

Front End Detector Connector

SEAF8-50-10

SEAF8-50-10

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SEAF8-50-10

SEAF8-50-10

SEAF8-20-10

SEAF8-20-10

SEAF8-20-10

SEAF8-20-10

SEAF8-20-10

1 A1 mars0 tpck p
2 A2 mars0 tpck n
3 A3 mars0 tpck n
4 A4 mars0 dal p
5 A5 mars0 dal n
6 A6 mars0 dal n
7 A7 mars1 fl p
8 A8 mars1 fl p
9 A9 mars1 fl n
10 A10 mars2 en p
11 A11 mars2 en n
12 A12 mars2 en n
13 A13 mars3 rw p
14 A14 mars3 rw n
15 A15 mars3 rw n
16 A16 mars4 tpck p
17 A17 mars4 tpck n
18 A18 mars4 tpck n
19 A19 mars4 dal p
20 A20 mars4 dal n
21 A21 mars4 dal n
22 A22 mars5 fl p
23 A23 mars5 fl n
24 A24 mars5 fl n
25 A25 mars6 en p
26 A26 mars6 en n
27 A27 mars6 en n
28 A28 mars7 rw p
29 A29 mars7 rw n
30 A30 mars7 rw n
31 A31 mars8 tpck p
32 A32 mars8 tpck n
33 A33 mars8 tpck n
34 A34 mars8 dal p
35 A35 mars8 dal n
36 A36 mars8 dal n
37 A37 mars9 fl p
38 A38 mars9 fl n
39 A39 mars9 fl n
40 A40 mars10 en p
41 A41 mars10 en n
42 A42 mars10 en n
43 A43 mars11 rw p
44 A44 mars11 rw n
45 A45 mars11 rw n
46 A46 mars11 rw n
47 A47 mars11 rw n
48 A48 mars11 rw n
49 A49 mars11 rw n
50 A50 mars11 rw n

1 B1 mars0 csi p
2 B2 mars0 csi n
3 B3 mars0 da2 p
4 B4 mars0 da2 n
5 B5 mars0 da2 n
6 B6 mars1 da0 p
7 B7 mars1 da0 n
8 B8 mars1 da0 n
9 B9 mars1 da0 n
10 B10 mars2 fl p
11 B11 mars2 fl n
12 B12 mars2 fl n
13 B13 mars3 rwck p
14 B14 mars3 rwck n
15 B15 mars3 rwck n
16 B16 mars4 csi p
17 B17 mars4 csi n
18 B18 mars4 da2 p
19 B19 mars4 da2 n
20 B20 mars4 da2 n
21 B21 mars5 da0 p
22 B22 mars5 da0 n
23 B23 mars5 da0 n
24 B24 mars5 dal n
25 B25 mars6 fl p
26 B26 mars6 fl n
27 B27 mars7 rwck p
28 B28 mars7 rwck n
29 B29 mars7 rwck n
30 B30 mars8 csi p
31 B31 mars8 csi n
32 B32 mars8 csi n
33 B33 mars8 da2 p
34 B34 mars8 da2 n
35 B35 mars8 da2 n
36 B36 mars9 da0 p
37 B37 mars9 da0 n
38 B38 mars9 da0 n
39 B39 mars9 dal n
40 B40 mars10 fl p
41 B41 mars10 fl n
42 B42 mars11 rwck p
43 B43 mars11 rwck n
44 B44 mars11 rwck n
45 B45 mars11 rwck n
46 B46 mars11 rwck n
47 B47 mars11 rwck n
48 B48 mars11 rwck n
49 B49 mars11 rwck n
50 B50 mars11 rwck n

1 C1 mars0 rw p
2 C2 mars0 rw n
3 C3 mars0 rw n
4 C4 mars1 tpck p
5 C5 mars1 tpck n
6 C6 mars1 tpck n
7 C7 mars1 dal p
8 C8 mars1 dal p
9 C9 mars1 dal n
10 C10 mars2 fl p
11 C11 mars2 fl n
12 C12 mars2 fl n
13 C13 mars3 en p
14 C14 mars3 en n
15 C15 mars3 en n
16 C16 mars4 rwck p
17 C17 mars4 rwck n
18 C18 mars4 en p
19 C19 mars5 csi p
20 C20 mars5 csi n
21 C21 mars5 tpck n
22 C22 mars5 dal p
23 C23 mars5 dal n
24 C24 mars5 dal n
25 C25 mars6 da0 p
26 C26 mars6 da0 n
27 C27 mars6 fl n
28 C28 mars7 en p
29 C29 mars7 en n
30 C30 mars7 en n
31 C31 mars8 rw p
32 C32 mars8 rw n
33 C33 mars8 rw n
34 C34 mars9 tpck p
35 C35 mars9 tpck n
36 C36 mars9 tpck n
37 C37 mars9 dal p
38 C38 mars9 dal n
39 C39 mars9 dal n
40 C40 mars10 fl p
41 C41 mars10 fl n
42 C42 mars10 fl n
43 C43 mars11 en p
44 C44 mars11 en n
45 C45 mars11 en n
46 C46 mars11 en n
47 C47 mars11 en n
48 C48 mars11 en n
49 C49 mars11 en n
50 C50 mars11 en n

1 D1 mars0 rwck p
2 D2 mars0 rwck n
3 D3 mars1 csi p
4 D4 mars1 csi n
5 D5 mars1 csi n
6 D6 mars1 da2 p
7 D7 mars1 da2 n
8 D8 mars1 da2 n
9 D9 mars2 tpck n
10 D10 mars2 da0 p
11 D11 mars2 da0 n
12 D12 mars2 dal n
13 D13 mars3 fl p
14 D14 mars3 fl n
15 D15 mars3 fl n
16 D16 mars4 rwck p
17 D17 mars4 rwck n
18 D18 mars4 en p
19 D19 mars5 csi p
20 D20 mars5 csi n
21 D21 mars5 rw n
22 D22 mars5 da2 p
23 D23 mars5 da2 n
24 D24 mars6 tpck n
25 D25 mars6 da0 p
26 D26 mars6 da0 n
27 D27 mars6 dal n
28 D28 mars7 fl p
29 D29 mars7 fl n
30 D30 mars8 rwck p
31 D31 mars8 rwck n
32 D32 mars8 rwck n
33 D33 mars9 csi p
34 D34 mars9 csi n
35 D35 mars9 csi n
36 D36 mars9 da2 p
37 D37 mars9 da2 n
38 D38 mars9 da2 n
39 D39 mars10 tpck n
40 D40 mars10 da0 p
41 D41 mars10 da0 n
42 D42 mars10 dal n
43 D43 mars11 fl p
44 D44 mars11 fl n
45 D45 mars11 fl n
46 D46 mars11 fl n
47 D47 mars11 fl n
48 D48 mars11 fl n
49 D49 mars11 fl n
50 D50 mars11 fl n

1 E1 mars0 en p
2 E2 mars0 en n
3 E3 mars0 en n
4 E4 mars1 rw p
5 E5 mars1 rw n
6 E6 mars1 rw n
7 E7 mars2 csi p
8 E8 mars2 csi n
9 E9 mars2 tpck n
10 E10 mars2 dal p
11 E11 mars2 dal n
12 E12 mars2 dal n
13 E13 mars3 fl p
14 E14 mars3 fl n
15 E15 mars3 fl n
16 E16 mars4 en p
17 E17 mars4 en n
18 E18 mars4 en n
19 E19 mars5 rw p
20 E20 mars5 rw n
21 E21 mars5 rw n
22 E22 mars6 csi p
23 E23 mars6 csi n
24 E24 mars6 csi n
25 E25 mars6 da2 p
26 E26 mars6 da2 n
27 E27 mars7 tpck n
28 E28 mars7 da0 p
29 E29 mars7 da0 n
30 E30 mars7 dal n
31 E31 mars8 fl p
32 E32 mars8 fl n
33 E33 mars8 fl n
34 E34 mars9 rw p
35 E35 mars9 rw n
36 E36 mars9 rw n
37 E37 mars10 csi p
38 E38 mars10 csi n
39 E39 mars10 tpck n
40 E40 mars10 dal p
41 E41 mars10 dal n
42 E42 mars10 dal n
43 E43 mars11 dal p
44 E44 mars11 dal n
45 E45 mars11 dal n
46 E46 mars11 dal n
47 E47 mars11 dal n
48 E48 mars11 dal n
49 E49 mars11 dal n
50 E50 mars11 dal n

1 F1 mars1 rwck p
2 F2 mars1 rwck n
3 F3 mars1 rwck n
4 F4 mars2 csi p
5 F5 mars2 csi n
6 F6 mars2 csi n
7 F7 mars2 csi p
8 F8 mars2 csi n
9 F9 mars2 csi n
10 F10 mars2 da2 p
11 F11 mars2 da2 n
12 F12 mars3 da0 p
13 F13 mars3 da0 n
14 F14 mars3 da0 n
15 F15 mars4 fl p
16 F16 mars4 fl n
17 F17 mars4 fl n
18 F18 mars5 rwck p
19 F19 mars5 rwck n
20 F20 mars5 rwck n
21 F21 mars6 csi p
22 F22 mars6 csi n
23 F23 mars6 csi n
24 F24 mars6 da2 p
25 F25 mars6 da2 n
26 F26 mars6 da2 n
27 F27 mars7 tpck n
28 F28 mars7 da0 p
29 F29 mars7 da0 n
30 F30 mars7 dal n
31 F31 mars8 fl p
32 F32 mars8 fl n
33 F33 mars8 fl n
34 F34 mars9 rwck p
35 F35 mars9 rwck n
36 F36 mars9 rwck n
37 F37 mars10 csi p
38 F38 mars10 csi n
39 F39 mars10 tpck n
40 F40 mars10 dal p
41 F41 mars10 dal n
42 F42 mars10 dal n
43 F43 mars11 dal p
44 F44 mars11 dal n
45 F45 mars11 dal n
46 F46 mars11 dal n
47 F47 mars11 dal n
48 F48 mars11 dal n
49 F49 mars11 dal n
50 F50 mars11 dal n

1 G1 mars0 fl p
2 G2 mars0 fl n
3 G3 mars0 fl n
4 G4 mars1 en p
5 G5 mars1 en n
6 G6 mars1 en n
7 G7 mars2 csi p
8 G8 mars2 csi n
9 G9 mars2 csi n
10 G10 mars2 da2 p
11 G11 mars2 da2 n
12 G12 mars3 tpck p
13 G13 mars3 tpck n
14 G14 mars3 dal p
15 G15 mars3 dal n
16 G16 mars4 fl p
17 G17 mars4 fl n
18 G18 mars4 fl n
19 G19 mars5 en p
20 G20 mars5 en n
21 G21 mars5 en n
22 G22 mars6 csi p
23 G23 mars6 csi n
24 G24 mars6 csi n
25 G25 mars6 da2 p
26 G26 mars6 da2 n
27 G27 mars7 tpck n
28 G28 mars7 da0 p
29 G29 mars7 da0 n
30 G30 mars7 dal n
31 G31 mars8 fl p
32 G32 mars8 fl n
33 G33 mars8 fl n
34 G34 mars9 en p
35 G35 mars9 en n
36 G36 mars9 en n
37 G37 mars10 csi p
38 G38 mars10 csi n
39 G39 mars10 tpck n
40 G40 mars10 dal p
41 G41 mars10 dal n
42 G42 mars11 tpck n
43 G43 mars11 dal p
44 G44 mars11 dal n
45 G45 mars11 dal n
46 G46 mars11 dal n
47 G47 mars11 dal n
48 G48 mars11 dal n
49 G49 mars11 dal n
50 G50 mars11 dal n

1 H1 mars0 bpd p
2 H2 mars0 bpd n
3 H3 mars0 bpd n
4 H4 mars0 bpd n
5 H5 mars0 bpd n
6 H6 mars0 bpd p
7 H7 mars0 bpd p
8 H8 mars0 bpd n
9 H9 mars0 bpd n
10 H10 mars1 bpd p
11 H11 mars1 bpd n
12 H12 mars1 bpd n
13 H13 mars2 bpd p
14 H14 mars2 bpd n
15 H15 mars3 bpd p
16 H16 mars3 bpd n
17 H17 mars3 bpd n
18 H18 mars4 bpd p
19 H19 mars4 bpd n
20 H20 mars4 bpd n
21 H21 mars5 bpd p
22 H22 mars5 bpd n
23 H23 mars5 bpd n
24 H24 mars6 bpd p
25 H25 mars6 bpd n
26 H26 mars6 bpd n
27 H27 mars7 bpd p
28 H28 mars7 bpd n
29 H29 mars7 bpd n
30 H30 mars8 bpd p
31 H31 mars8 bpd n
32 H32 mars8 bpd n
33 H33 mars9 bpd p
34 H34 mars9 bpd n
35 H35 mars9 bpd n
36 H36 mars9 bpd n
37 H37 mars10 bpd p
38 H38 mars10 bpd n
39 H39 mars10 bpd n
40 H40 mars11 bpd p
41 H41 mars11 bpd n
42 H42 mars11 bpd n
43 H43 mars11 bpd n
44 H44 mars11 bpd n
45 H45 mars11 bpd n
46 H46 mars11 bpd n
47 H47 mars11 bpd n
48 H48 mars11 bpd n
49 H49 mars11 bpd n
50 H50 mars11 bpd n

1 J1 mars0 btd p
2 J2 mars0 btd n
3 J3 mars0 btd n
4 J4 mars0 btd n
5 J5 mars0 btd n
6 J6 mars0 btd p
7 J7 mars0 btd p
8 J8 mars0 btd n
9 J9 mars0 btd n
10 J10 mars1 btd p
11 J11 mars1 btd n
12 J12 mars1 btd n
13 J13 mars2 btd p
14 J14 mars2 btd n
15 J15 mars3 btd p
16 J16 mars3 btd n
17 J17 mars3 btd p
18 J18 mars3 btd n
19 J19 mars4 btd p
20 J20 mars4 btd n
21 J21 mars4 btd n
22 J22 mars5 btd p
23 J23 mars5 btd n
24 J24 mars5 btd n
25 J25 mars6 btd p
26 J26 mars6 btd n
27 J27 mars6 btd n
28 J28 mars7 btd p
29 J29 mars7 btd n
30 J30 mars7 btd n
31 J31 mars8 btd p
32 J32 mars8 btd n
33 J33 mars8 btd n
34 J34 mars9 btd p
35 J35 mars9 btd n
36 J36 mars9 btd n
37 J37 mars10 btd p
38 J38 mars10 btd n
39 J39 mars10 btd n
40 J40 mars11 btd p
41 J41 mars11 btd n
42 J42 mars11 btd n
43 J43 mars11 btd n
44 J44 mars11 btd n
45 J45 mars11 btd n
46 J46 mars11 btd n
47 J47 mars11 btd n
48 J48 mars11 btd n
49 J49 mars11 btd n
50 J50 mars11 btd n

1 K1 mars0 da0 p
2 K2 mars0 da0 n
3 K3 mars0 da0 n
4 K4 mars0 da0 n
5 K5 mars0 da0 n
6 K6 mars2 rwck p
7 K7 mars2 rwck n
8 K8 mars2 rwck n
9 K9 mars3 csi p
10 K10 mars3 csi n
11 K11 mars3 csi n
12 K12 mars3 da2 p
13 K13 mars3 da2 n
14 K14 mars3 da2 n
15 K15 mars4 da0 p
16 K16 mars4 da0 n
17 K17 mars4 da0 n
18 K18 mars7 csi p
19 K19 mars7 csi n
20 K20 mars6 rwck p
21 K21 mars6 rwck n
22 K22 mars6 rwck n
23 K23 mars6 rwck n
24 K24 mars7 csi p
25 K25 mars7 csi n
26 K26 mars7 csi n
27 K27 mars7 da2 p
28 K28 mars7 da2 n
29 K29 mars7 da2 n
30 K30 mars8 da0 p
31 K31 mars8 da0 n
32 K32 mars8 da0 n
33 K33 mars8 da0 n
34 K34 mars9 da0 p
35 K35 mars9 da0 n
36 K36 mars9 da0 n
37 K37 mars10 rwck p
38 K38 mars10 rwck n
39 K39 mars10 rwck n
40 K40 mars11 csi p
41 K41 mars11 csi n
42 K42 mars11 da2 p
43 K43 mars11 da2 n
44 K44 mars11 da2 n
45 K45 mars11 da2 n
46 K46 mars11 da2 n
47 K47 mars11 da2 n
48 K48 mars11 da2 n
49 K49 fe i2c sda
50 K50 fe i2c scl

Title:

Ge 384 Readout Module

Date: 10-14-16

Ver:

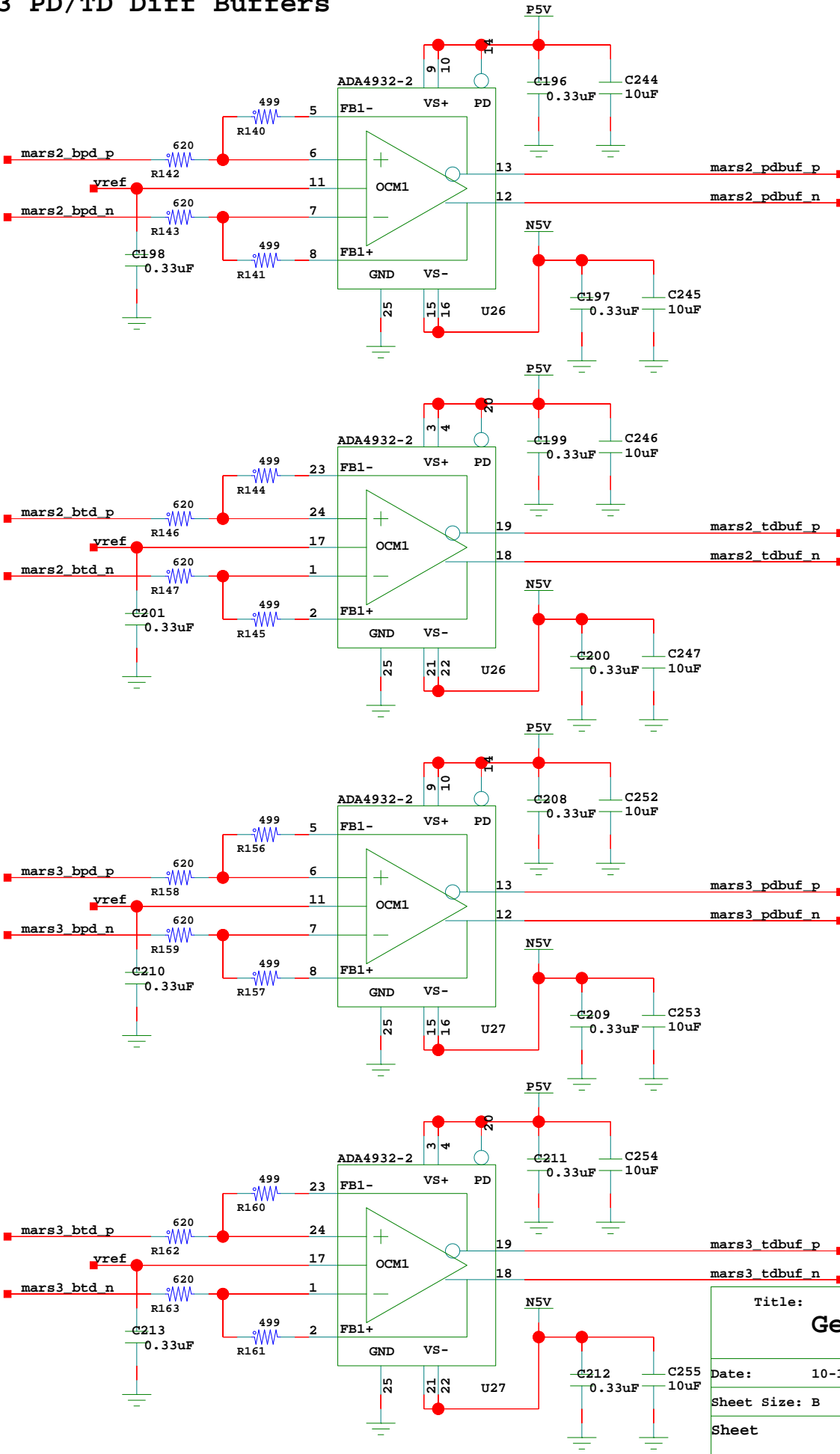
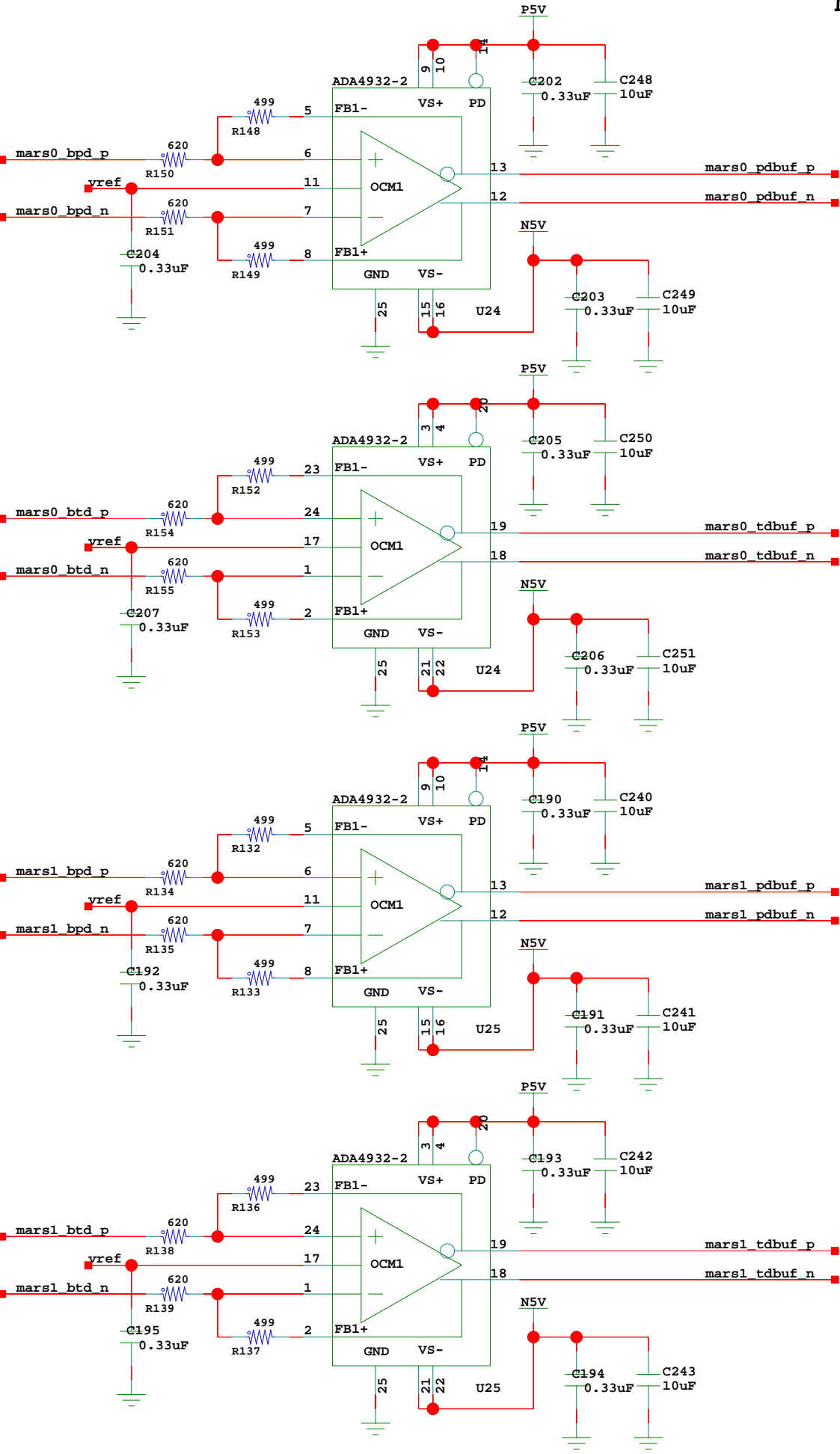
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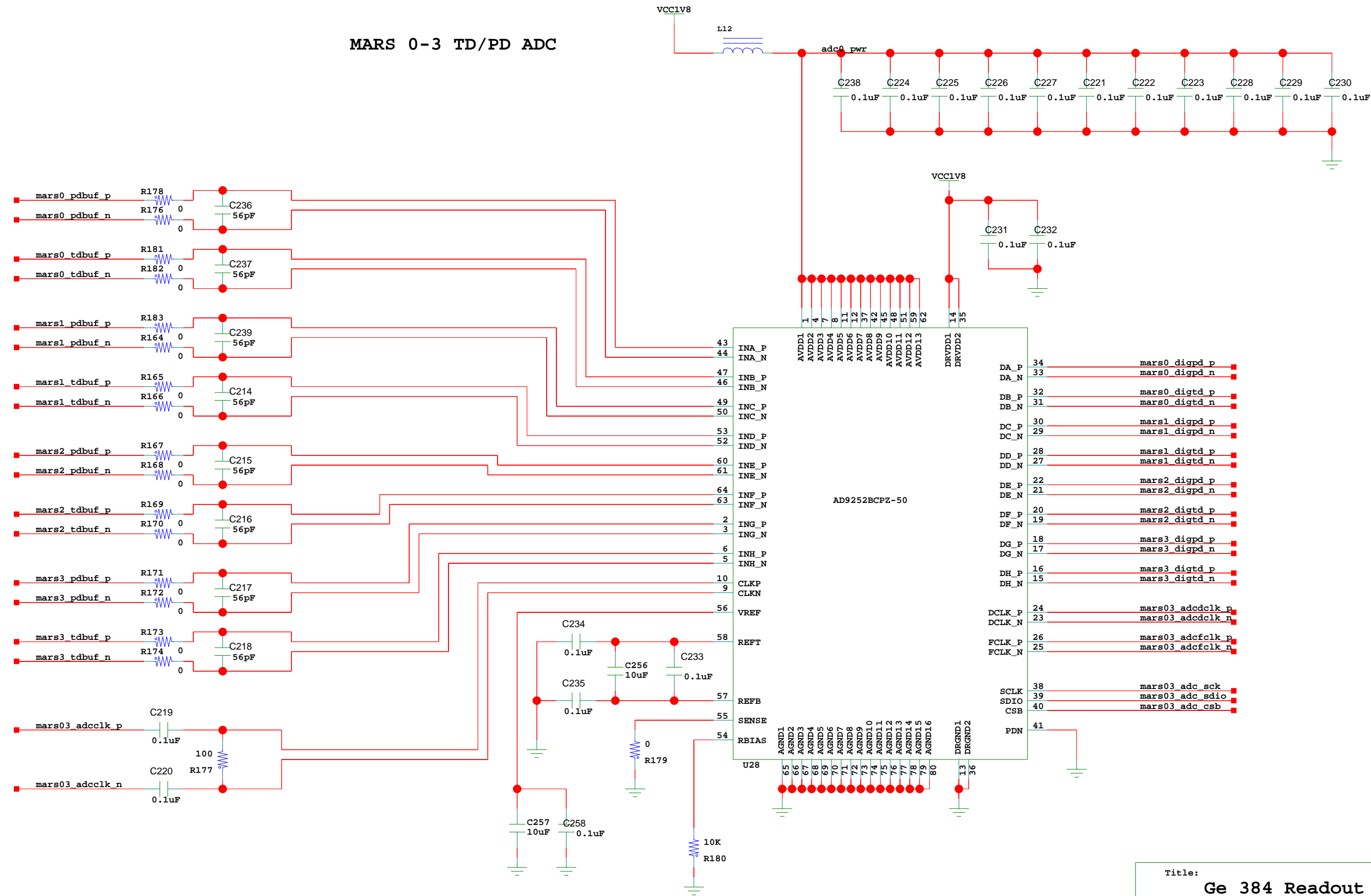
Drawn By J. Mead

MARS 0-3 PD/TD Diff Buffers



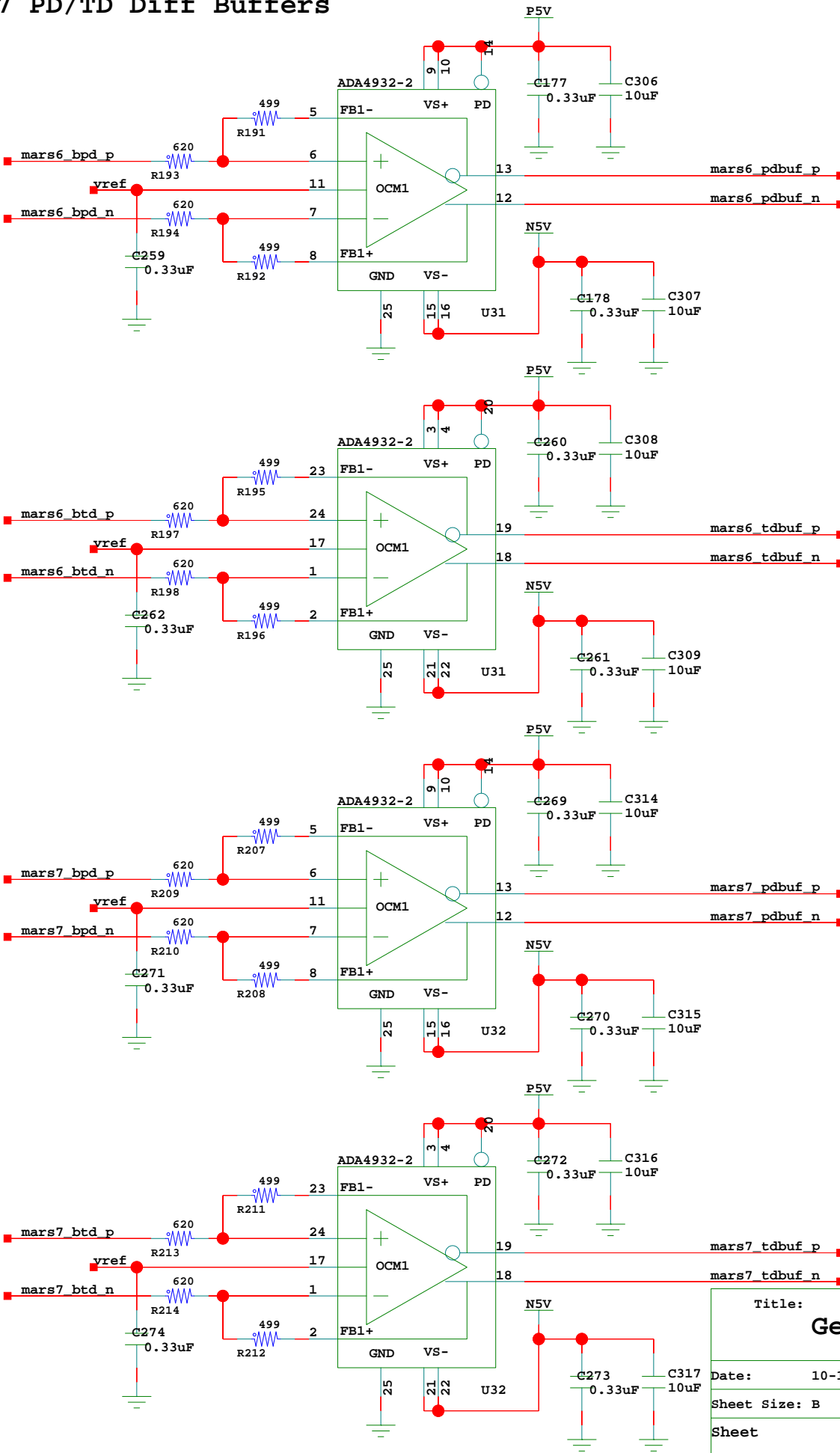
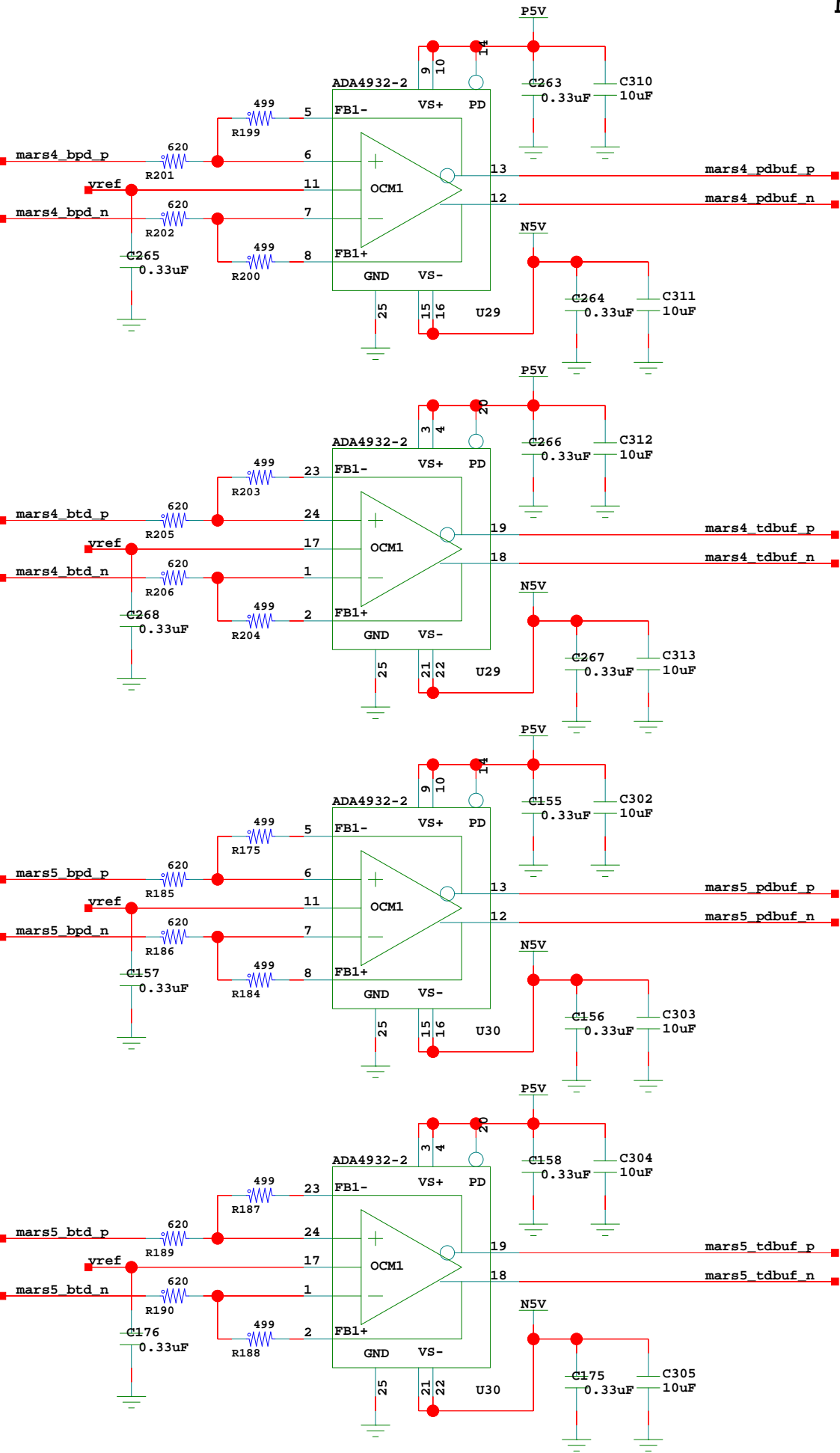
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Date: 10-14-16	Ver:
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MARS 0-3 TD/PD ADC



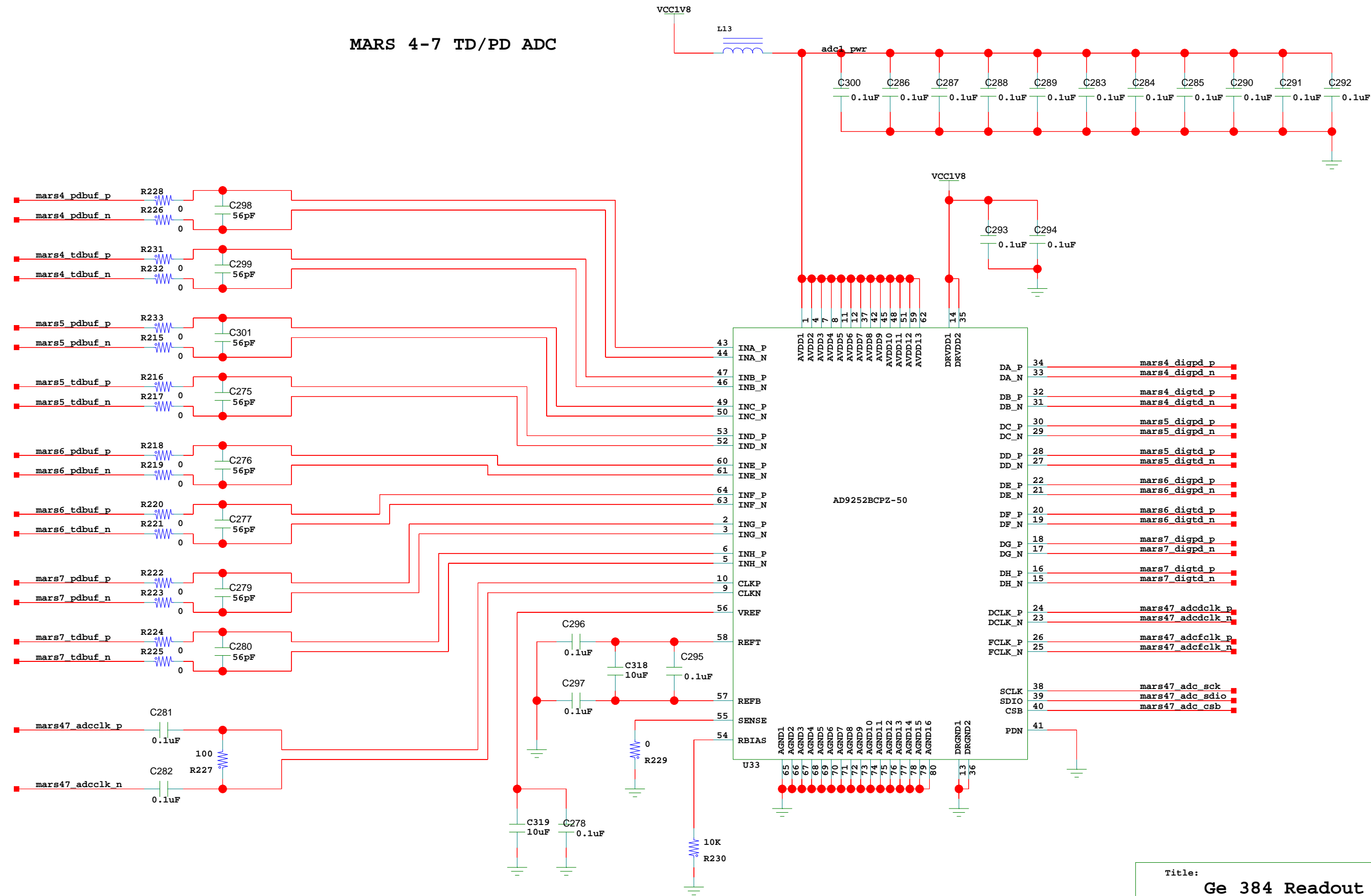
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MARS 4-7 PD/TD Diff Buffers



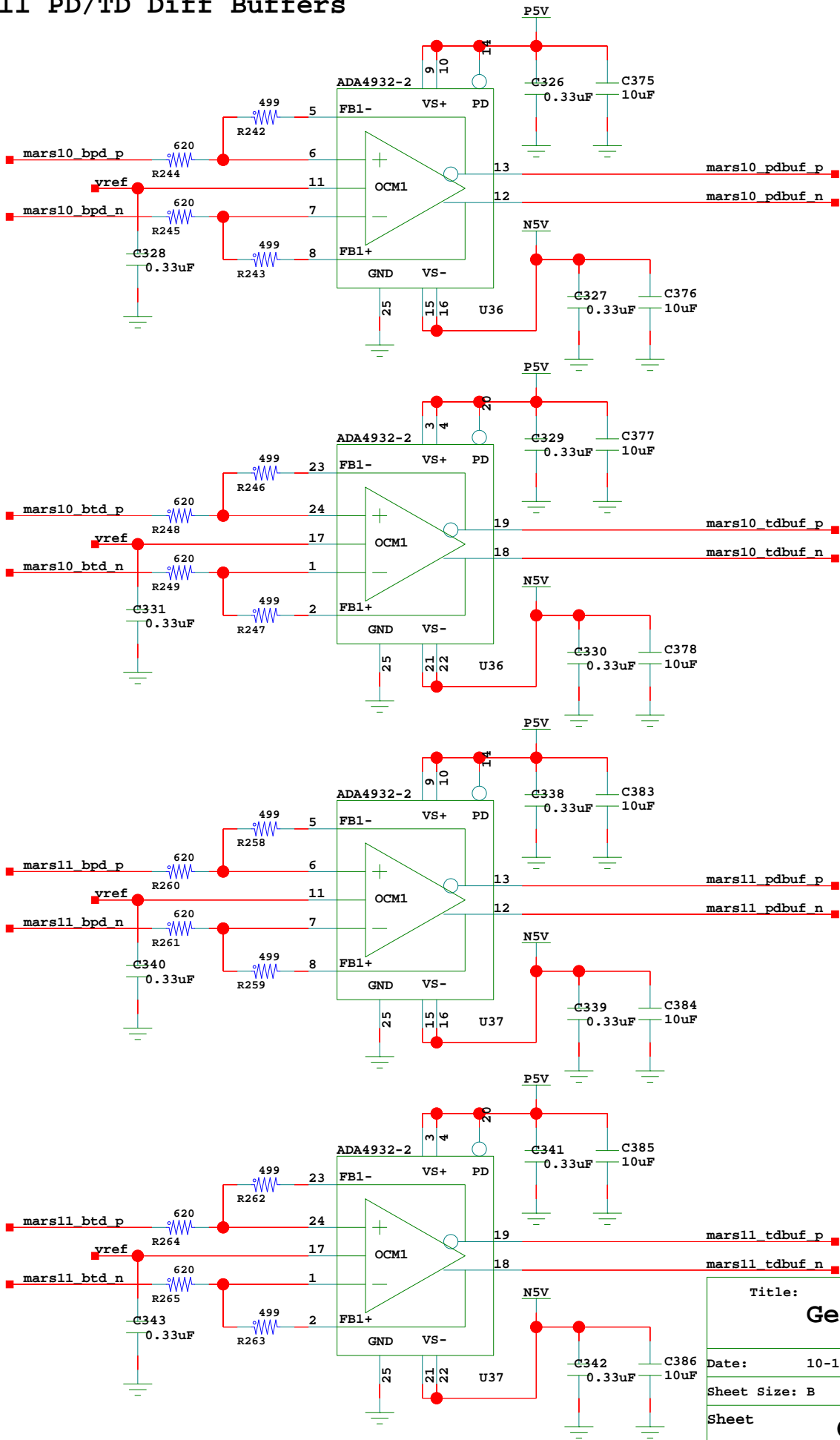
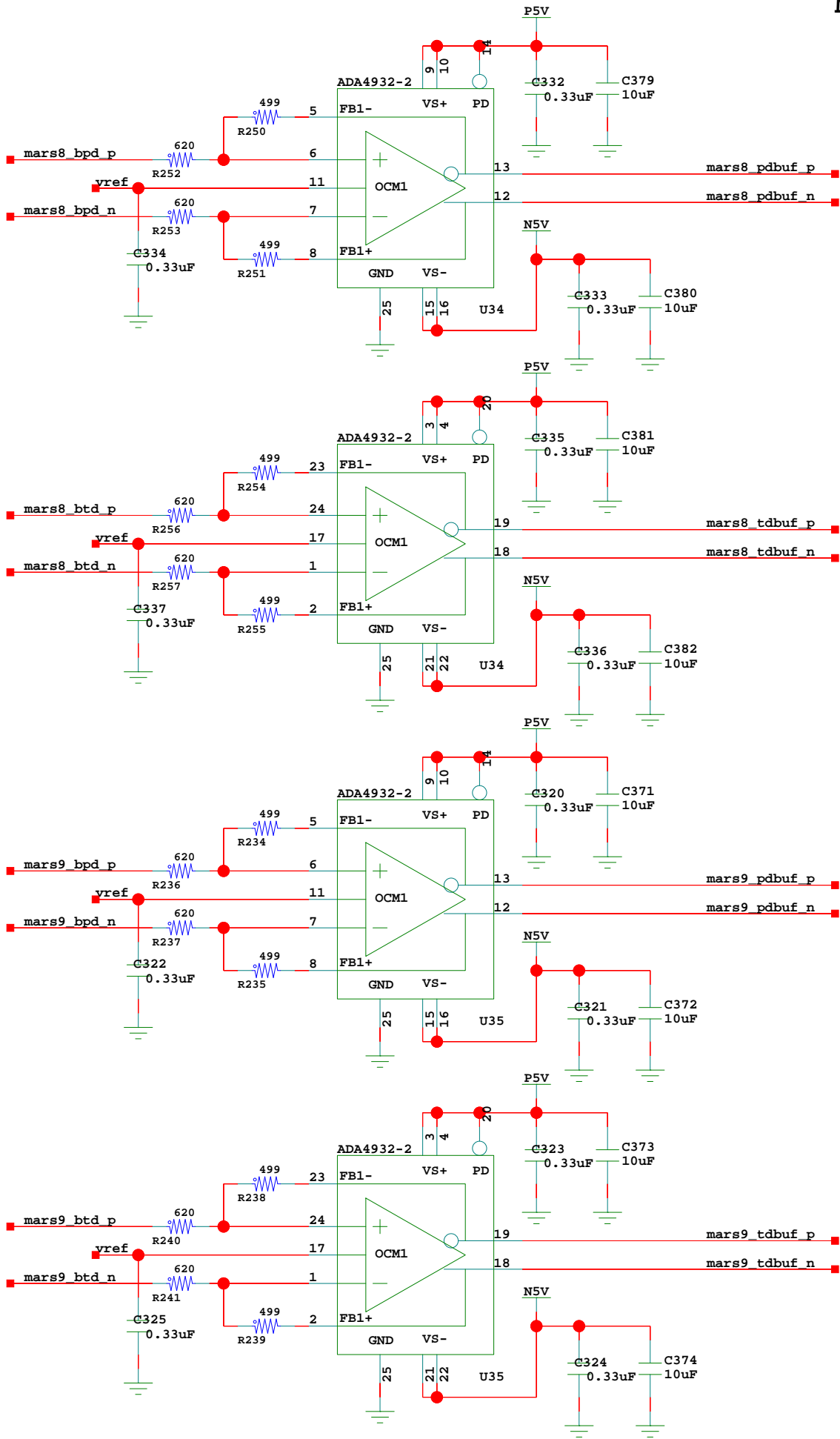
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MARS 4-7 TD/PD ADC



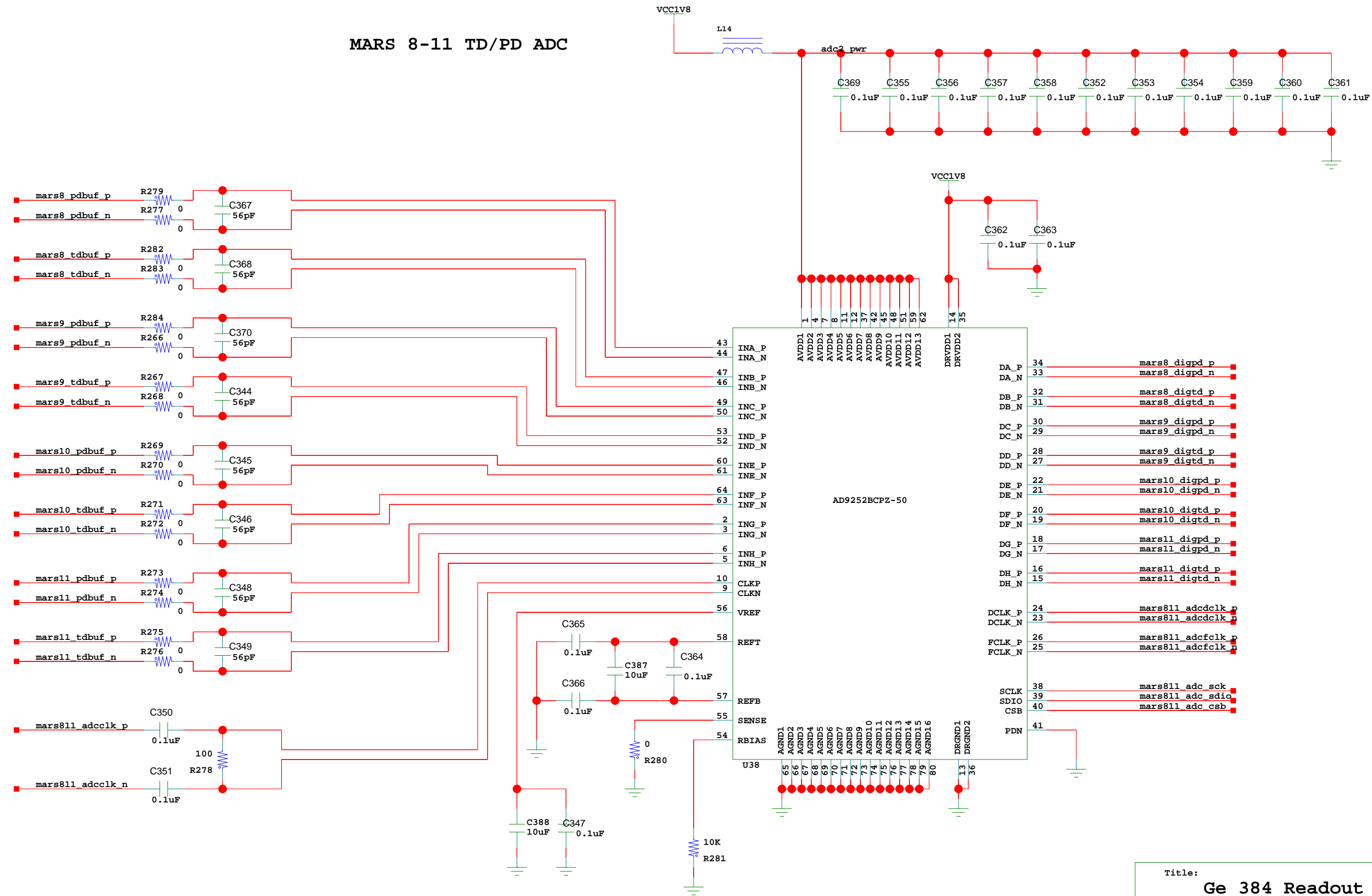
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MARS 8-11 PD/TD Diff Buffers



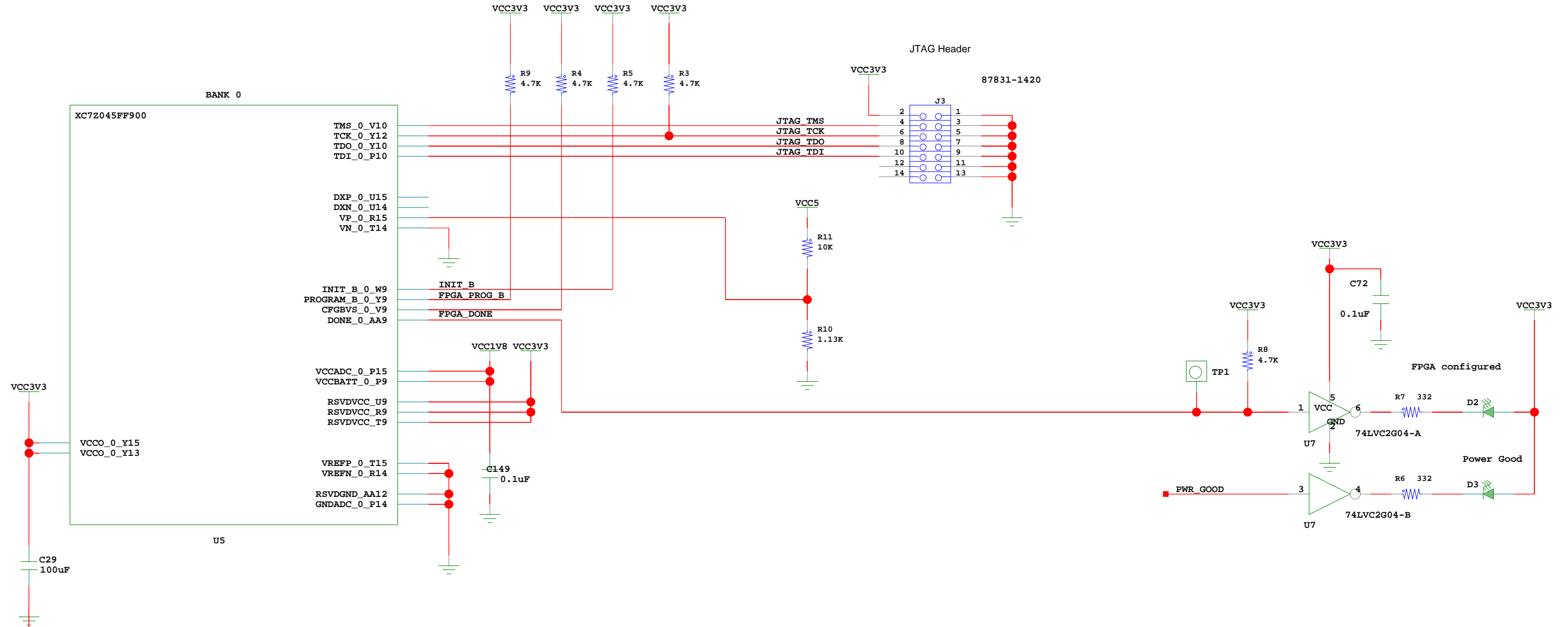
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MARS 8-11 TD/PD ADC



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FPGA: Configuration



Title:

Ge 384 Readout Module

Date: 10-14-16

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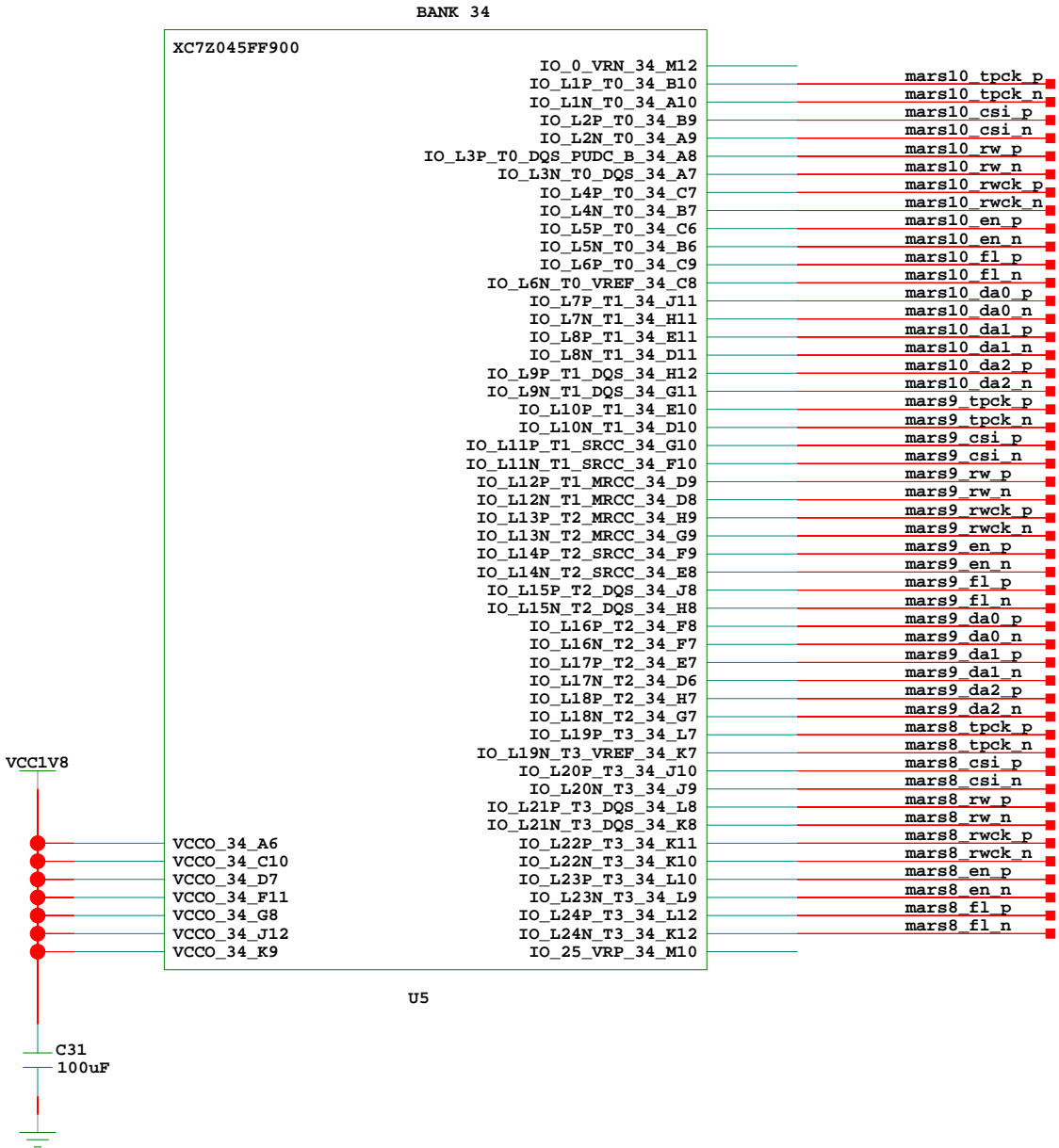
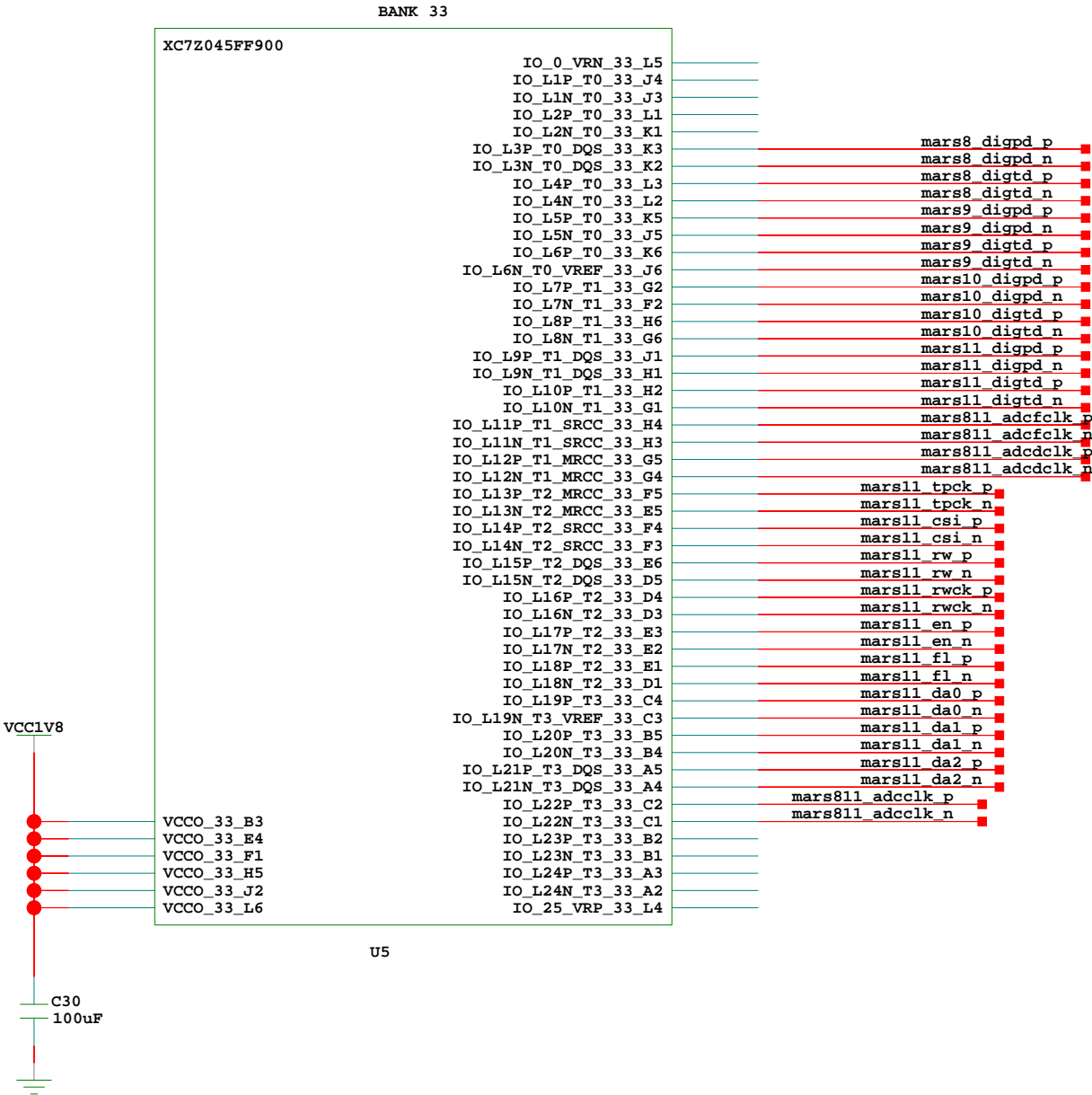
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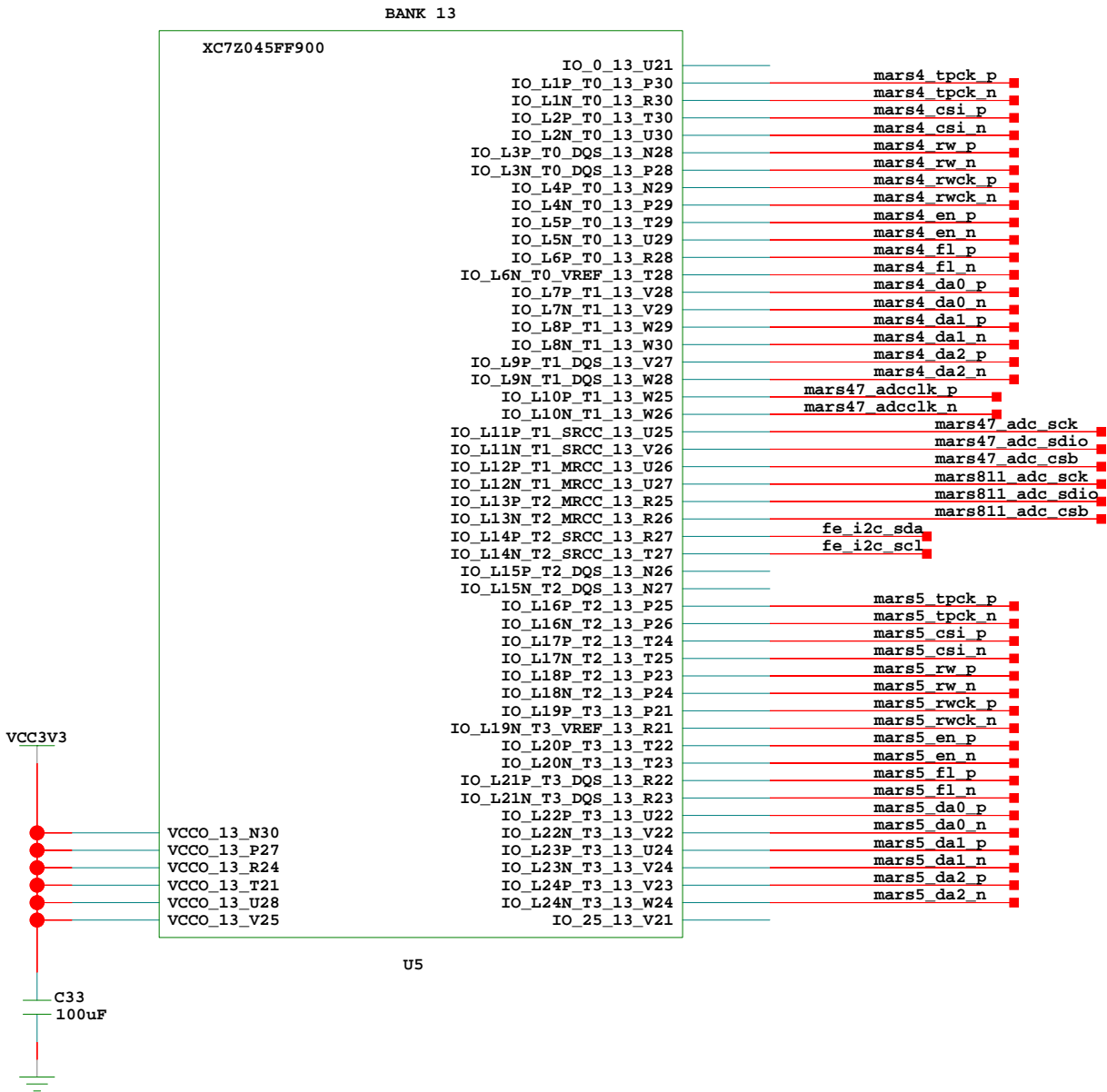
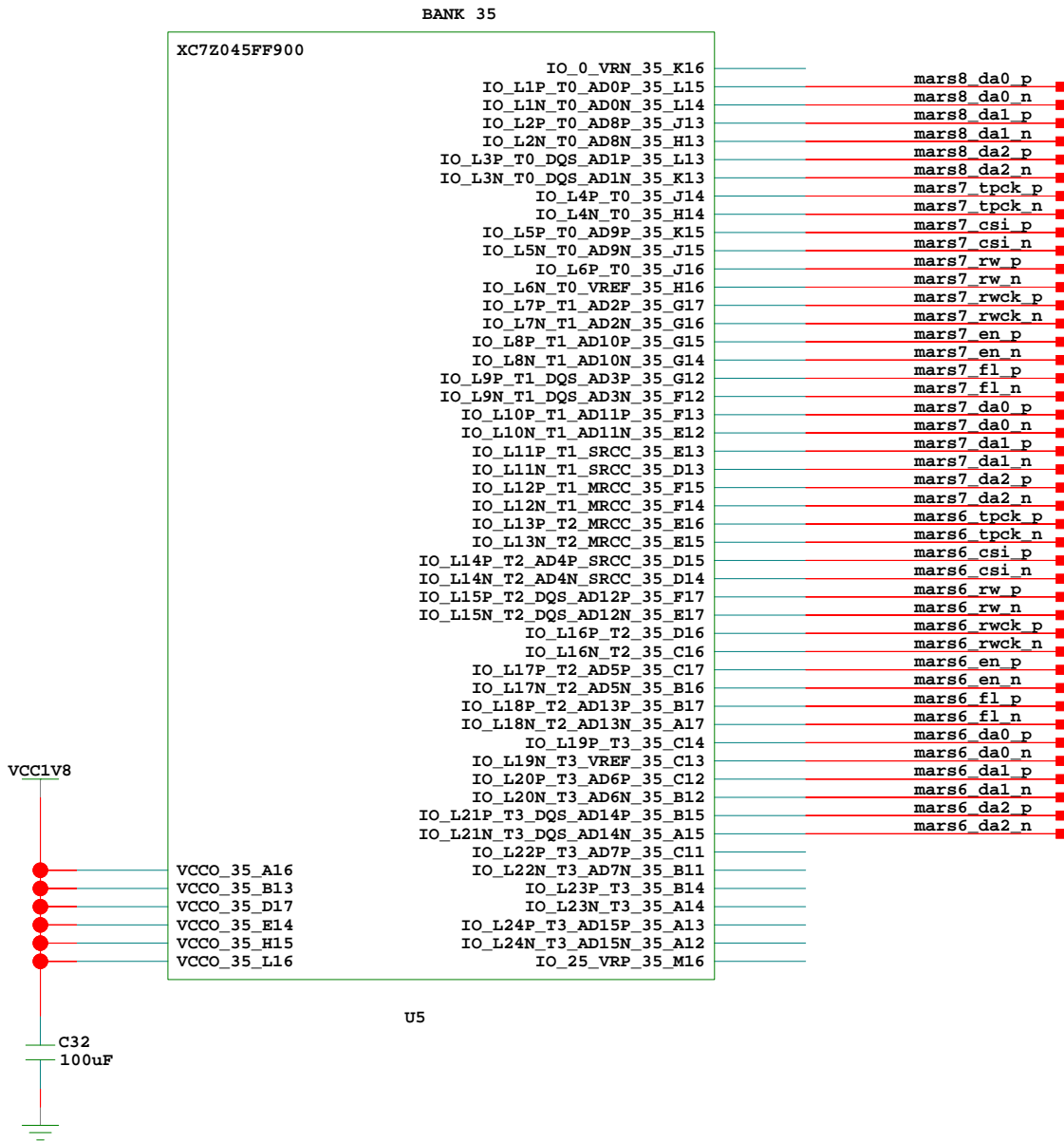
Drawn By J. Mead

FPGA: MARS I/O



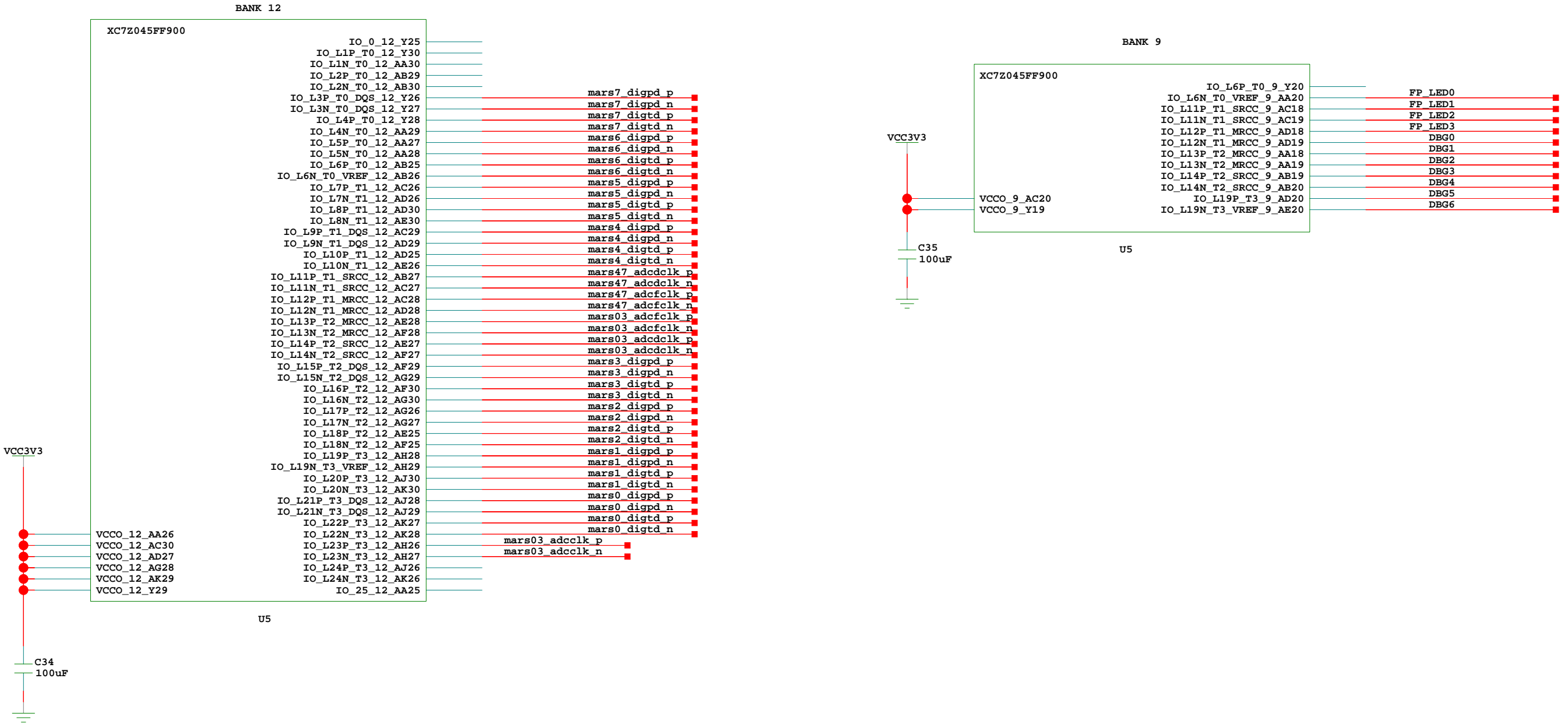
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Ge 384 Readout Module			
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FPGA: MARS I/O



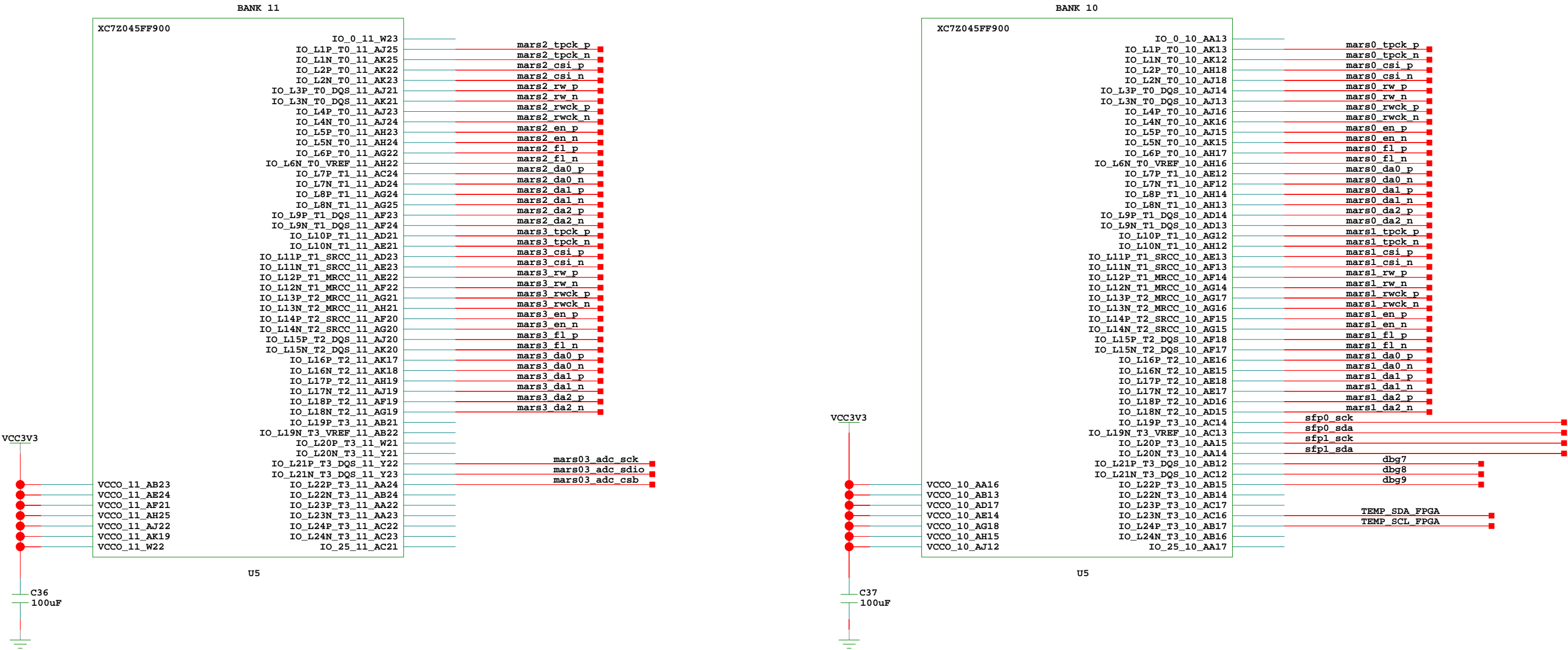
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Ge 384 Readout Module			
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Drawn By		J. Mead	

FPGA: MARS I/O



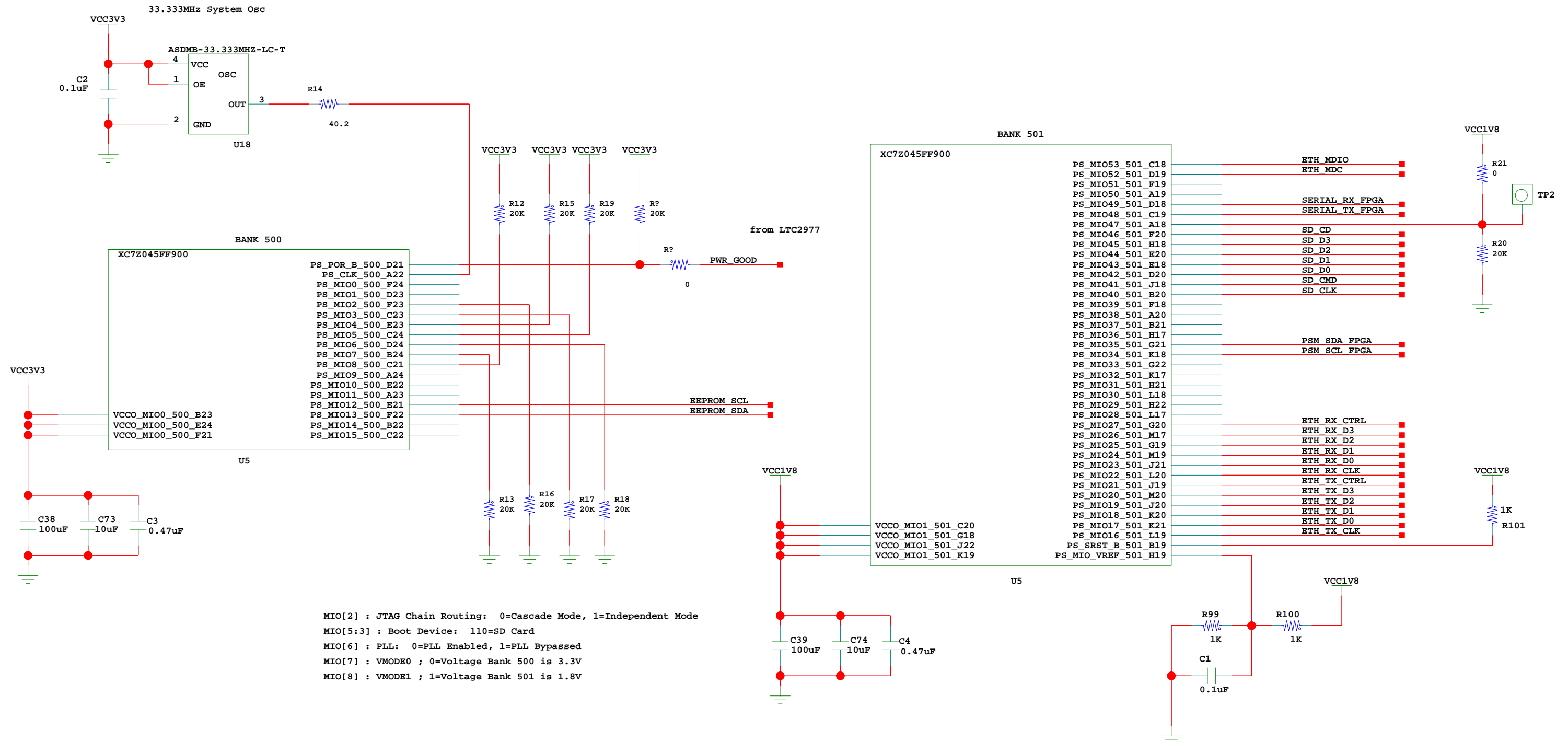
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FPGA: MARS I/O



Title:			
Ge 384 Readout Module			
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FPGA: PS MIO



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MIO[2] : JTAG Chain Routing: 0=Cascade Mode, 1=Independent Mode
MIO[5:3] : Boot Device: 110=SD Card
MIO[6] : PLL: 0=PLL Enabled, 1=PLL Bypassed
MIO[7] : VMODE0 : 0=Voltage Bank 500 is 3.3V
MIO[8] : VMODE1 : 1=Voltage Bank 501 is 1.8V
```

Title: <h1>Ge 384 Readout Module</h1>	
Date: 10-14-16	Ver:
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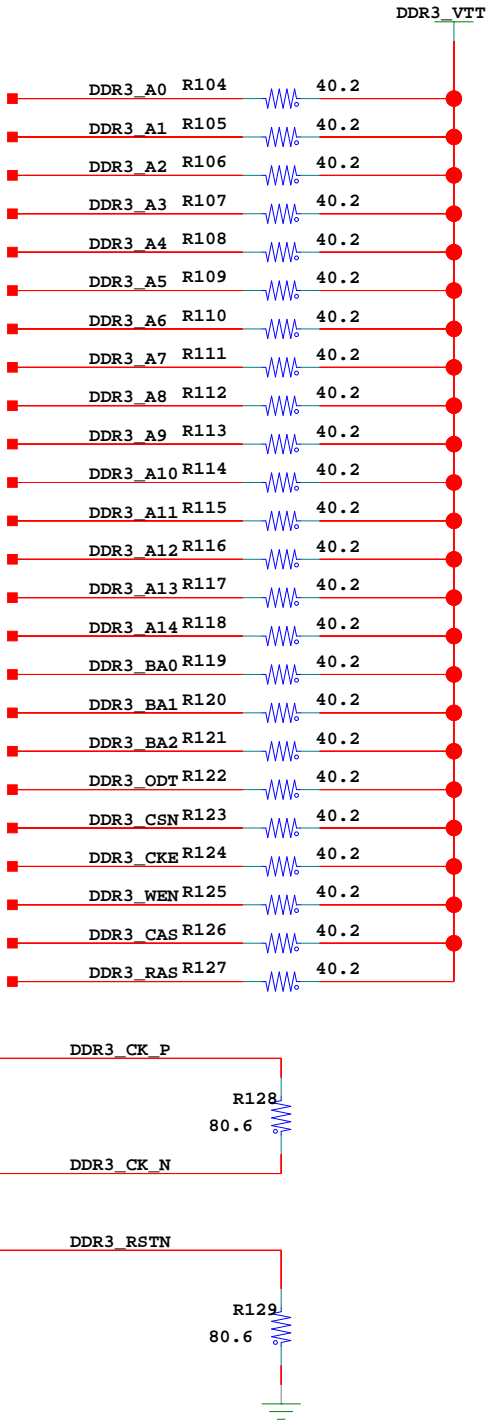
FPGA: PS DDR3 Memory

Layout Notes:

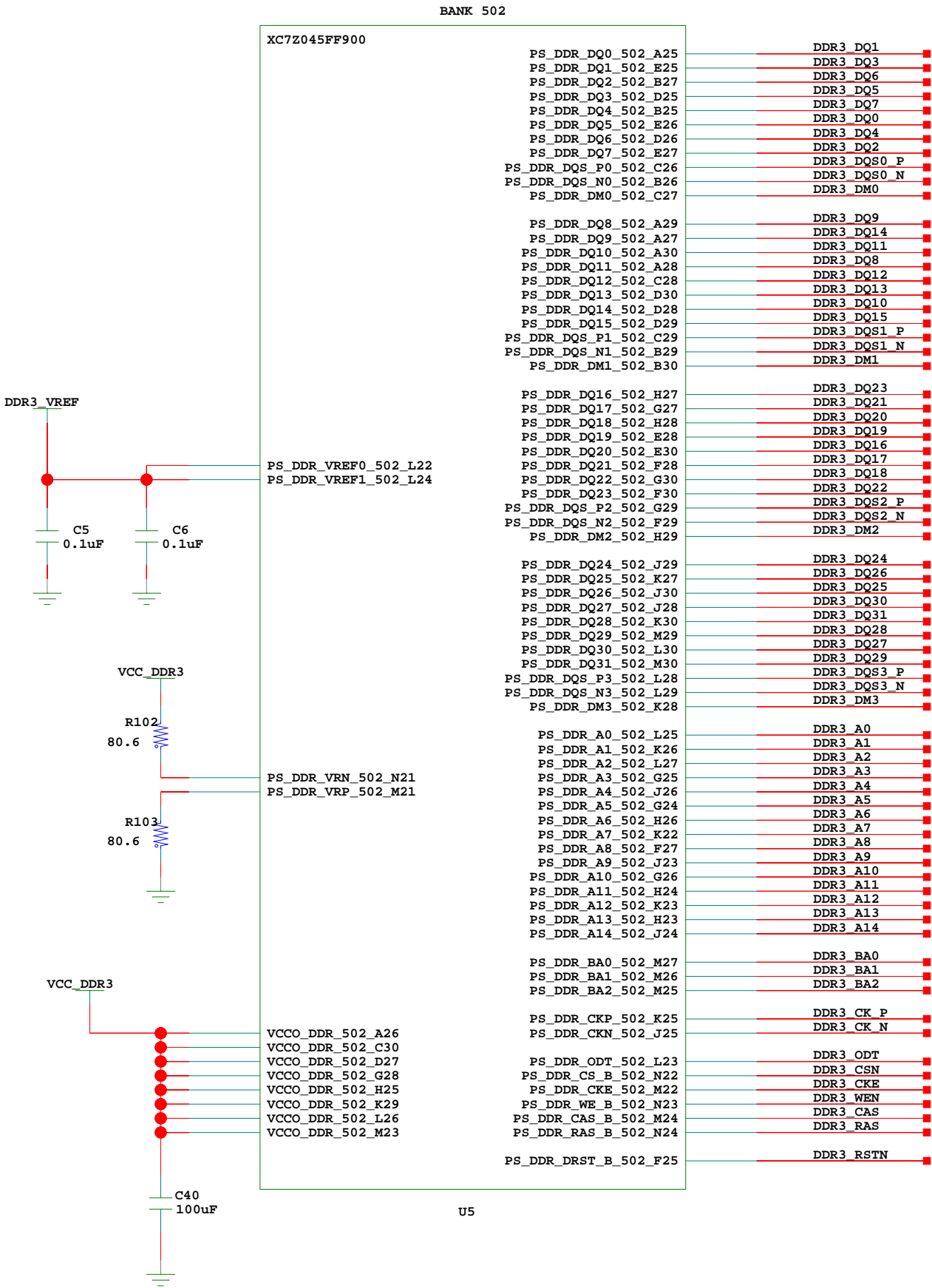
Use Fly-by routing and termination for DDR3 control signals. Resistors should be placed past the last memory IC and as close to the device as possible

DDR3 trace lengths must include Zynq package flight times. See UG933 and Layout Guidelines

DDR3 target trace impedances are:
Single Ended = 40 ohms
Differential = 80 ohms



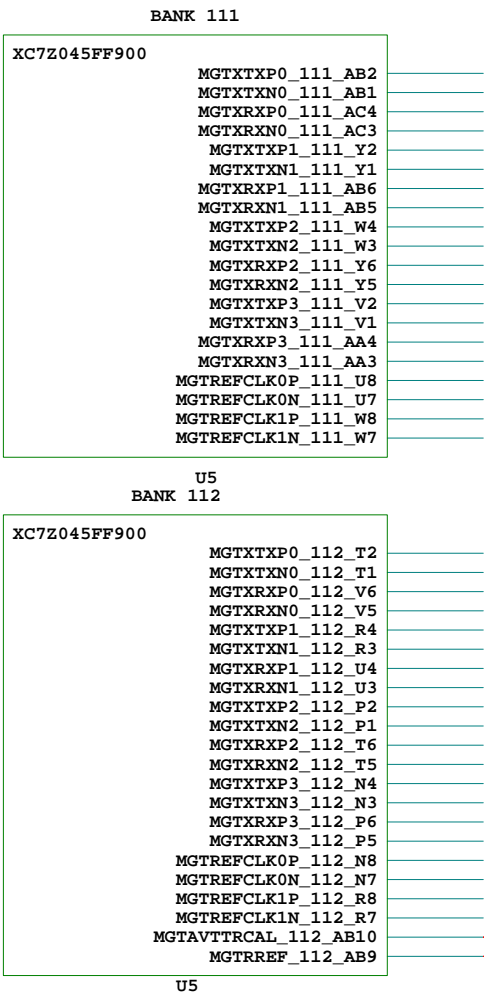
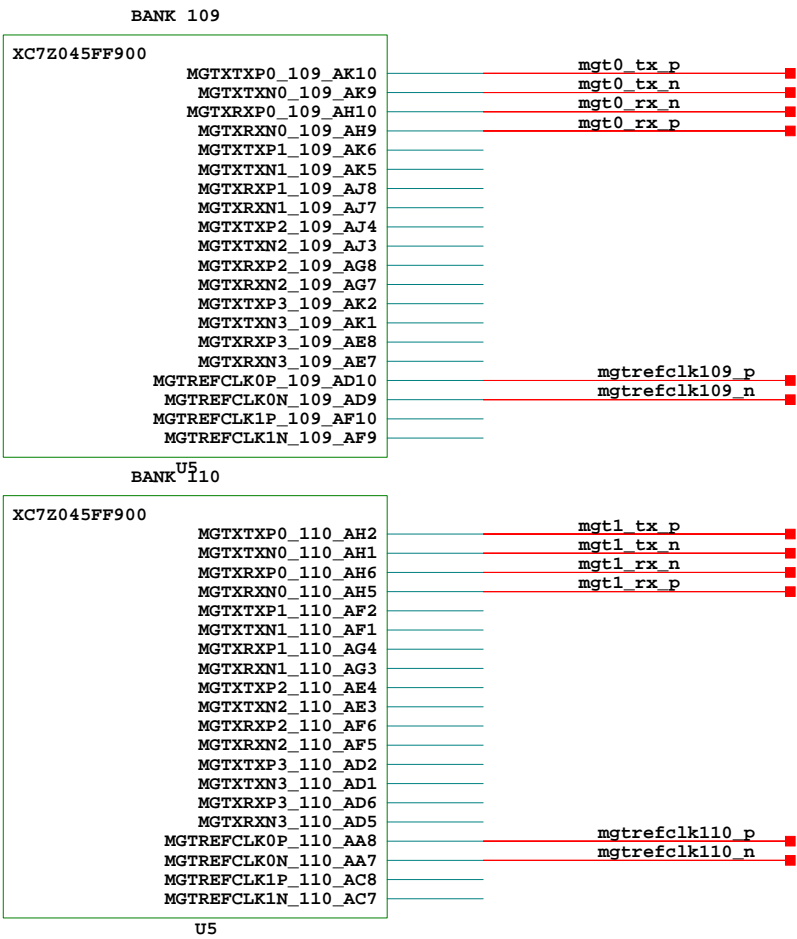
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FPGA: GTX

EVR

Data

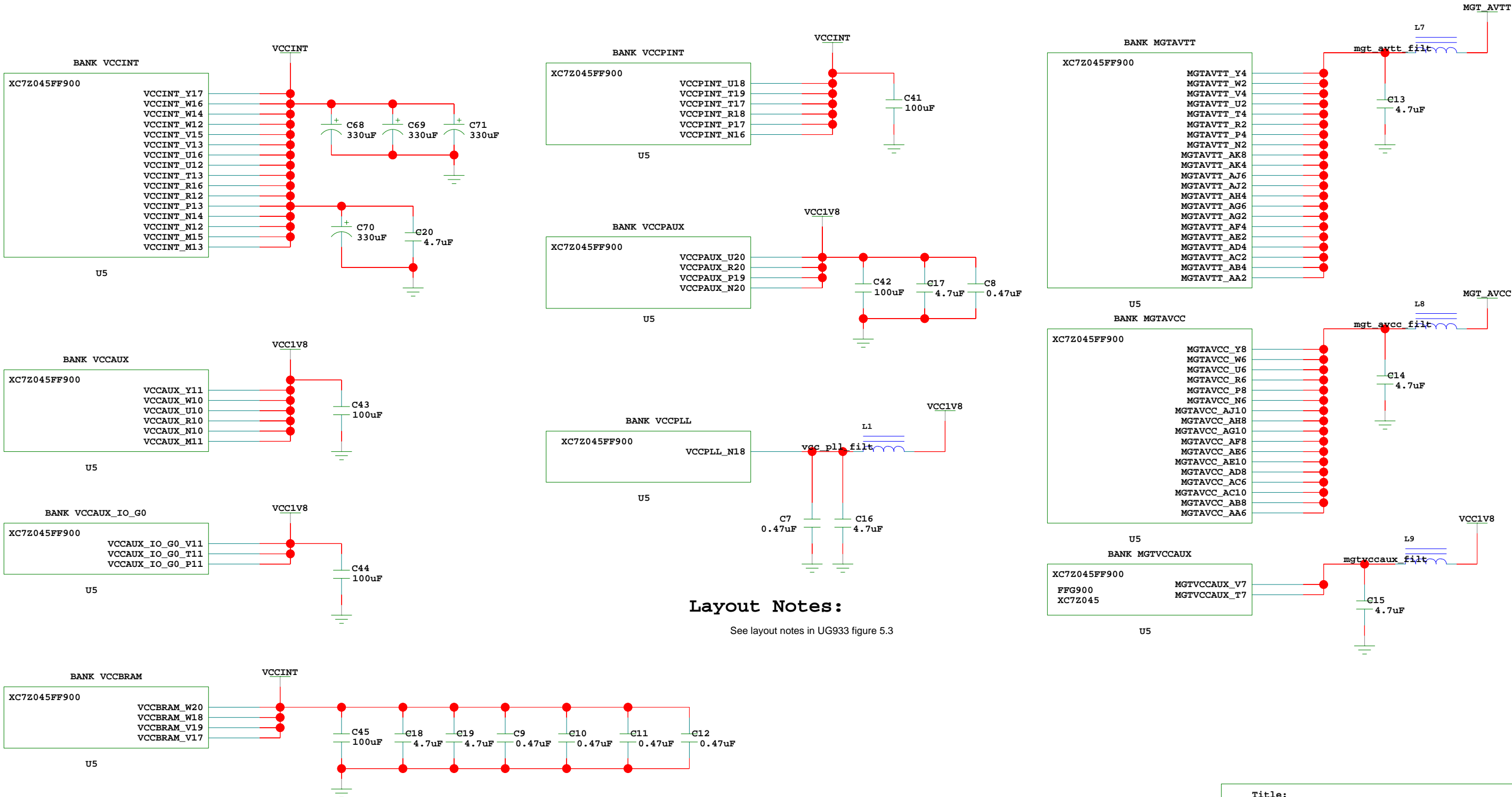


Title:		Ge 384 Readout Module	
Date:	10-14-16	Ver:	
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FPGA: PL Power

FPGA: PS Power

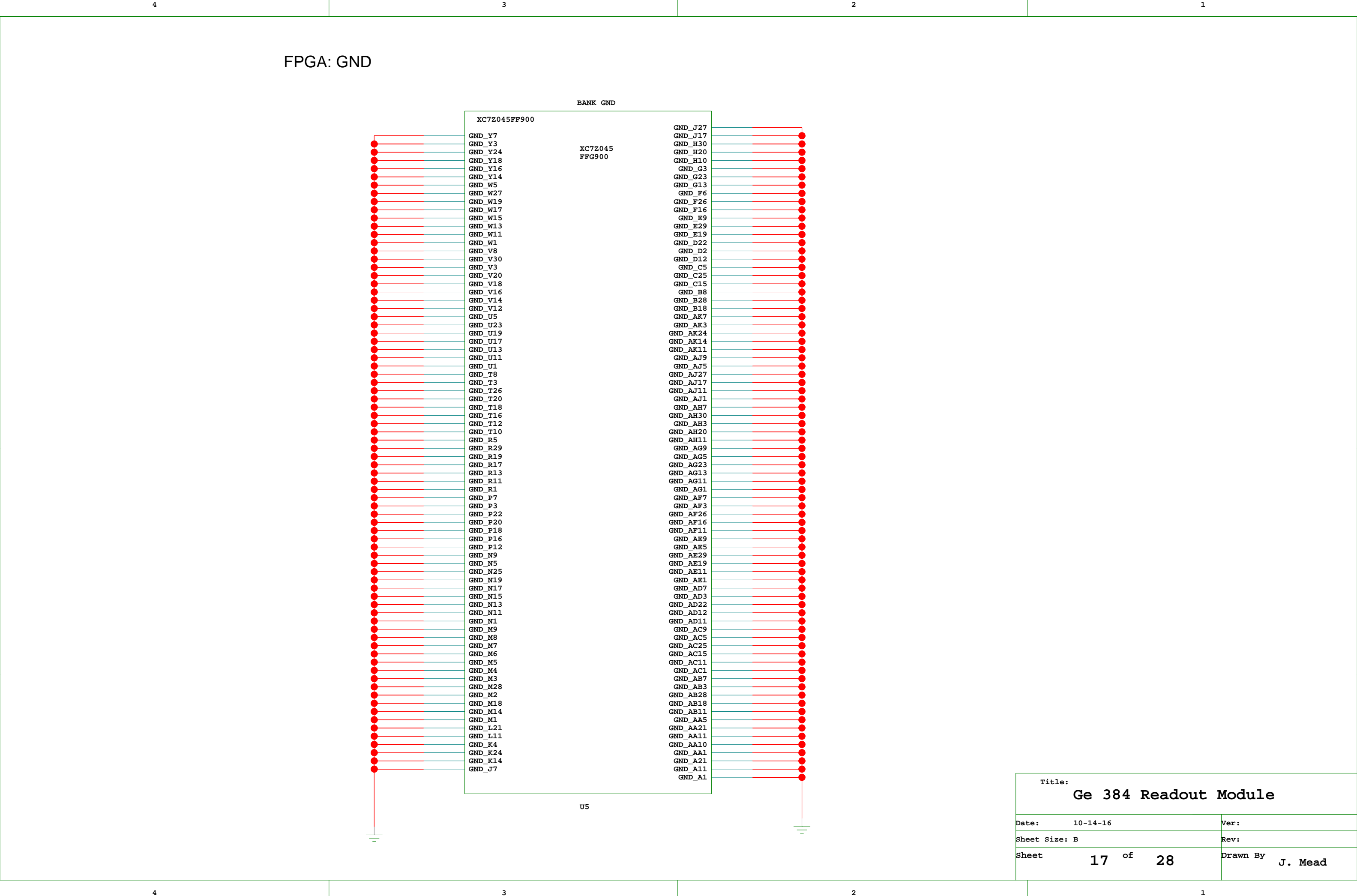
FPGA: MGT Power



Layout Notes:

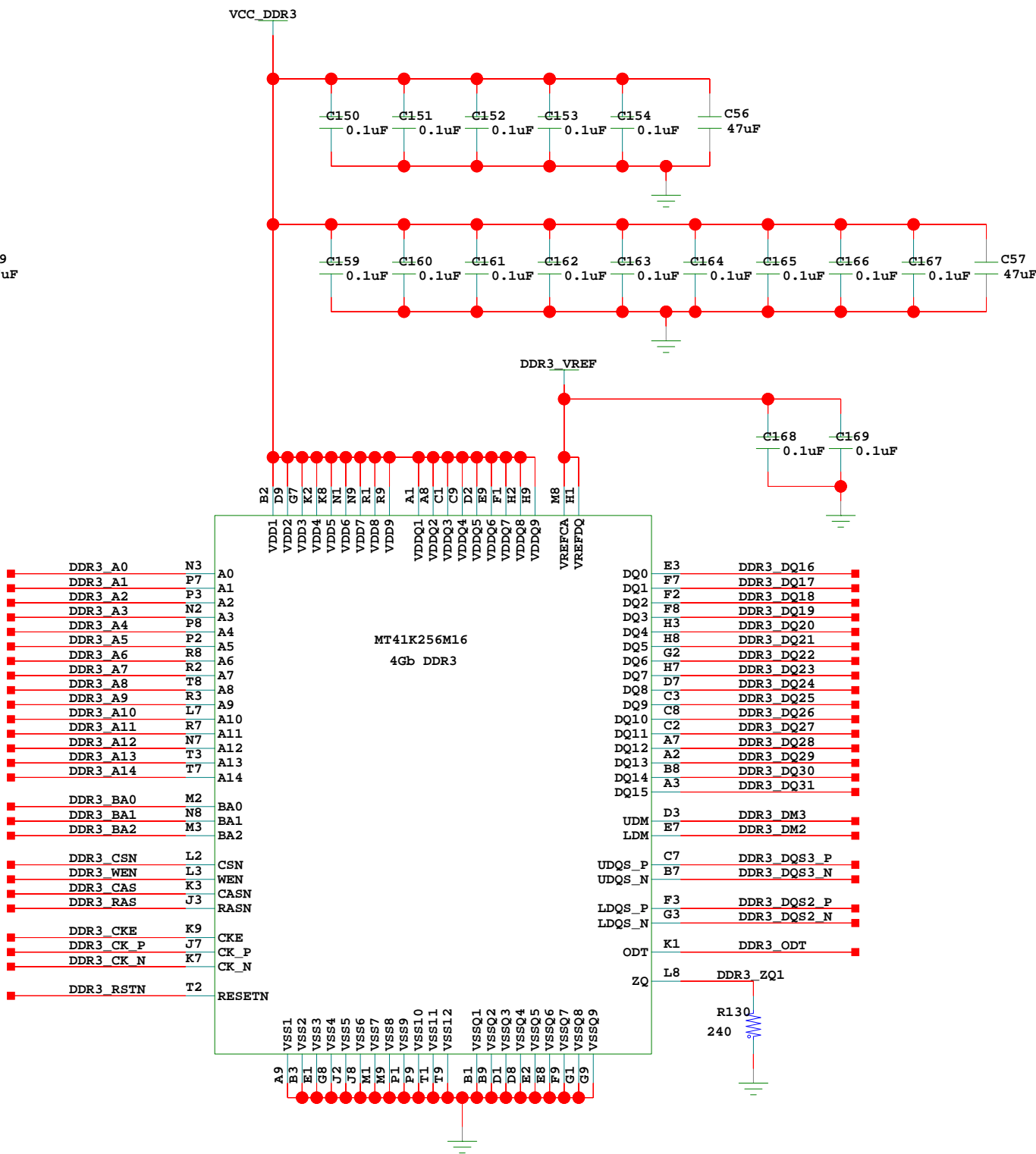
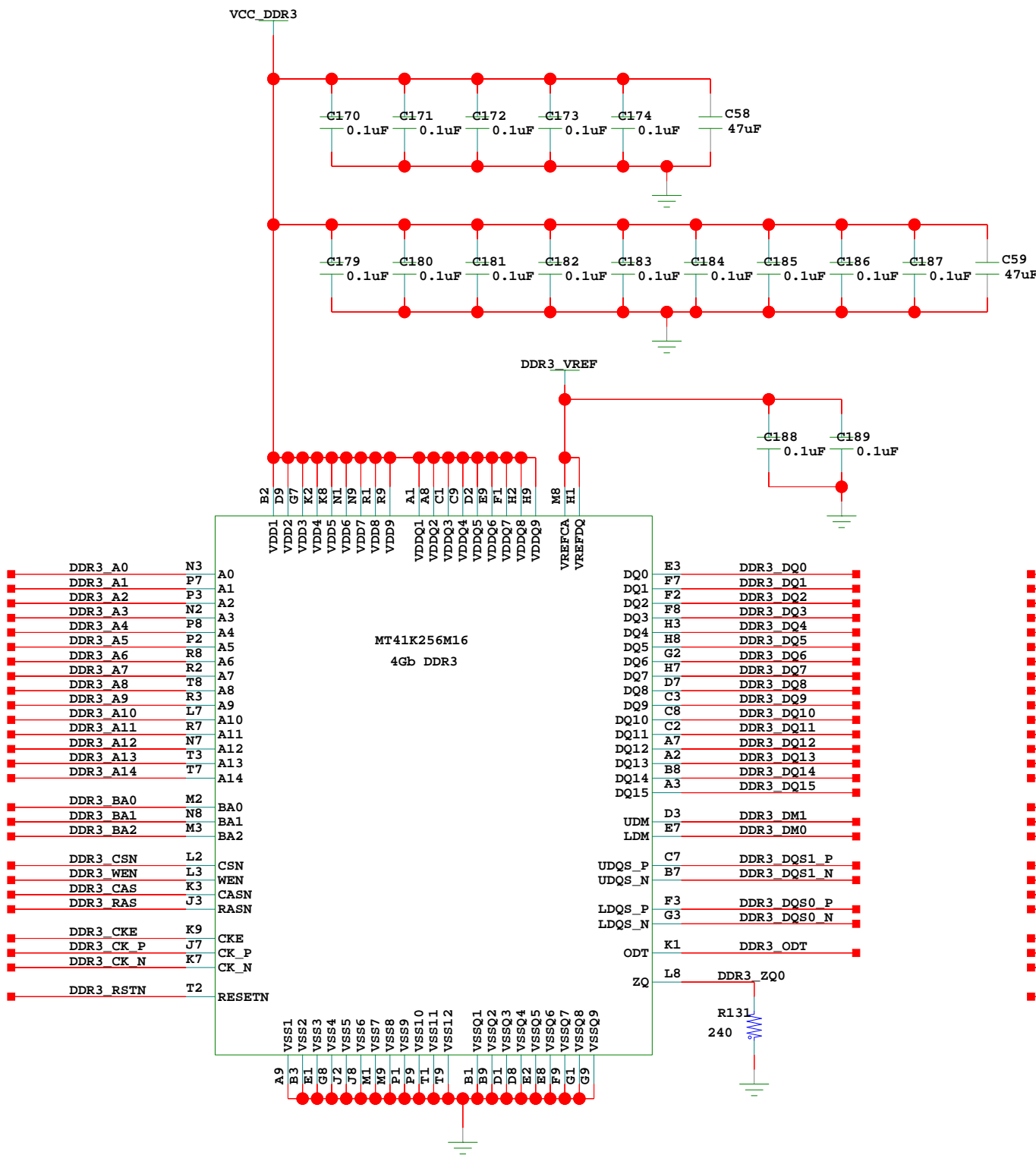
See layout notes in UG933 figure 5.3

Title: Ge 384 Readout Module	
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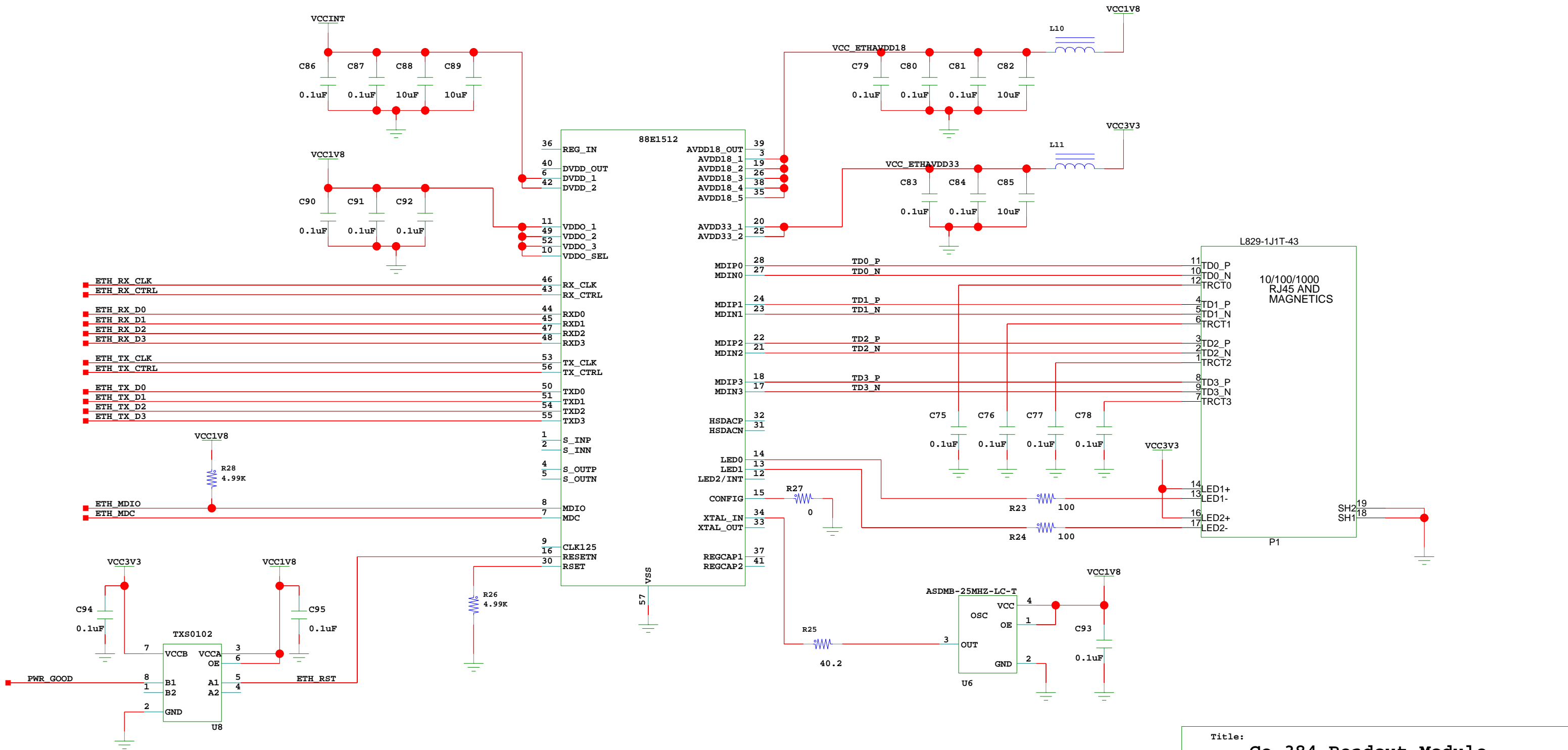
Title: Ge 384 Readout Module	
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DDR3



Title: Ge 384 Readout Module	
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Sheet Size: B	Rev:
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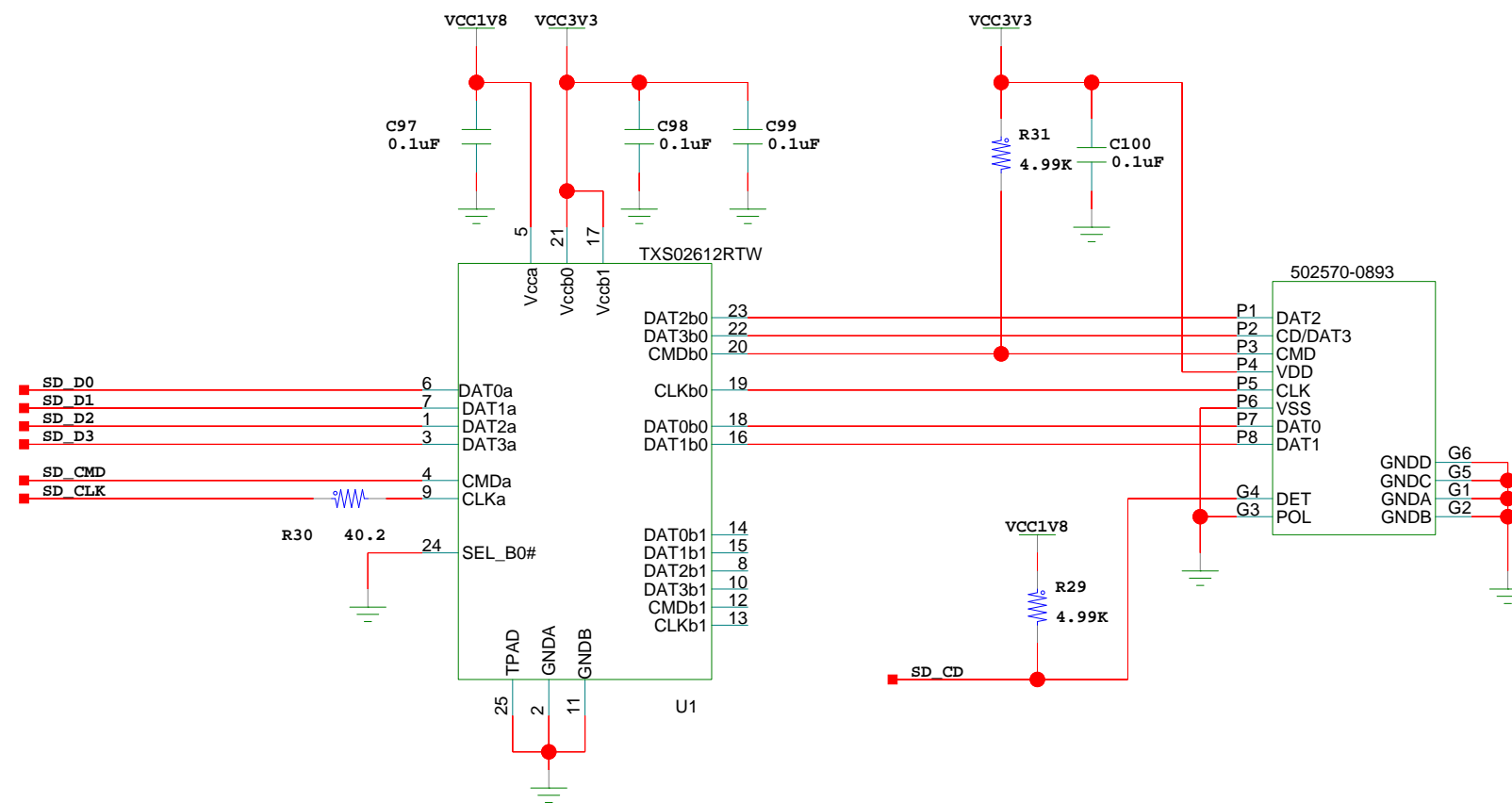
Gigabit Ethernet



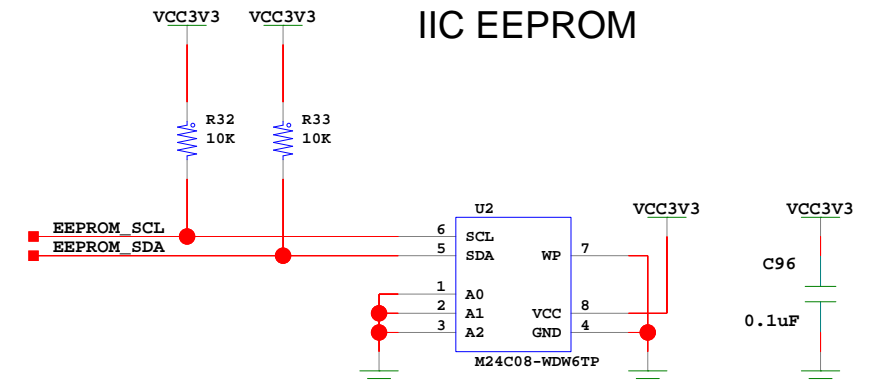
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NonVolatile Memories

SD card

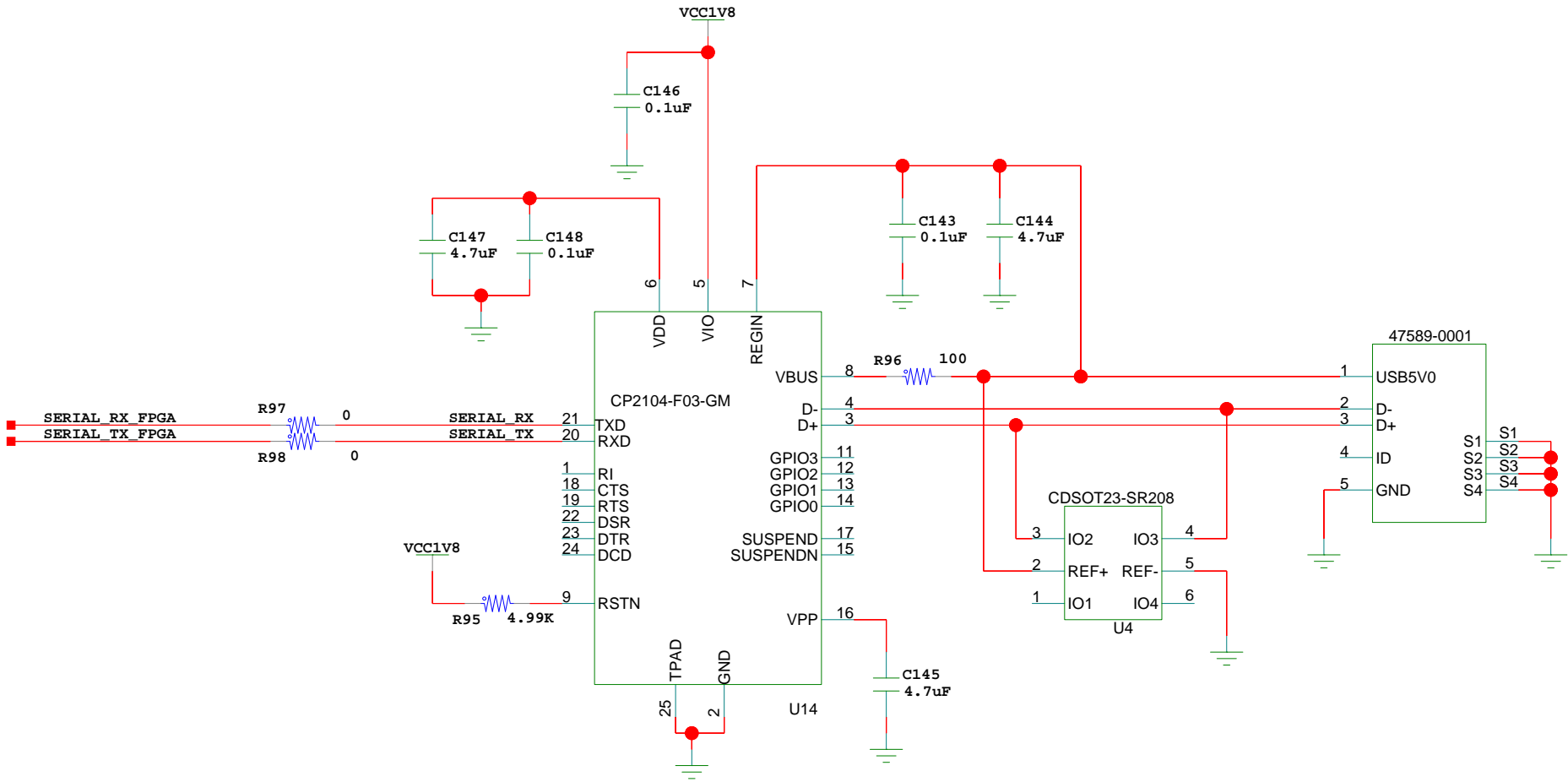


IIC EEPROM



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USB UART



Title:

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Ver:

Sheet Size:

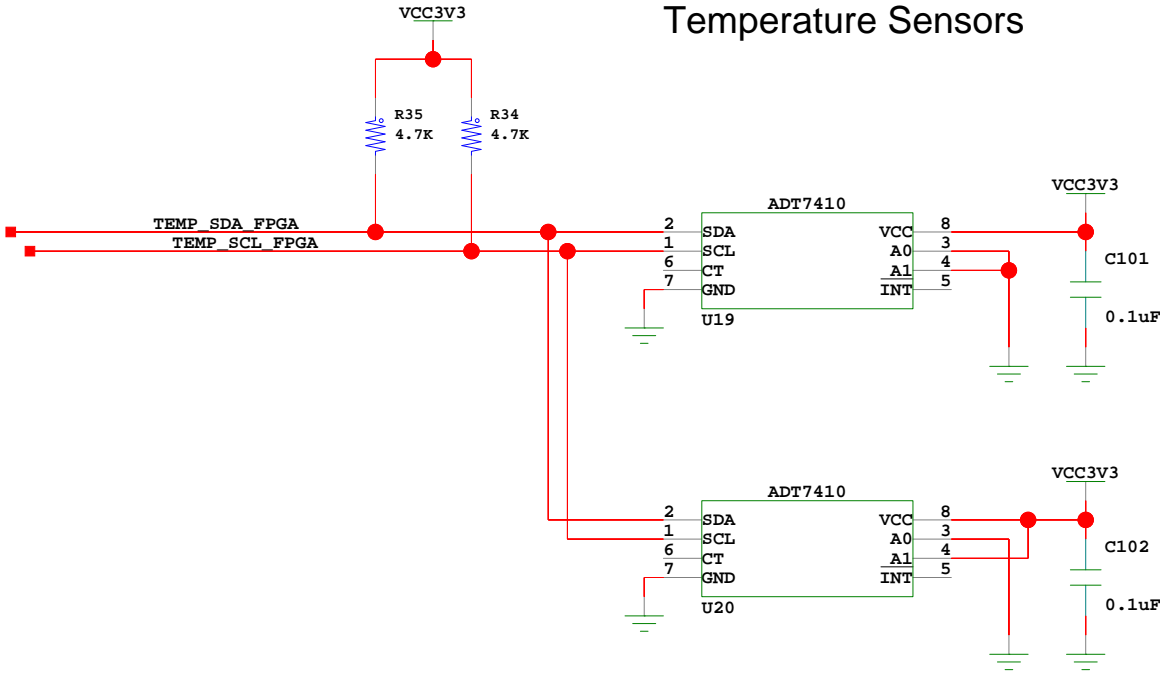
Rev

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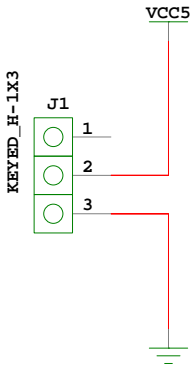
Drawn By J. Mead

Miscellaneous

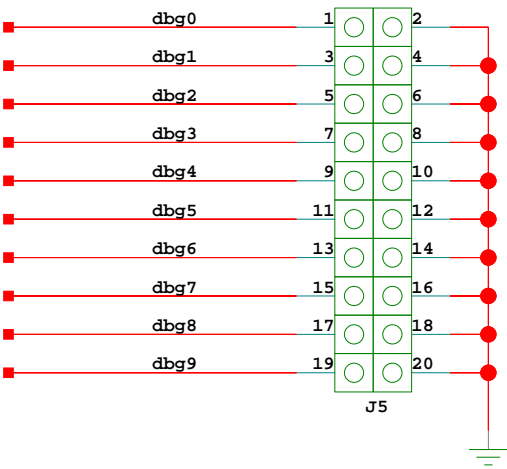
Temperature Sensors



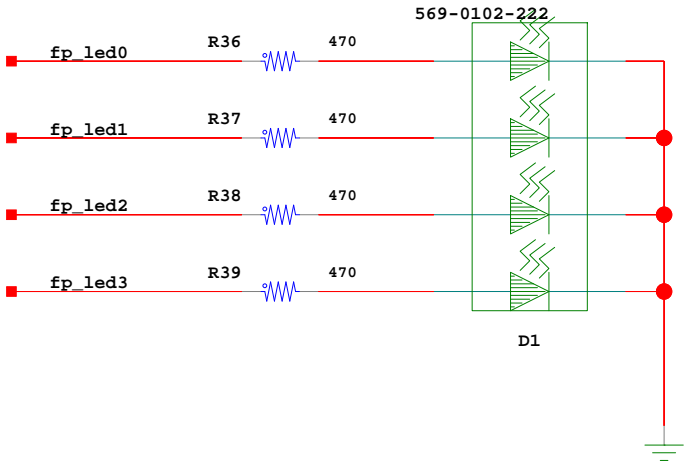
Fan Power



Debug Header



Front Panel LEDs

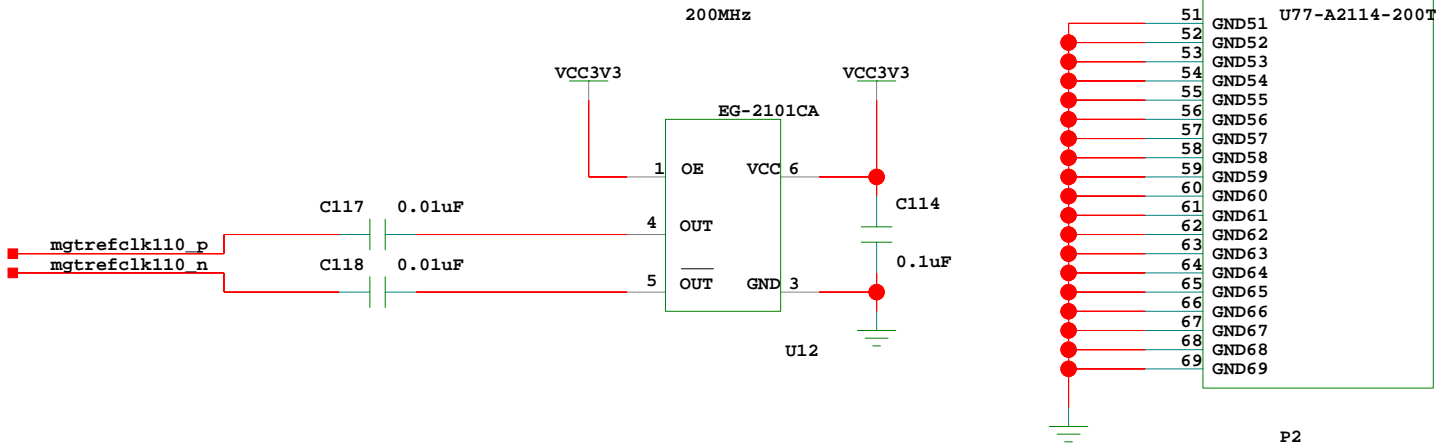
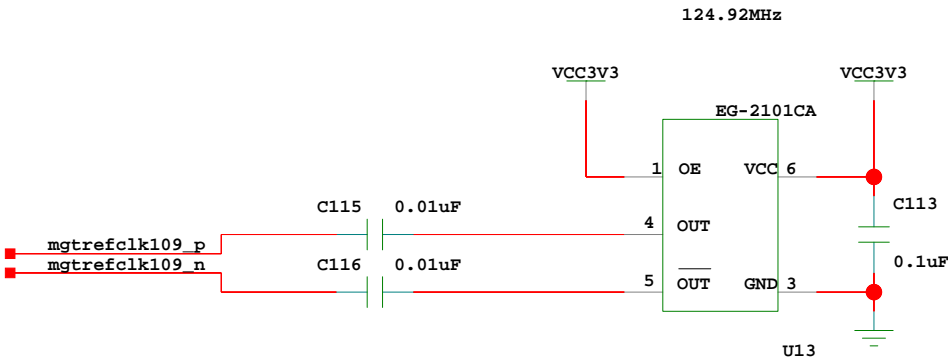
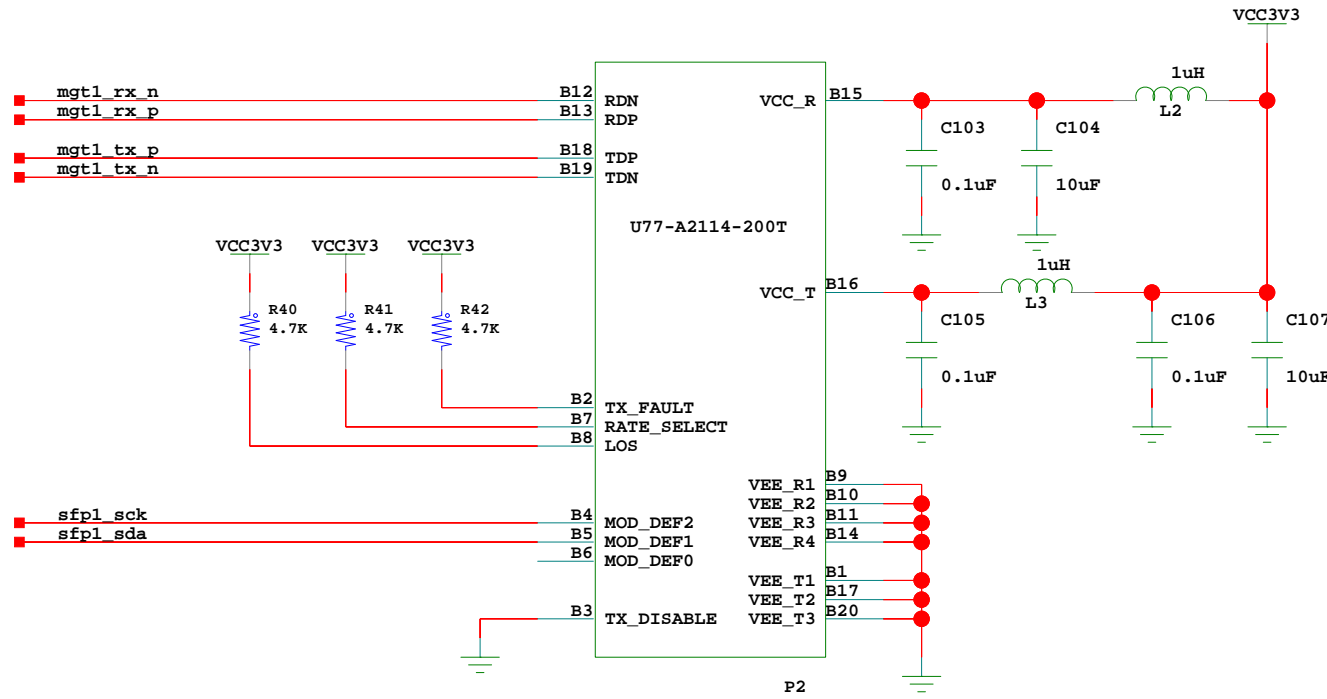
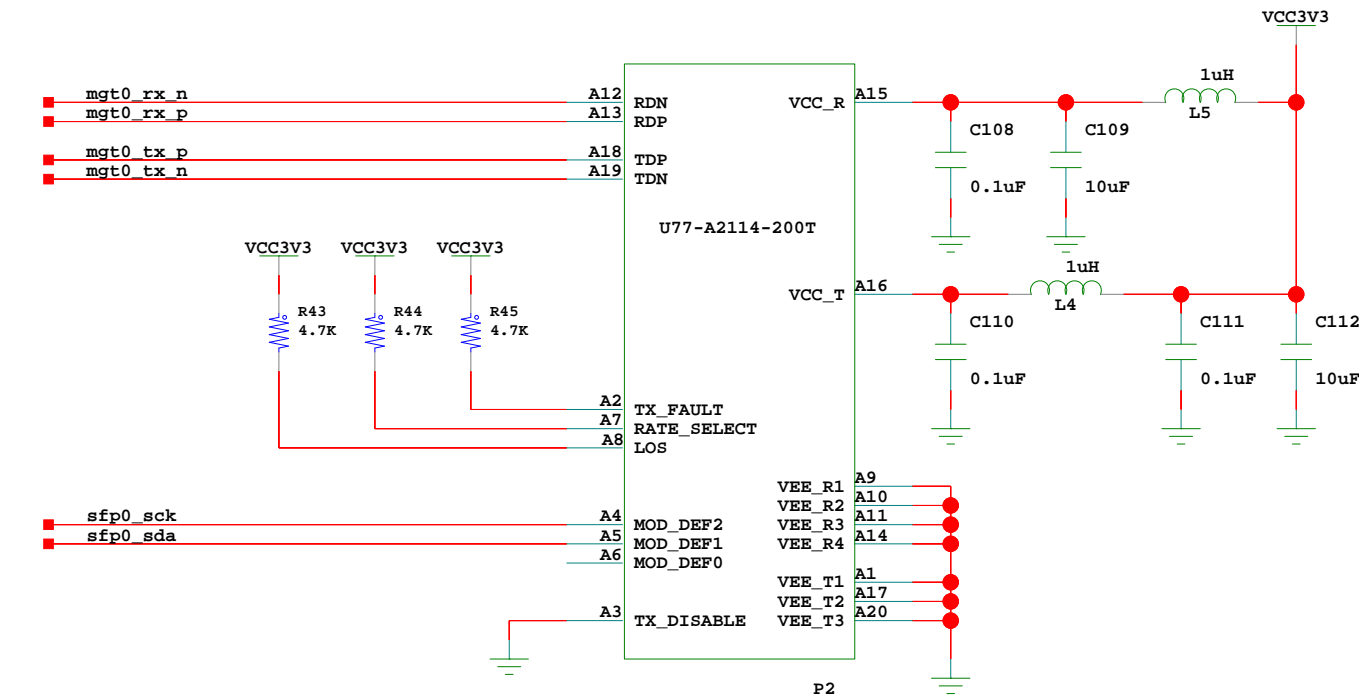


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SFP Module

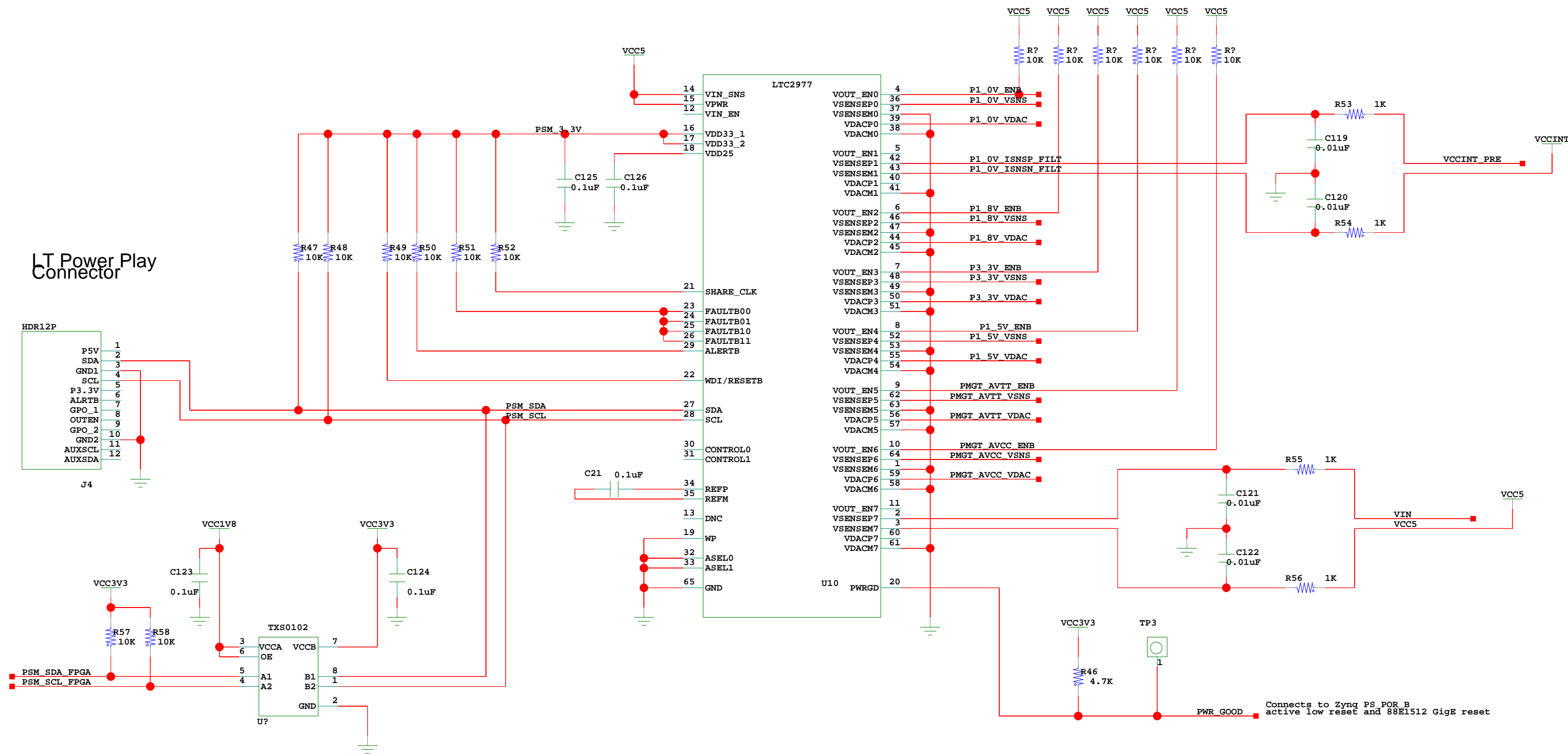
Event Receiver

Data Transceiver



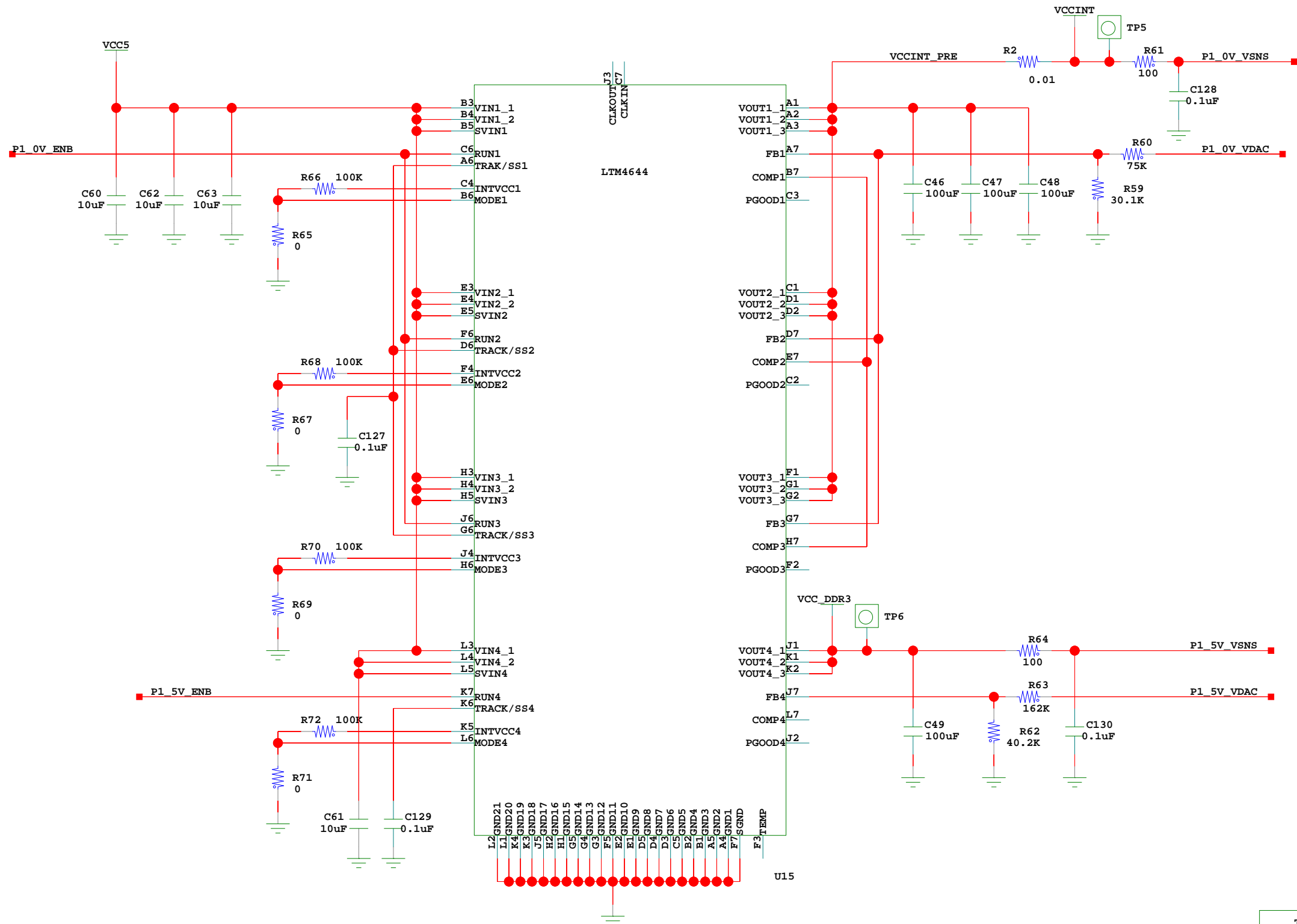
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		Drawn By	J. Mead

Power System Management



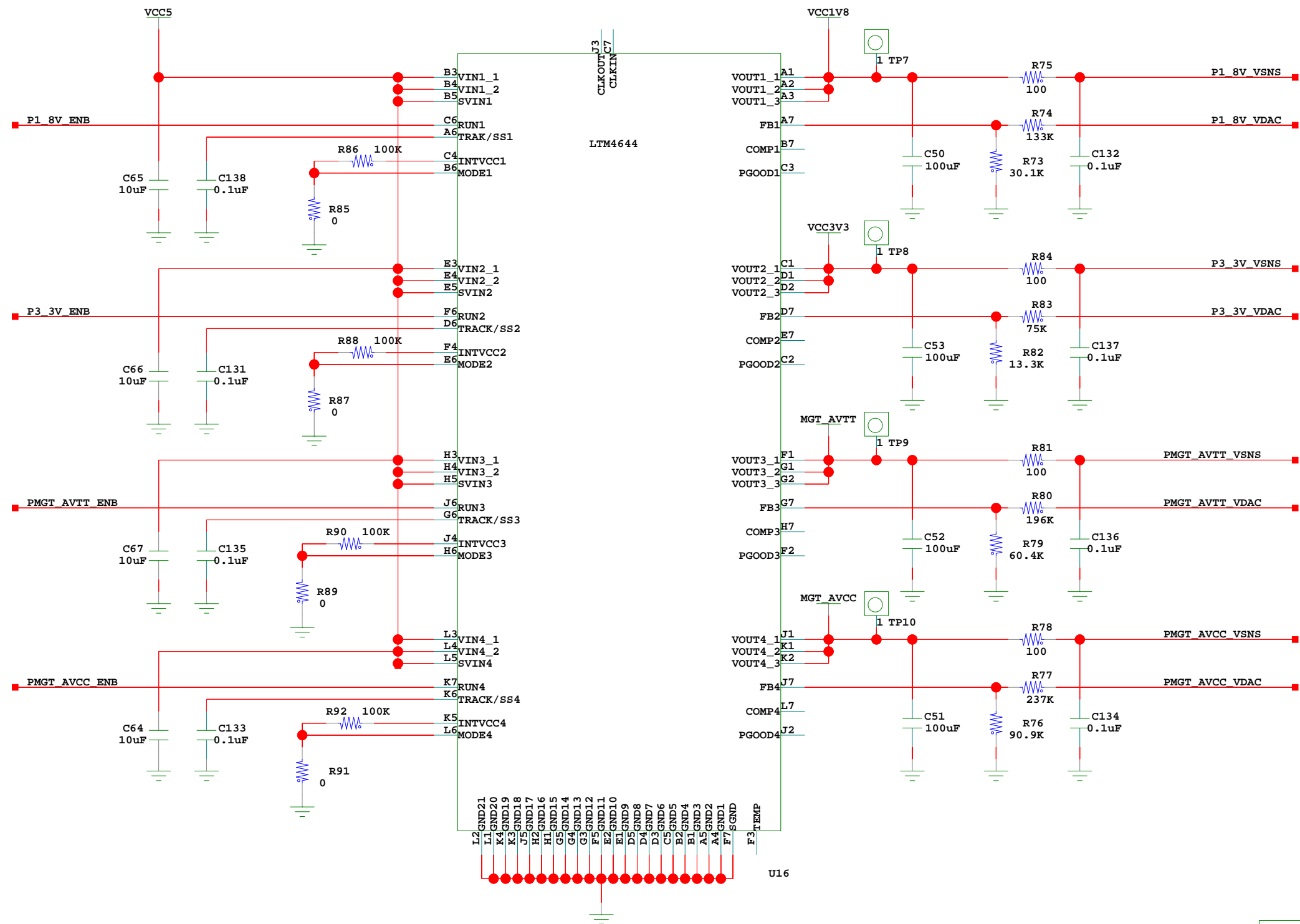
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Regulators: VCCINT, VCCDDR



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Regulators: 3.3v, 1.8v, GTX

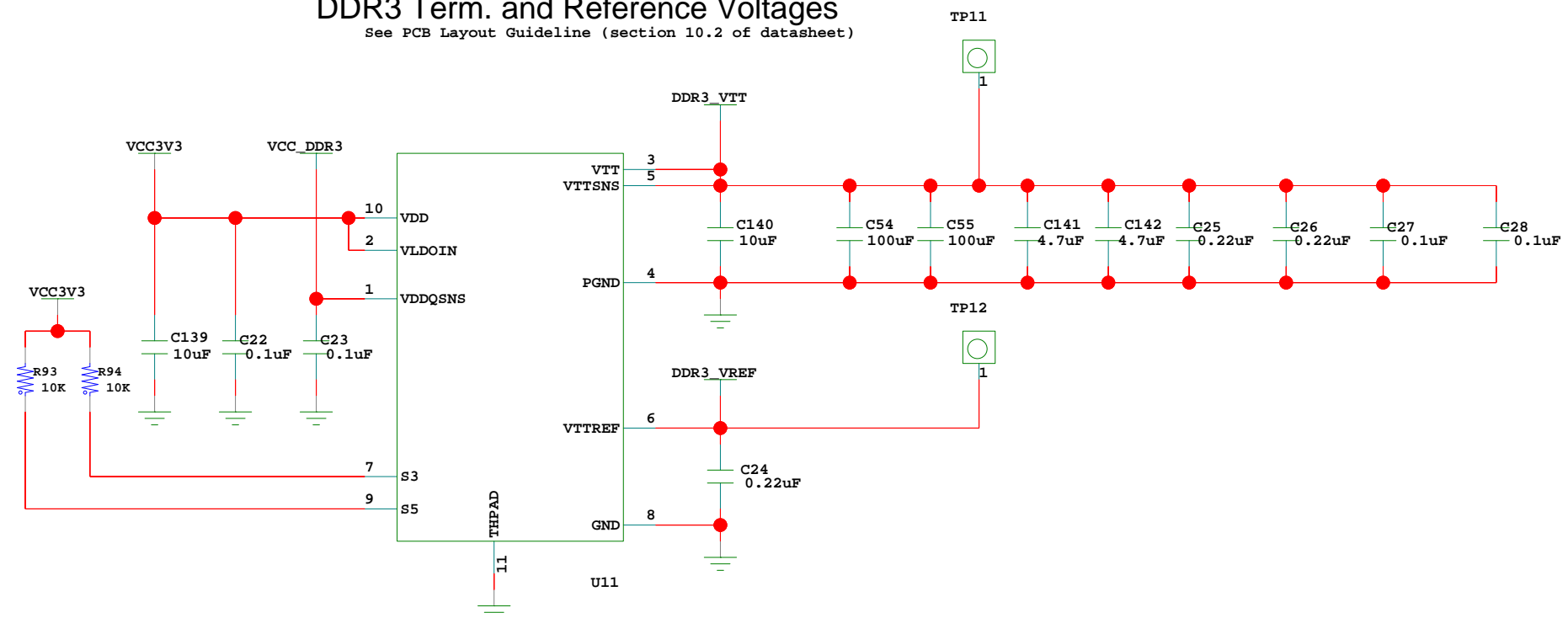


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DDR 3 Regulator

DDR3 Term. and Reference Voltages

See PCB Layout Guideline (section 10.2 of datasheet)



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Ge 384 Readout Module

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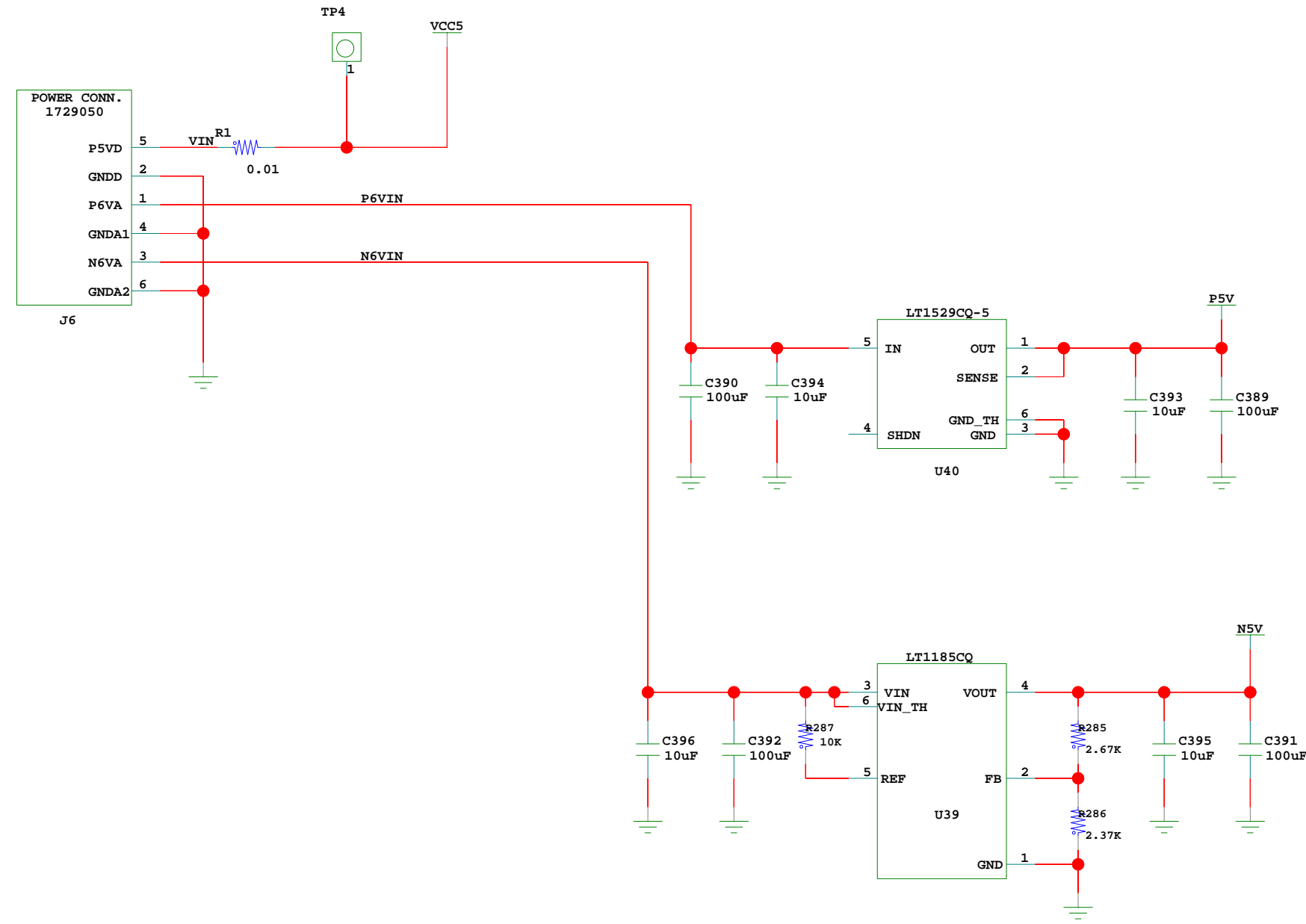
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PD / TD Differential Buffer Regulators

Power Input



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