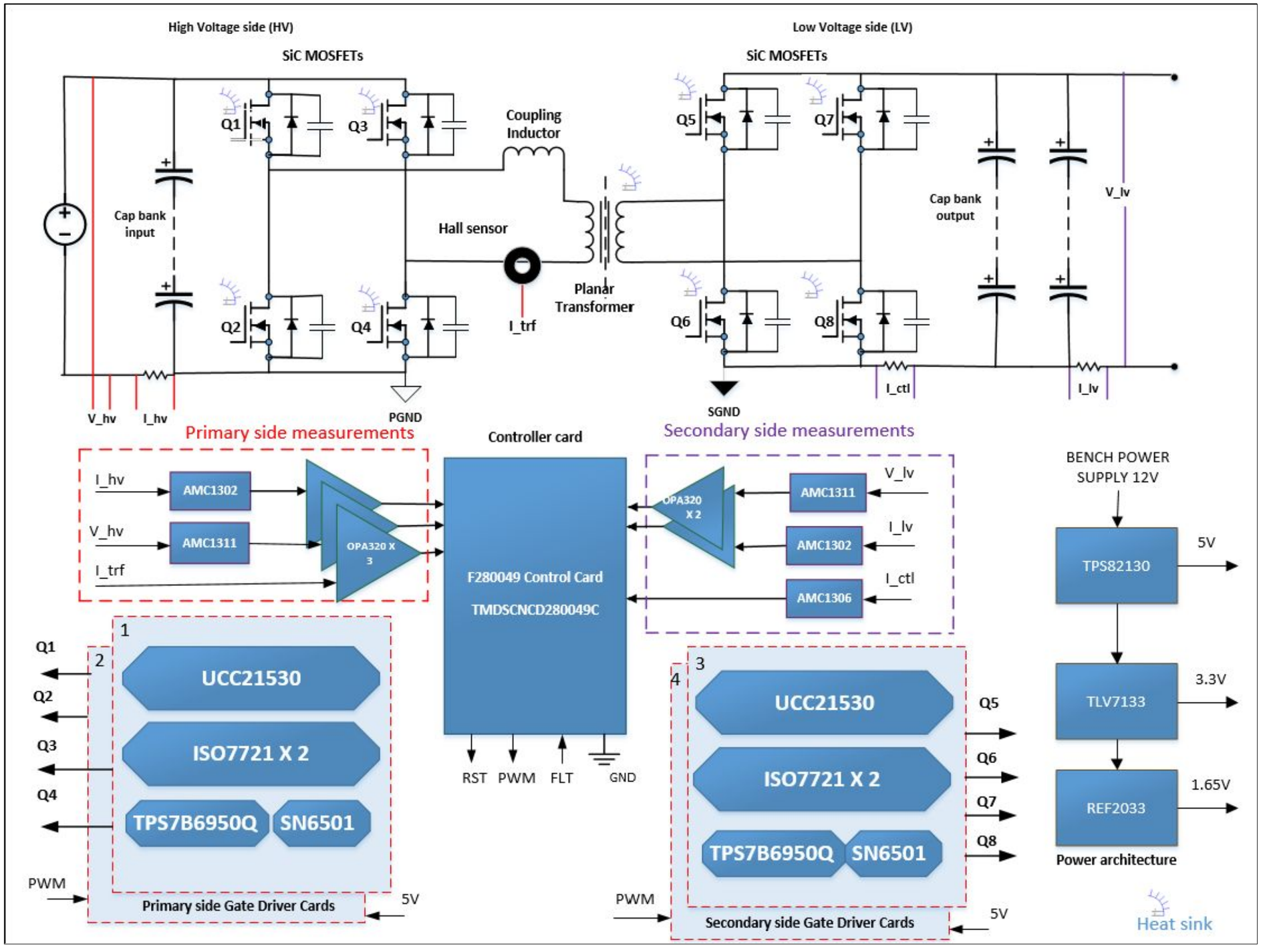

Orderable:	Designed for: Public Release	Mod. Date: 5/22/2020
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054 Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 1 of 7
Drawn By:	File: TIDA-DAB-010054-E2_Block Diagram.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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Dual Active Bridge Power Stage

TP1
VBUS
J2
74650073R
800V
Input DC Voltage
J4
74650073R
I_INP
R29
0.002
INP_RTN
PGND_K2
Input side sense resistor
Kelvin type connection to be made in PCB
C10 0.1µF 1kV
C11 0.1µF 1kV
C1 450V 150µF
C2 450V 150µF
C3 450V 150µF
C15 450V 150µF
C16 450V 150µF
C17 450V 150µF
R1 1.00M
R2 1.00M
R3 1.00M
R4 1.00M
R5 1.00M
R10 1.00M
R11 1.00M
R12 1.00M
R13 1.00M
R14 1.00M
R19 1.00M
R20 1.00M
R21 1.00M
R22 1.00M
R23 1.00M
R31 1.00M
R32 1.00M
R33 1.00M
PGND

TP2
VBATT
J1
74650073R
500V
Output DC voltage
J3
74650073R
IBATT
R28
0.001
SGND_K2
IBATT_RTN
Output side sense resistor
Kelvin type connection to be made in PCB
SGND
C13 800V 0.47µF
C14 800V 0.47µF
C6 150µF 350V
C7 150µF 350V
C8 150µF 350V
C9 150µF 350V
C20 150µF 350V
C21 150µF 350V
C22 150µF 350V
C23 150µF 350V
R6 1.00M
R7 1.00M
R8 1.00M
R9 1.00M
R15 1.00M
R16 1.00M
R17 1.00M
R18 1.00M
R24 1.00M
R25 1.00M
R26 1.00M
R27 1.00M
R36 1.00M
R37 1.00M
R38 1.00M
R39 1.00M

C12 6800pF
C28 6800pF
C44 6800pF
C121 6800pF
C123 6800pF
C125 6800pF
C127 6800pF
C129 6800pF
C131 6800pF
C133 6800pF
C19 6800pF
C41 6800pF
C47 6800pF
C122 6800pF
C124 6800pF
C126 6800pF
C128 6800pF
C130 6800pF
C132 6800pF
C134 6800pF
T1_8
D2L_S
T1_1
T1
60830
T1_3

C3M0016120K
Q4
D1H_P
G1H_P
S1H_P
DNP
Q1
D2H_P
G2H_P
S2H_P
Q5
D1L_P
G1L_P
S1L_P
Q6
D2L_P
G2L_P
S2L_P
C3M0030090K
Q2
D1H_S
G1H_S
S1H_S
Q3
D2H_S
G2H_S
S2H_S
Q7
D1L_S
G1L_S
S1L_S
Q8
D2L_S
G2L_S
S2L_S

U4
ACS733KMATR-65AB-T
IP-
IP+
VCC
GND
PROGRAM
VIOUT
FAULT
VOC
3V3
C135 100nF 25V
GND
R30 49.9k
R57 55.6k
R41 0
R51 0
R52 10.0k
TP3
Itank_prim_sense
C141 100nF 25V

I_out_sense
R53 0.001
R54 0.001
NT1
Net-Tie
SGND_K1
C33 3KV 2200pF
PGND
SGND

Rb = Vm/(Ip X N) where N=1:100
Burden resistor is chosen to handle 1.4V (Vm)
1.65V will be given as reference to OPAMP
OPAMP will produce o/p between 0.25V-3.05V

Two resistors of 1mOhm are chosen for redundancy of control loop

Orderable:	Designed for: Public Release	Mod. Date: 5/21/2020
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054	Rev: E2	Sheet Title: *
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 2 of 7
Drawn By: *	File: TIDA-DAB-010054-E2_PowerStage.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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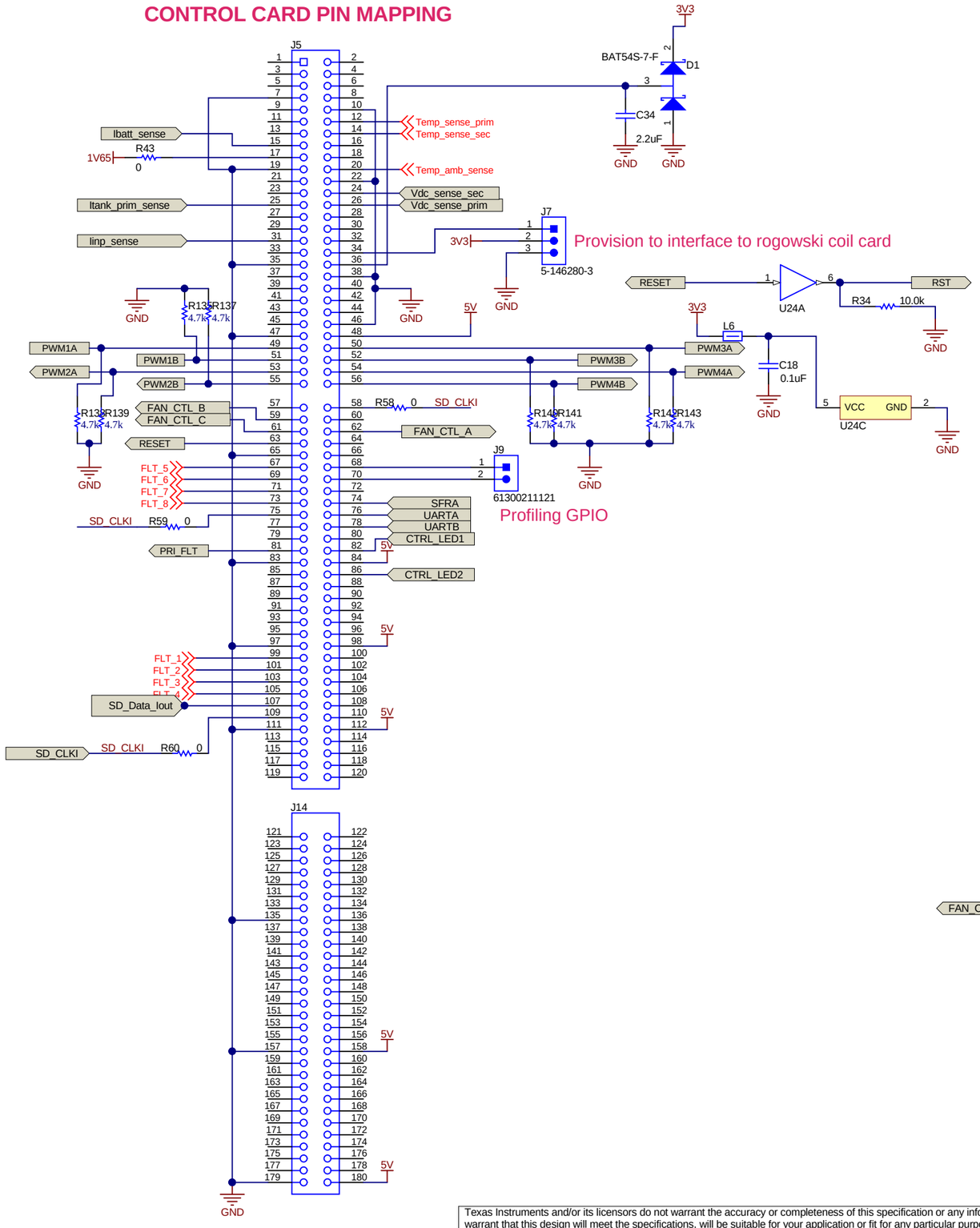
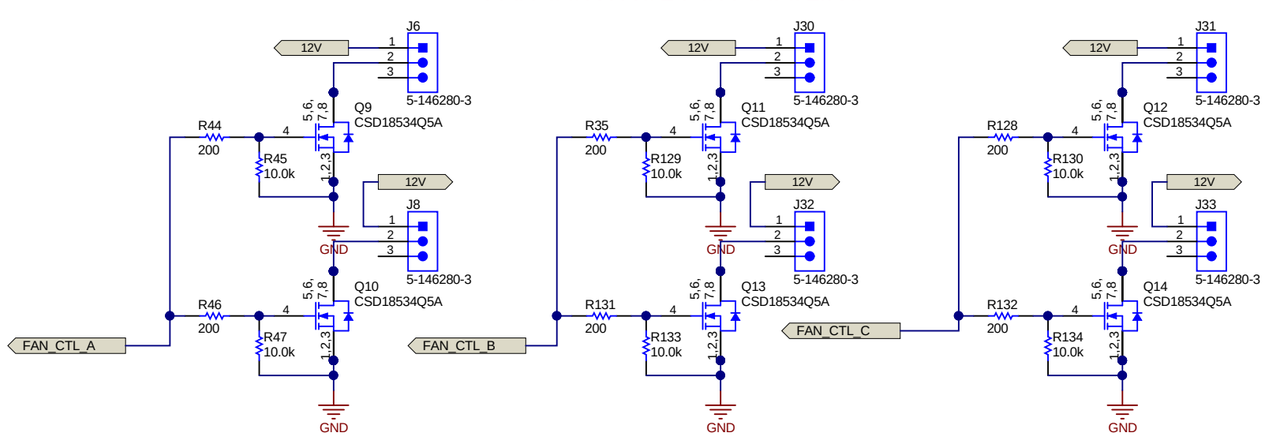
CONTROL CARD PIN MAPPING



FAN CONTROL FOR COOLING



Orderable:	Designed for: Public Release	Mod. Date: 5/21/2020
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054 Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 3 of 7
Drawn By:	File: TIDA-DAB-010054-E2_Control Card.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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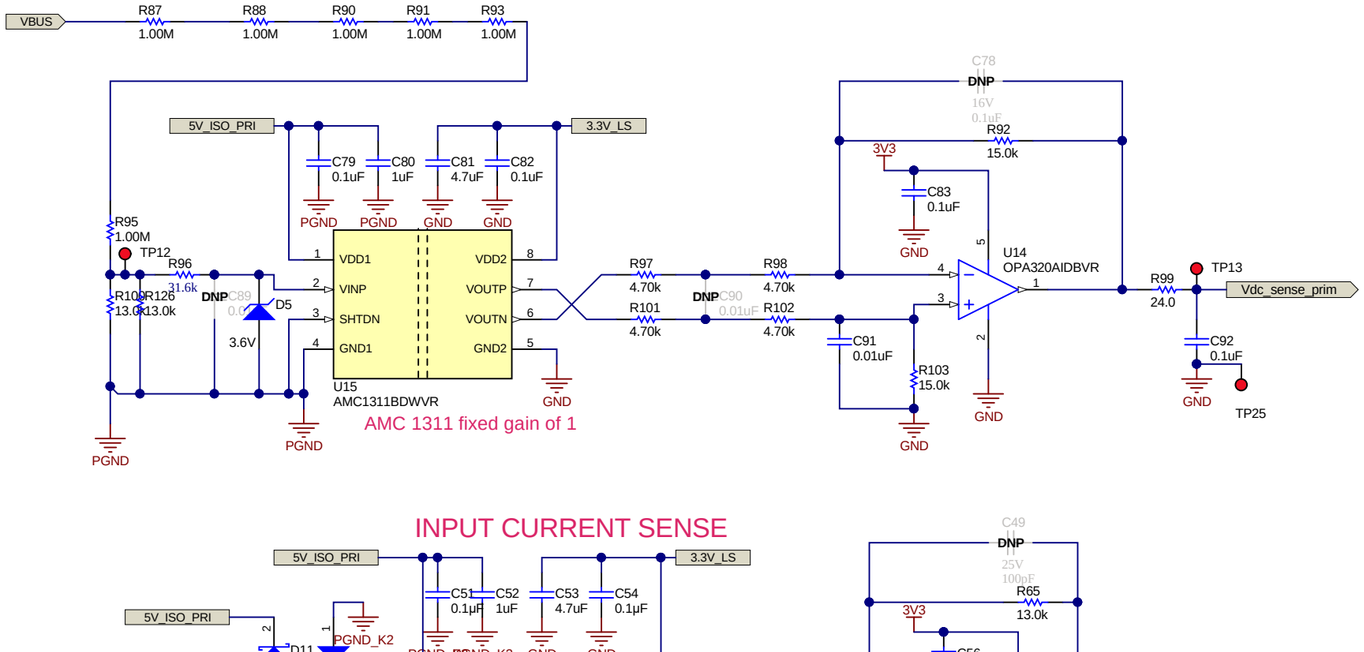
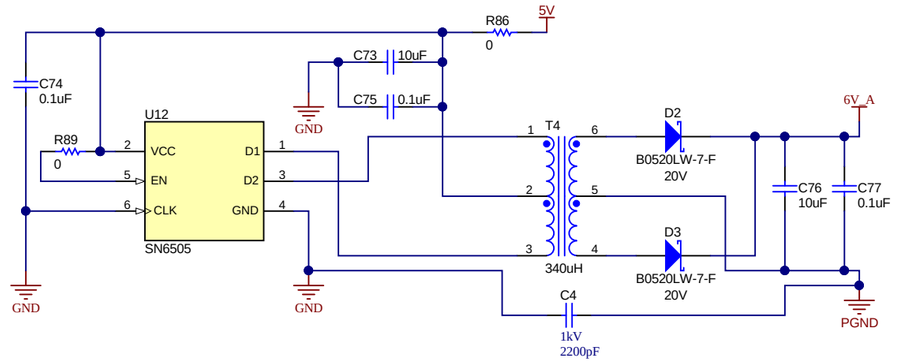
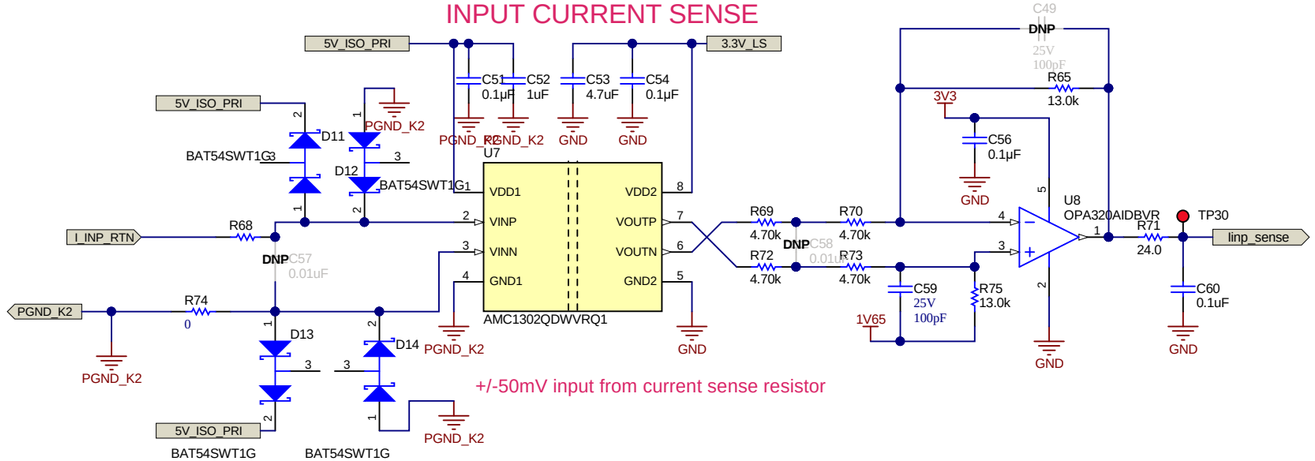
DC INPUT VOLTAGE SENSING



ISOLATED SUPPLY FOR AMPLIFIERS

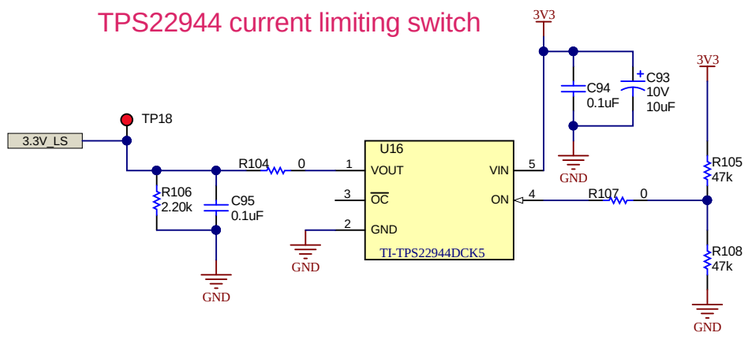


INPUT CURRENT SENSE



Isolation between GND and PGND

TPS22944 current limiting switch



Orderable:	Designed for: Public Release	Mod. Date: 5/20/2020
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054	Rev: E2	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 4 of 7
Drawn By:	File: TIDA-DAB-010054-E2_Primary Side Sensing.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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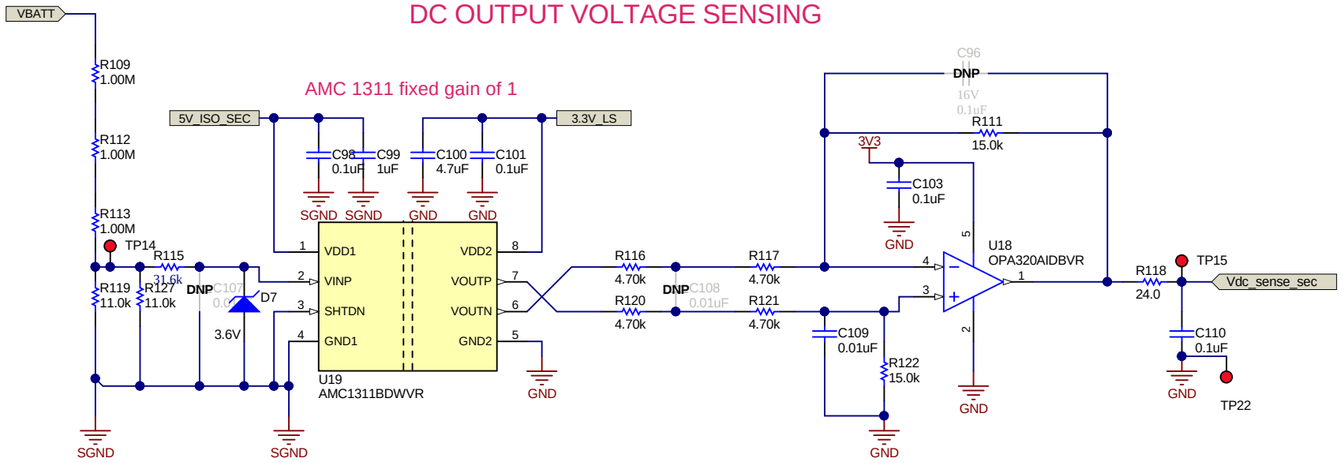
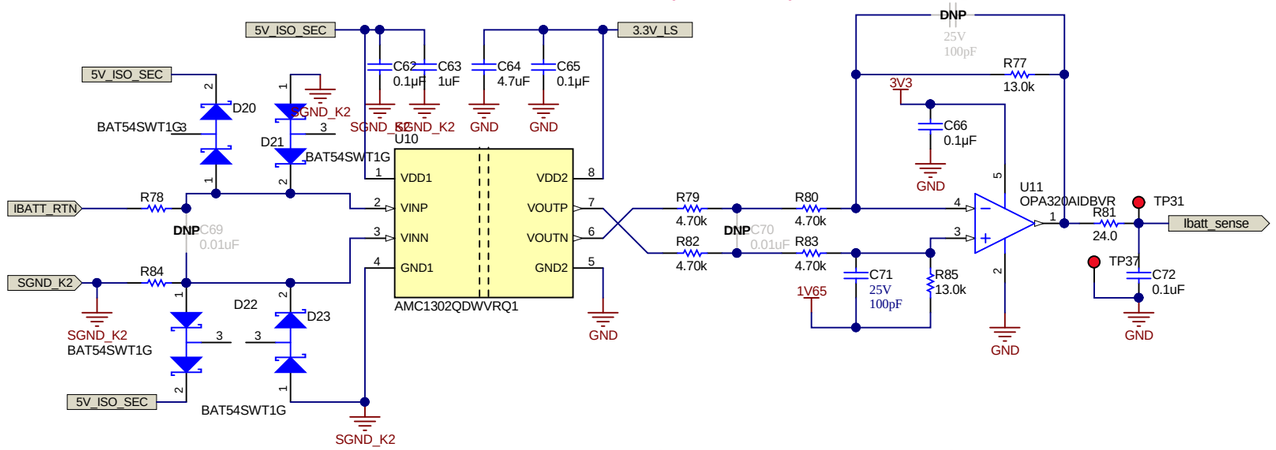
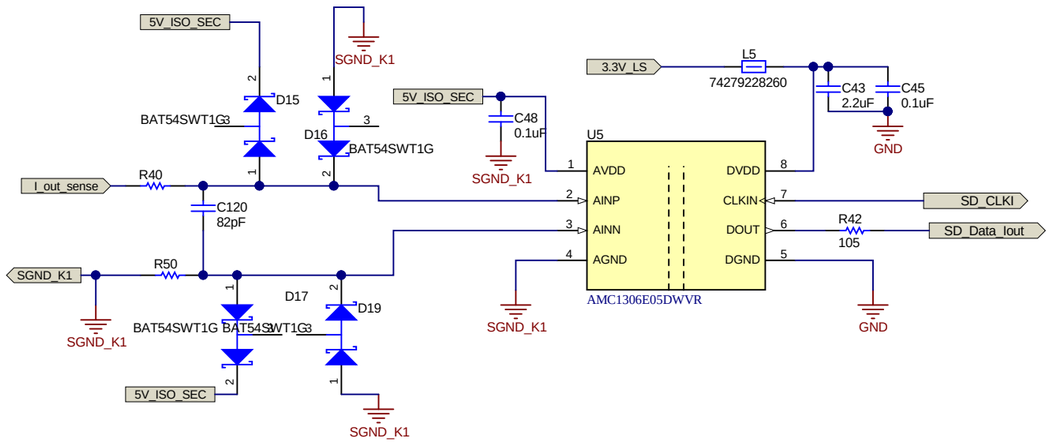
DC OUTPUT VOLTAGE SENSING



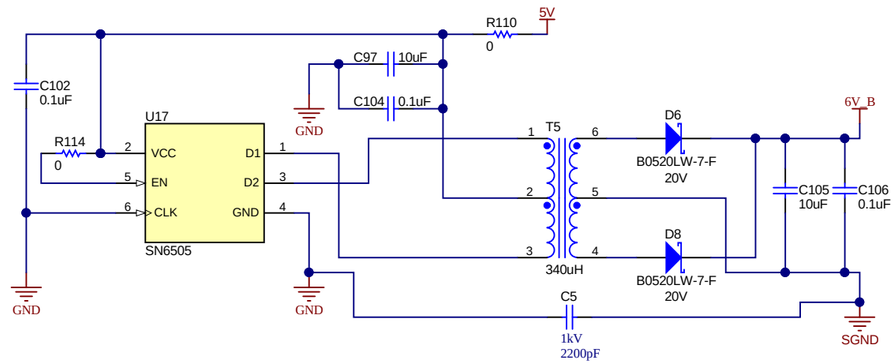
OUTPUT CURRENT SENSE (AT LOAD)



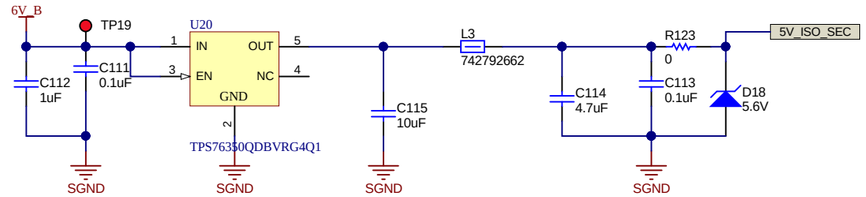
OUTPUT CURRENT SENSE (SWITCHING CURRENT)



ISOLATED SUPPLY FOR AMPLIFIERS



ISOLATION BETWEEN GND AND SGND



Orderable:	Designed for: Public Release	Mod. Date: 10/18/2019
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054	Rev: E2	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 5 of 7
Drawn By:	File: TIDA-DAB-010054-E2_Secondary Side Sensing.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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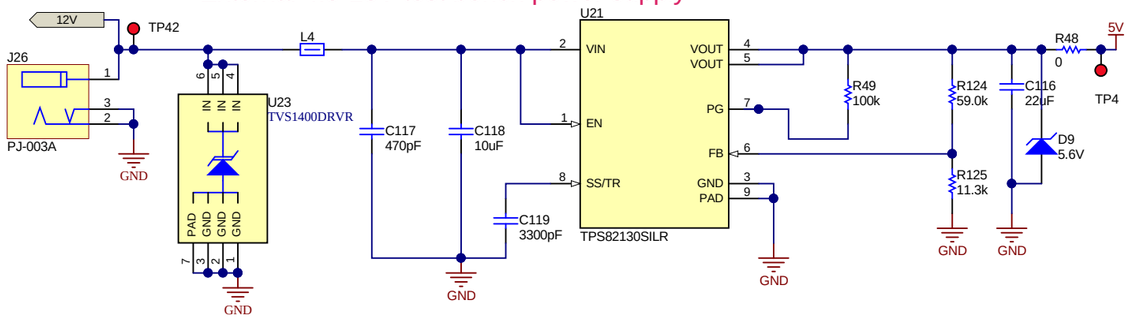
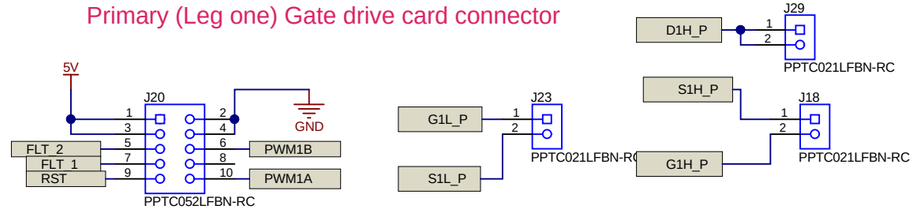
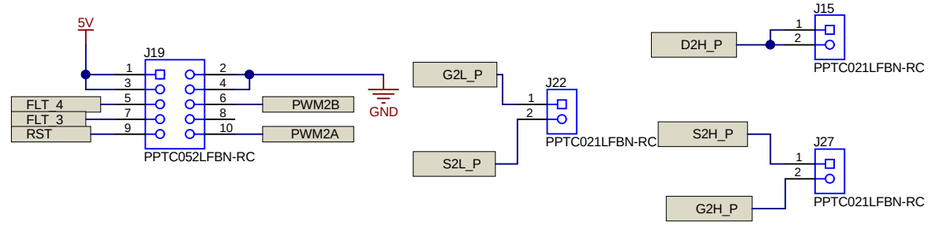
External 4.5-18V test bench power supply



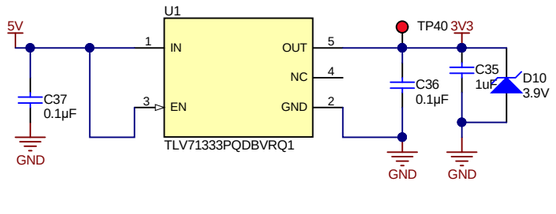
Primary (Leg one) Gate drive card connector



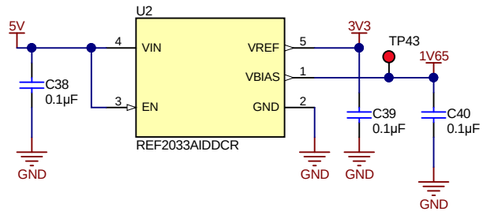
Primary (Leg two) Gate drive card connector



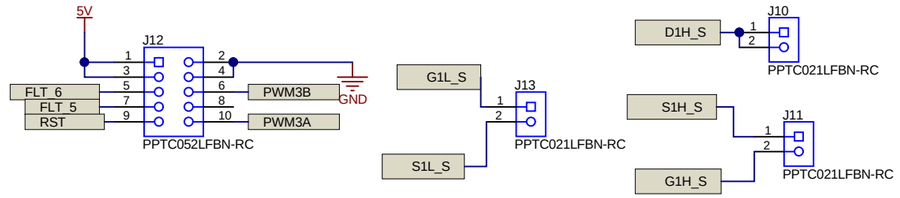
3V3 bus



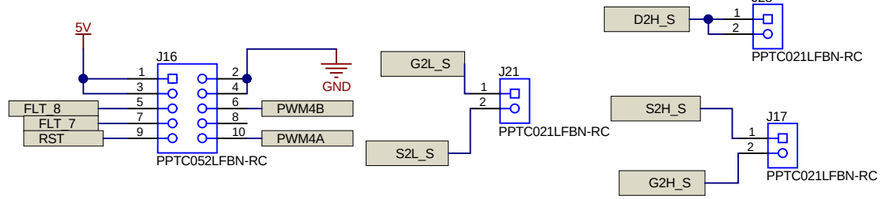
1V65 bus



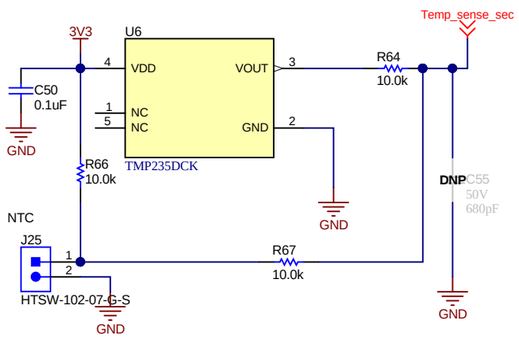
Secondary (Leg one) Gate drive card connector



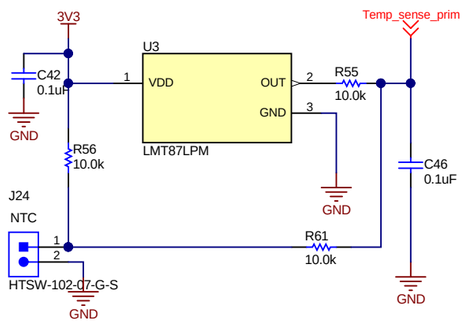
Secondary (Leg two) Gate drive card connector



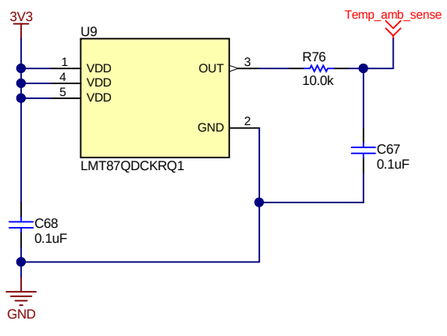
Temperature Sensing for secondary



Temperature Sensing for primary



Ambient temperature sense



Orderable:	Designed for: Public Release	Mod. Date: 10/18/2019
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054 Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 6 of 7
Drawn By:	File: TIDA-DAB-010054-E2 Power Tree.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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H1 NY PMS 440 0025 PH
H2 NY PMS 440 0025 PH
H3 NY PMS 440 0025 PH
H4 NY PMS 440 0025 PH
H13 NY PMS 440 0025 PH
H14 NY PMS 440 0025 PH
H15 NY PMS 440 0025 PH
H16 NY PMS 440 0025 PH
H21 NY PMS 440 0025 PH
H22 NY PMS 440 0025 PH
H23 NY PMS 440 0025 PH
H24 NY PMS 440 0025 PH

H5 1902C
H6 1902C
H7 1902C
H8 1902C
H17 1902C
H18 1902C
H19 1902C
H20 1902C
H25 1902C
H26 1902C
H27 1902C
H28 1902C

FID1 FID2 FID3 FID4 FID5 FID6

PCB Number: TIDA-DAB-010054
PCB Rev: E2

PCB LOGO
FCC disclaimer

PCB LOGO
WEEE logo

CAUTION HOT SURFACE

Logo6
PCB LOGO
ESD Susceptible

LOGO5
DANGER HIGH VOLTAGE

You should delete the nylon screws/standoffs and/or the bumpons as needed for your design (or substitute other parts from Hardware.IntLib). Bumpons are cheaper, but provide less clearance.

Deleting anything else from this page may result in your EVM submission being rejected (until you add them back).

Update the Label Text in the Label Table as needed for each Assembly Variant.

You should delete this note too.

Variant/Label Table	
Variant	Label Text
001	ChangeMe!
002	ChangeMe!

LOGO7
DANGER HIGH VOLTAGE

LBL1
PCB Label
THT-14-423-10
Size: 0.65" x 0.20 "

ZZ1
Label Assembly Note
This Assembly Note is for PCB labels only

ZZ2
Assembly Note
These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3
Assembly Note
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4
Assembly Note
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

H9 OMNI-UNI-18-50
H10 OMNI-UNI-18-50
H11 OMNI-UNI-18-50
H12 OMNI-UNI-18-50

Orderable:	Designed for: Public Release	Mod. Date: 10/18/2019
TID #: 010054	Project Title: 10KW DC:DC CONVERTER	
Number: TIDA-DAB-010054 Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: DAB_PCB	Sheet: 7 of 7
Drawn By:	File: TIDA-DAB-010054-E2_EVM_Hardware.SchDoc	Size: B
Engineer: HARISH R	Contact: http://www.ti.com/support	

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