608)	1
26	R22	300R 5% 0603(1608)	1
27	R23, R24	60R4 1% 1210(3225)	2
28	R25, R26, R50, R55, R56	330R 5% 0603(1608)	5
29	R28	3K 5% 0603(1608)	1
30	R51	1K 5% 0603(1608)	1
31	SW1	4-1437565-1	1
32	SW2	B3U-1000P	1
33	U1	LM339D	1
34	U2, U8, U9	SN74AHC1G02DBVR	3
35	U3	MCP2517FD	1
36	U4	MCP2561	1
37	U5	MC14067BDWR2G	1
38	U6	ATmega1284P-AU	1
39	U7	LD1117S50CTR	1
40	U10, U11, U12, U13, U14, U15	VO14642AABTR	6
41	X1	Crystal 20MHz	1
42	X2	ATS16ASM-1	1

Comment	Description	Designator	Footprint	LibRef	Quantity
CAP 100nF 16V 0603	CAP 100nF 16V ±5% C1	CAPC0603(1608)100	CMP-1035-02583-1		1
EMR2120B-AU	EMR2120B-AU, 10	C2	CAPC0603(1608)53X50	CMP-1035-02549-1	1
CAP 100nF 16V 0603	CAP 100nF 16V ±5% C3	CAPC0603(1608)100	CMP-1035-02583-1	1	
CAP 100nF 16V 0603	CAP 100nF 16V ±5% C4	CAPC0603(1608)100	CMP-1035-02583-1	1	
CAP 100nF 16V 0603	CAP 100nF 16V ±5% C5	CAPC0603(1608)100	CMP-1035-02583-1	1	
CAP 100nF 16V 0603	CAP 100nF 16V ±10% C6	CAPC0603(1608)100	CMP-1035-02584-1	1	
CAP 100nF 16V 0603	CAP 100nF 16V ±10% C11	CAPC0603(1608)100	CMP-1035-02584-1	1	
CAP 4.7nF 50V 0603	CAP 4.7nF 50V ±5% C12	CAPC0603(1608)100	CMP-1035-02202-1	1	
CAP 22pF 16V 0603	CAP 22pF 16V ±5% C13	CAPC0603(1608)100	CMP-1035-00808-1	1	
CAP 22pF 16V 0603	CAP 22pF 16V ±5% C14	CAPC0603(1608)100	CMP-1035-00808-1	1	
CAP 100nF 16V 0603	CAP 100nF 16V ±5% C15	CAPC0603(1608)100	CMP-1035-02583-1	1	
CAP 100nF 16V 0603	CAP 100nF 16V ±5% C16	CAPC0603(1608)100	CMP-1035-02583-1	1	
CAP 22pF 16V 0603	CAP 22pF 16V ±5% C17	CAPC0603(1608)100	CMP-1035-02583-1	1	
CAP 100nF 16V 0603	CAP 22pF 16V ±10% C18	CAPC0603(1608)100	CMP-1035-00805-1	1	
CAP 100nF 25V 0603	CAP 100nF 25V ±5% C19	CAPC0603(1608)100	CMP-1035-02587-1	1	
12103D1064KAT2A	Capacitor, 10	C20	CAP322S278X50U	CMP-2000-05477-1	1
CAP 10uF 16V 08050	CAP 10uF 16V ±10% C21	CAPC0805(2012)100	CMP-1036-04928-1	1	
LTS1-C191GK7	Chip LED, Green, 5 D51	LITE-ON-LTS1-C191	CMP-2000-05198-1	1	
6437288-2	Conn Wire to Board	J1	TE-6437288-2	6437288-2	1
R7424024	DPDT 2 Form C (CO) K1	TECO-R7424024_V	CMP-2000-66999-1	1	
R7424024	DPDT 2 Form C (CO) K2	TECO-R7424024_V	CMP-2000-66999-1	1	
R7424024	DPDT 2 Form C (CO) K3	TECO-R7424024_V	CMP-2000-66999-1	1	
R7424024	DPDT 2 Form C (CO) K4	TECO-R7424024_V	CMP-2000-66999-1	1	
R7424024	DPDT 2 Form C (CO) K5	TECO-R7424024_V	CMP-2000-66999-1	1	
R7424024	DPDT 2 Form C (CO) K6	TECO-R7424024_V	CMP-2000-66999-1	1	
LM4041FN1000M70L	Fixed Inductor, 10	L2	MURATA-IND0205_V	CMP-2000-06587-1	1
2x 20mA 0603 Org	LED, SMT, 0603(150) LED1	KING-LED0603-25-1	CMP-0239-00002-1	1	
2x 20mA 0603 Org	LED, SMT, 0603(150) LED2	KING-LED0603-25-2	CMP-0239-00002-1	1	
2x 20mA 0603 Org	LED, SMT, 0603(150) LED3	KING-LED0603-25-3	CMP-0239-00002-1	1	
2x 20mA 0603 Org	LED, SMT, 0603(150) LED4	KING-LED0603-25-4	CMP-0239-00002-1	1	
Header 3H	Header, 3-Pin, RigP1	HDR1X3H	Header 3H	1	1
Header 3H	Header, 3-Pin, RigP2	HDR1X3H	Header 3H	1	1
UART Header	UART Header	P3	HDR1X2	Header 2	1
Header 3X2	Header, 3-Pin, Dual	P4	HDR2X3	Header 3X2	1
Header 3X2	Header, 3-Pin, Dual	P5	HDR2X3	Header 3X2	1
Header 2	Header, 2-Pin	P6	HDR1X2	Header 2	1
Header 2	Header, 2-Pin	P7	HDR1X2	Header 2	1
Header 2	Header, 2-Pin	P8	HDR1X2	Header 2	1
Header 2	Header, 2-Pin	P9	HDR1X2	Header 2	1
Header 2	Header, 2-Pin	P10	HDR1X2	Header 2	1
NTR1P02T1Q1	Power MOSFET, -20Q1	ONSC-SOT-23-3-318	CMP-1058-00751-1	1	
MGSF1N02L1T1Q	Power MOSFET, 75Q2	ONSC-SOT-23-3-318	CMP-1058-00777-1	1	
NTR1P02T1Q1	Power MOSFET, 20Q3	ONSC-SOT-23-3-318	CMP-1058-00751-1	1	
MGSF1N02L1T1Q1	Power MOSFET, 20Q3	ONSC-SOT-23-3-318	CMP-1058-00777-1	1	
NTR1P02T1Q1	Power MOSFET, 20Q7	ONSC-SOT-23-3-318	CMP-1058-00751-1	1	
MGSF1N02L1T1Q1	Power MOSFET, 75Q8	ONSC-SOT-23-3-318	CMP-1058-00777-1	1	
NTR1P02T1Q1	Power MOSFET, -20Q9	ONSC-SOT-23-3-318	CMP-1058-00751-1	1	
MGSF1N02L1T1Q1	Power MOSFET, 75Q10	ONSC-SOT-23-3-318	CMP-1058-00777-1	1	
MGSF1N02L1T1Q1	Power MOSFET, 75Q11	ONSC-SOT-23-3-318	CMP-1058-00777-1	1	
MGSF1N02L1T1Q1	Power MOSFET, 75Q12	ONSC-SOT-23-3-318	CMP-1058-00777-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R1	RESC0603(1608)_N	CMP-1012-00098-1	1	
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R2	RESC0603(1608)_N	CMP-1012-00090-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R3	RESC0603(1608)_N	CMP-1012-00098-1	1	
220R 5% 0603(1608)	220R 0.1W 5% 0603 (R4	RESC0603(1608)_M	CMP-1012-00098-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R5	RESC0603(1608)_N	CMP-1012-00098-1	1	
Res1	Resistor	R6	AXIAL-0.3	Res1	1
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R7	RESC0603(1608)_N	CMP-1012-00090-1	1	
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R8	RESC0603(1608)_N	CMP-1012-00090-1	1	
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R9	RESC0603(1608)_N	CMP-1012-00090-1	1	
Res1	Resistor	R8	AXIAL-0.3	Res1	1
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R9	RESC0603(1608)_N	CMP-1012-00090-1	1	
Res1	Resistor	R10	AXIAL-0.3	Res1	1
Res1	Resistor	R11	AXIAL-0.3	Res1	1
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R12	RESC0603(1608)_N	CMP-1012-00090-1	1	
Res1	Resistor	R13	AXIAL-0.3	Res1	1
Res1	Resistor	R14	AXIAL-0.3	Res1	1
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R15	RESC0603(1608)_N	CMP-1012-00090-1	1	
5.1K 5% 0603(1608)	5.1K 0.1W 5% 0603 (R16	RESC0603(1608)_M	CMP-1012-00115-1	1	
Res1	Resistor	R17	AXIAL-0.3	Res1	1
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R18	RESC0603(1608)_N	CMP-1012-00090-1	1	
Res1	Resistor	R19	AXIAL-0.3	Res1	1
Res1	Resistor	R20	AXIAL-0.3	Res1	1
Res1	Resistor	R21	AXIAL-0.3	Res1	1
300R 5% 0603(1608)	300R 0.1W 5% 0603 (R22	RESC0603(1608)_N	CMP-1012-00061-1	1	
60R4 1% 1210(3225)	60R4 0.5W 1% 1210(R23	RESC1210(3225)_L	CMP-1015-00372-1	1	
60R4 1% 1210(3225)	60R4 0.5W 1% 1210(R24	RESC1210(3225)_L	CMP-1015-00372-1	1	
330R 5% 0603(1608)	330R 0.1W 5% 0603 (R25	RESC0603(1608)_M	CMP-1012-00062-1	1	
330R 5% 0603(1608)	330R 0.1W 5% 0603 (R26	RESC0603(1608)_N	CMP-1012-00062-1	1	
330R 5% 0603(1608)	330R 0.1W 5% 0603 (R27	RESC0603(1608)_N	CMP-1012-00062-1	1	
3K 5% 0603(1608)	3K 0.1W 5% 0603 (R28	RESC0603(1608)_M	CMP-1012-00065-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R29	RESC0603(1608)_N	CMP-1012-00098-1	1	
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R30	RESC0603(1608)_N	CMP-1012-00090-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R31	RESC0603(1608)_N	CMP-1012-00098-1	1	
220R 5% 0603(1608)	220R 0.1W 5% 0603 (R32	RESC0603(1608)_M	CMP-1012-00098-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R33	RESC0603(1608)_N	CMP-1012-00098-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R34	RESC0603(1608)_N	CMP-1012-00098-1	1	
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R35	RESC0603(1608)_N	CMP-1012-00090-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R36	RESC0603(1608)_N	CMP-1012-00098-1	1	
220R 5% 0603(1608)	220R 0.1W 5% 0603 (R37	RESC0603(1608)_N	CMP-1012-00098-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R38	RESC0603(1608)_N	CMP-1012-00098-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R39	RESC0603(1608)_N	CMP-1012-00098-1	1	
4K7 5% 0603(1608)	4K7 0.1W 5% 0603 (R40	RESC0603(1608)_N	CMP-1012-00090-1	1	
10K 5% 0603(1608)	10K 0.1W 5% 0603 (R41	RESC0603(1608)_N	CMP-1012-00098-1	1	
220R 5% 0603(1608)	220R 0.1W 5% 0603 (R42	RESC			

