

# MX508-EVK Based E-Book add-on Board

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### Disclaimer:



ICAP Classification: FCP: FILIO: X PUBI:

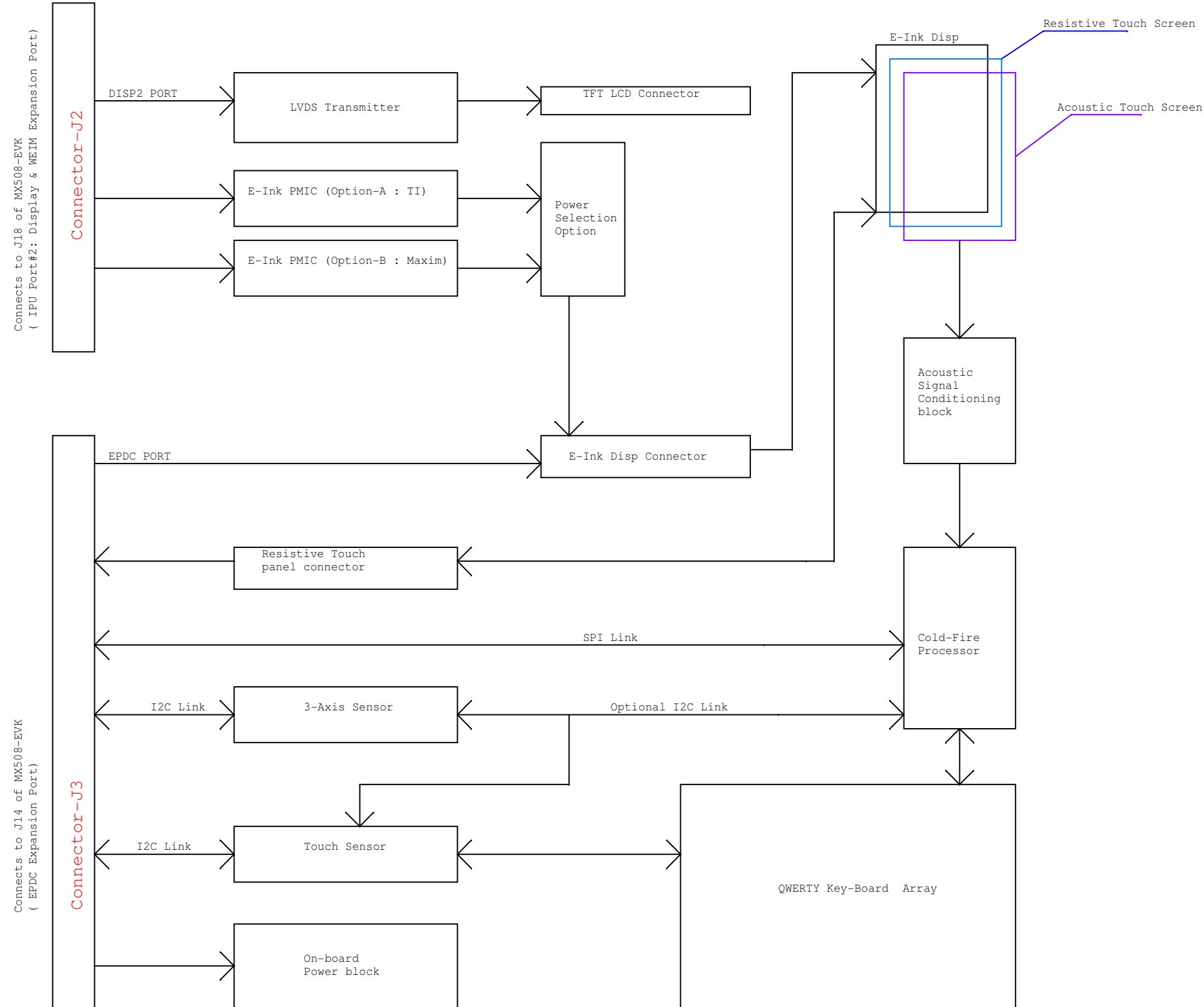
Drawing Title: **MX51-EVK Based E-Book add-on Board**

Page Title: **Covering Page**

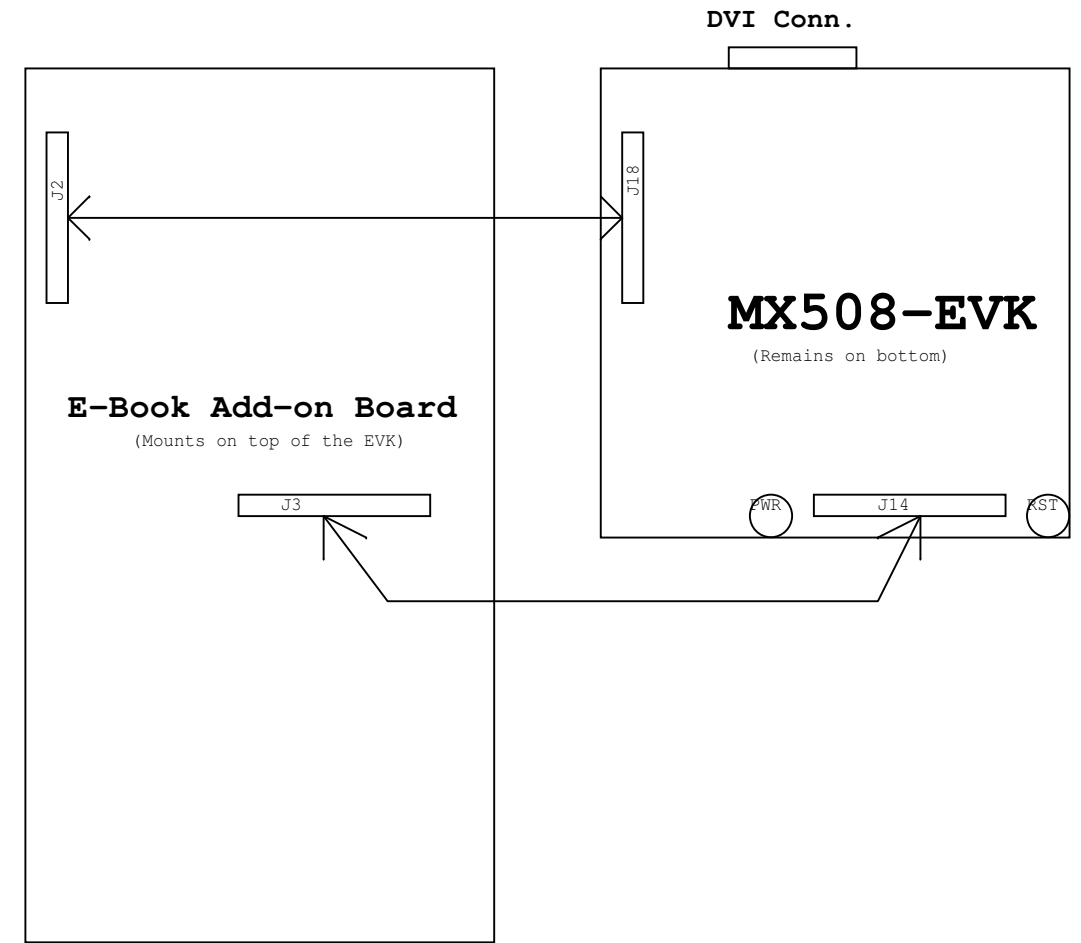
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# System Block Diagram



# Docking Scheme



		
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1. Unless Otherwise Specified:

- All resistors are in ohms, 5%, 1/8 Watt
- All capacitors are in uF, 20%, 50V
- All voltages are DC
- All polarized capacitors are aluminum electrolytic


2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

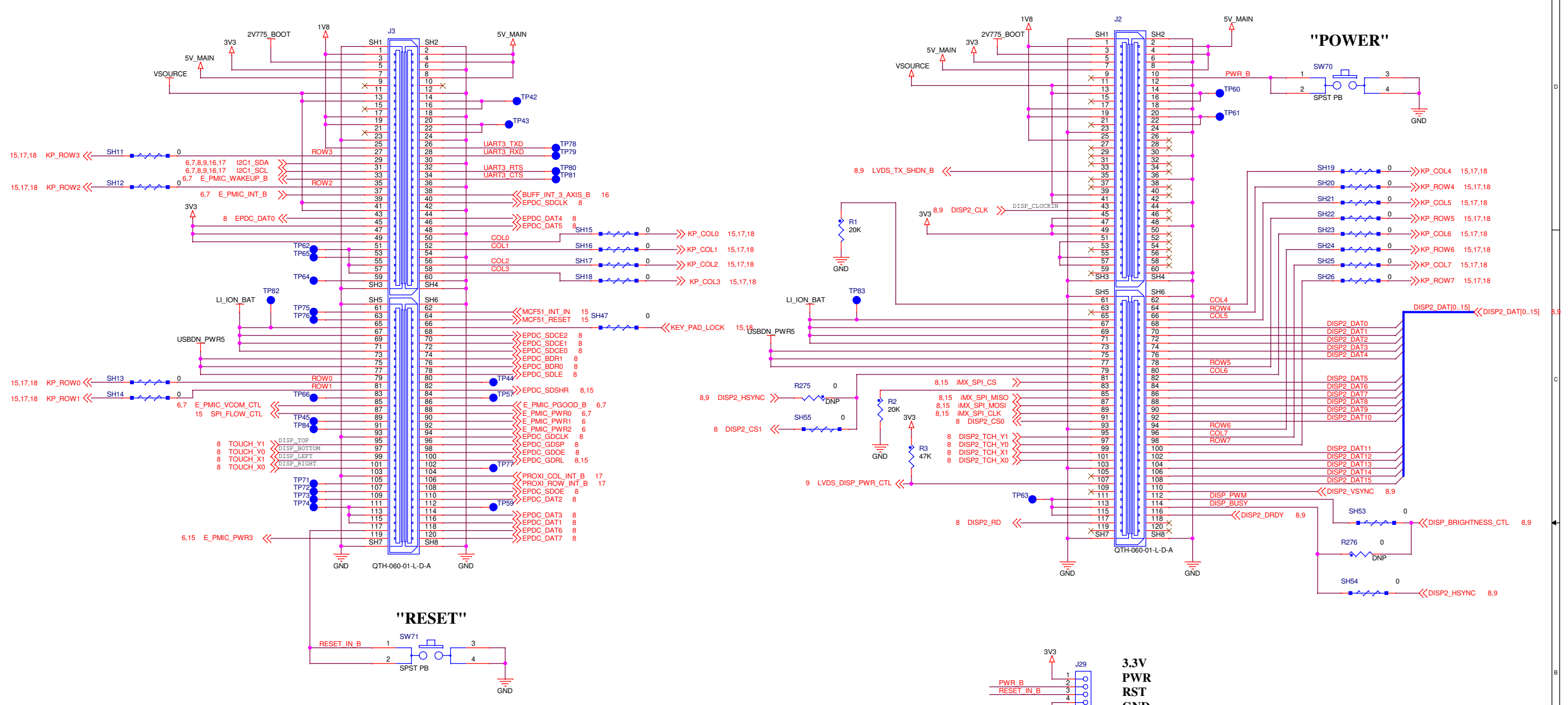
3. Device type number is for reference only. The number varies with the manufacturer.

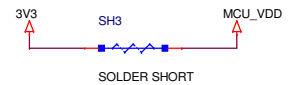
4. Special signal usage:

- \_B Denotes - Active-Low Signal
- <> or [] Denotes - Vectored Signals

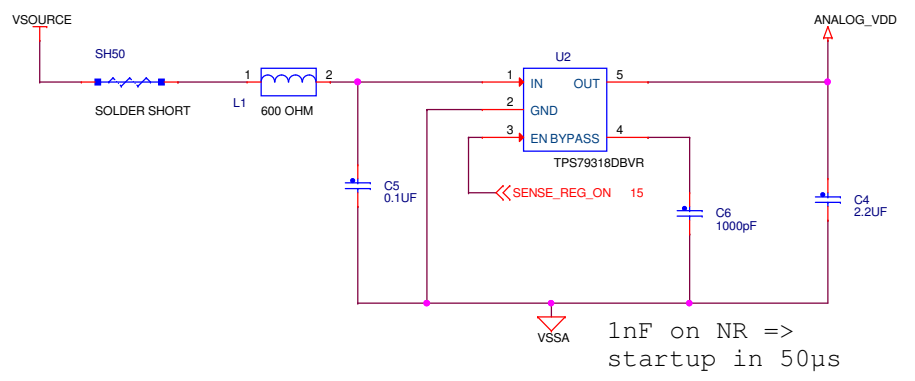
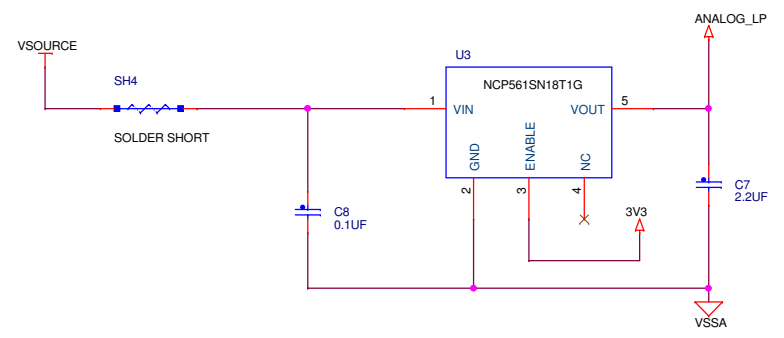
5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.

		
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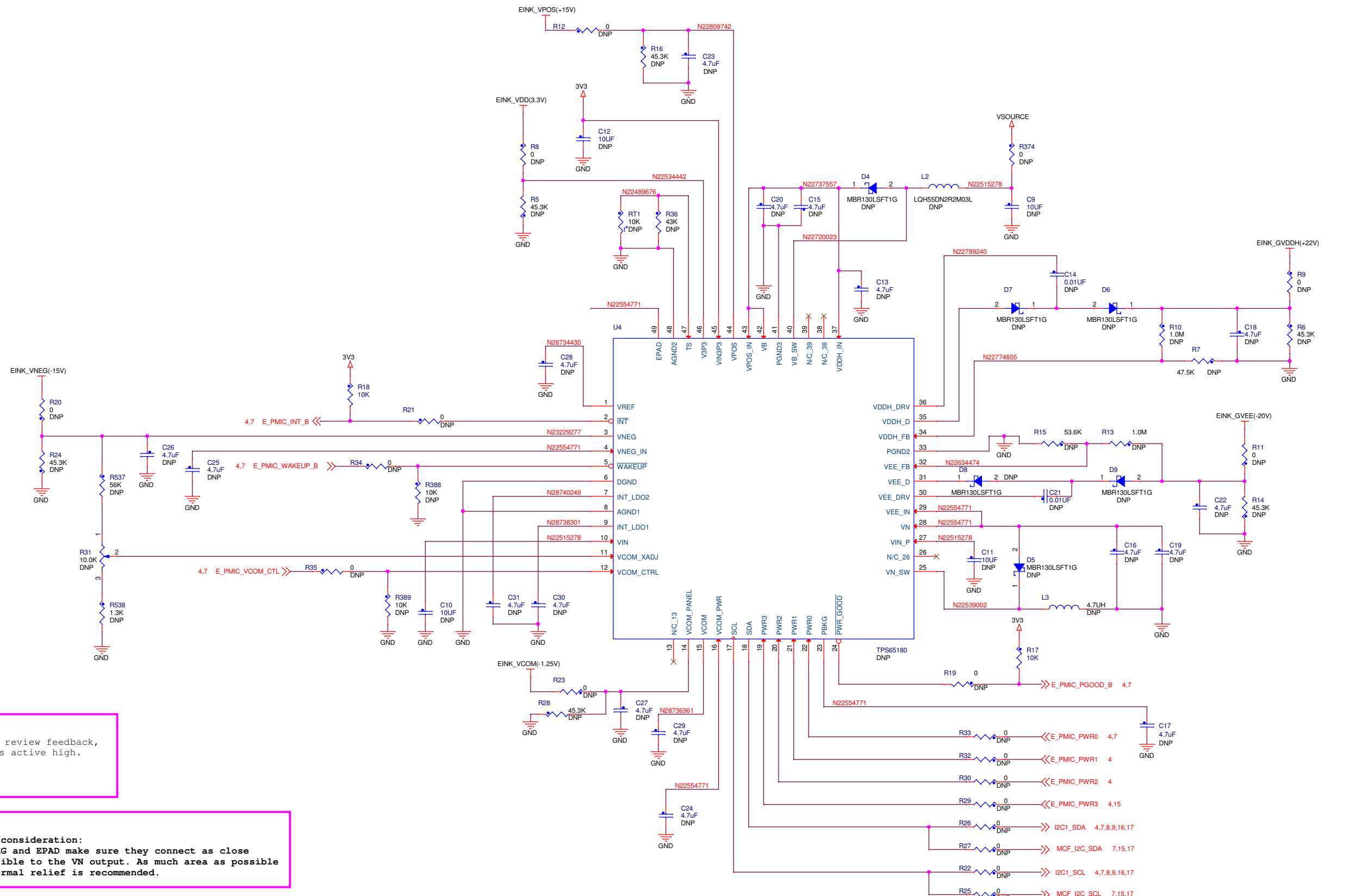


All Regulators are 3V3 Output



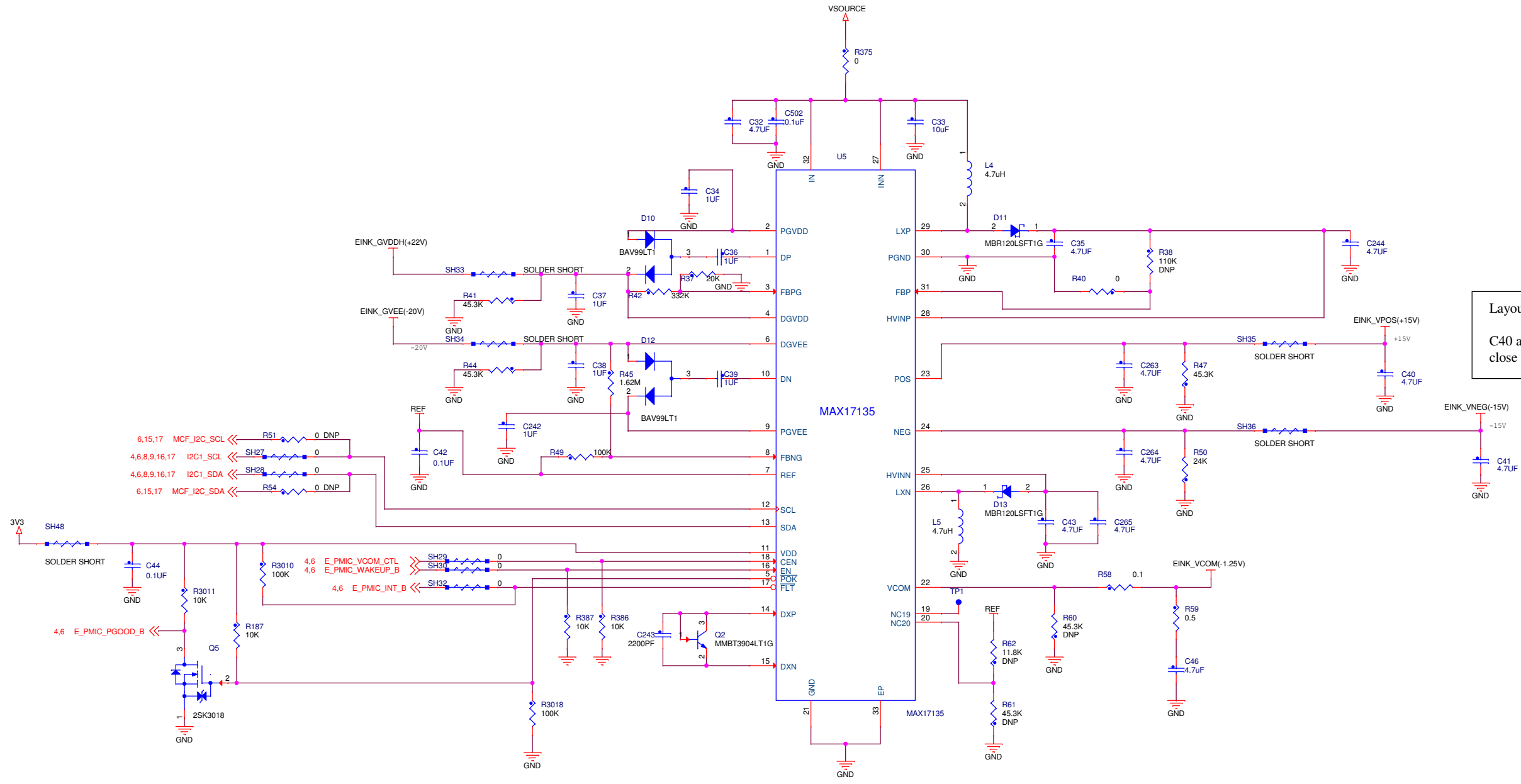
PSRR of the analog regulator has to be greater or equal to 70dB@10kHz

ANALOG\_VDD can be either 1.8V or 3.3V. So far, only 3.3V has been tested,



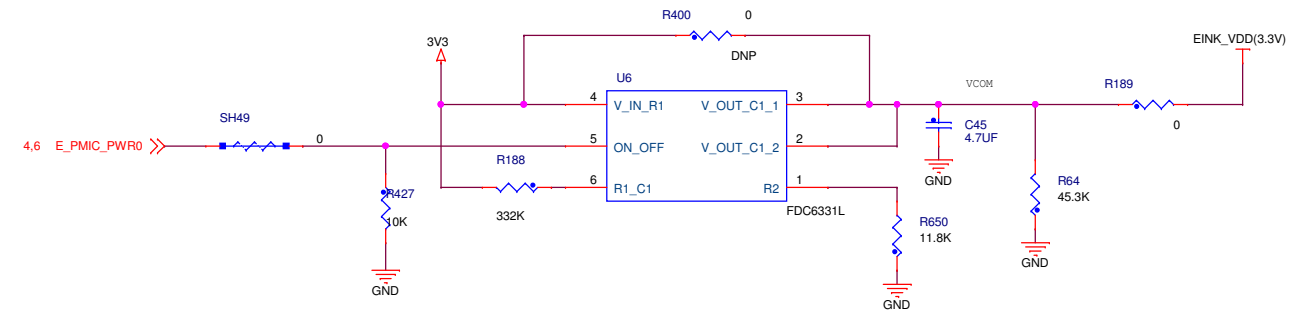
**Dec-25**  
 Per TI's review feedback, wakeup is active high.

**Dec-25**  
 Layout consideration:  
 For PBKG and EPAD make sure they connect as close as possible to the VN output. As much area as possible for thermal relief is recommended.

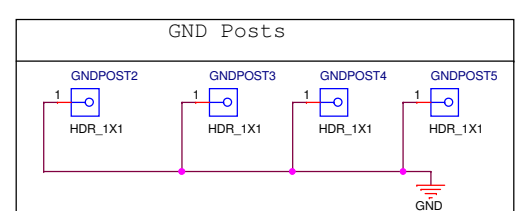
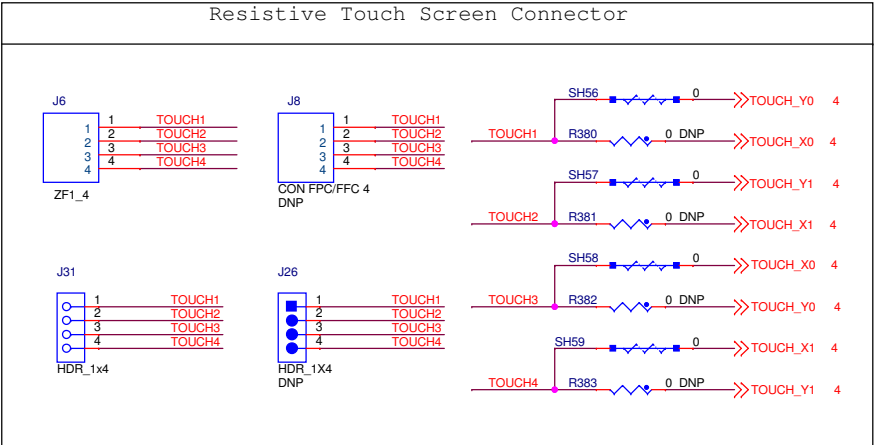
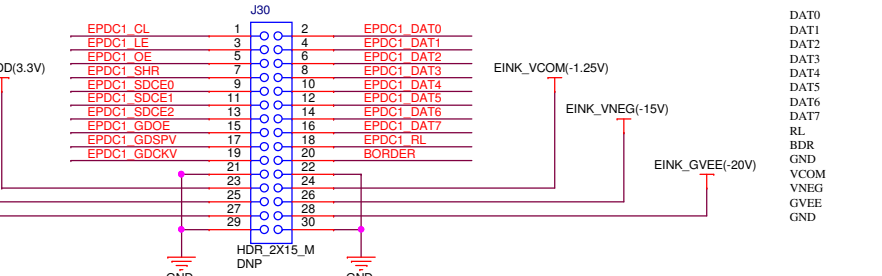
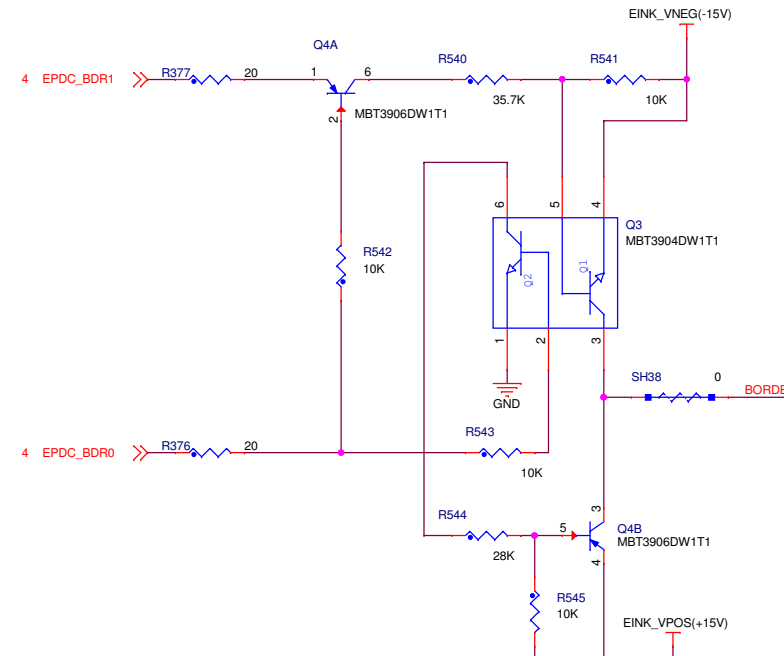
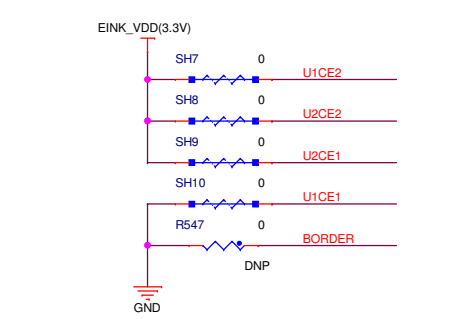
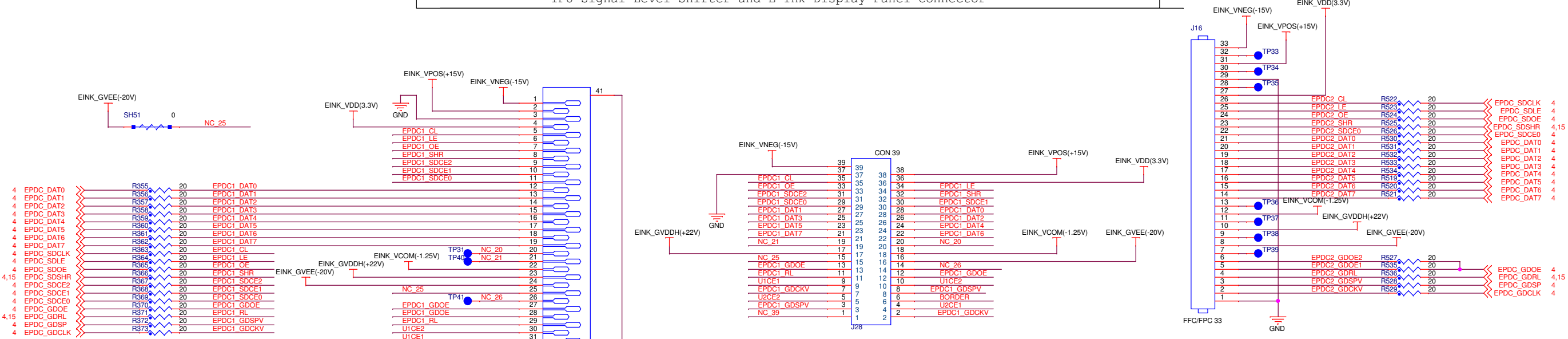


Layout Note:  
C40 and C41 should be placed close to connector J28.

NOTE:  
For MAX17135 E-PMIC\_WAKEUP\_B is ACTIVE\_HIGH.



IPU Signal Level Shifter and E-Ink Display Panel Connector

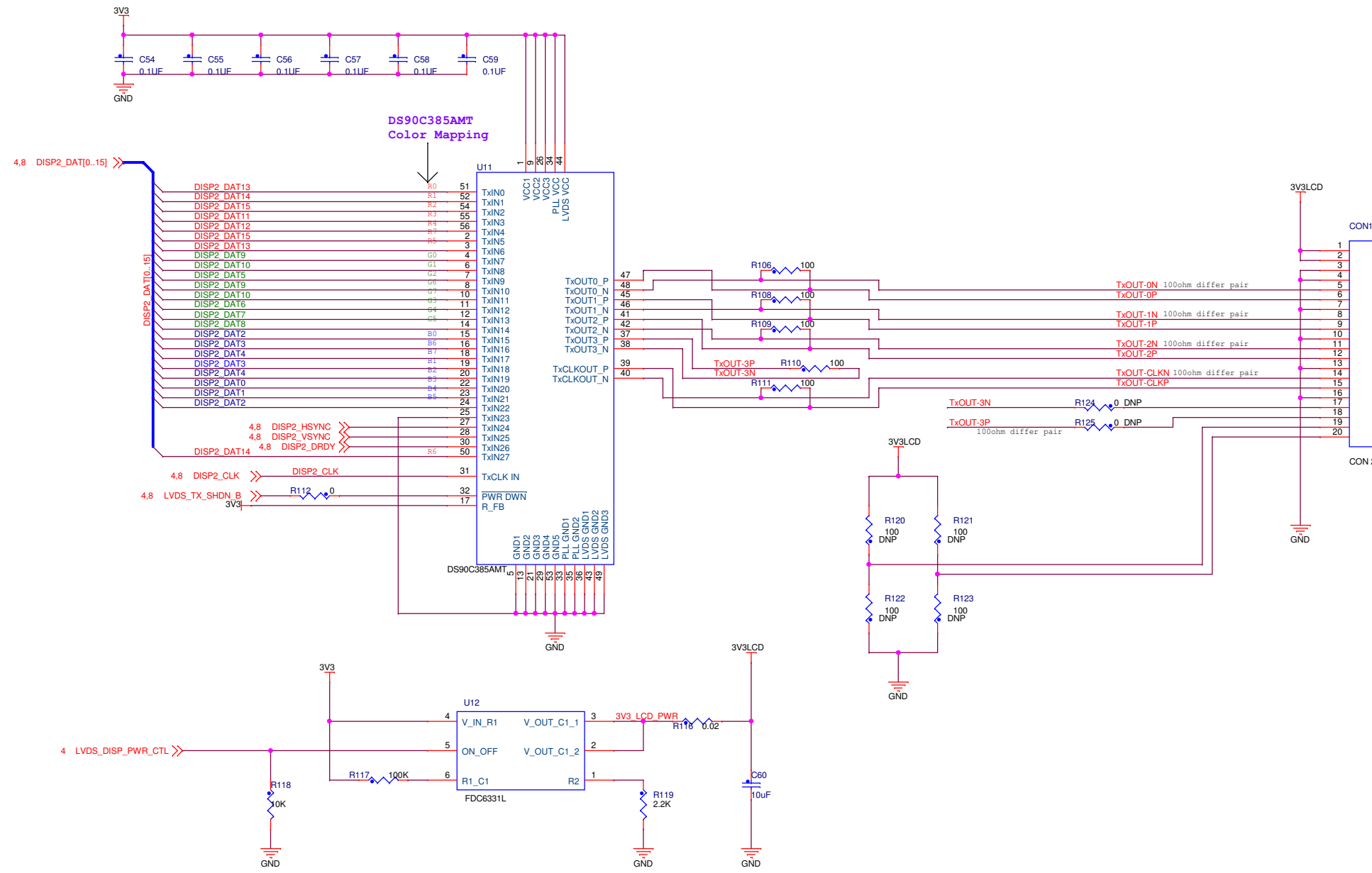


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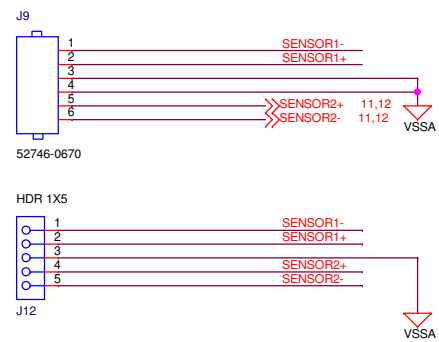
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Drawing Title: **MX51-EVK Based E-Book add-on Board**  
Page Title: **Level Shifters and E-Ink Display**

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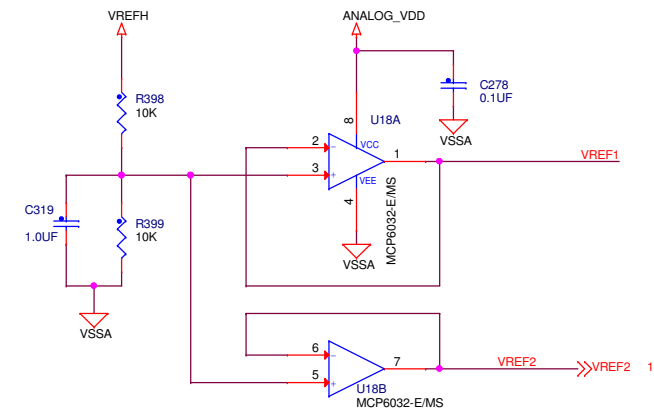




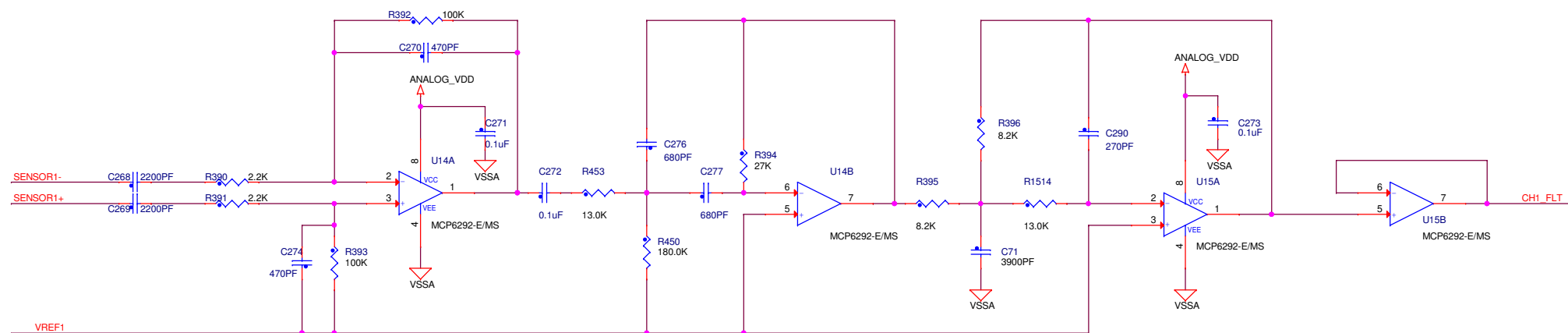
Acoustic Sensor Connectors



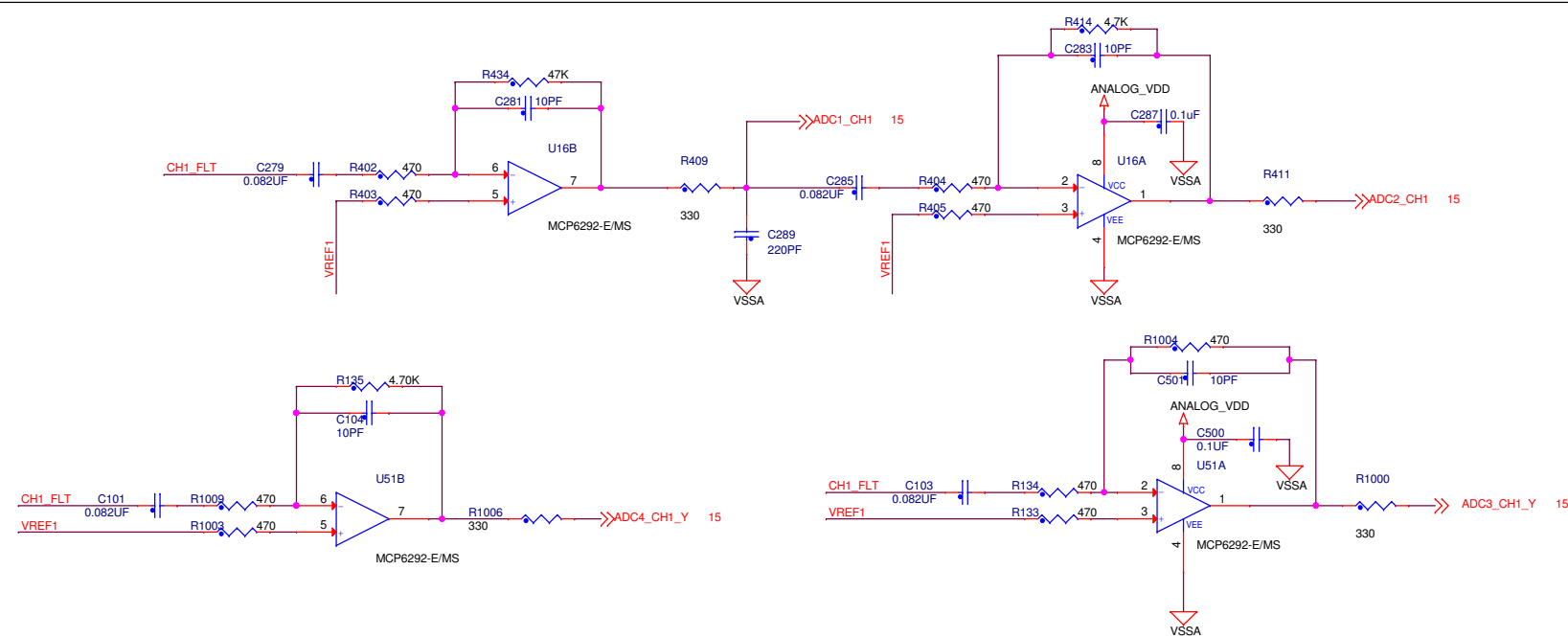
VREF1 and VREF2 Generator



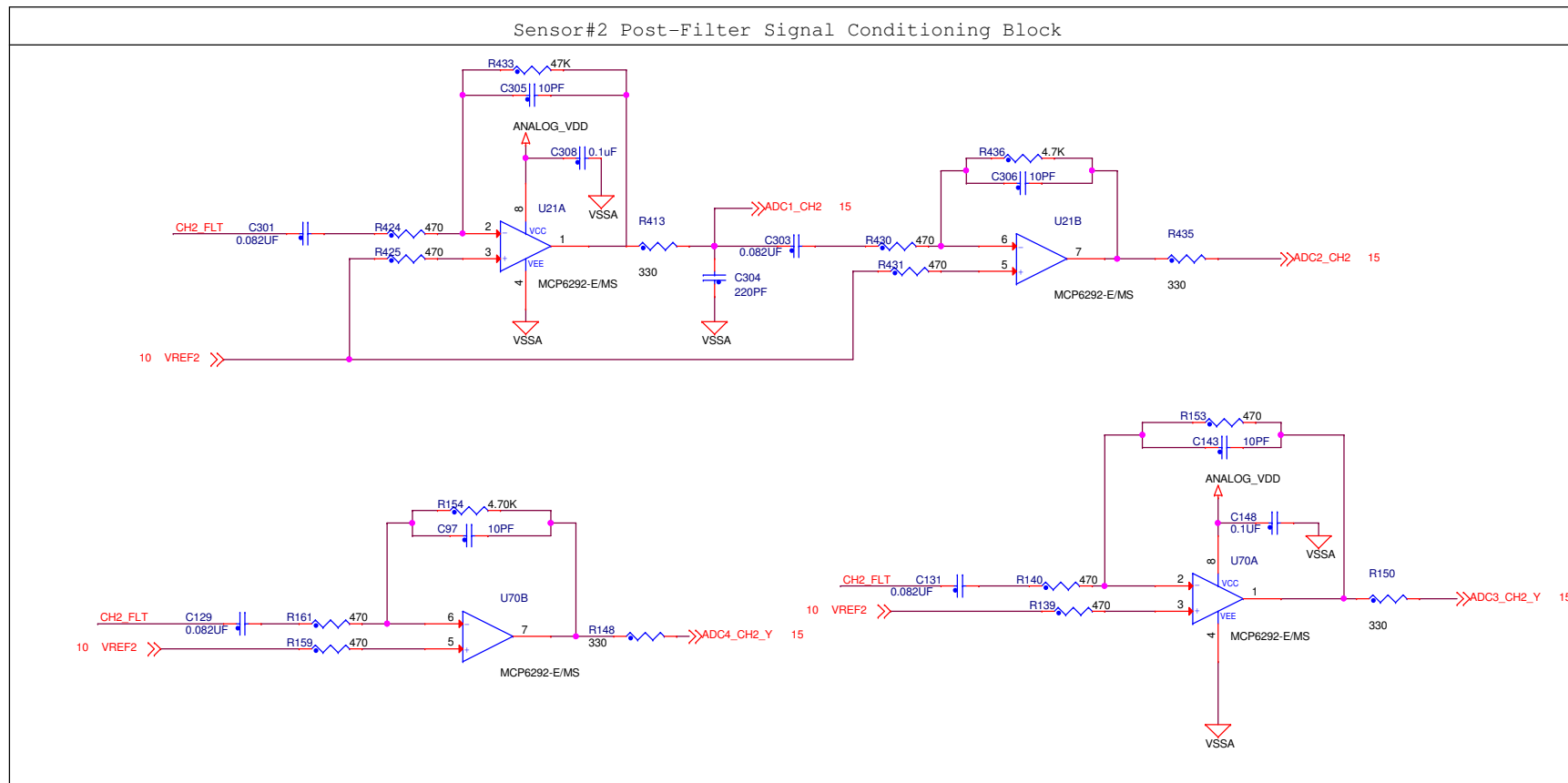
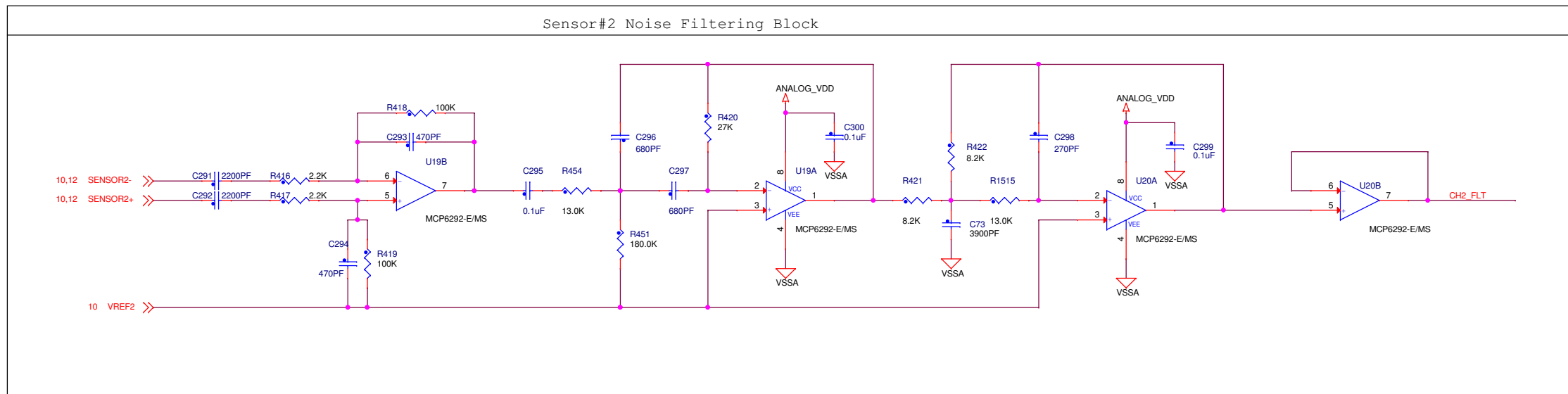
Sensor#1 Noise Filtering Block



Sensor#1 Post-Filter Signal Conditioning Block

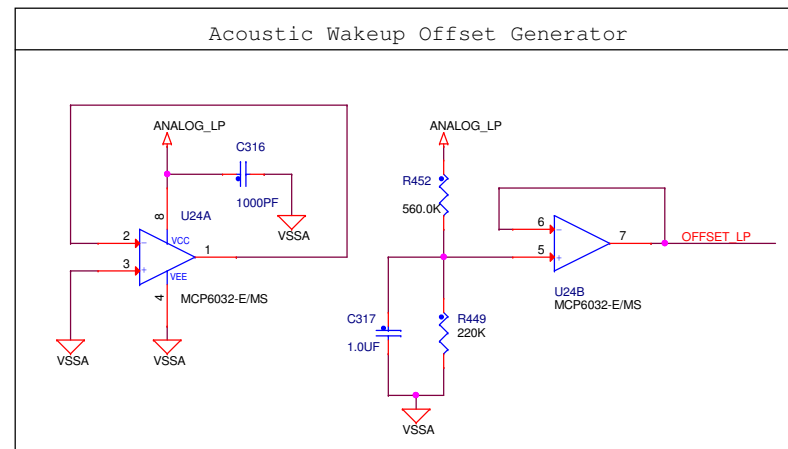
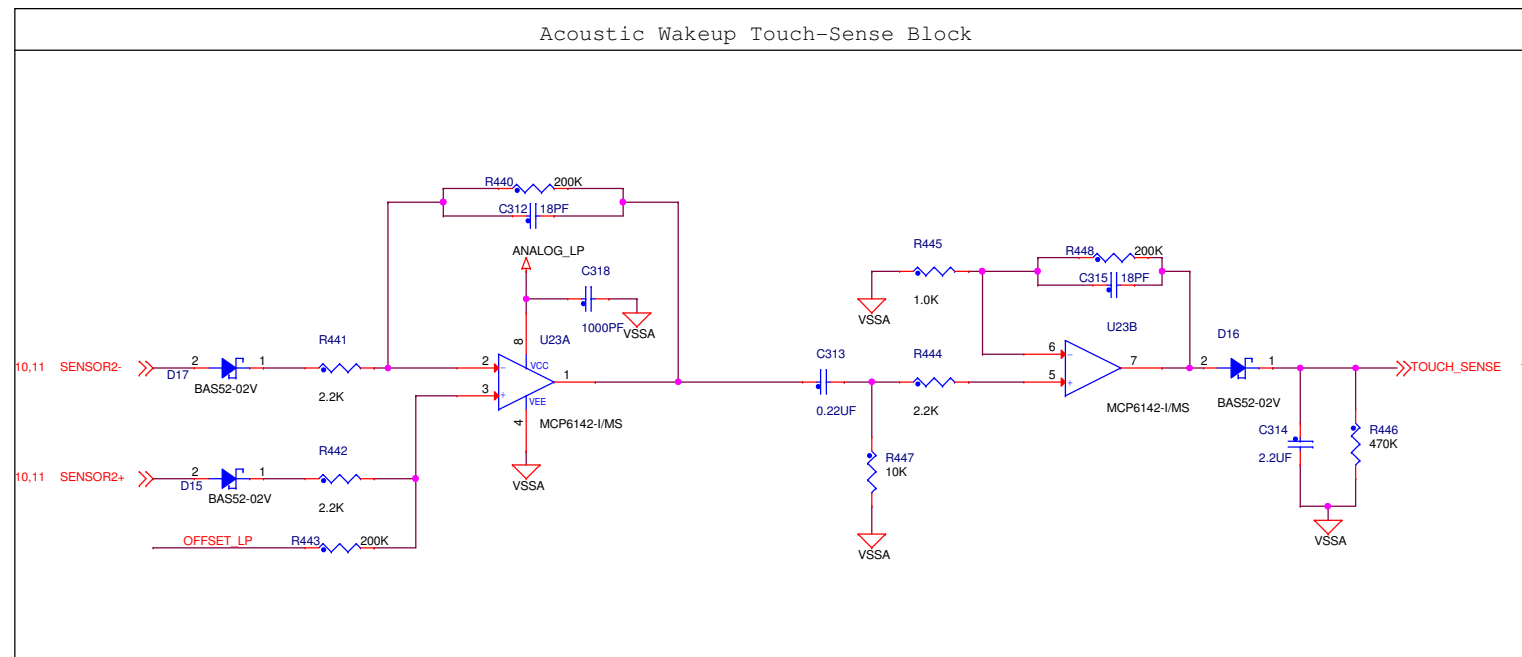


ICAP Classification: FCP: _____ FILE: X PUBI: _____		
Drawing Title: <b>MX51-EVK Based E-Book add-on Board</b>		
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OPAMPS on the amplification / Filtering path (MCP6292) can be changed, provided they meet the following requirements :

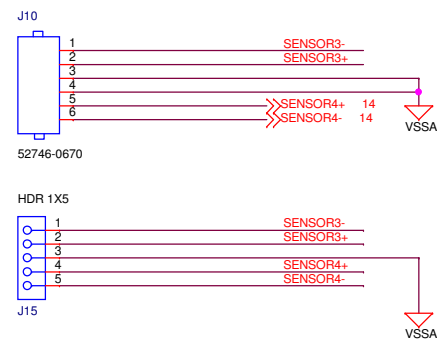
- \* GBWP > 10MHz
- \* noise density < 10 nV/rt(Hz)



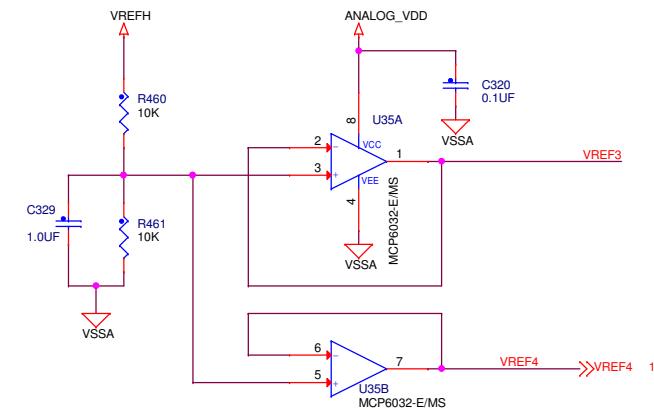
OPAMPS on the wakeup path (MCP6142) can be changed, provided they meet the following requirements :

- \* GBWP > 100kHz
- \* quiescent current < 1µA

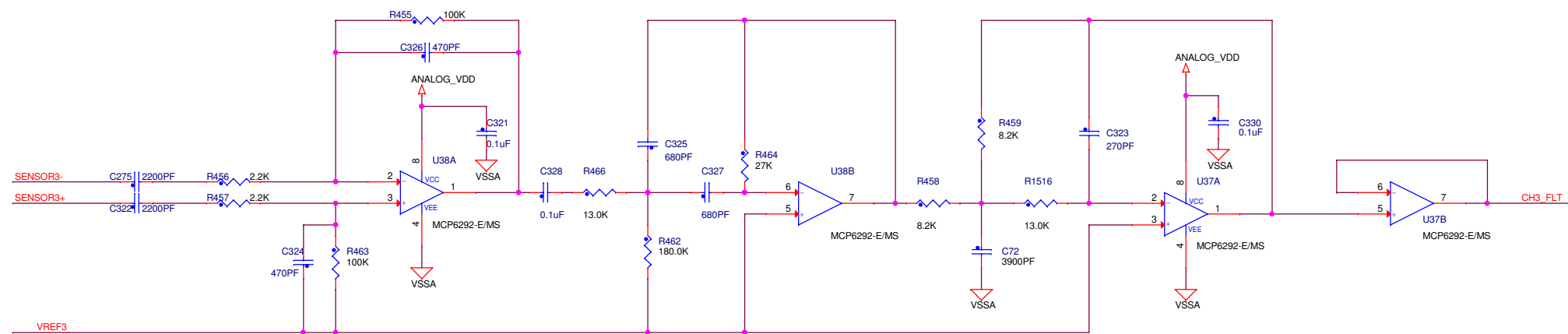
Acoustic Sensor Connectors



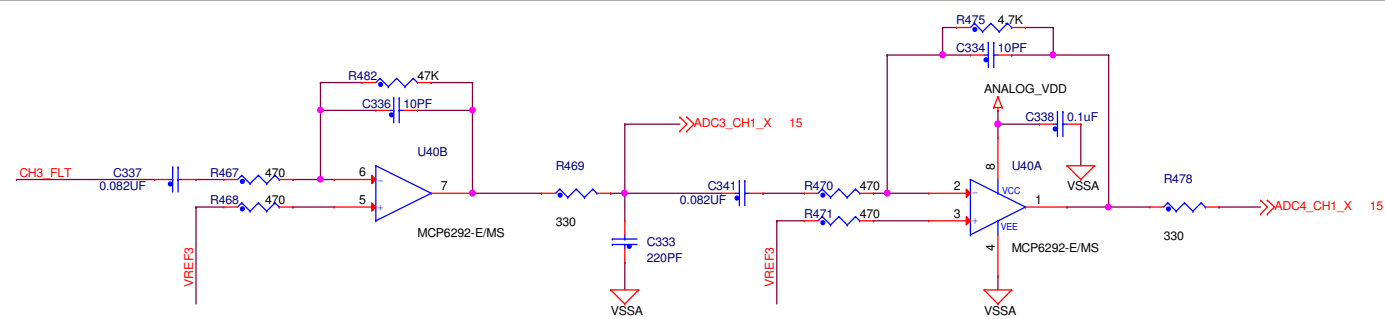
VREF3 and VREF4 Generator



Sensor#3 Noise Filtering Block



Sensor#3 Post-Filter Signal Conditioning Block



ICAP Classification: FCP: FILU: X PUBI:

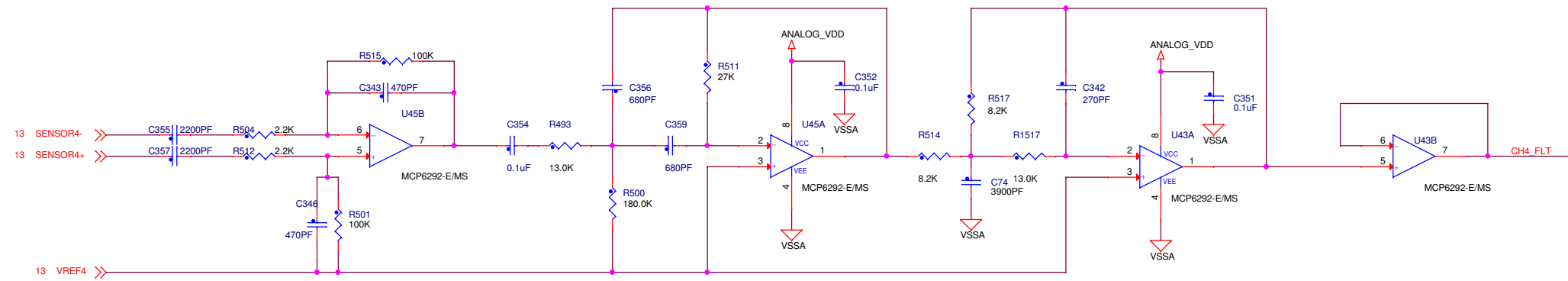
Drawing Title: **MX51-EVK Based E-Bok add-on Board**

Page Title: **Acoustic Sig-Conditioner D**

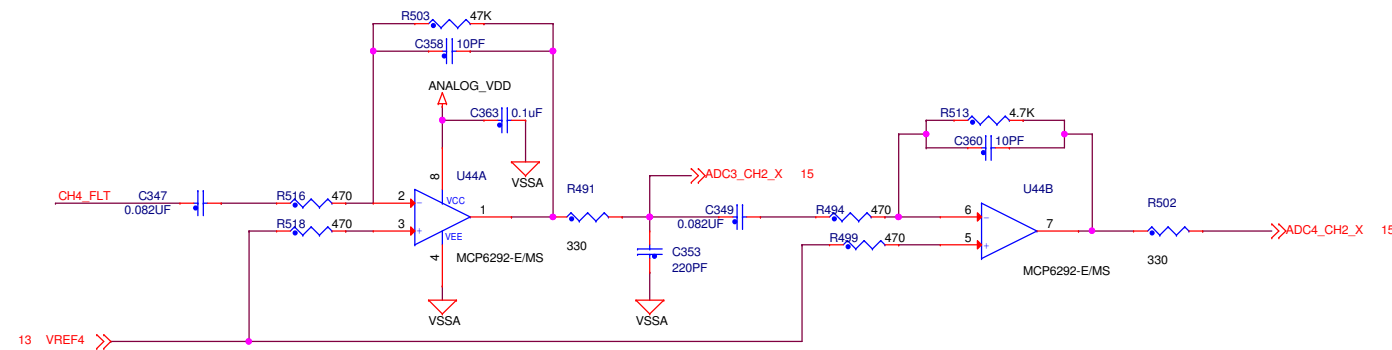
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Sensor#4 Noise Filtering Block

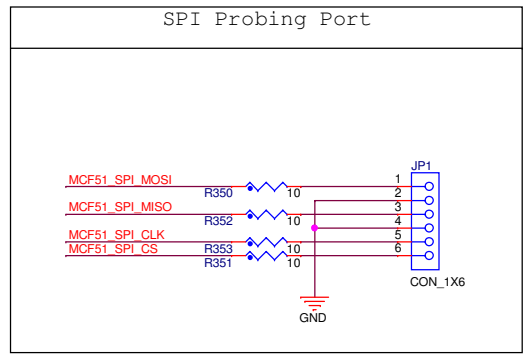
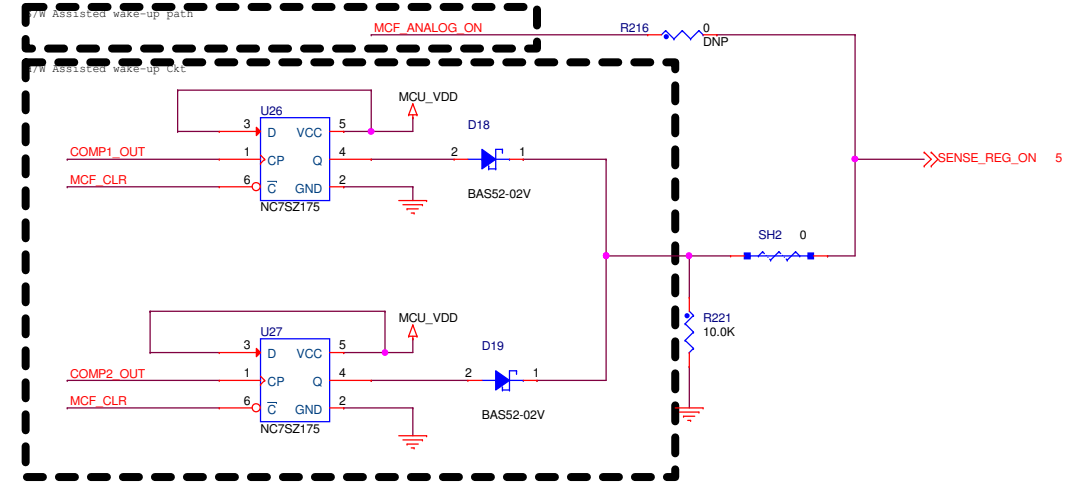
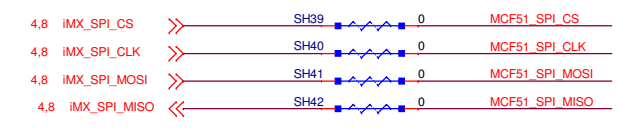
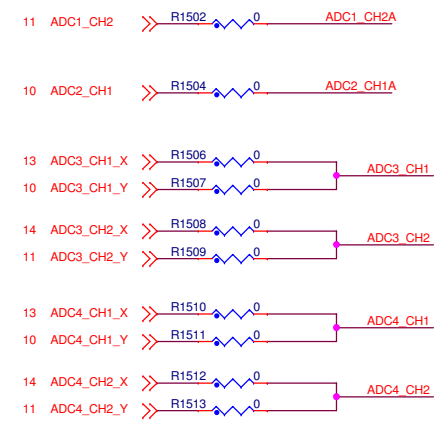
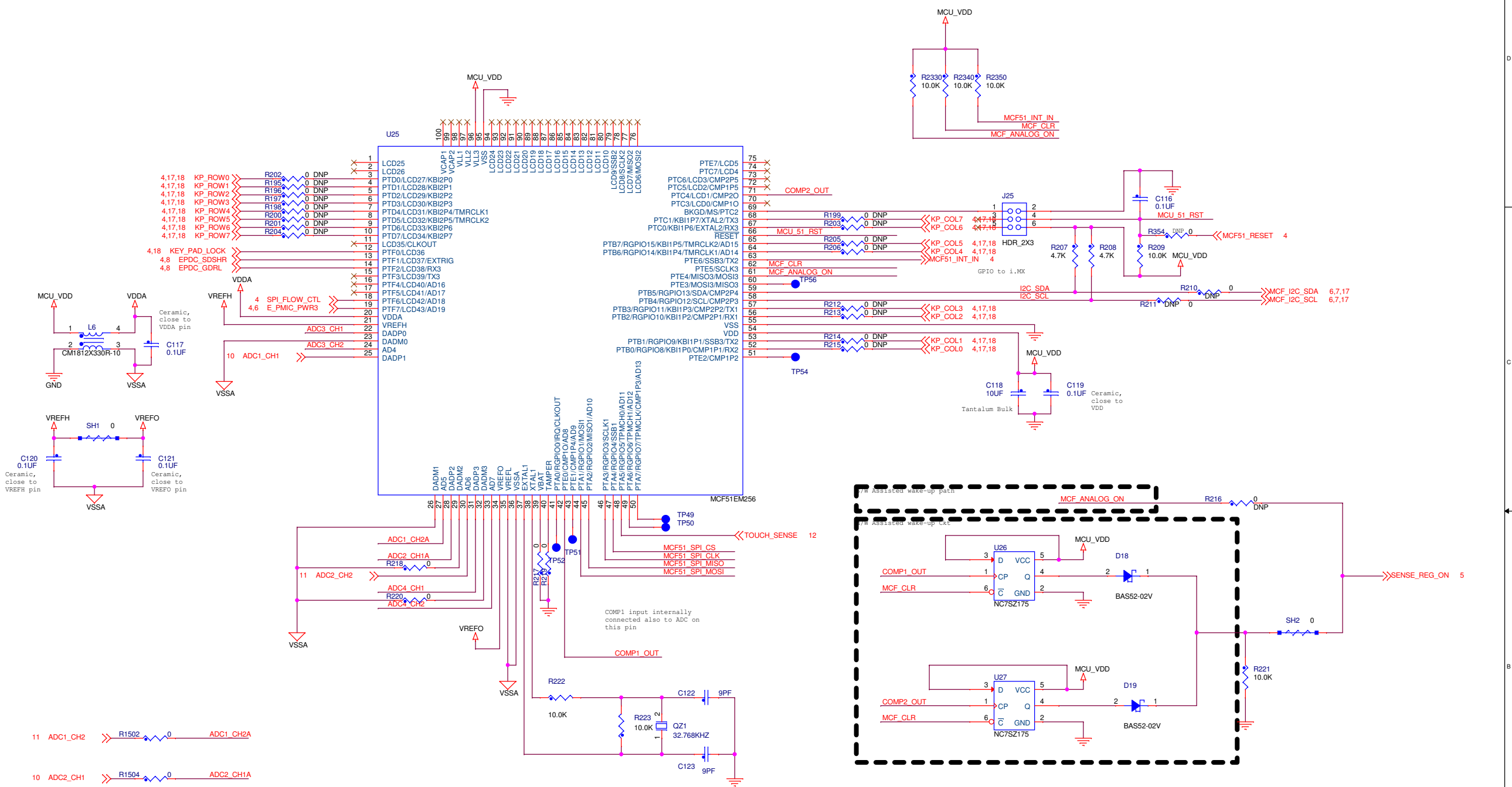


Sensor#4 Post-Filter Signal Conditioning Block



OPAMPS on the amplification / Filtering path (MCP6292) can be changed, provided they meet the following requirements :

- \* GBWP > 10MHz
- \* noise density < 10 nV/rt(Hz)



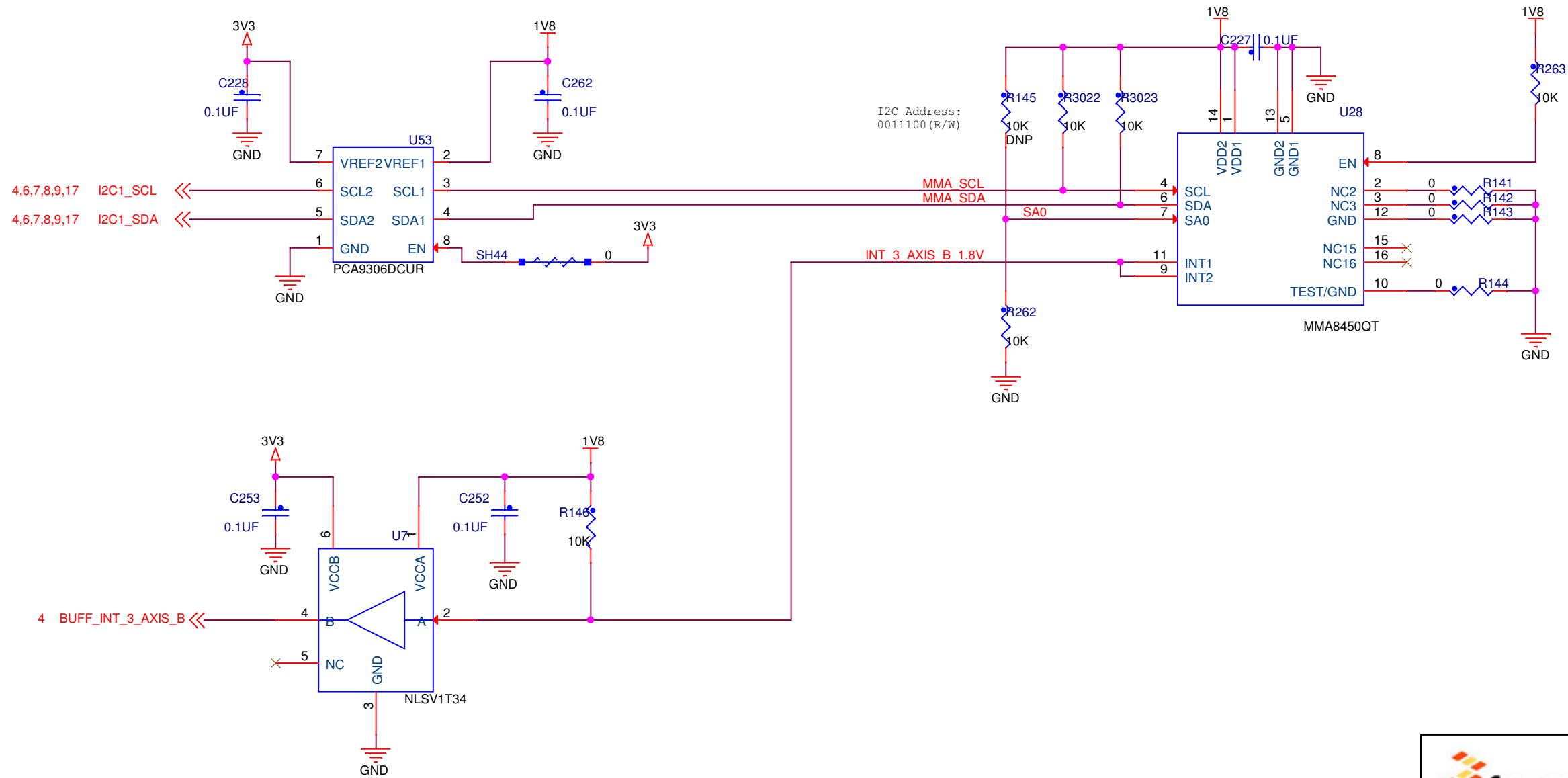
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3-Axis Orientation Sensor



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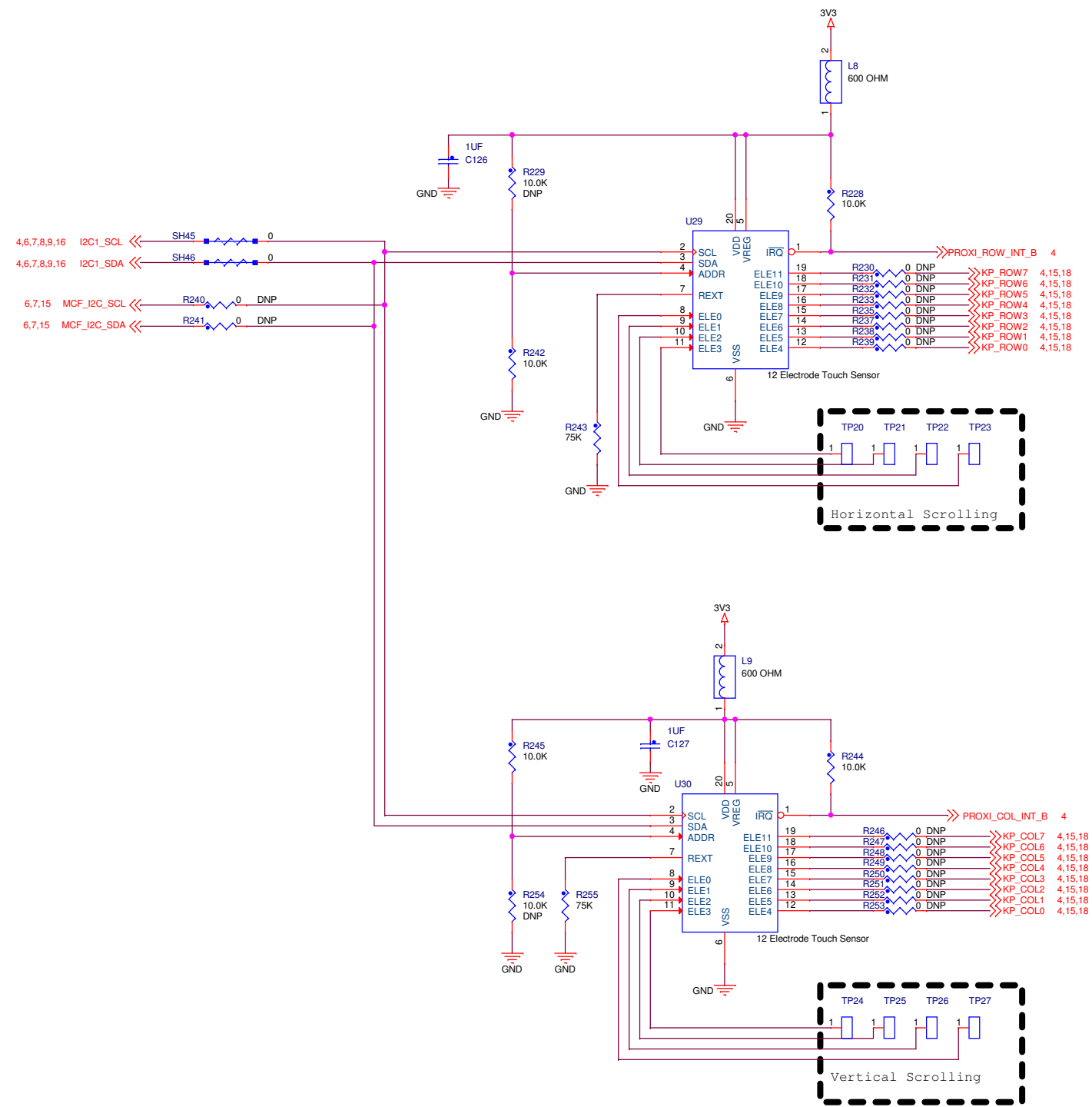
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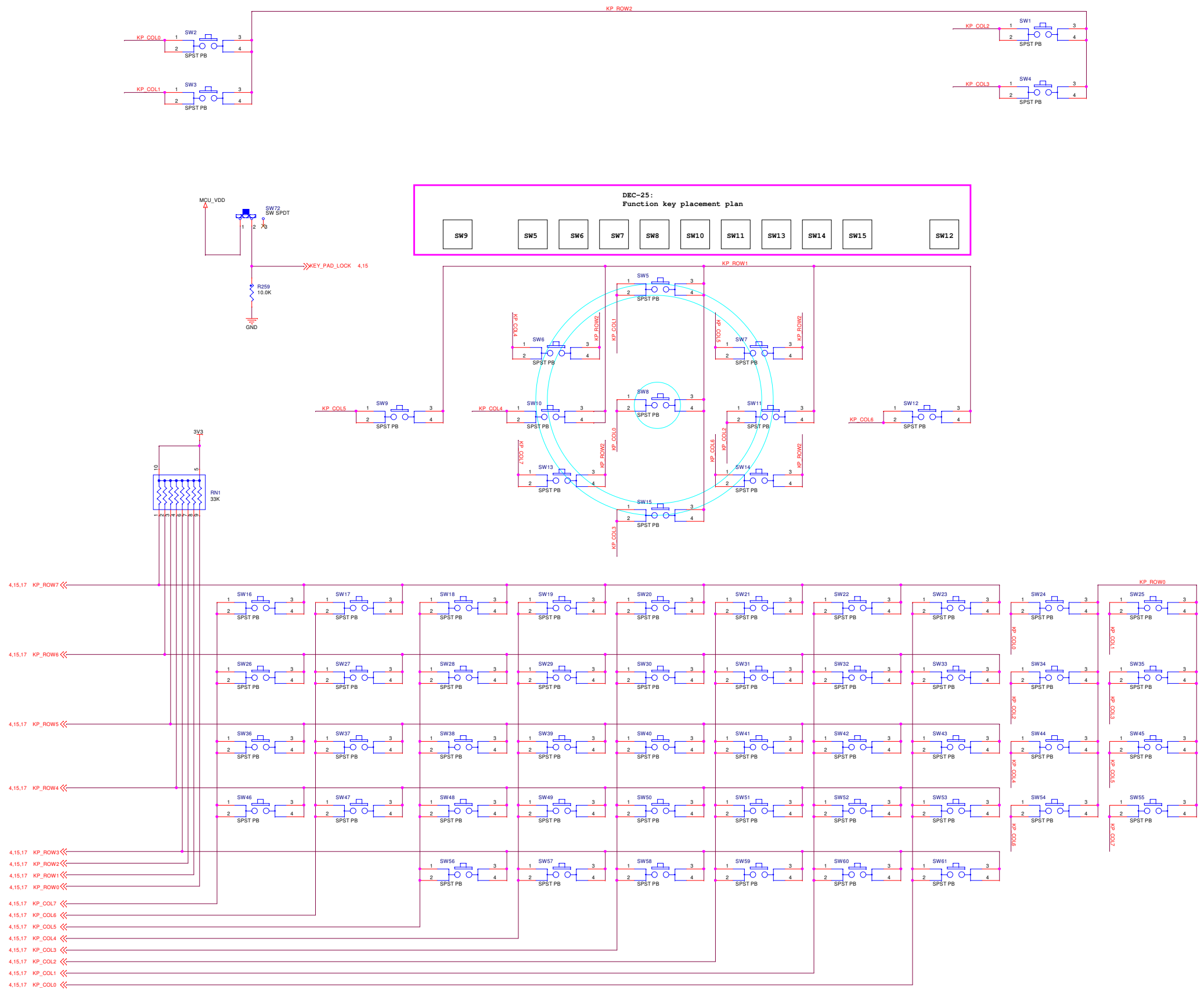
Page Title: **3-Axis Sensor**

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Capacitive Proximity Sensors





**Dec-25-2009:**

1. Provided missing GND connection to J3.
2. Included DISP1 signals on J3 as a jumper based connection backup plan due to connector overlap issue
3. Per TI's review feedback, RT1 should be 10K. Suggested part is NCP18XH103F03RB from Murata. matching part not found in FCL. Need follow up.
4. Added note to indicate that the WAKEUP for TI PMIC is active HIGH per TI's input.
5. Added TI's specific layout note.
6. Added 1uF cap between PGVVEE and GND. (Maxim FB)
7. R61 and R62 are DNP (Per maxim FB)
8. D14 removed on Maxim PMIC page. Replaced by Q2 per Maxim's FB.
9. Added R258 per Maxim FB.
10. Made R51 to R58, all 0-ohm
11. Changed R49 connection per Maxim.
12. Changed the value of R45 and R49 per Maxim.
13. Added function key placement plan. Circular touch plan will not be implemented.

**Dec-26-2009:**

1. Added key lock slide switch. KEY\_LOCK\_A and KEY-LOCK\_B should be connected to the poles of DIP\_SW10 on Babbage.
2. Changed R148 and R149 to 10K to minimize power loss.
3. Corrected acoustic sensor#1 signal conditioning errors which had surfaced due to different schematic symbol creation by the FCL team.
4. Corrected acoustic sensor#2 signal conditioning errors which had surfaced due to different schematic symbol creation by the FCL team.
5. Corrected acoustic wakeup sense signal conditioning errors which had surfaced due to different schematic symbol creation by the FCL team.
6. Corrected main power connection error with the linear regulators.
7. Corrected the value of R22 and R26.

**Jan-05-2010:**

1. Added R268 and R269 for the power rail voltage selection option for the bi-directional buffer
2. Added R274, R275, R348 and R349; all 0-ohm resistors on the SPI interface lines.
3. Added R250, R251, R252 and R253 as well as JP1 per SO's request.
4. J9 is now a 6-pin FPC connector per SO's requirement
5. Added test points TP29, TP30, TP31 and TP32 to the unconnected pins of the eInk connector.
6. Added GND posts 1 through 5 for GND hook connection.

**Jan-08-2010:**

1. Connected J3 pins : 6, 12, 18, 24, 23, 30, 36, 42, 48 and 60 to GND for MX51 EVK compatability.
2. Connected J3 pins : 93 and 103 to GND for MX51-EVK compatability. Display data lines connected to these pins are moved to pins 57 and 61 respectively.
3. Added header J12 per SO's requirement
4. signal mapping on acoustic sensor changed as per SO's requirement
5. Removed test-points TP16, 17, 18 and TP19
6. C71 was changed to 3900pF and FP changed to 0603
7. C110 was removed
8. Value and connection scheme of R188 was changed
9. Connection scheme of R185 and R187 was changed
10. changed the capacitor voltage rating connected with PMIC-A
11. Added R354 for MCF-51 RESET option from i.MX51
12. Adjusted connection wiring for the capacitive sensors due to symbol change

**Jan-09-2010:**

1. Added R355 to R370 (20-0hm) to display data line connecting to e-Ink connector to minimize reflection related issues.
2. Provided missing GND node to the ground posts.

**Jan-11-2010:**


1. Following display-1 port signals were remapped to different pins of J3: DISP1\_DAT13, 12, 15, 14, 10, 9, 19

**March-16- 2010**

1. Removed 3V3LCD net from J3
2. Added R371, R372 and R373 in Power Management page
3. Added R374, R388, R389, R537, R538 in E-INK PMIC A page
4. Added R375, R387, R386, R400, R427, R397, R3018 E-INK PMIC B page
5. Replaced DISP2\_DAT8 net name with DISP2\_DRDY, Added R349, J13, J14, Disconnected U8.37, U8.12, U8.29, U8.27, U8.26, U8.20, U8.22, U8.23.
- Added U52, Added J26, removed J7 from level Shifters and E-Ink Display page
6. Changed all components to 0603 on Accoustic sig-conditioner-A,B,C,D,E pages
7. Added Accoustic sig-conditioner-C and Accoustic sig-conditioner-D pages
8. Added choices for ADC3\_CH1, ADC3\_CH2, ADC4\_CH1, ADC4\_CH2. Swapped connections between ADC3\_CH1, ADC1\_CH1 and ADC2\_CH1 WRT U25
9. Added TP52, TP51, TP50, TP49, TP56, TP54. Added offpage connectors for nets MCF\_SPI\_CTL1, MCF\_SPI\_CTL2 and SPI\_FLOW\_CTL, E\_PMIC\_PWR3
10. Added missing net from SW5 to ROW1
11. Added J16, J17 and J18

**June-22-2010:**

1. Updated block diagram to match i.MX508 EVK Connectors.
2. Deleted J9. Not used on i.MX508 EVK
3. Reconfigured J2 and J3 signals to match i.MX508 EVK.
4. Added Reset (SW71) and Power (SW70) buttons.
5. Added Remote Operation Header J29 for PWR/RST.
6. Deleted U1 as Unnecessary.
7. DNP all components on TI PMIC page. TI is optional PMIC.
8. RT1 changed to 10K per TI feedback.
9. Changed R38 to 110K/DNP and R40 to 0 Ohm per Maxim.
10. Removed E-Ink Display level shifters U44, U47 and U52-U54 as unnecessary. Also deleted DISP1/DISP2 resistor bank option.
11. Add LCD Expansion port option.
12. Per E-Ink, added Border signal control circuit.
13. Added test point HDR (J30) for E-Ink signals
14. Added Top Contact Connector J28 for easier display mounting.
15. DNP all Row/Column traces to U25. No longer primary.
16. Changed accelerometer (U28) to MMA8450QT. Added level shifters U7 and U53 to support.
17. DNP all Row/Column traces to U29/U30, Touch Sensors. No longer primary.
18. Deleted Misc Exp Header.

		
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