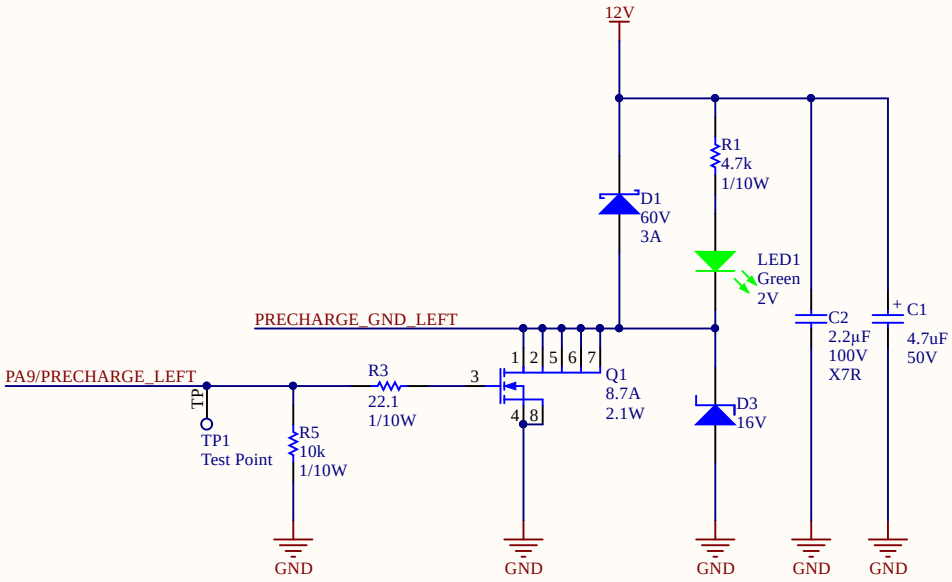
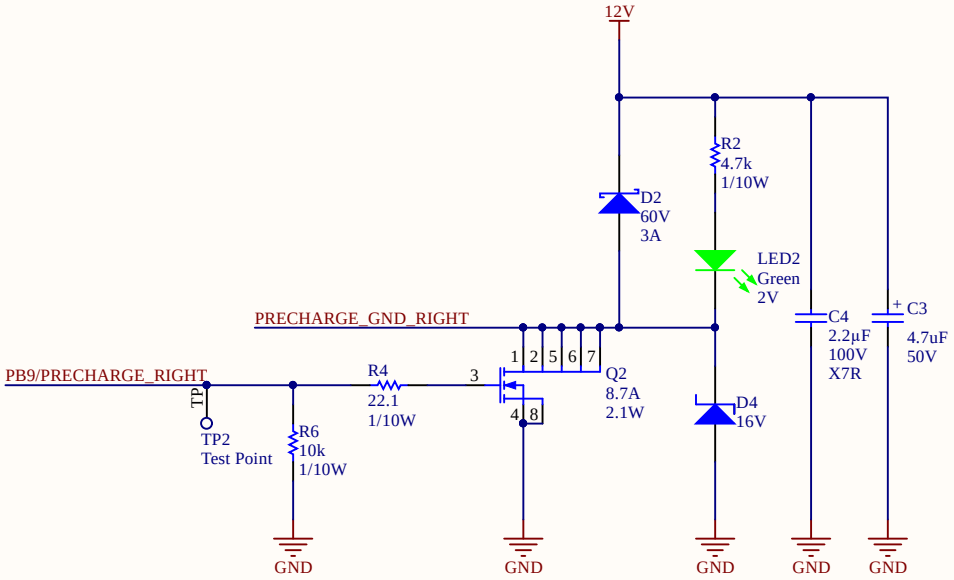
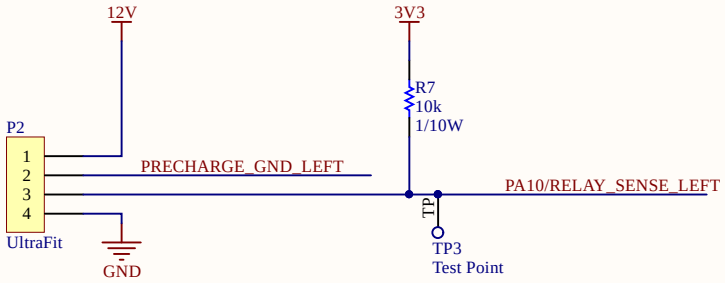
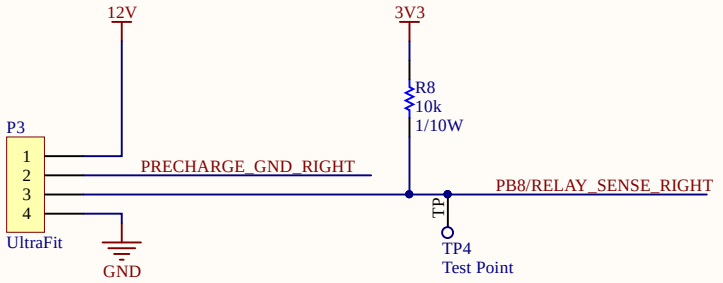
Precharge Control

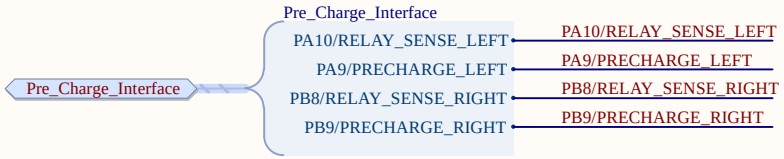




Relay Connectors

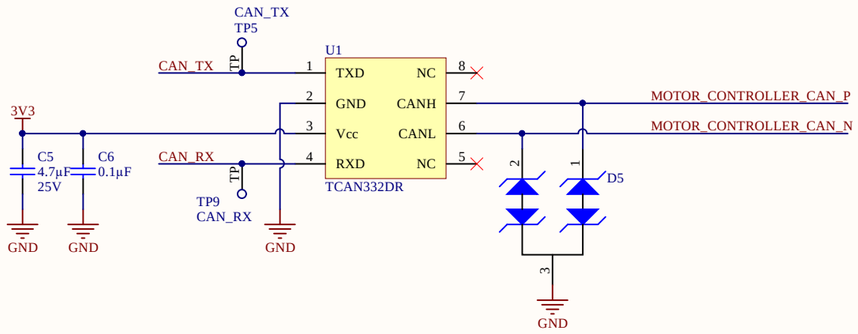




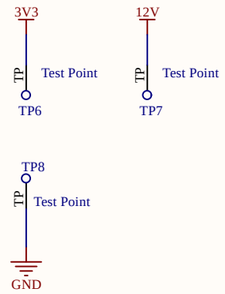


Project: *MSXII_MotorControllerInterface.PrjPcb*		MIDNIGHT SUN
Title: **PreCharge Interface**		
Project Author: Peiliang Guo		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 1.6	
Date: 2018-06-22	Sheet 2 of 3	Website: www.uwmidsun.com

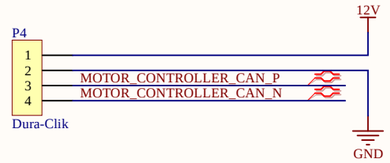
CAN Transceiver

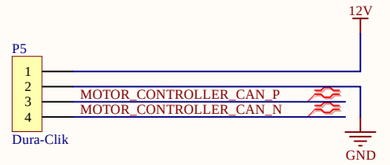


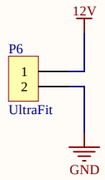
Power Test Points



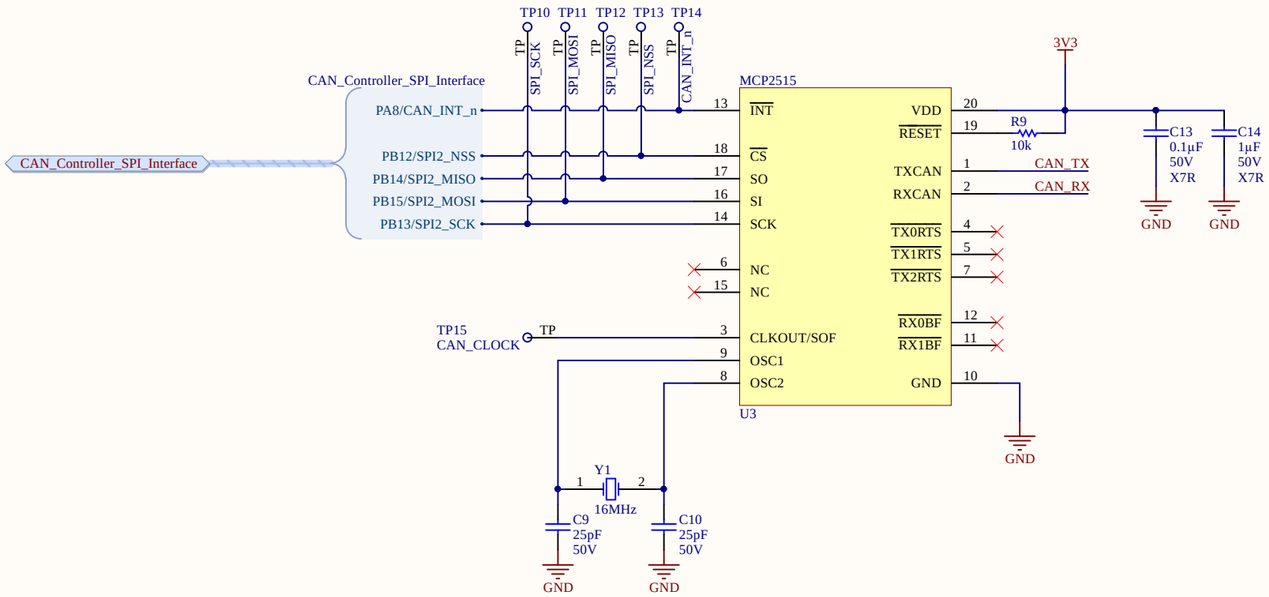
Connectors



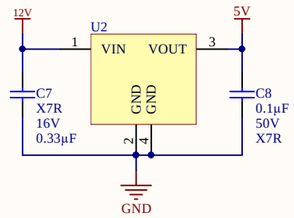




CAN Controller

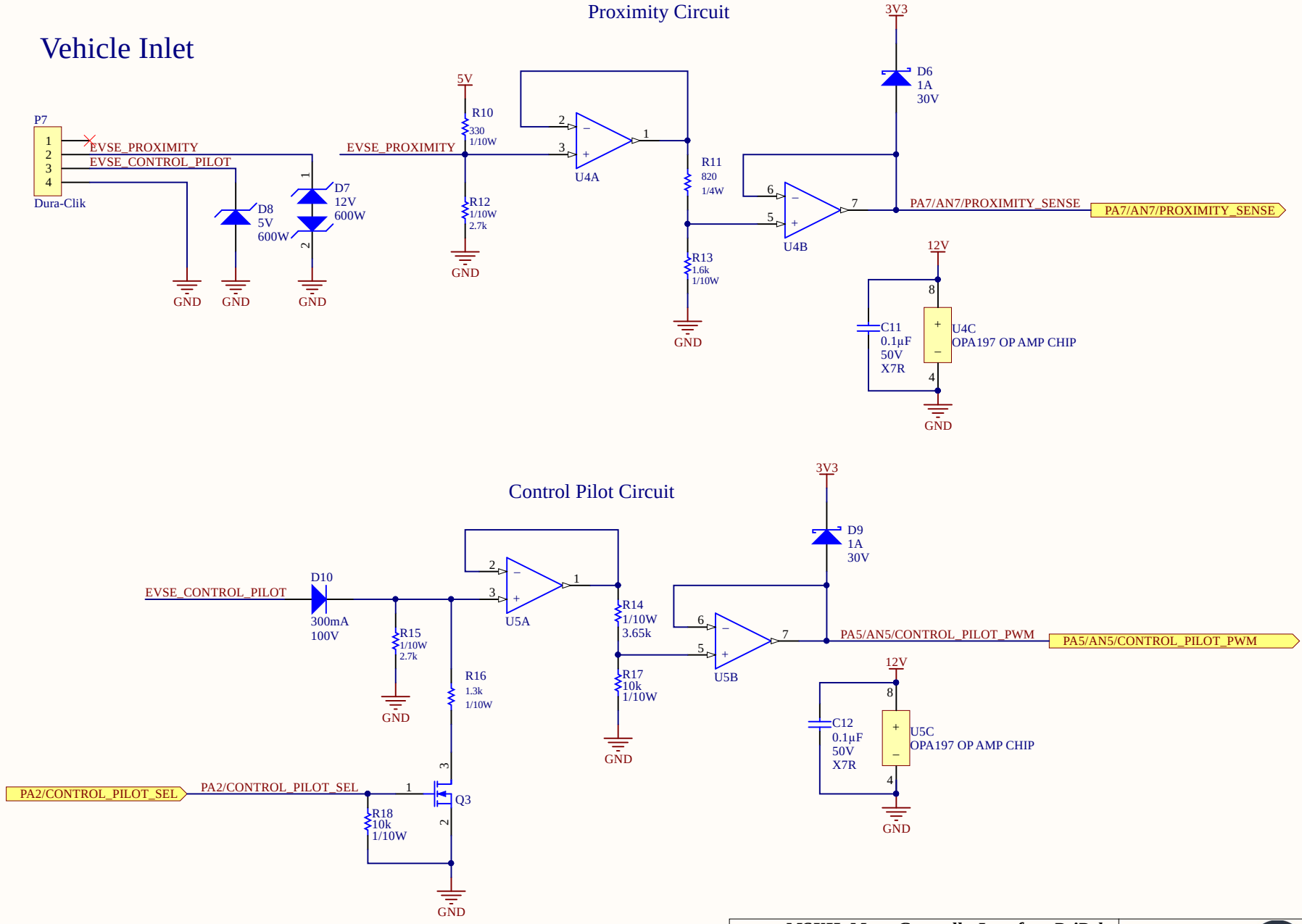


Power Supply



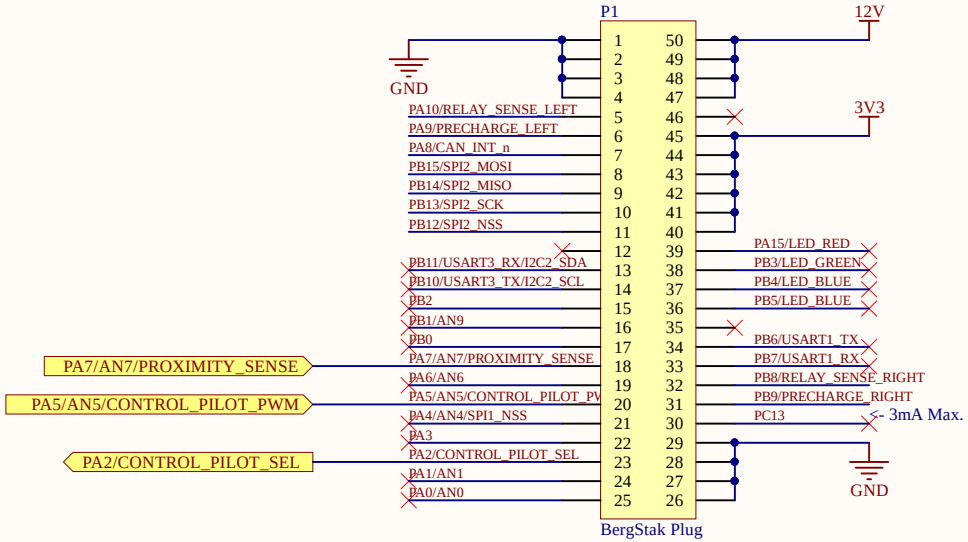
Project: ***MSXII_MotorControllerInterface.PrjPcb***		MIDNIGHT SUN
Title: **Slave Controller**		
Project Lead: Peiliang Guo		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 1.6	
Date: 2018-06-22	Sheet 3 of 3	Website: www.uwmidsun.com

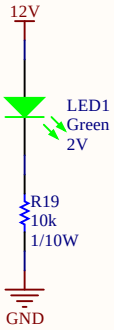
Vehicle Inlet

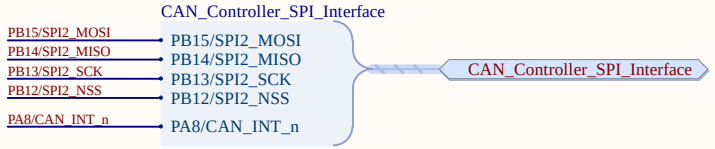


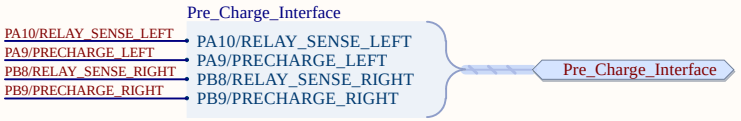
Project:	***MSXII_MotorControllerInterface.PrjPcb***	
Title:	**EVSE Interface & Charger Relay**	
Project Author:	Peiliang Guo	
Size:	Letter	Revision: 1.6
Date:	2018-06-22	Sheet 3 of 4

MIDNIGHT SUN
University of Waterloo
200 University Ave W
Waterloo, ON, Canada
N2L 3E9
Website: www.uwmidsun.com







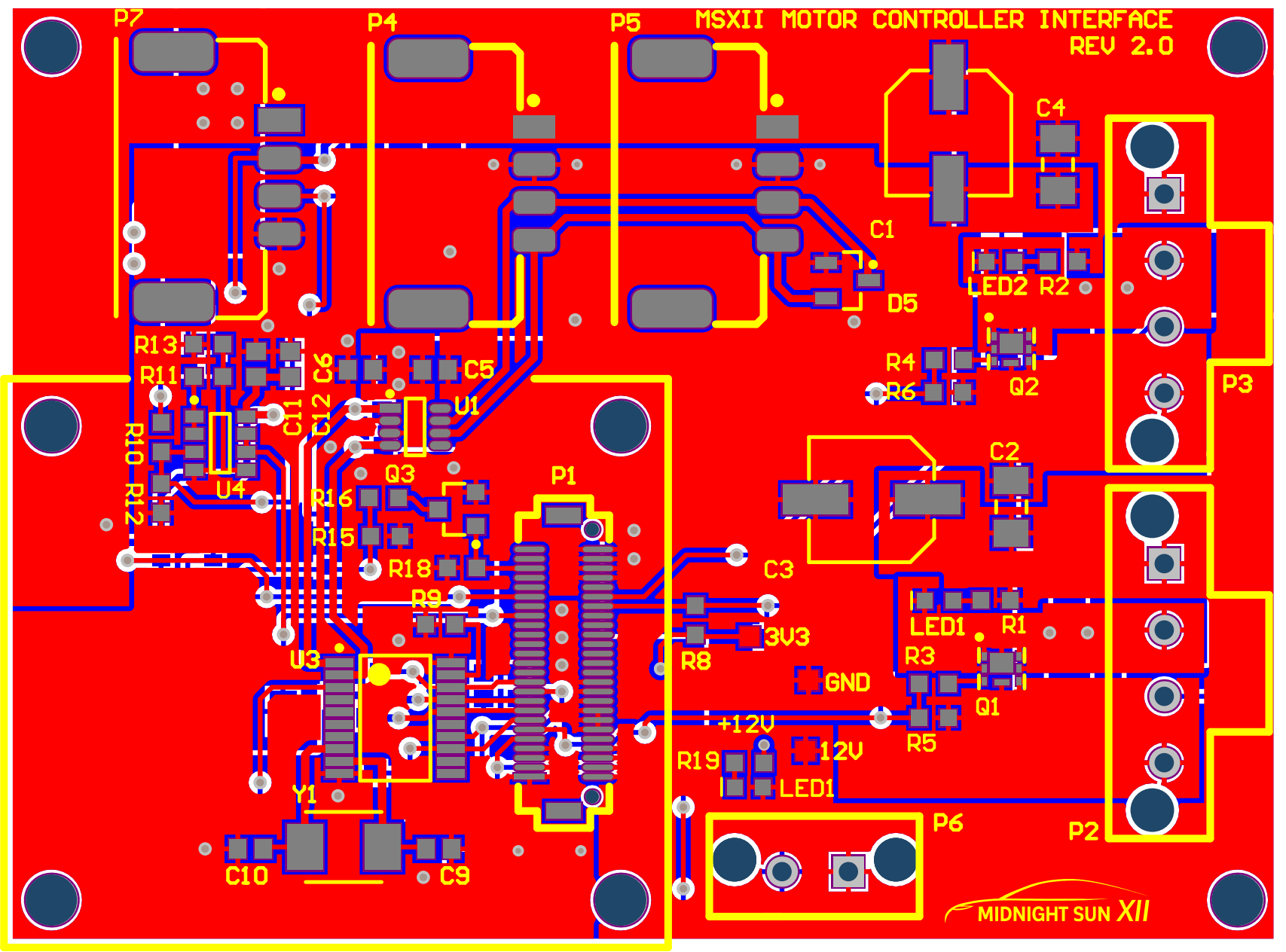


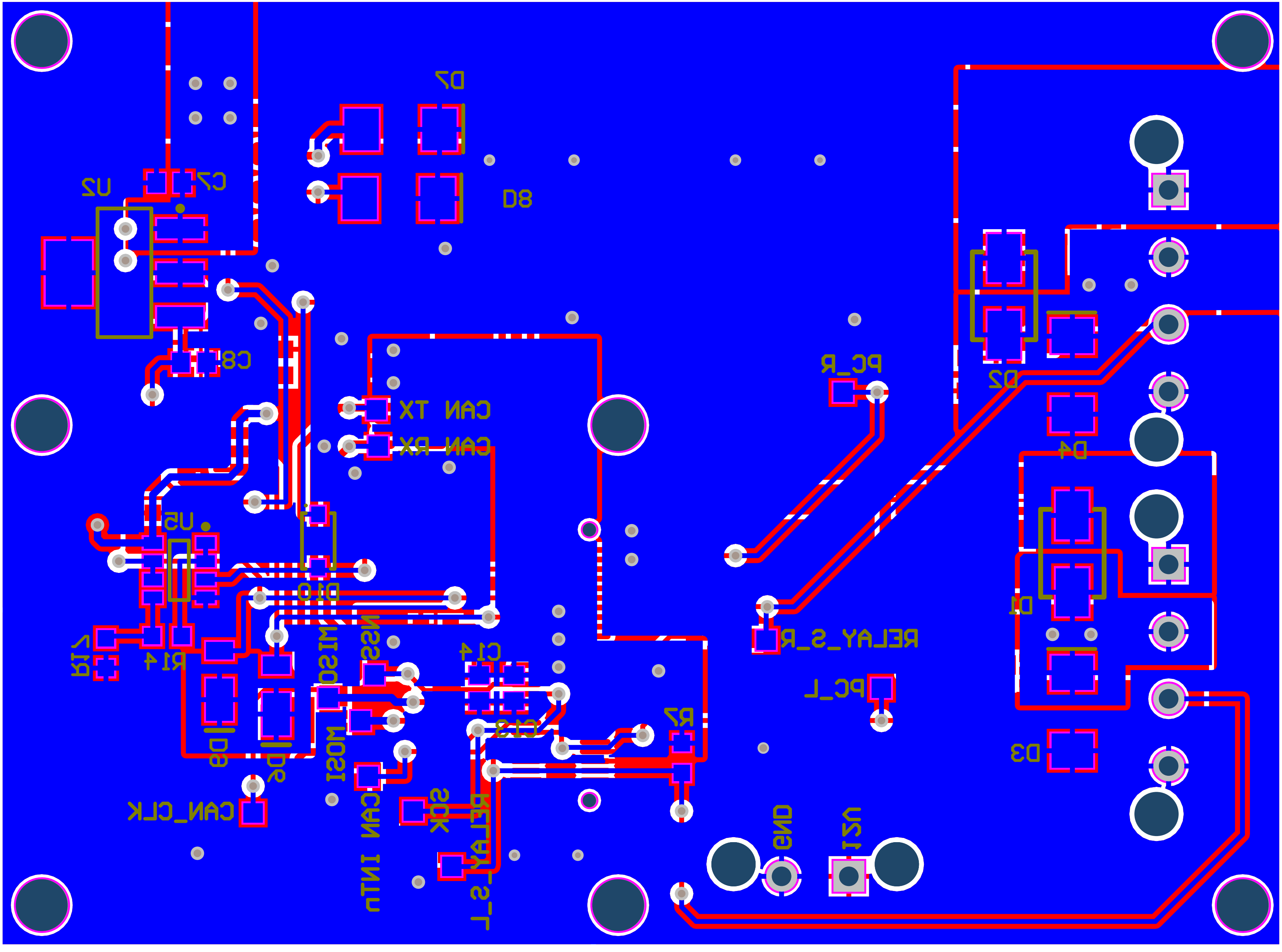
Project: ***MSXII_MotorControllerInterface.PrjPcb***		MIDNIGHT SUN
Title: *		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Project Author: Peiliang Guo		
Size: Letter	Revision: 1.6	
Date: 2018-06-22	Sheet * of *	Website: www.uwmidsun.com

Bill of Materials

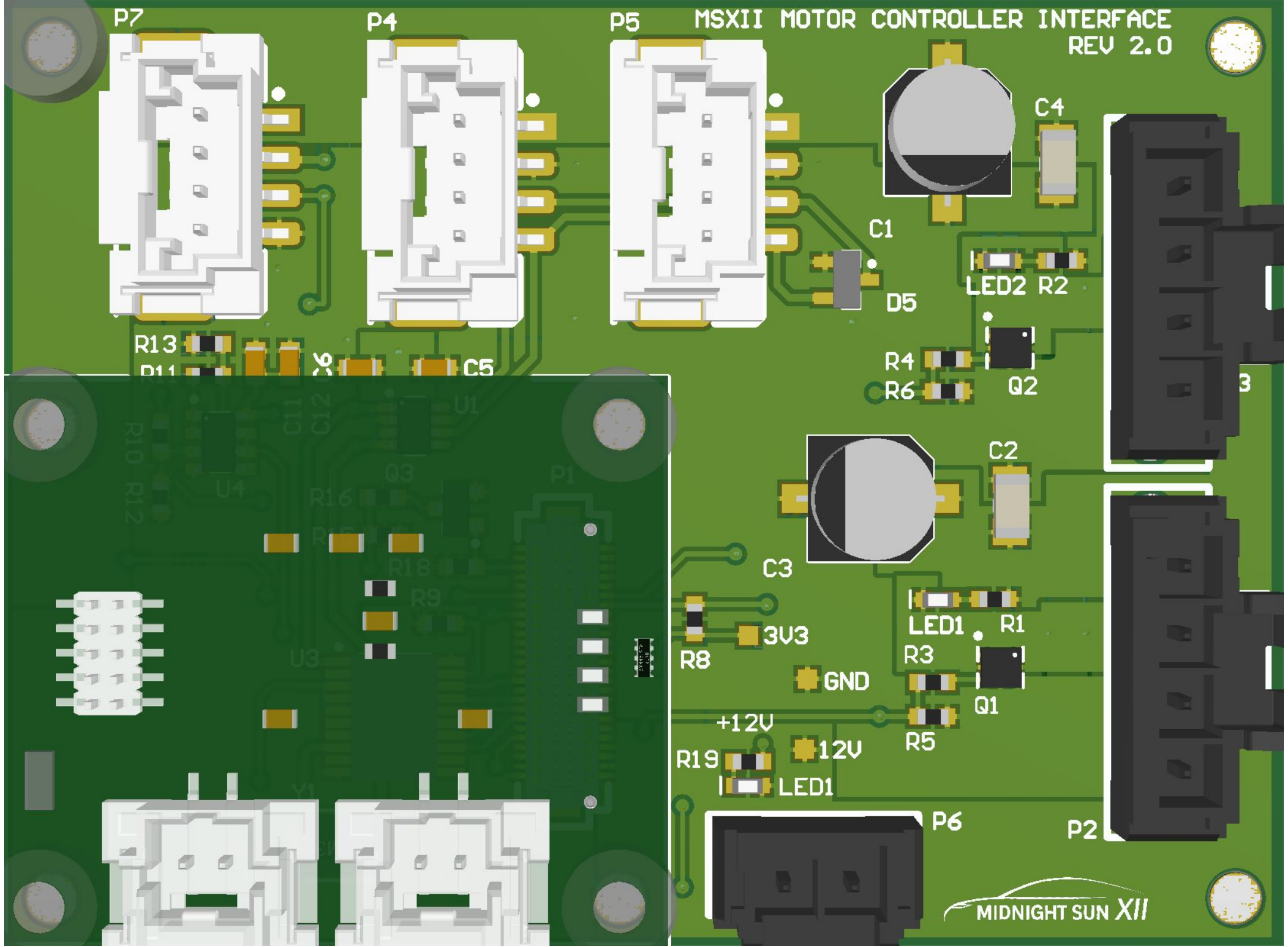
Project:	MSXII_MotorControllerInterface.PrjPcb
Revision:	1.6
Project Lead:	Peiliang Guo
Generated On:	2018-06-22 4:33:52 AM
Production Quantity:	1
Currency	CAD
Total Parts Count:	65

LibRef	Designator	Manufacturer 1	Manufacturer Part Number 1	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Supplier Order Qty 1	Supplier Subtotal 1
CAP ALUM 4.7UF 20% 50V SMD	C1, C3	Panasonic	EEE-1HA4R7NP	Digi-Key	PCE4304CT-ND	0.57	2	$ 1.14
CAP CER 2.2UF 100V ±20% X7R 1206	C2, C4	Murata	GRM31CR72A225MA73L	Digi-Key	490-12773-1-ND	0.93	2	$ 1.86
CAP CER 4.7UF 25V 10% X5R 0603	C5	Murata	GRM188R61E475KE11D	Digi-Key	490-7203-1-ND	0.61	1	$ 0.61
CAP CER 0.1UF 50V 10% X7R 0603	C6, C8, C11, C12, C13	Kyocera AVX	06035C-104KAT2A	Digi-Key	478-5052-1-ND	0.21	5	$ 1.06
CAP CER 0.33UF 16V 10% X7R 0603	C7	KEMET	C0603C334K4RACTU	Digi-Key	399-4916-1-ND	0.4	1	$ 0.40
CAP CER 25PF 50V ±5% C0G/NP0 0603	C9, C10	Samsung	CL10C250JB8NNNC	Digi-Key	1276-2244-1-ND	0.13	2	$ 0.27
CAP CER 1UF 50V 10% X7R 0603	C14	Taiyo Yuden	UMK107AB7105KA-T	Digi-Key	587-3247-1-ND	0.39	1	$ 0.39
DIODE SCHOTTKY 60V 3A SMA	D1, D2	Diodes	B360A-13-F	Digi-Key	B360A-FDICT-ND	0.64	2	$ 1.28
DIODE ZENER 16V 5W DO-214AA (SMB)	D3, D4	MCC	SMBJ5353B-TP	Digi-Key	SMBJ5353B-TPMSCT-ND	0.9	2	$ 1.81
DIODE TVS 24VWM 70VC SOT23	D5	Nexperia	PESD1CAN,215	Digi-Key	1727-3817-1-ND	0.65	1	$ 0.65
DIODE SCHOTTKY 30V 1A POWERDI123	D6, D9	Diodes	DFLS130L-7	Digi-Key	DFLS130LDICT-ND	0.67	2	$ 1.33
DIODE TVS 12VWM 19.6VC DO-214AA (SMB)	D7	Vishay Semiconductors	SMBJ12CD-M3/H	Digi-Key	SMBJ12CD-M3/HGICT-ND	0.67	1	$ 0.67
DIODE TVS 5VWM 9.1VC DO-214AA (SMB)	D8	Vishay Semiconductors	SMBJ5.0D-M3/H	Digi-Key	SMBJ5.0D-M3/HGICT-ND	0.49	1	$ 0.49
DIODE GEN PURP 100V 300MA SOD123	D10	Diodes Zetex	1N4148WQ-7-F	Digi-Key	1N4148WQ-7-FDICT-ND	0.29	1	$ 0.29
LED GREEN CLEAR 2V 0603	LED1, LED2	Wurth Electronics	150060VS75000	Digi-Key	732-4980-1-ND	0.19	3	$ 0.56
CONN 50POS Bergstak Plug 0.02"	P1	Amphenol FCI	10132797-055100LF	Digi-Key	609-5226-1-ND	1.86	1	$ 1.86
CONN 4POS ULTRA-FIT 0.138"	P2, P3	Molex	1722871104	Digi-Key	WM11703-ND	1.2	2	$ 2.39
CONN 4POS DURA-CLIK 0.079"	P4, P5, P7	Molex	560020-0420	Digi-Key	WM10864CT-ND	2.1	3	$ 6.31
CONN 2POS ULTRA-FIT 0.138"	P6	Molex	1722861302	Digi-Key	WM11673-ND	1.84	1	$ 1.84
MOSFET N-CH 30V 8.7A 2.1W 6-PQFN (2x2)	Q1, Q2	Infineon	IRLHS6342TRPBF	Digi-Key	IRLHS6342TRPBFCT-ND	0.93	2	$ 1.86
MOSFET N-CH 30V 6.2A 0.9W SOT-23	Q3	Diodes	DMN3023L-7	Digi-Key	DMN3023L-7DICT-ND	0.63	1	$ 0.63
RES 4.7K OHM 1% 1/10W 0603	R1, R2	Yageo	RC0603FR-074K7L	Digi-Key	311-4.70KHRCT-ND	0.13	2	$ 0.27
RES 22.1 OHM 1% 1/10W 0603	R3, R4	Yageo	RC0603FR-0722R1L	Digi-Key	311-22.1HRCT-ND	0.13	2	$ 0.27
RES 10K OHM 1% 1/10W 0603	R5, R6, R7, R8, R9, R17, R18, R19	Yageo	RC0603FR-0710KL	Digi-Key	311-10.0KHRCT-ND	0.03	10	$ 0.32
RES 330 OHM 1% 1/10W 0603	R10	TE Connectivity	CRGCQ0603F330R	Digi-Key	A129682TR-ND	0	5000	$ 15.83
RES 820 OHM 5% 1/4W 0603	R11	Rohm	ESR03EZPJ821	Digi-Key	RHM820DCT-ND	0.13	1	$ 0.13
RES 2.7K OHM 1% 1/10W 0603	R12, R15	TE Connectivity	CRGCQ0603F2K7	Digi-Key	A129693TR-ND	0	5000	$ 15.83
RES 1.6K OHM 1% 1/10W 0603	R13	Yageo	RC0603FR-071K6L	Digi-Key	311-1.60KHRCT-ND	0.13	1	$ 0.13
RES 3.65KOHM 0.1% 1/10W 0603	R14	Panasonic	ERA3AEB3651V	Digi-Key	P3.65KDBCT-ND	0.47	1	$ 0.47
RES 1.3K OHM 1% 1/10W 0603	R16	Yageo	RC0603FR-071K3L	Digi-Key	311-1.30KHRCT-ND	0.13	1	$ 0.13
Test Point	TP6, TP7, TP8							
IC CAN Tranceiver TCAN332DR	U1	Texas Instruments	TCAN332DR	Digi-Key	296-43711-1-ND	2.75	1	$ 2.75
IC REG LDO 5V 0.5A SOT223	U2	Texas Instruments	UA78M05IDCYR	Digi-Key	296-17616-1-ND	0.85	1	$ 0.85
IC CAN SPI CONTROLLER MCP2515T-I/ST 20-TSSOP	U3	Microchip	MCP2515T-I/ST	Digi-Key	MCP2515T-I/STCT-ND	2.73	1	$ 2.73
IC OP AMP DUAL GP RR 10MHZ 8-VSSOP	U4, U5	Texas Instruments	OPA2197IDGKR	Digi-Key	296-47349-1-ND	3.21	2	$ 6.41
CRYSTAL 16 MHz 18PF 2-SMD	Y1	Abracon	ABM3-16.000MHZ-D2Y-T	Digi-Key	535-10638-1-ND	0.92	1	$ 0.92
							Total:	$ 74.74


MSXII MOTOR CONTROLLER INTERFACE
REV 2.0
P7
P4
P5
C4
C1
D5
LED2
R2
P3
R13
R11
C6
C5
C11
C12
U1
R4
R6
Q2
R10
R12
U4
Q3
P1
C2
R16
R15
R18
C3
R9
3V3
R8
LED1
R1
R3
U3
GND
Q1
+12V
12V
R5
R19
LED1
Y1
P6
P2
C10
C9
MIDNIGHT SUN XII



D7
D8
U2
C7
C8
CAN TX
CAN RX
U5
D10
R14
PC_R
PC_L
D2
D4
D1
D3
RELAY_S_R
C14
C13
R7
MISO
SS
MOSI
SCK
CAN INT
CAN_CLK
RELAY_S_L
GND
12V


MSXII MOTOR CONTROLLER INTERFACE
REV 2.0
P7
P4
P5
C4
C1
D5
LED2
R2
R13
R4
R6
Q2
C2
C3
LED1
R1
R3
Q1
R8
3V3
GND
+12V
R5
R19
12V
LED1
P6
P2
MIDNIGHT SUN XII

Electrical Rules Check Report

Class	Document	Message
Error	Controller_Board_Interface.SchDoc	Duplicate Component Designators LED1 at 4055mil,6350mil and 8055mil,7450mil
Warning	EVSEInterface&ChargerRelay.SchDoc	Net EVSE_PROXIMITY has no driving source (Pin D7-1,Pin P7-2,Pin R10-2,Pin R12-1,Pin U4-3)
Warning	EVSEInterface&ChargerRelay.SchDoc	Net NetD10_2 has no driving source (Pin D10-2,Pin R15-1,Pin R16-1,Pin U5-3)
Warning	EVSEInterface&ChargerRelay.SchDoc	Net NetR11_2 has no driving source (Pin R11-2,Pin R13-1,Pin U4-5)
Warning	EVSEInterface&ChargerRelay.SchDoc	Net NetR14_2 has no driving source (Pin R14-2,Pin R17-1,Pin U5-5)

Design Rules Verification Report

Filename : C:\Users\Taiping\Documents\MidnightSun\hardware\MSXII_MotorControllerInterfa

Warnings 0
Rule Violations 99

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=0.254mm) (All),(All)	0
Short-Circuit Constraint (Allowed=No) (All),(All)	0
Un-Routed Net Constraint ((All))	0
Modified Polygon (Allow modified: No), (Allow shelved: No)	0
Width Constraint (Min=0.152mm) (Max=2.54mm) (Preferred=0.254mm) (All)	0
Width Constraint (Min=0.381mm) (Max=0.381mm) (Preferred=0.381mm) (InNet('12V'))	0
Power Plane Connect Rule(Relief Connect)(Expansion=0.508mm) (Conductor Width=0.254mm) (Air Gap=0.254mm)	0
Minimum Annular Ring (Minimum=0.15mm) (All)	1
Hole Size Constraint (Min=0.3mm) (Max=6.3mm) (All)	0
Hole To Hole Clearance (Gap=0.254mm) (All),(All)	0
Minimum Solder Mask Sliver (Gap=0.3mm) (All),(All)	48
Silk To Solder Mask (Clearance=0.178mm) (IsPad),(All)	46
Silk to Silk (Clearance=0.254mm) (OnLayer('Bottom Overlay')),(OnLayer('Bottom Overlay'))	0
Silk to Silk (Clearance=0.254mm) (OnLayer('Top Overlay')),(OnLayer('Top Overlay'))	0
Net Antennae (Tolerance=0mm) (All)	0
Board Clearance Constraint (Gap=0mm) (All)	4
Height Constraint (Min=0mm) (Max=25.4mm) (Prefered=12.7mm) (All)	0
Total	99

Minimum Annular Ring (Minimum=0.15mm) (All)
Minimum Annular Ring: (0.1mm < 0.15mm) Via (40.05mm,10.681mm) from Top Layer to Bottom Layer (Annular Ring=0.1mm) On (Top Layer)

Minimum Solder Mask Sliver (Gap=0.3mm) (All),(All)
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C10-1(13.675mm,5.2mm) on Top Layer And Pad C10-2(12.325mm,5.2mm) on
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C11-1(13.284mm,30.079mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C12-1(15.088mm,30.099mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C13-1(27.077mm,14.478mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C14-1(25.273mm,14.478mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C5-1(23.408mm,30.487mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C6-1(18.125mm,30.487mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C7-1(9.819mm,40.112mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C8-1(9.739mm,30.754mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.298mm < 0.3mm) Between Pad C9-1(22.225mm,5.2mm) on Top Layer And Pad C9-2(23.575mm,5.2mm) on
Minimum Solder Mask Sliver Constraint: (0.246mm < 0.3mm) Between Pad LED1-1(40mm,8.461mm) on Top Layer And Pad R19-2(40.05mm,9.736mm) on
Minimum Solder Mask Sliver Constraint: (0.246mm < 0.3mm) Between Pad LED1-2(38.5mm,8.461mm) on Top Layer And Pad R19-1(38.5mm,9.736mm) on
Minimum Solder Mask Sliver Constraint: (0.105mm < 0.3mm) Between Pad P1-(29.5mm,22.8mm) on Top Layer And Pad P1-(31mm,22.05mm) on
Minimum Solder Mask Sliver Constraint: (0.105mm < 0.3mm) Between Pad P1-(29.5mm,7.2mm) on Top Layer And Pad P1-(31mm,7.95mm) on Multi-Layer
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q1-1(51.653mm,15.36mm) on Top Layer And Pad Q1-2(51.653mm,14.71mm)
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q1-2(51.653mm,14.71mm) on Top Layer And Pad Q1-3(51.653mm,14.06mm)
Minimum Solder Mask Sliver Constraint: (0.275mm < 0.3mm) Between Pad Q1-2(51.653mm,14.71mm) on Top Layer And Pad Q1-8(52.578mm,13.97mm)
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q1-3(51.653mm,14.06mm) on Top Layer And Pad Q1-7(52.578mm,15.01mm)
Minimum Solder Mask Sliver Constraint: (0.202mm < 0.3mm) Between Pad Q1-3(51.653mm,14.06mm) on Top Layer And Pad Q1-8(52.578mm,13.97mm)
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q1-4(53.503mm,14.06mm) on Top Layer And Pad Q1-5(53.503mm,14.71mm)
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q1-4(53.503mm,14.06mm) on Top Layer And Pad Q1-7(52.578mm,15.01mm)
Minimum Solder Mask Sliver Constraint: (0.202mm < 0.3mm) Between Pad Q1-4(53.503mm,14.06mm) on Top Layer And Pad Q1-8(52.578mm,13.97mm)
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q1-5(53.503mm,14.71mm) on Top Layer And Pad Q1-6(53.503mm,15.36mm)
Minimum Solder Mask Sliver Constraint: (0.275mm < 0.3mm) Between Pad Q1-5(53.503mm,14.71mm) on Top Layer And Pad Q1-8(52.578mm,13.97mm)
Minimum Solder Mask Sliver Constraint: (0.187mm < 0.3mm) Between Pad Q1-7(52.578mm,15.01mm) on Top Layer And Pad Q1-8(52.578mm,13.97mm)
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q2-1(52.161mm,32.227mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q2-2(52.161mm,31.577mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.275mm < 0.3mm) Between Pad Q2-2(52.161mm,31.577mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q2-3(52.161mm,30.927mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.202mm < 0.3mm) Between Pad Q2-3(52.161mm,30.927mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q2-4(54.011mm,30.927mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q2-4(54.011mm,30.927mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.202mm < 0.3mm) Between Pad Q2-4(54.011mm,30.927mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.047mm < 0.3mm) Between Pad Q2-5(54.011mm,31.577mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.275mm < 0.3mm) Between Pad Q2-5(54.011mm,31.577mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.187mm < 0.3mm) Between Pad Q2-7(53.086mm,31.877mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U4-1(10.025mm,28.025mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U4-2(10.025mm,27.075mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U4-3(10.025mm,26.125mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U4-5(12.775mm,25.175mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U4-6(12.775mm,26.125mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U4-7(12.775mm,27.075mm) on Top Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U5-1(11.027mm,21.364mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U5-2(11.027mm,20.414mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U5-3(11.027mm,19.464mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U5-5(8.277mm,18.514mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U5-6(8.277mm,19.464mm) on Bottom Layer And Pad
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.3mm) Between Pad U5-7(8.277mm,20.414mm) on Bottom Layer And Pad

Silk To Solder Mask (Clearance=0.178mm) (IsPad),(All)
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D1-1(56.134mm,18.796mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D1-1(56.134mm,18.796mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D1-2(56.134mm,22.796mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D1-2(56.134mm,22.796mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D2-1(52.582mm,32.2mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D2-1(52.582mm,32.2mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D2-2(52.582mm,36.2mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad D2-2(52.582mm,36.2mm) on Bottom Layer And Track
Silk To Solder Mask Clearance Constraint: (0.15mm < 0.178mm) Between Pad P1-1(27.7mm,9mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.166mm < 0.178mm) Between Pad P1-25(27.7mm,21mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.158mm < 0.178mm) Between Pad P1-26(31.3mm,21mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.15mm < 0.178mm) Between Pad P1-50(31.3mm,9mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.173mm < 0.178mm) Between Pad P4-4(27.95mm,37.3mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.168mm < 0.178mm) Between Pad P4-7(22.37mm,33.7mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.107mm < 0.178mm) Between Pad P4-7(22.37mm,46.9mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.173mm < 0.178mm) Between Pad P5-4(40.78mm,37.3mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.168mm < 0.178mm) Between Pad P5-7(35.2mm,33.7mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.107mm < 0.178mm) Between Pad P5-7(35.2mm,46.9mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.155mm < 0.178mm) Between Pad P7-7(8.941mm,34.036mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.17mm < 0.178mm) Between Pad P7-7(8.941mm,47.236mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q1-1(51.653mm,15.36mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q1-2(51.653mm,14.71mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q1-2(51.653mm,14.71mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q1-3(51.653mm,14.06mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q1-4(53.503mm,14.06mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q1-5(53.503mm,14.71mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q1-5(53.503mm,14.71mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q1-6(53.503mm,15.36mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q2-1(52.161mm,32.227mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q2-2(52.161mm,31.577mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q2-2(52.161mm,31.577mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q2-3(52.161mm,30.927mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q2-4(54.011mm,30.927mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q2-5(54.011mm,31.577mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.112mm < 0.178mm) Between Pad Q2-5(54.011mm,31.577mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.05mm < 0.178mm) Between Pad Q2-6(54.011mm,32.227mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.058mm < 0.178mm) Between Pad Q3-1(24.876mm,22.214mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.058mm < 0.178mm) Between Pad Q3-2(24.876mm,24.014mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.175mm < 0.178mm) Between Pad U1-1(20.341mm,28.432mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.177mm < 0.178mm) Between Pad U1-2(20.341mm,27.782mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.177mm < 0.178mm) Between Pad U1-3(20.341mm,27.132mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.177mm < 0.178mm) Between Pad U1-4(20.341mm,26.482mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.175mm < 0.178mm) Between Pad U1-5(22.991mm,26.482mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.175mm < 0.178mm) Between Pad U1-6(22.991mm,27.132mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.175mm < 0.178mm) Between Pad U1-7(22.991mm,27.782mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.175mm < 0.178mm) Between Pad U1-8(22.991mm,28.432mm) on Top Layer And Track

Board Clearance Constraint (Gap=0mm) (All)
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (0mm,0mm)(0mm,30mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (0mm,0mm)(35mm,0mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (0mm,30mm)(6.5mm,30mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (35mm,0mm)(35mm,15.6mm) on Top Overlay