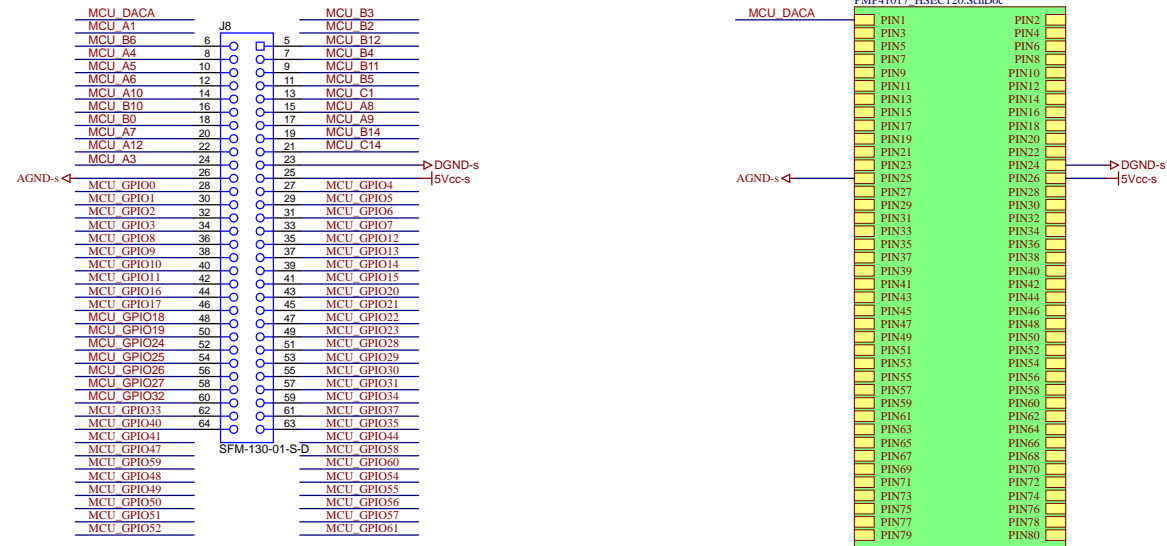
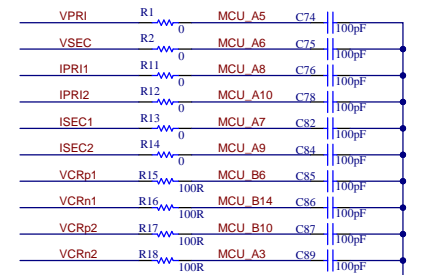


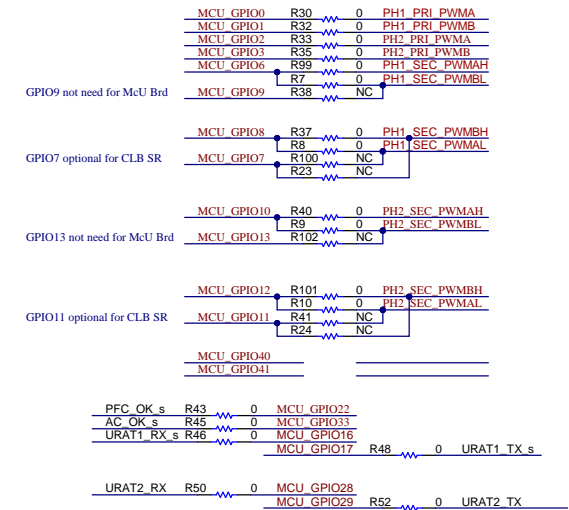
LLC Control Stage



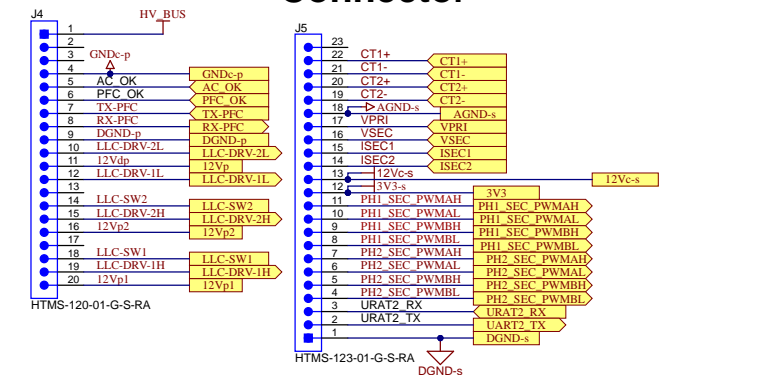
Analog Interface



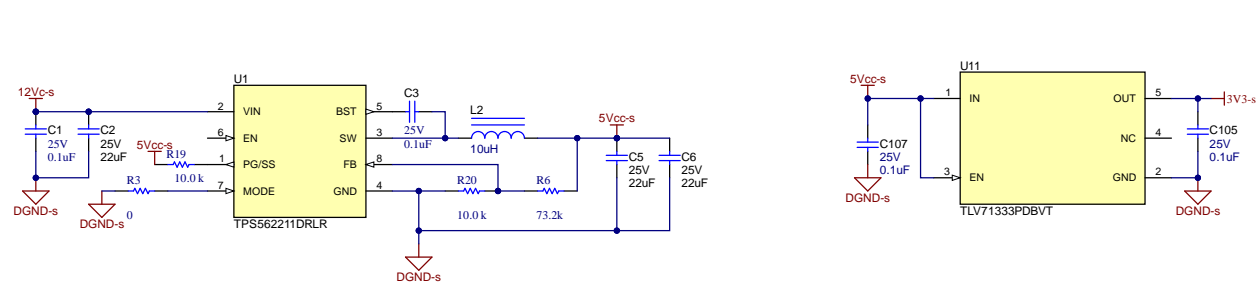
Digital Interface



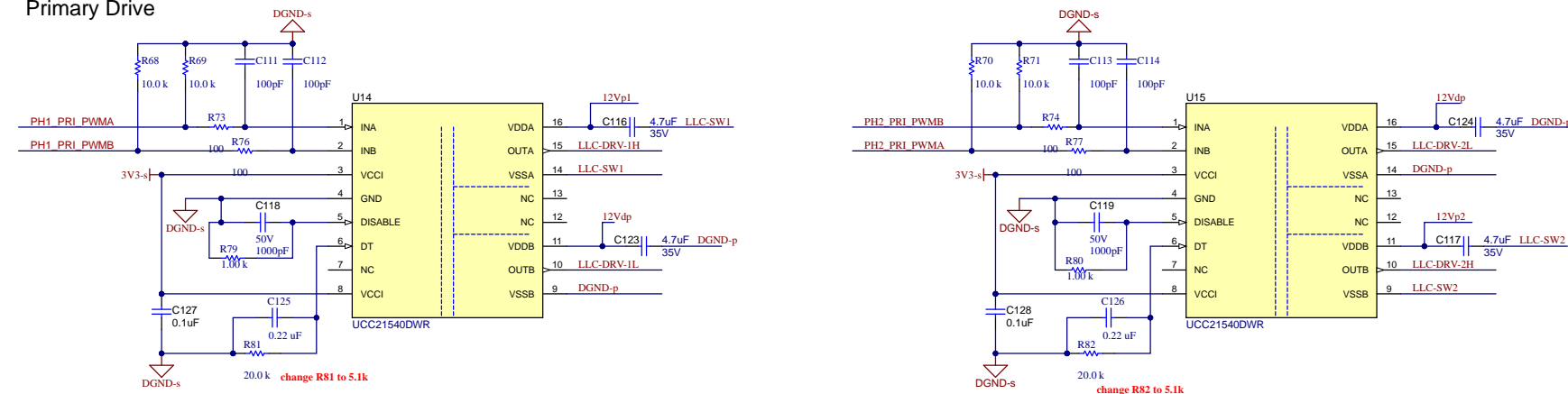
Connector



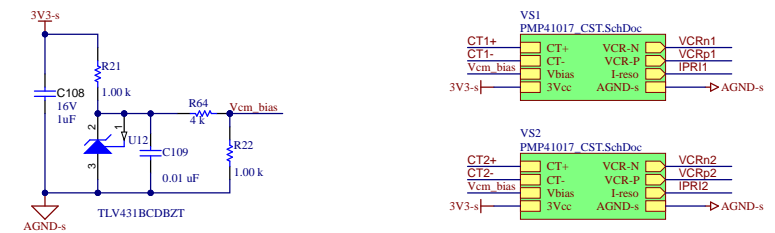
Secondary Side 12 to 5V



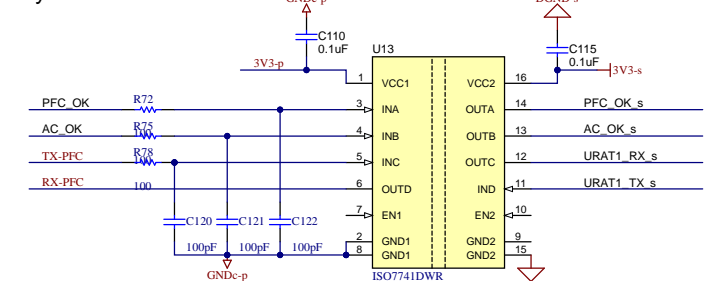
Primary Drive



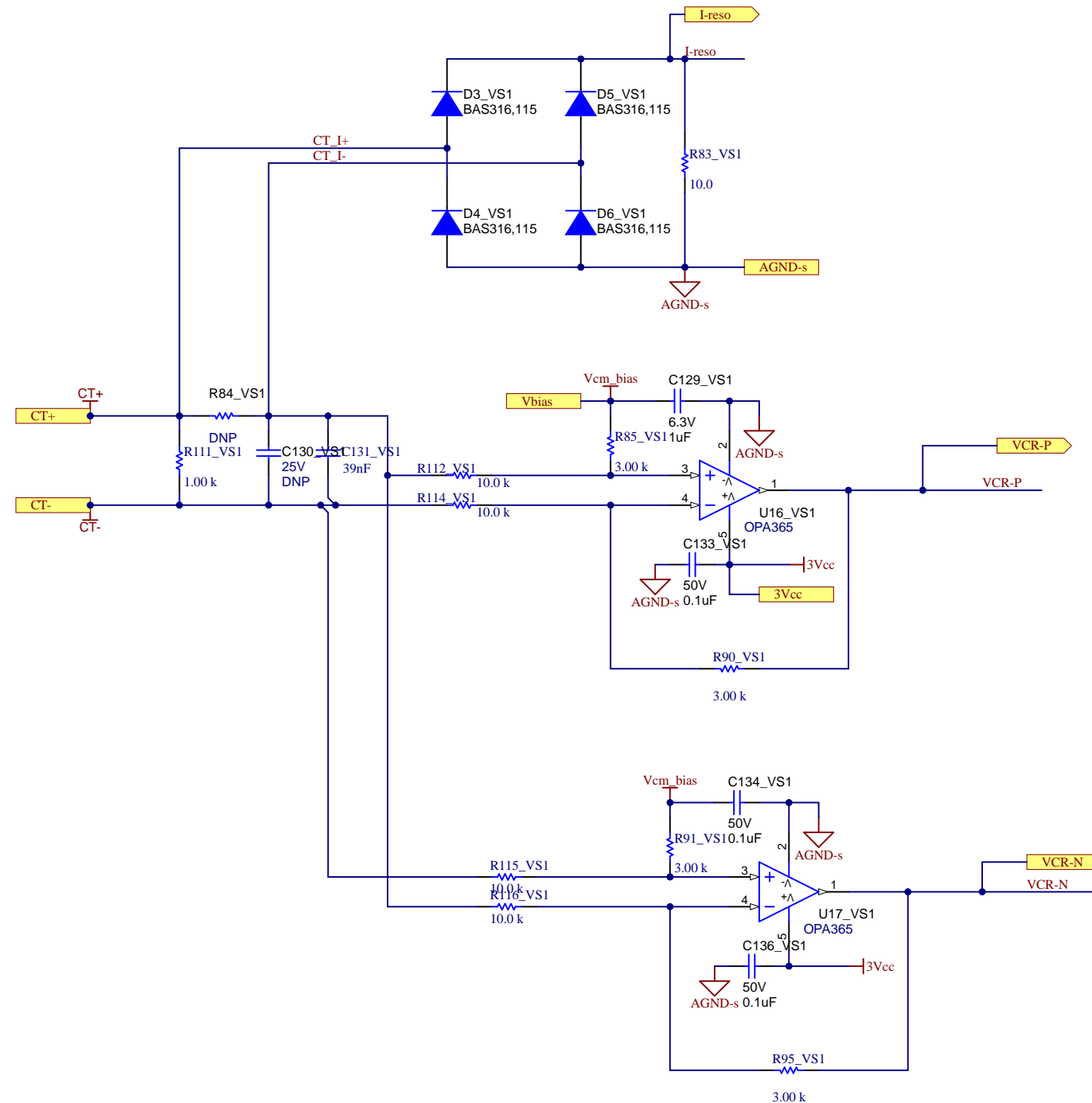
VCR Sense



Primary Communicate



Ir and Vcr sensing with CT



VCR sensing design process:

- 1, get the peak-peak voltage of the Cr (resonant CAP) @ min Vin and full load;
- 2, select the CT and its turn ratio N:1;
- 3, select Cs (sensing CAP) by keeping the CT within its volt-sec;

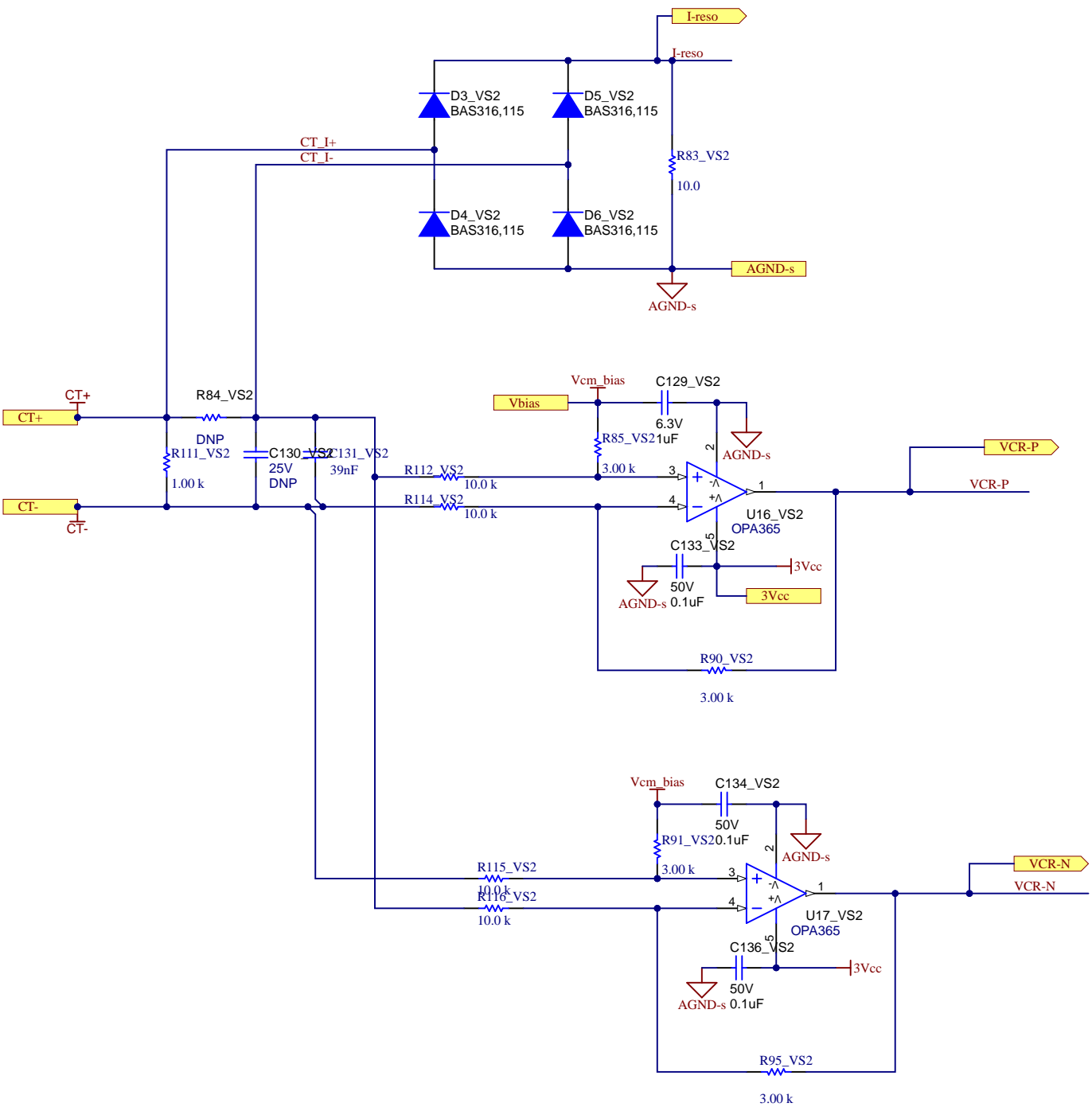
$$V_{s_pp} = V_{cr_pp} * C_r / (N * C_s)$$

- 4, select Ks (ratio of OPA circuits) to adjust the sensing volt to 2.0V max;**

$$VCR_sense_p = V_{cm} + 0.5 \cdot V_{cr_pp} \cdot C_r / (N \cdot C_s) \cdot K_s$$

Min volt is clamped by Vcm, and Vcm is set at 0.5V by default.

Ir and Vcr sensing with CT



VCR sensing design process:

- 1, get the peak-peak voltage of the Cr (resonant CAP) @ min Vin and full load;
 - 2, select the CT and its turn ratio N:1;
 - 3, select Cs (sensing CAP) by keeping the CT within its volt-sec;
$$V_{s_pp} = V_{cr_pp} * Cr / (N * Cs)$$
 - 4, select Ks (ratio of OPA circuits) to adjust the sensing volt to 2.0V max;
$$V_{CR_sense_p} = V_{cm} + 0.5 * V_{cr_pp} * Cr / (N * Cs) * K_s$$
- Min volt is clamped by Vcm, and Vcm is set at 0.5V by default.

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Orderable: Not Orderable	Designed for: Public Release	Mod. Date: 6/29/2022
TID #: PMP41017	Project Title: CRPS 12V 3000W LLC C2000 Interposer	
Number: PMP41017	Rev: E1	Sheet Title:
SVN Rev: Not in version control	Assembly Variant: [No Variations]	Sheet: 2 of 3
Drawn By: Desheng Guo	File: PMP41017_CST.SchDoc	Size: A3
Engineer: Desheng Guo	Contact: http://www.ti.com/support	



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