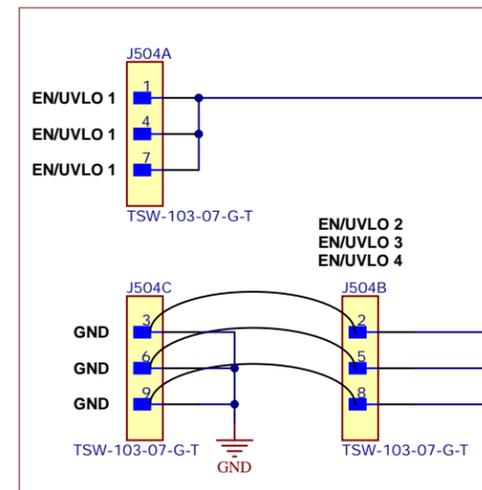


48Vin battery (30V-60V)

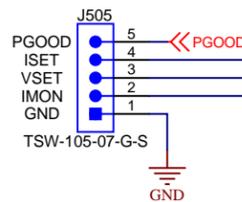
5Vout  
TDC: 20A/ph  
EDC: 25A/ph



EN/UVLO selection for phases 2, 3, and 4.

To enable a phase, tie its EN/UVLO to the EN/UVLO of Phase 1.

To disable a phase, tie its EN/UVLO to GND (default).



The VSET, ISET, and IMON signals of disabled phases shouldn't affect the buses.

U\_Hardware  
Hardware.SchDoc



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TID #: N/A	Project Title: 4-ph 400W Integrated GaN	
Number: PMP23680	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 1 of 4
Drawn By:	File: TopSheet.SchDoc	Size: B
Engineer: <a href="#">Matthew Bowers</a>	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	

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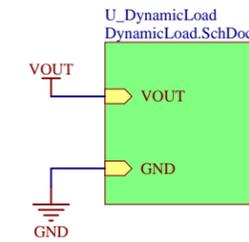
**Color key**

Orange indicates configuration options

Purple gives design/part info

Black text is labels and miscellaneous notes

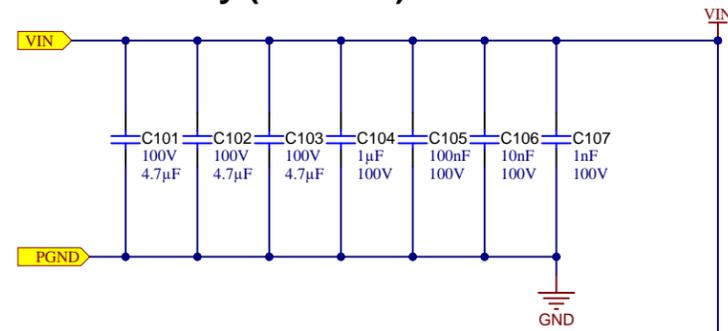
FB are input pins. FB of disabled phases shouldn't affect the bus.



### Color key

Orange indicates configuration options  
 Purple gives design/part info  
 Black text is labels and miscellaneous notes

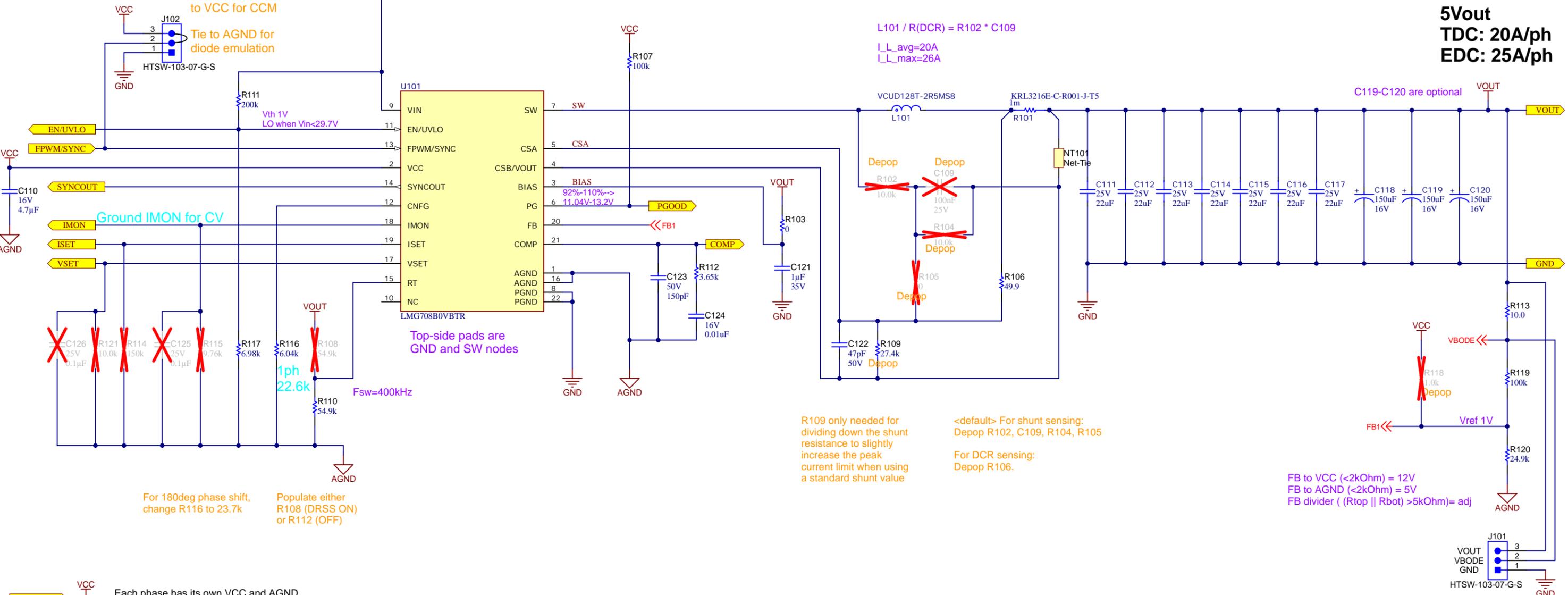
### 48Vin battery (30V-60V)



<default>  
 Tie FPWM/SYNC to VCC for CCM

Tie to AGND for diode emulation

**5Vout**  
**TDC: 20A/ph**  
**EDC: 25A/ph**



$$L101 / R(DCR) = R102 * C109$$

$$I_{L\_avg} = 20A$$

$$I_{L\_max} = 26A$$

Ground IMON for CV

Top-side pads are GND and SW nodes

R109 only needed for dividing down the shunt resistance to slightly increase the peak current limit when using a standard shunt value

<default> For shunt sensing:  
 Depop R102, C109, R104, R105  
 For DCR sensing:  
 Depop R106.

FB to VCC (<2kOhm) = 12V  
 FB to AGND (<2kOhm) = 5V  
 FB divider ( (Rtop || Rbot) >5kOhm) = adj

For 180deg phase shift, change R116 to 23.7k  
 Populate either R108 (DRSS ON) or R112 (OFF)

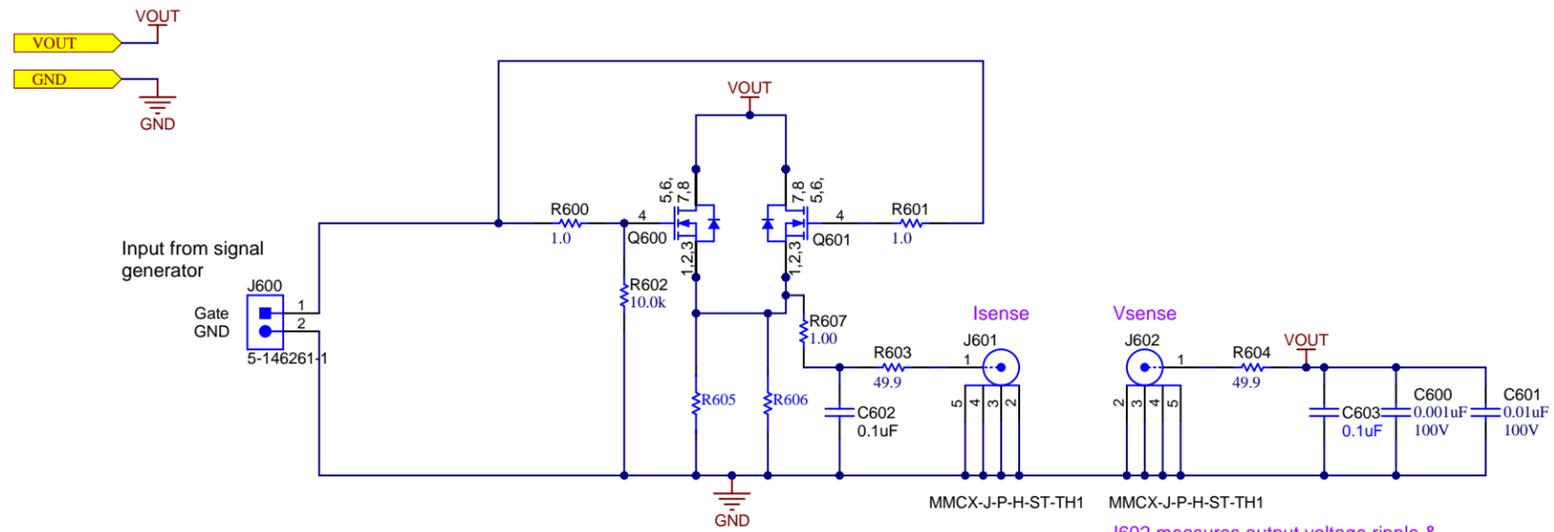
Each phase has its own VCC and AGND (VCC1, VCC2,...) (AGND1, AGND2,...)  
 Setting up a Port with these Power Port objects enables each instance of this sheet to have its own local instance of the power net (VCC1, VCC2, etc.)

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TID #: N/A	Project Title: 4-ph 400W Integrated GaN	
Number: PMP23680	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 2 of 4
Drawn By:	File: Phase1_SchDoc	Size: B
Engineer: <a href="#">Matthew Bowers</a>	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	



Load transient on underside of board



RC constant of R607 and C602 can balance LR constant of R605, R606

J601 measures current pulse size & rise / fall times with measured voltage to current relationship based on the equivalent resistance of R605 || R606

J602 measures output voltage ripple & transient response

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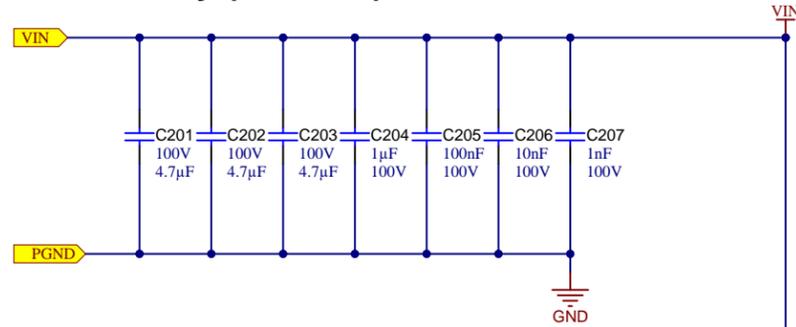
Orderable: <a href="#">ChangeMe in variant</a>	Designed for: <a href="#">Public Release</a>	Mod. Date: 2/11/2026
TID #: N/A	Project Title: 4-ph 400W Integrated GaN	
Number: PMP23680	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 2 of 3
Drawn By:	File: <a href="#">DynamicLoad.SchDoc</a>	Size: B
Engineer: <a href="#">Matthew Bowers</a>	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	



# Color key

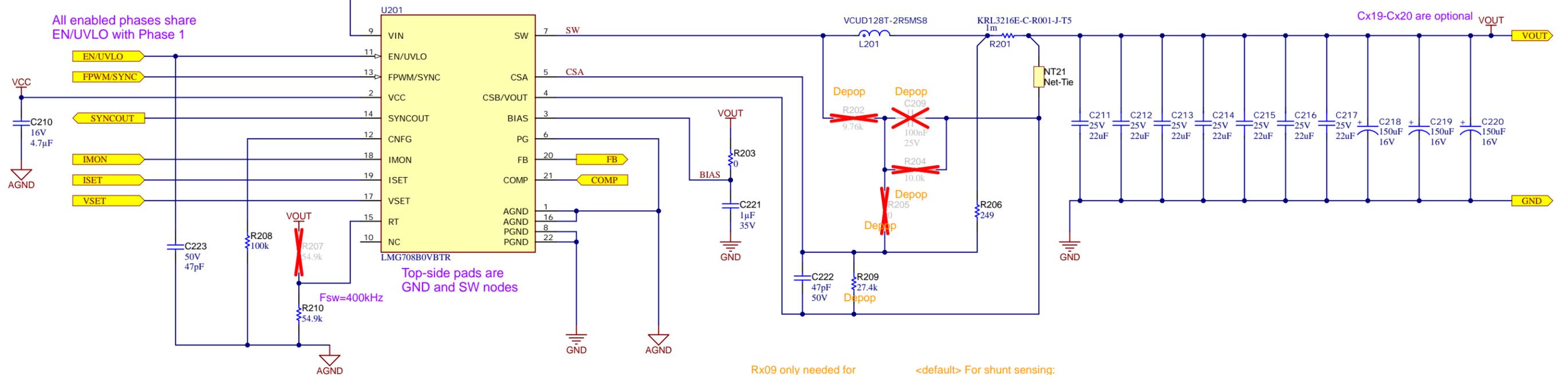
Orange indicates configuration options  
 Purple gives design/part info  
 Black text is labels and miscellaneous notes

## 48Vin battery (30V-60V)



**5Vout**  
**TDC: 20A/ph**  
**EDC: 25A/ph**

All enabled phases share EN/UVLO with Phase 1



$L2 / R(DCR) = R02 * C09$   
 $I_{L\_avg}=20A$   
 $I_{L\_max}=26A$

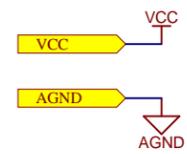
Top-side pads are GND and SW nodes

DRSS ON: Rx07  
 DRSS OFF: Rx10 <default>

Rx09 only needed for dividing down the shunt resistance to slightly increase the peak current limit when using a standard shunt value

<default> For shunt sensing:  
 Depop Rx02, Cx09, Rx04, Rx05

For DCR sensing:  
 Depop Rx06.



Each phase has its own VCC and AGND (VCC1, VCC2,...) (AGND1, AGND2,...)

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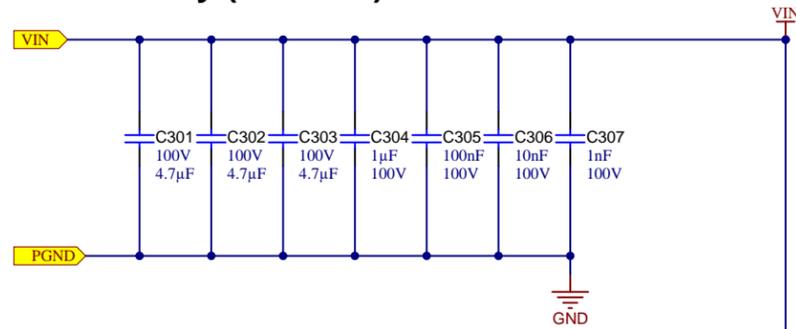
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Number: PMP23680	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 3 of 4
Drawn By:	File: ModularPhases_SchDoc	Size: B
Engineer: <a href="#">Matthew Bowers</a>	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	

# Color key

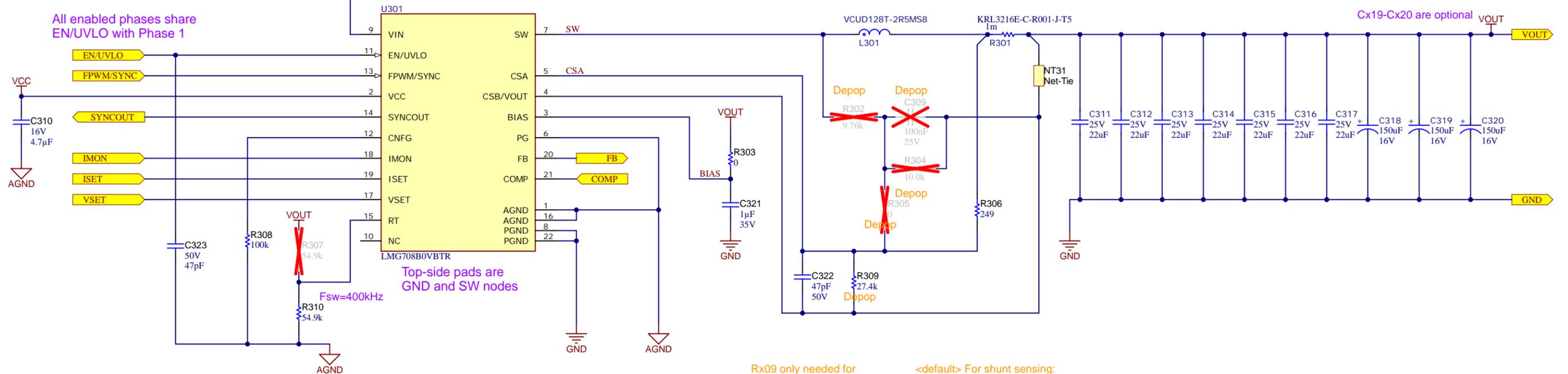
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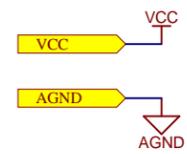
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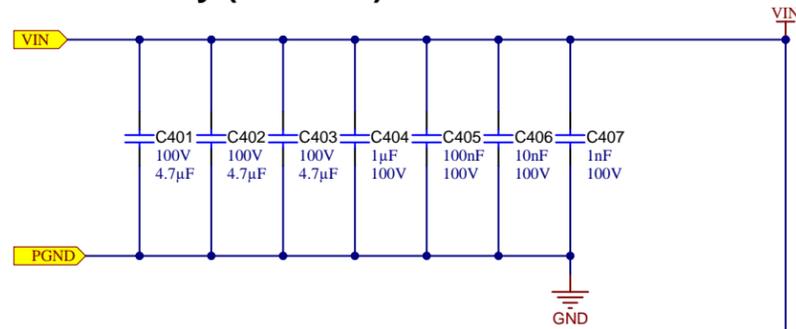
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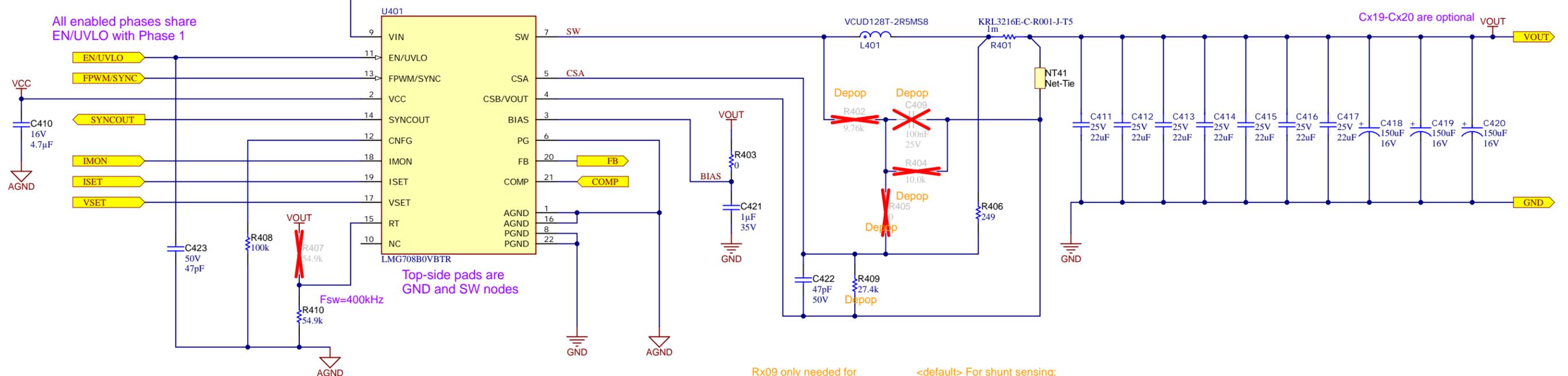
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## 48Vin battery (30V-60V)



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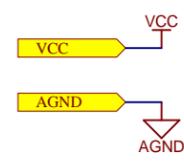
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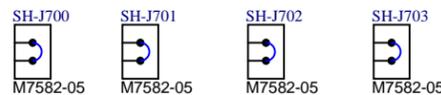
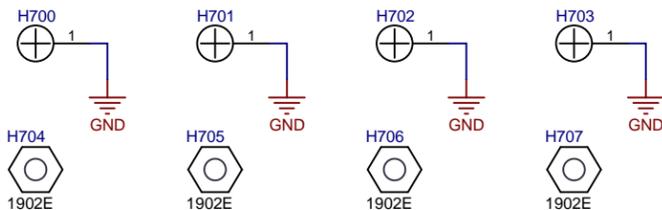


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TID #: N/A	Project Title: 4-ph 400W Integrated GaN	
Number: PMP23680	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 3 of 4
Drawn By:	File: ModularPhases_SchDoc	Size: B
Engineer: <a href="#">Matthew Bowers</a>	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	





PCB Number: PMP23680  
PCB Rev: A

PCB LOGO  
Texas Instruments



PCB LOGO  
FCC disclaimer

PCB LOGO  
WEEE logo

Logo704



CAUTION HOT SURFACE

ZZ700

Label Assembly Note

This Assembly Note is for PCB labels only

ZZ701

Assembly Note

These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ702

Assembly Note

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

ZZ703

Assembly Note

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

Orderable: <a href="#">ChangeMe in variant</a>	Designed for: <a href="#">Public Release</a>	Mod. Date: 2/11/2026
TID #: N/A	Project Title: 4-ph 400W Integrated GaN	
Number: PMP23680	Rev: A	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 4 of 4
Drawn By:	File: <a href="#">Hardware.SchDoc</a>	Size: B
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