
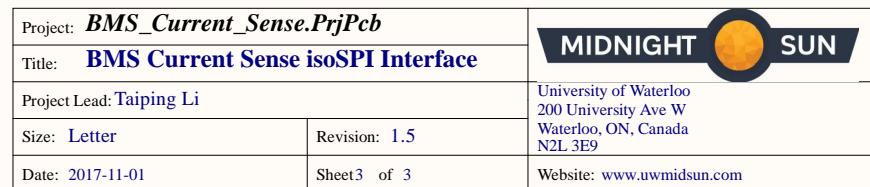
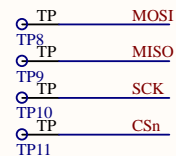


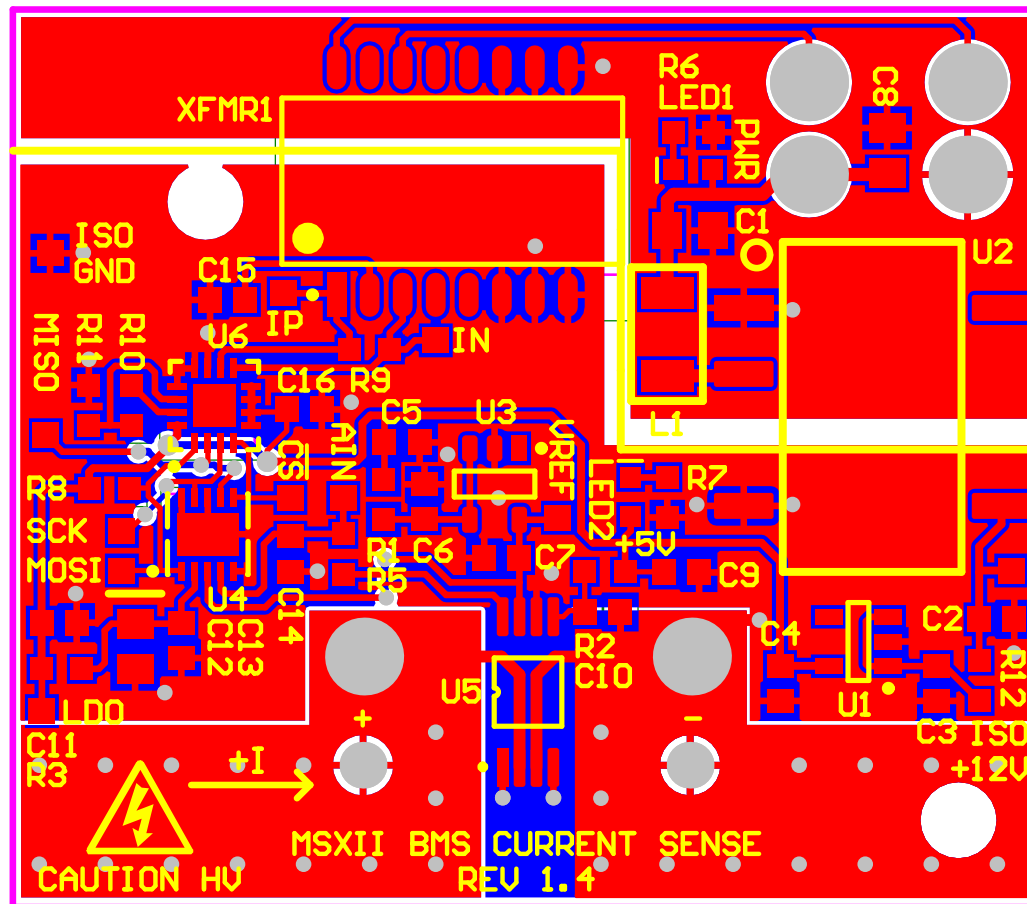
Last Updated: Oct 29, 2017

— Power  
— Analog Signal  
— Digital Signal  
- - - Board Outline

Project: <b>BMS_Current_Sense.PrjPcb</b>		<div>MIDNIGHTSUN</div>
Title: <b>BMS Current Sense Block Diagram</b>		
Project Lead: <b>Taiping Li</b>		University of Waterloo 200 University Ave W Waterloo, ON, Canada N2L 3E9
Size: <b>Letter</b>	Revision: <b>1.5</b>	
Date: <b>2017-11-01</b>	Sheet <b>1</b> of <b>3</b>	
		Website: <a href="http://www.uwmidsun.com">www.uwmidsun.com</a>







# Bill of Materials

Bill of Materials For Project [BMS\_Current\_Sense.Prj]Pcb [No PCB Document Selected]

Source Data From: BMS\_Current\_Sense.PrjPcb  
Project: BMS\_Current\_Sense.PrjPcb  
Variant: None

Creation Date: 2017-11-01 12:06:28 AM  
Print Date: 01-Nov-17 12:06:43 AM

Production Quantity: 1  
Currency: <none>

Footprint	Comment	LibRef	Designator	Description	Quantity	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Supplier Order Qty 1	Supplier Subtotal 1	Manufacturer 1	Manufacturer Part Number 1
CAP_0805	CAP CER 4.7UF 50V 10% X5R 0805	CAP CER 4.7UF 50V 10% X5R 0805	C1	4.7uF ±20% 50V Ceramic Capacitor X5R 0805 (2012 Metric)	1	Digi-Key	<a href="#">490-12395-1-ND</a>	0.42	1	\$ 0.42	<a href="#">Murata Electronics North America</a>	<a href="#">GRT21BR61H475ME13L</a>
CAP_0603	CAP CER 2.2UF 25V 10% X5R 0603	CAP CER 2.2UF 25V 10% X5R 0603	C2, C4	2.2uF ±10% 25V Ceramic Capacitor X5R 0603 (1608 Metric)	2	Digi-Key	<a href="#">490-10731-1-ND</a>	0.16	2	\$ 0.32	<a href="#">Murata Electronics North America</a>	<a href="#">GRM188R61E225KA12D</a>
CAP_0603	CAP CER 1UF 50V 10% X7R 0603	CAP CER 1UF 50V 10% X7R 0603	C3	1uF ±10% 50V Ceramic Capacitor X7R 0603 (1608 Metric)	1	Digi-Key	<a href="#">587-3247-1-ND</a>	0.25	1	\$ 0.25	<a href="#">Taiyo Yuden</a>	<a href="#">UMK107AB7105KA-T</a>
CAP_0603	CAP CER 0.1UF 50V 10% X7R 0603	CAP CER 0.1UF 50V 10% X7R 0603	C6, C10, C13, C16	0.10uF ±10% 50V Ceramic Capacitor X7R 0603 (1608 Metric)	4	Digi-Key	<a href="#">478-5052-1-ND</a>	0.1	4	\$ 0.40	<a href="#">AVX Corporation</a>	<a href="#">06035C104KAT2A</a>
CAP_0603	0.022uF	CAP CER 0.022UF 50V 10% X7R 0603	C7	0.022uF ±10% 50V Ceramic Capacitor X7R 0603 (1608 Metric)	1	Digi-Key	<a href="#">490-1517-1-ND</a>	0.11	1	\$ 0.11	<a href="#">Murata Electronics North America</a>	<a href="#">GRM188R71H223KA01D</a>
CAP_0805	CAP CER 10uF 25V 10% X5R 0805	CAP CER 10uF 25V 10% X5R 0805	C8	10uF ±10% 25V Ceramic Capacitor X5R 0805 (2012 Metric)	1	Digi-Key	<a href="#">490-5523-1-ND</a>	0.21	1	\$ 0.21	<a href="#">Murata</a>	<a href="#">GRM21BR61E106KA73L</a>
CAP, TANTALUM 0805	1uF	CAP TANT 1UF 25V 10% 0805	C12	1uF Molded Tantalum Capacitors 25V 0805 (2012 Metric) 8 Ohm	1	Digi-Key	<a href="#">478-8928-1-ND</a>	0.71	1	\$ 0.71	<a href="#">AVX Corporation</a>	<a href="#">TAJR105K025RNU</a>
CAP_0603	CAP CER 10nF 50V 5% X7R 0603	CAP CER 10nF 50V 5% X7R 0603	C14	10000pF ±5% 50V Ceramic Capacitor U2J 0603 (1608 Metric)	1	Digi-Key	<a href="#">399-13384-1-ND</a>	0.29	1	\$ 0.29	<a href="#">KEMET</a>	<a href="#">C0603C103J5JAC7867</a>
CAP_0603	CAP CER 20PF 50V ±5% COG/NP0 0603	CAP CER 20PF 50V ±5% COG/NP0 0603	C15	20pF ±5% 50V Ceramic Capacitor COG, NP0 0603 (1608 Metric)	1	Digi-Key	<a href="#">490-1410-1-ND</a>	0.11	1	\$ 0.11	<a href="#">Murata Electronics North America</a>	<a href="#">GRM1885C1H200JA01D</a>
NLFV32T-6R8M-EF/IND 6.8uH	IND 6.8uH 260mA 20% 1210	IND 6.8uH 260mA 20% 1210	L1	6.8uH Shielded Wirewound Inductor 260mA 204 mOhm Max 1210 (3225 Metric)	1	Digi-Key	<a href="#">445-15776-1-ND</a>	0.44	1	\$ 0.44	<a href="#">TDK Corporation</a>	<a href="#">NLFV32T-6R8M-EF</a>
LED_0603	LED YELLOW CLEAR 2.1V 0603	LED YELLOW CLEAR 2.1V 0603	LED1	Yellow 590nm LED Indication - Discrete 2V 0603 (1608 Metric)	1	Digi-Key	<a href="#">732-4981-1-ND</a>	0.14	1	\$ 0.14	<a href="#">Würth Electronics</a>	<a href="#">150060YS75000</a>
LED_0603	LED GREEN CLEAR 2V 0603	LED GREEN CLEAR 2V 0603	LED2	Green 572nm LED Indication - Discrete 2V 0603 (1608 Metric)	1	Digi-Key	<a href="#">732-4980-1-ND</a>	0.14	1	\$ 0.14	<a href="#">Würth Electronics</a>	<a href="#">150060VS75000</a>
RES_0603	RES 0.0 OHM 1/4W 0603	RES 0.0 OHM 1/4W 0603	R1, R2, R3, R5, R12	RES SMD 0.0 OHM JUMPER 1/4W 0603	5	Digi-Key	<a href="#">541-0-0SBCT-ND</a>	0.15	5	\$ 0.75	<a href="#">Vishay Dale</a>	<a href="#">CRCW06030000Z0EAHP</a>
RES SHUNT 100UOHM 60MM	100uOhm Shunt Resistor	RES SHUNT 100UOHM 5% 36W 60MM	R4	100 µOhms ±5% 36W Shunt, Battery Specialized Resistor Metal Element ±175ppm/°C Shunt Fixture, 60mm Pitch	1	Digi-Key	<a href="#">541-1906-ND</a>	12.1	1	\$ 12.10	<a href="#">Vishay Dale</a>	<a href="#">WSBM8518L1000JK</a>
RES_0603	RES 4.7K OHM 1% 1/10W 0603	RES 4.7K OHM 1% 1/10W 0603	R6	4.7k Ohm ±1% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric) Moisture Resistant Thick Film	1	Digi-Key	<a href="#">311-4.70KHRCT-ND</a>	0.1	1	\$ 0.10	<a href="#">Yageo</a>	<a href="#">RC0603FR-074K7L</a>
RES_0603	2K	RES 2K OHM 1% 1/10W 0603	R7, R8	2k Ohm ±1% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric) Moisture Resistant Thick Film	2	Digi-Key	<a href="#">311-2.00KHRCT-ND</a>	0.1	2	\$ 0.20	<a href="#">Yageo</a>	<a href="#">RC0603FR-072KL</a>
RES_0603	RES 120 OHM 1% 1/10W 0603	RES 120 OHM 1% 1/10W 0603	R9	RES SMD 120 OHM 1% 1/10W 0603	1	Digi-Key	<a href="#">311-120HRCT-ND</a>	0.1	1	\$ 0.10	<a href="#">Yageo</a>	<a href="#">RC0603FR-07120RL</a>
RES_0603	RES 1.4k OHM 1% 1/10W 0603	RES 1.4k OHM 1% 1/10W 0603	R10	RES SMD 1.4K OHM 1% 1/10W 0603	1	Digi-Key	<a href="#">311-1.40KHRCT-ND</a>	0.1	1	\$ 0.10	<a href="#">Yageo</a>	<a href="#">RC0603FR-071K4L</a>
RES_0603	RES 604 OHM 1% 1/10W 0603	RES 604 OHM 1% 1/10W 0603	R11	RES SMD 604 OHM 1% 1/10W 0603	1	Digi-Key	<a href="#">311-604HRCT-ND</a>	0.1	1	\$ 0.10	<a href="#">Yageo</a>	<a href="#">RC0603FR-07604RL</a>
Test Point	Test Point	Test Point	TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11		11							
SOT95P280X145-5N	IC REG LDO 5V 0.1A SOT23-5	IC REG LDO 5V 0.1A SOT23-5	U1	Linear Voltage Regulator IC Positive Fixed Output 5V 100mA SOT-23-5	1	Digi-Key	<a href="#">497-7787-1-ND</a>	0.59	1	\$ 0.59	<a href="#">STMicroelectronics</a>	<a href="#">LD2981CM50TR</a>
IC, Isolated DCDC	IC DCDC ISOLATED 12V 1W 8-SMD 5-LEAD	IC DCDC ISOLATED 12V 1W 8-SMD 5-LEAD	U2	Isolated Module DC DC Converter 1 Output 12V 84mA 10.8V - 13.2V Input	1	Digi-Key	<a href="#">1470-2950-1-ND</a>	4.68	1	\$ 4.68	<a href="#">XP Power</a>	<a href="#">ISE1212A</a>
IC OP AMP GP RR 10MHZ SOT-23-5	4.096V Reference	IC VREF SERIES 4.096V 5MA SOT23-5	U3	Series Voltage Reference IC ±0.2% 5mA SOT-23-5	1	Digi-Key	<a href="#">LM4120AIM5-4.1NOPBCT-ND</a>	2.05	1	\$ 2.05	<a href="#">Texas Instruments</a>	<a href="#">LM4120AIM5-4.1/NOPB</a>
IC ADC LTC2484 10-DFN	IC ADC 24BIT 10-DFN	IC ADC 24BIT 10-DFN	U4	24 Bit Analog to Digital Converter 1 Input 1 Sigma-Delta 10-DFN (3x3)	1	Digi-Key	<a href="#">LTC2484CDD#PBF-ND</a>	4.92	1	\$ 4.92	<a href="#">Linear Technology</a>	<a href="#">LTC2484CDD#PBF</a>
IC CURRENT AMPLIFIER INA240 TSSOP-8	100V/V	IC CURRENT AMPLIFIER INA240 8-TSSOP	U5	Current Sense Amplifier 1 Circuit 8-TSSOP	1	Digi-Key	<a href="#">296-45090-1-ND</a>				<a href="#">Texas Instruments</a>	<a href="#">INA240A3PWR</a>
IC COMM INTERFACE ISOSPI 16-QFN	IC ISOSPI COMM INTERFACE LTC6820IUD	IC ISOSPI COMM INTERFACE LTC6820IUD	U6	IC COMM INTERFACE ISOSPI 16-QFN	1	Digi-Key	<a href="#">LTC6820IUD#PBF-ND</a>	4.9	1	\$ 4.90	<a href="#">Linear Technology</a>	<a href="#">LTC6820IUD#PBF</a>
IC, PULSE XFMR 1CT:1CT 350UH SMD	IC PULSE XFMR 1CT:1CT 350UH SMD	IC PULSE XFMR 1CT:1CT 350UH SMD	XFMR1	PULSE XFMR 1CT:1CT 350UH SMD	1	Digi-Key	<a href="#">PT61018AAPEL-SCT-ND</a>				<a href="#">Loading...</a>	<a href="#">Loading...</a>
					46							
						\$ 34.13						