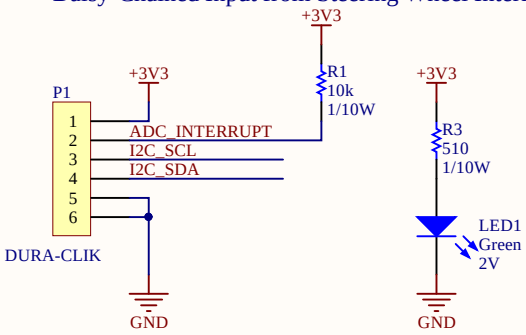
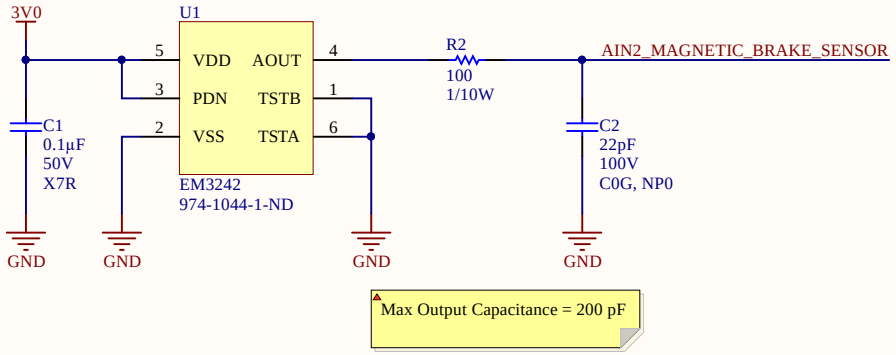
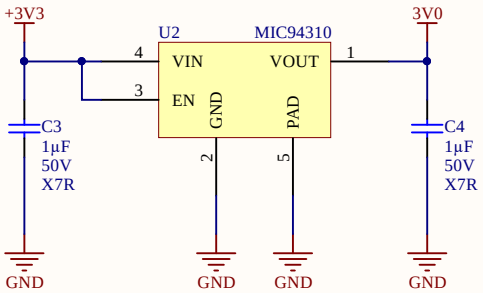
Daisy-Chained Input from Steering Wheel Interface Board



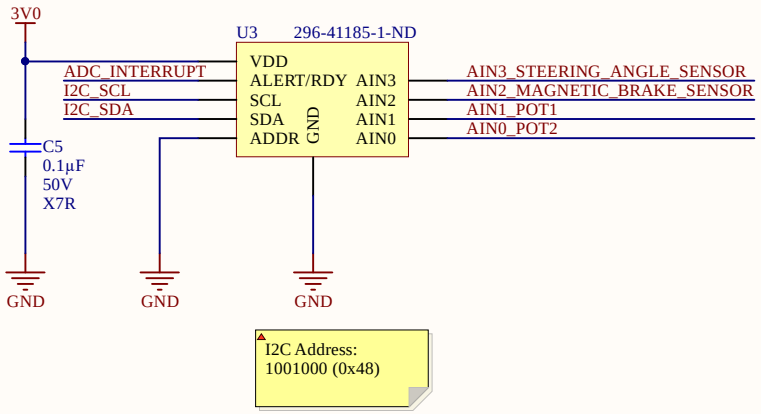
Brake Pedal Magnetic Sensor



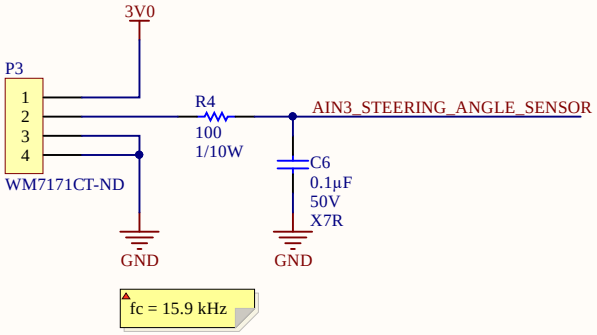
Power Supply



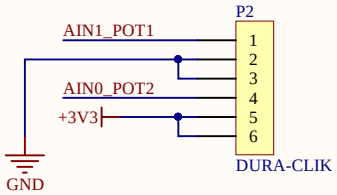
ADC



Steering Angle Sensor



Accelerator Pedal Connector

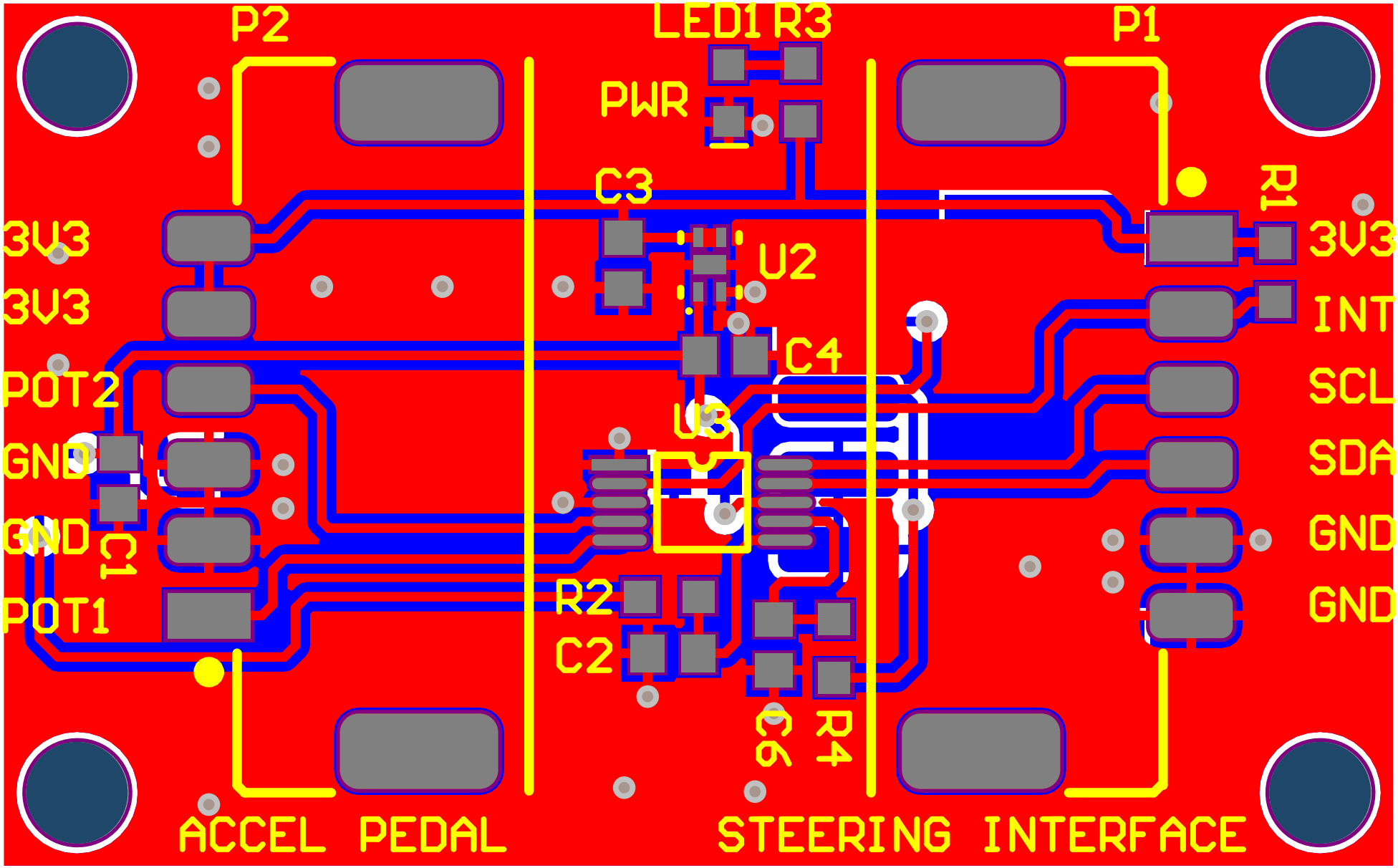


Project: ***MSXII_PedalBoard.PrjPcb***		MIDNIGHT SUN
Title: **Pedal Interface Board**		
Project Lead: Taiping Li		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 2.0	
Date: 2018-05-21	Sheet 1 of 1	Website:

Bill of Materials

Project:	MSXII_PedalBoard.PrjPcb
Revision:	2.1
Project Lead:	Taiping Li
Generated On:	2018-05-21 7:13:20 PM
Production Quantity:	1
Currency	CAD
Total Parts Count:	17

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 0.1UF 50V 10% X7R 0603	C1	Kyocera AVX	06035C-104KAT2A	Digi-Key	478-5052-1-ND	0.2	1	$ 0.20
CAP CER 22PF 100V 5% NP0 0603	C2	Murata	GCM1885C2A220JA16D	Digi-Key	490-4942-1-ND	0.15	1	$ 0.15
CAP CER 1UF 50V 10% X7R 0603	C3	Taiyo Yuden	UMK107AB7105KA-T	Digi-Key	587-3247-1-ND	0.37	1	$ 0.37
CAP CER 1UF 50V 10% X7R 0603	C4	Taiyo Yuden	UMK107AB7105KA-T	Digi-Key	587-3247-1-ND	0.37	1	$ 0.37
CAP CER 0.1UF 50V 10% X7R 0603	C5	Kyocera AVX	06035C-104KAT2A	Digi-Key	478-5052-1-ND	0.2	1	$ 0.20
CAP CER 0.1UF 50V 10% X7R 0603	C6	Kyocera AVX	06035C-104KAT2A	Digi-Key	478-5052-1-ND	0.2	1	$ 0.20
LED GREEN CLEAR 2V 0603	LED1	Wurth Electronics	150060VS75000	Digi-Key	732-4980-1-ND	0.18	1	$ 0.18
CONN 6POS DURA-CLIK 0.079"	P1	Molex	560020-0620	Digi-Key	WM10866CT-ND	1.55	1	$ 1.55
CONN 6POS DURA-CLIK 0.079"	P2	Molex	560020-0620	Digi-Key	WM10866CT-ND	1.55	1	$ 1.55
CONN 4POS DURA-CLIK RIGHT ANGLE 0.079"	P3	Molex	502352-0400	Digi-Key	WM7171CT-ND	1.75	1	$ 1.75
RES 10K OHM 1% 1/10W 0603	R1	Yageo	RC0603FR-0710KL	Digi-Key	311-10.0KHRCT-ND	0.13	1	$ 0.13
RES 100 OHM 1% 1/10W 0603	R2	Yageo	RC0603FR-07100RL	Digi-Key	311-100HRCT-ND	0.13	1	$ 0.13
RES 510 OHM 5% 1/10W 0603	R3	Yageo	RC0603JR-07510RL	Digi-Key	311-510GRCT-ND	0.13	1	$ 0.13
RES 100 OHM 1% 1/10W 0603	R4	Yageo	RC0603FR-07100RL	Digi-Key	311-100HRCT-ND	0.13	1	$ 0.13
IC SENSOR ROTATIONAL ANGLE 360DEG SOP6	U1	AKM Semiconductor	EM3242	Digi-Key	974-1044-1-ND	6.14	1	$ 6.14
IC REG LDO 3V 0.2A 4-TDFN	U2	Microchip	MIC94310-PYMT-TR	Digi-Key	576-4761-1-ND	0.37	1	$ 0.37
IC ADC 12-BIT VSSOP-10	U3	Texas Instruments	ADS1015IDGSR	Digi-Key	296-41185-1-ND	3.54	1	$ 3.54
							Total:	$ 17.09


P2
LED1
R3
P1
PWR
C3
R1
3V3
3V3
U2
3V3
INT
C4
POT2
SCL
U3
GND
SDA
GND
C1
GND
R2
GND
POT1
C2
C6
R4
ACCEL PEDAL
STEERING INTERFACE

MSXII DRIVER CONTROLS
PEDAL BOARD
REV 2.1

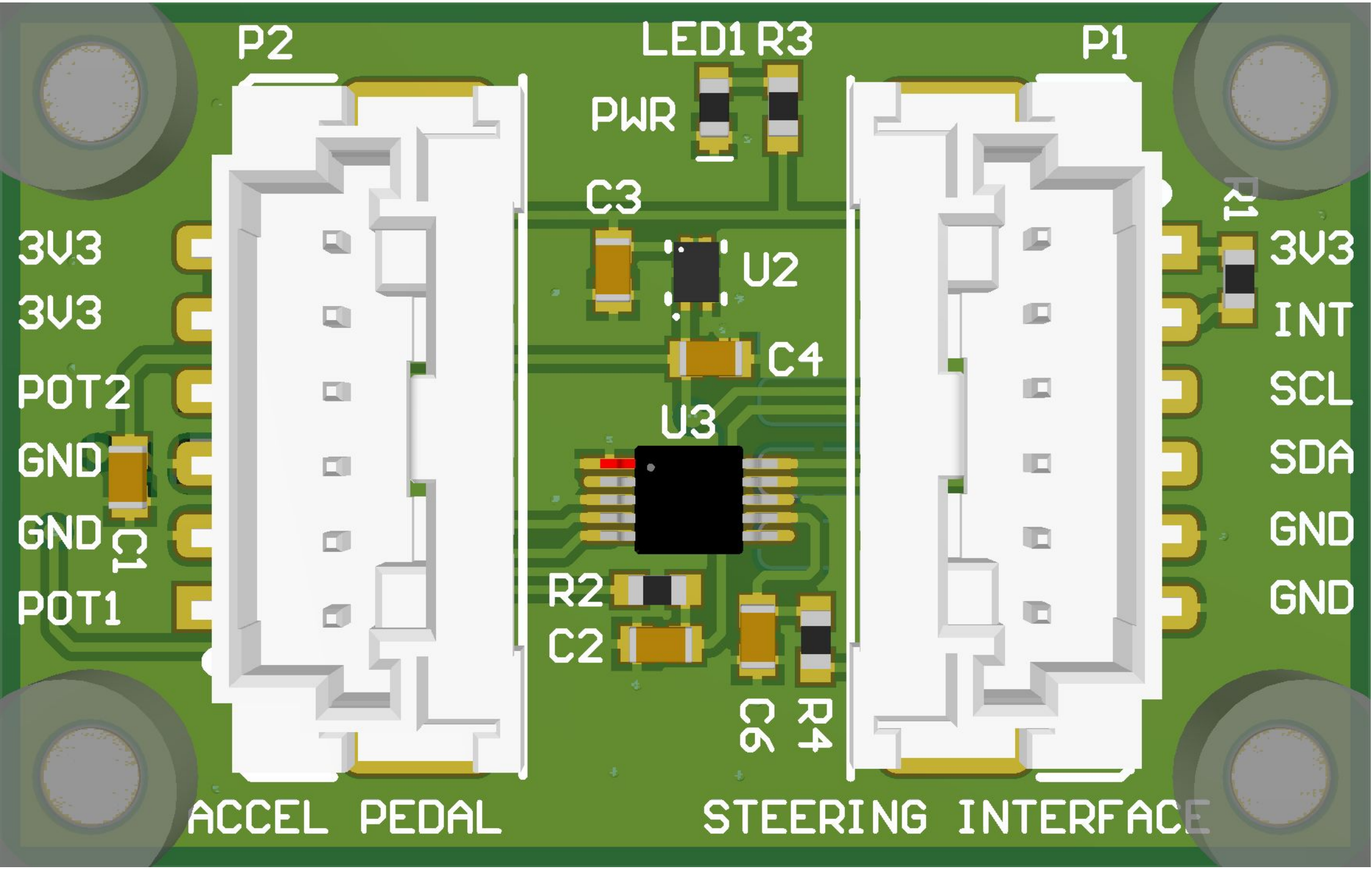
P3

3V0
SENSE
GND
GND

STEERING ANGLE SENSOR

C5

U1


P2
LED1
R3
P1
PWR
C3
U2
R1
3V3
3V3
INT
POT2
C4
SCL
U3
GND
SDA
C1
GND
GND
R2
POT1
C2
C6
R4
ACCEL PEDAL
STEERING INTERFACE

Electrical Rules Check Report

Class	Document	Message
		Successful Compile for MSXII_PedalBoard.PrjPcb

Design Rules Verification Report

Filename : C:\Users\Taiping\Documents\MidnightSun\hardware\MSXII_PedalBoard\PedalBc

Warnings 0
Rule Violations 36

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=0.254mm) (Max=0.254mm) (Preferred=0.254mm) (All)	0
Power Plane Connect Rule(Relief Connect)(Expansion=0.508mm) (Conductor Width=0.254mm) (Air Gap=0.254mm)	0
Hole Size Constraint (Min=0.025mm) (Max=2.54mm) (All)	4
Hole To Hole Clearance (Gap=0.254mm) (All),(All)	0
Minimum Solder Mask Sliver (Gap=0.254mm) (All),(All)	10
Silk To Solder Mask (Clearance=0.254mm) (IsPad),(All)	22
Silk to Silk (Clearance=0.254mm) (All),(All)	0
Net Antennae (Tolerance=0mm) (All)	0
Height Constraint (Min=0mm) (Max=25.4mm) (Prefered=12.7mm) (All)	0
Total	36

Hole Size Constraint (Min=0.025mm) (Max=2.54mm) (All)
Hole Size Constraint: (2.7mm > 2.54mm) Pad Free-(2.5mm,2.5mm) on Multi-Layer Actual Hole Size = 2.7mm
Hole Size Constraint: (2.7mm > 2.54mm) Pad Free-(2.5mm,21.5mm) on Multi-Layer Actual Hole Size = 2.7mm
Hole Size Constraint: (2.7mm > 2.54mm) Pad Free-(35.5mm,2.5mm) on Multi-Layer Actual Hole Size = 2.7mm
Hole Size Constraint: (2.7mm > 2.54mm) Pad Free-(35.5mm,21.5mm) on Multi-Layer Actual Hole Size = 2.7mm

Minimum Solder Mask Sliver (Gap=0.254mm) (All),(All)
Minimum Solder Mask Sliver Constraint: (0.197mm < 0.254mm) Between Pad U1-1(5.65mm,12.5mm) on Bottom Layer And Pad U1-2(5.65mm,11.5mm) on
Minimum Solder Mask Sliver Constraint: (0.197mm < 0.254mm) Between Pad U1-2(5.65mm,11.5mm) on Bottom Layer And Pad U1-3(5.65mm,10.5mm) on
Minimum Solder Mask Sliver Constraint: (0.197mm < 0.254mm) Between Pad U1-4(1.55mm,10.5mm) on Bottom Layer And Pad U1-5(1.55mm,11.5mm) on
Minimum Solder Mask Sliver Constraint: (0.197mm < 0.254mm) Between Pad U1-5(1.55mm,11.5mm) on Bottom Layer And Pad U1-6(1.55mm,12.5mm) on
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.254mm) Between Pad U2-1(19mm,15.785mm) on Top Layer And Pad U2-2(19.6mm,15.785mm) on
Minimum Solder Mask Sliver Constraint: (0.012mm < 0.254mm) Between Pad U2-1(19mm,15.785mm) on Top Layer And Pad U2-5(19.3mm,16.5mm) on
Minimum Solder Mask Sliver Constraint: (0.012mm < 0.254mm) Between Pad U2-2(19.6mm,15.785mm) on Top Layer And Pad U2-5(19.3mm,16.5mm) on
Minimum Solder Mask Sliver Constraint: (0.147mm < 0.254mm) Between Pad U2-3(19.6mm,17.225mm) on Top Layer And Pad U2-4(19mm,17.225mm) on
Minimum Solder Mask Sliver Constraint: (0.022mm < 0.254mm) Between Pad U2-3(19.6mm,17.225mm) on Top Layer And Pad U2-5(19.3mm,16.5mm) on
Minimum Solder Mask Sliver Constraint: (0.022mm < 0.254mm) Between Pad U2-4(19mm,17.225mm) on Top Layer And Pad U2-5(19.3mm,16.5mm) on

Silk To Solder Mask (Clearance=0.254mm) (IsPad),(All)
Silk To Solder Mask Clearance Constraint: (0.188mm < 0.254mm) Between Arc (18.746mm,15.277mm) on Top Overlay And Pad U2-1(19mm,15.785mm)
Silk To Solder Mask Clearance Constraint: (0.165mm < 0.254mm) Between Pad LED1-2(19.8mm,20.3mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (Collision < 0.254mm) Between Pad P3-(28.188mm,6.4mm) on Bottom Layer And Text "STEERING ANGLE
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad R3-2(21.7mm,21.85mm) on Top Layer And Text "R3" (21.1mm,22.6mm) on
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U2-1(19mm,15.785mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U2-2(19.6mm,15.785mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U2-3(19.6mm,17.225mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U2-4(19mm,17.225mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.193mm < 0.254mm) Between Pad U3-1(16.9mm,11.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.175mm < 0.254mm) Between Pad U3-1(16.9mm,11.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U3-10(21.3mm,11.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-10(21.3mm,11.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-2(16.9mm,10.7mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-3(16.9mm,10.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-4(16.9mm,9.7mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-5(16.9mm,9.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U3-5(16.9mm,9.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.25mm < 0.254mm) Between Pad U3-6(21.3mm,9.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-6(21.3mm,9.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-7(21.3mm,9.7mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-8(21.3mm,10.2mm) on Top Layer And Track
Silk To Solder Mask Clearance Constraint: (0.233mm < 0.254mm) Between Pad U3-9(21.3mm,10.7mm) on Top Layer And Track