

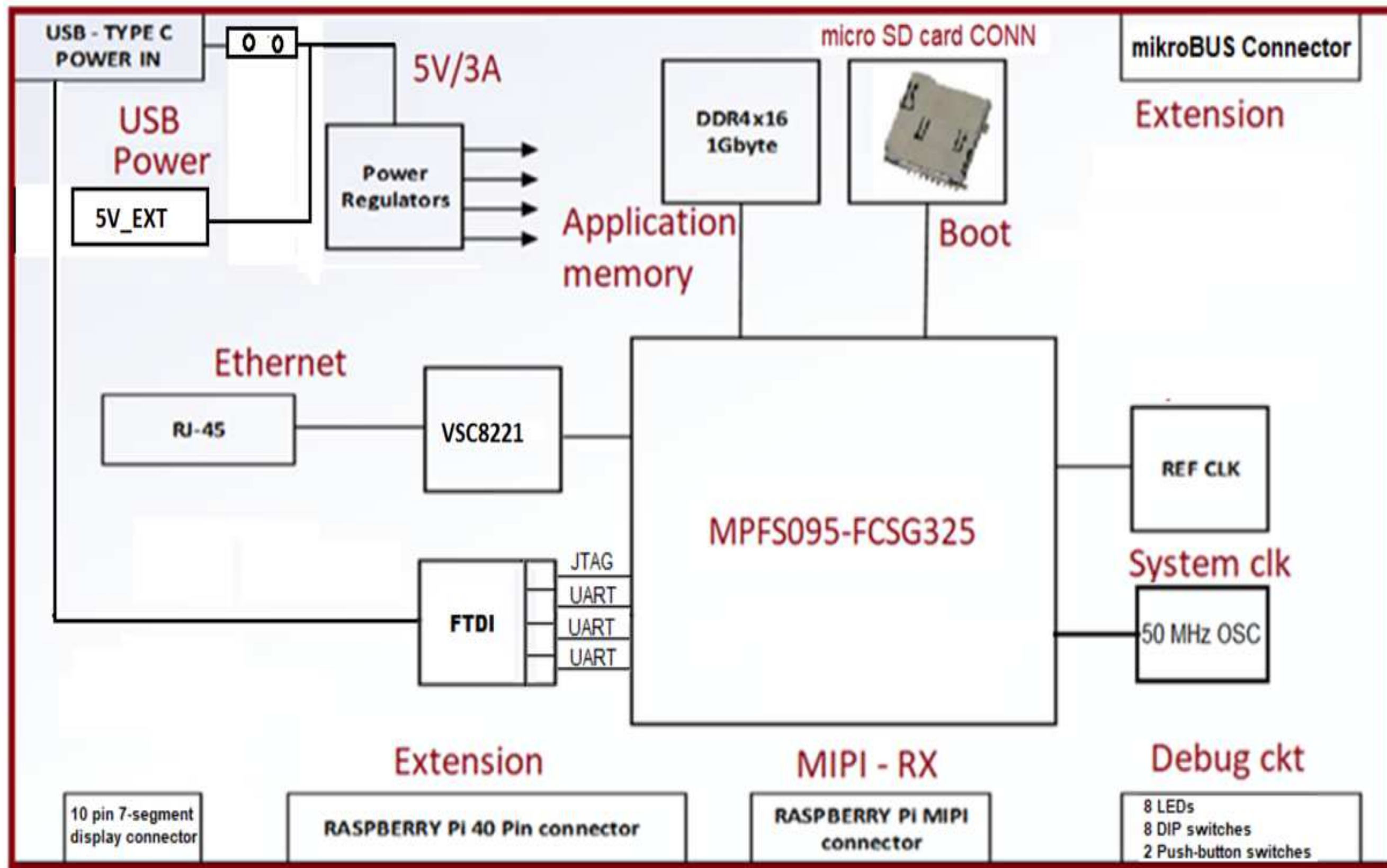
# PolarFire SoC Discovery Kit

Part Number: MPFS-DISCO-KIT

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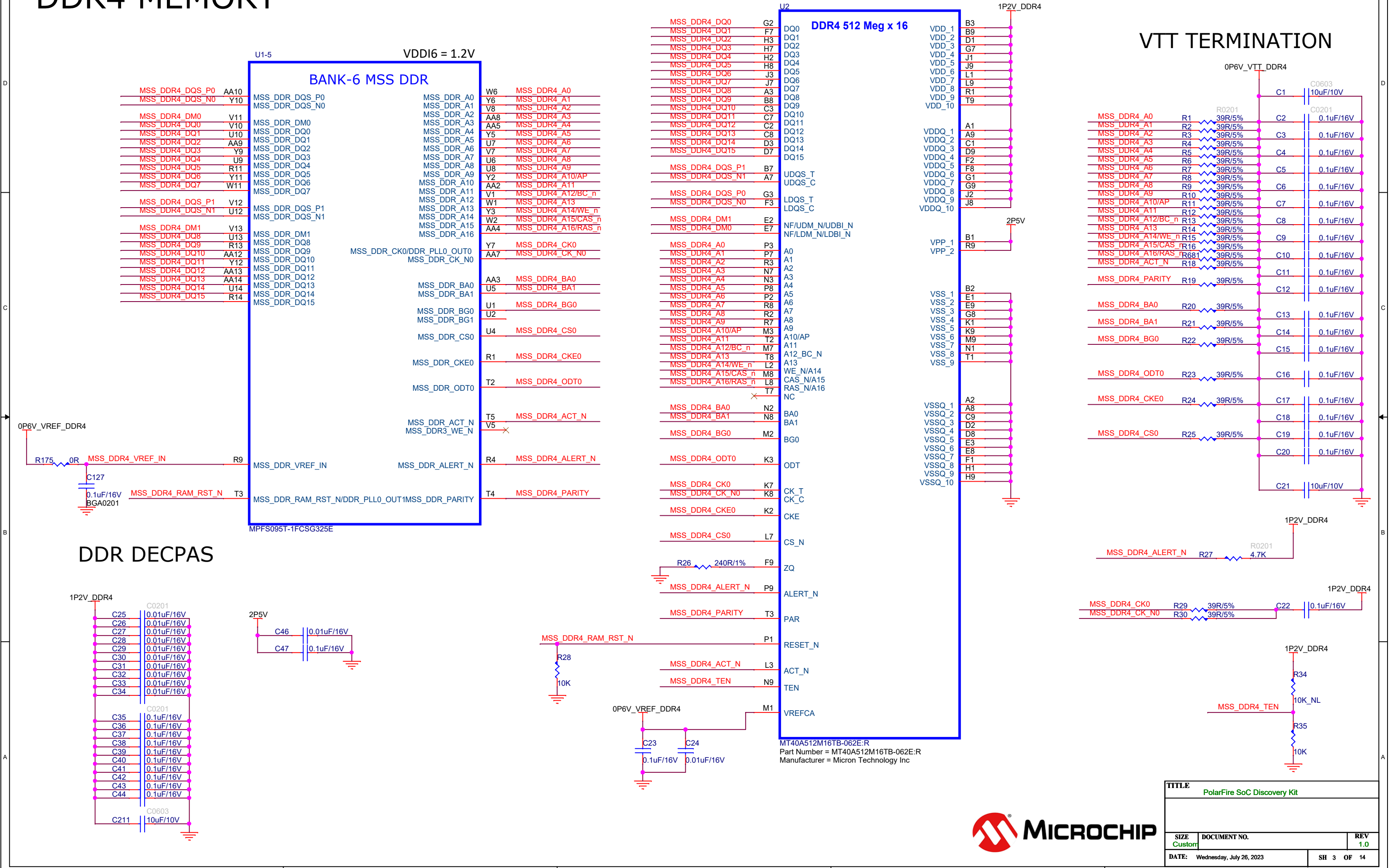


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| Project Name: |              |                          | PolarFire SoC Discovery Kit |          |       |
| Rev           | Part Number: | DVP-100-000578-002       |                             | PACTRON: |       |
| 1.0           |              |                          |                             |          |       |
| Originator:   |              |                          |                             |          |       |
| Size          | Date:        | Wednesday, July 26, 2023 |                             |          | Sheet |
| B             |              |                          |                             | 1        | of 14 |



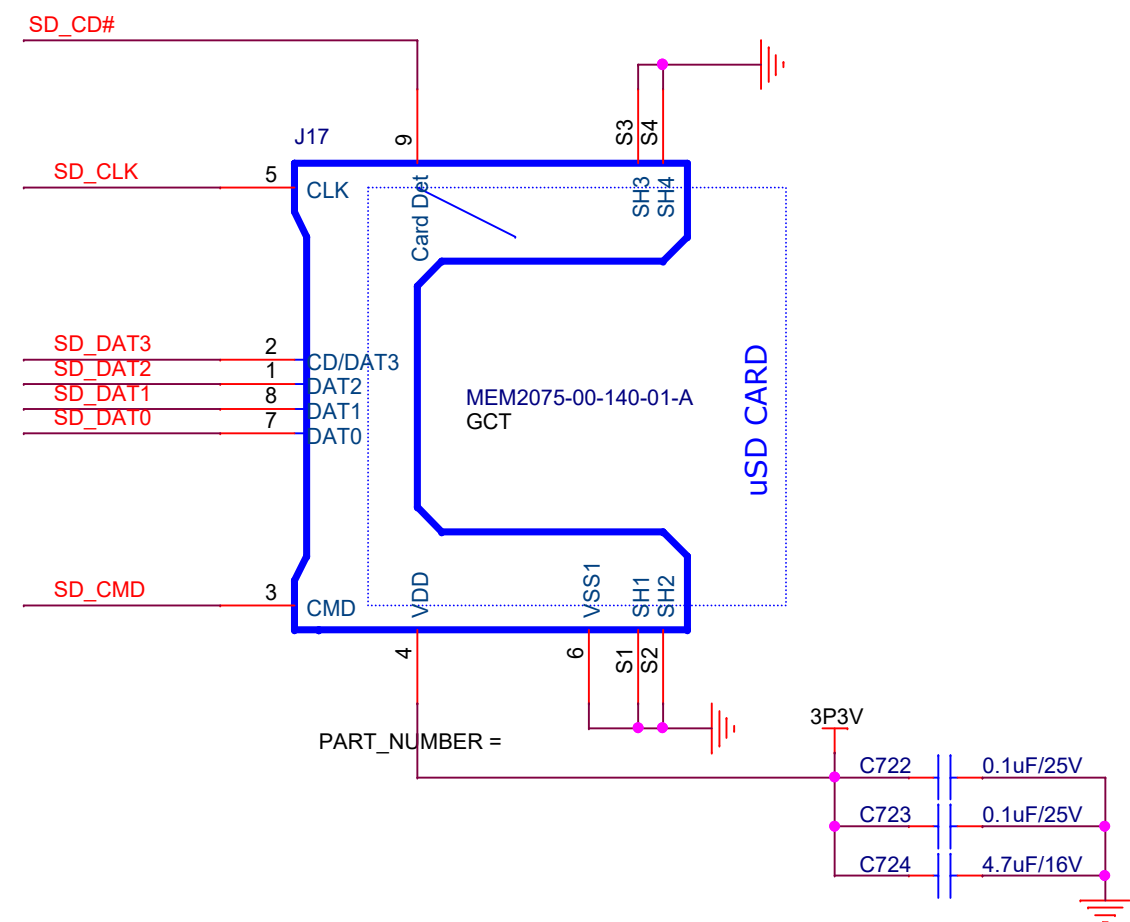
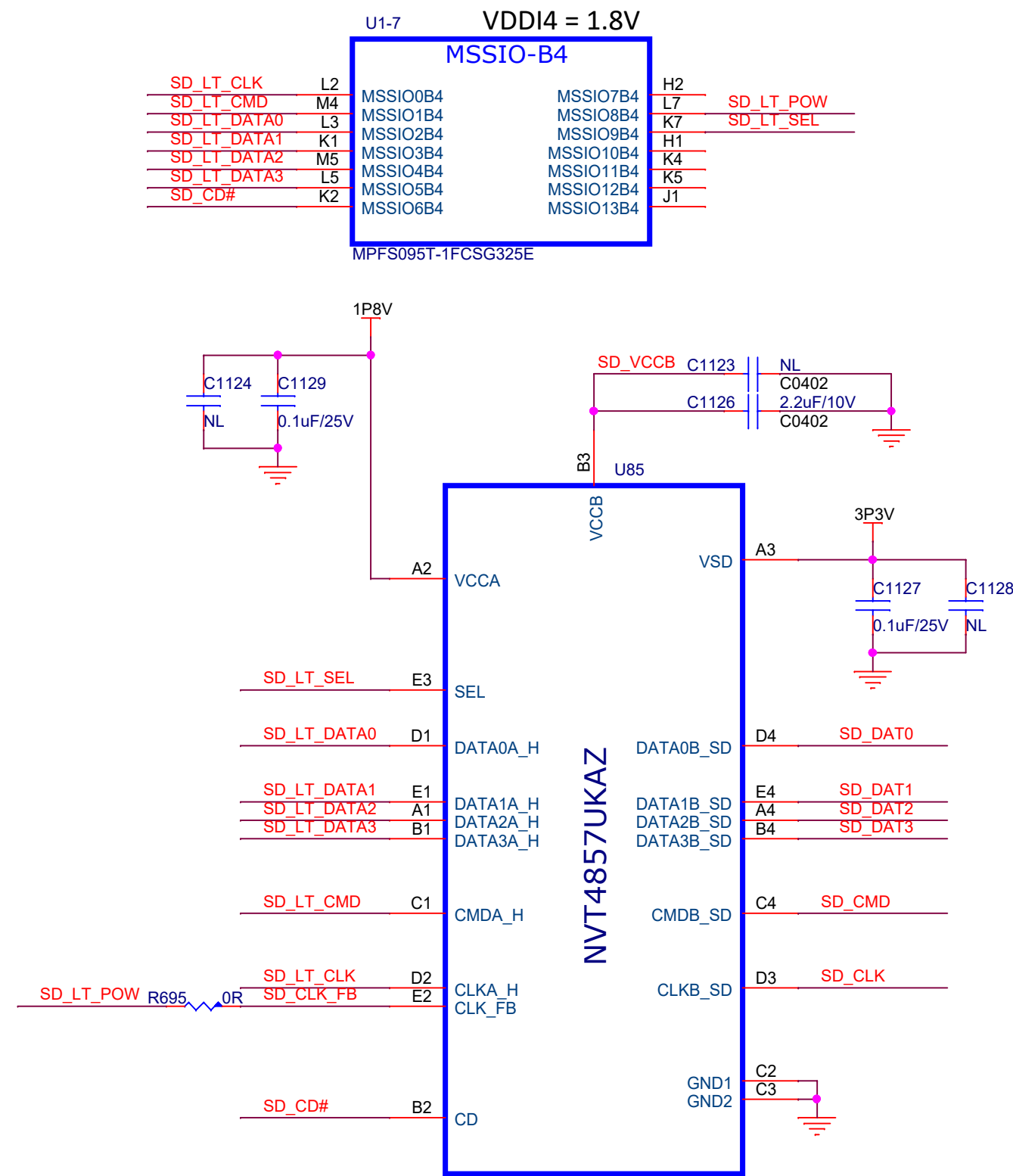
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| PolarFire SoC Discovery Kit    |              |            |
| SIZE<br>B                      | DOCUMENT NO. | REV<br>1.0 |
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DDR4 MEMORY



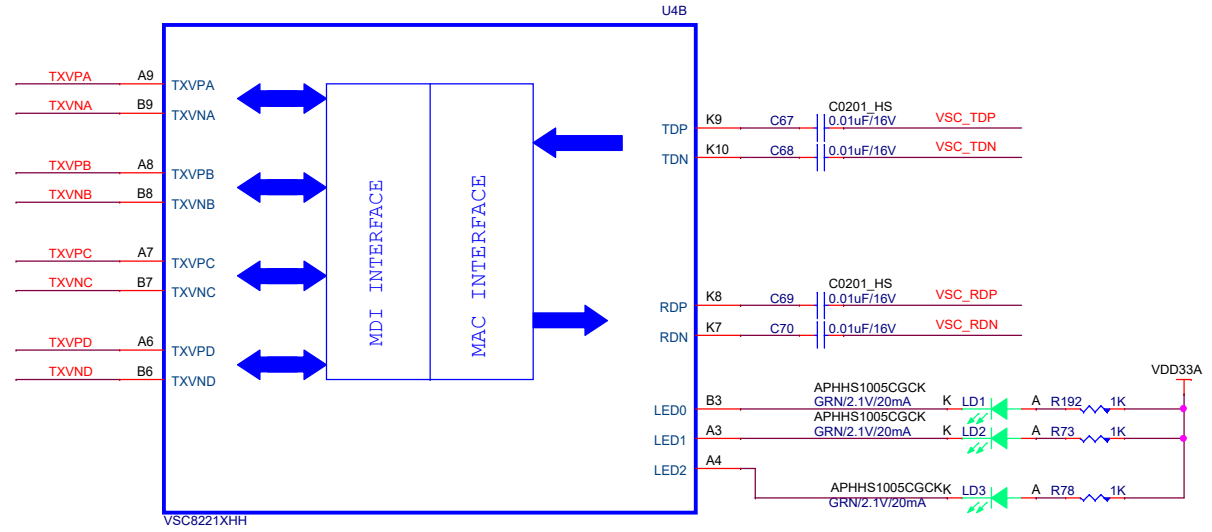
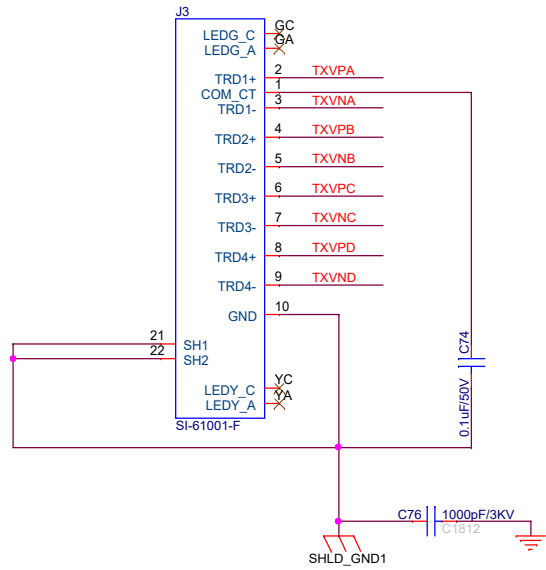
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| SIZE<br>Custom                       | DOCUMENT NO. | REV<br>1.0 |
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BANK4- uSD Conneciton

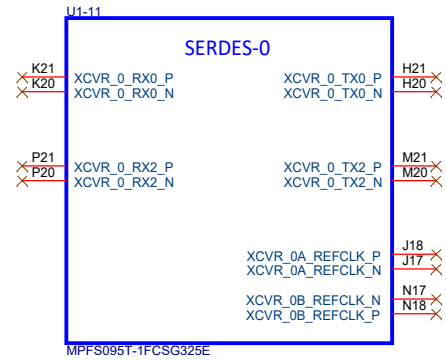
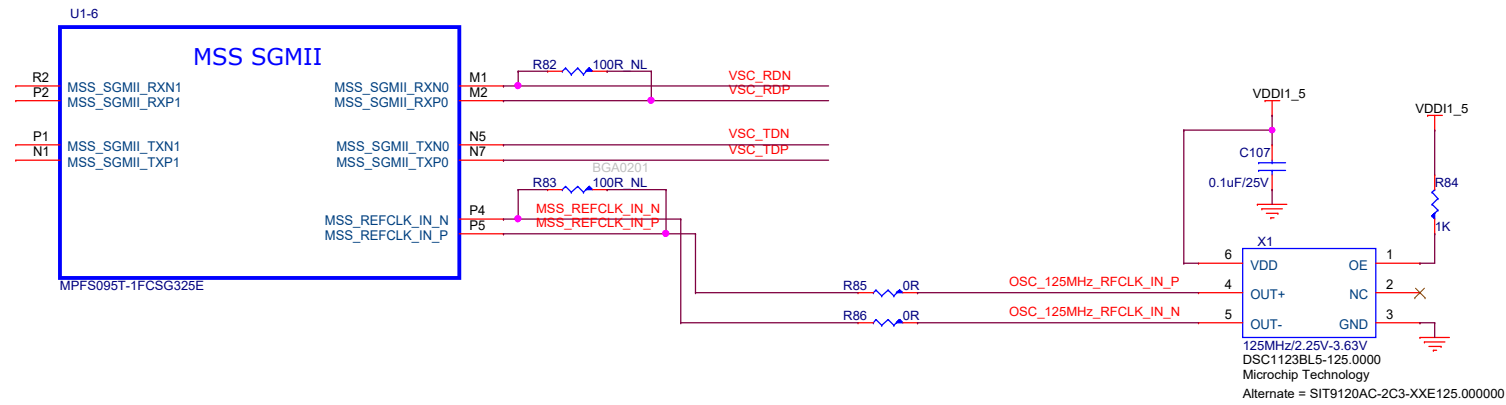
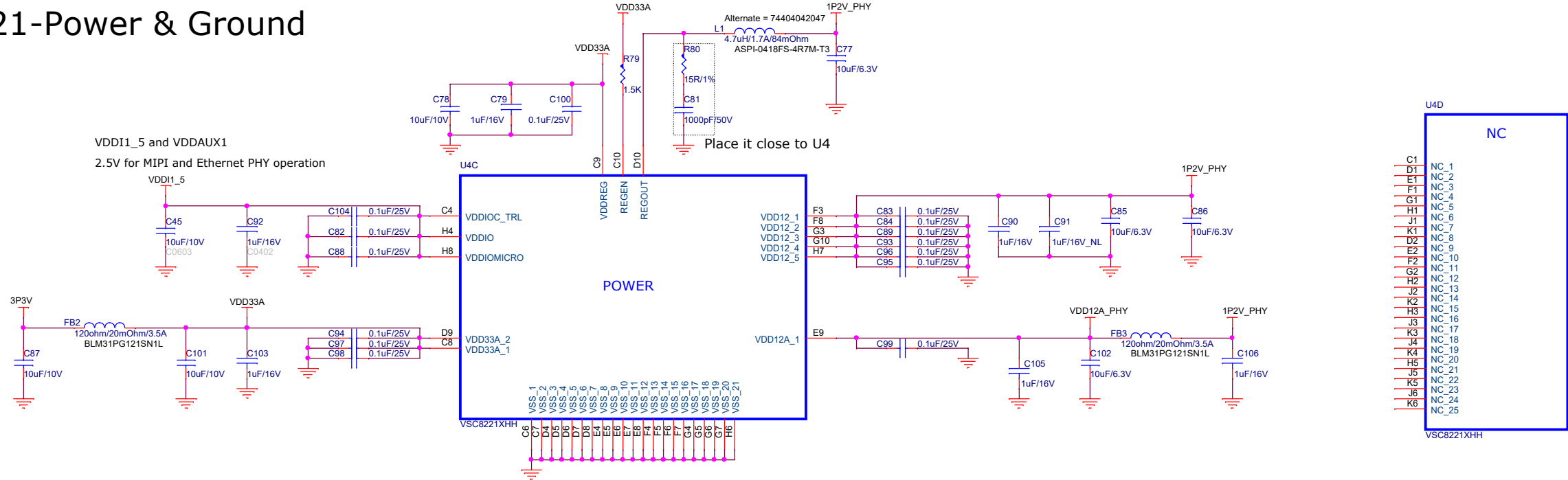


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| PolarFire SoC Discovery Kit |                          |            |
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# VSC8221 - SGMII Interface



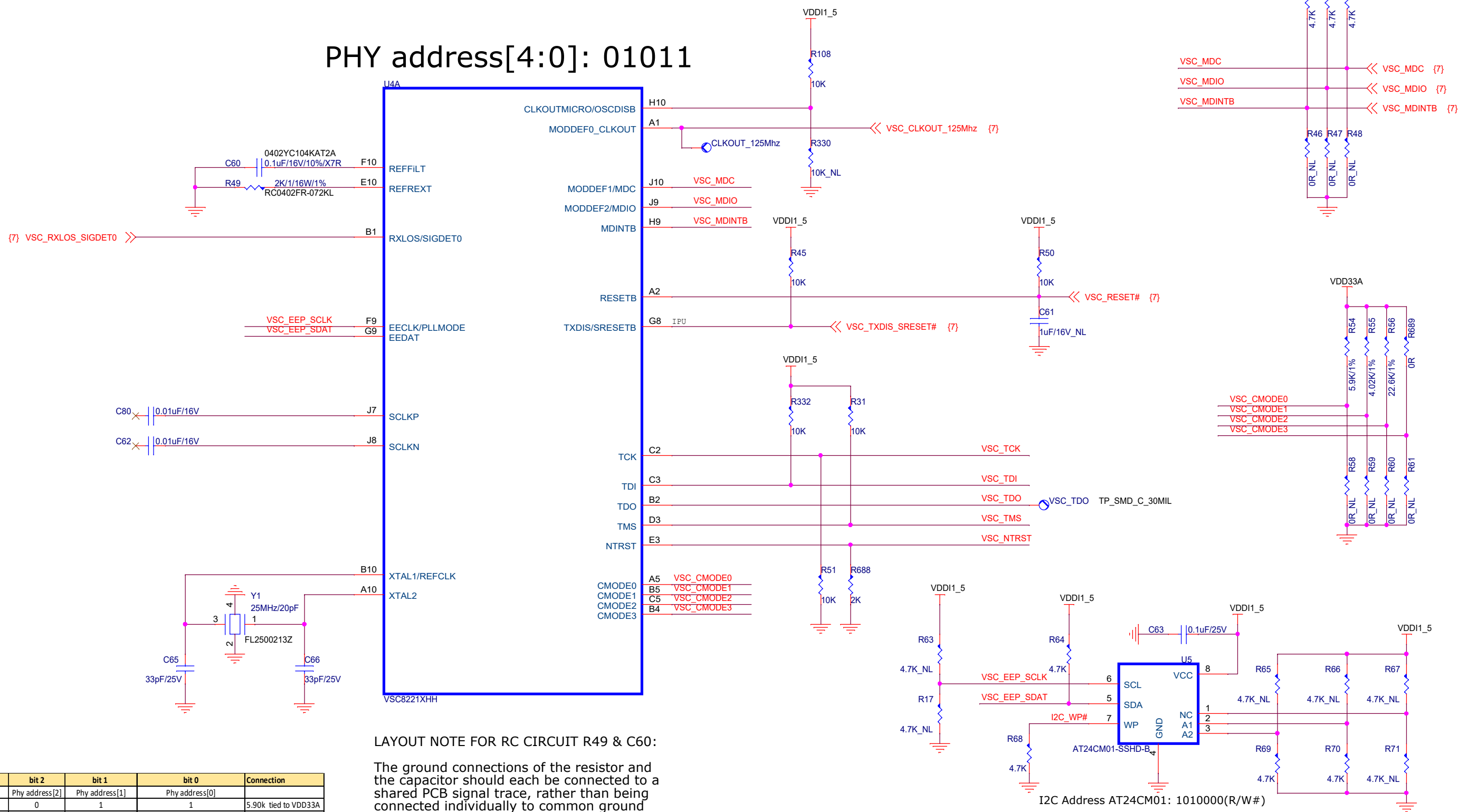
# VSC8221-Power & Ground





# VSC8221 - Connection

PHY address[4:0]: 01011



## LAYOUT NOTE FOR RC CIRCUIT R49 & C60:

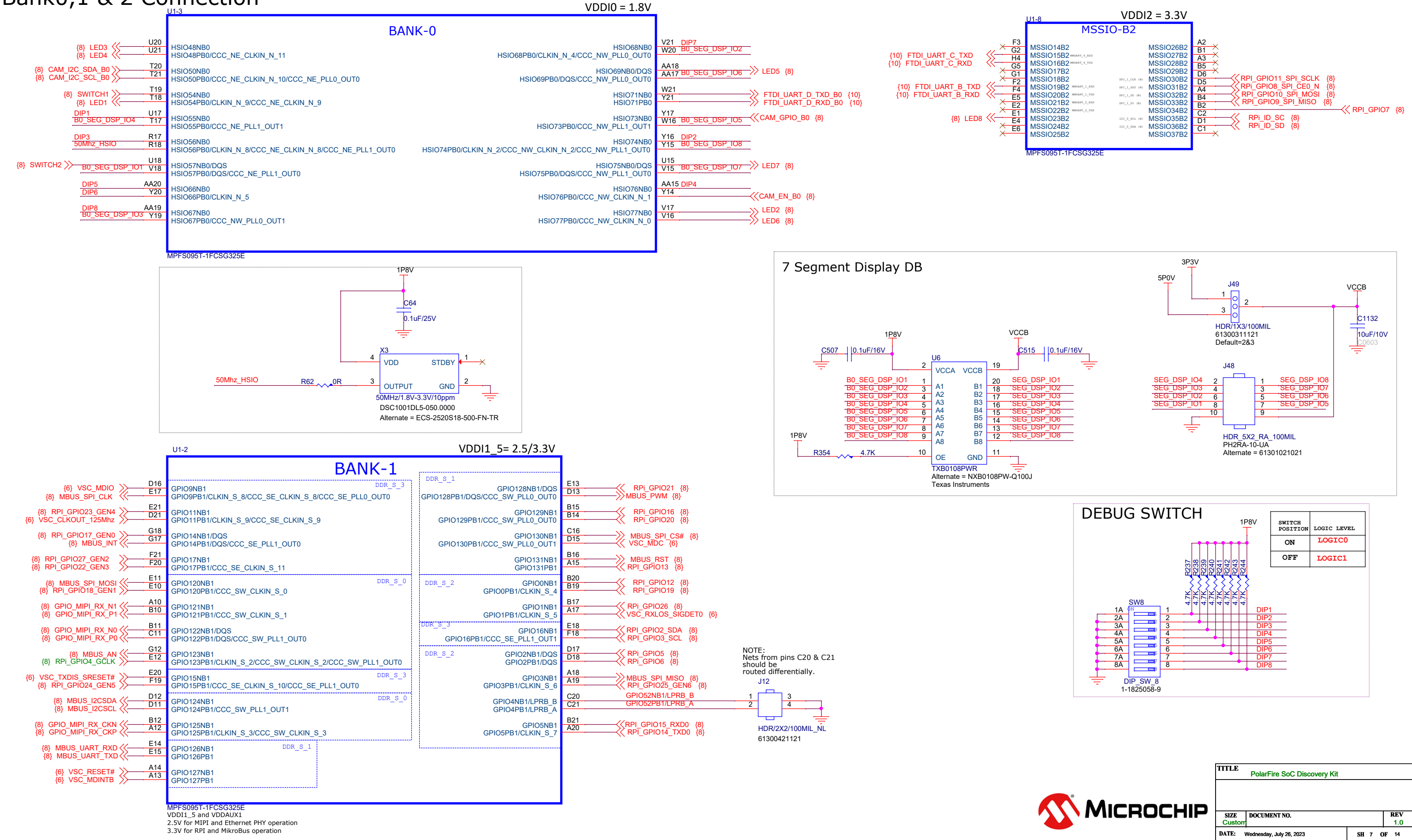
The ground connections of the resistor and the capacitor should each be connected to a shared PCB signal trace, rather than being connected individually to common ground plane. This PCB signal trace should then be connected to a ground plane at a single point. In addition, the reference capacitor and resistor should be placed as close as possible to the VSC8221

|         | bit 3  | bit 2                 | bit 1                 | bit 0                                     | Connection                 |
|---------|--|-----------------------|-----------------------|---|----------------------------|
| CMODE 0 | Phy address[3]                                   | Phy address[2]        | Phy address[1]        | Phy address[0]                            |                            |
|         | 1  | 0                     | 1                     | 1   | 5.90k tied to VDD33A       |
| CMODE1  | SFP Mode Disable                                 | PHY Address[4]        | SIGDET pin direction  | SerDes Line impedance                     |                            |
|         | 1  | 0                     | 1                     | 0   | 4.02k tied to VDD33A       |
| CMODE 2 | PHY Operating Mode[3]                            | PHY Operating Mode[2] | PHY Operating Mode[1] | PHY Operating Mode[0]                     |                            |
|         | 1  | 1                     | 1                     | 1   | 22.6k tied to VDD33A       |
| CMODE3  | LED Control[1]                                   | SQE Enable            | Reserved              | Auto-negotiation Advertisement Control[1] |                            |
|         | 1  | 0                     | 0                     | 0   | 0k tied to VDD33A          |
|         | LED[2:0] = {Link/Activity, Link/Activity, Fault} |                       |                       |   | 10/100/1000BASE-T HDX, FDX |

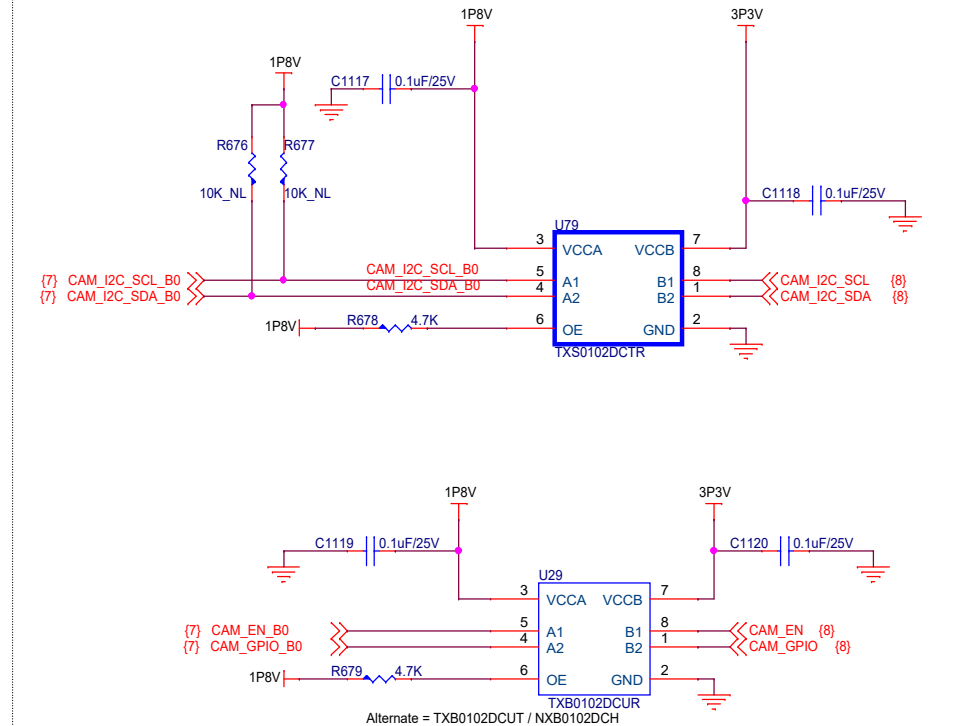
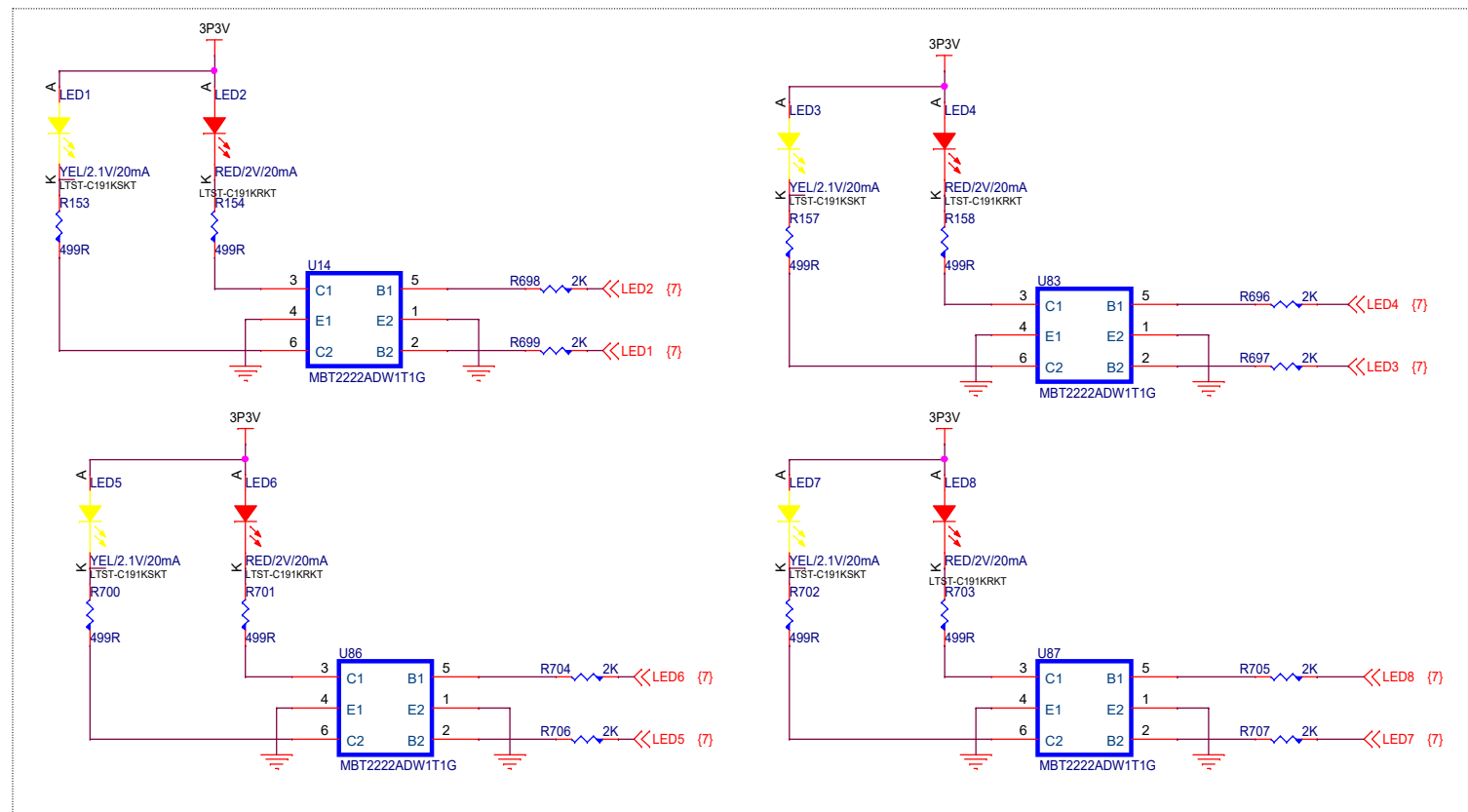
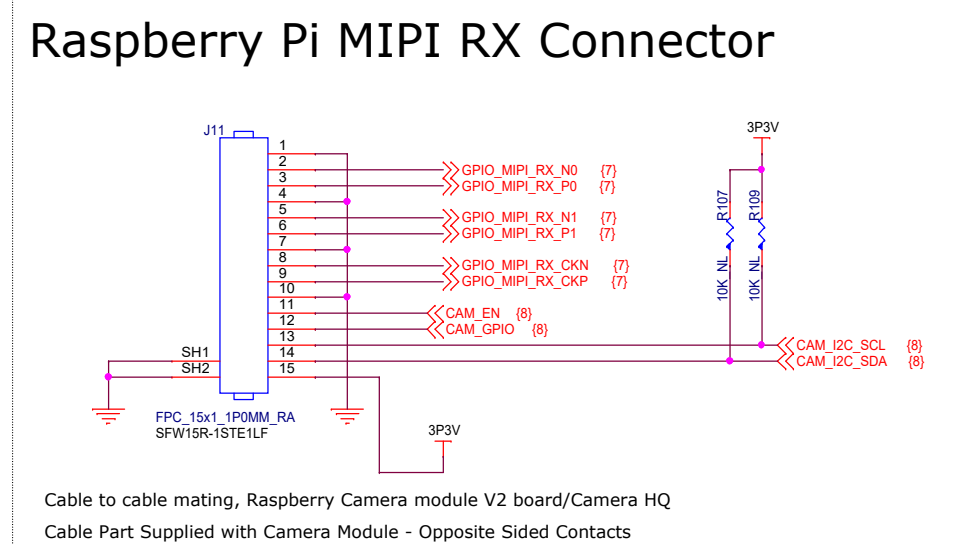
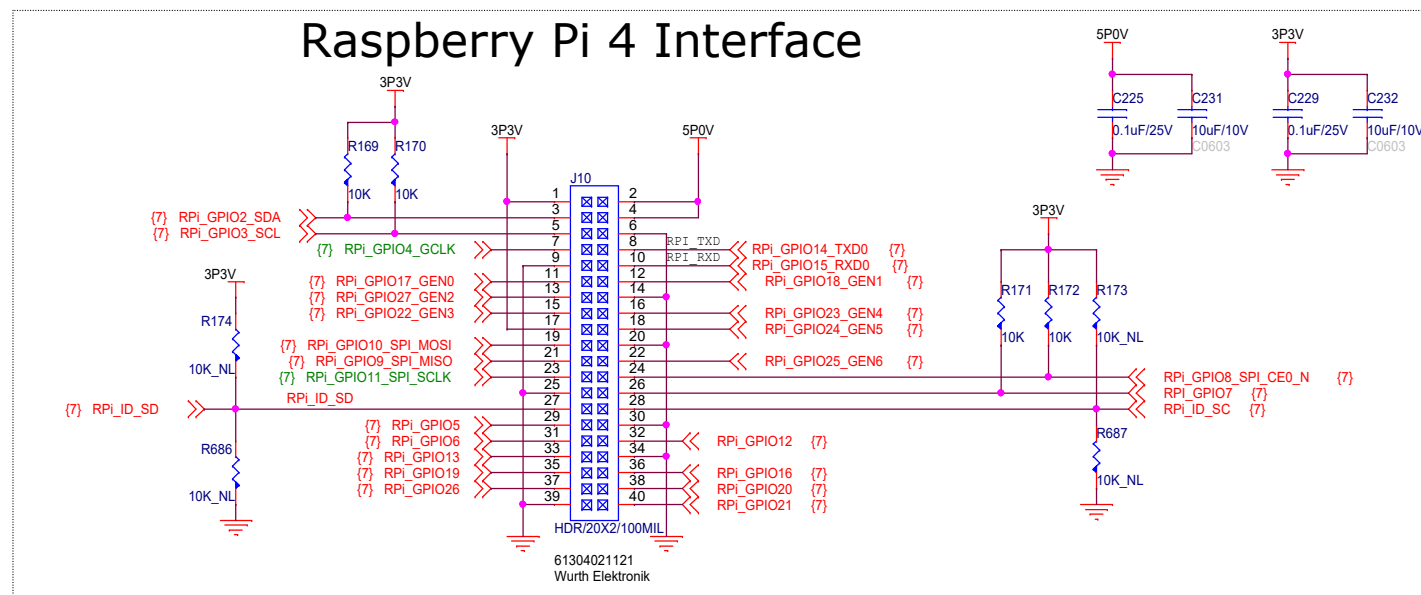
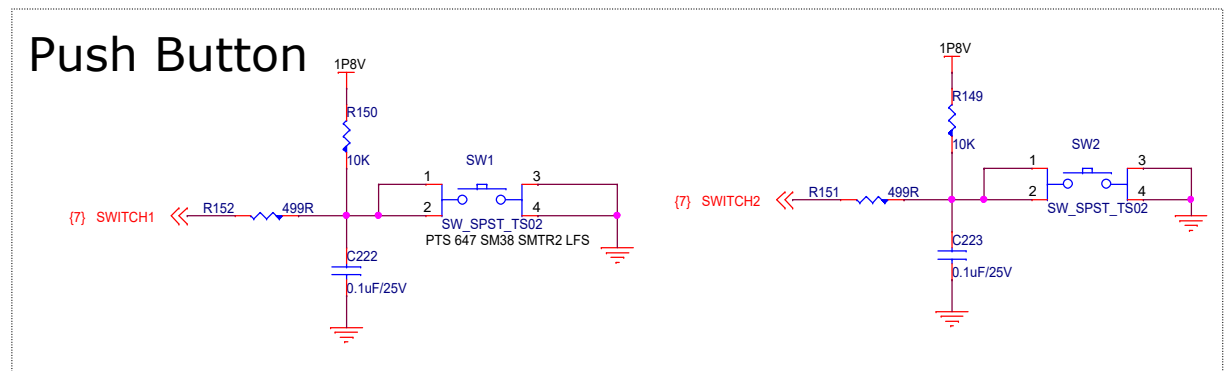
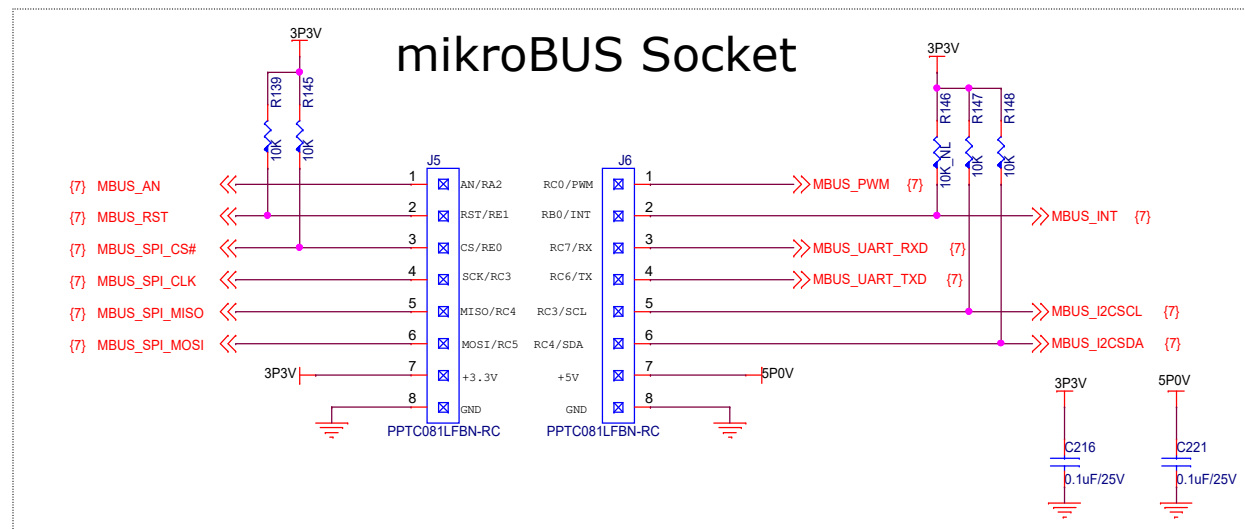


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Bank0,1 & 2 Connection



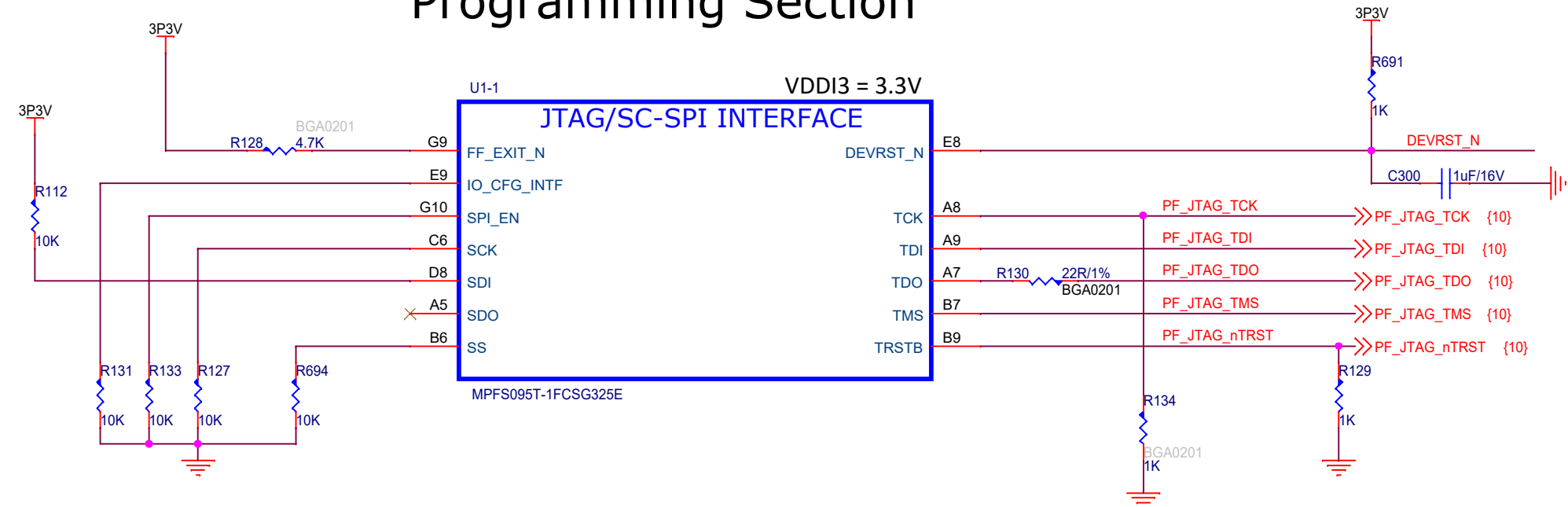
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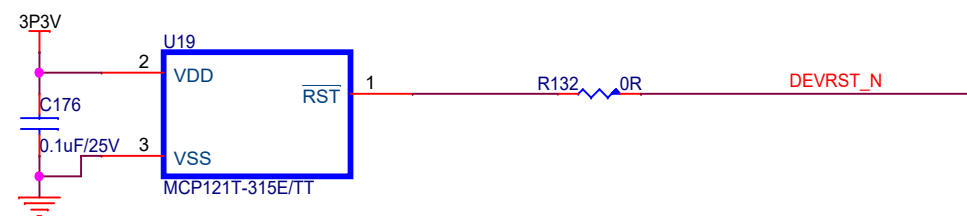
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| PolarFire SoC Discovery Kit |  |                     |  |
|                             |  |                     |  |
| <b>SIZE</b>                 |  | <b>DOCUMENT NO.</b> |  |
| Custom                      |  | REV 1.0             |  |
| <b>DATE:</b>                |  | <b>SH 8 OF 14</b>   |  |
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# Programming Section

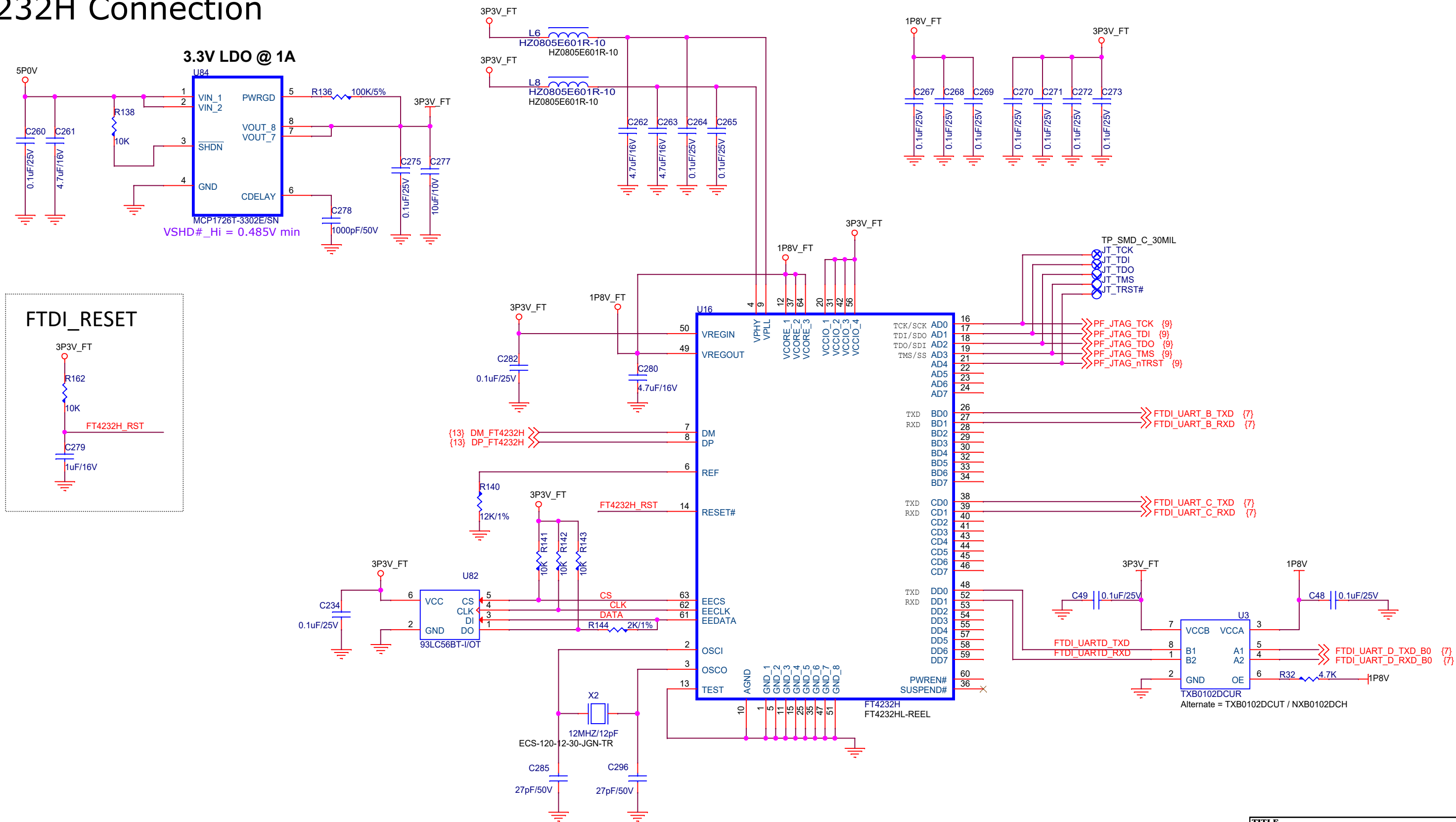


## Device Reset



| TITLE                          |              |            |
|--------------------------------|--------------|------------|
| PolarFire SoC Discovery Kit    |              |            |
| SIZE                           | DOCUMENT NO. | REV        |
| Custom                         |              | 1.0        |
| DATE: Wednesday, July 26, 2023 |              | SH 9 OF 14 |

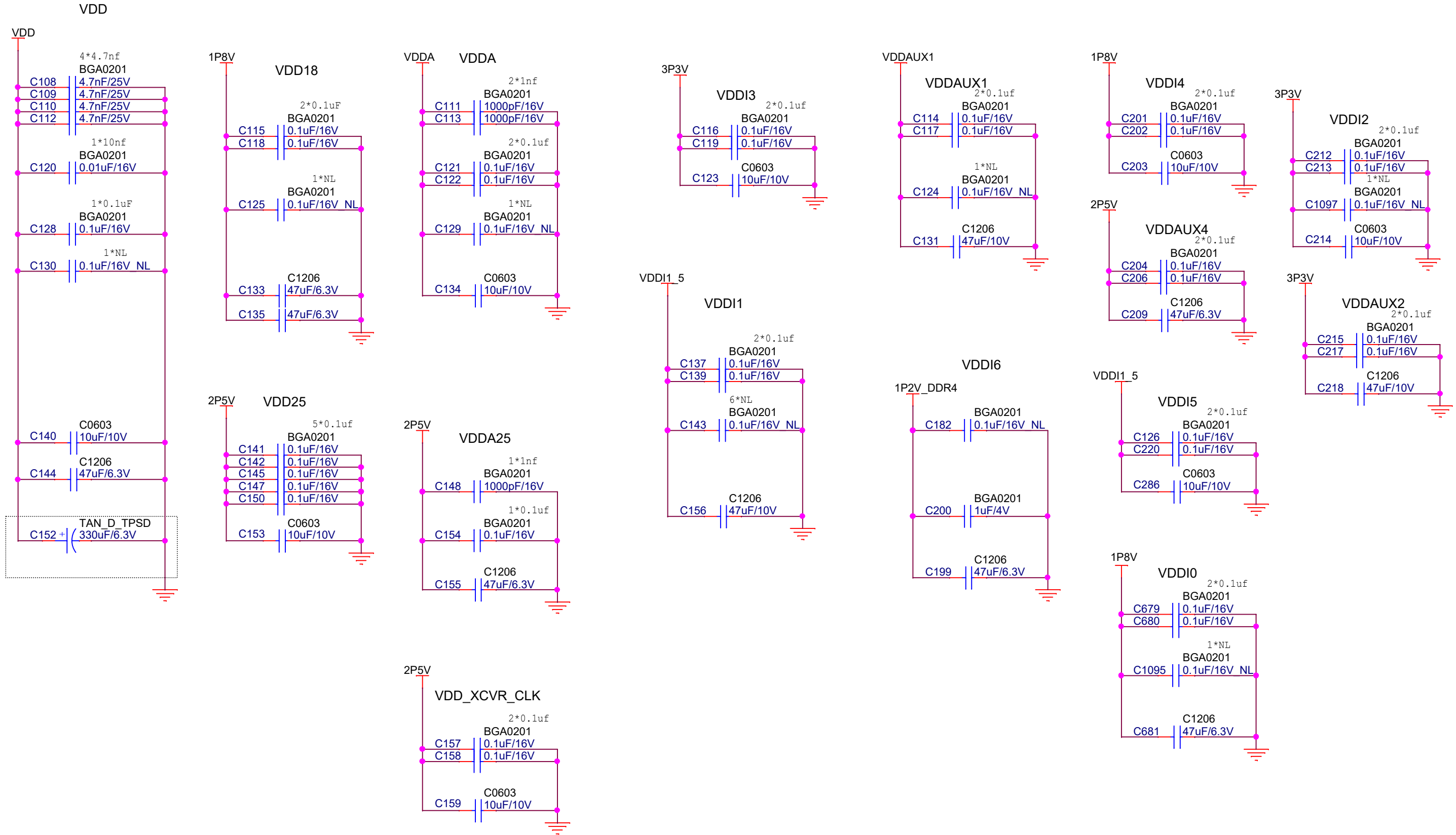
FT4232H Connection



|                                      |              |            |
|--------------------------------------|--------------|------------|
| TITLE<br>PolarFire SoC Discovery Kit |              |            |
| SIZE<br>Custom                       | DOCUMENT NO. | REV<br>1.0 |
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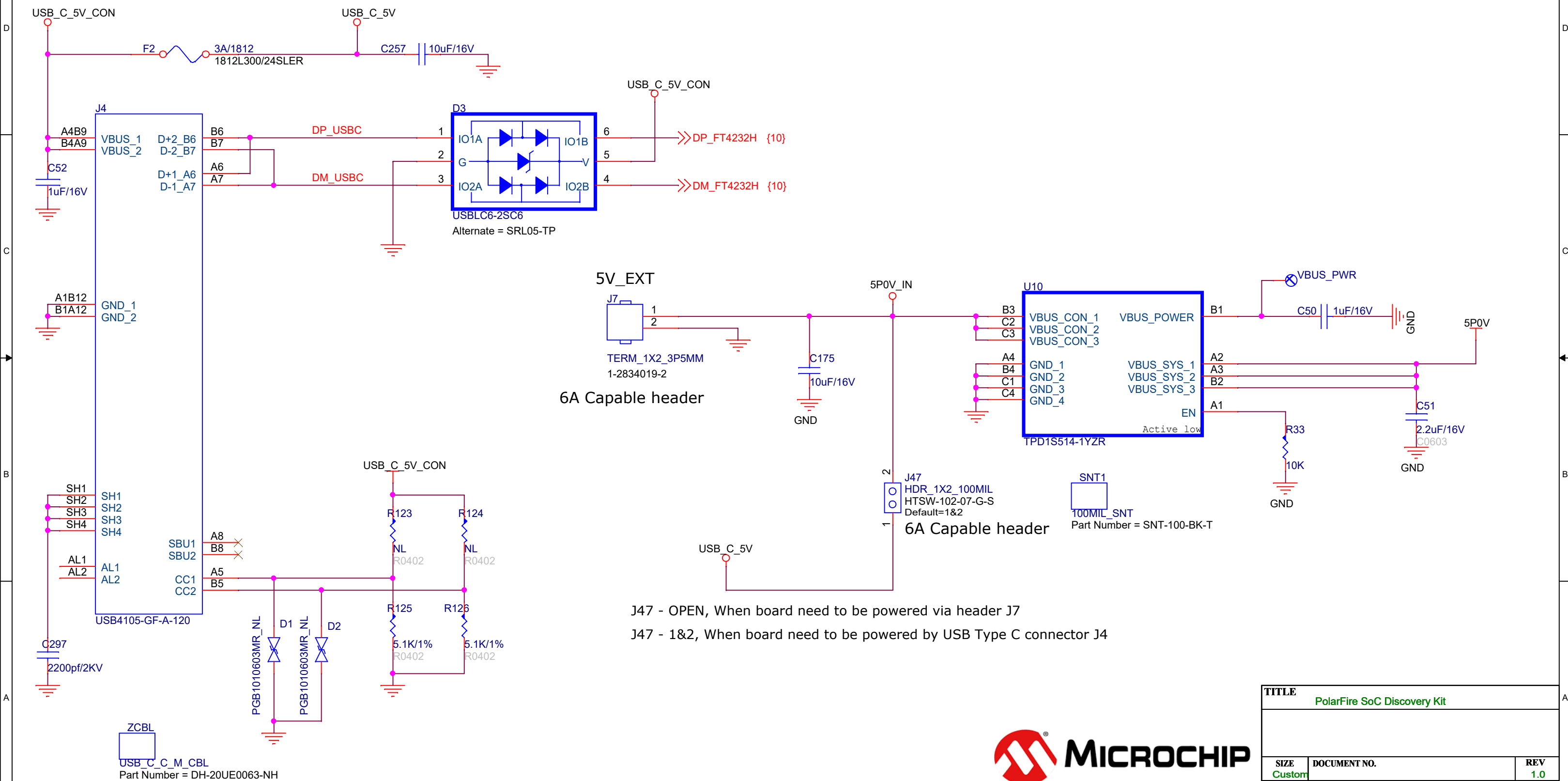


# Decoupling Capacitors



| TITLE                       |              |             |
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| SIZE                        | DOCUMENT NO. | REV         |
| Custom                      |              | 1.0         |
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## 5V DC Supply



|   |                     |  |                    |
|---|---------------------|--|--------------------|
| <b>TITLE</b><br>PolarFire SoC Discovery Kit |                     |  |                    |
|   |                     |  |                    |
| <b>SIZE</b><br>Custom                       | <b>DOCUMENT NO.</b> |  | <b>REV</b><br>1.0  |
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