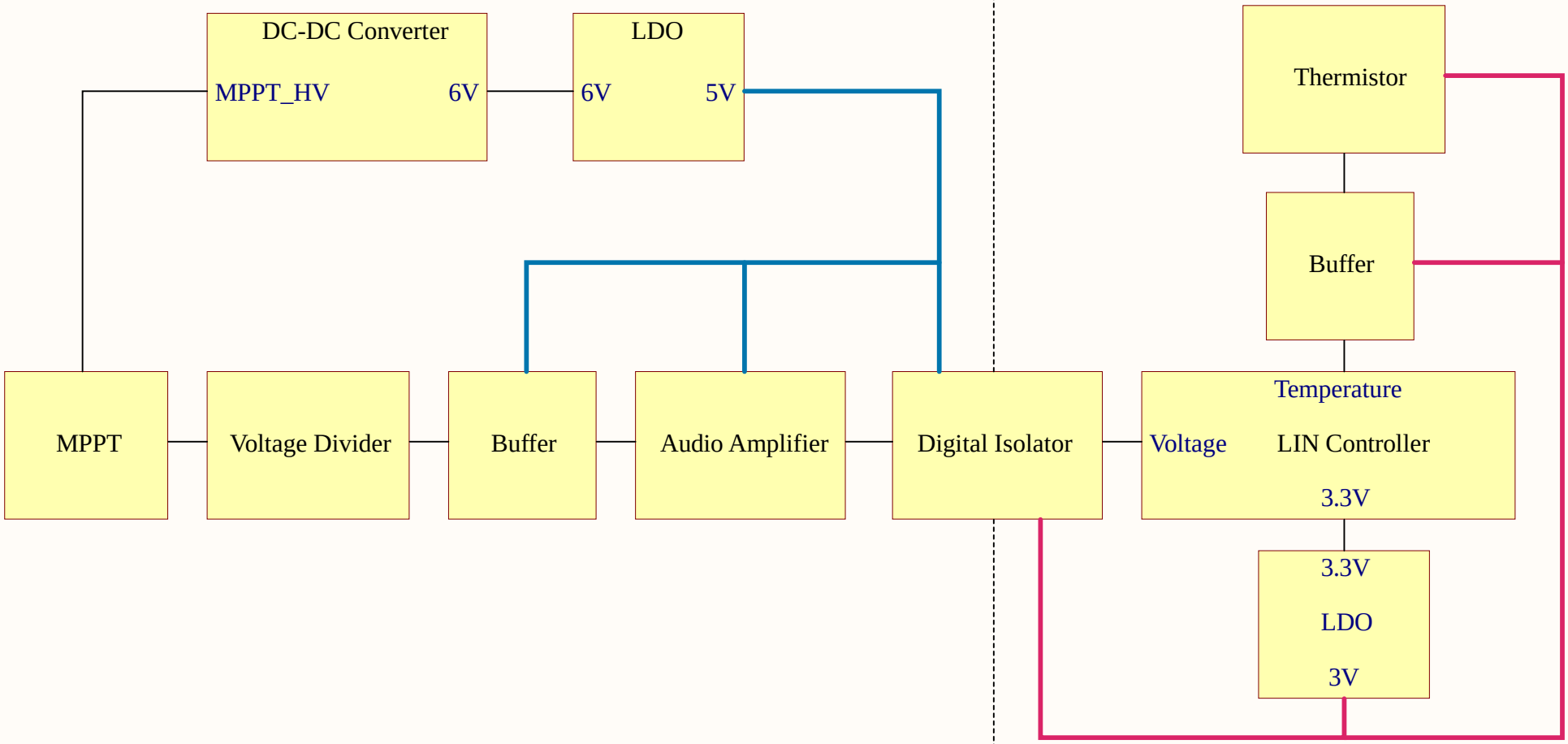
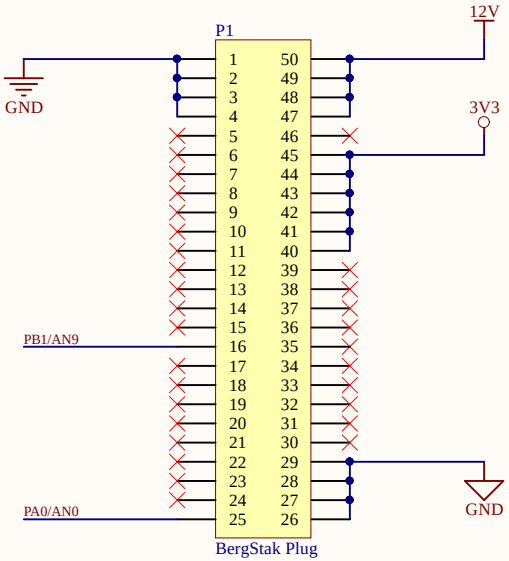
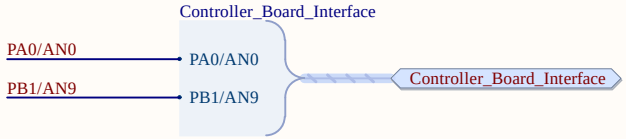
High Voltage MPPT Side (MPPT) | Low Voltage Side



Project: ***MSXII_SolarSenseSlave.PrjPcb***	
Title: **Block Diagram**	
Project Lead: Peiliang Guo	
Size: Letter	Revision: 1.13
Date: 2018-02-27	Sheet 1 of 4

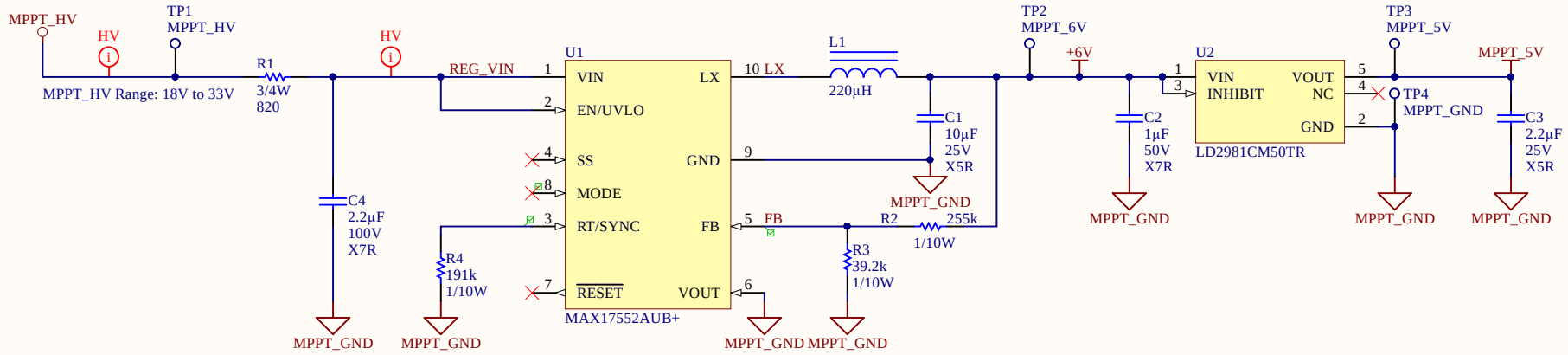
MIDNIGHT SUN
University of Waterloo
200 University Ave W
Waterloo, ON, Canada
N2L 3E9
Website: www.uwmidsun.com



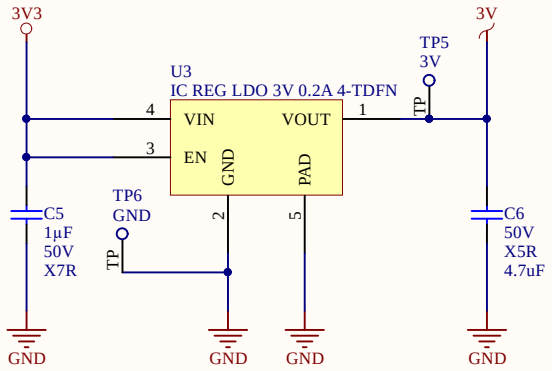


Project: *MSXII_SolarSenseSlave.PrjPcb*		MIDNIGHT SUN
Title: **Controller Board Interface**		
Project Lead: Peiliang Guo		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 1.13	
Date: 2018-02-27	Sheet 2 of 4	Website: www.uwmidsun.com

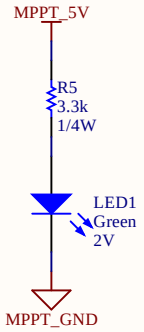
Voltage Sense Power Supply



Isolated Side Power Supply

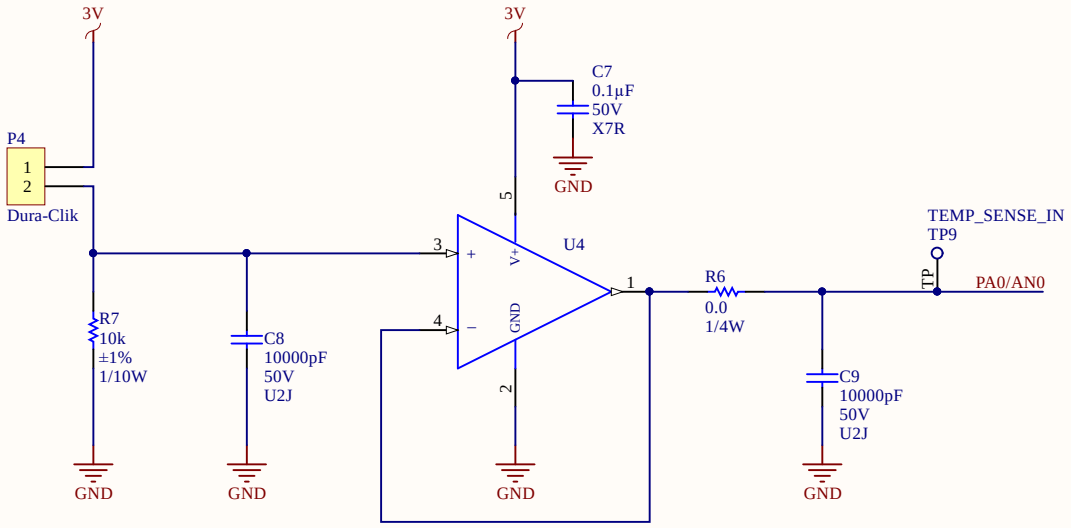


Power Indicator LED

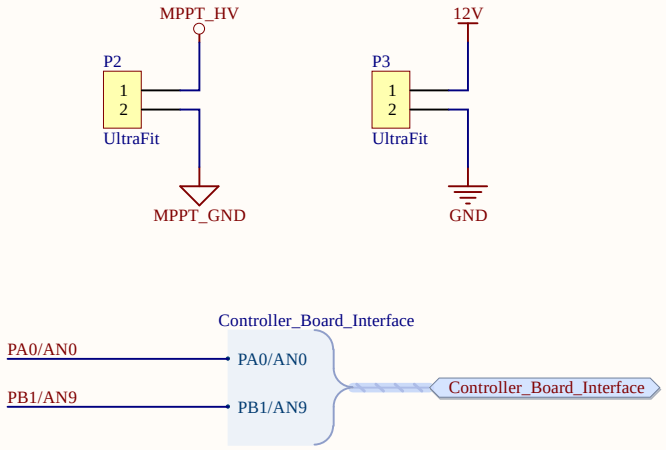


Project: ***MSXII_SolarSenseSlave.PrjPcb***		MIDNIGHT SUN
Title: **Power Supplies**		
Project Lead: Peiliang Guo		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 1.13	
Date: 2018-02-27	Sheet 3 of 4	Website: www.uwmidsun.com

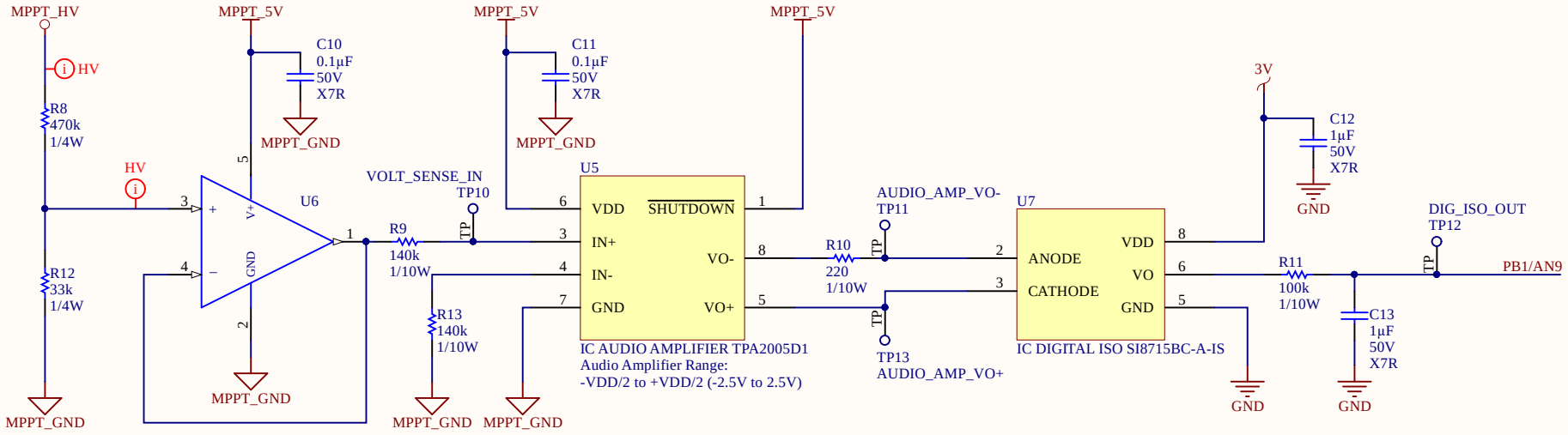
Temperature Sense



Connectors



Voltage Sense

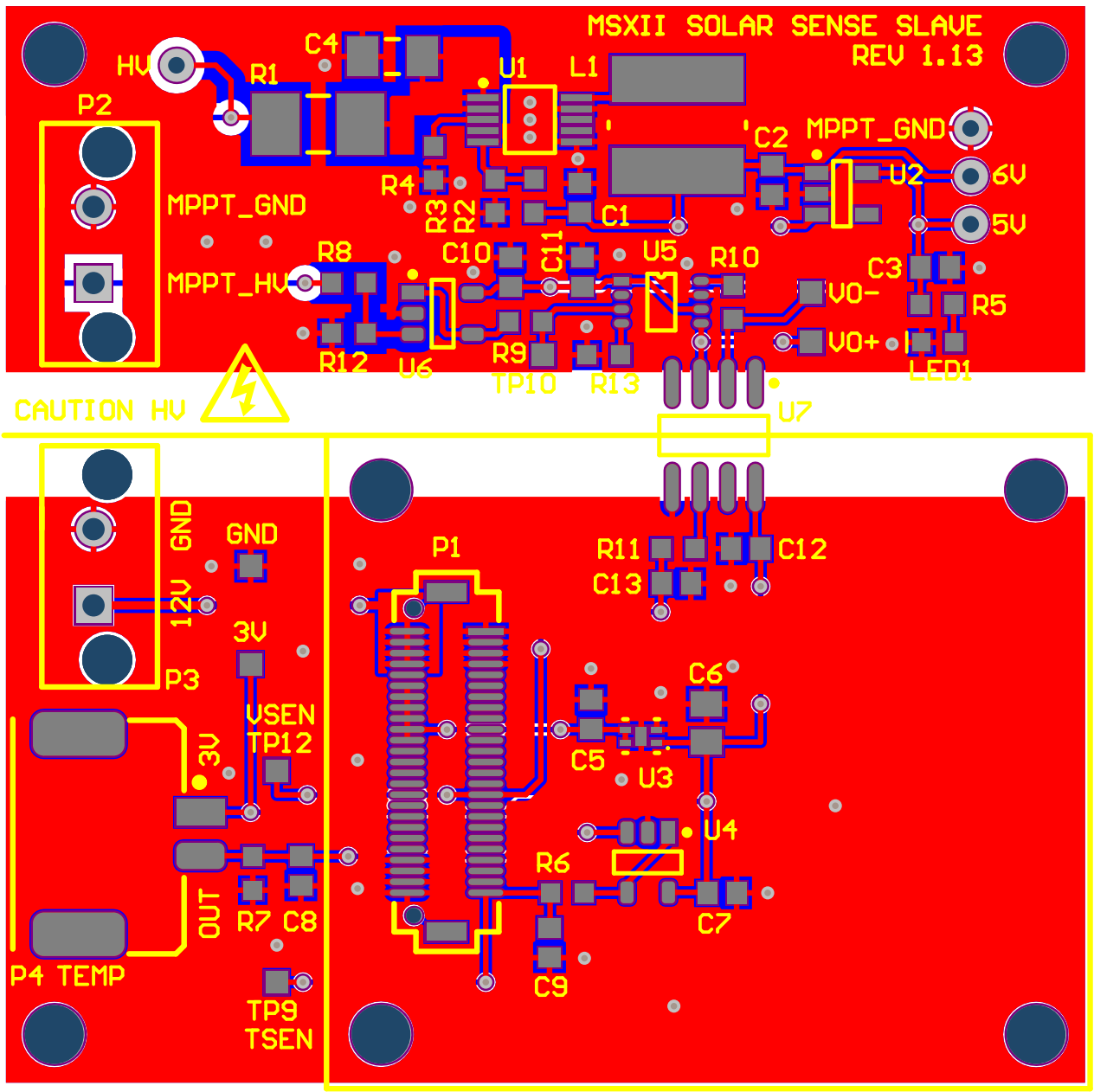


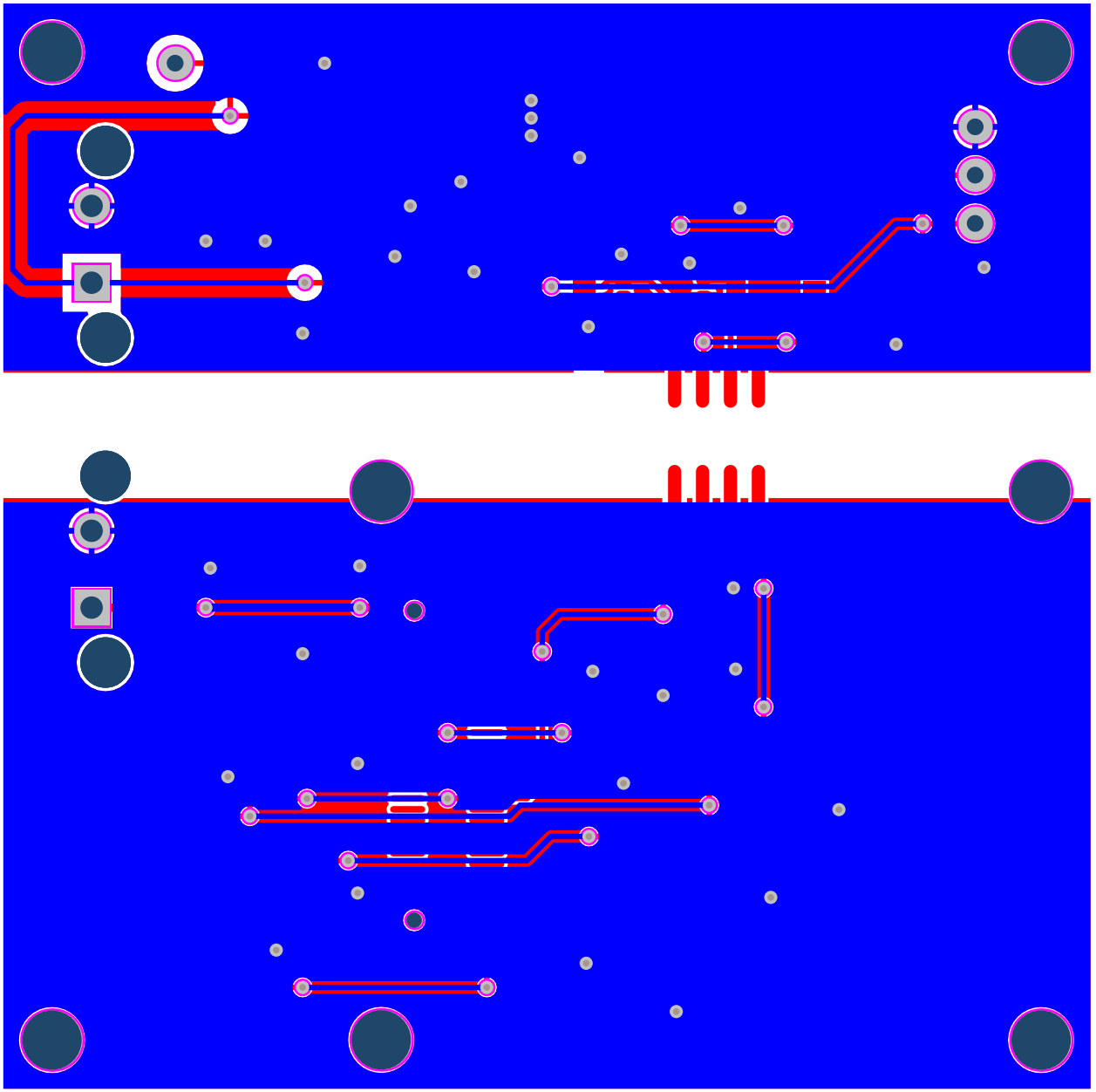
Project: ***MSXII_SolarSenseSlave.PrjPcb***		MIDNIGHT SUN
Title: **Solar Sense Slave**		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Project Lead: Peiliang Guo		
Size: Letter	Revision: 1.13	
Date: 2018-02-27	Sheet 4 of 4	Website: www.uwmidsun.com

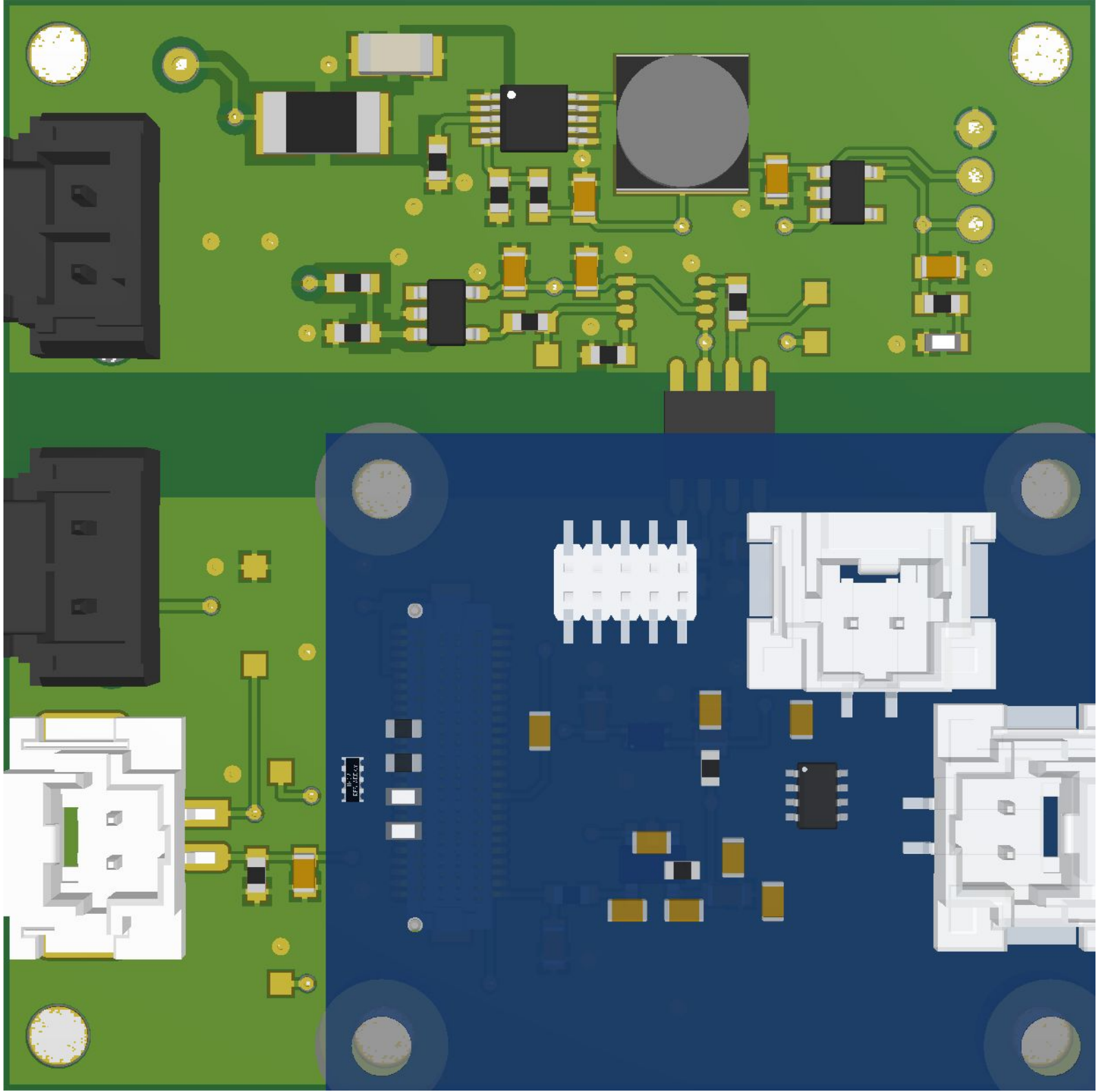
Bill of Materials

Project:	MSXII_SolarSenseSlave.PrjPcb
Revision:	1.13
Project Lead:	Peiliang Guo
Generated On:	2018-02-27 8:24:41 PM
Production Quantity:	1
Currency	CAD
Total Parts Count:	50

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 CER 10uF 25V 20% X5R 0603	C1	Murata	GRM188R61E106MA73D	Digi-Key	490-7202-1-ND	0.52	1	$ 0.52
CAP CER 1UF 50V 10% X7R 0603	C2, C5, C12, C13	Taiyo Yuden	UMK107AB7105KA-T	Digi-Key	587-3247-1-ND	0.34	4	$ 1.38
CAP CER 2.2UF 25V 10% X5R 0603	C3	Murata	GRM188R61E225KA12D	Digi-Key	490-10731-1-ND	0.2	1	$ 0.20
CAP CER 2.2UF 100V ±20% X7R 1206	C4	Murata	GRM31CR72A225MA73L	Digi-Key	490-12773-1-ND			
CAP CER 4.7UF 50V 10% X5R 0805	C6	Murata	GRT21BR61H475ME13L	Digi-Key	490-12395-1-ND	0.53	1	$ 0.53
CAP CER 0.1UF 50V 10% X7R 0603	C7, C10, C11	Kyocera AVX	06035C-104KAT2A	Digi-Key	478-5052-1-ND	0.13	3	$ 0.38
CAP CER 10nF 50V 5% X7R 0603	C8, C9	KEMET	C0603C103J5JAC7867	Digi-Key	399-13384-1-ND	0.33	2	$ 0.66
IND 220uH 0.59A 20%	L1	Laird Steward	TYS6045221M-10	Digi-Key	240-2742-1-ND	0.7	1	$ 0.70
LED GREEN CLEAR 2V 0603	LED1	Wurth Electronics	150060VS75000	Digi-Key	732-4980-1-ND	0.18	1	$ 0.18
CONN 50POS Bergstak Plug 0.02"	P1	Amphenol FCI	10132797-055100LF	Digi-Key	609-5226-1-ND	1.78	1	$ 1.78
CONN 2POS ULTRA-FIT 0.138"	P2, P3	Molex	1722861302	Digi-Key	WM11673-ND	1.76	2	$ 3.52
CONN 2POS DURA-CLIK 0.079" VERT	P4	Molex	560020-0220	Digi-Key	WM10862CT-ND	1.04	1	$ 1.04
RES 820 OHM 5% 3/4W 2010	R1	Stackpole Electronics	RMCF2010JT820R	Digi-Key	RMCF2010JT820RCT-ND	0.31	1	$ 0.31
RES 255K OHM 1% 1/10W 0603	R2	Yageo	RC0603FR-07255KL	Digi-Key	311-255KHRCT-ND	0.13	1	$ 0.13
RES 39.2K OHM 1% 1/10W 0603	R3	Yageo	RC0603FR-0739K2L	Digi-Key	311-39.2KHRCT-ND	0.13	1	$ 0.13
RES 191K OHM 1% 1/10W 0603	R4	Yageo	RC0603FR-07191KL	Digi-Key	311-191KHRCT-ND	0.13	1	$ 0.13
RES 3.3K OHM 1% 1/4W 0603	R5	Panasonic	ERJPA3F3301V	Digi-Key	P3.3KBYCT-ND	0.2	1	$ 0.20
RES 0.0 OHM 1/4W 0603	R6	Vishay Dale	CRCW06030000Z0EAHP	Digi-Key	541-0.0SBCT-ND	0.22	1	$ 0.22
RES 10K OHM 1% 1/10W 0603	R7	Yageo	RC0603FR-0710KL	Digi-Key	311-10.0KHRCT-ND	0.13	1	$ 0.13
RES 470K OHM 1% 1/4W 0603	R8	Panasonic	ERJPA3F4703V	Digi-Key	P470KBYCT-ND	0.2	1	$ 0.20
RES 140K OHM 1% 1/10W 0603	R9, R13	Yageo	RC0603FR-07140KL	Digi-Key	311-140KHRCT-ND	0.13	2	$ 0.25
RES 220 OHM 1% 1/10W 0603	R10			Digi-Key				
RES 100K OHM 5% 1/8W 0603	R11	Yageo	RC0603JR-07100KL	Digi-Key	311-100KGRCT-ND	0.13	1	$ 0.13
RES 33K OHM 1% 1/4W 0603	R12	Panasonic	ERJPA3F3302V	Digi-Key	P33KBYCT-ND	0.2	1	$ 0.20
Thru Test Point	TP1							
Thru Test Point	TP2							
Thru Test Point	TP3							
Thru Test Point	TP4							
Test Point	TP5							
Test Point	TP6							
Test Point	TP9							
Test Point	TP10							
Test Point	TP11							
Test Point	TP12							
Test Point	TP13							
IC REG BUCK ADJ 0.1A 10UMAX	U1	Maxim	MAX17552AUB+	Digi-Key	MAX17552AUB+-ND	3.41	1	$ 3.41
IC REG LDO 5V 0.1A SOT23-5	U2	STMicroelectronics	LD2981CM50TR	Digi-Key	497-7787-1-ND	0.75	1	$ 0.75
IC REG LDO 3V 0.2A 4-TDFN	U3			Digi-Key				
IC OP AMP GEN PURPOSE RR 10MHZ SOT-23-5	U4, U6	Texas Instruments	TLV316QDBVRQ1	Digi-Key	296-45323-1-ND	1.08	2	$ 2.17
IC AUDIO AMPLIFIER TPA2005D1	U5			Digi-Key				
IC DIGITAL ISO SI8715BC-A-IS	U7	Silicon Labs	SI8715BC-A-IS	Digi-Key	336-3027-ND	1.27	1	$ 1.27
							Total:	$ 20.52


MSXII SOLAR SENSE SLAVE
REV 1.13
HV
R1
C4
U1
L1
C2
MPPT_GND
P2
MPPT_GND
R4
R3
R2
C1
U2
6V
5V
MPPT_HV
R8
C10
C11
U5
R10
C3
VO-
R5
R12
U6
R9
TP10
R13
VO+
LED1
CAUTION HV
U7
GND
GND
12V
3V
P3
P1
R11
C12
C13
C6
VSEN
TP12
3V
C5
U3
U4
R6
OUT
R7
C8
C7
P4 TEMP
C9
TP9
TSEN





Electrical Rules Check Report

Class	Document	Message
Warning	SolarSenseBoard.SchDoc	Net NetC8_1 has no driving source (Pin C8-1,Pin P4-2,Pin R7-1,Pin U4-3)
Warning	SolarSenseBoard.SchDoc	Net NetR8_2 has no driving source (Pin R8-2,Pin R12-1,Pin U6-3)

Design Rules Verification Report

Filename : C:\Users\Taiping\Documents\MidnightSun\hardware\MSXII_SolarSenseSlave\Sola

Warnings 0
Rule Violations 6

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=20.866mil) (InNetClass('HV')),(InNet('MPPT_GND'))	0
Clearance Constraint (Gap=6mil) (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=6mil) (Max=100mil) (Preferred=10mil) (All)	0
Power Plane Connect Rule(Relief Connect)(Expansion=20mil) (Conductor Width=10mil) (Air Gap=10mil) (Entries=4)	0
Minimum Annular Ring (Minimum=5.906mil) (All)	0
Hole Size Constraint (Min=11.811mil) (Max=248.031mil) (All)	0
Hole To Hole Clearance (Gap=10mil) (All),(All)	0
Minimum Solder Mask Sliver (Gap=11.811mil) (Disabled)(All),(All)	0
Silk To Solder Mask (Clearance=7mil) (IsPad),(All)	6
Silk to Silk (Clearance=10mil) (All),(All)	0
Net Antennae (Tolerance=0mil) (All)	0
Height Constraint (Min=0mil) (Max=1000mil) (Prefered=500mil) (All)	0
Total	6

Silk To Solder Mask (Clearance=7mil) (IsPad),(All)
Silk To Solder Mask Clearance Constraint: (6.688mil < 7mil) Between Pad P4-3(142.52mil,641.732mil) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (4.921mil < 7mil) Between Pad U2-1(1474.409mil,1655.512mil) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (4.921mil < 7mil) Between Pad U2-2(1474.409mil,1618.11mil) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (4.921mil < 7mil) Between Pad U2-3(1474.409mil,1580.709mil) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (4.921mil < 7mil) Between Pad U2-4(1564.961mil,1580.709mil) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (4.921mil < 7mil) Between Pad U2-5(1564.961mil,1655.512mil) on Top Layer And Track