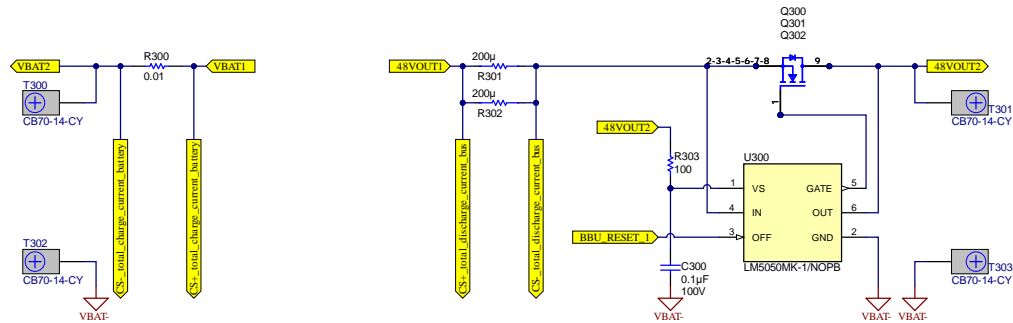
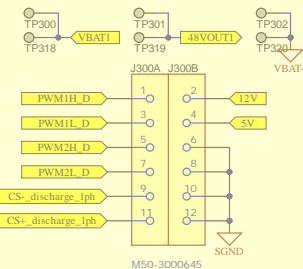


Notes:

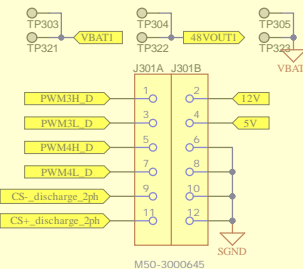
1. 90 seconds, 5.5KW power discharge time @ $\geq 3.9V/cell$. I.e. Discharge power reduced when cell voltage is low. I.e. the design not support 5.5kW at 28.6V_{in}.
2. Reserve 4 discharge phases, 2 charge phases.
3. Use Infineon IQE046N08LM5CGSC FET. 2 in parallel each location. Worse case 4W loss each FET. phase.
4. Add a header on the main/interposer board for BBU_Ishare for future use.
5. Target switching frequency:300kHz.
6. Need to replace discharge ORING FETs to IPT010N08NM5. Use 3 in parallel. Altium model requested.
7. Don't think ORING needed in charging phases. Removed.
8. Want to remove all ORING circuits as we are not planning to test ORING feature in this reference design.
9. Assigned pin 33 for 48V1 sense, pin 36 for VBAT1 sense.
10. Need to double check male/female connector pin mapping is correct.
11. Need to reserve additional AL capacitor on the main board for VBAT. additional cap on the main board for Vbus.
12. Need to add buffer for PWM signals to increase voltage level.



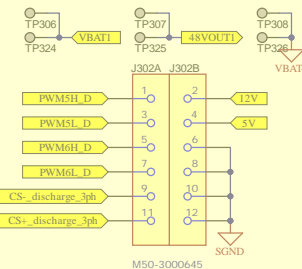
Discharge phase 1 connectors



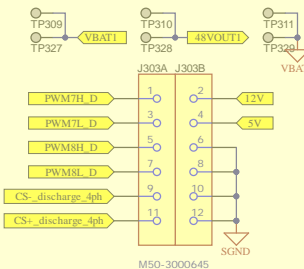
Discharge phase 2 connectors



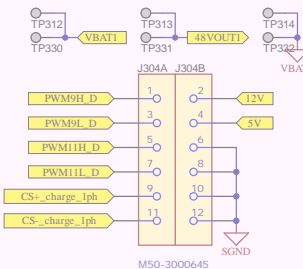
Discharge phase 3 connectors



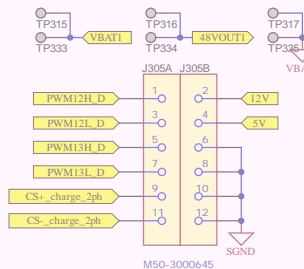
Discharge phase 4 connectors



Charge phase 1 connectors

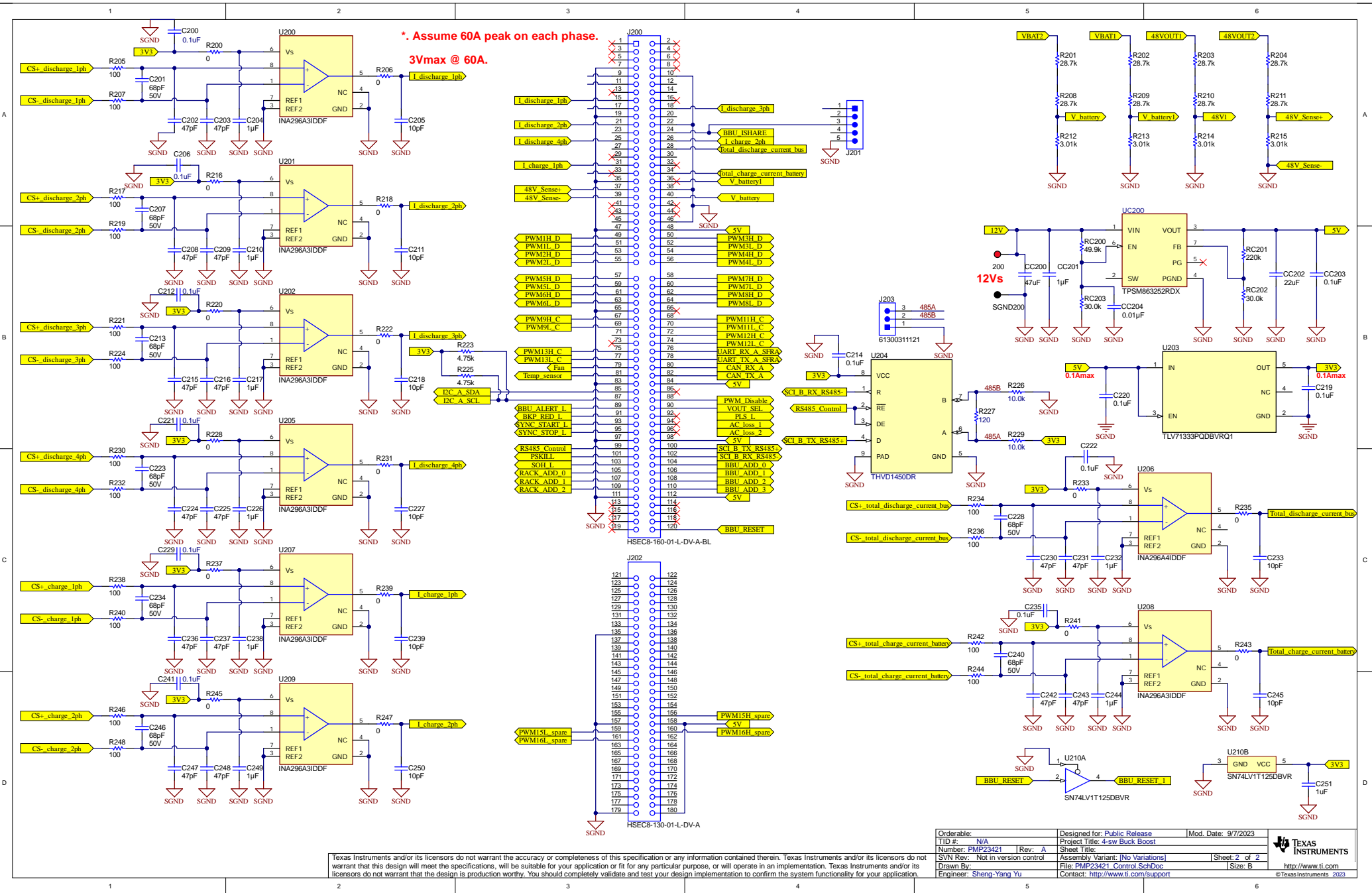


Charge phase 2 connectors



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Orderable:	Designed for: Public Release	Mod. Date: 9/7/2023
TID #: N/A	Project Title: 4-sw Buck Boost	
Number: PMP23421	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: [No Variations]	Sheet: 1 of 2
Drawn By:	File: PMP23421_ORING_N_CS.SchDoc	Size: B
Engineer: Sheng-Yang Yu	Contact: http://www.ti.com/support	



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Orderable:	Designed for: Public Release	Mod. Date: 9/7/2023
TID #: N/A	Project Title: 4-sw Buck Boost	Sheet Title:
Number: PMP23421	Rev: A	Assembly Variant: [No Variations]
SVN Rev: Not in version control		File: PMP23421_Control.SchDoc
Drawn By:	Sheng-Yang Yu	Size: B
Engineer:		Contact: http://www.ti.com/support



Comment	Description	Designator	Footprint	Libref	Quantity
8000	Test Point, Miniature Lead 1in	J200	Keystone8000	8000	1
88012204046	CAP. CERAM. 0.1 uF, 14V, +/- 10%, K7R, 0603	C200, C206, C212, C221, C229, C241	0603	CMP-0006829-4	4
96035A680AT2A	CAP. CERAM. 68 pf, 50 V, +/- 5%, CGS/NPL, 0603	C201, C207, C213, C223, C228, C234, C240, C246	0603	96035A680AT2A	8
GRM1555C1H470F401D	CAP. CERAM. 47 pf, 50 V, +/- 1%, CGS/NPL, 0402	C202, C203, C208, C209, C215, C216, C224, C225, C230, C231, C236, C237, C242, C243, C247, C248	0402	GRM1555C1H470F401D	16
7160BK7R1C105K080AC	CAP. CERAM. 1 uF, 14V, +/- 10%, K7R, 0603	C204, C206, C217, C226, C232, C238, C244, C249	0603	7160BK7R1C105K080AC	8
2303C100F5C6CT89-7	CAP. CERAM. 10 pf, 50 V, +/- 1%, CGS/NPL, 0603	C205, C211, C218, C227, C233, C239, C245, C250	0603	2303C100F5C6CT89-7	8
GRM158K7R1E104K6A01D	CAP. CERAM. 0.1 uF, 16V, +/- 10%, K7R, 0402	C214, C219, C220, C222, C235, C230	0402	GRM158K7R1E104K6A01D	4
7160BK7R1E105K080AB	CAP. CERAM. 1 uF, 25V, +/- 10%, K7R, 0603	C251	0603	7160BK7R1E105K080AB	1
12061C104AT2A	CAP. CERAM. 0.1 uF, 100V, +/- 5%, K7R, 1206	C300	1206	12061C104AT2A	1
GRM32ER61C474K1E1L	CAP. CERAM. 47 uF, 14V, +/- 10%, K2R, 1210	C200	1210_270	CMP-0009211-1	1
8209C105K3RAC7U	CAP. CERAM. 1 uF, 25V, +/- 10%, K5R, 0805	C201	0805_HV	CMP-0007728-2	2
121A22M30QNNNE	SAP. CERAM. 22 uF, 4.2V, +/- 10%, K5R, 0805	C202	0805_HV	CMP-0007989-2	1
C240C2103KARACTU	CAP. CERAM. 0.01 uF, 16V, +/- 10%, K7R, 0603	CC204	0402	CMP-0078218-1	1
H5ECB-160-01-L-DV-A-RL	C2000 controlCABD-120HSEC connector, 5MT	U200	controlCABD-120HSEC	controlCABD-120HSEC	1
W1300511021	Header, 2.54 mm, 3x1, Gold, 80A, TH	U201	Wurth_61300511021	CMP-0054800-1	1
H5ICB-130-01-L-DV-A	C2000 controlCABD-180HSEC (60-pin add-on) connector, 5MT	U202	controlCABD-180HSEC-60pinAdd-on	CMP-0003899-2	1
W1300311121	Header, 2.54 mm, 3x1, Gold, TH	U203	WURTH_61300311121	CMP-0054796-4	1
M50-300045	12 Position Receptacle Connector 6 050P (0.27mm) Through Hole Gold	U300, U301, U302, U303, U304, U305	VP-M50-300045_HDR12-MFG	CMP-0094055-1	6
PT1010N8NM5ATMA1	Transceiver MCPSET 8 Channel 8M 425A & Pin HSOF 178	C300, C301, C302	FP-PT1010N8NM5ATMA1_H5OF8-MFG	CMP-0120006-1	3
RC0603JR-070RL	RES, 0.5%, 0.1 W, 0603	R210, R216, R217, R218, R219, R220, R222, R228, R231, R233, R235, R237, R239, R241, R243, R245, R247	0603	RC0603JR-070RL	16
RCW060328K7RKEA	RES, 28.7k, 1%, 0.1 W, 0603	R201, R202, R203, R204, R208, R209, R210, R211	0603	RCW060328K7RKEA	8
RC0603FR-07100RL	RES, 100, 1%, 0.1 W, 0603	R206, R207, R217, R219, R221, R224, R230, R232, R234, R236, R238, R240, R242, R244, R246, R248	0603	RC0603FR-07100RL	16
RCW06033001FREAE	RES, 3.01k, 1%, 0.1 W, 0603	R212, R213, R214, R215	0603	RCW06033001FREAE	4
RCW06034075FREAE	RES, 4.75k, 1%, 0.1 W, 0603	R221, R225	0603	RCW06034075FREAE	2
AC0402FR-07100L	RES, 10.0k, 1%, 0.043 W, AEC-Q200 Grade 0, 0402	R226, R229	0402	CMP-0077731-1	2
RC0603FR-07120RL	RES, 100, 1%, 0.1 W, 0603	R227	0603	CMP-0022749-6	1
CR2512C0R01F	RES, 0.0, 0.1%, 3 W, AEC-Q200 Grade 0, 2512	R300	2512	CR2512C0R01F	1
PLU921FRNP04JL3	0.1 inchPitch 4Pin SMD Chip Resistor Nonstandard Automotive AEC-Q200, Current Sense, Moisture Resistant Metal Element Metal Element	R301, R302	FP-PLU921FRNP04JL3_P-921-MFG	CMP-0096319-1	2
RCW0805100R04EAP	RES, 100, 0.5%, 0.125 W, AEC-Q200 Grade 0, 0805	R303	0805_HV	RCW0805100R04EAP	1
RCW040249R0KED	RES, 49.0k, 1%, 0.043 W, AEC-Q200 Grade 0, 0402	RC200	0402	CMP-0026492-2	1
RC0402FR-07200L	RES, 200k, 1%, 0.043 W, 0402	RC201	0402	CMP-0026478-1	1
RCW040230R0KED	RES, 30.0k, 1%, 0.043 W, AEC-Q200 Grade 0, 0402	RC202, RC203	0402	CMP-0078244-2	2
0001	Test Point, Miniature Black, TH	SCN02000	Keystone0001	0001	1
CR70-14-CY	Terminal 90A Lug	T300, T301, T302, T303	CR70-14-CY	CMP-0055443-2	4
Suggest using a net name here	Pin Receptacle, 0324mm x100 Dia, Gold TH	FP300, FP301, FP302, FP303, FP304, FP305, FP306, FP307, FP308, FP309, FP310, FP311, FP312, FP313, FP314, FP315, FP316, FP317, FP318, FP319, FP320, FP321, FP322, FP323, FP324, FP325, FP326, FP327, FP328, FP329, FP330, FP331, FP332, FP333, FP334, FP335	Mill-Max_0312-0-15-15-54-27-10-0	0312-0-15-15-54-27-10-0	36
NA276A30DF	4.5V to 150-V, Bidirectional, 1-MHz, 5V/us, Ultra-Precision Current Sense Amplifier, SOT23-6	U200, U201, U202, U206, U207, U208, U209	DDF0008A-MFG	CMP-0093654-2	7
TLV7133PQDRVRC1	Capacitor-Free, 150-mA, Low-Dropout Regulator with Foldback Current Limit for Portable Devices, DRV0005A	U203	DRV0005A_N	TLV7133PQDRVRC1	1
THD14500R	3.3-V to 5-V RS-485 Transceivers With +/-18-V ESD Protection, D0008A (SOT-8)	U204	D0008A_N	CMP-0081978-1	1
NA276A40DF	4.5V to 150-V, Bidirectional, 1-MHz, 5V/us, Ultra-Precision Current Sense Amplifier, SOT23-6	U206	DDF0008A-MFG	CMP-0093655-2	1
8174LV11125D00R	Single-Power Supply Single-BUFFER GATE w/ 3-State Output (active low enable), DRV0005A (SOT-23-5)	U210	DRV0005A_N	CMP-0051320-2	1
MS050AK-1/NOV9	High-Side On-Offing FET Controller, D00008A (SOT-23-T-4)	U300	D00008A_N	CMP-0066179-2	1
TPS46A25280X	3V to 16-V Input, 3-A Synchronous Step-Down Voltage Regulator Module, P/N F430007	UC200	RD0007A-MFG	CMP-0097271-1	1