Project: **BMS_Carrier_Board.PrjPcb**Title: **Controller Board Interface**Project Lead: **Taiping Li**Size: **Letter**Revision: **2.2**Date: **2018-01-14**

Sheet 1 of 4

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Table 4. SPI Modes

MODE	POL	PHA	DESCRIPTION
0	0	0	SCK Idles Low, Latches on Rising (1st) Edge
1	0	1	SCK Idles Low, Latches on Falling (2nd) Edge
2	1	0	SCK Idles High, Latches on Falling (1st) Edge
3	1	1	SCK Idles High, Latches on Rising (2nd) Edge

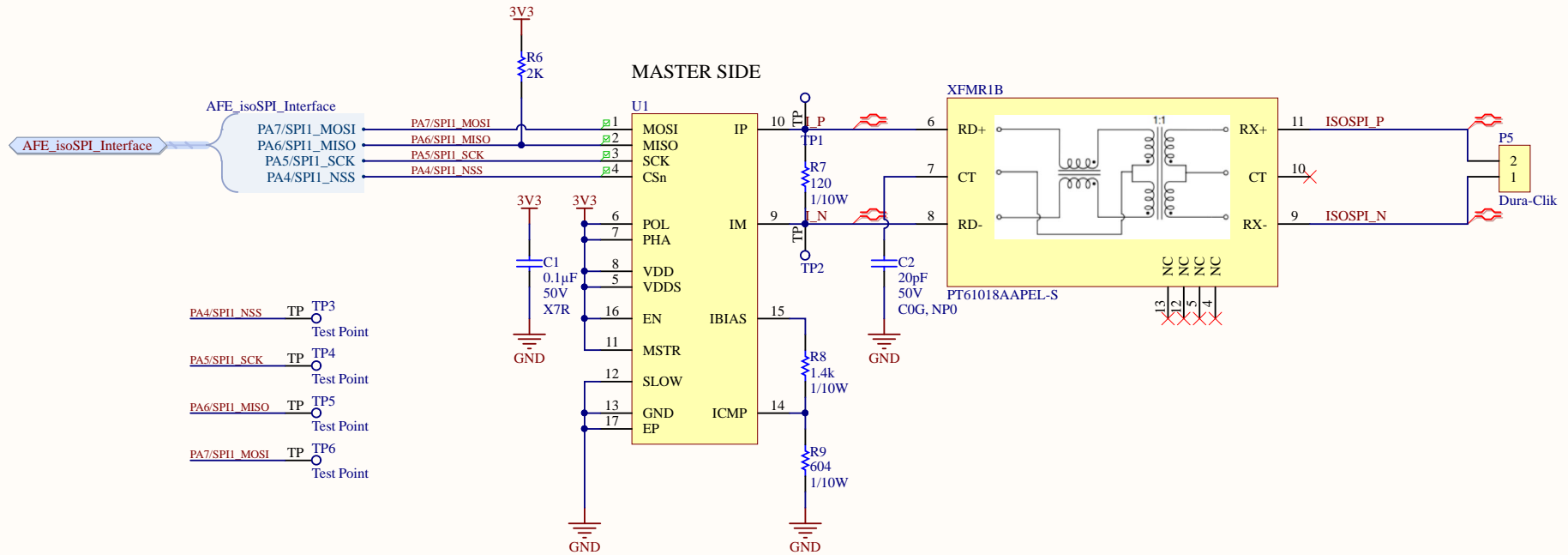
SCK idles high, latches on 2nd rising edge


Pulse Drive Current $I_{IP} = 20 \times I_{BIAS} = 20\text{mA}$

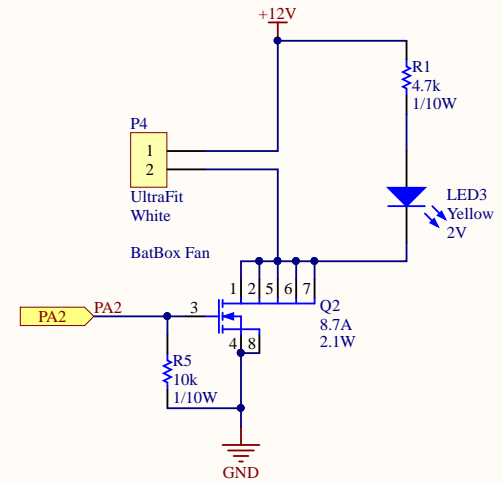
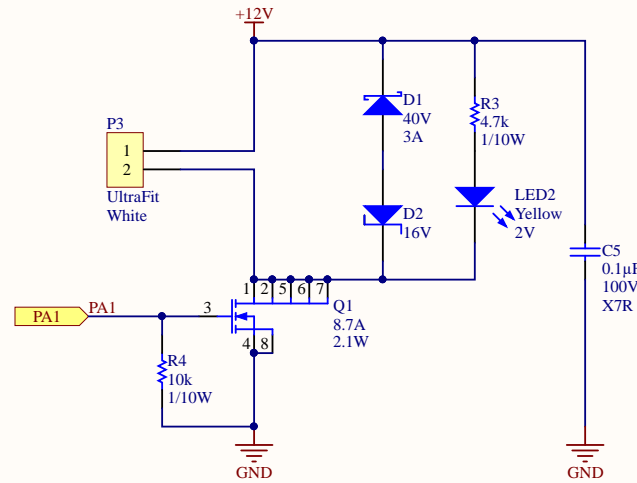
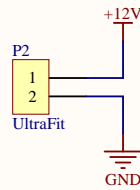
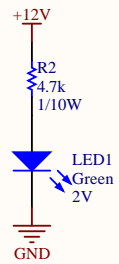
Transmitted Differential Signal Amplitude $V_A = I_{IP} \times 120/2 = 1.2\text{V}$


Bias Current I_{BIAS} can be adjusted from 0.1mA to 1mA

Currently set to 1mA

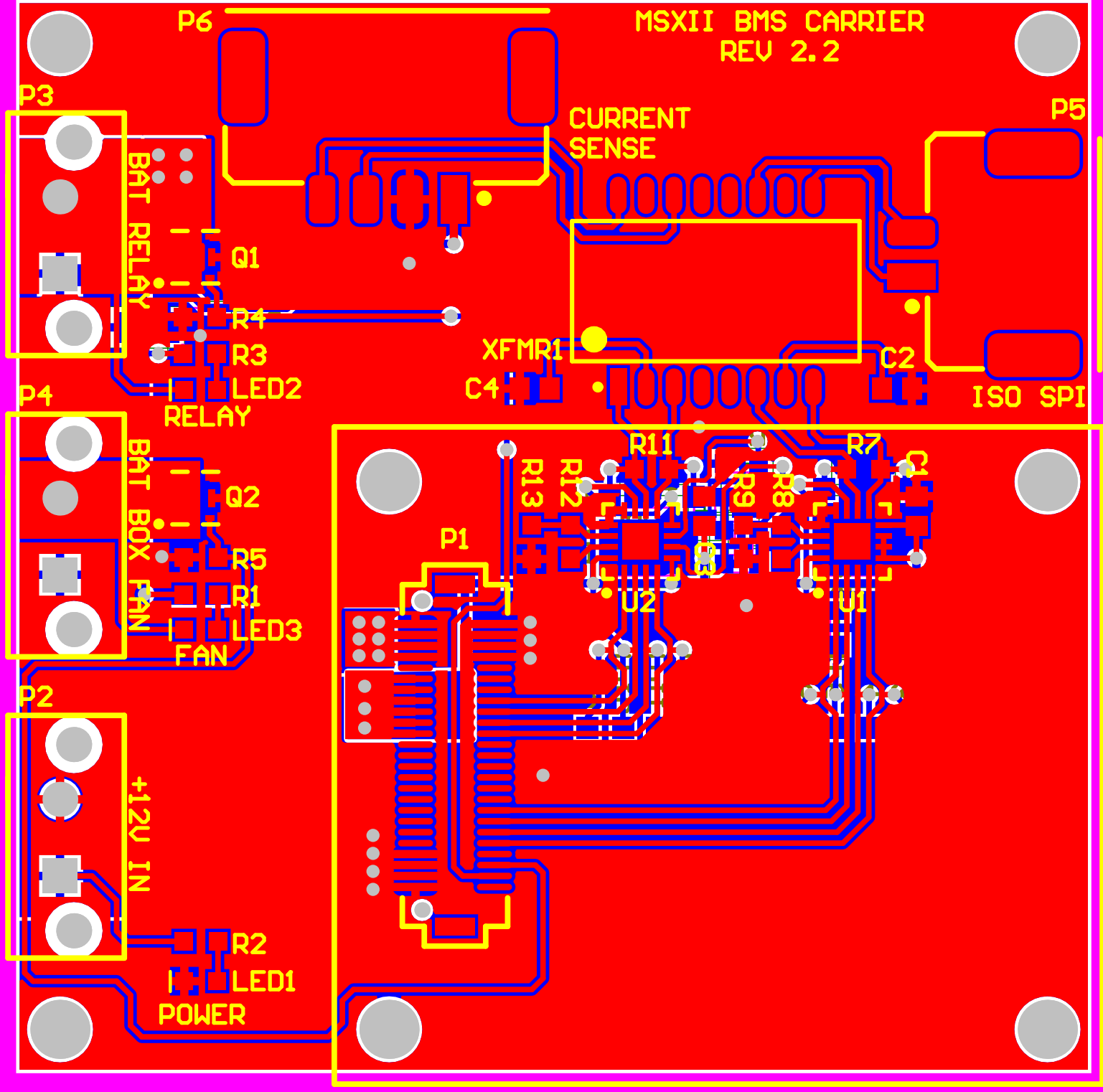


Project: BMS_Carrier_Board.PrjPcb		<div><div>MIDNIGHT</div><div></div><div>SUN</div></div>
Title: BMS Interface		
Project Lead: Taiping Li		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 2.2	
Date: 2018-01-14	Sheet 3 of 4	Website: www.uwmidsun.com



Project: BMS_Carrier_Board.PrjPcb		<div>MIDNIGHTSUN</div>
Title: BMS Fan and Relay Control		
Project Lead: Taiping Li		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: Letter	Revision: 2.2	
Date: 2018-01-14	Sheet 4 of 4	Website: www.uwmidsun.com

MSXII BMS CARRIER
REV 2.2



Component list

Source Data From:
Project:
Variant:

Bill of Materials For Project [BMS_Carrier_Board.PrjPcb] (No PCB Document Selected)

BMS_Carrier_Board.PrjPcb
BMS_Carrier_Board.PrjPcb
None



Report Date: 2018-01-14 10:01:26 PM
Print Date: 14-Jan-18 10:01:42 PM

#	LibRef	#Column Name Error:Manufacturer	olumn Name Error:Manufacturer	#Column Name Error:PartType	Description	Footprint	#Column Name Error:Package Reference	Quantity
1	CAP CER 0.1UF 50V 10% X7R 0603				0.10µF ±10% 50V Ceramic Capacitor X7R 0603 (1608 Metric)	CAP_0603		2
2	CAP CER 20PF 50V ±5% C0G/NP0 0603				20pF ±5% 50V Ceramic Capacitor C0G, NP0 0603 (1608 Metric)	CAP_0603		2
3	CAP CER 0.1UF 100V 10% X7R 0805				0.1µF ±10% 100V Ceramic Capacitor X7R 0805 (2012 Metric)	CAP_0805		1
4	DIODE SCHOTTKY 40V 3A DO-214AA (SMB)				Diode Schottky 40V 3A Surface Mount DO-214AA (SMB)	DO-214AA Diode		1
5	DIODE ZENER 16V 5W DO-214AA (SMB)				Zener Diode 16V 5W ±5% Surface Mount DO-214AA (SMB)	DO-214AA Diode		1
6	LED GREEN CLEAR 2V 0603				Green 572nm LED Indication - Discrete 2V 0603 (1608 Metric)	LED_0603		1
7	LED YELLOW CLEAR 2.1V 0603				Yellow 590nm LED Indication - Discrete 2V 0603 (1608 Metric)	LED_0603		2
8	CONN 50POS Bergstak Plug 0.02"				50 Position Connector Plug, Outer Shroud Contacts Surface Mount Gold	CONN, Bergstak 50 Pos Plug		1
9	CONN 2POS ULTRA-FIT 0.138"				2 Positions Header, Shrouded Connector 0.138" (3.50mm) Through Hole Gold	CONN, 2POS ULTRA-FIT		1
10	CONN 2POS ULTRA-FIT NATURAL COLOR 0.138"				2 Positions Header, Shrouded Connector 0.138" (3.50mm) Through Hole	CONN, 2POS ULTRA-FIT - NATURAL COLOR		2
11	CONN 2POS DURA-CLIK 0.079" VERT				2 Positions Header, Shrouded Connector 0.079" (2.00mm) Surface Mount, Vertical Tin	CONN, 2POS Dura-Click Vertical		1
12	CONN 4POS DURA-CLIK 0.079"				4 Positions Header Connector 0.079" (2.00mm) Surface Mount Tin	CONN, 4POS DURA-CLIK VERT		1
13	MOSFET N-CH 30V 8.7A 2.1W 6-PQFN (2x2)					MOSFET N-CH 30V 12A 2mmx2mm PQFN		2
14	RES 4.7K OHM 1% 1/10W 0603				4.7k Ohm ±1% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric) Moisture Resistant Thick Film	RES_0603		3
15	RES 10K OHM 1% 1/10W 0603				RES SMD 10K OHM 1% 1/10W 0603	RES_0603		2
16	RES 2K OHM 1% 1/10W 0603				2k Ohm ±1% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric) Moisture Resistant Thick Film	RES_0603		2
17	RES 120 OHM 1% 1/10W 0603				RES SMD 120 OHM 1% 1/10W 0603	RES_0603		2
18	RES 1.4k OHM 1% 1/10W 0603				RES SMD 1.4K OHM 1% 1/10W 0603	RES_0603		2
19	RES 604 OHM 1% 1/10W 0603				RES SMD 604 OHM 1% 1/10W 0603	RES_0603		2
20	RES 0.0 OHM 1/4W 0603				RES SMD 0.0 OHM JUMPER 1/4W 0603	RES_0603		2
21	Test Point					Test Point		12
22	IC ISOSPI COMM INTERFACE LTC6820IUD				IC COMM INTERFACE ISOSPI 16-QFN	IC COMM INTERFACE ISOSPI 16-QFN		2
23	IC PULSE XFMR 1CT:1CT 350UH SMD				PULSE XFMR 1CT:1CT 350UH SMD	IC, PULSE XFMR 1CT:1CT 350UH SMD		1

Approved	Notes	48