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DLPC7540EVM FORMATTER BOARD

COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY			
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	Initial Release - Based off Pico E.2		
B	Updates per DLPC7540EVM_Design_Job Request_v1.2	18-Mar-2021	
C	REFER REVISION HISTORY NOTES	12-Apr-2021	

		DWN	DATE	<div>TEXAS INSTRUMENTS</div> <div>(C) COPYRIGHT 2020 TEXAS INSTRUMENTS</div> <div>ALL RIGHTS RESERVED</div>		
		ENGR				
		SYST				
		PRJ				
		QA		TITLE DLPC7540EVM FORMATTER BOARD		
NEXT ASSY	USED ON					
APPLICATION		SW	Cadence Capture V.17.2	A3	DRAWING NO DLP055	REV C
				SCALE		SHEET 1 of 26

REVISION HISTORY

NOTE:Below are the changes from reviosn A to B

- 1.Update TITLE from “DLPC7540 FORMATTER BOARD” to “DLPC7540EVM FORMATTER BOARD”.
- 2.Update Drawing No. to DLP055 on all schematic pages.
- 3.Remove note of “PRELIMINARY” throughout all schematic pages
- 4.All mentions of “DLPC6540” should be changed to “DLPC7540”
- 5.For part number UMK105BJ104KV-F that is covered by reference designators C321,C687,C688,C689,C690,C695,C696, update the Package parameter from 0603 to 0402. This discrepancy causes the 0603 to erroneously be inserted to BOM
- 6.Add the INSTALL parameter to all parts that are listed in the file “parts to add INSTALL parameter.XLSX”.
- 7.Change from DNI to INSTALL YES all parts that are listed in the file “Change from DNI to Install YES.XLSX”.
- 8.For the part in reference designators TP227,TP228,TP229,TP230,TP231,TP232,TP233,TP234,TP235,TP236,TP237,TP238,TP239,TP240,TP241,TP242,TP243,TP244,TP245,TP246,TP247,TP248,TP249,TP272,TP273,TP274,TP275,TP276,TP277,TP278,TP279,TP280,TP281,TP282,TP283 update the INSTALL parameter that was created in step 9 to DNI.
- 9.Update manufacturer part number for U525 and U526 to LM3881MM/NOPB.
- 10.Update manufacturer part number for U555, U556 and U557 to DLPA100PT.
- 11.On Title Page:

a.“D3 – VIN (19V) (high = led on)” should be changed to “D3 – VIN (12V) (high = led on)” under STATUS LEDs section.

b.Remove note “PRELIMINARY – UNTESTED ENGINEERING RELEASE ONLY”

c.Confirm that sheet designations in index are correct after sheet numbering has been completed.
- 12.On Block Diagram page: Replace block diagram with visio file provided.
- 13.On DLPC FPDlink/Parallel In page:

a.Remove compatible part numbers note inside U15B.

b.Move “Place jumper across pins 1 & 2 to enable IIC0.” and “Place jumper across pins 2 & 3 to enable IIC1” notes so that they do not overlap sheet grid or any other drawings.

c.Correct typo in “Place jumper across pins 1 & 2 to enable IIC0.” to “Place jumper across pins 1 & 2 to enable IIC0”.
- 14.On Actuator Driver page:

a.Remove note for Actuator Option #2

b.Make R134, R135, R136 and R137 install “Y”.

c.Change “ECD Actuator I/F” to “External Actuator Driver Board I/F”.
- 15.On VIN & POWER SEQ page:

a.Redesign all circuits on page so that they follow how it is designed on Page 5 of 7540_PMD_BOARD.DSN. Make sure that any nets referring to VCORE_EN are kept as P1P15V_EN and P3P3V_STBY are kept as P3P3V_SB.

Note that one of the changes is that VIN of TP554327 should end up coming from P12V_VIN and not P12V. Feel free to contact us if there are questions regarding this request.

b.Keep the net names consistent with existing DLPC7540_EVM.DSN when redesigning based on 7540_PMD_BOARD.DSN. Follow this convention for keeping net names.

Net name from 7540_PMD_BOARD.DSNNet name to maintain in DLPC7540_EVM.DSN

POWERGOODPMIC_POWERGOOD

VCORE_ENP1P15V_EN

P3P3V_STDBYP3P3V_SB

VCORE_PGPIP15V_PG

c.Remove note of changes to P3P3V_SB.

d.Remove note of VCORE_EN change

e.Update note from “DLPC7541 SUPPLY SEQUENCING” to “DLPC7540 SUPPLY SEQUENCING”

f.Remove DNI note from R832 (referring to R135 if looking at design from page 5 at 7540_PMD_BOARD.DSN). This resistor needs to be populated

g.R830 should be DNI (referring to R94 if looking at design from page 5 at 7540_PMD_BOARD.DSN). It is currently only marked as DNI with a note. This part needs to have the Install property added and have it marked as DNI so that the part is correctly marked as DNI in BOM.

h.C801 should be DNI (referring to C50 if looking at design from page 5 at 7540_PMD_BOARD.DSN). It is currently only marked as DNI with a note. This part needs to have the Install property added and have it marked as DNI so that the part is correctly marked as DNI in BOM.

i.C820 should be DNI (referring to C111 if looking at design from page 5 at 7540_PMD_BOARD.DSN). It is currently only marked as DNI with a note. This part needs to have the Install property added and have it marked as DNI so that the part is correctly marked as DNI in BOM.
- 16.On DLPA100 #0 page:

a.Delete “DNI – For Validation Only” note.

b.Remove note “Diodes Inc DMTH6009K3-13 can be used for 5V if cooled”

c.Delete D29 from design.

d.Change note J515 from “CW1 MOTOR DRIVE” to “CW0 MOTOR DRIVE”
- 17.On DLPA100 #1 page:

a.Change note J519 from “CW2 MOTOR DRIVE” to “CW1 MOTOR DRIVE”
- 18.On DLPA100 #2 page:

a.Change note J523 from “CW3 MOTOR DRIVE” to “CW2 MOTOR DRIVE”
- 19.Add a Hardware Page sheet where you place:

a.PCB component which part number is “DLP055”; Manufacturer is “ANY”; Description is “Printed Circuit Board, DLP055”; Quantity is 1

b.PCB component which part number is “DLP064”; Manufacturer is “ANY”; Description is “Printed Circuit Board, DLP064”; Quantity is 1

c.Mechanical part which part number is “JF08R0R051020UA”; Manufacturer is “JAE Electronics”; Description is “CABLE ASSY HI SPEED 51POS 20CM”; Quantity is 1
- d.See image below for an example of how components show up on Hardware Page
- 20.Replace any text within terms that say “MISO” with “CIPO” throughout the schematic (ie. replace “SPI1_MISO” with “SPI1_CIPO”)
- 21.Replace any text within terms that say “MOSI” with “COPI” throughout the schematic (ie. replace “SPI1_MOSI” with “SPI1_COPI”)
- 22.Change any notes or net names from “master” to “primary”.
- 23.Change any notes or net names from “slave” to “secondary”.
- 24.Place note “For Texas Instruments Development Only” within the dotted box for the REALVIEW ICE JTAG I/F in the DLPC MISC page. Move the text “REALVIEW ICE JTAG I/F” so that it is not crossing the cutoff by the dotted box.
- 25.Add note “For Texas Instruments Development Only” on top of following schematic pages:

a.Ballast Connection

b.Cypress

c.Keypad, MSP430
- 26.Move J42 that’s currently in “DLPC FPDlink/Parallel In” page and everything enclosed in red marking to a new schematic page to be named as . Place a note on top of this new schematic page indicating “For Texas Instruments Development Only”. Link back to appropriate nodes with off page interconnects as necessary.
- 27.Move J44 that’s currently in “DLPC FPDlink/Parallel In” page and everything enclosed in red marking to the same schematic page created in previous step.
- Link back to appropriate nodes with off page interconnects as necessary.
- 28.Move J500 that’s currently in “DLPC FPDlink/Parallel In” page and everything enclosed in red marking to the same schematic page created in the two previous steps. Link back to appropriate nodes with off page interconnects as necessary.
- 29.Correct text in Keypad, MSP430 page from “MPS430 PROGRAM & DEBUG” to “MSP430 PROGRAM & DEBUG”
- 30.On DLPC VX1 Input Interface page

a.Delete note regarding Parallel & FPDlink Interfaces and floating ground symbol.
- 31.D3 Notes removed from Title page.
- 32.DNI added for U500,U502,U503
- 33.Update manufacturer part number for X1 to 7V-40.000MDDE-T
- 34.Update manufacturer part number for X2 to 7V-38.000MAAV-T
- 35.Update manufacturer part number for Q11 to NTD14N03RT4G

NOTE:Below are the changes from reviosn B to C

- 1.Update manufacturer part number for C756,C757,C777,C778,C791,C792 to CL10A224KB8NNNC
- 2.Update manufacturer part number for C18,C764,C765,C766,C770,C771,C779,C783,C784,C785,C793,C797,C798,C799,C801,C814,C815,C820 to CL21A226MAYNNNE
- 3.Update manufacturer part number for C752,C753,C754,C755,C773,C774,C775,C776,C787,C788,C789,C790 to CL21B334KBFNFE
- 4.Update manufacturer part number for U15 to DLPC7540ZDC
- 5.Update manufacturer part number for C317 to EMK105B7153KV-F
- 6.Update manufacturer part number for U59 to TPS259260DRCR
- 7.Mech part SPC02SYAN added

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DWN
R. Perry

DATE
04/12/2021

ISSUE DATE
04/12/2021

A3

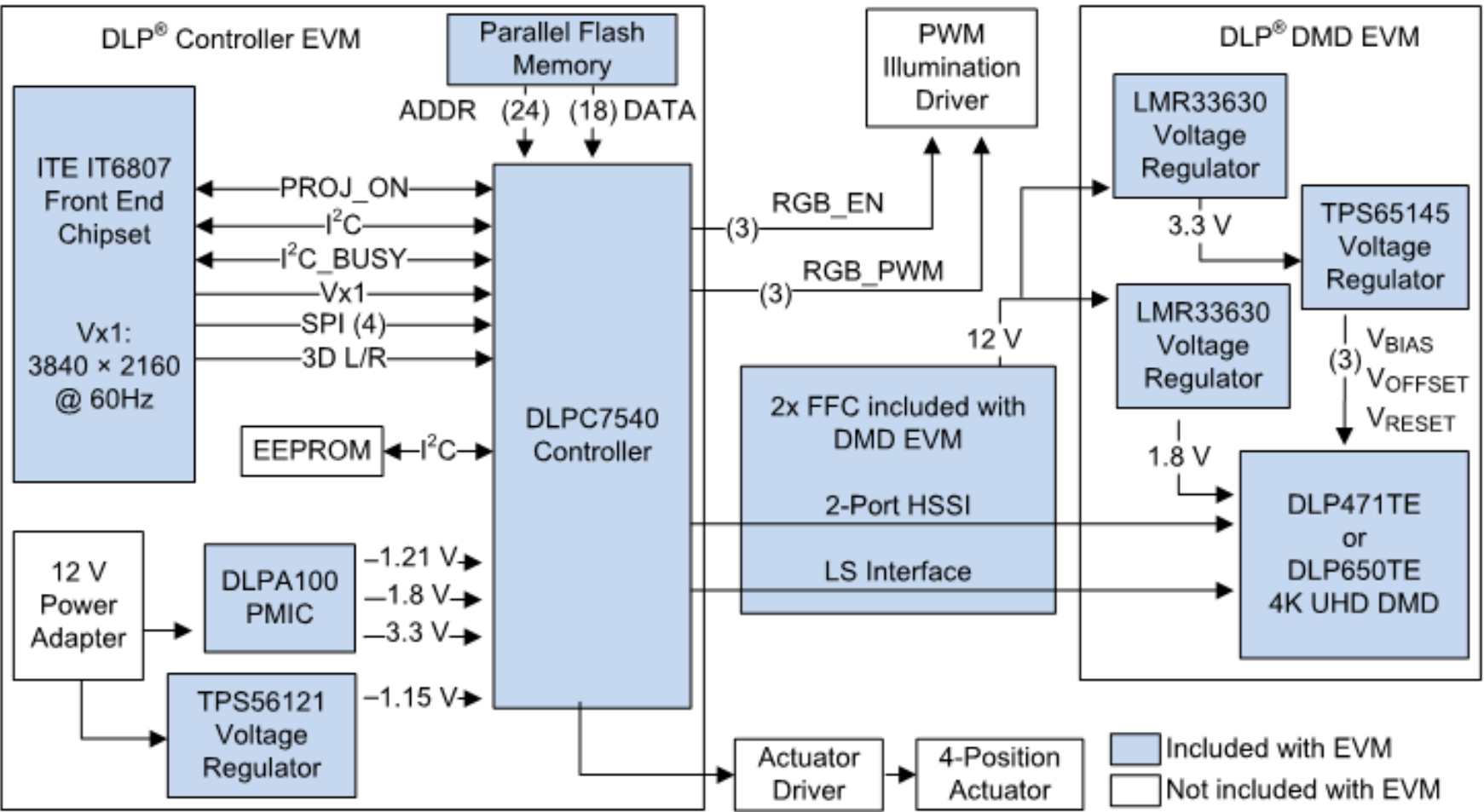
DRAWING NO
DLP055

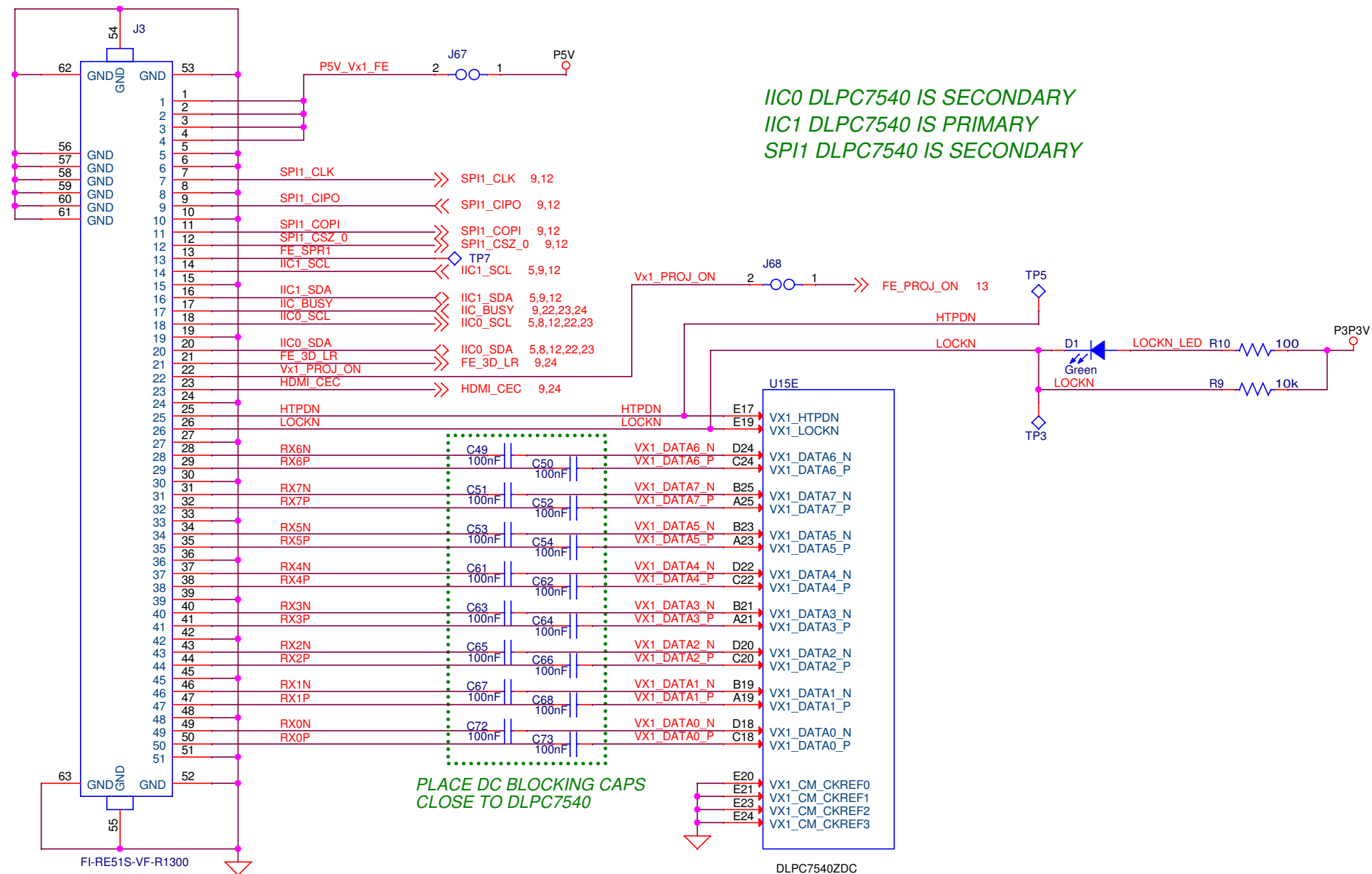
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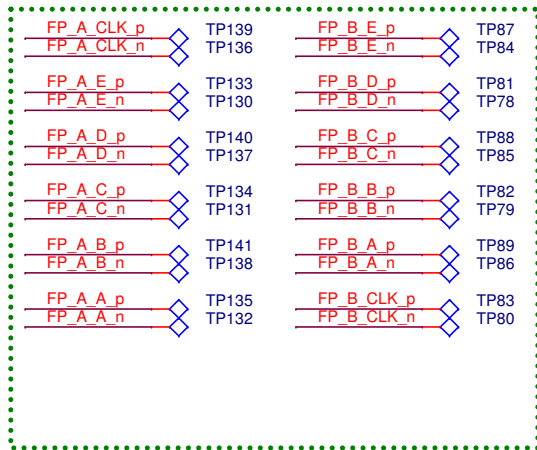
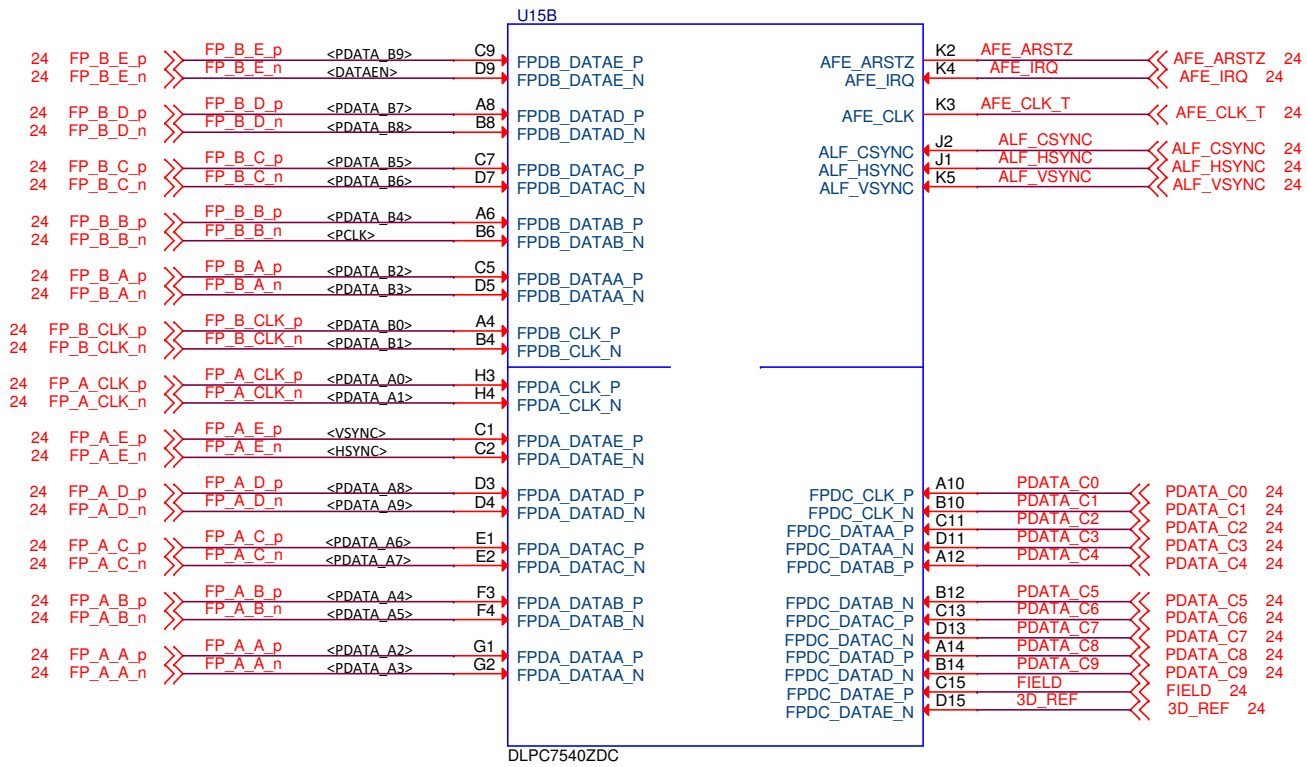
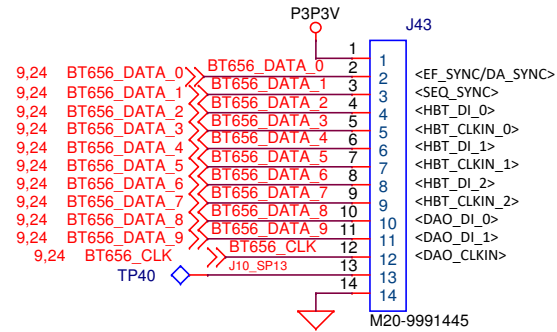
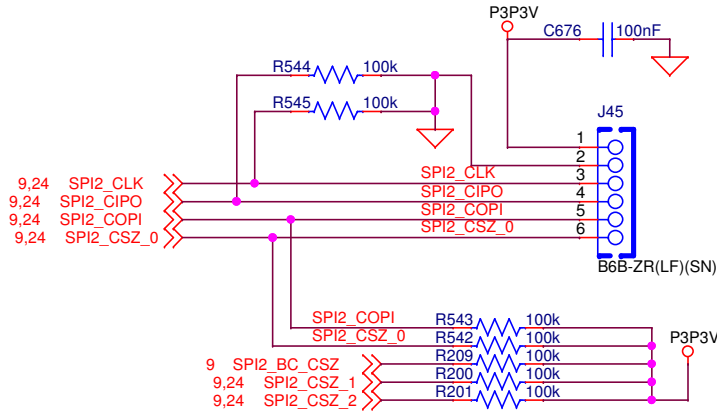
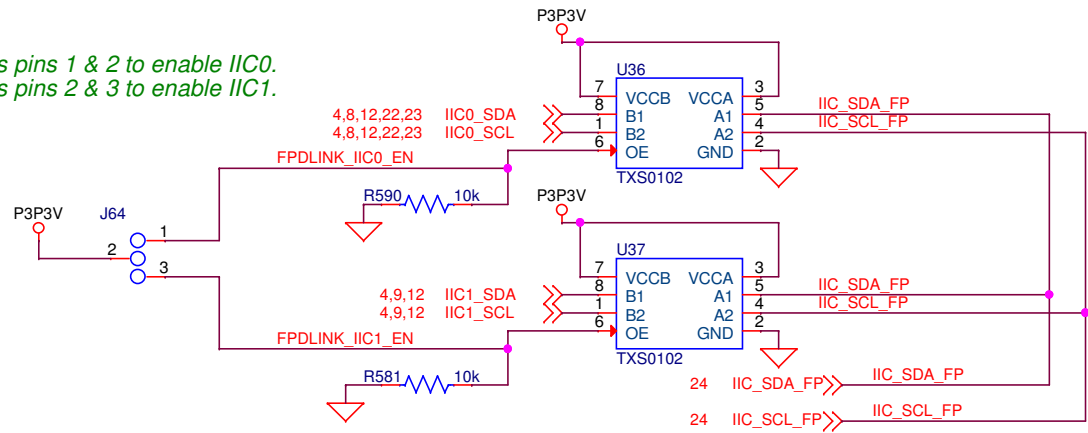
Block Diagram



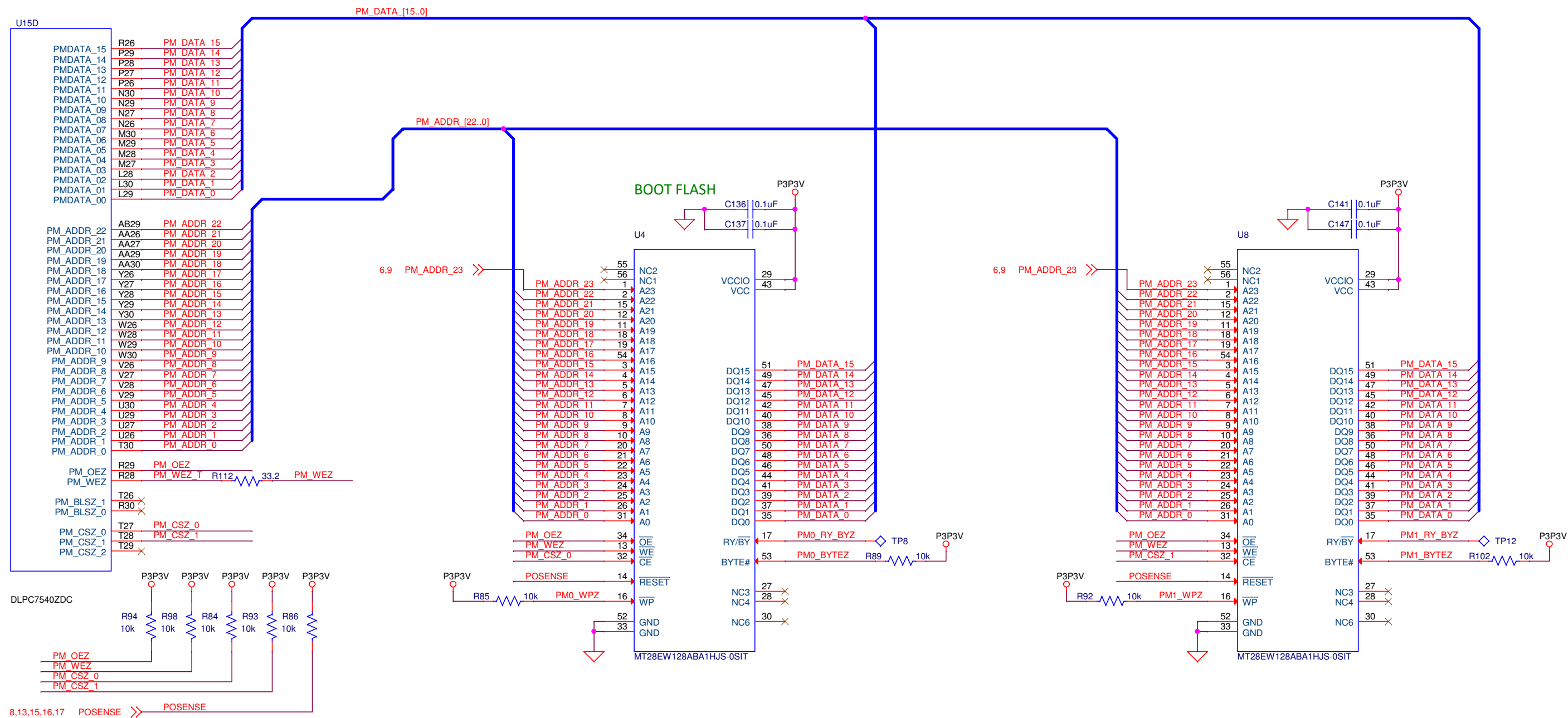


DLPC7540 Vx1 Input Interface

Place jumper across pins 1 & 2 to enable IIC0.
Place jumper across pins 2 & 3 to enable IIC1.



FI-RE515-HF-R1500 (SIDE ENTRY) (index pn 1668)
FI-RE515-VF-R1300 (TOP ENTRY) (index pn 1629)
Compatible FFC Cables:
20cm length - JAE Electronics - JF08R0R051020UA (DigiKey 670-3072-ND)
30cm length - JAE Electronics - JF08R0R051030UA (DigiKey 670-3073-ND)
40cm length - JAE Electronics - JF08R0R051040UA (DigiKey 670-3074-ND)



Flash Memory Interface

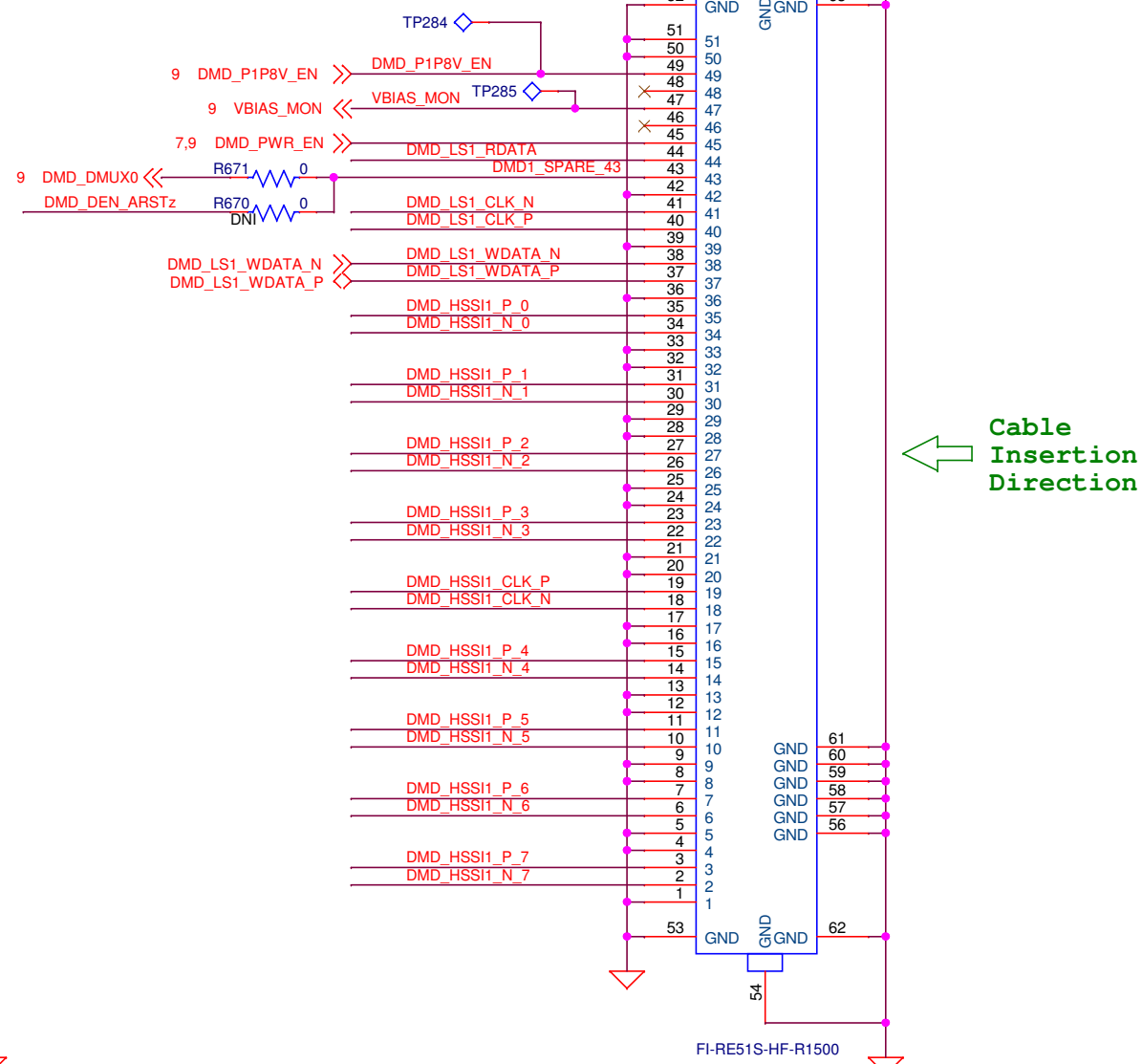
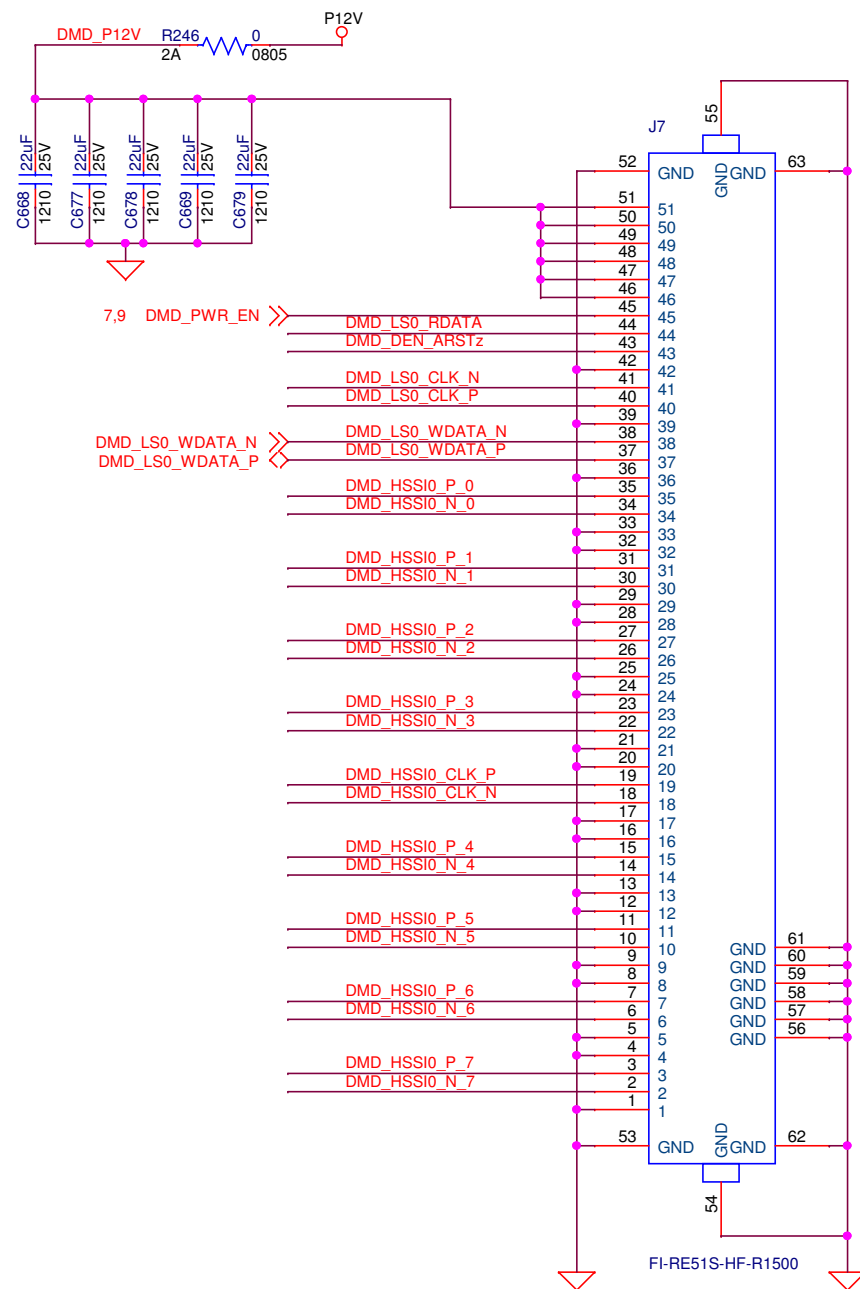
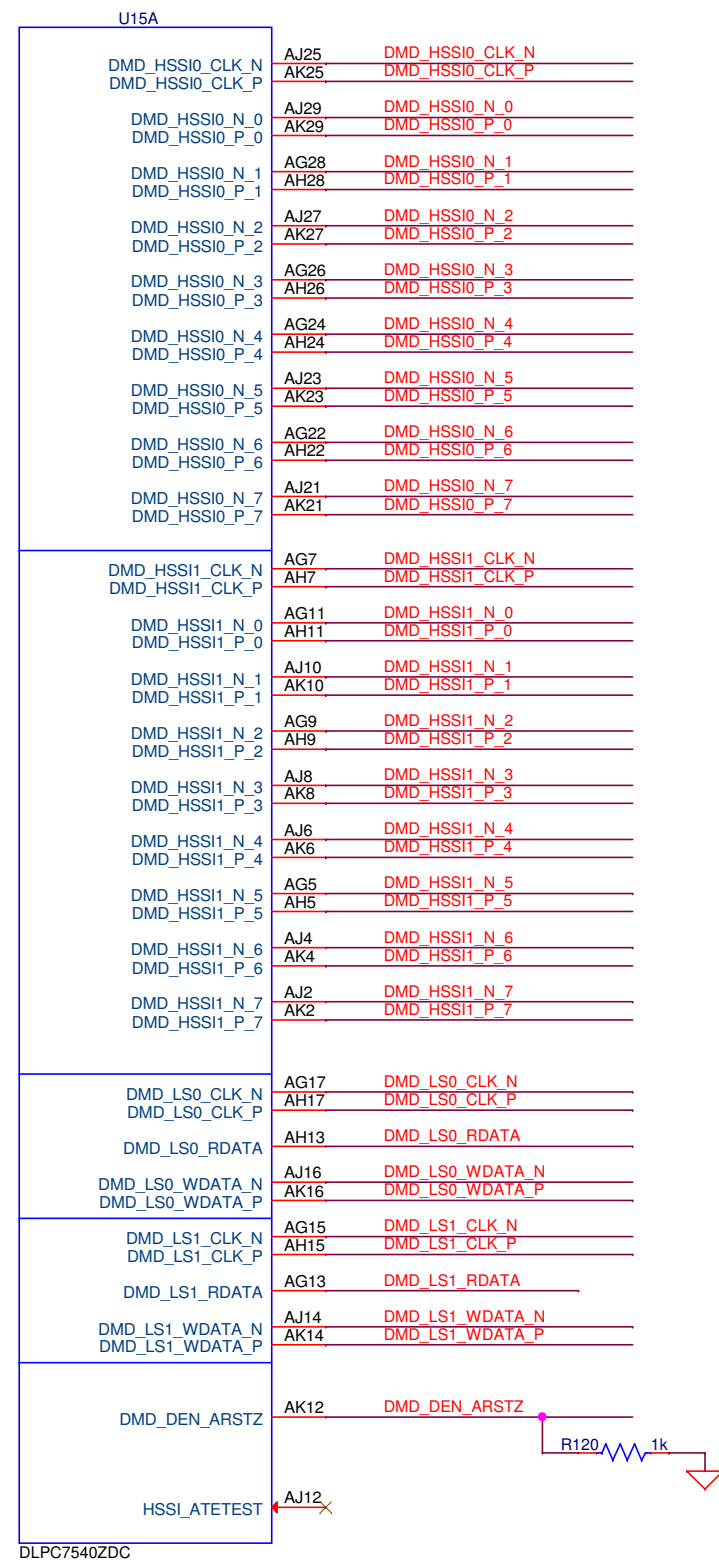
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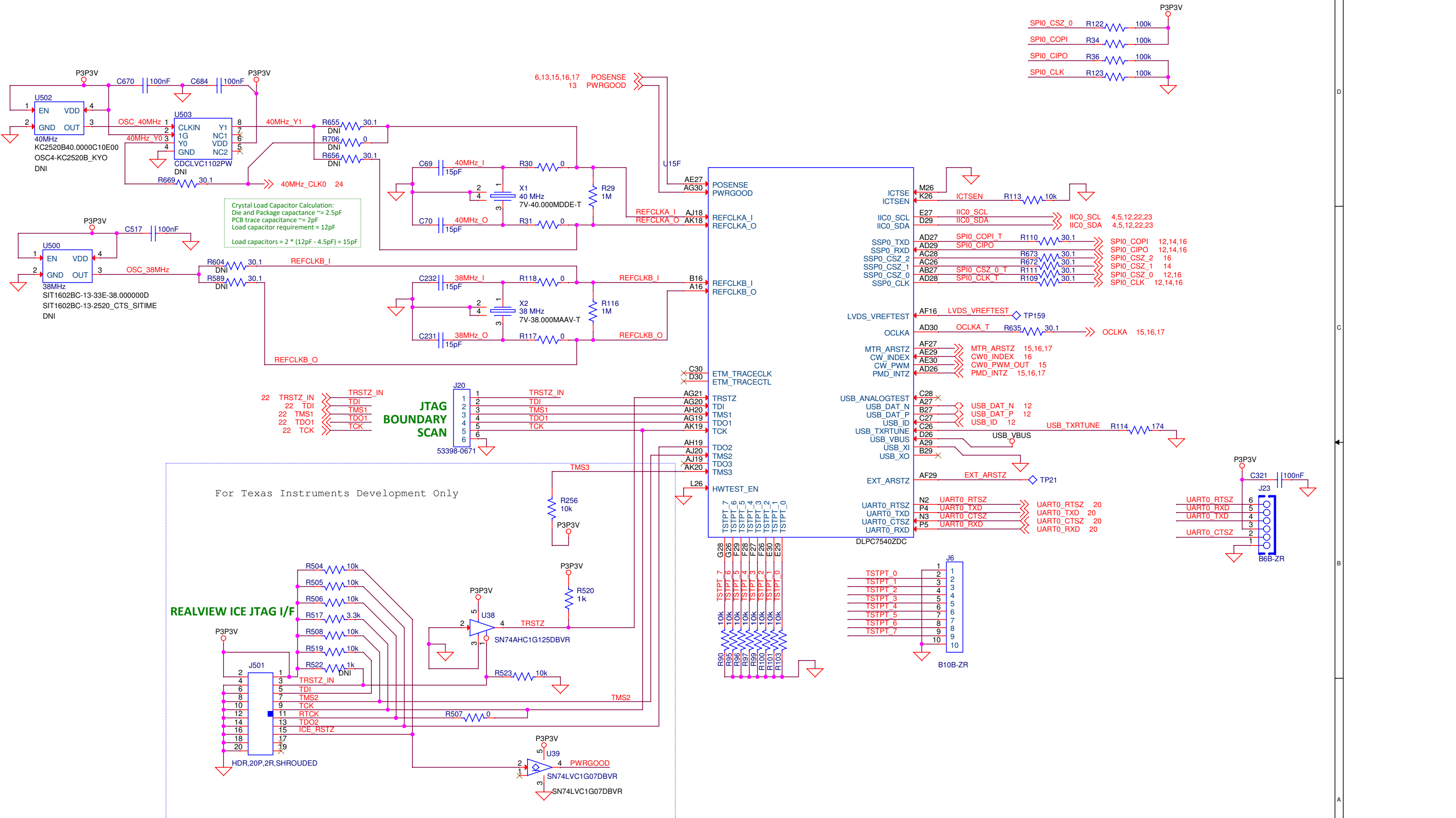
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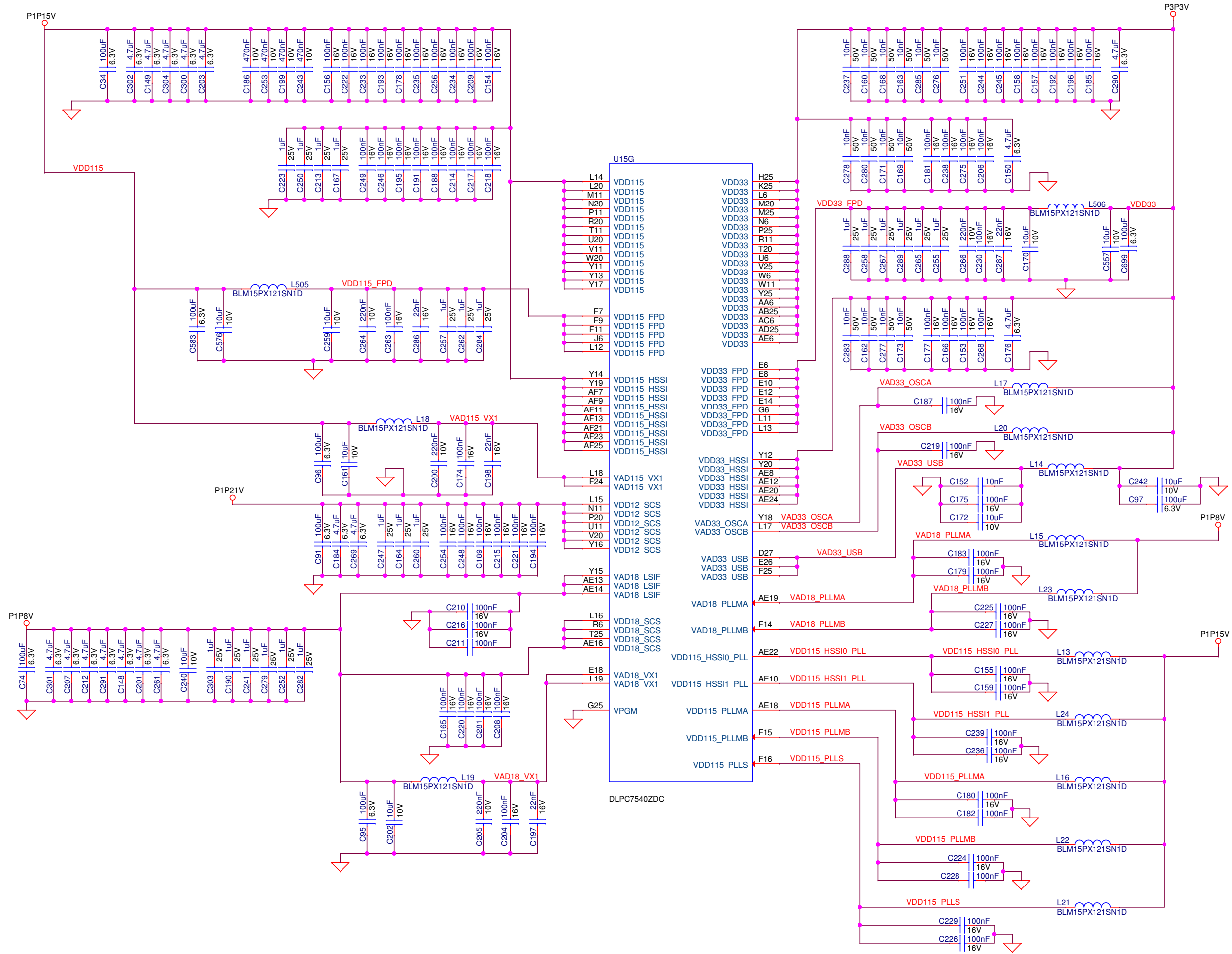
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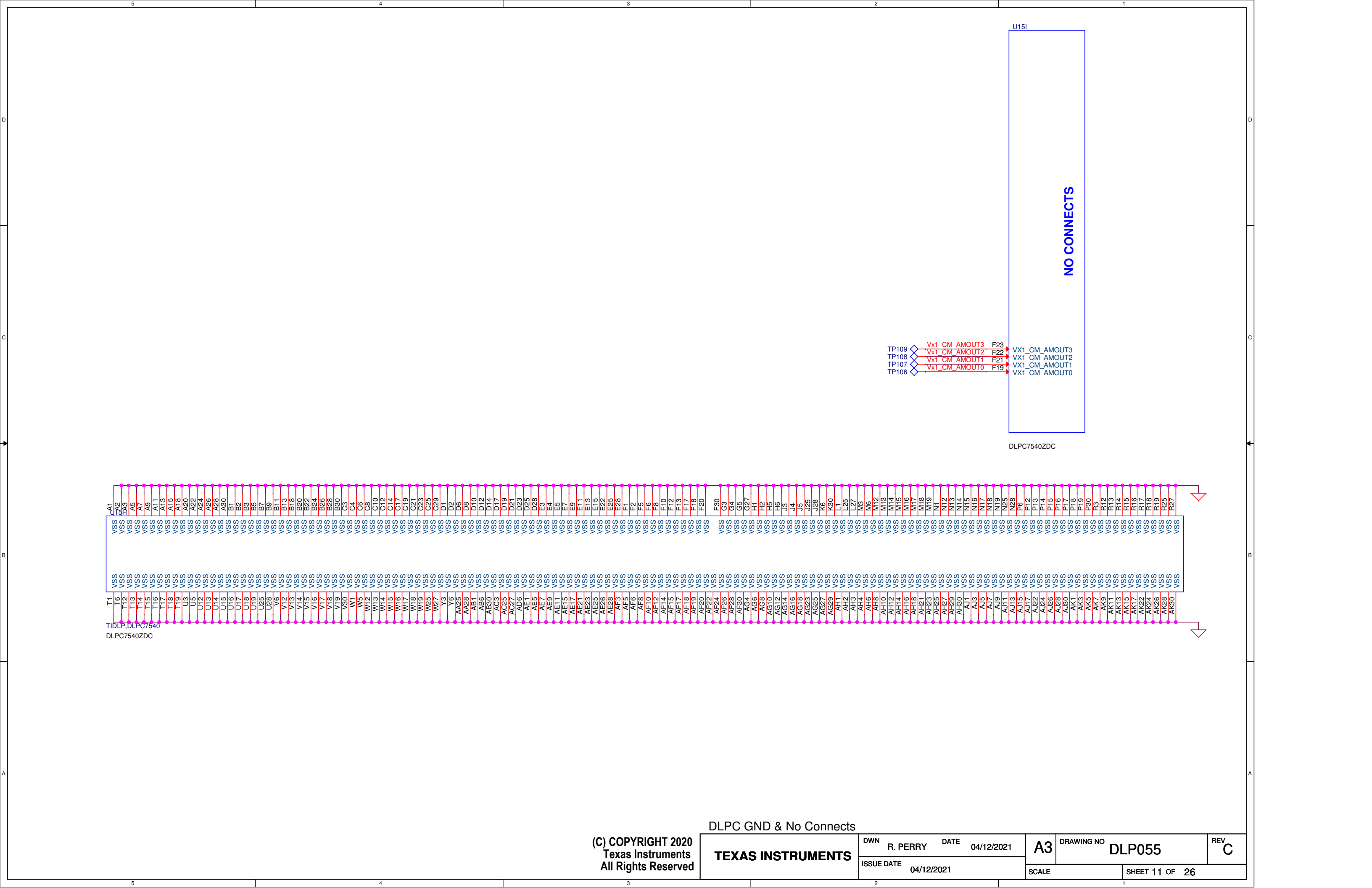
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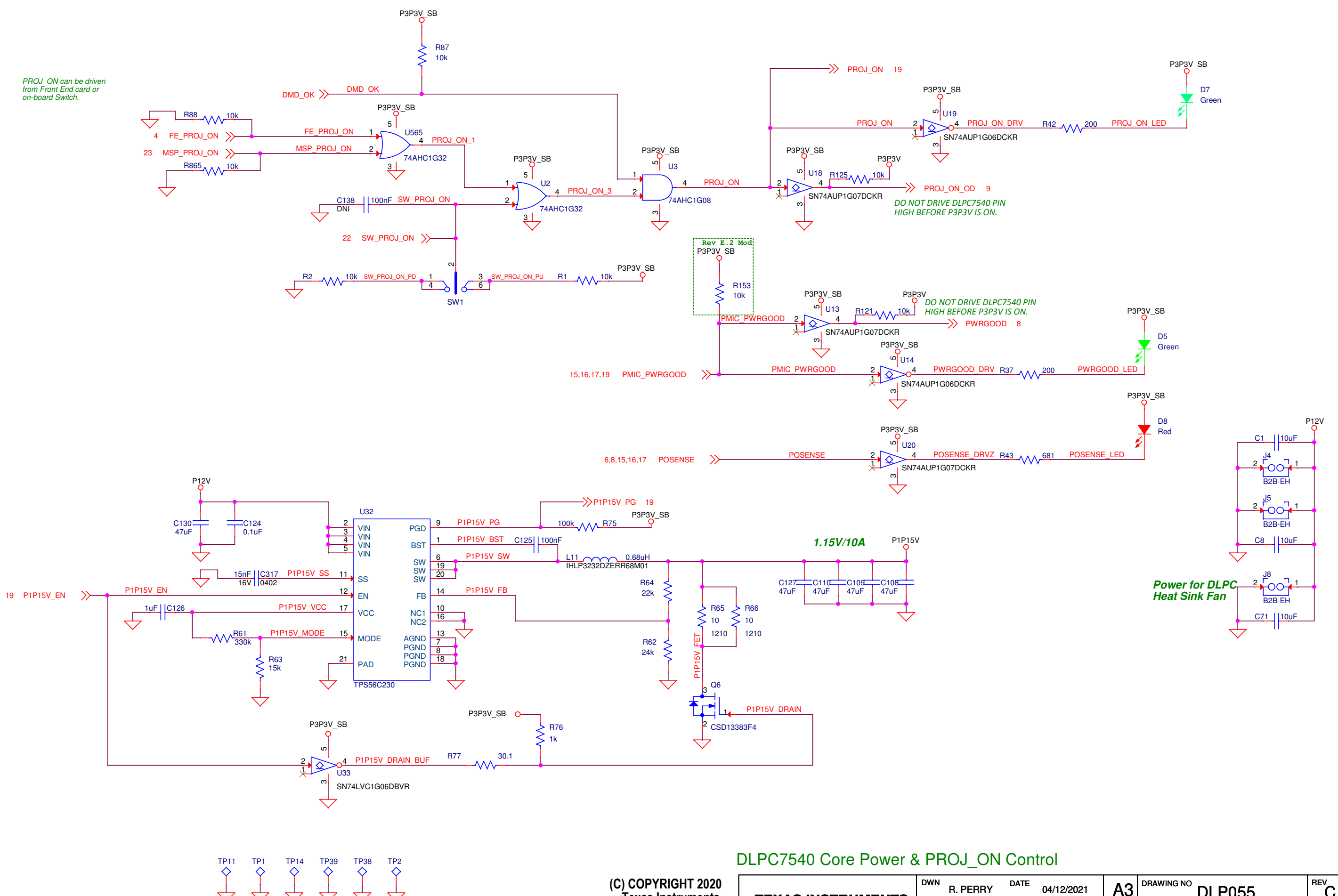




DLPC Clocks, JTAG, UART, USB, SPI0, Etc.



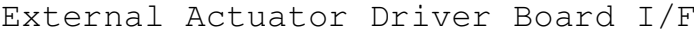


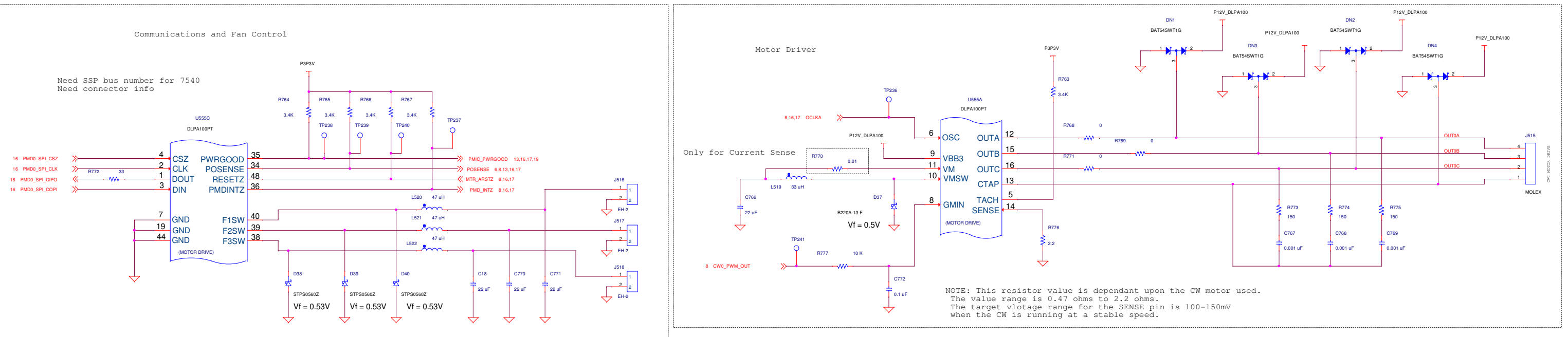
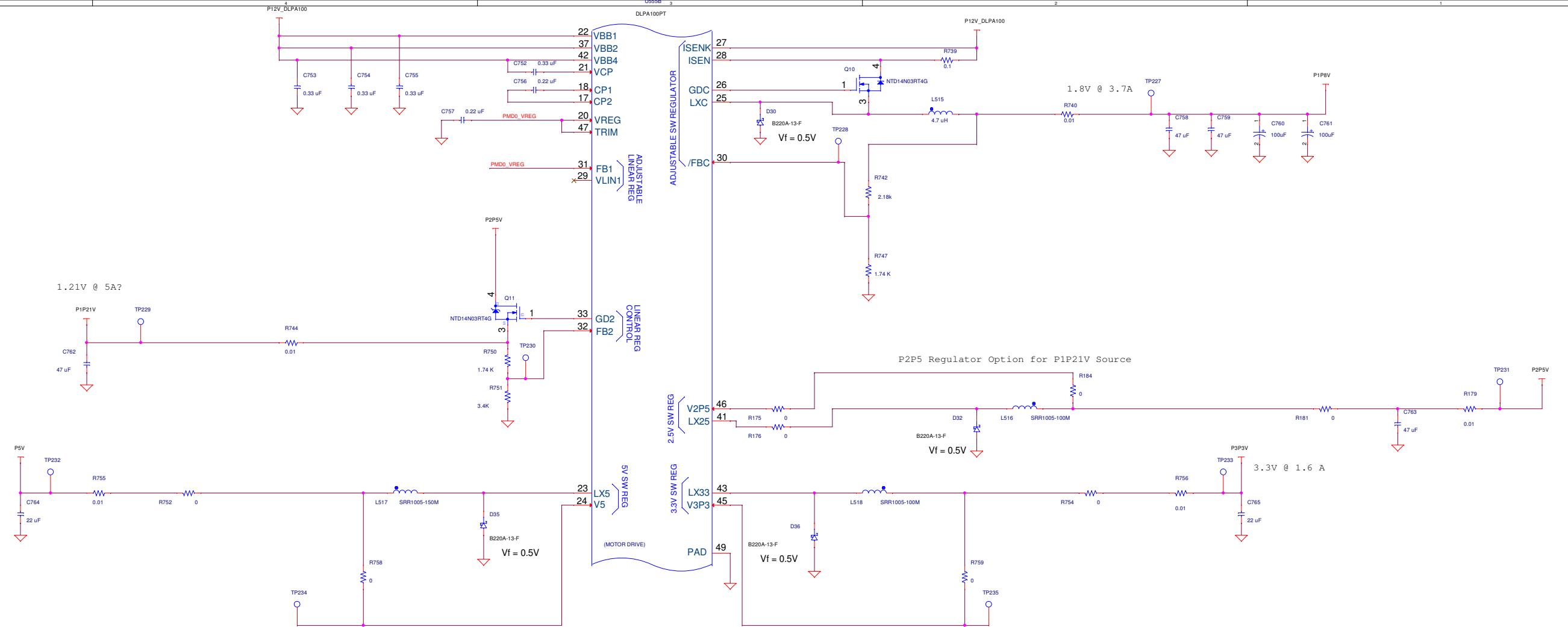


DLPC7540 Core Power & PROJ_ON Control

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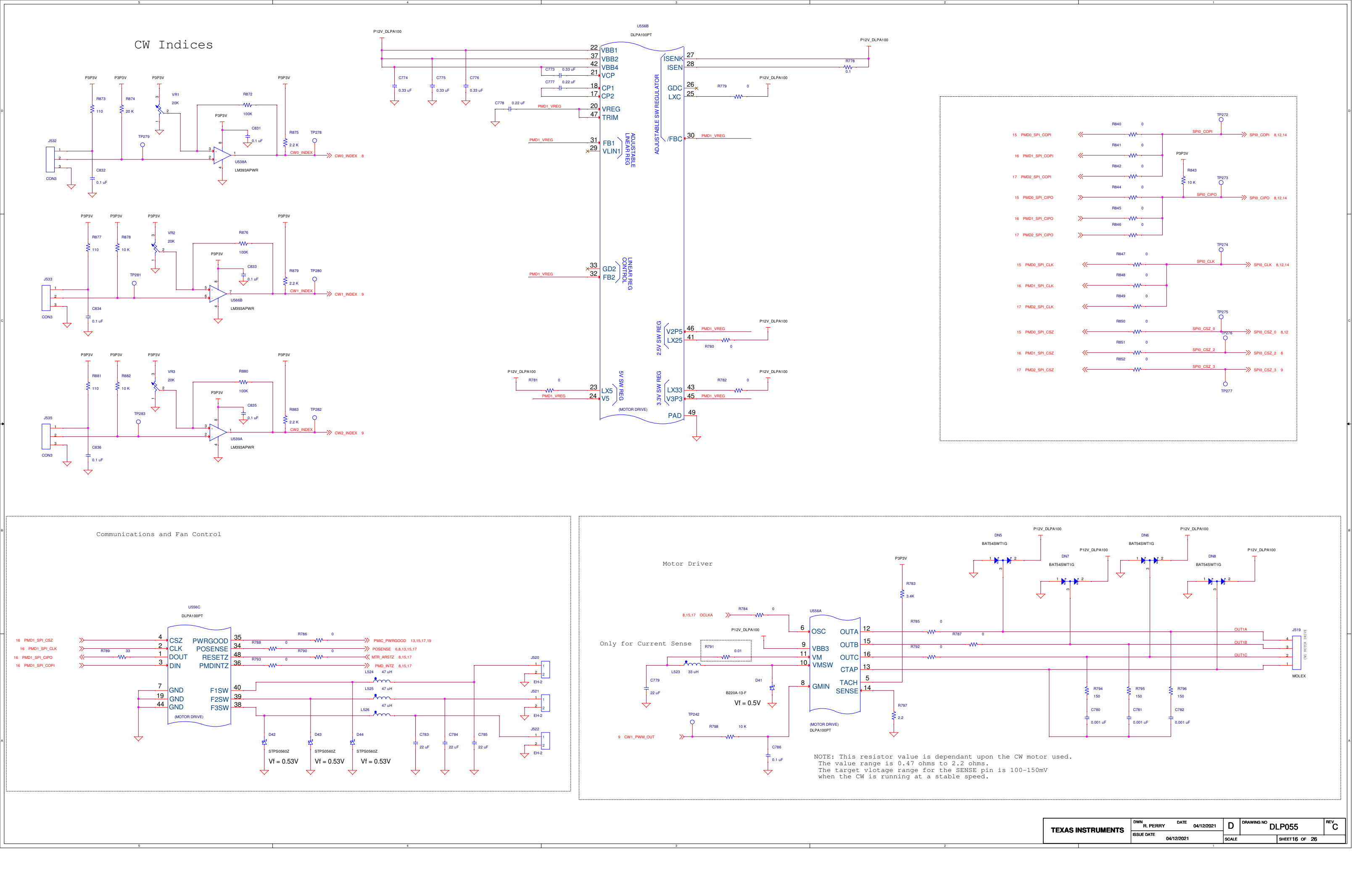
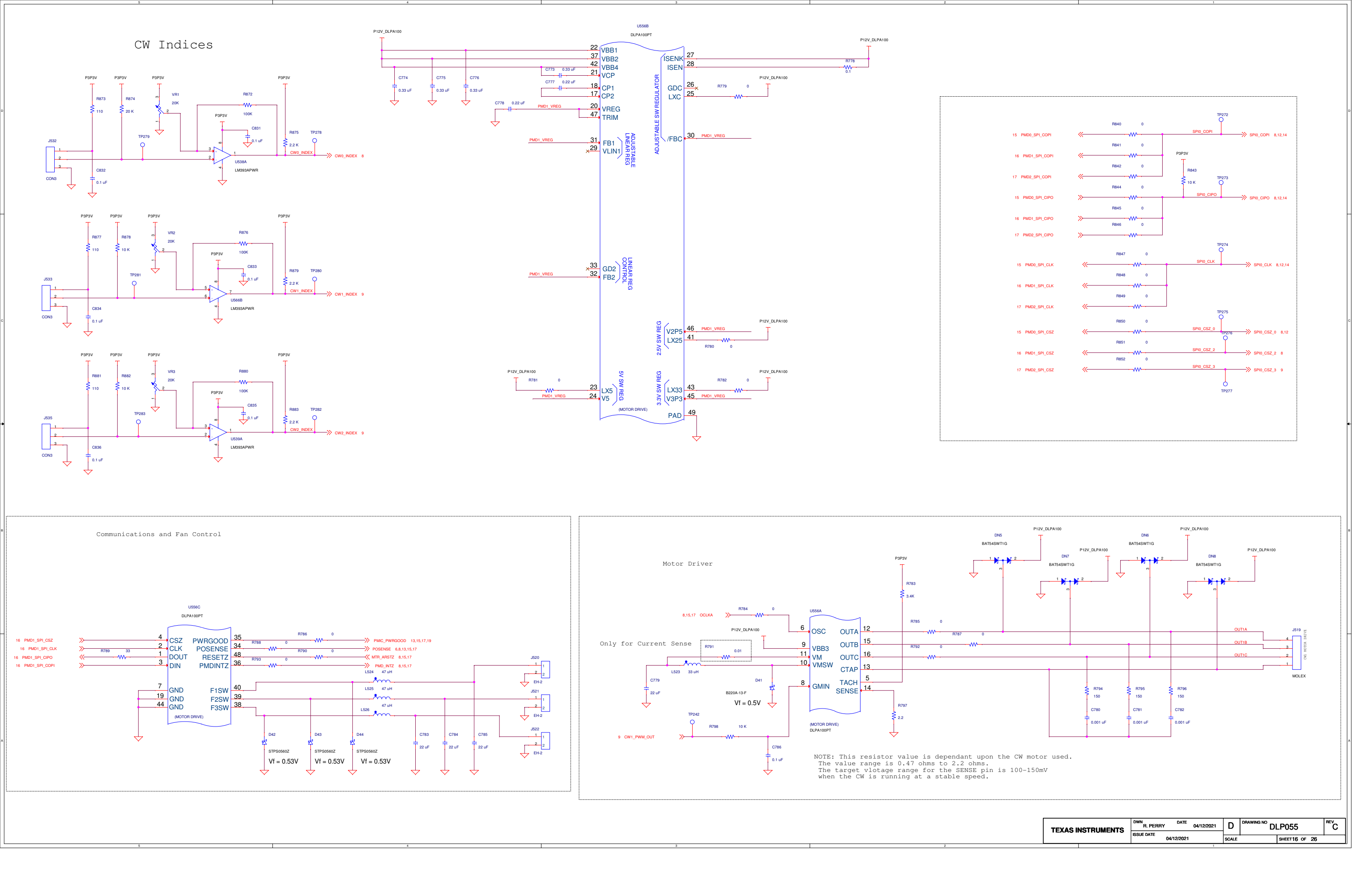
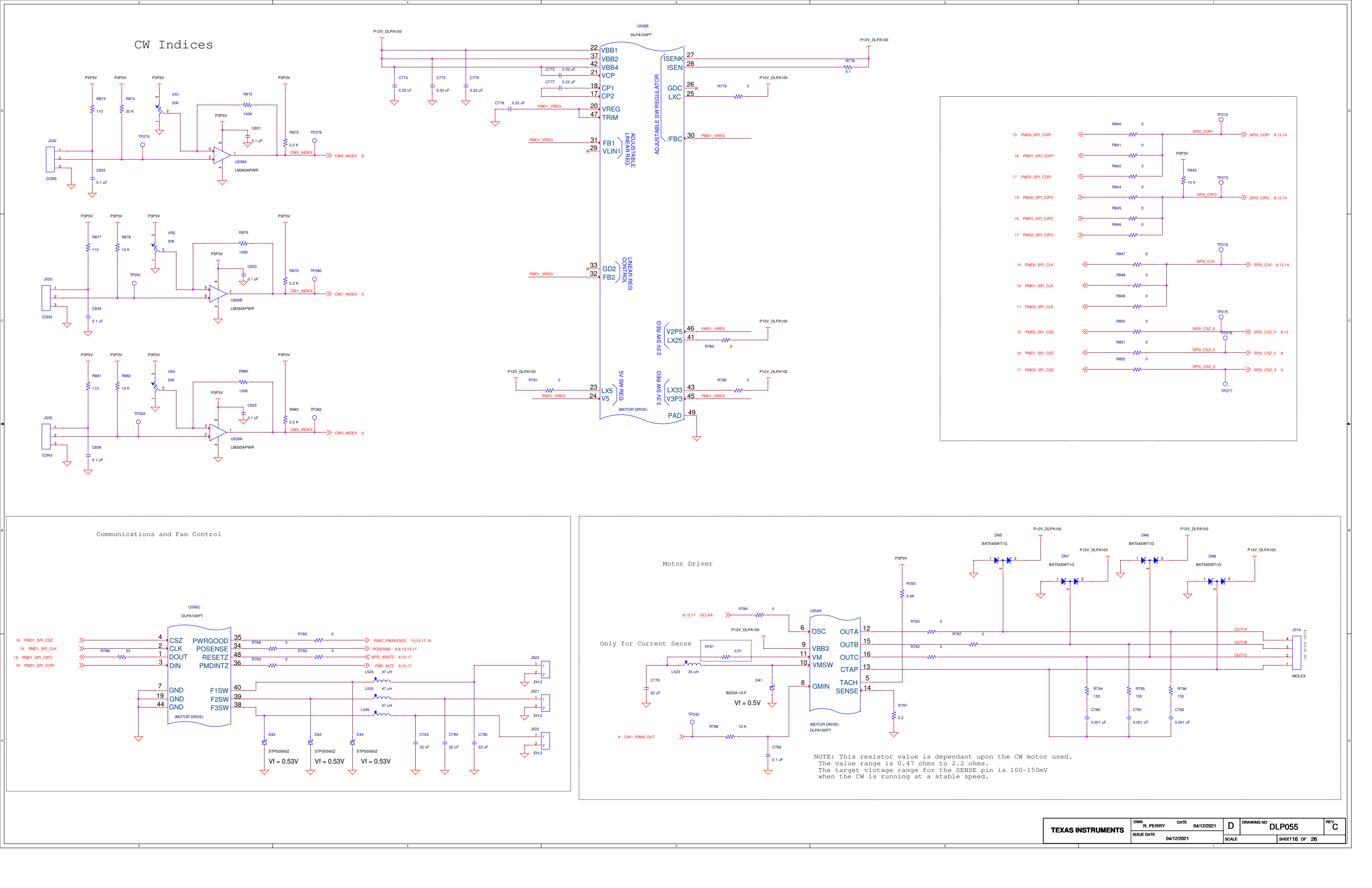
CW Indices

Communications and Fan Control

Motor Driver

Peripheral SPI Interface

NOTE: This resistor value is dependant upon the CW motor used. The value range is 0.47 ohms to 2.2 ohms. The target vlotage range for the SENSE pin is 100-150mV when the CW is running at a stable speed.



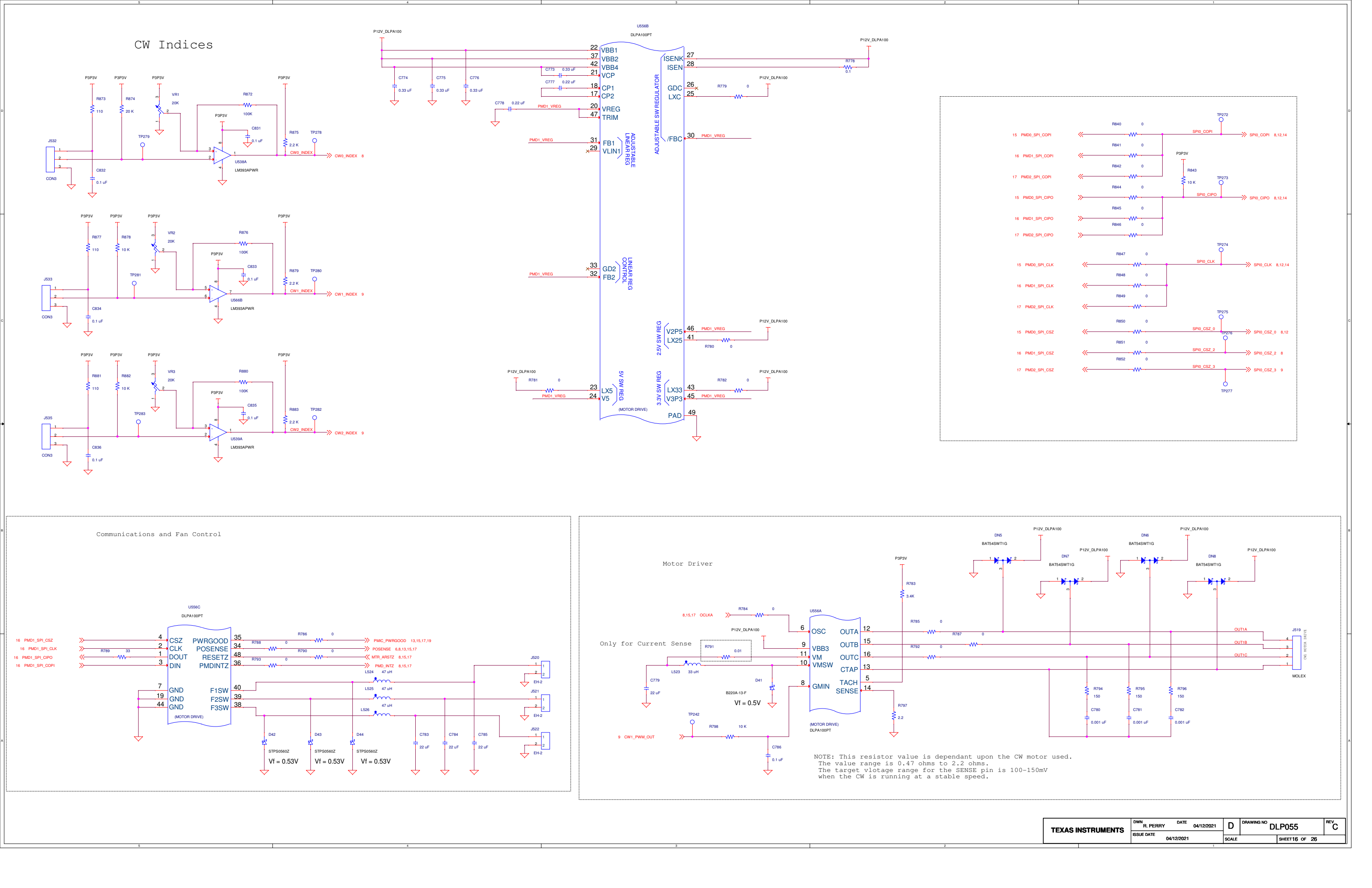
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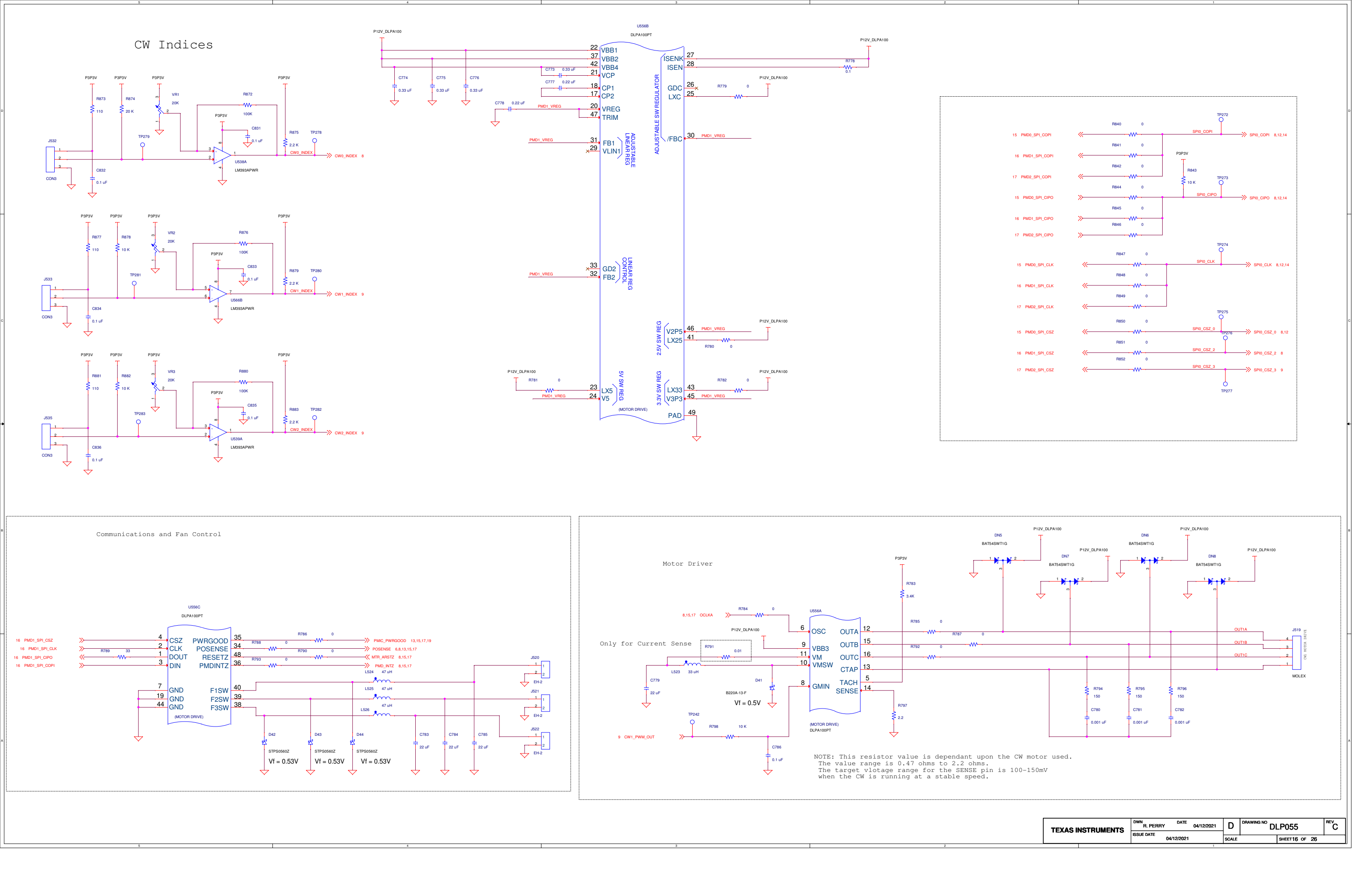
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CW Indices

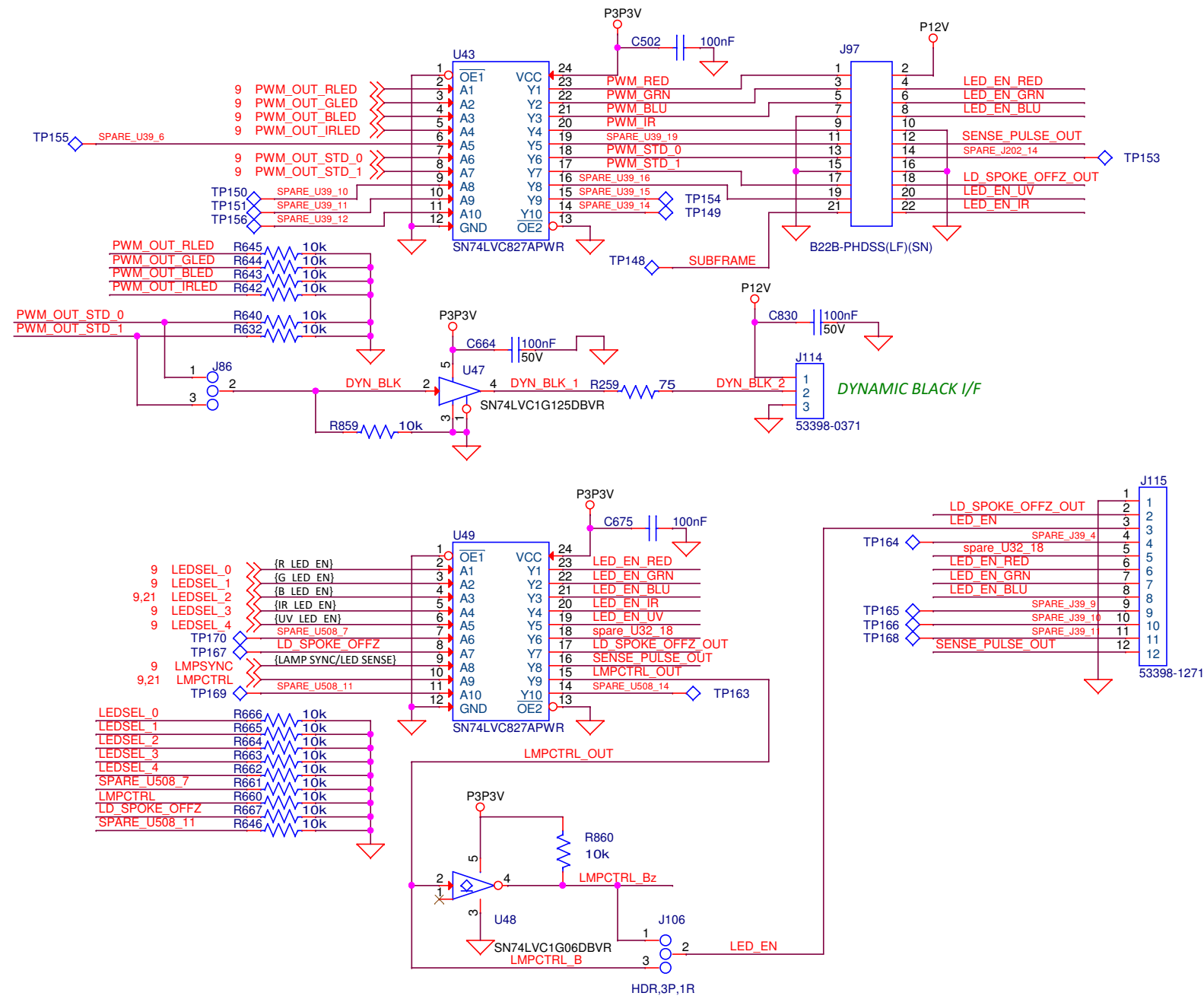
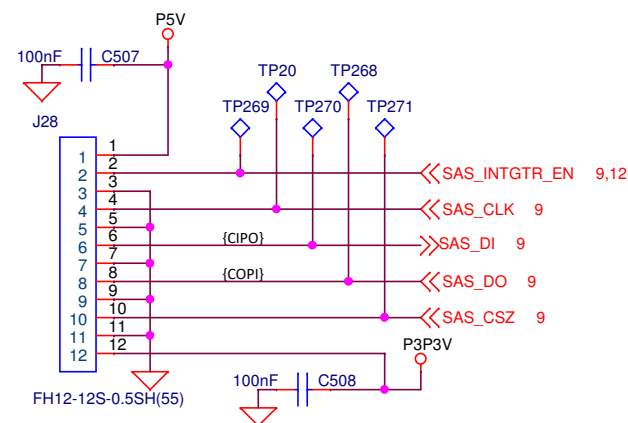
Communications and Fan Control

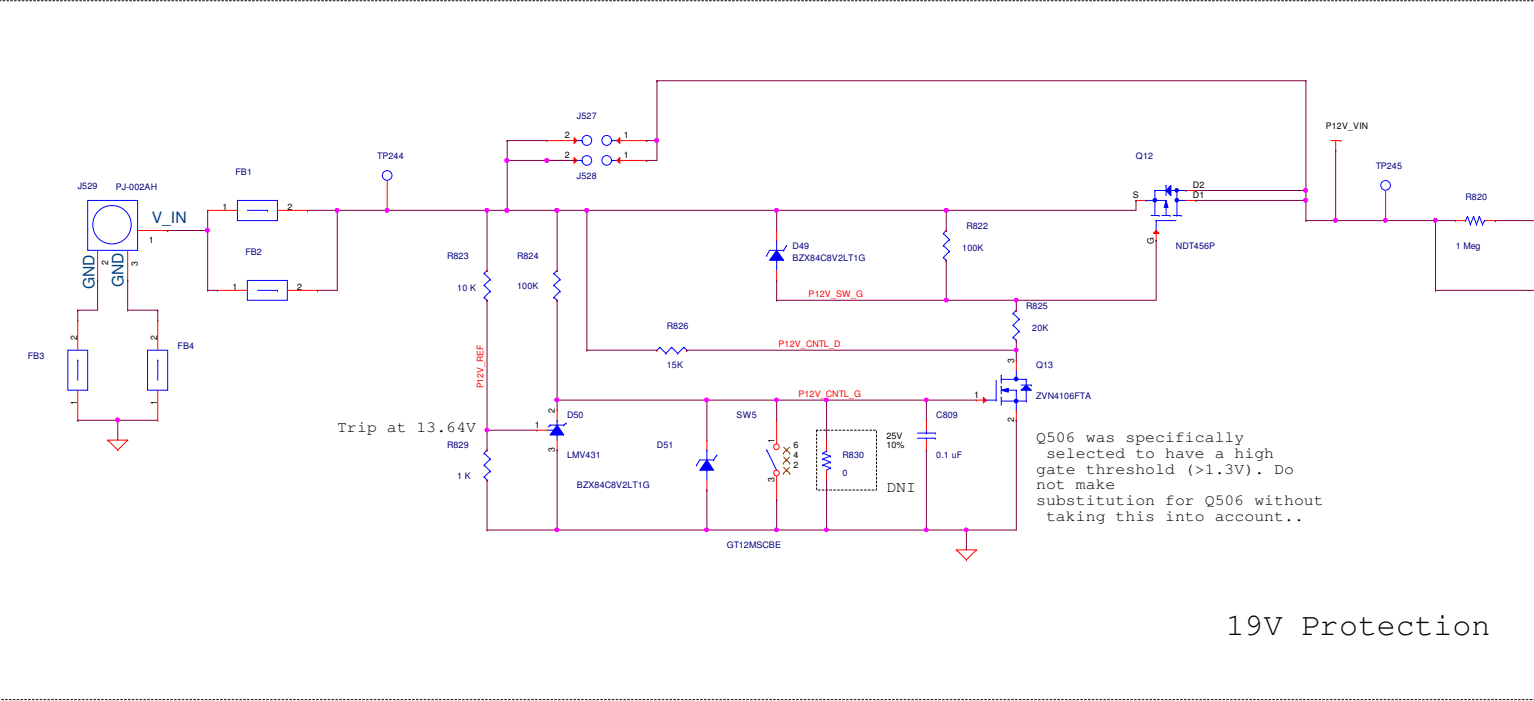
Motor Driver

Peripheral SPI Interface

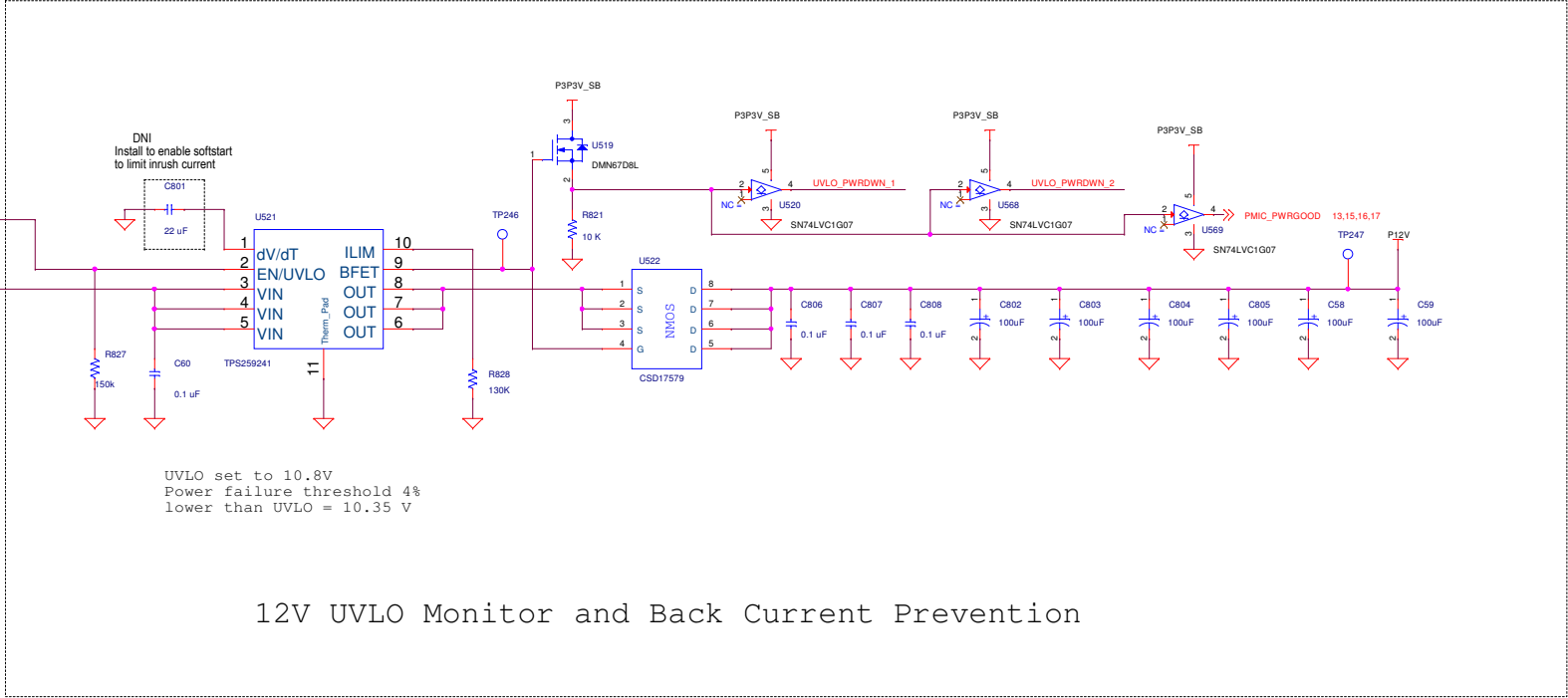
NOTE: This resistor value is dependant upon the CW motor used. The value range is 0.47 ohms to 2.2 ohms. The target vlotage range for the SENSE pin is 100-150mV when the CW is running at a stable speed.

ADC INTEGRATING SENSOR BOARD I/F

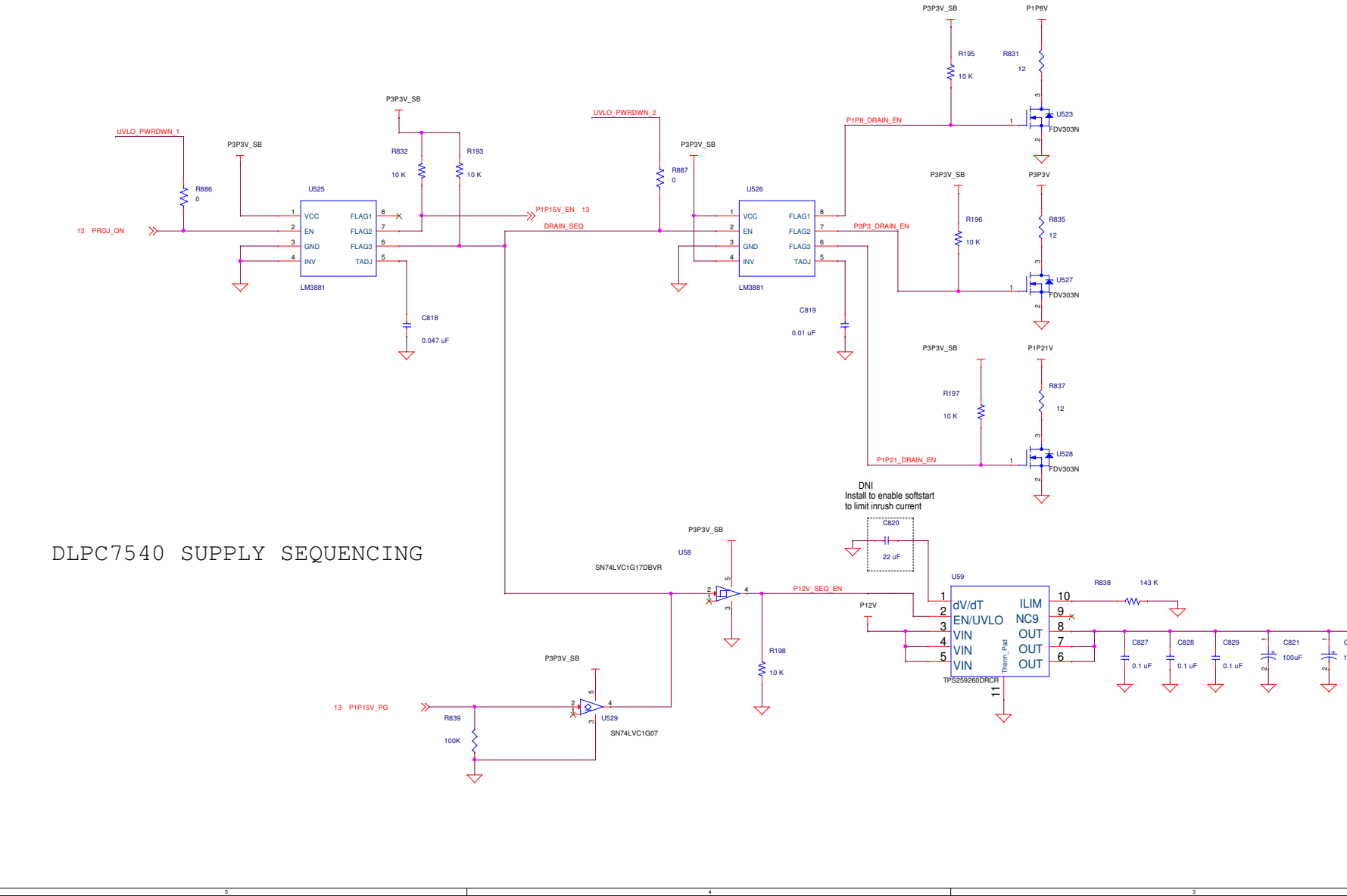




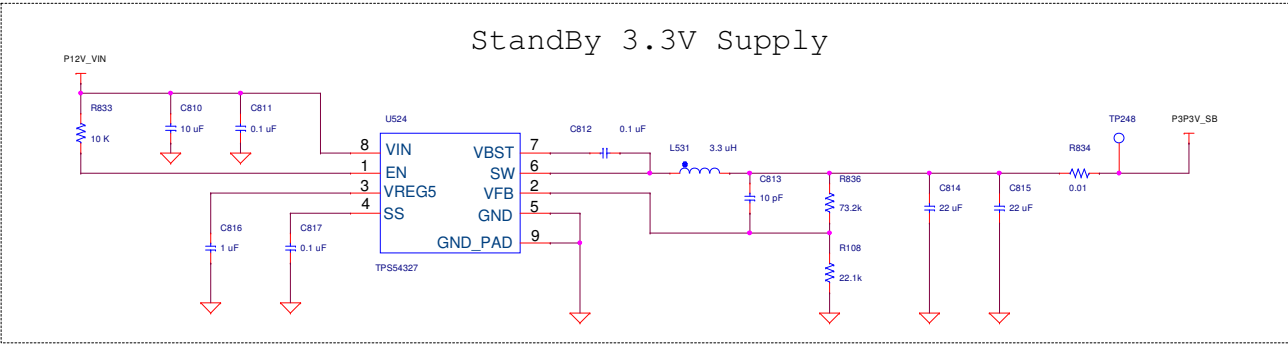
19V Protection



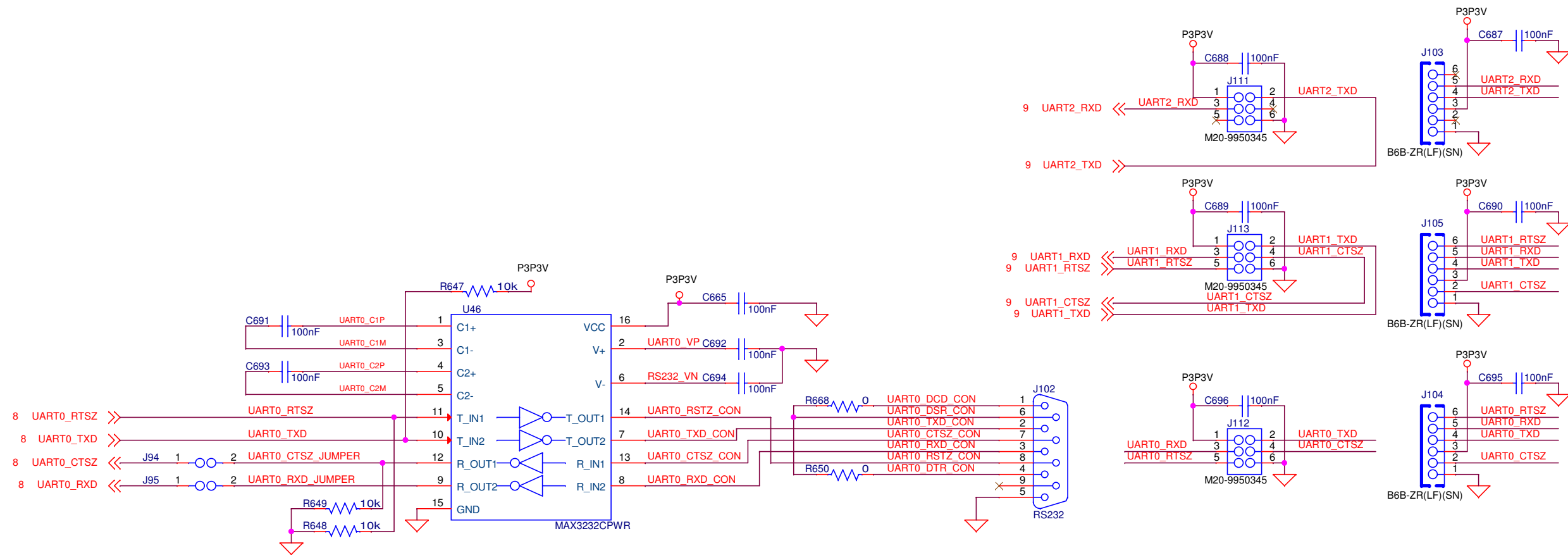
12V UVLO Monitor and Back Current Prevention



DLPC7540 SUPPLY SEQUENCING



StandBy 3.3V Supply



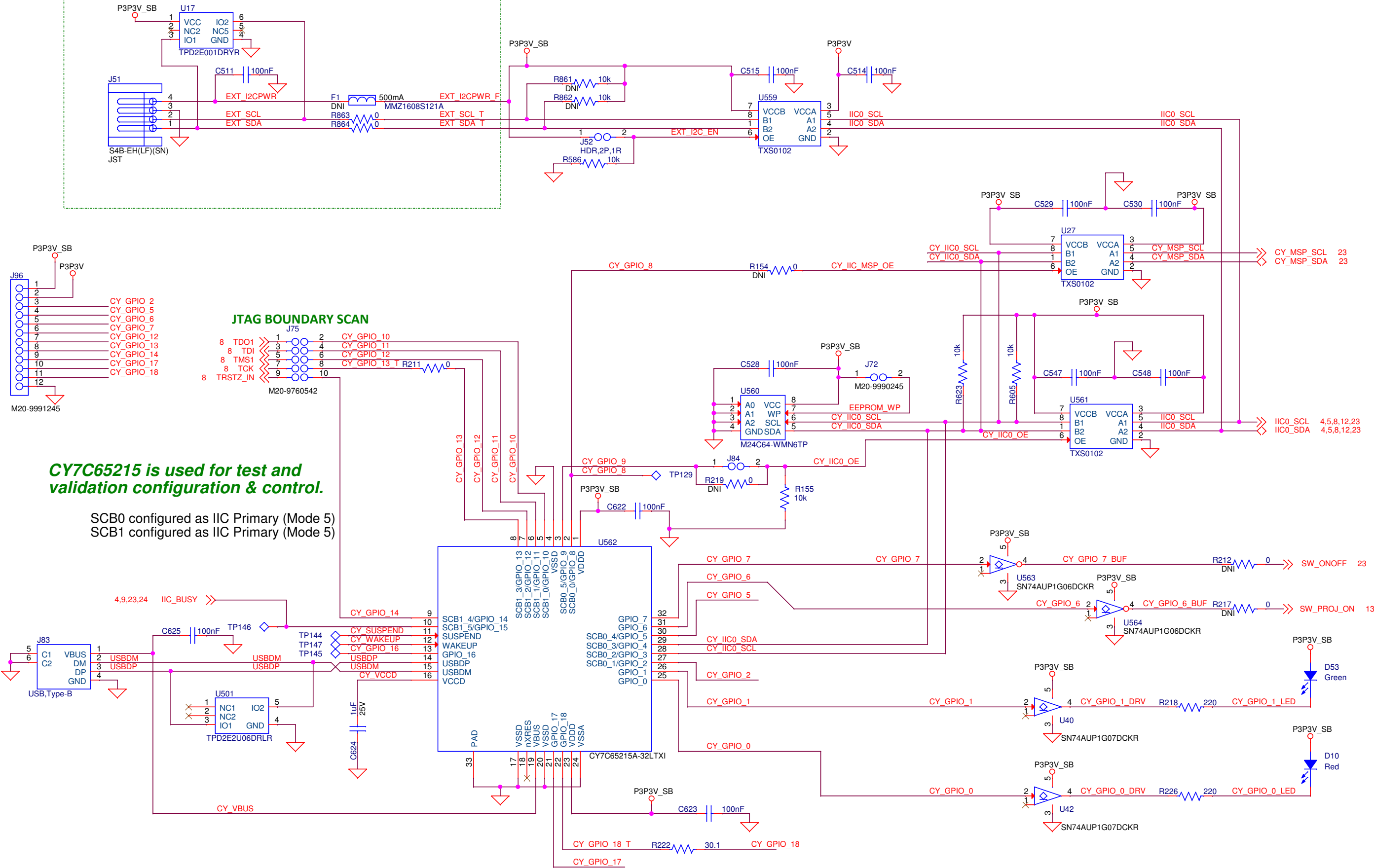
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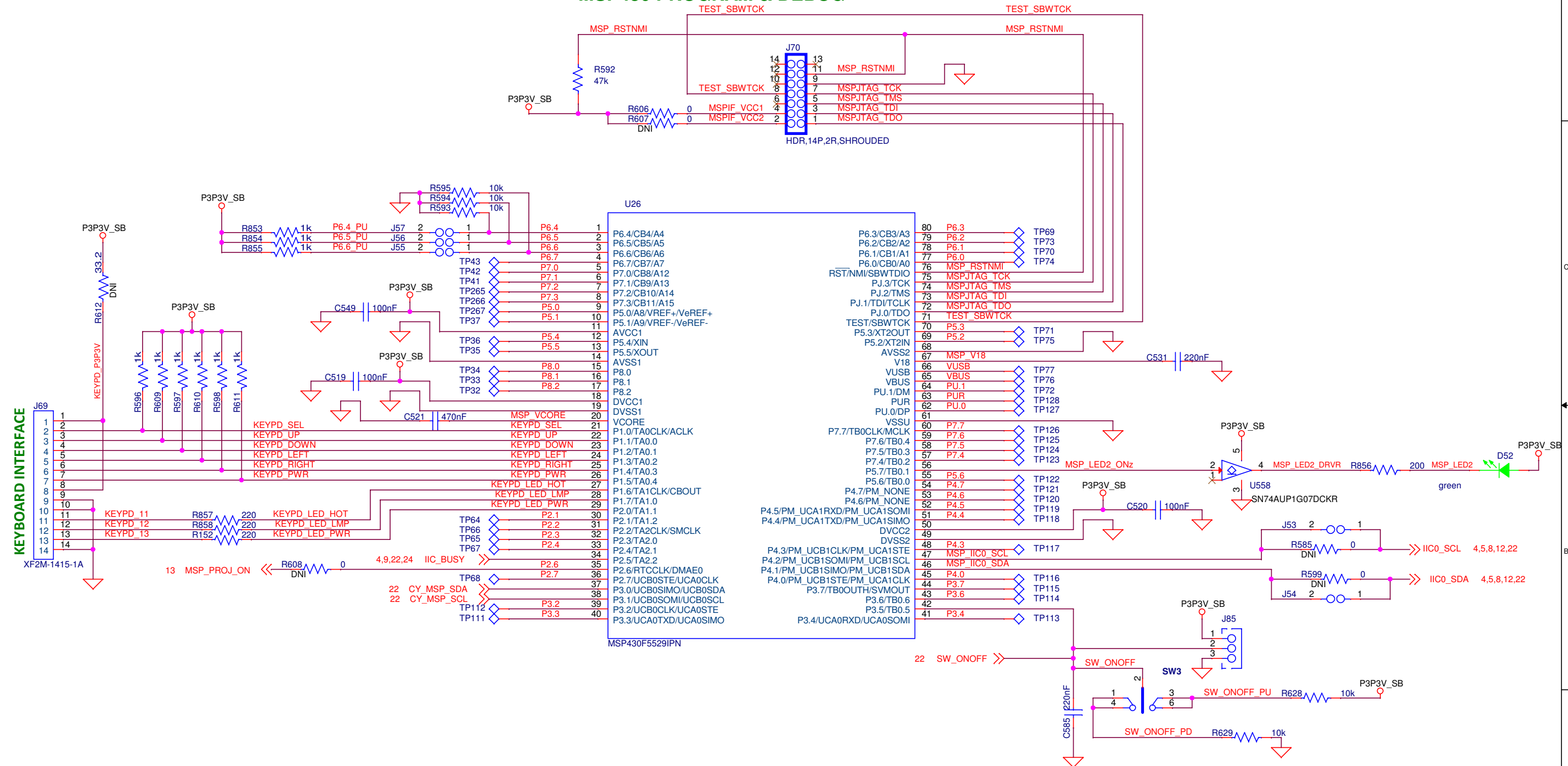
DEVASYS CONNECTION



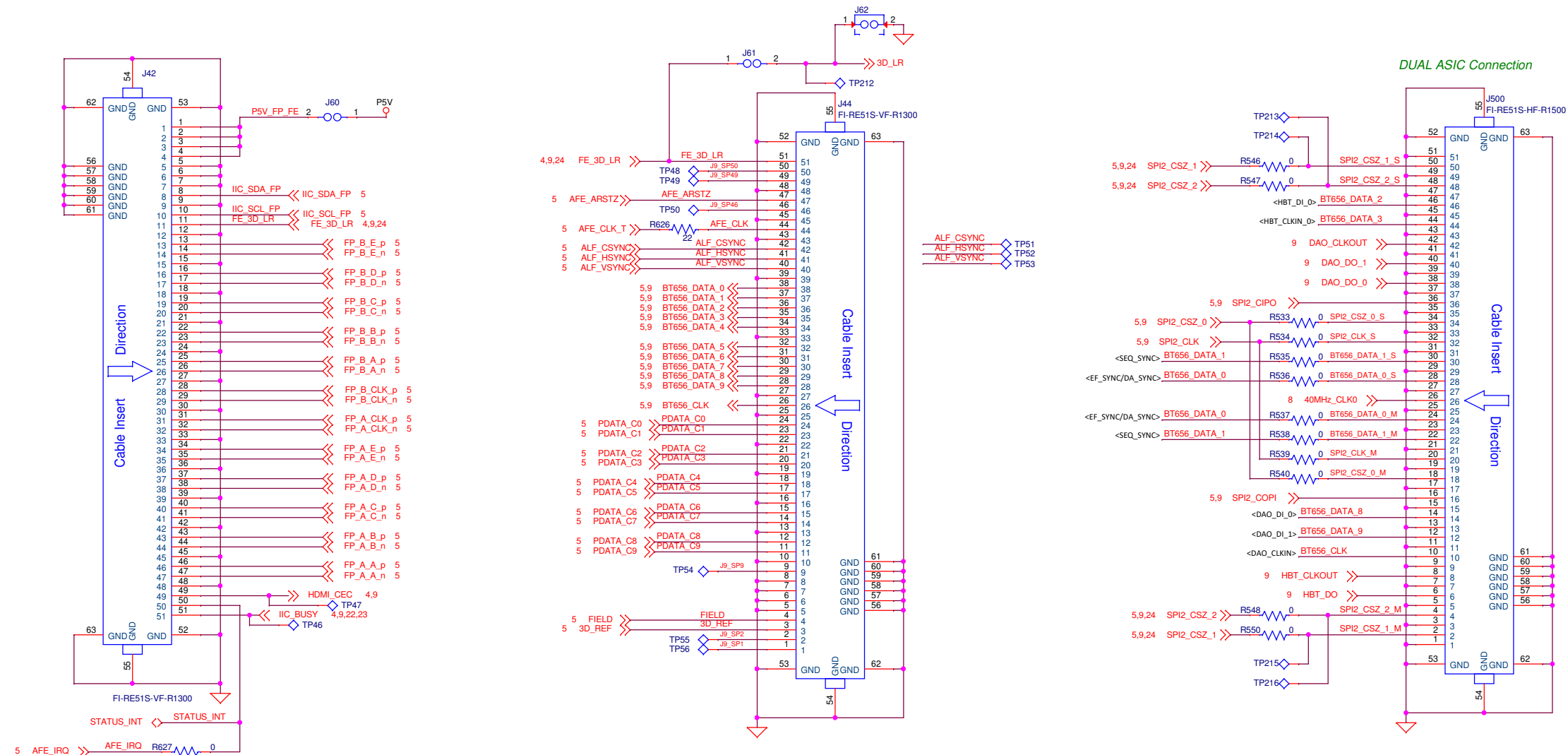
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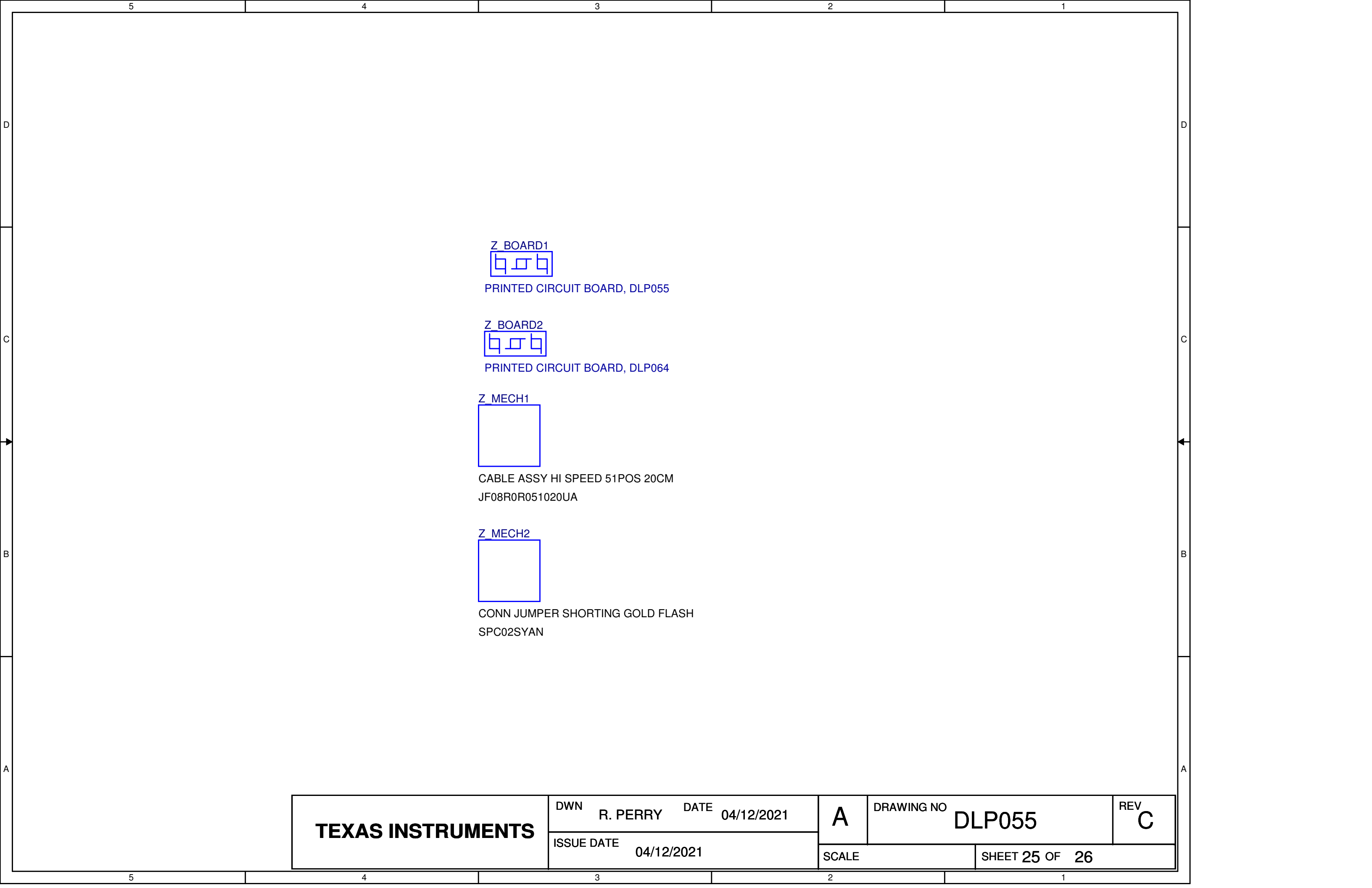
SCB0 configured as IIC Primary (Mode 5)
SCB1 configured as IIC Primary (Mode 5)

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