PG150-C03

384b GDDR6 x16
TALL DP + DP + DP + HDMI/DP + USB

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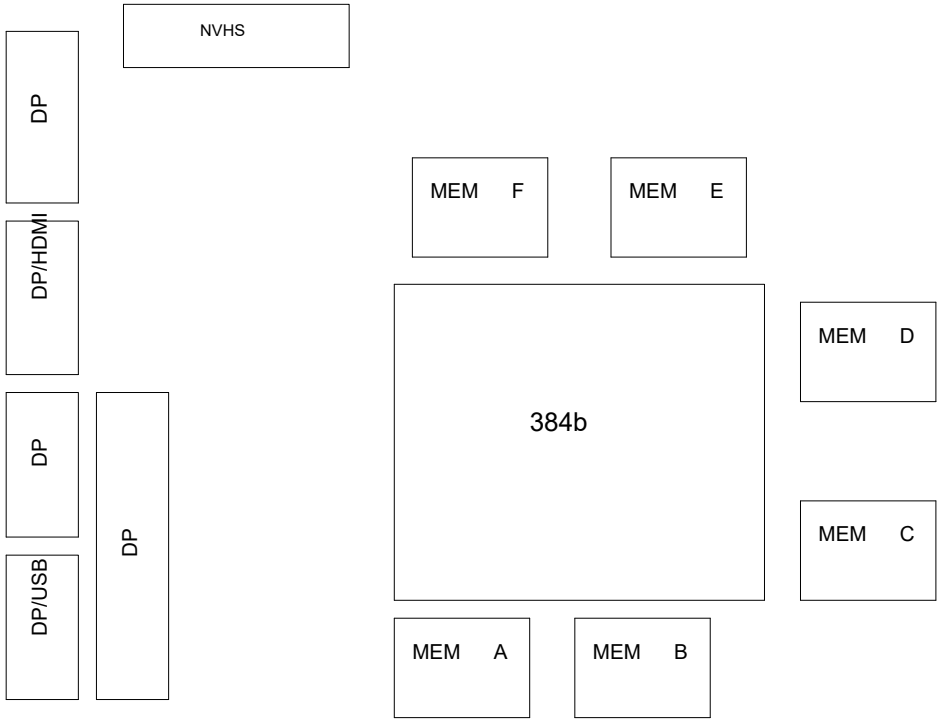
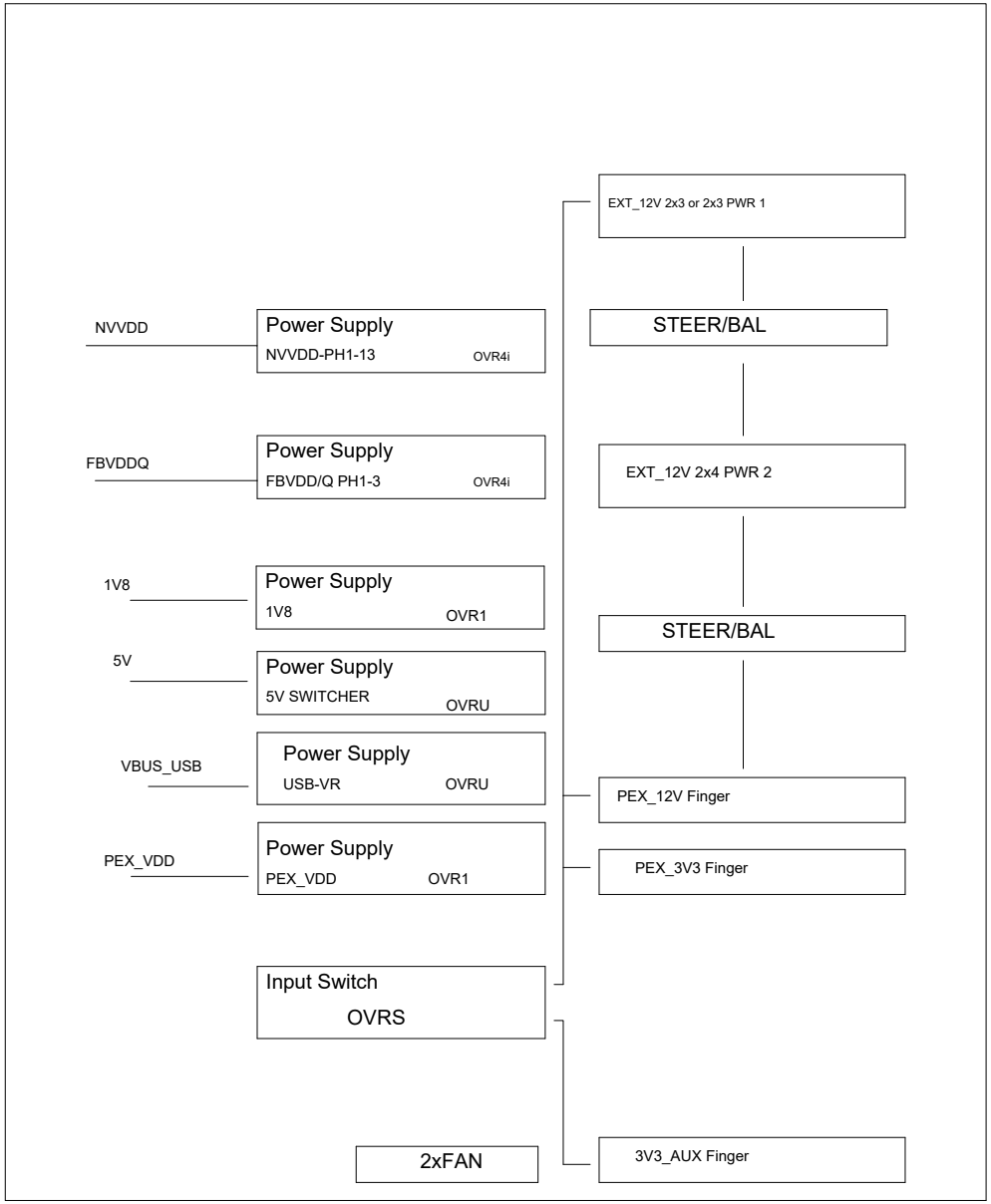
Block Diagram





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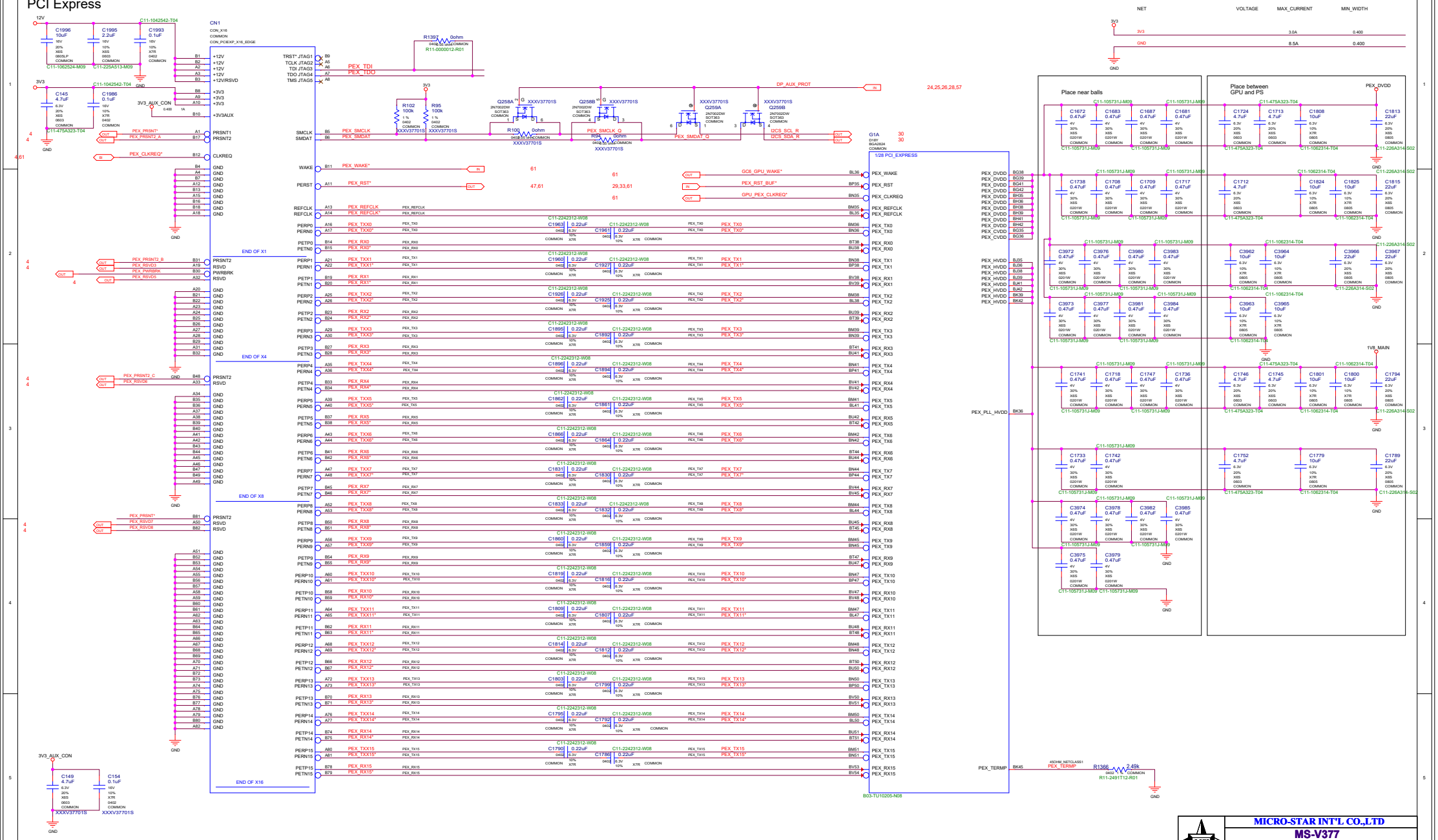
PCI Express


NET
VOLTAGE
MAX_CURRENT
MIN_WIDTH
3V3
3.0A
0.400
GND
8.5A
0.400
CN1
CON_X16
CON_PCIEXP_X16_EDGE
1/28 PCI_EXPRESS
Place near balls
Place between GPU and PS
PEX_DVDD
1V8_MAIN
PEX_PLL_HVDD
PEX_TERMP
PEX_TERMP
2.49k
R11-2491T12-R01
R1366
PEX_TDI
PEX_TDO
R11-0000012-R01
R1397
0ohm
PEX_SMCLK
PEX_SMDAT
PEX_SMCLK_Q
PEX_SMDAT_Q
DP_AUX_PROT
I2CS_SCL_R
I2CS_SDA_R
GO6_GPU_WAKE*
PEX_RST_BUF*
GPU_PEX_CLKREQ*
PEX_PRSNT1_A
PEX_PRSNT2_A
PEX_PRSNT2_B
PEX_RSVD3
PEX_PWRBRK
PEX_RSVD5
PEX_PRSNT2_C
PEX_RSVD6
PEX_PRSNT*
PEX_RSVD7
PEX_RSVD8
END OF X1
END OF X4
END OF X8
END OF X16
B03-TU10205-N08
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PCI TERM

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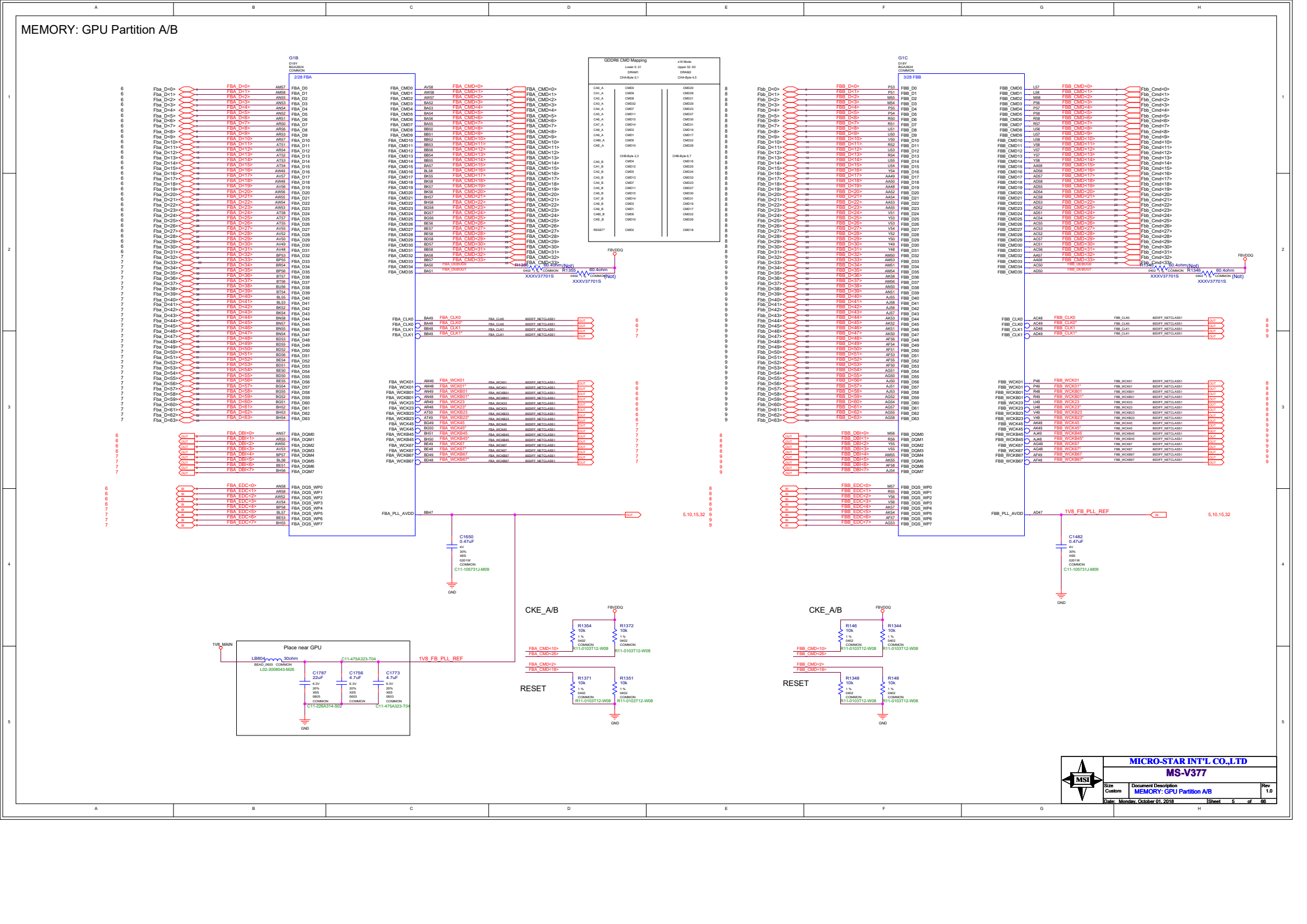
MEMORY: GPU Partition A/B



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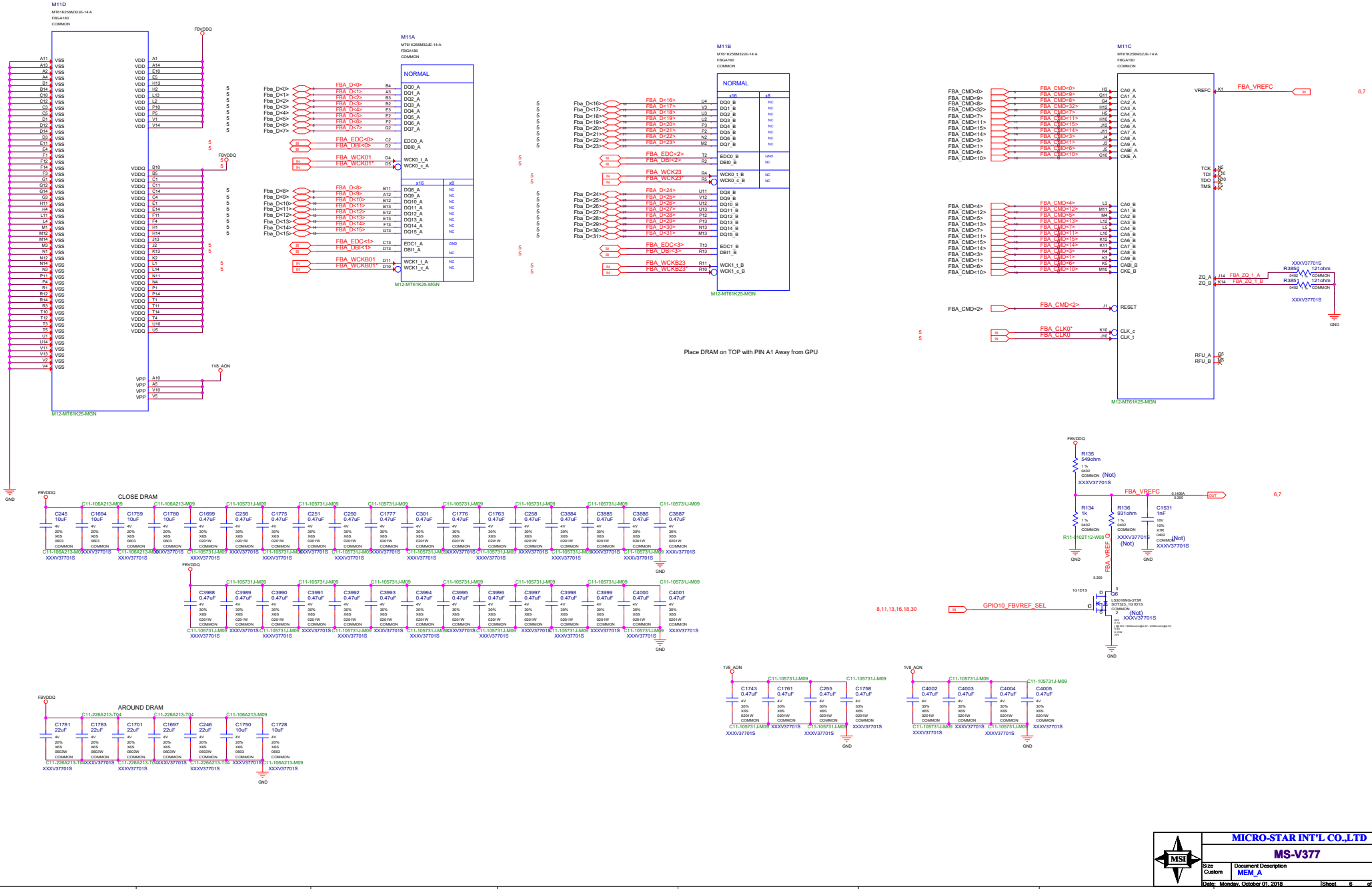
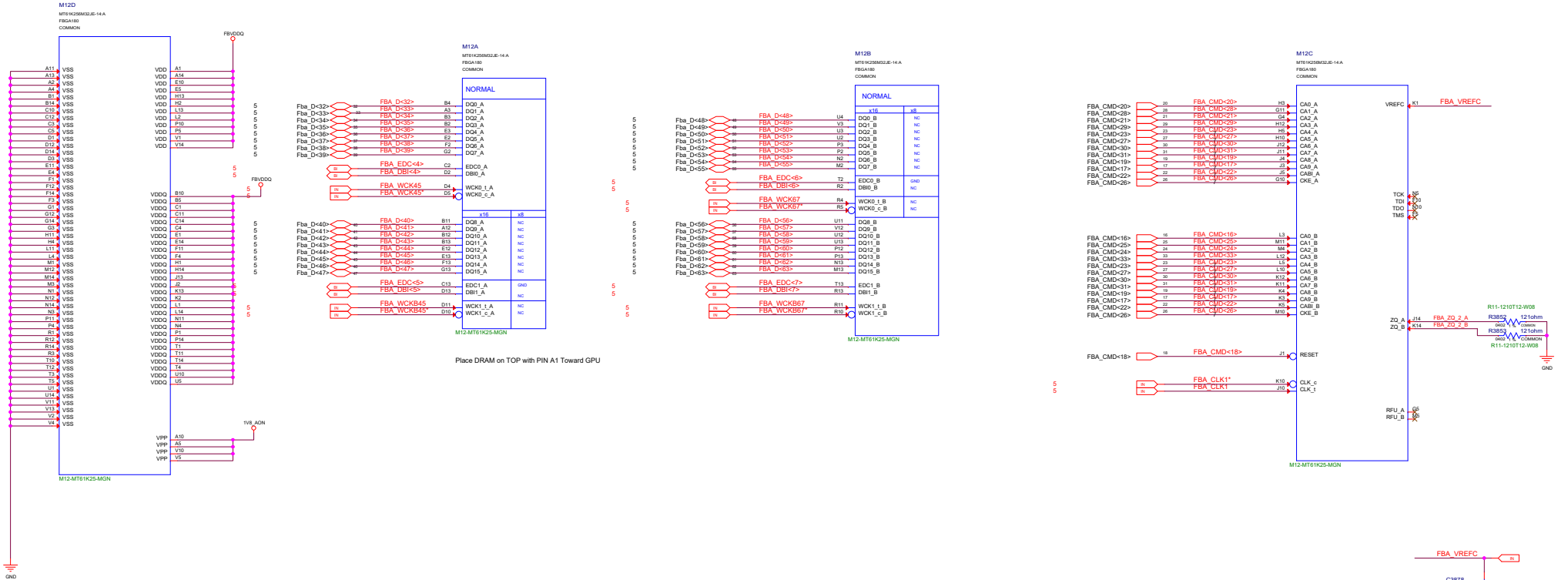
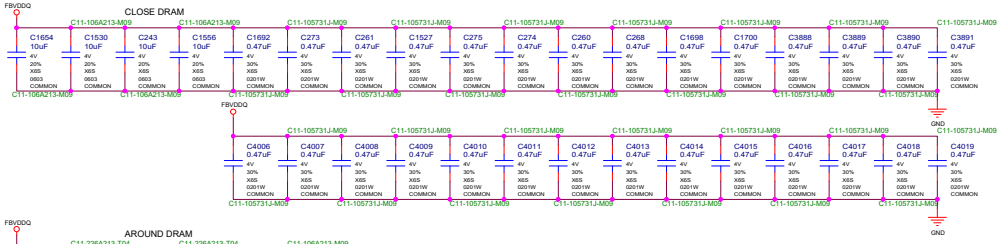
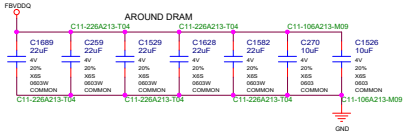
MEMORY: FBA Partition 31..0

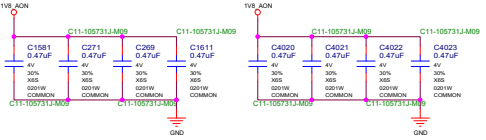


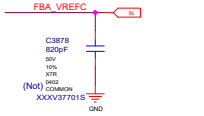
MEMORY: FBA Partition 63..32











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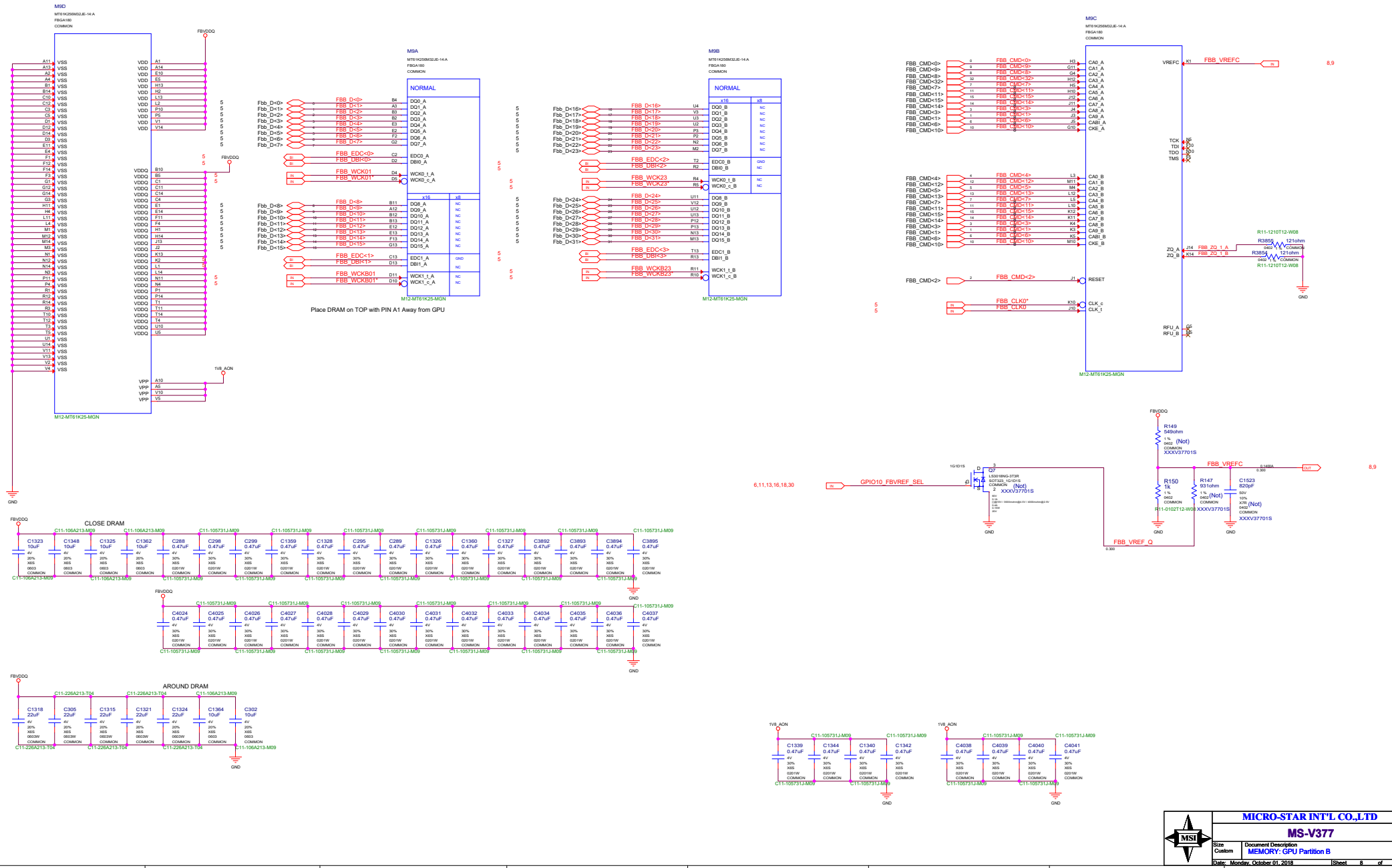
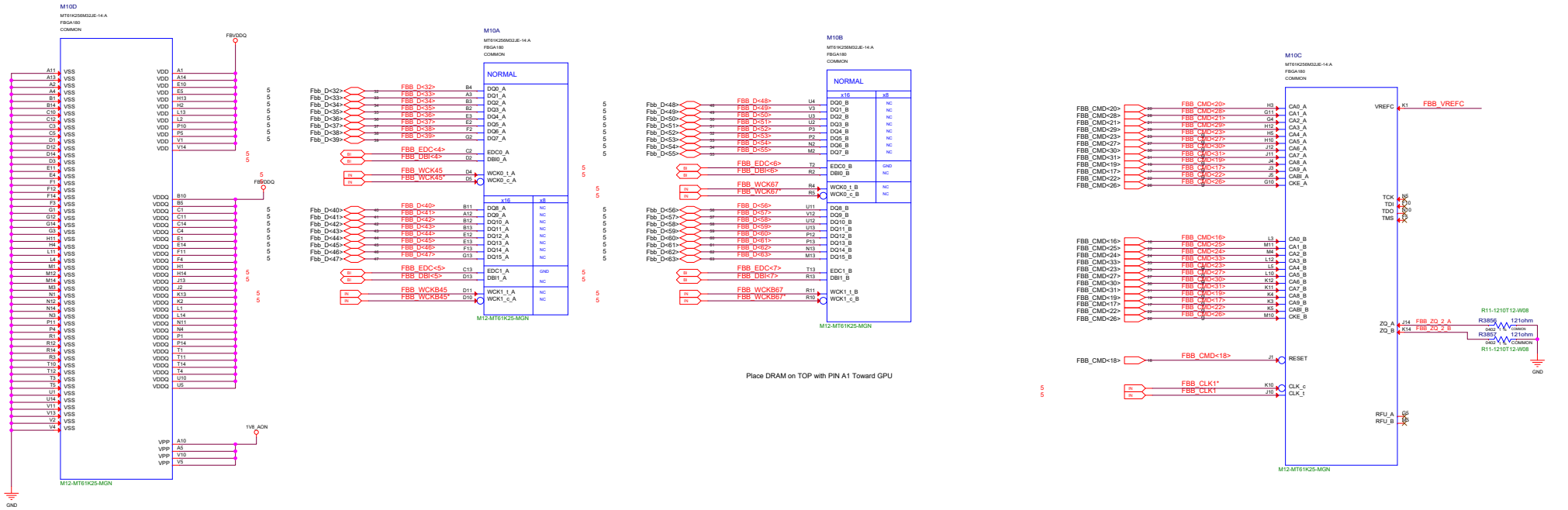
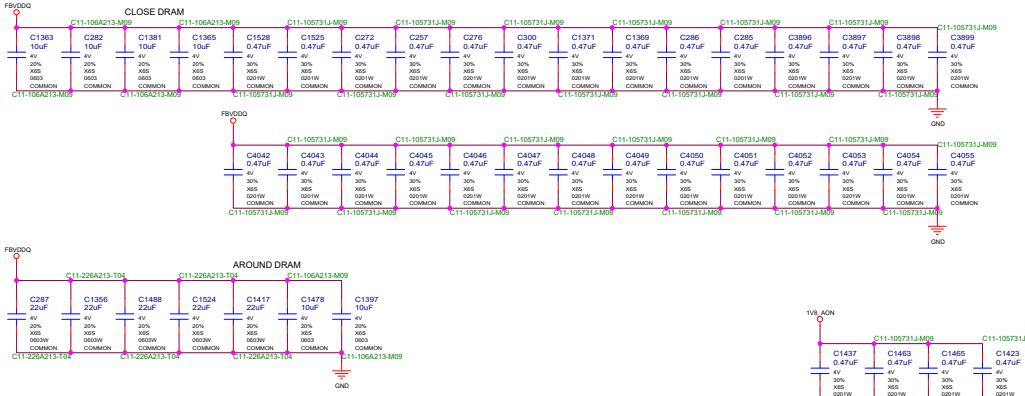
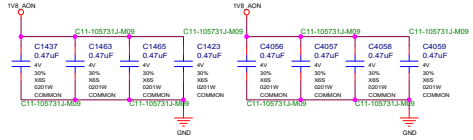
MEMORY: FBB Partition 31..0

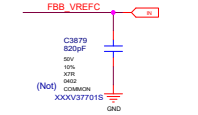


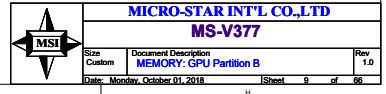
MEMORY: FBB Partition 63..32



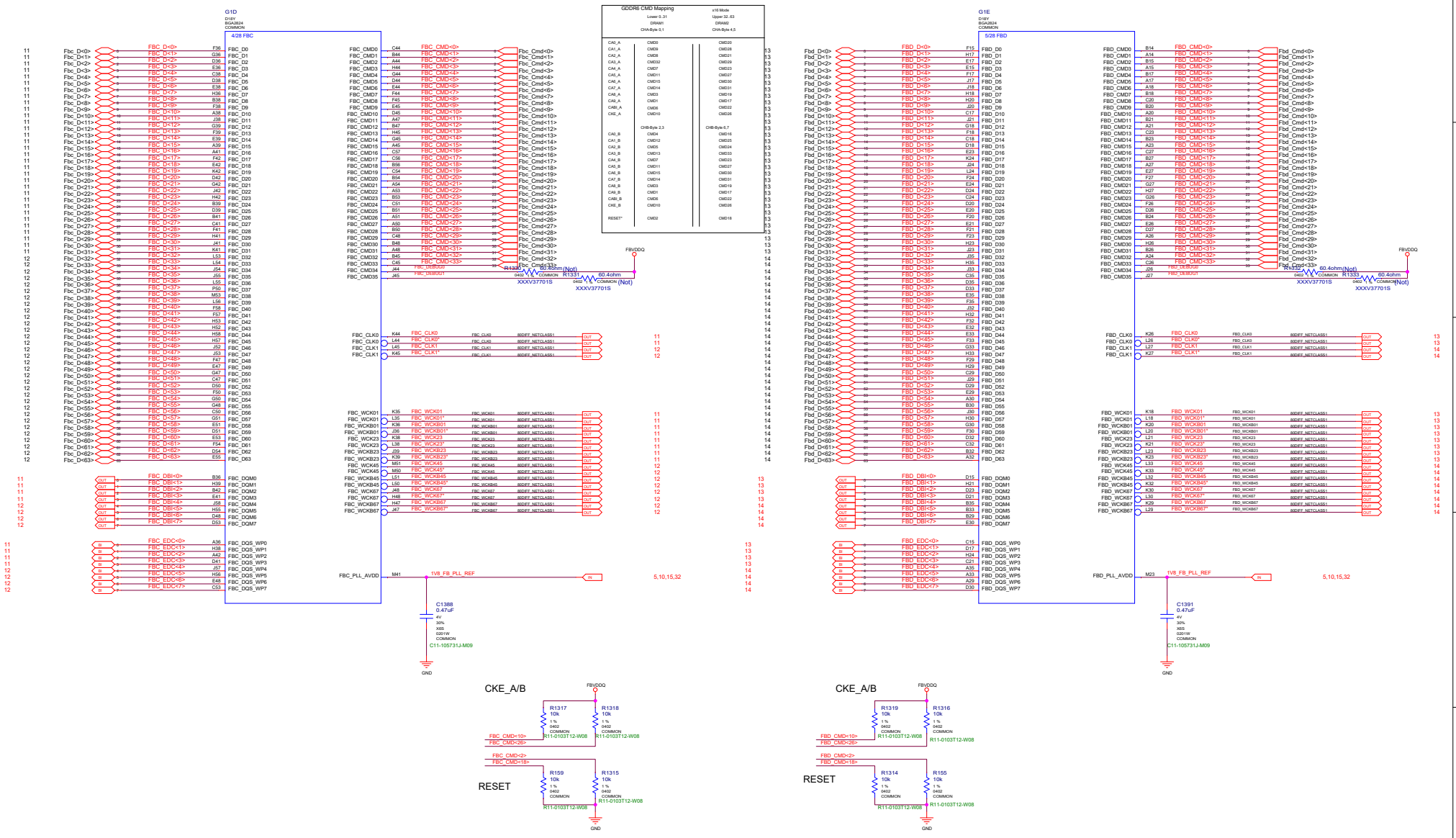








MEMORY: GPU Partition C/D



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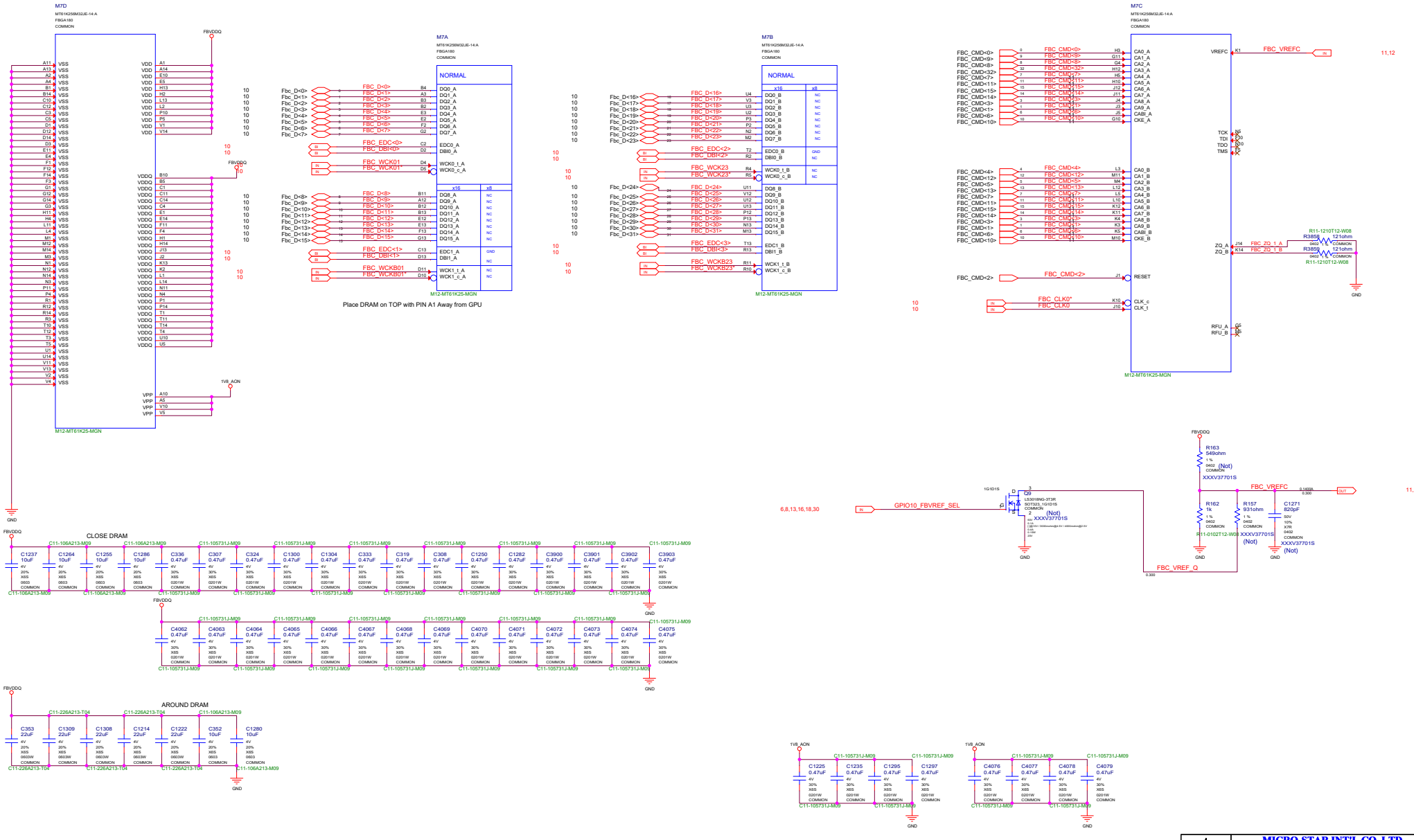
MEMORY: FBC Partition 31..0



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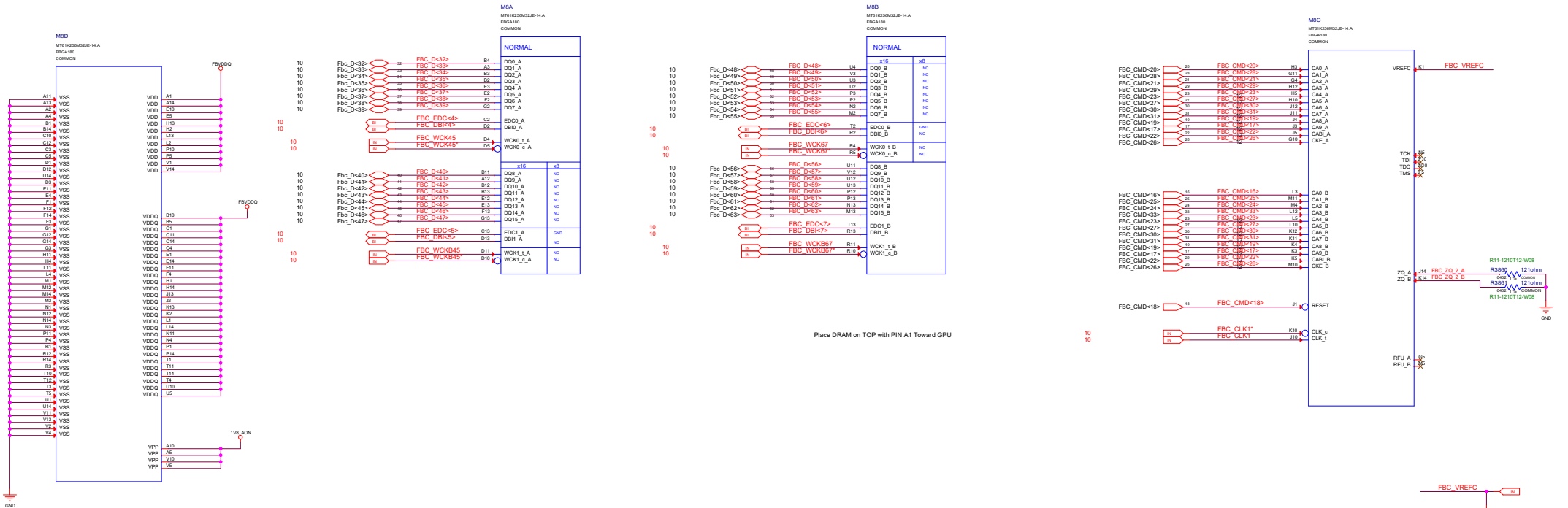
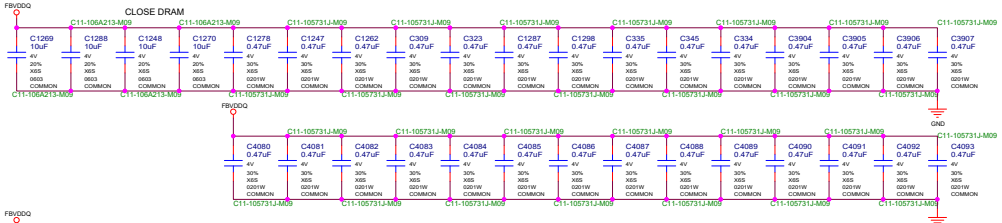
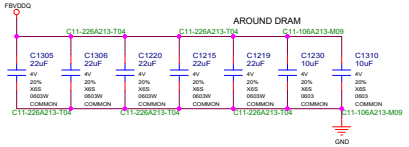
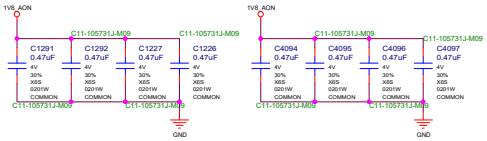
MEMORY: FBC Partition 63..32









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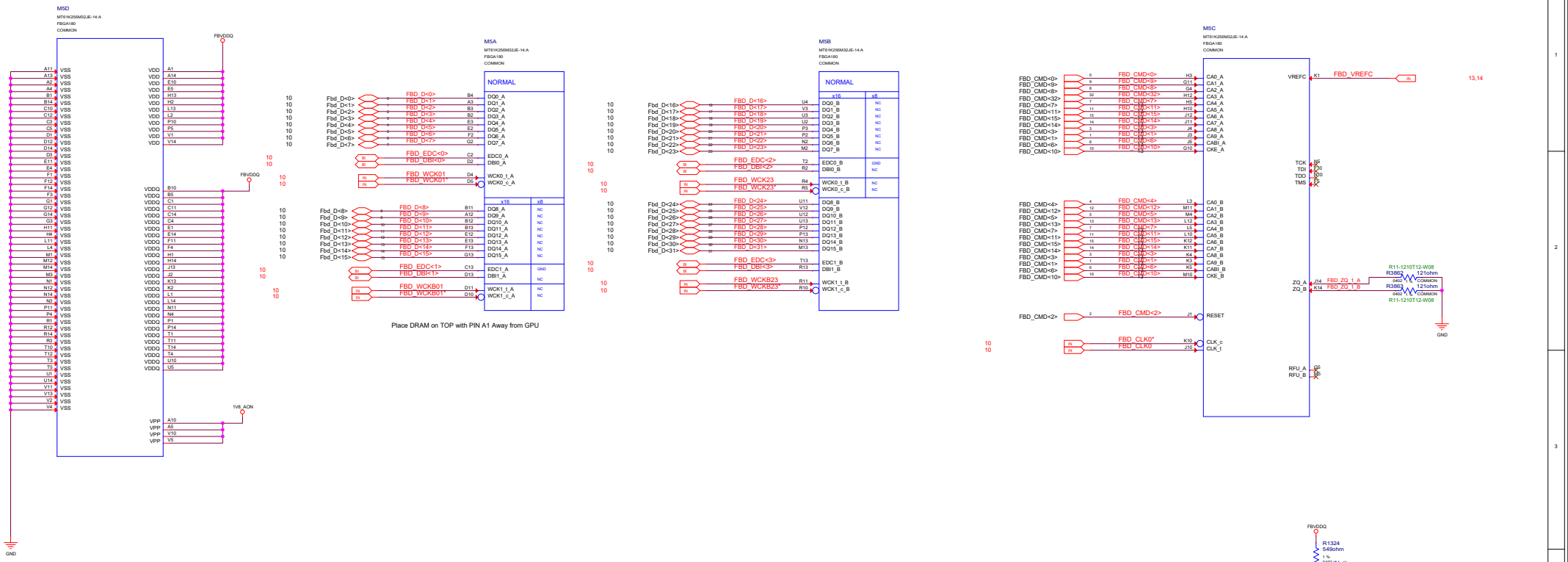
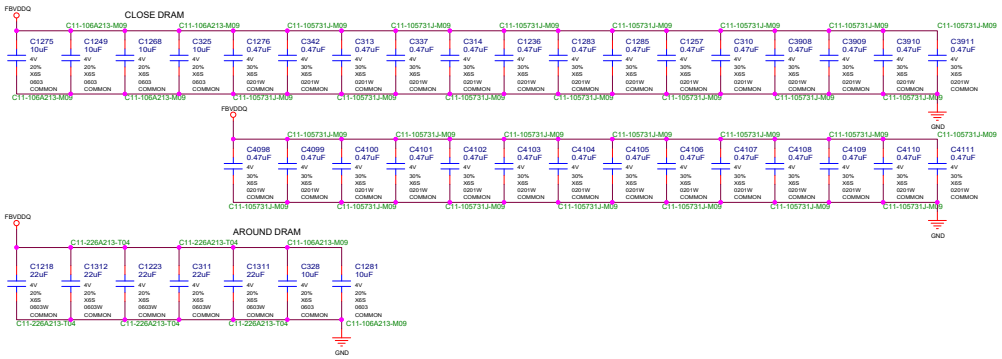
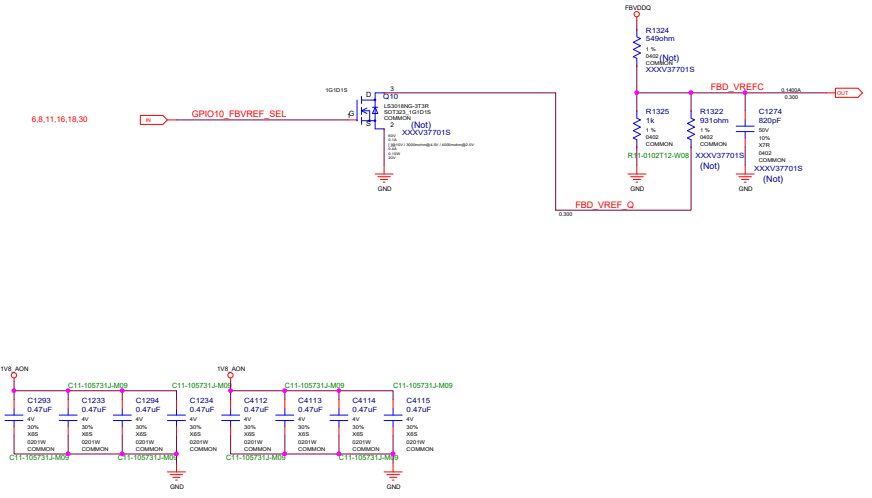
MEMORY: FBD Partition 31..0







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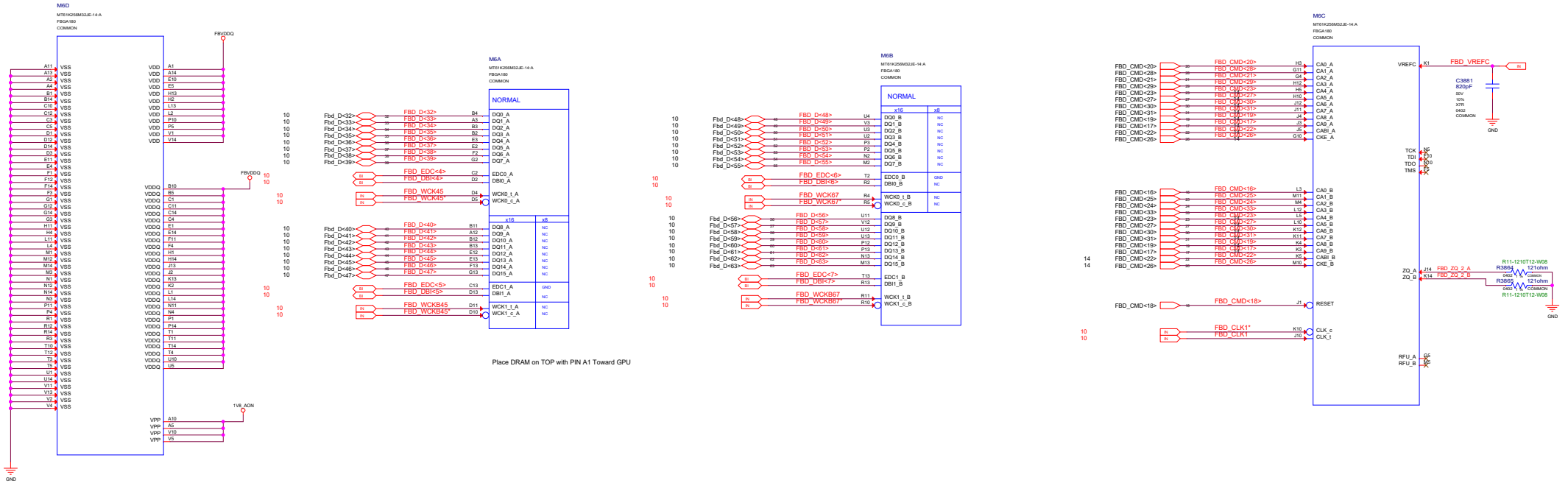
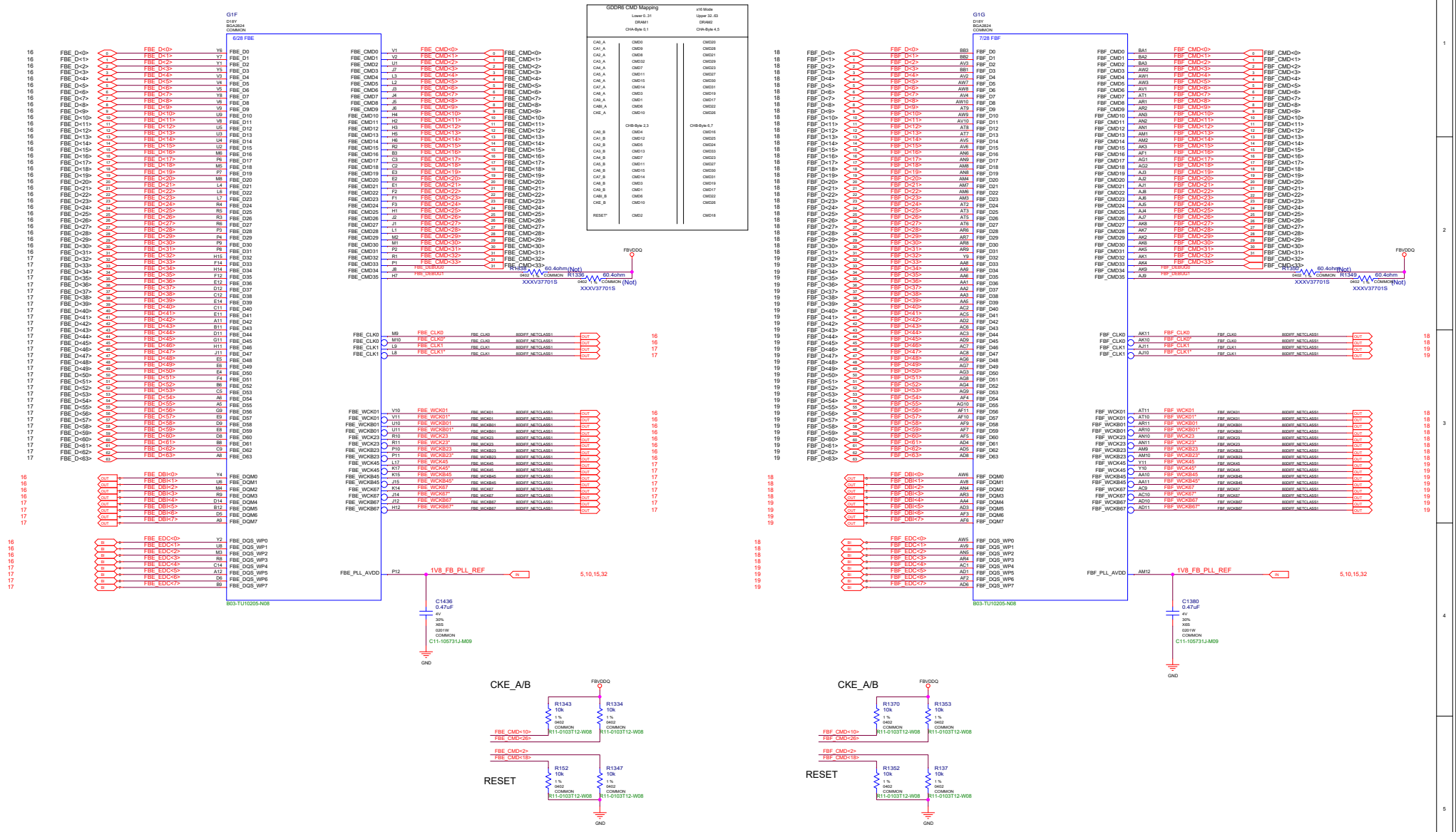
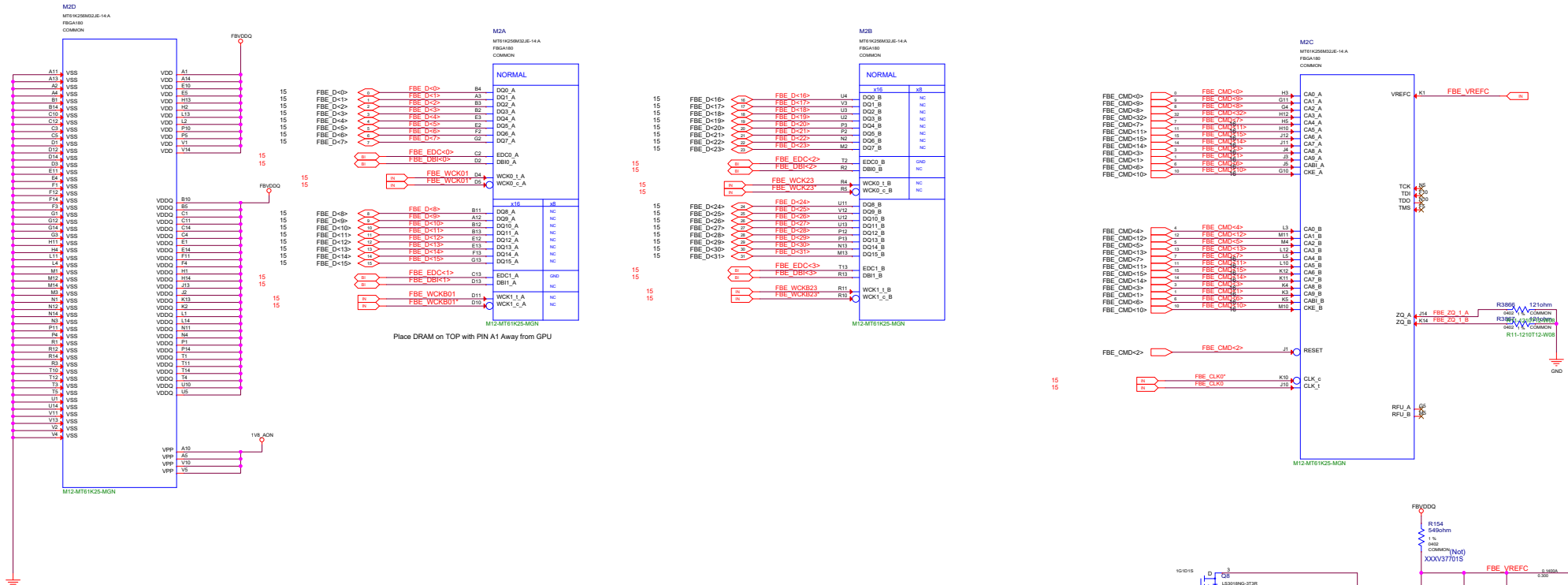
MEMORY: FBD Partition 63..32

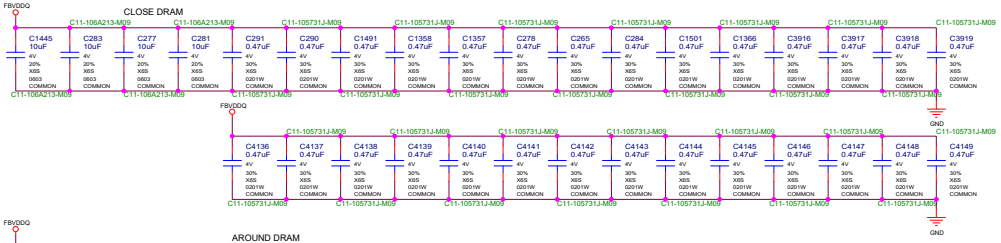


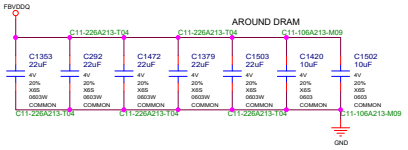
MEMORY: GPU Partition E/F

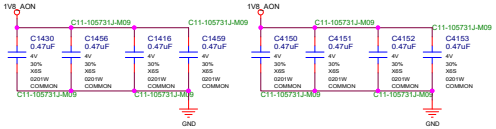


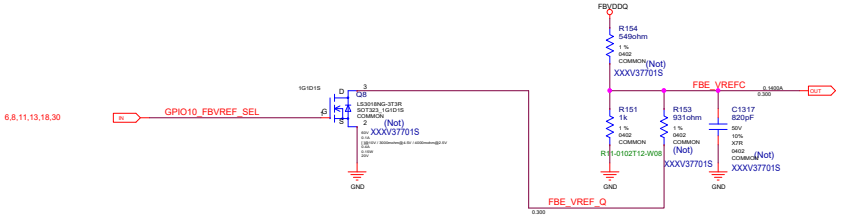
MEMORY: FBE Partition 31..0











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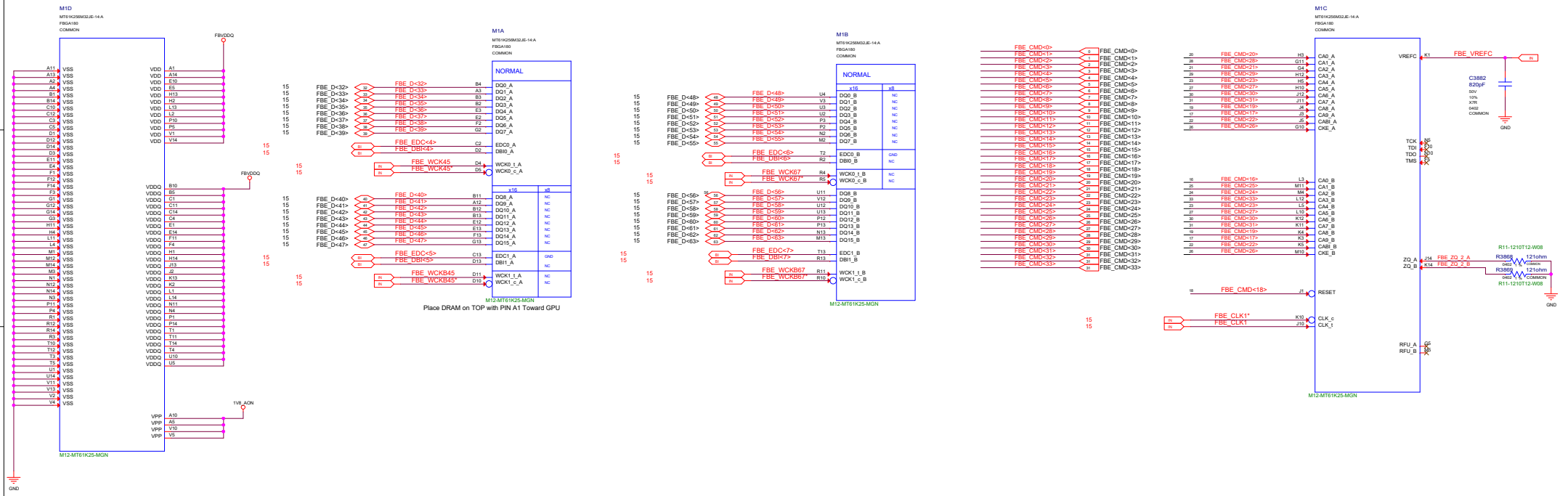
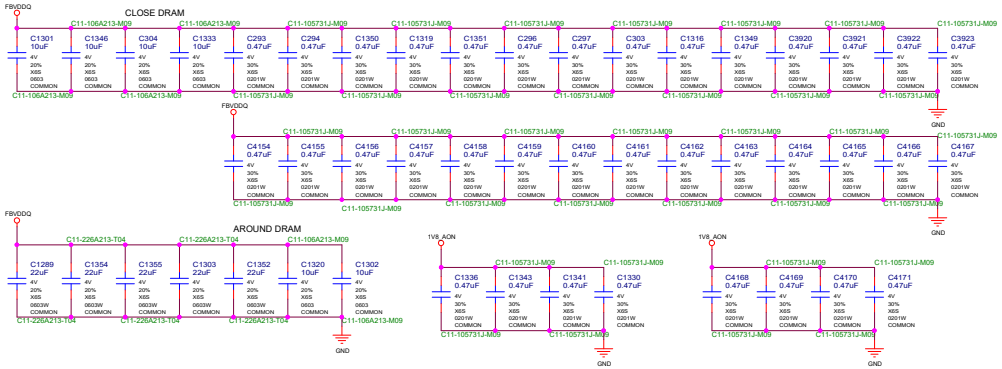
MEMORY: FBE Partition 63..32





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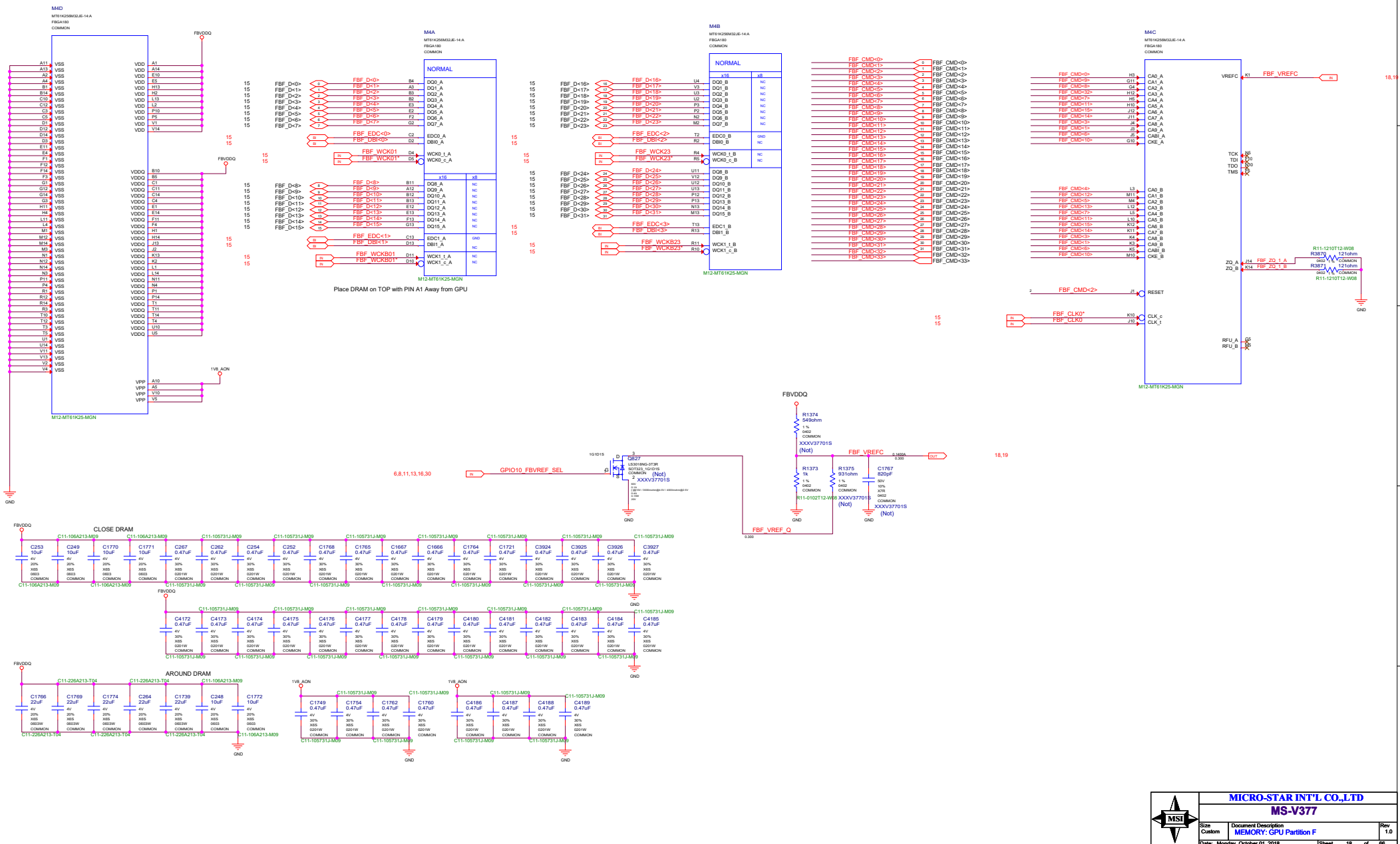
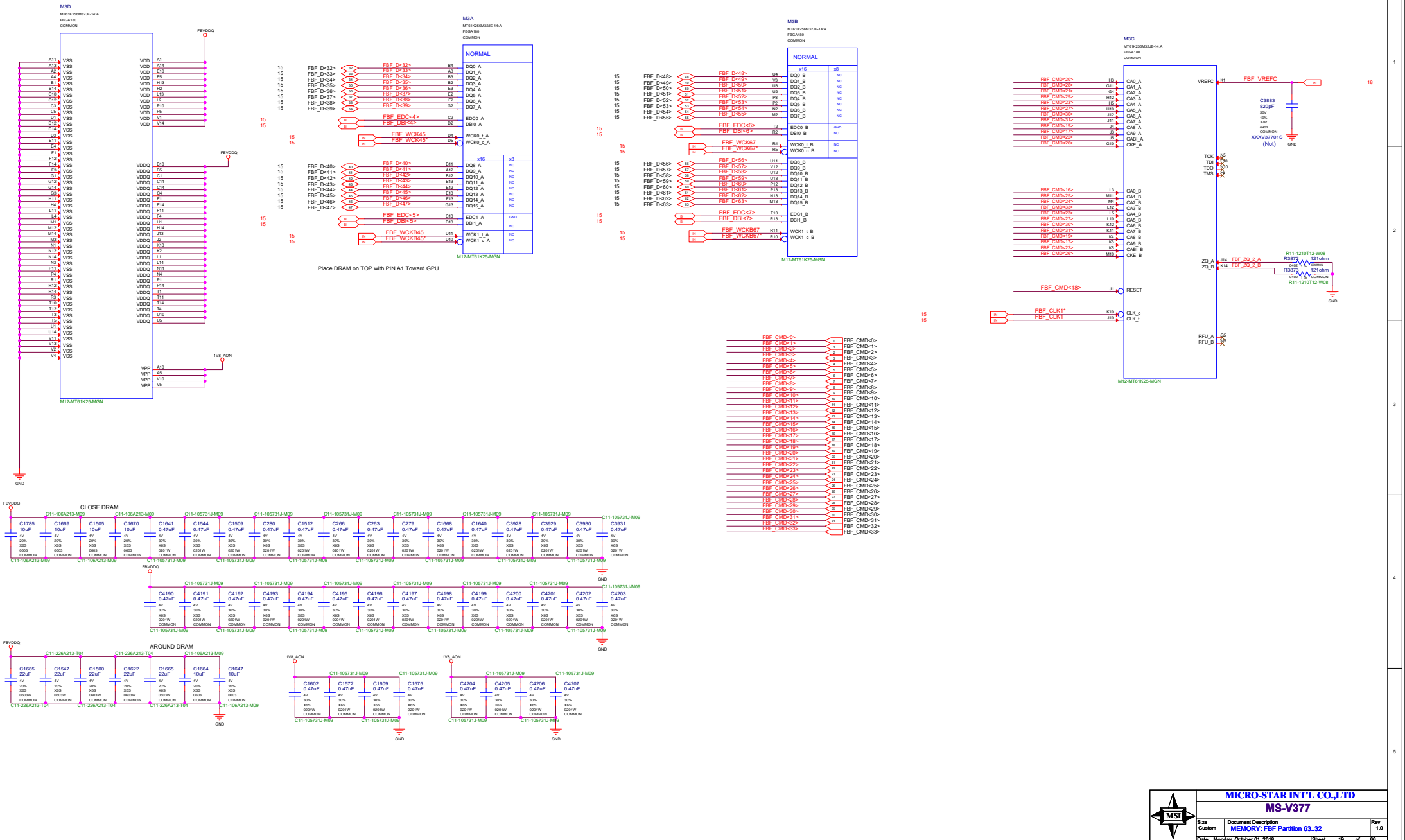
MEMORY: FBF Partition 31..0



MEMORY: FBF Partition 63..32



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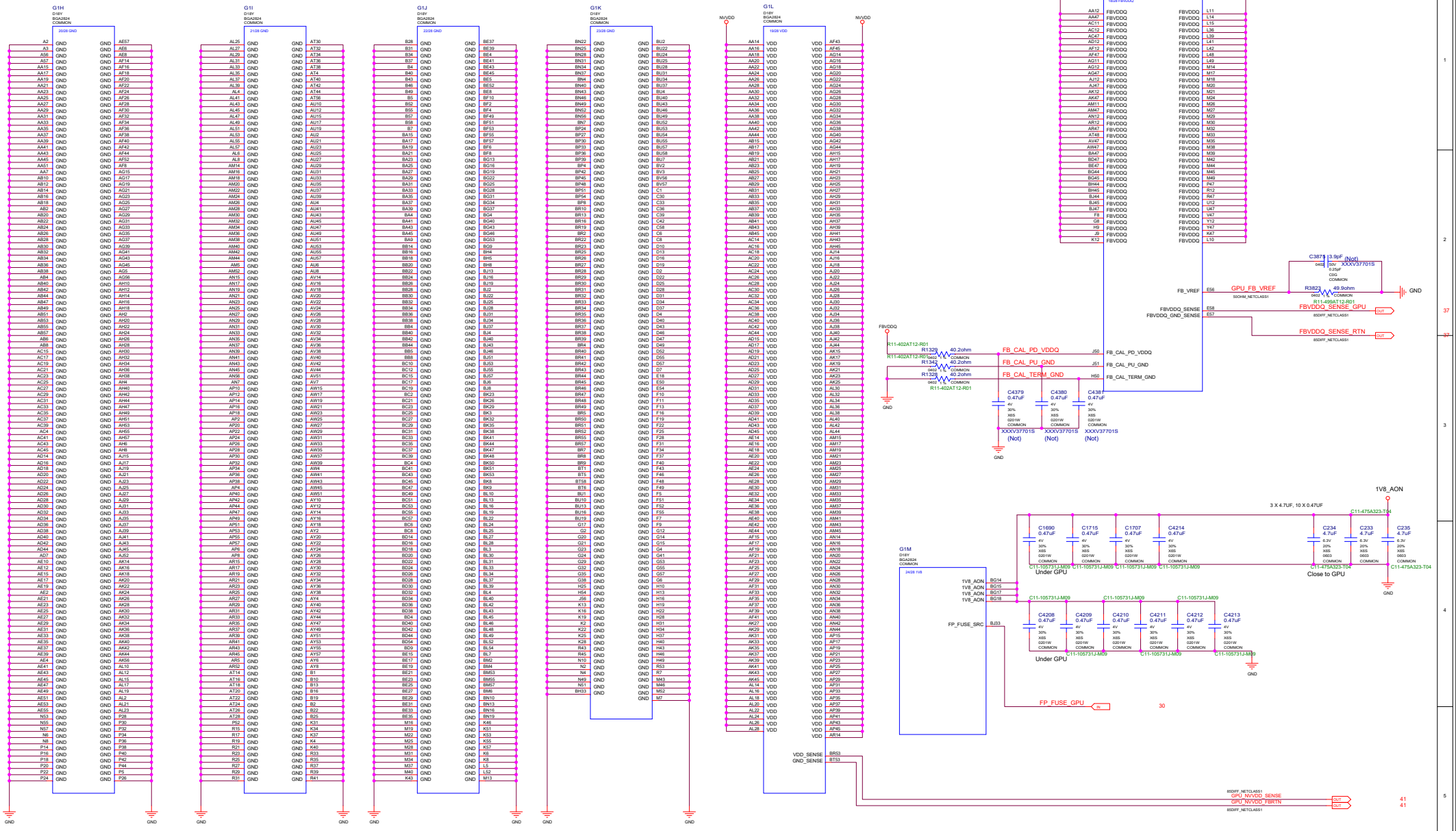
GPU PWR and GND



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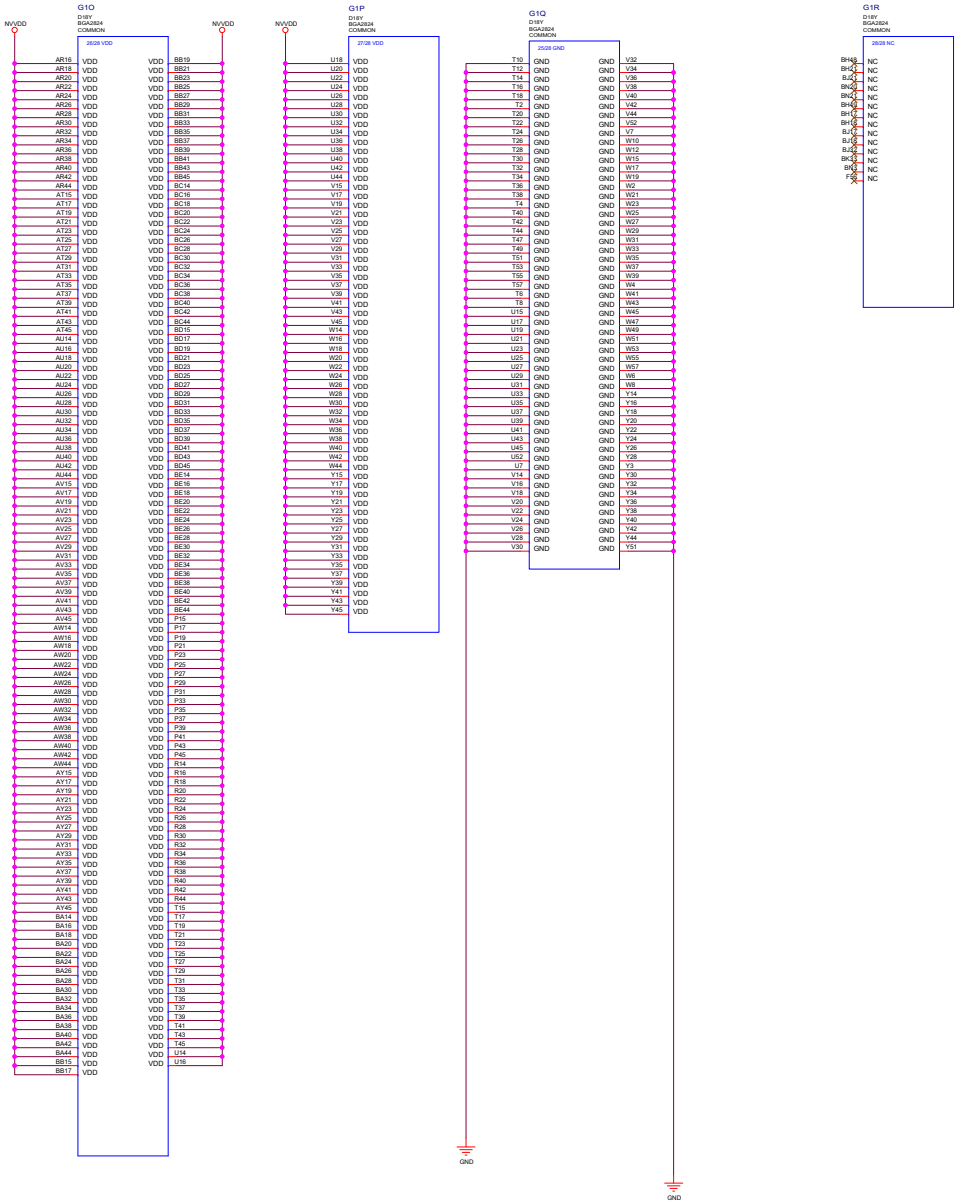
GPU PWR GND NCs



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GPU Decoupling

FBVDDQ

FBVDDQ

Partition A

2 X 10UF, 6 X 0.47UF

C1616 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1704 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1583 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1599 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1557 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1555 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1639 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1734 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Partition B

2 X 10UF, 6 X 0.47UF

C1508 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1438 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1386 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1457 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1497 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1468 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1534 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1428 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Partition C

2 X 10UF, 6 X 0.47UF

C1387 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1374 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1383 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1401 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1375 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1411 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1361 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1376 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Partition D

2 X 10UF, 6 X 0.47UF

C1392 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1368 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1373 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1367 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1382 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1385 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1378 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1384 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Partition E

2 X 10UF, 6 X 0.47UF

C1427 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1443 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1418 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1458 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1393 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1370 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1398 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1464 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Partition F

2 X 10UF, 6 X 0.47UF

C1568 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1473 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1587 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1507 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1545 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1489 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1629 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1579 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Place close to GPU

6 X 10UF

C1377 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1331 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1372 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1576 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1744 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1347 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

Place close to GPU

14 x 22UF

C1684 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1334 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1337 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1511 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1553 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1332 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1421 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
GND

C1470 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1338 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1399 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1439 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1335 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1610 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
C1607 22uF 4V 20% X6S 0603W COMMON C11-226A213-T04
GND

NVVDD

NVVDD

1 X 470UF + 10 x 47UF overlap

PCB CO-LAYOUT

C1577 470uF 20% 6.3V@105degC TA-Polymer 1.7A@45degC, 100KHz 0.035ohm SMD-7343 XXXV37701S
C1561 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1562 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1592 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1564 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1593 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1567 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1595 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1566 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1596 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1597 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09

1 X 470UF + 10 x 47UF overlap

C11-4767314-M09

C1467 470uF 20% 6.3V@105degC TA-Polymer 1.7A@45degC, 100KHz 0.035ohm SMD-7343 XXXV37701S
C1479 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1480 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1447 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1485 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1448 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1486 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1452 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1449 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1481 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1450 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09

PCB CO-LAYOUT

GND

12 X 47UF

C1590 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1591 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1446 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1559 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1563 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1565 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1589 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
C1487 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1453 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1484 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1451 22uF 4V 20% X6S 0805 COMMON C11-226A314-S02
C1483 47uF 4V 20% X6S 0805 COMMON C11-4767314-M09
GND

6 X 22UF

C1455 22uF 6.3V 20% X6S 0805 COMMON C11-226A314-S02
C1624 22uF 6.3V 20% X6S 0805 COMMON C11-226A314-S02
C1422 22uF 6.3V 20% X6S 0805 COMMON C11-226A314-S02
C1434 22uF 6.3V 20% X6S 0805 COMMON C11-226A314-S02
C1594 22uF 6.3V 20% X6S 0805 COMMON C11-226A314-S02
C1623 22uF 6.3V 20% X6S 0805 COMMON C11-226A314-S02
GND

30 X 10UF

C1653 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1652 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1651 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1642 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1403 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1514 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1521 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1400 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1515 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1517 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1686 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1615 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1614 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1638 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1636 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1516 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1520 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1519 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1518 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1513 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

C1645 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1644 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1643 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1677 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1543 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1432 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1620 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1433 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1407 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
C1536 10uF 4V 20% X6S 0603 COMMON C11-106A213-M09
GND

16 X 4.7UF

C1541 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1424 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1619 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1429 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1634 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1539 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1617 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1425 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1535 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1537 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1626 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1431 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1542 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1404 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1540 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
C1538 4.7uF 6.3V 20% X6S 0603 COMMON C11-475A323-T04
GND

80 X 0.47UF

C1442 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1462 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1419 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1660 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1510 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1631 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1569 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1532 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1406 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1414 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1627 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1548 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1490 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1408 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1656 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1549 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1454 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1469 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1552 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1533 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
GND

C1426 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1588 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1410 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1499 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1649 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1655 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1496 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1554 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1475 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1474 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1394 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1676 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1466 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1460 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1635 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1498 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1494 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1570 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1440 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1413 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
GND

C1412 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1476 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1598 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1603 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1477 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1585 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1571 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1671 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1495 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1573 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1625 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1409 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1461 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1396 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1402 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1441 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1560 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1580 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1613 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1605 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
GND

C1405 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1658 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1493 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1578 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1435 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1522 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1551 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1444 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1550 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1471 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1604 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1492 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1415 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1546 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1395 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1673 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1601 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1637 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1657 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
C1584 0.47uF 4V 30% X6S 0201W COMMON C11-105731J-M09
GND

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GPU Decoupling

FBVDDQ

0.47uF ---->1uF

FBVDDQ

Partition A

2 X 10UF, 6 X 0.47UF

C4254 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4260 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4266 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4272 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4278 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4284 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

Partition B

2 X 10UF, 6 X 0.47UF

C4255 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4261 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4267 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4273 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4279 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4285 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

Partition C

2 X 10UF, 6 X 0.47UF

C4256 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4262 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4268 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4274 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4280 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4286 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

Partition D

2 X 10UF, 6 X 0.47UF

C4257 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4263 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4269 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4275 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4281 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4287 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

Partition E

2 X 10UF, 6 X 0.47UF

C4258 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4264 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4270 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4276 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4282 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4288 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

Partition F

2 X 10UF, 6 X 0.47UF

C4259 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4265 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4271 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4277 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4283 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
C4289 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

NVVDD

NVVDD

80 X 0.47UF

C4290 C4294 C4298 C4302 C4306 C4310 C4314 C4318 C4322 C4326 C4330 C4334 C4338 C4342 C4346 C4350 C4354 C4358 C4362 C4366 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

C4291 C4295 C4299 C4303 C4307 C4311 C4315 C4319 C4323 C4327 C4331 C4335 C4339 C4343 C4347 C4351 C4355 C4359 C4363 C4367 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

C4292 C4296 C4300 C4304 C4308 C4312 C4316 C4320 C4324 C4328 C4332 C4336 C4340 C4344 C4348 C4352 C4356 C4360 C4364 C4368 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

C4293 C4297 C4301 C4305 C4309 C4313 C4317 C4321 C4325 C4329 C4333 C4337 C4341 C4345 C4349 C4353 C4357 C4361 C4365 C4369 0.47uF 4V 30% X6S 0201W COMMON — C11-105731J-M09
GND

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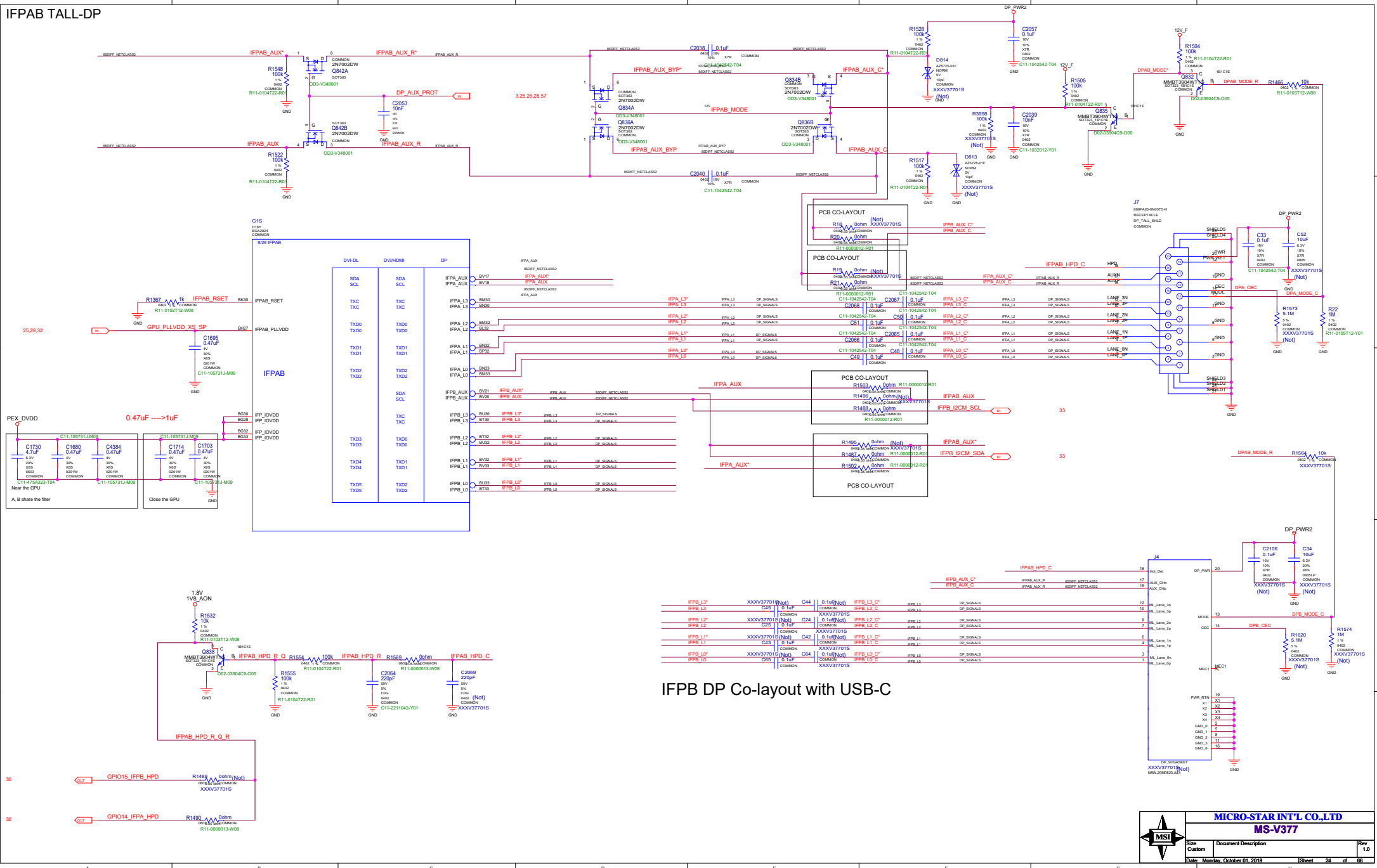
IFPAB TALL-DP



IFPB DP Co-layout with USB-C

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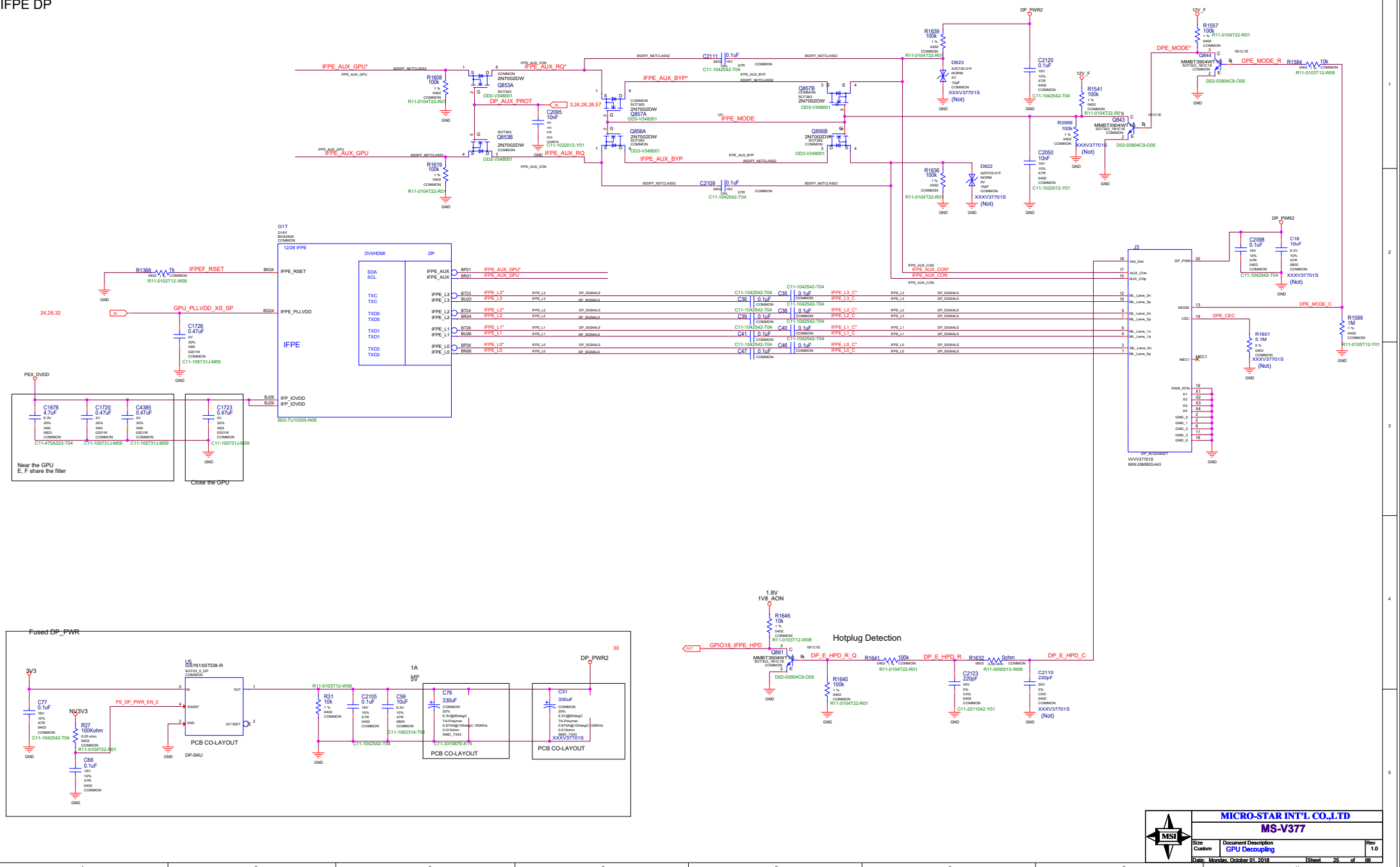
IFPE DP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IFPE_AUX_GPU
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IFPE_AUX_RQ
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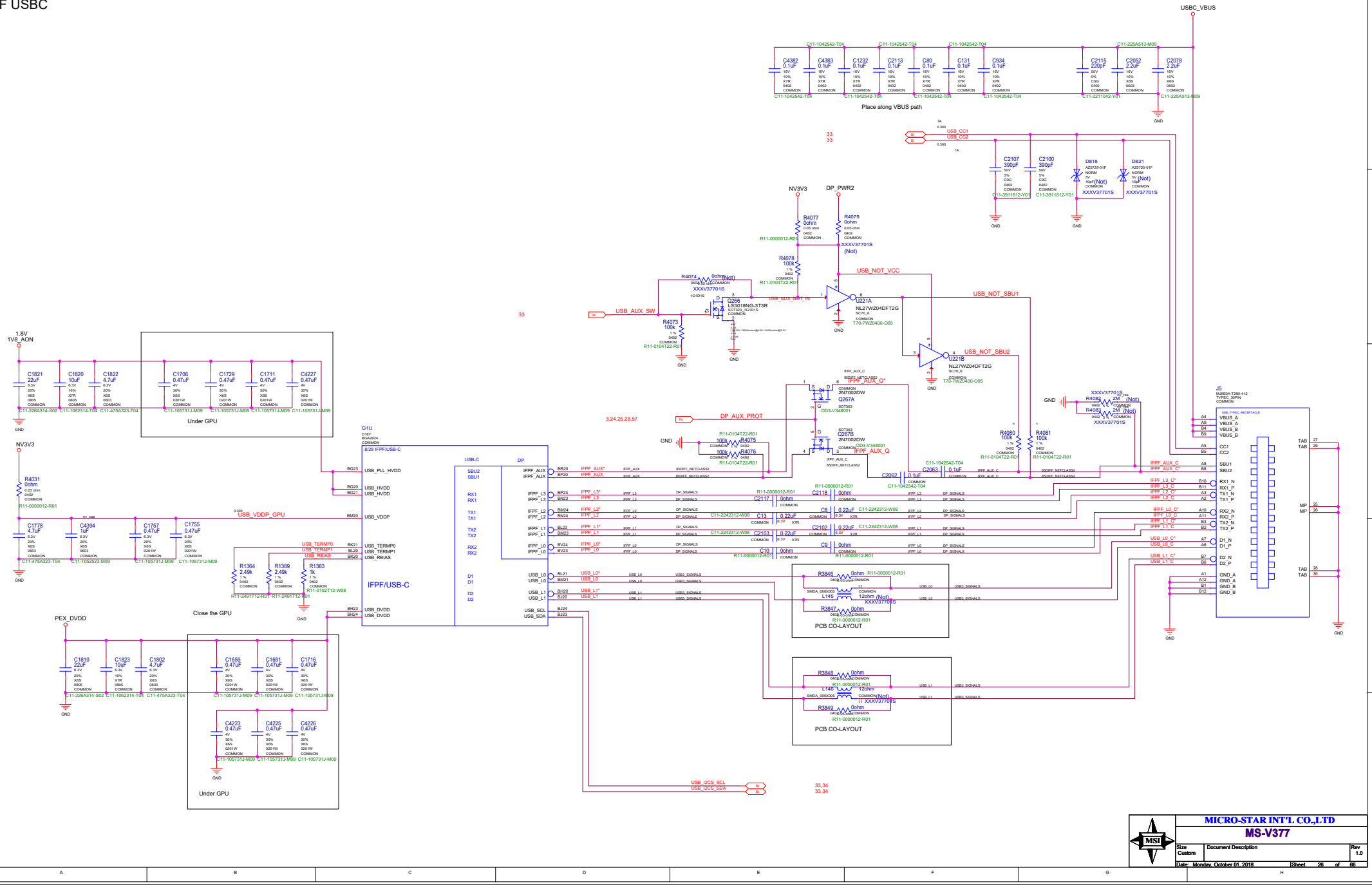
IFPE_AUX_BYP
IFPE_MODE
IFPE_AUX_CON
IFPE_AUX_CON*
DP_PWR2
12V_F
DPE_MODE*
DPE_MODE_R
DPE_MODE_C
DPE_CEC
IFPEF_RSET
GPU_PLLVDD_XS_SP
IFPE
DVI/HDMI
DP
PEX_DVDD
Near the GPU
E, F share the filter
Close the GPU
Fused DP_PWR
PCB CO-LAYOUT
DP-SKU
Hotplug Detection
GPIO18_IFPE_HPD
DP_E_HPD_C
MICRO-STAR INT'L CO.,LTD
MS-V377
GPU Decoupling
Monday, October 01, 2018

IFPF USBC



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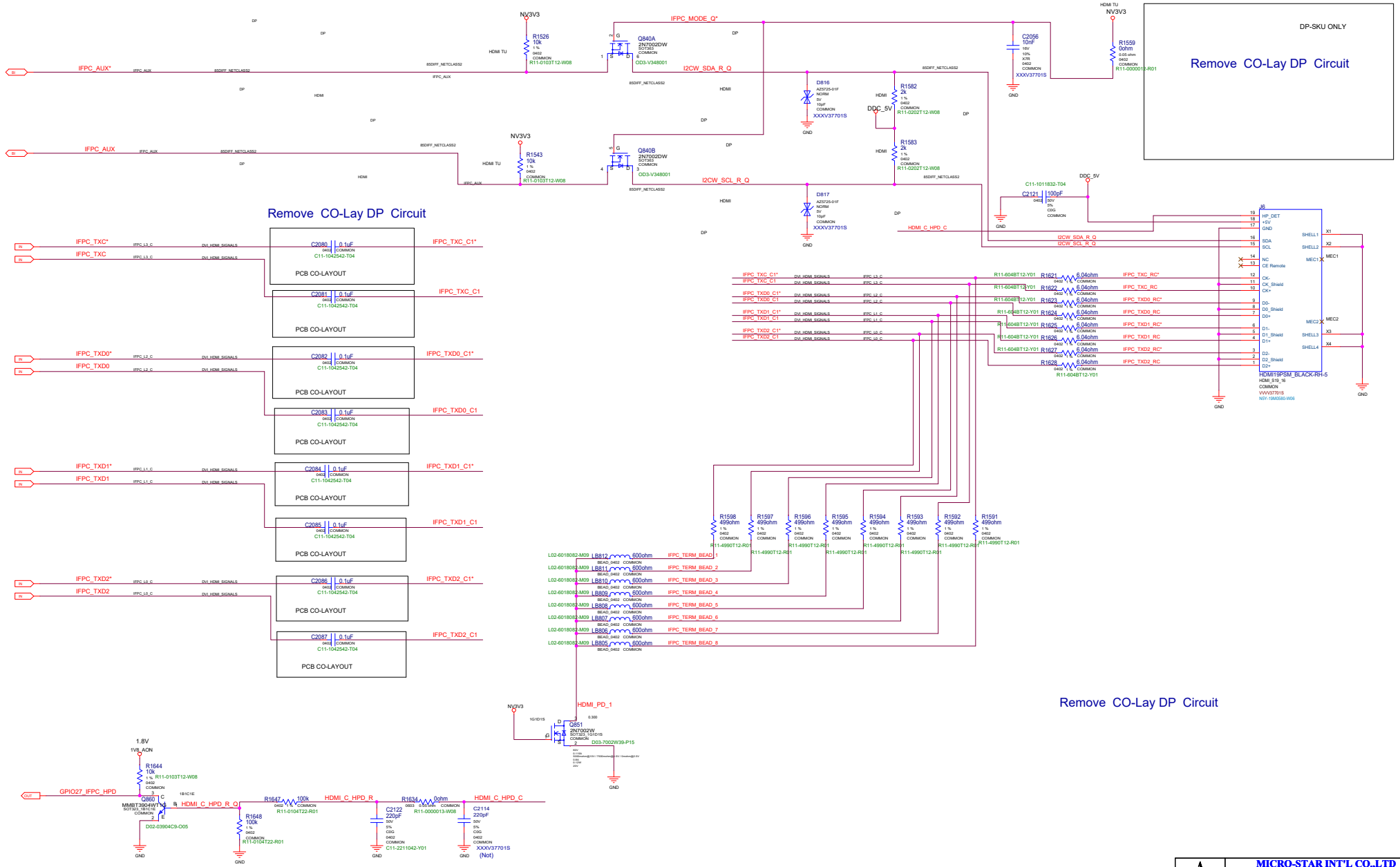
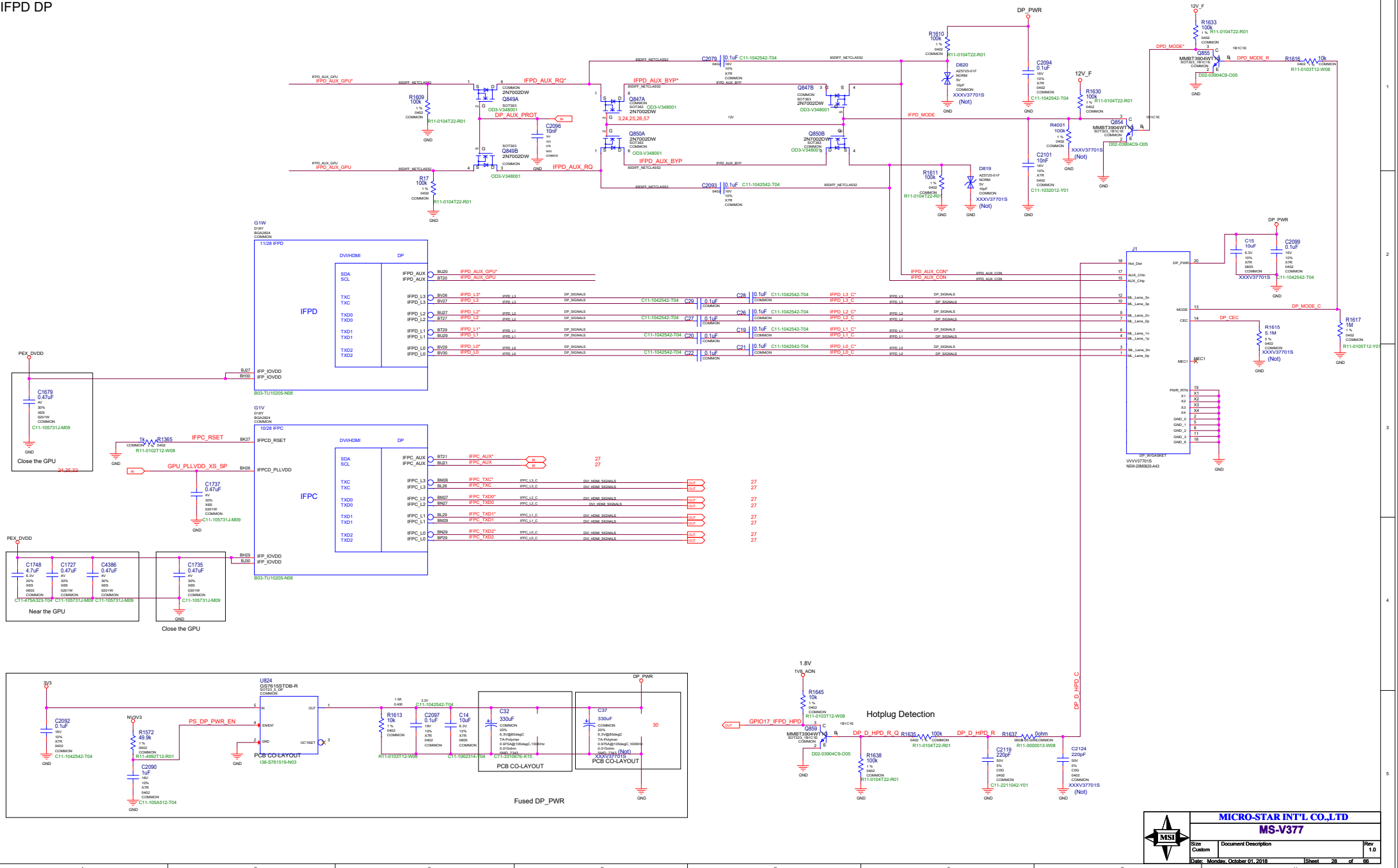
IFPC HDMI 2.0/DP



IFPD DP


IFPD_AUX_GPU*
IFPD_AUX_GPU
IFPD_AUX_RQ*
IFPD_AUX_RQ
DP_AUX_PROT
IFPD_AUX_BYP*
IFPD_AUX_BYP
IFPD_MODE
IFPD_AUX_CON*
IFPD_AUX_CON
DP_PWR
12V_F
DPD_MODE*
DPD_MODE_R
DPD_MODE_C
DP_CEC
G1W
11/28 IFPD
IFPD
DVI/HDMI
DP
G1V
10/28 IFPC
IFPC
PEX_DVDD
Close the GPU
Near the GPU
GPU_PLLVDD_XS_SP
IFPC_RSET
IFPD_IOVDD
B03-TU10205-N08
J1
Hotplug Detection
GPIO17_IFPD_HPD
DP_D_HPD_C
DP_D_HPD_R_Q
DP_D_HPD_R
1.8V
1V8_AON
3V3
NV3V3
PS_DP_PWR_EN
U824
GS7615STDB-R
PCB CO-LAYOUT
Fused DP_PWR
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Custom
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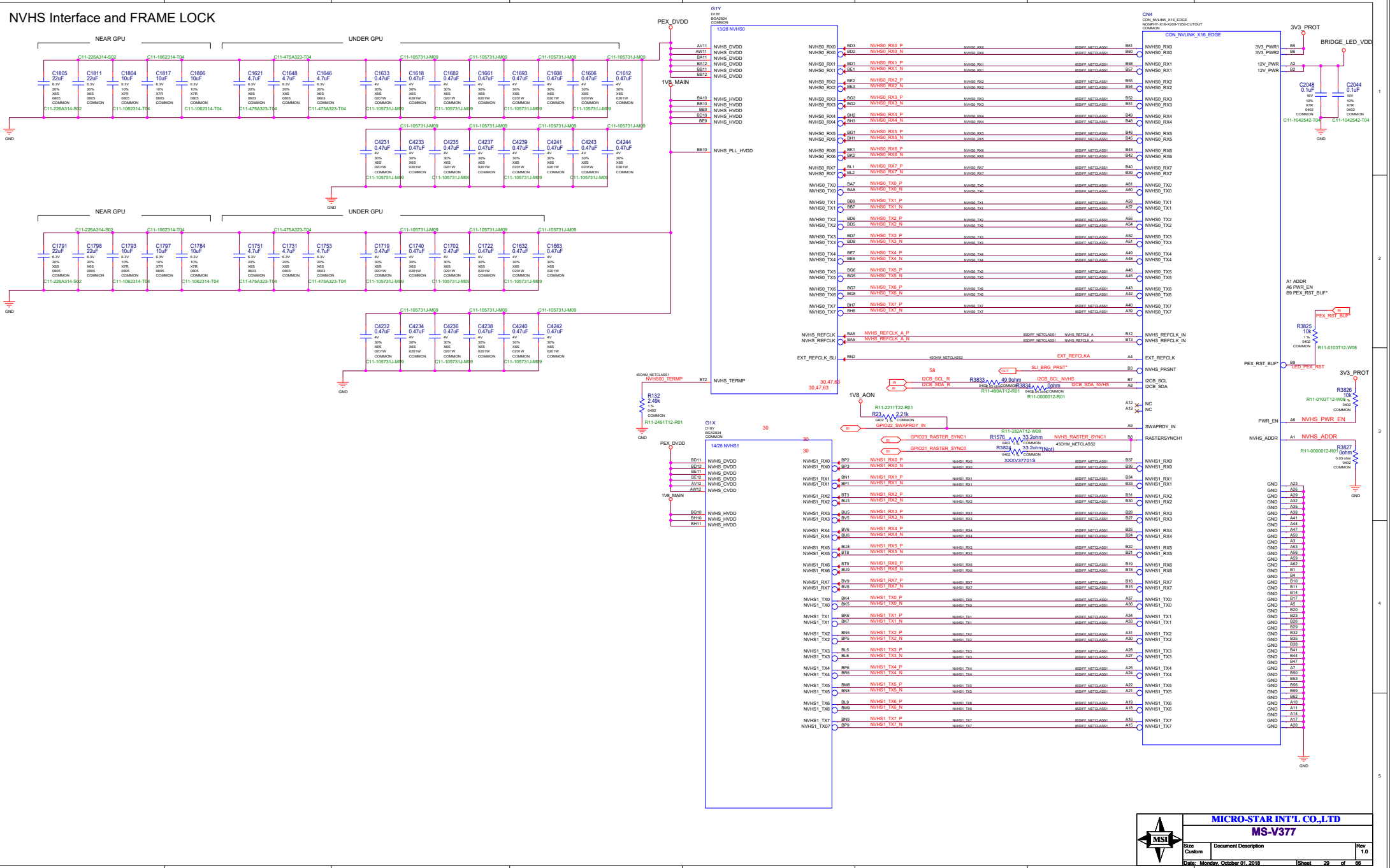
NVHS Interface and FRAME LOCK



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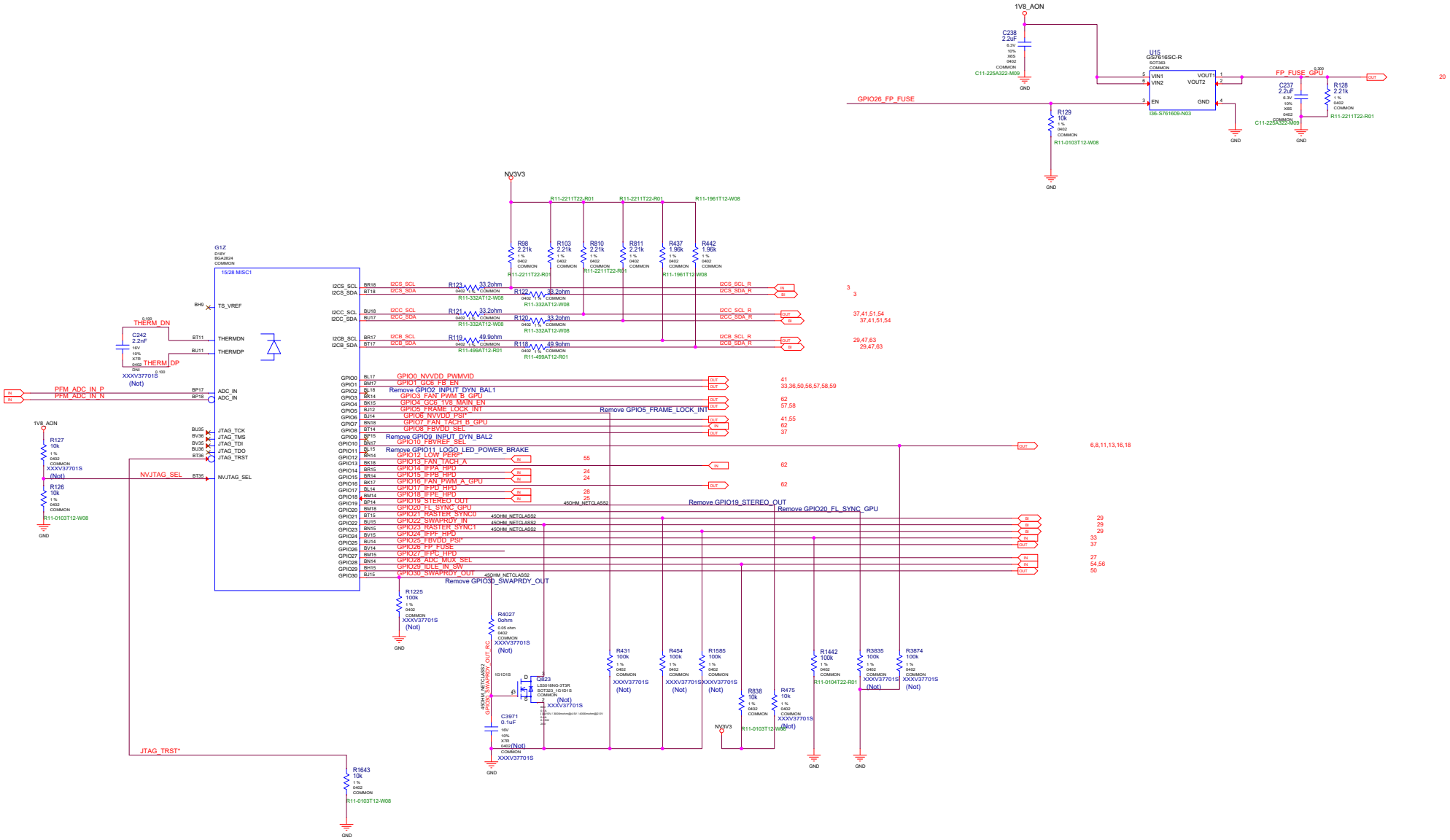
MISC1: Fan, Thermal, JTAG, GPIO, STEREO



MISC2: ROM, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	00000	
L	L	H	00001	DEFAULT
L	H	L	00010	
L	H	H	00011	
H	L	L	00100	
H	L	H	00101	
H	H	L	00110	
H	H	H	00111	
L	L	M	01000	
L	M	L	01001	

H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V

ROM_SO	ROM_SI	ROM_SCLK	DUMMY[2:0],FS_OVERT	1:ENABLE 0:DISABLE	
L	L	L	XXX1	FS_OVERT ENABLE	DEFAULT
L	L	H	XXX0	FS_OVERT DISABLE	

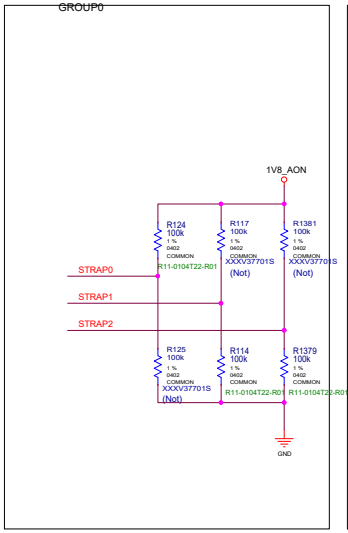
STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE	
M	H	H	1	1	1	1	
M	H	L	1	1	1	0	
M	L	H	1	1	0	1	
M	L	L	1	1	0	0	
L	M	M	1	0	1	1	
L	M	H	1	0	1	0	
L	M	L	1	0	0	1	
L	L	M	1	0	0	0	
H	H	H	0	1	1	1	
H	H	L	0	1	1	0	
H	L	H	0	1	0	1	
H	L	L	0	1	0	0	
L	H	H	0	0	1	1	
L	H	L	0	0	1	0	
L	L	H	0	0	0	1	Default
L	L	L	0	0	0	0	SKU 200

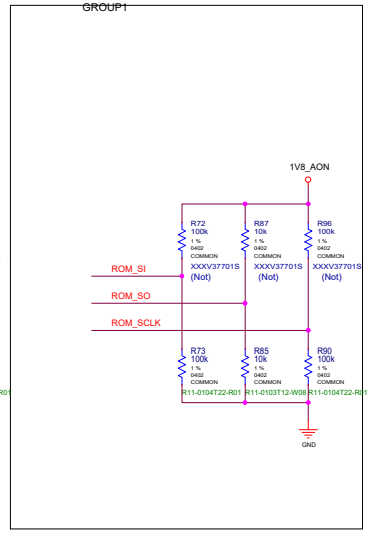
1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

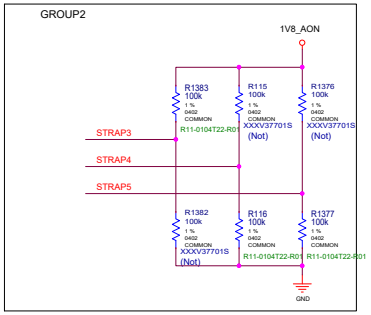
1:DEVID_SEL REBRAND
0:DEVID_SEL ORIGNAL

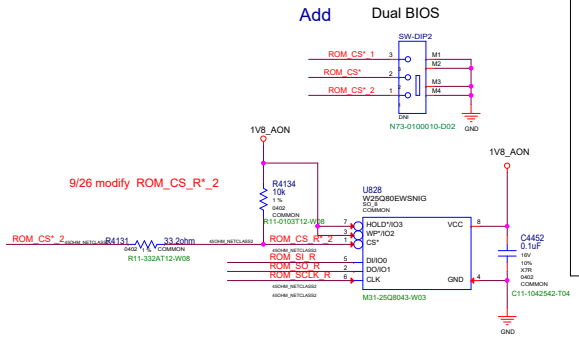
1:PCIE_CFG LOW POWER
0:PCIE_CFG HIGH POWER

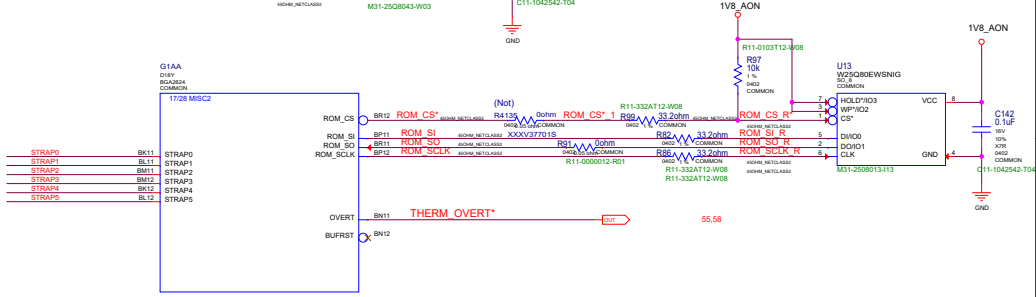
1:VGA_DEVICE ENABLE
0:VGA_DEVICE DISABLE











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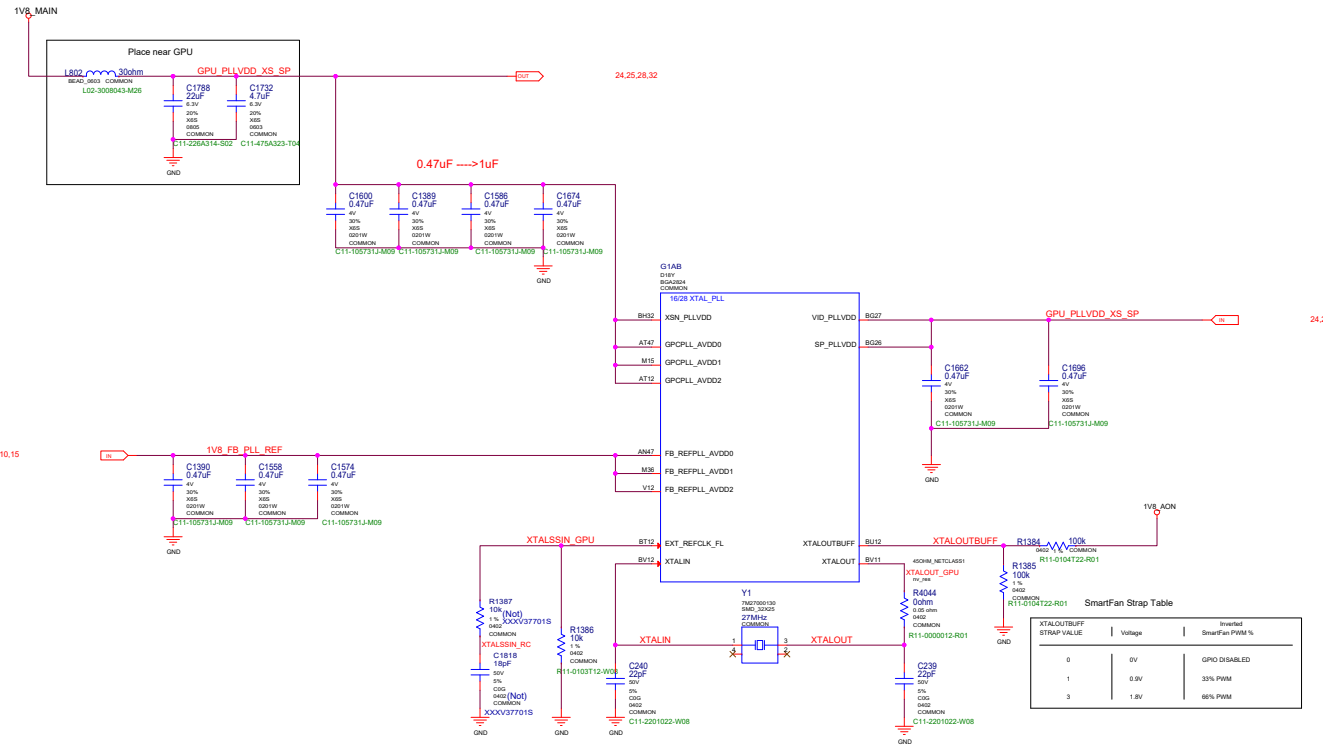
MISC2: XTAL. PLL



XTALOUTBUFF STRAP VALUE	Voltage	Inverted SmartFan PWM %
0	0V	GPIO DISABLED
1	0.9V	33% PWM
3	1.8V	66% PWM

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Custom	GPU Decoupling	1.0

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MISC: USB PPC

PIN	ANX	CYP
1	TP	TP
2	RESET	VBUS_MON
3	NC	NC
4	ROLE_SEL (PD)	CC2
5	NC	VCON_5V
6	VDDD (3.3V)	CC1
7	VBUS_MON	RESET
8	NC	NC
9	CC2	I2CM_SDA
10	VCON_5V	I2CM_SCL
11	CC1	HPD
12	VDDD (3.3V)	NC
13	DVDD_IO (1.8V)	NC
14	VBUS_FET_EN	VBUS_FET_EN
15	DSCH_CTL	DSCH_CTL
16	HPD	I2CS_SDA
17	I2CM_SDA	I2CS_SCL
18	I2CM_SCL	NC
19	DVDD_IO (1.8V)	GND
20	NC	VDDD (3.3V)
21	I2CS_SDA	DVDD_IO (1.8V)
22	I2CS_SCL	VCCD (100nF)
23	SINK_CLT (PD)	NC
24	PWR_EN	PWR_EN

U820 CYPD4136-24LQXIT QFN-24 COMMON

Place it closed to 5V regulator

PCB CO-LAYOUT

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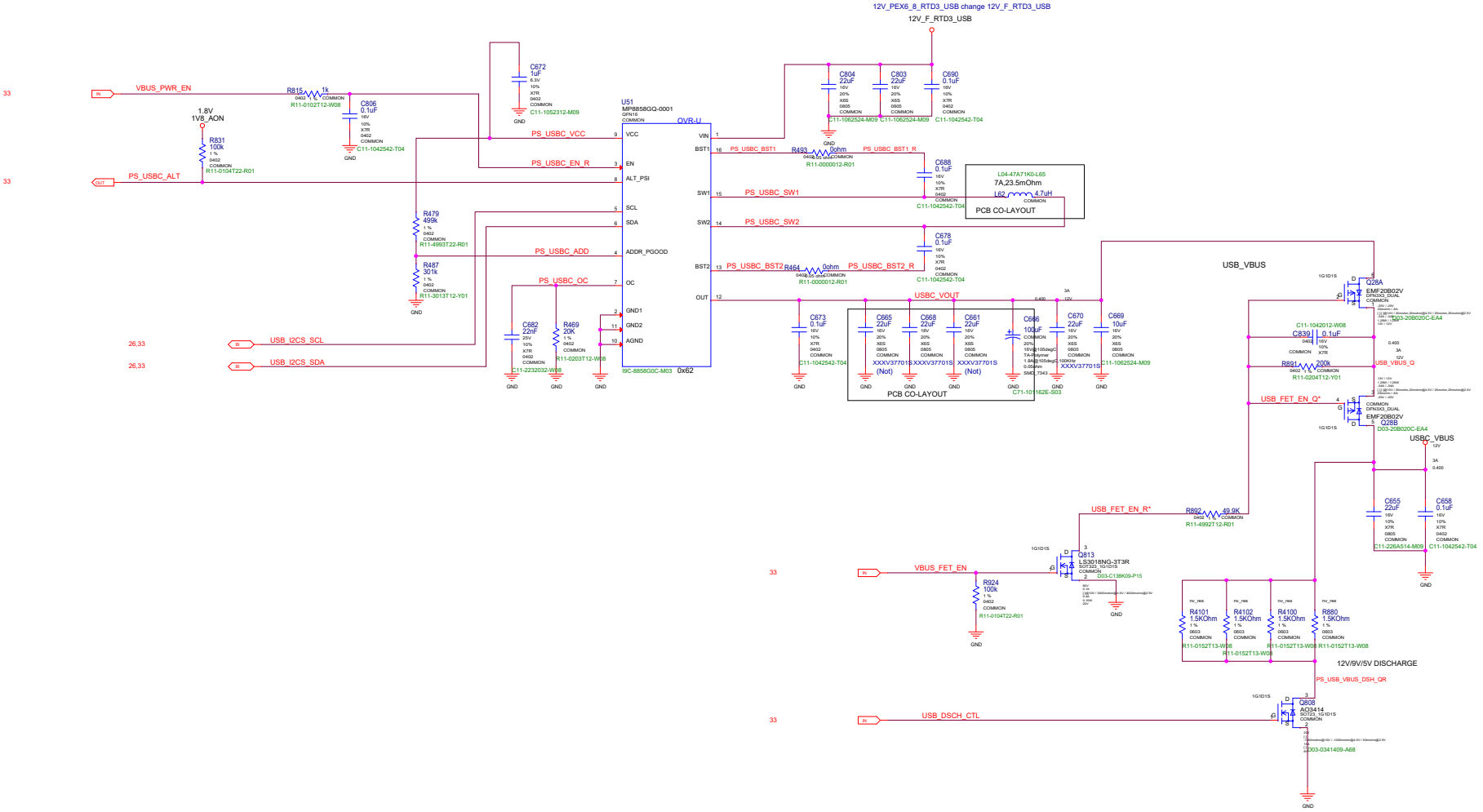
PS: USB VR


12V_PEX6_8_RTD3_USB change 12V_F_RTD3_USB
12V_F_RTD3_USB
U51
MP8858GQ-0001
OVR-U
VBUS_PWR_EN
1.8V
1V8_AON
PS_USBC_ALT
PS_USBC_VCC
PS_USBC_EN_R
PS_USBC_ADD
PS_USBC_OC
PS_USBC_BST1
PS_USBC_BST1_R
PS_USBC_SW1
PS_USBC_SW2
PS_USBC_BST2
PS_USBC_BST2_R
USBC_VOUT
USB_I2CS_SCL
USB_I2CS_SDA
USB_VBUS
USBC_VBUS
USB_FET_EN_Q*
USB_FET_EN_R*
VBUS_FET_EN
USB_DSCH_CTL
PS_USB_VBUS_DSH_QR
12V/9V/5V DISCHARGE
PCB CO-LAYOUT
L04-47A71K0-L65
7A,23.5mOhm
4.7uH
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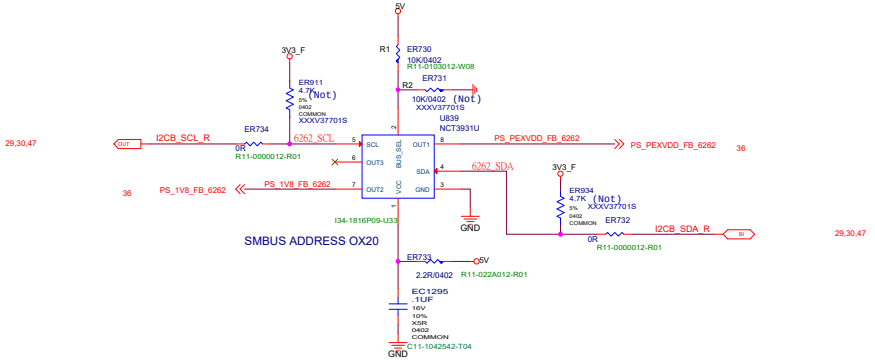
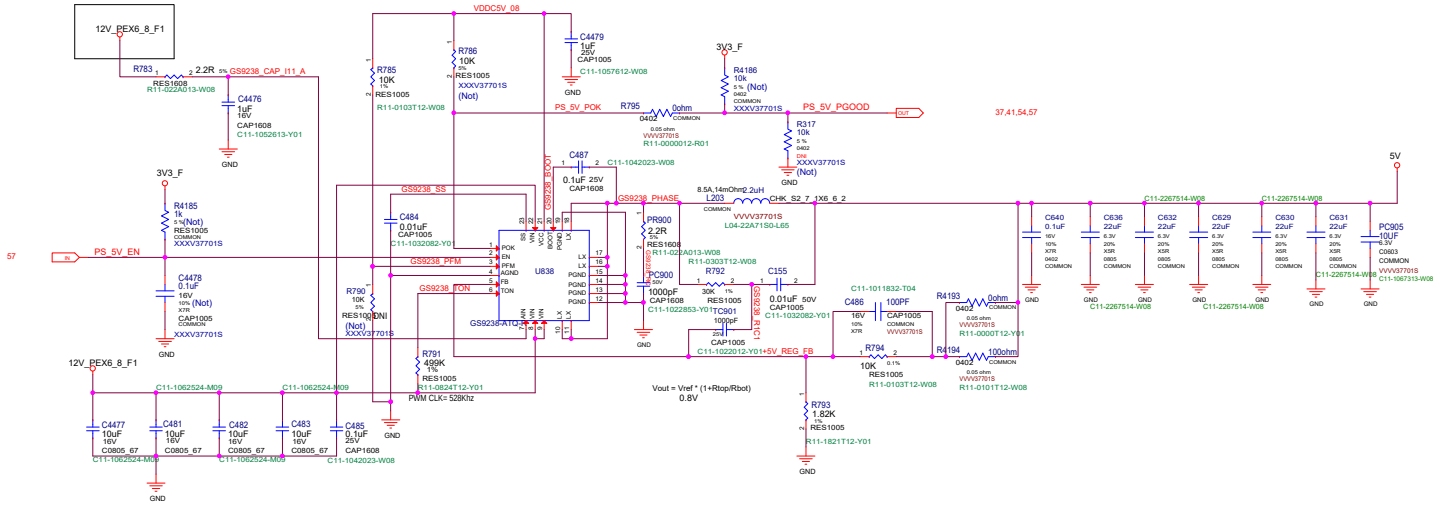
PS: 5V, 5V_BACKUP

Table 1. Recommended Address Programming

Address	0x2A	0x28	0x26	0x24	0x22	0x20
R1 (kΩ)	open	3.9	3	2.2	1.3	10
R2 (kΩ)	10	1.3	2.2	3	3.9	open
BUS_SEL Voltage (% of VCC)	0	25	42	58	75	100





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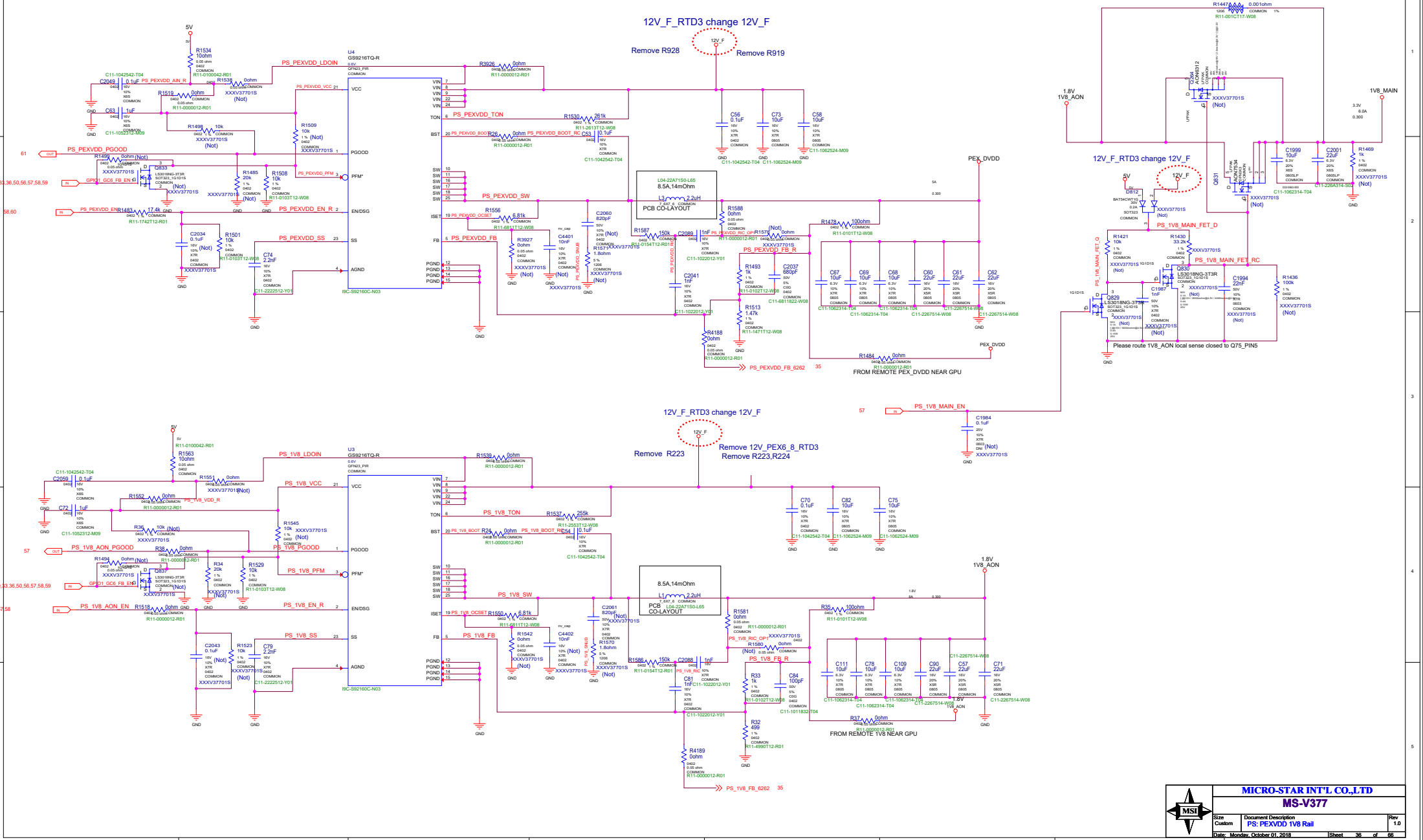
PS: PEXVDD 1V8 Rail



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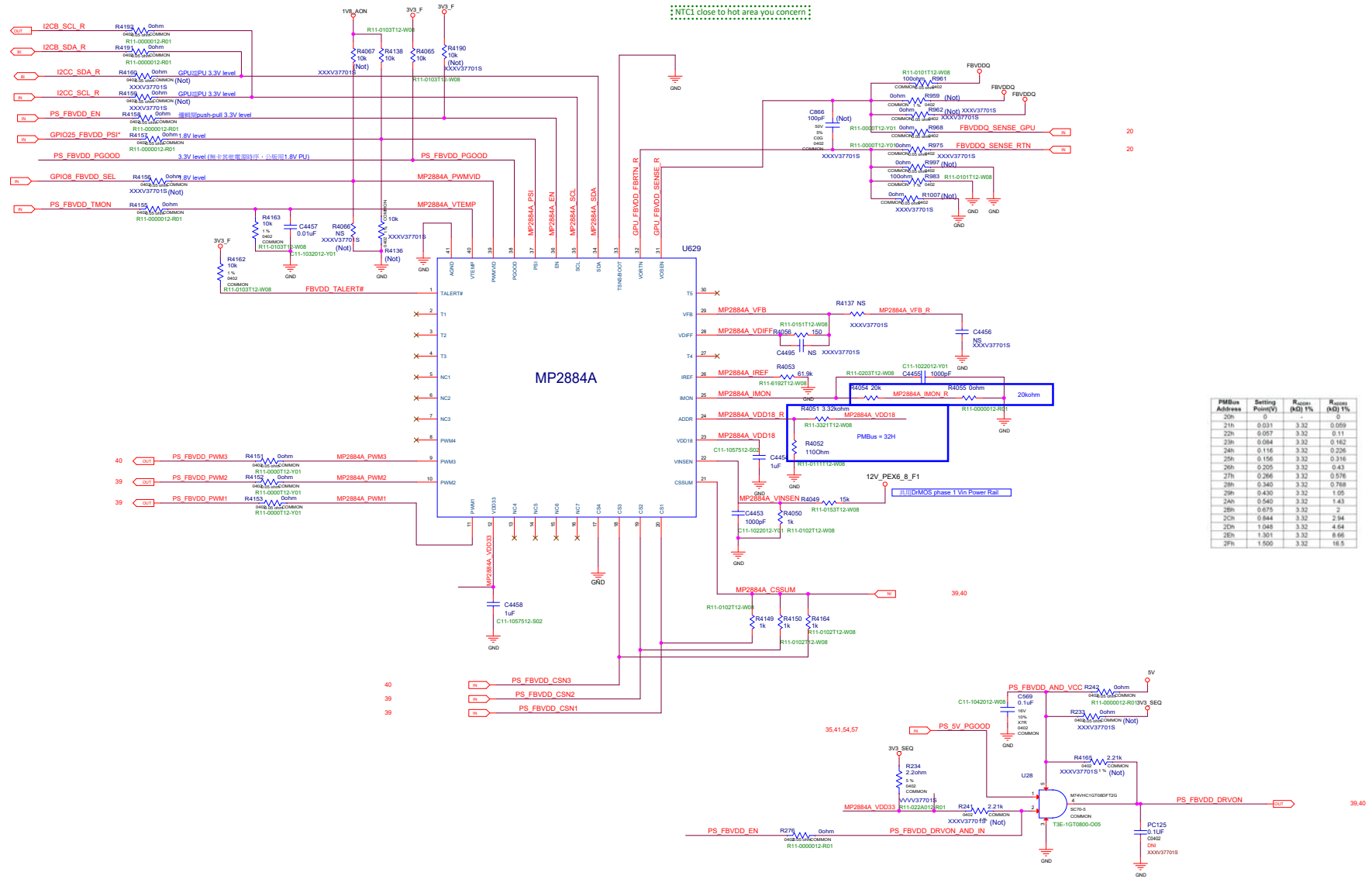
PS: FBVDD Controller

EN Type	R3
Open Drain	10k
Push Pull	NS

PSI	Mode
High	High Phase Count
Hi-Z	Auto Power Mode
Low	Low Phase Count

PWMVID	Vout
High	VID in 24h
Hi-Z	VID in 21h
Low	VID in 1Fh

	+NVVDD
TDC	??A
IccMax	??A
Vboot	1.35V
Load Line	0mohm



PMBus Address	Setting Point(V)	R_{ADDR} (kΩ) 1%	R_{ADDR0} (kΩ) 1%
20h	0	-	0
21h	0.031	3.32	0.059
22h	0.057	3.32	0.11
23h	0.084	3.32	0.162
24h	0.116	3.32	0.226
25h	0.156	3.32	0.316
26h	0.205	3.32	0.43
27h	0.266	3.32	0.576
28h	0.340	3.32	0.768
29h	0.430	3.32	1.05
2Ah	0.540	3.32	1.43
2Bh	0.675	3.32	2
2Ch	0.844	3.32	2.94
2Dh	1.048	3.32	4.64
2Eh	1.301	3.32	8.66
2Fh	1.500	3.32	16.5

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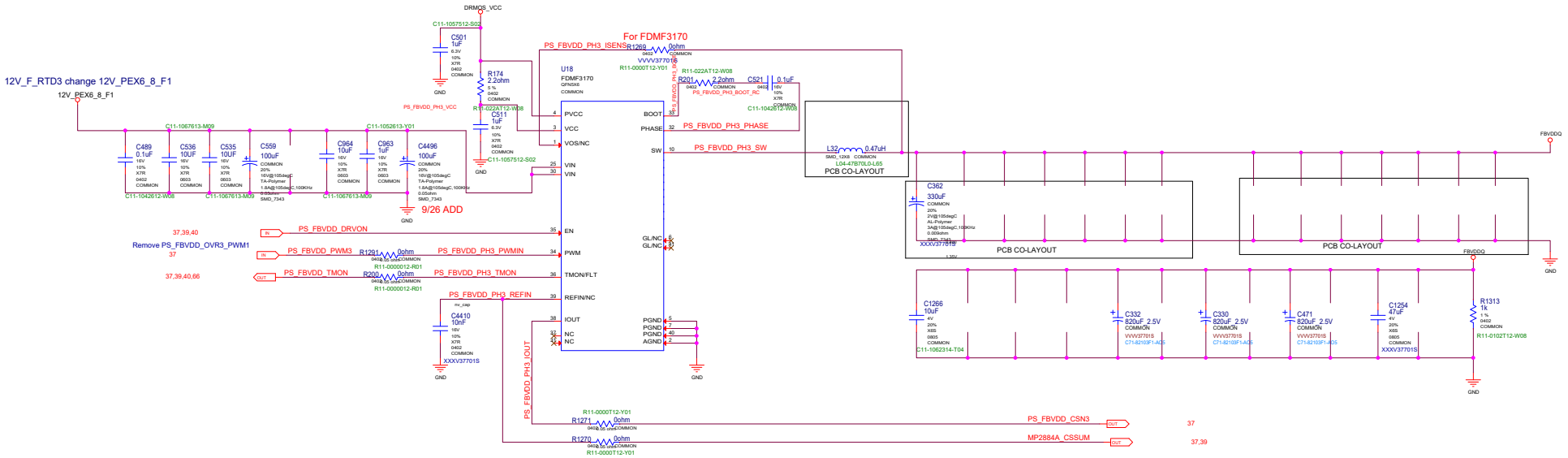
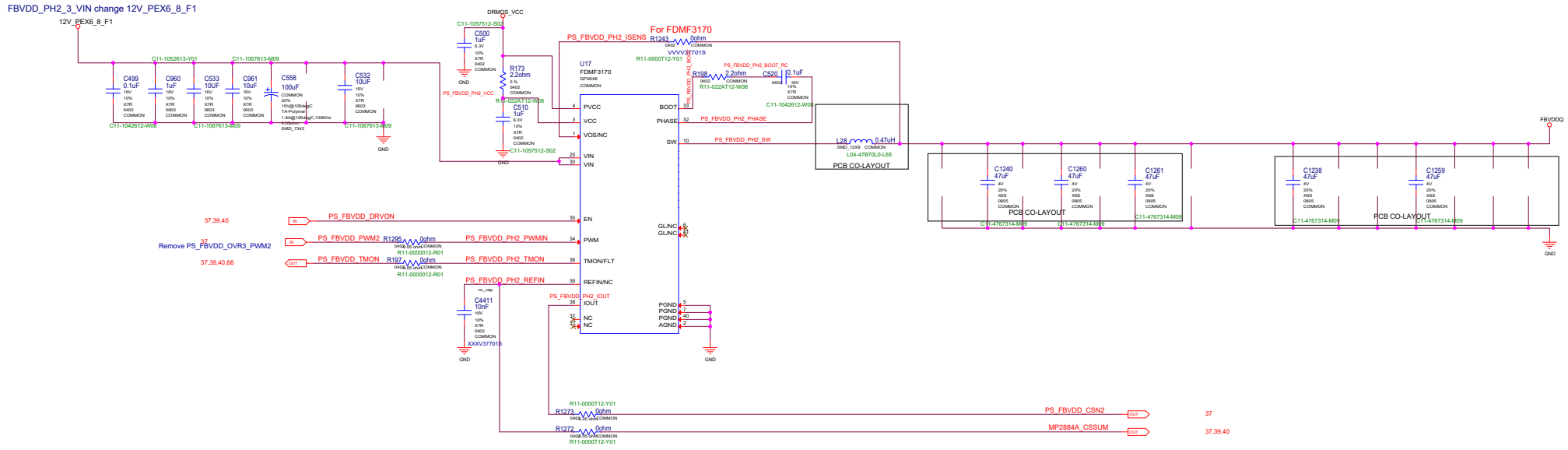
PS: FBVDD Controller OVR3

PS: FBVDD PH2,3





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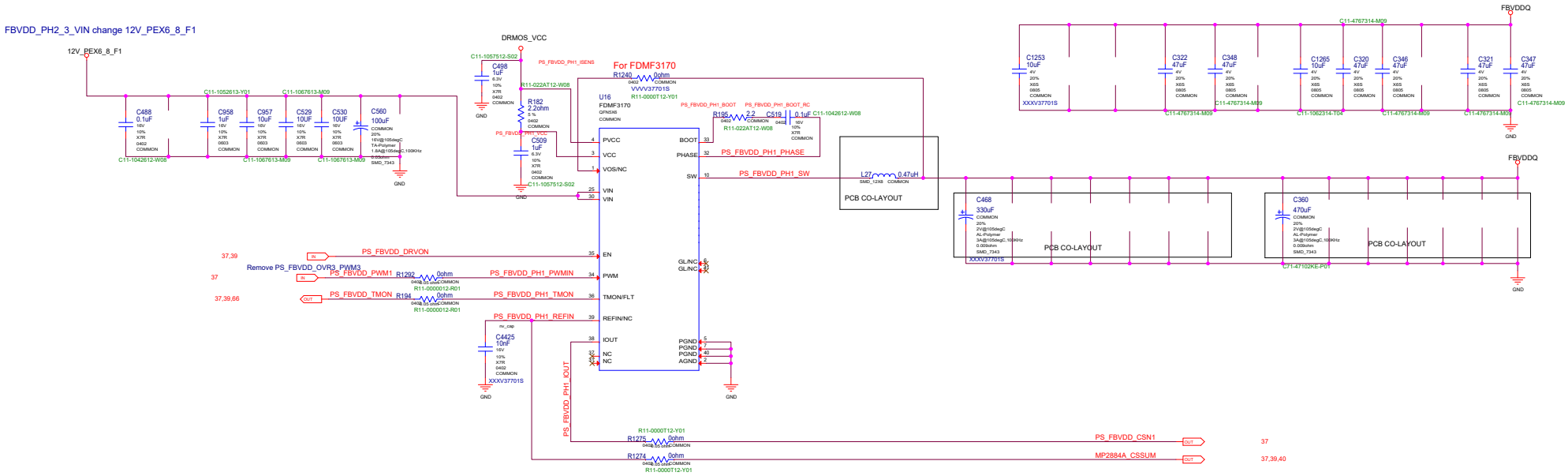
PS: FBVDD PH1



Remove 12V_PEX_FB --->FBVDD_PH2_3_VIN circuit

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EN Type	R3
Open Drain	10k
Push Pull	NS

PSI	Mode
High	High Phase Count
Hi-Z	Auto Power Mode
Low	Low Phase Count

PWMVID	Vout
High	VID in 24h
Hi-Z	VID in 21h
Low	VID in 1Fh

NTC1 close to hot area you concern

MP2888A

U837 QFN52_TSMDQ142

	+NVVDD
TDC	200A
IccMax	330A
Vboot	0.8V
Load Line	0mohm

PMBus Address	Setting Point(V)	R_{ADDR1} (kΩ) 1%	R_{ADDR0} (kΩ) 1%
20h	0	-	0
21h	0.031	3.32	0.059
22h	0.057	3.32	0.11
23h	0.084	3.32	0.162
24h	0.116	3.32	0.226
25h	0.156	3.32	0.316
26h	0.205	3.32	0.43
27h	0.266	3.32	0.576
28h	0.340	3.32	0.768
29h	0.430	3.32	1.05
2Ah	0.540	3.32	1.43
2Bh	0.675	3.32	2
2Ch	0.844	3.32	2.94
2Dh	1.048	3.32	4.64
2Eh	1.301	3.32	8.66
2Fh	1.500	3.32	16.5

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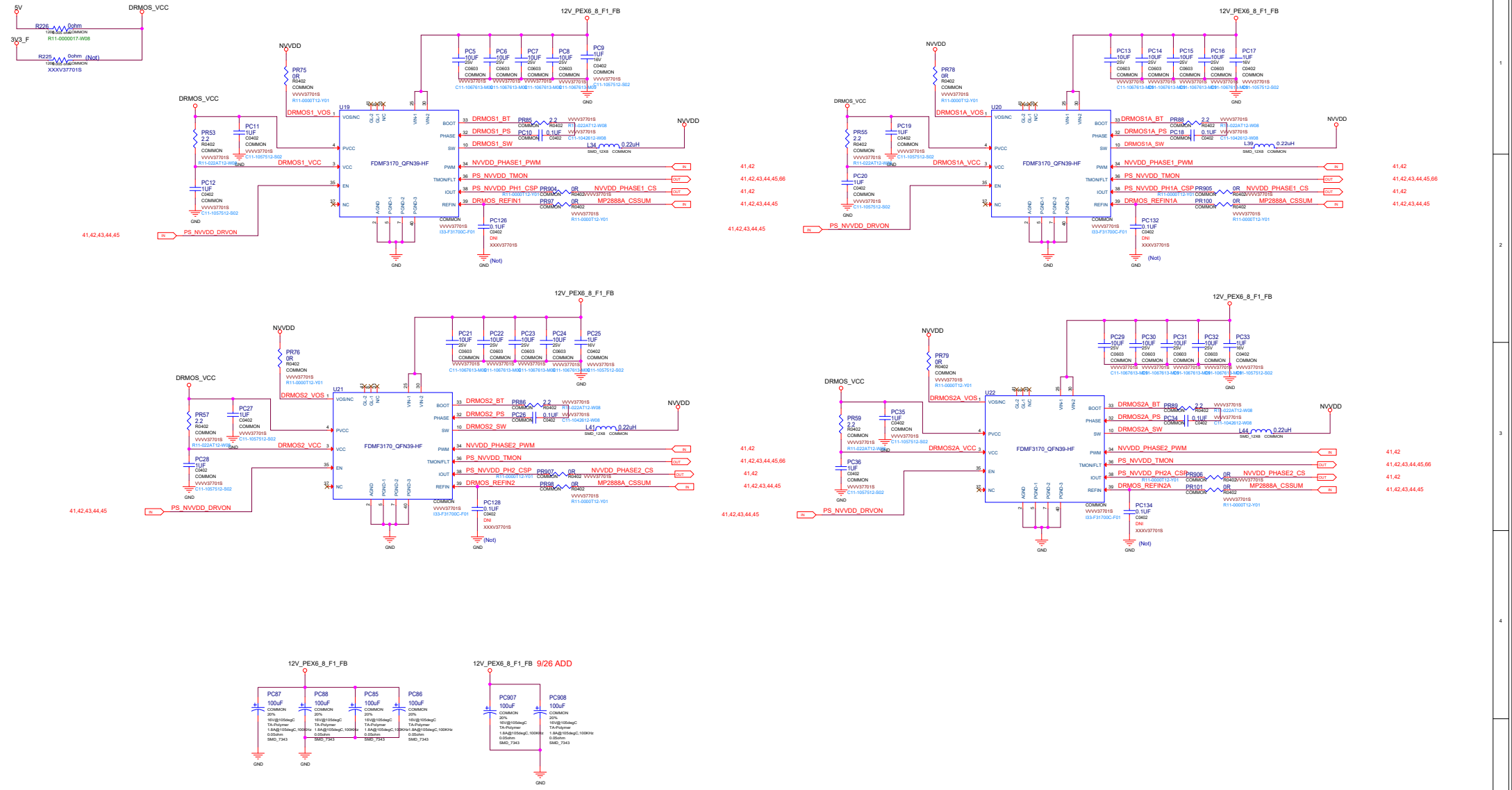
PS: NVVDD Phase 1~4



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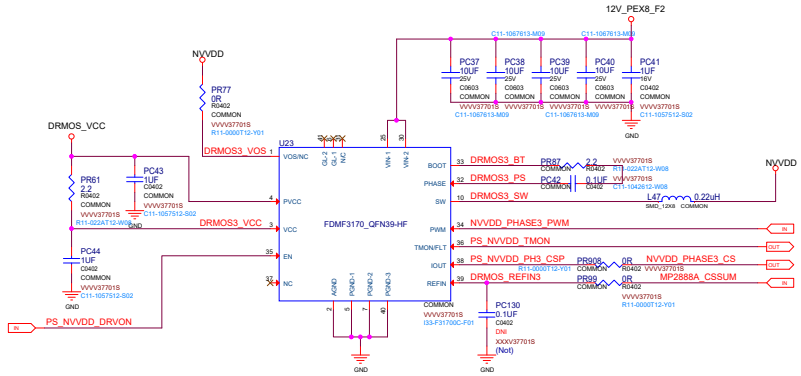
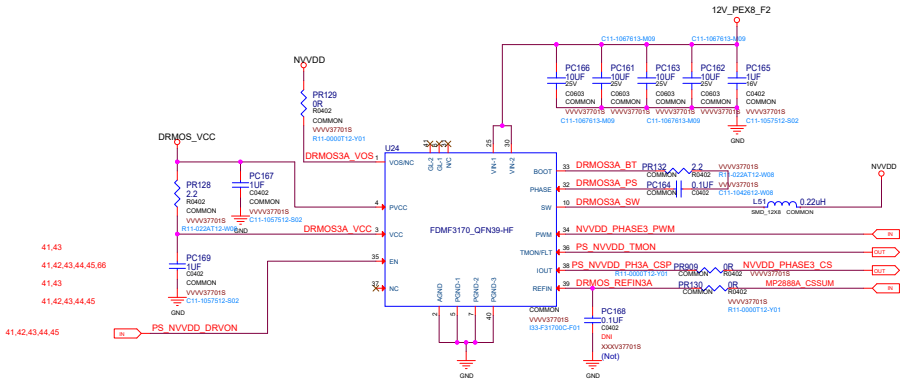
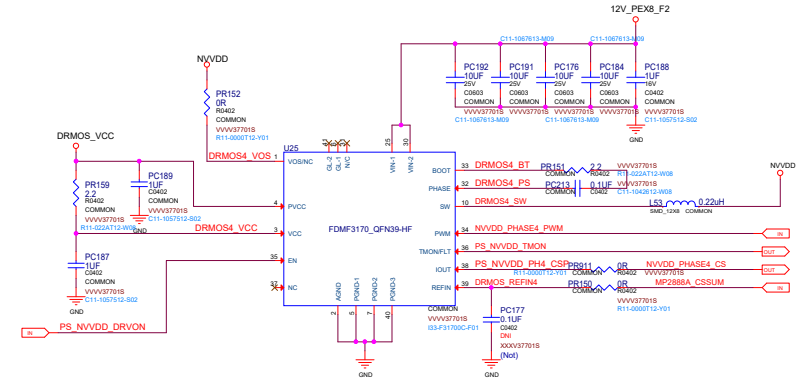
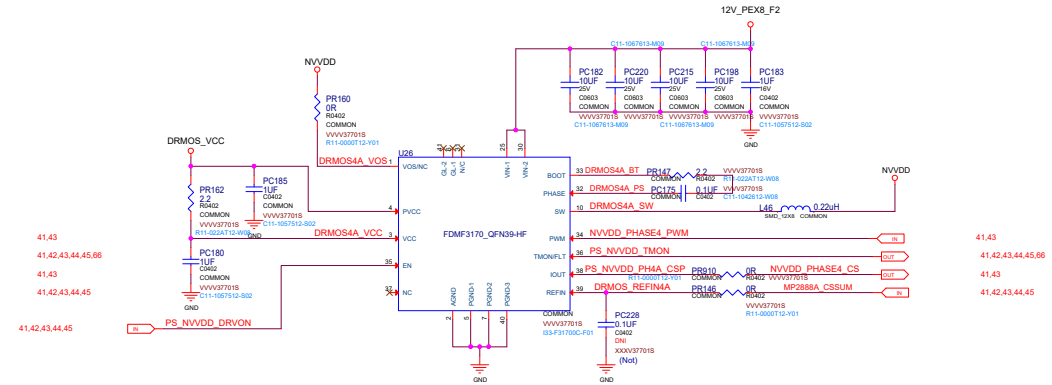
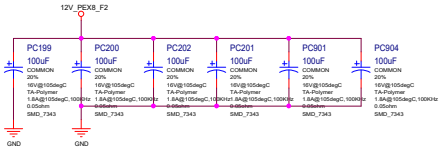
PS: NVVDD Phase 5~8

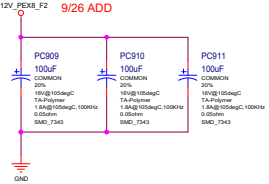












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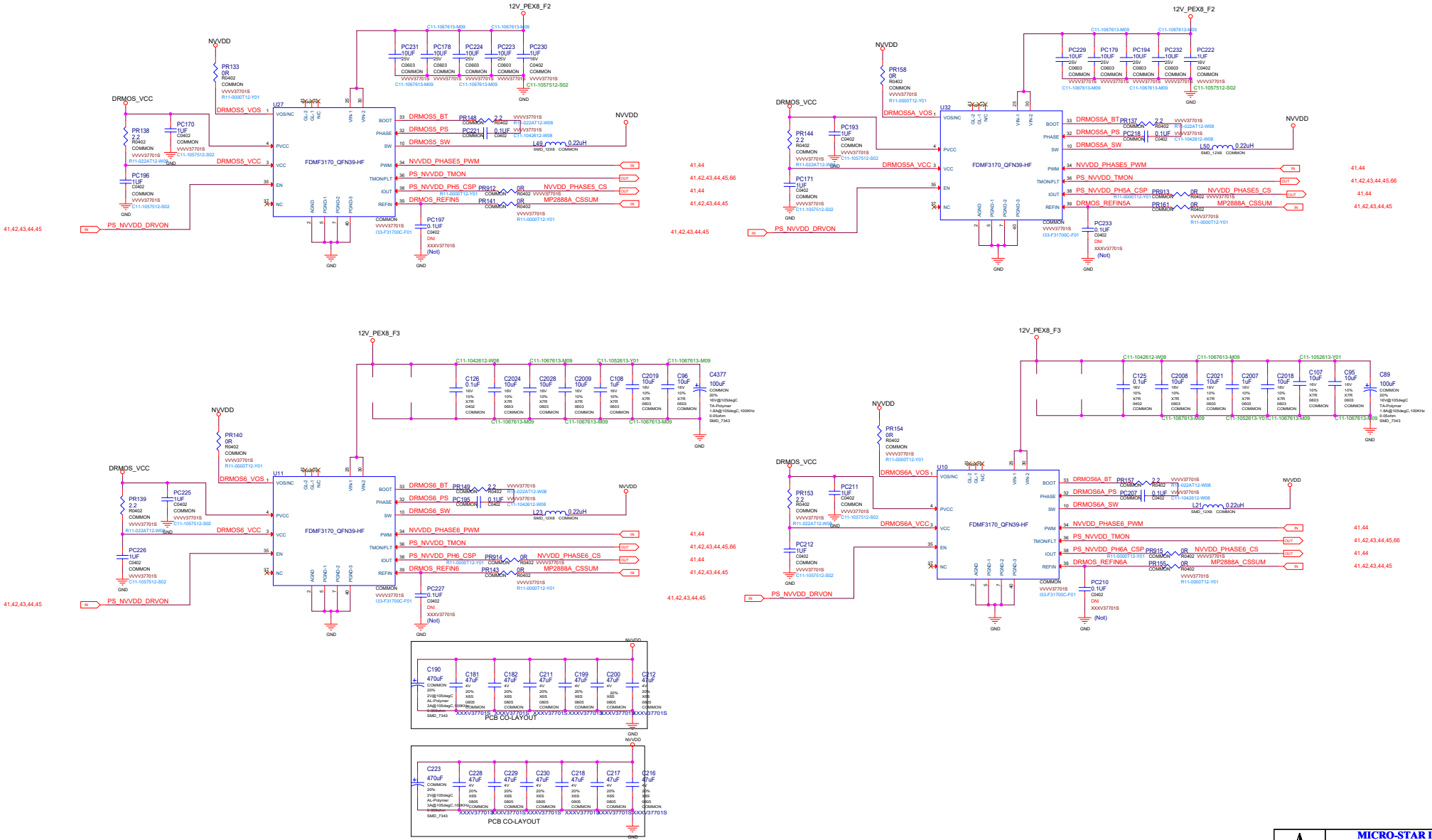
PS: NVVDD Phase 9~12



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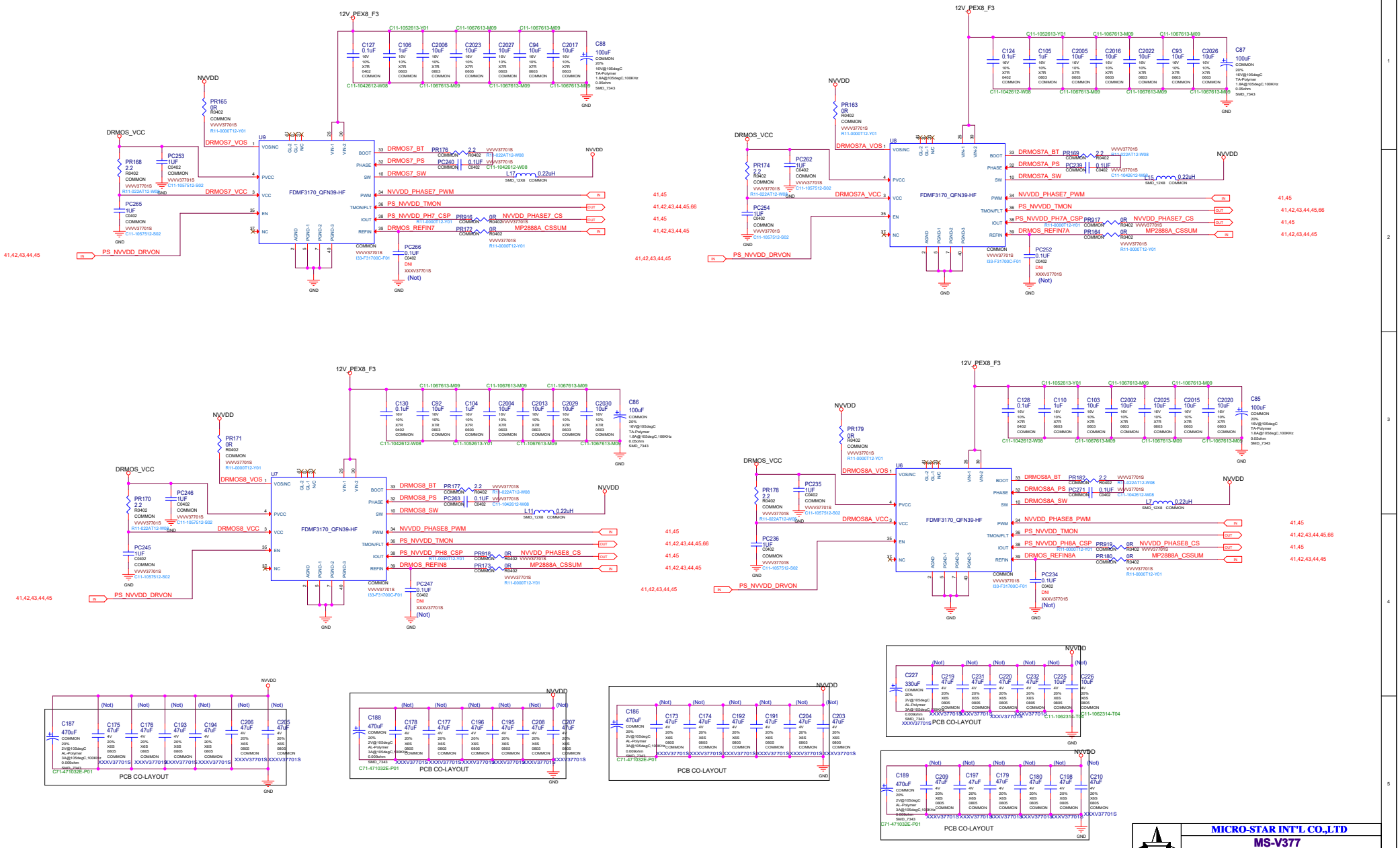
PS: NVVDD Phase 13~16



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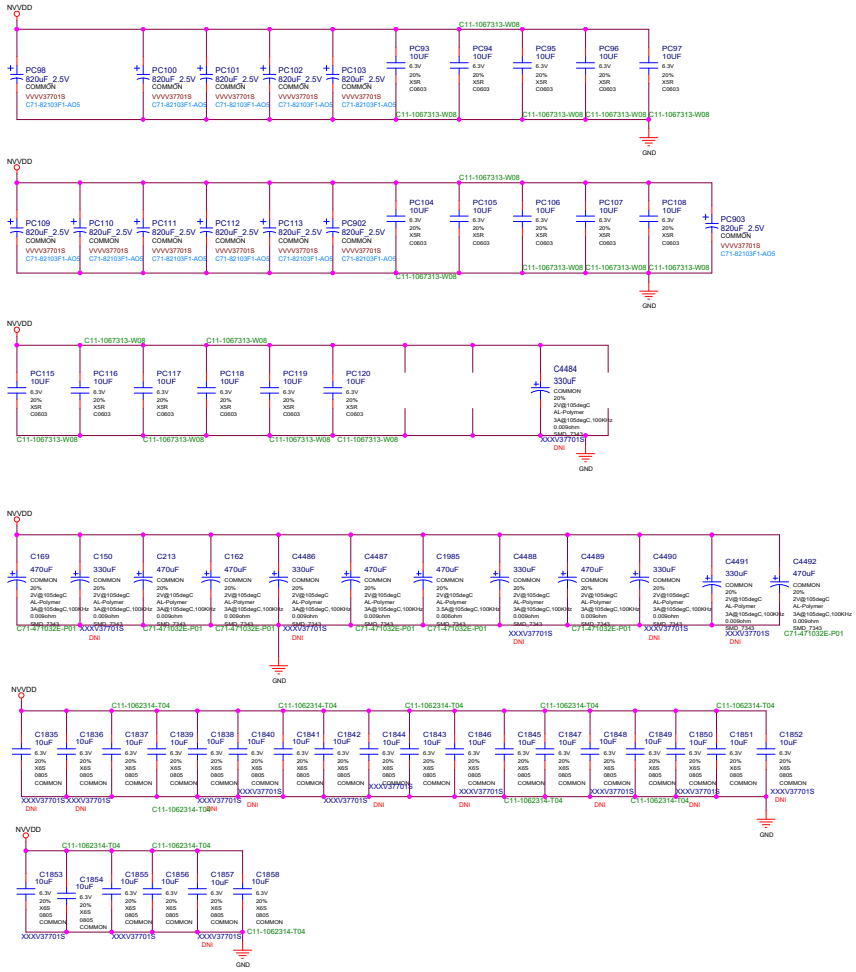
PS:NVVDD Phase 7, 8



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-V377	
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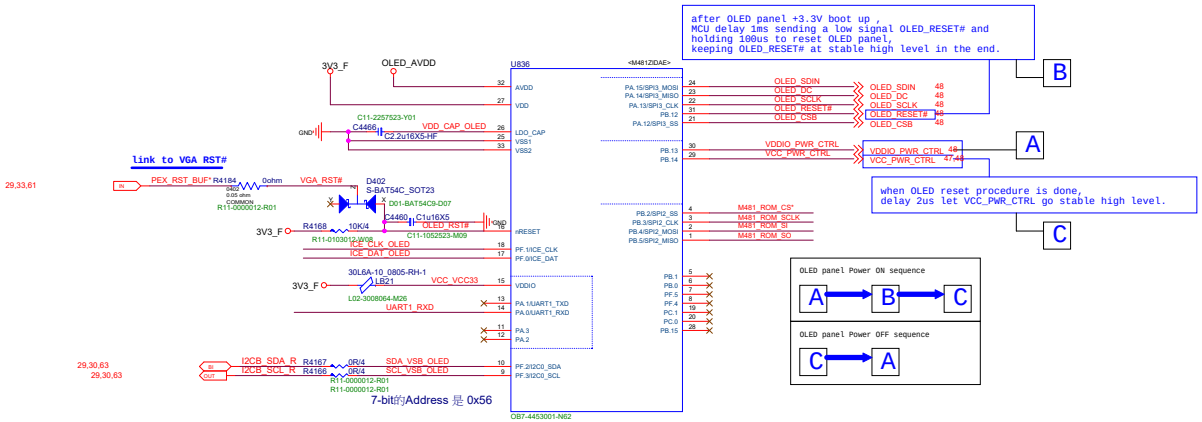
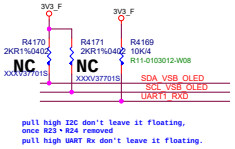
PS: NVVDD PH 9,10

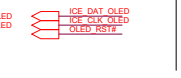
32 PIN OLED MCU



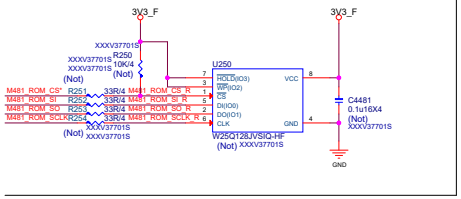
I2C and UART Reserve



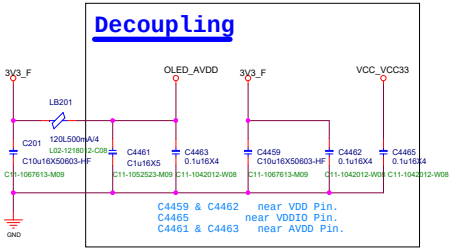
FW update



External 3.3V SPI ROM,128M(16Mx8bit)

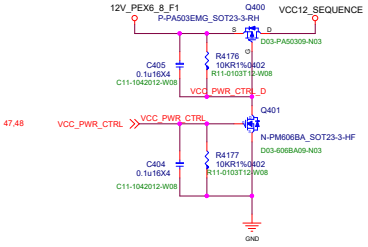


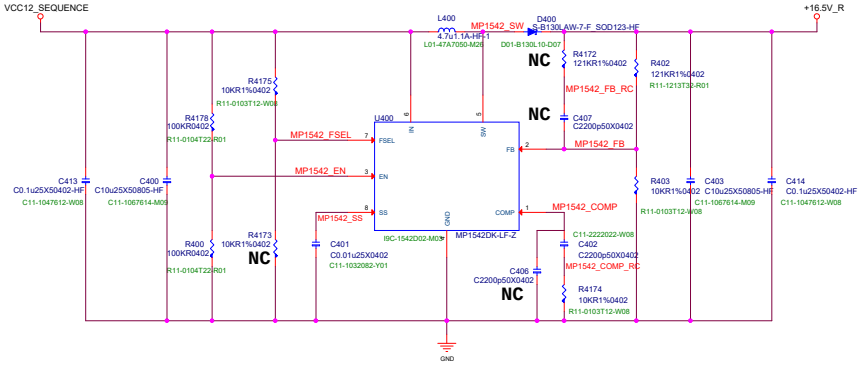
Decoupling



MPS1542 BUCK BOOST FOR OLED POWER 12Vin 16.5Vout

+16.5V power up sequence





PIN FUNCTIONS

Pin #	Name	Description
1	COMP	Compensation Pin. Connect a capacitor and resistor in series to ground for loop stability.
2	FB	Feedback Input. Reference voltage is 1.25V. Connect a resistor divider to this pin.
3	EN	Regulator On/Off Control Input. A high input at EN turns on the converter, and a low input turns it off. When not used, connect EN to the input source (through a 100kΩ pull-up resistor if V_{IN} > 6V) for automatic startup. EN cannot be left floating.

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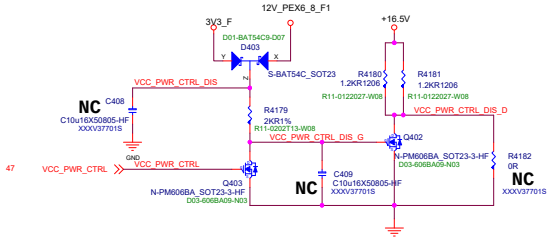
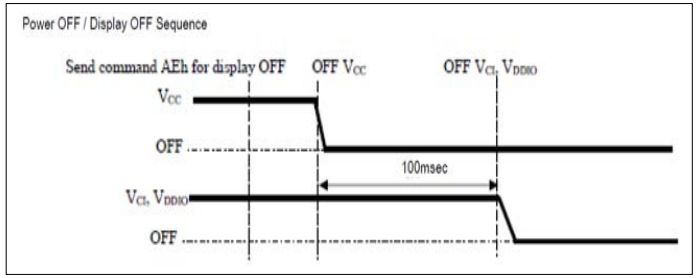
+16.5V Discharge



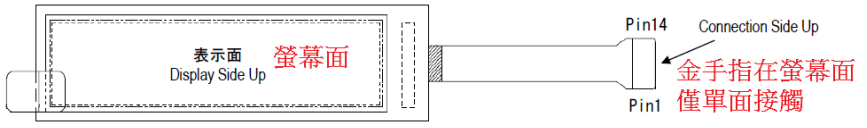
100mS time interval is counting from 2 voltages rating 10% to 10% or lower level.



12-2) 入力端子名称 Pin Assignment

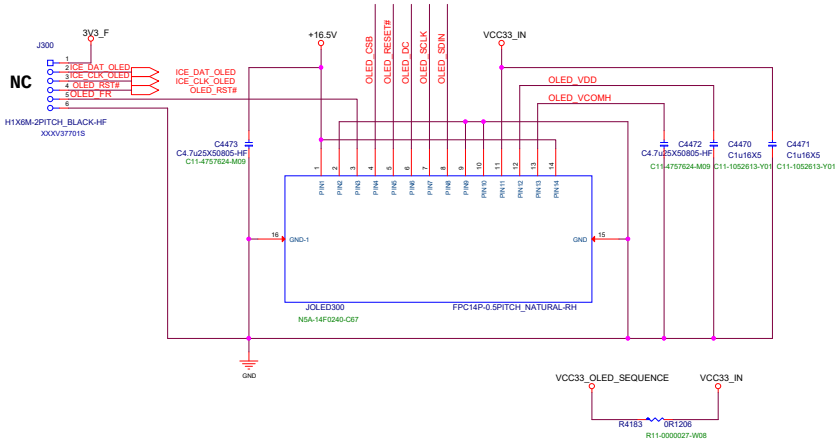
I:Input, O:Output, P:Power

PIN No	名称 Pin Name	機能 Function Description		I/O
1	VCC	OLED駆動電源	OLED Driving Voltage	P
2	AGND	グランド	Analog Ground	P
3	FR	同期信号	Synchronization Signal	O
4	CSB	チップセレクト	Chip Select	I
5	RSTB	リセット	Reset	I
6	DC	データ/コマンド選択	Data/Command Selection	I
7	SCLK	シリアルクロック	Serial Clock	I
8	SDIN	データ	Data Input	I
9	GND	グランド	Ground Pin	P
10	AGND	グランド	Analog Ground	P
11	VCI	ロジック電源	Logic Power Voltage	P
12	VDD	コア電源	Core Voltage	P
13	VCOMH	COMH 電源	COMH Voltage	P
14	VCC	OLED駆動電源	OLED Driving Voltage	P

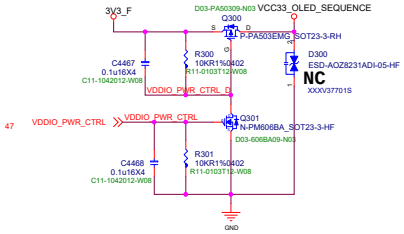


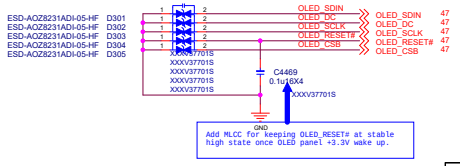
形名 Type No. ELW2106AA

OLED housing



+3.3V power up sequence





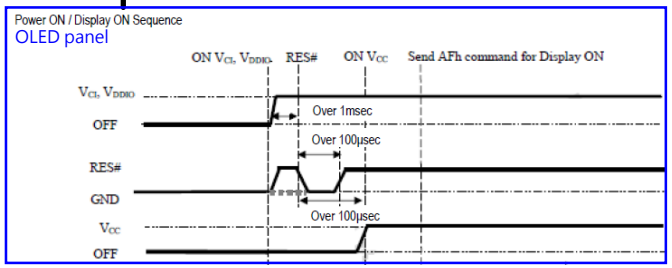
LDO A1117 fixed
+5V to +3.3V

BOOST Circuit
+12V to +16.5V

MCU NUC481
OLED controller
VDDIO for UART

OLED panel
VCC 52mA(max.)
VDD/VCI uA

1. after OLED panel +3.3V boot up , delay 1ms sending a low signal OLED_RESET# and holding 100us to reset OLED panel, keeping OLED_RESET# at stable high level in the end.
2. when OLED reset procedure is done, delay 2us let VCC_PWR_CTRL go stable high level.



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PS: NVVDD PH 13,14

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PS: INPUT SWITCH RTD3

AND GATE LOGIC FOR P-BOARD

GPIO1	GPIO29	SWITCH	VOUT
0	0	0	12V_F
0	1	0	12V_F
1	0	0	12V_F
1	1	1	3V3A

Remove 12V_F_RTD3 circuit

AND GATE LOGIC FOR P-BOARD

GPIO1	GPIO29	SWITCH	VOUT
0	0	0	3V3
0	1	0	3V3
1	0	0	3V3
1	1	1	3V3A

Remove 3V3_RTD3 circuit

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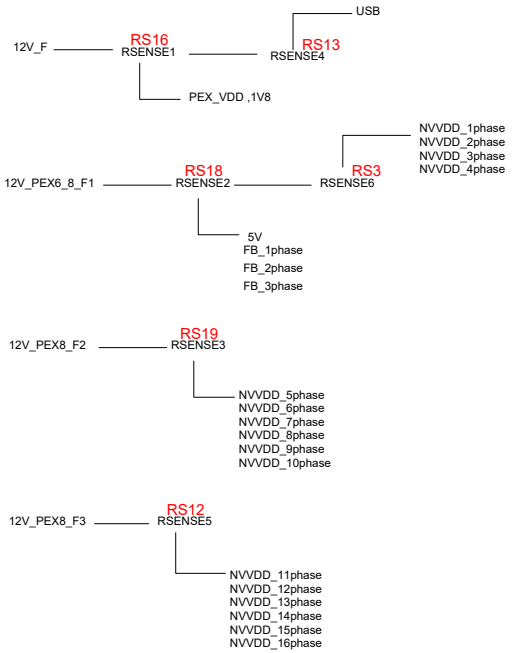
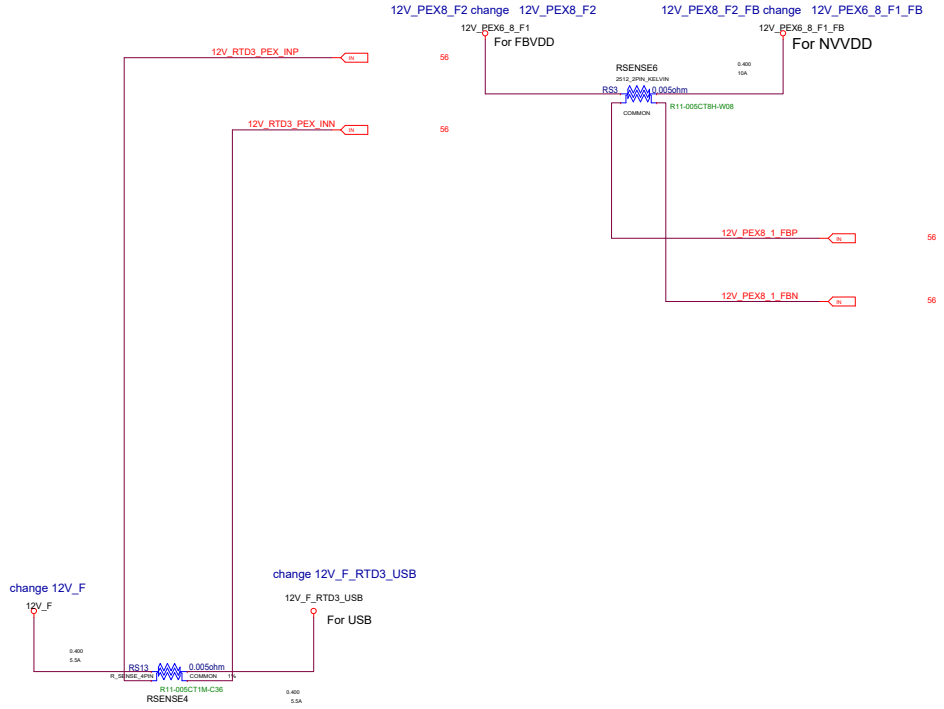
Remove U802 Circuit





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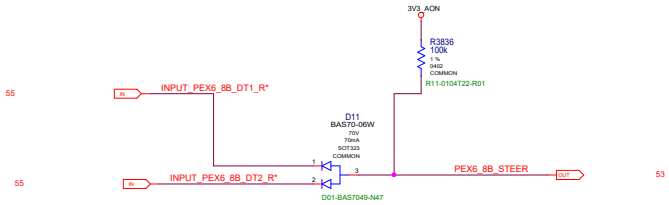
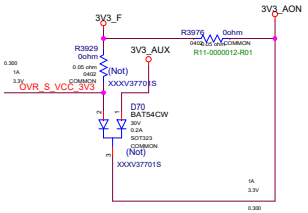
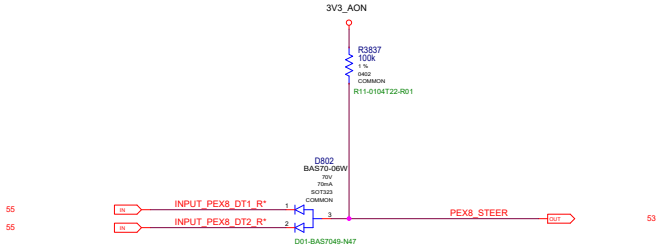
PS: Input Switch Rail Balance

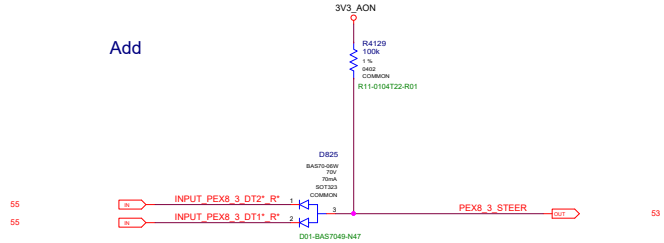






Remove NVVDD VIN change circuit

Add



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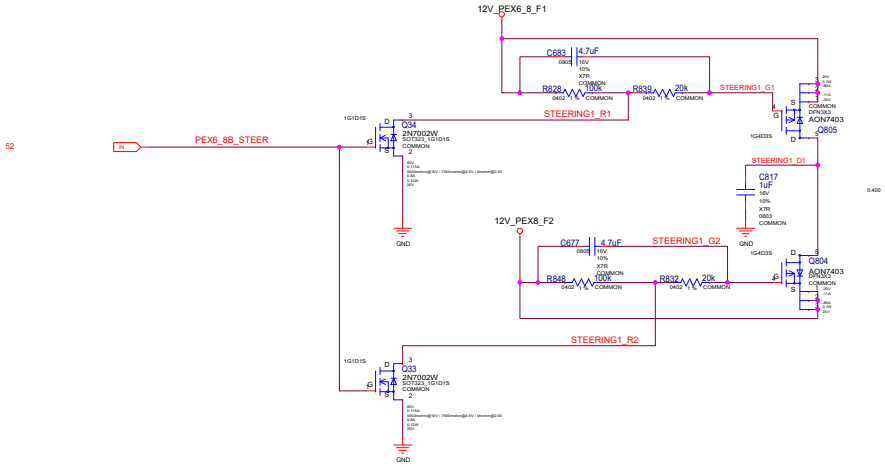
12V CURRENT STEERING (UNDER POWER BOOT):

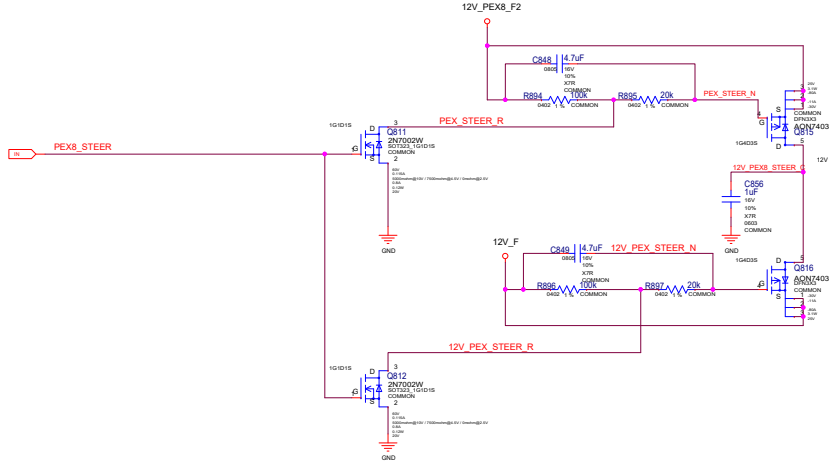
GUIDES CURRENT FROM PEX EDGE TO PEX 6/8 PIN INPUT AREA



12V CURRENT STEERING (UNDER POWER BOOT):

GUIDES CURRENT FROM PEX EDGE TO PEX 8 PIN INPUT AREA

For OpenVreg Type4 + Phase Doubler, 2 phase PSI mode



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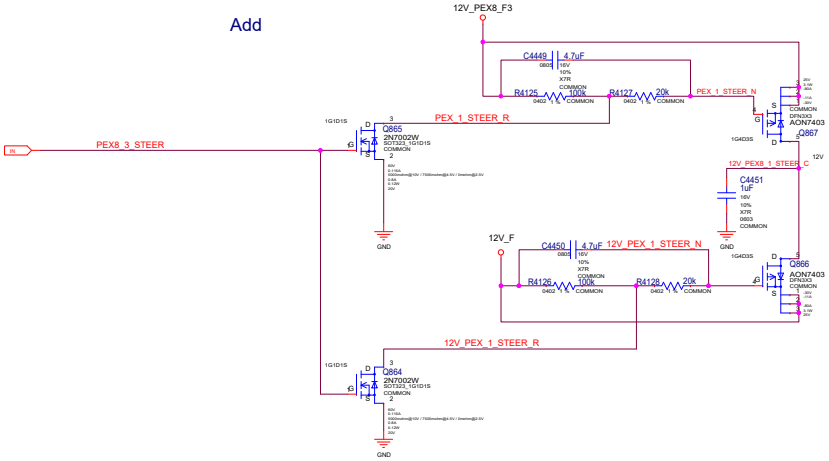

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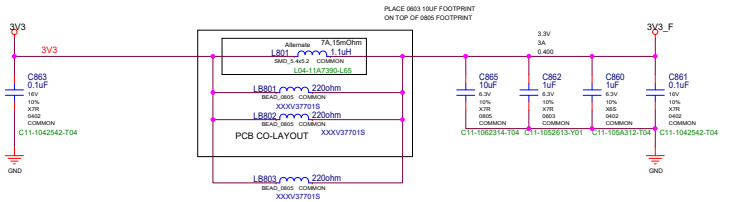
PS: Inputs, Filtering, and Monitoring

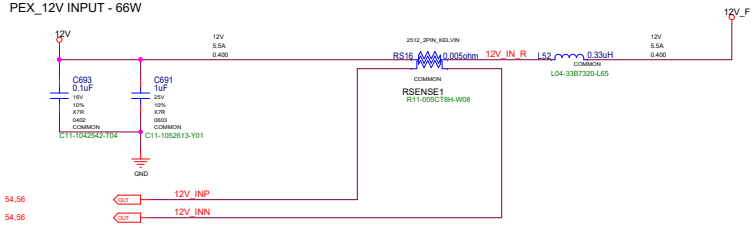
place caps close to INA3221

Remove U801 Circuit

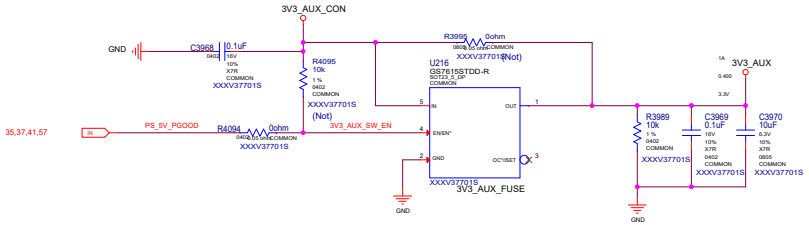
PEX 3V3 INPUT - 10W



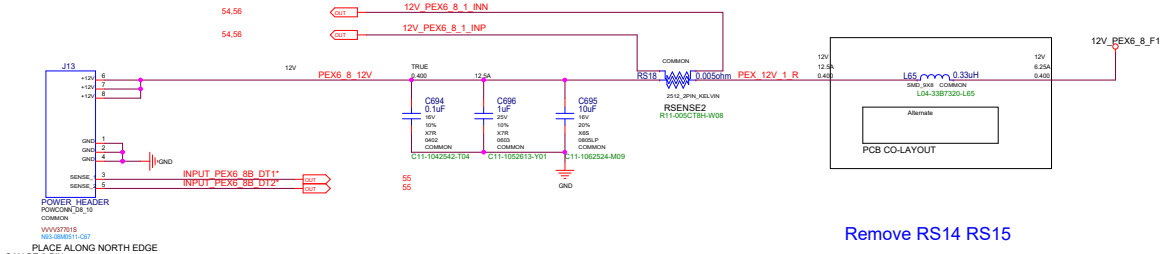
PEX_12V INPUT - 66W



Remove R808 R812

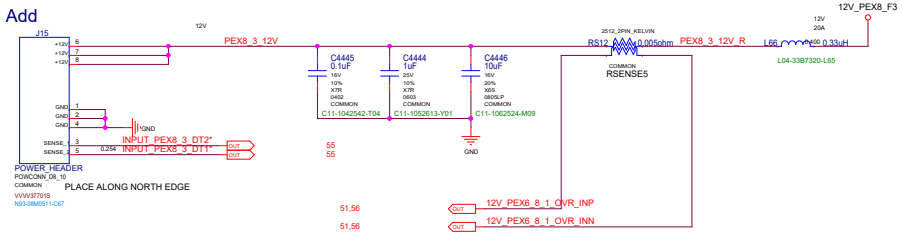


PEX6 INPUT 1 - 2x3 PCIE CON 75W



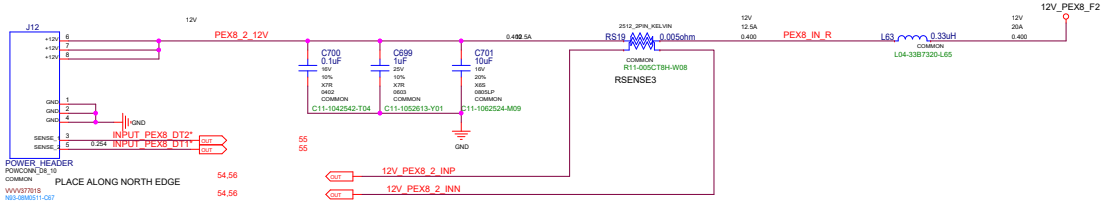
Remove RS14 RS15

Add



PEX8 INPUT 2 - 2x4 PCIE CON 150W

STUFF FOR SINGLE CONNECTOR



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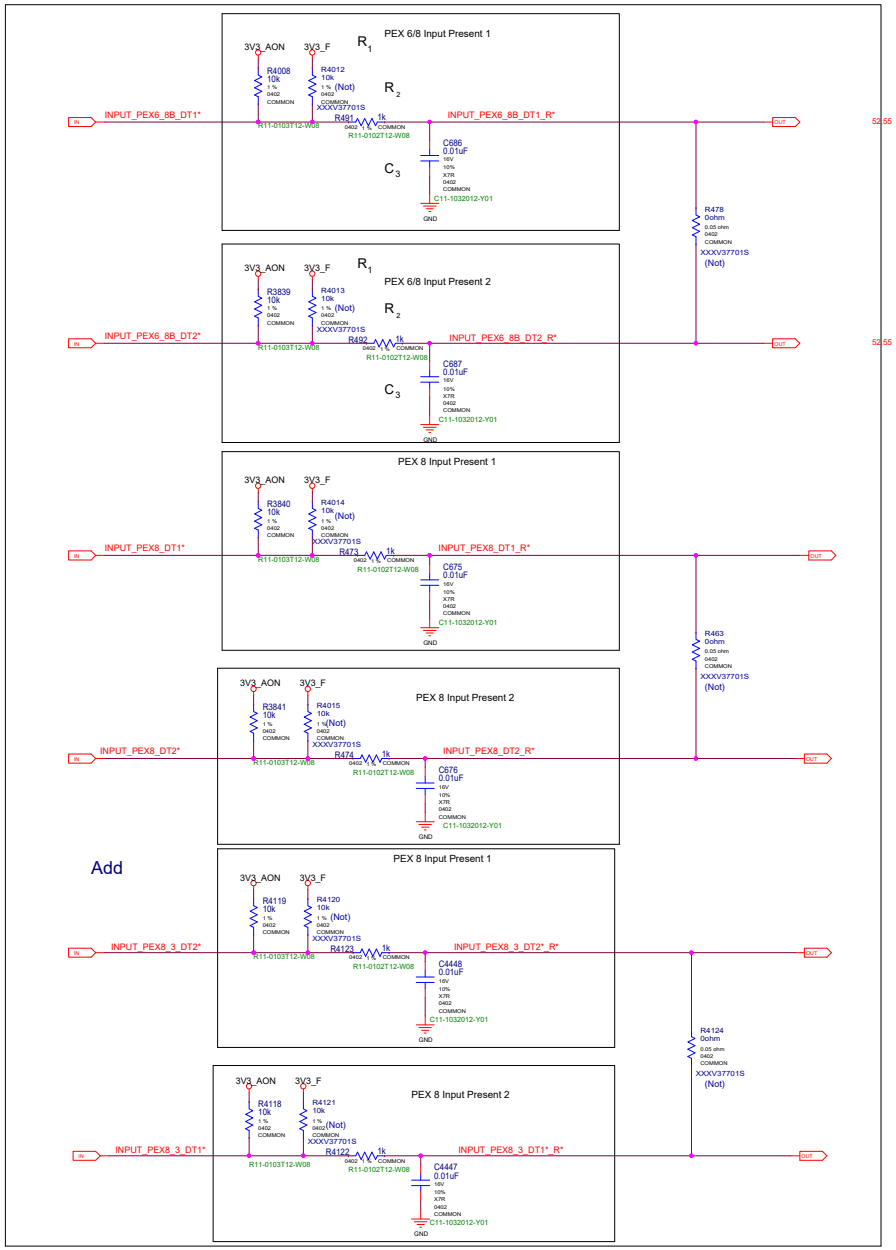
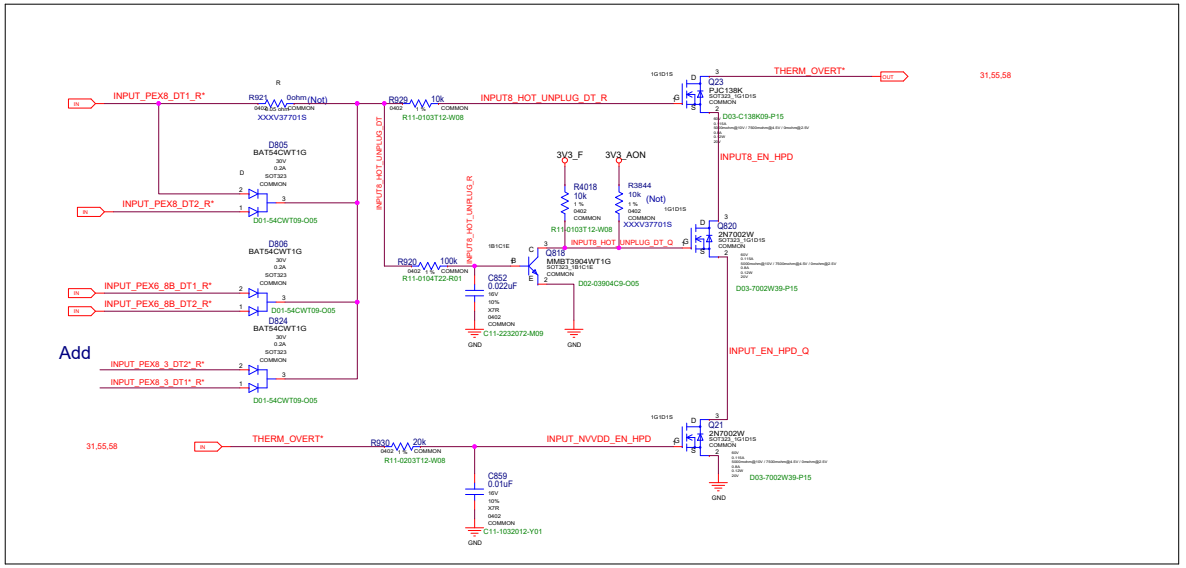
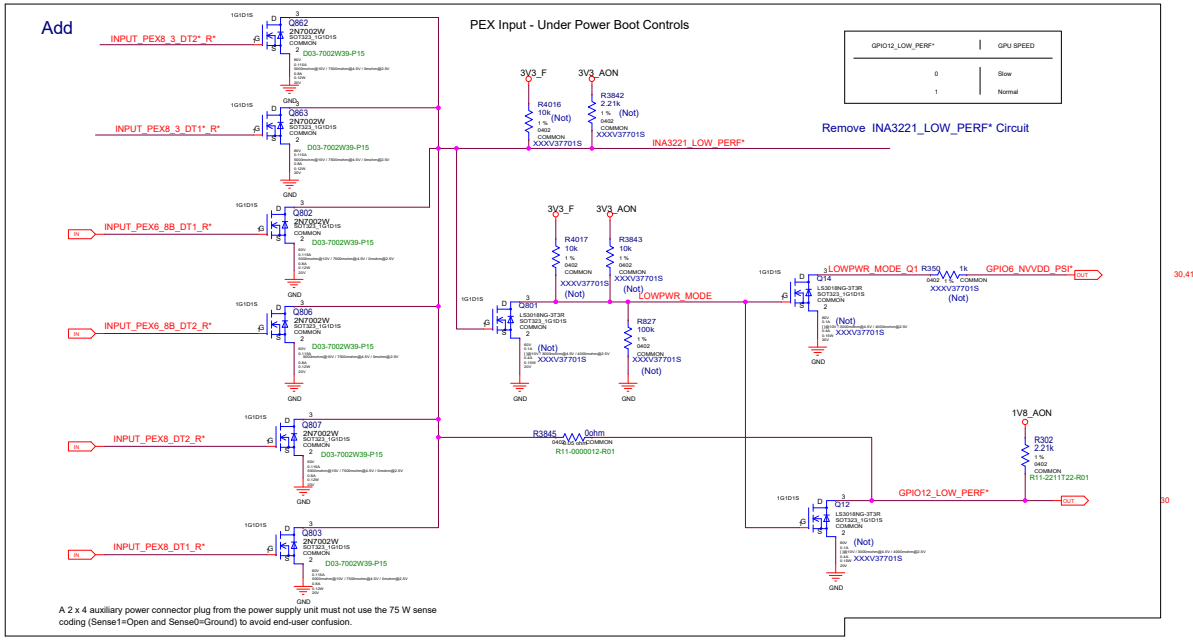
PS: 12V Current Steering & Hot Unplug Detect







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Size: Custom	Document Description: 12V Current Steering & Hot Unplug Detect
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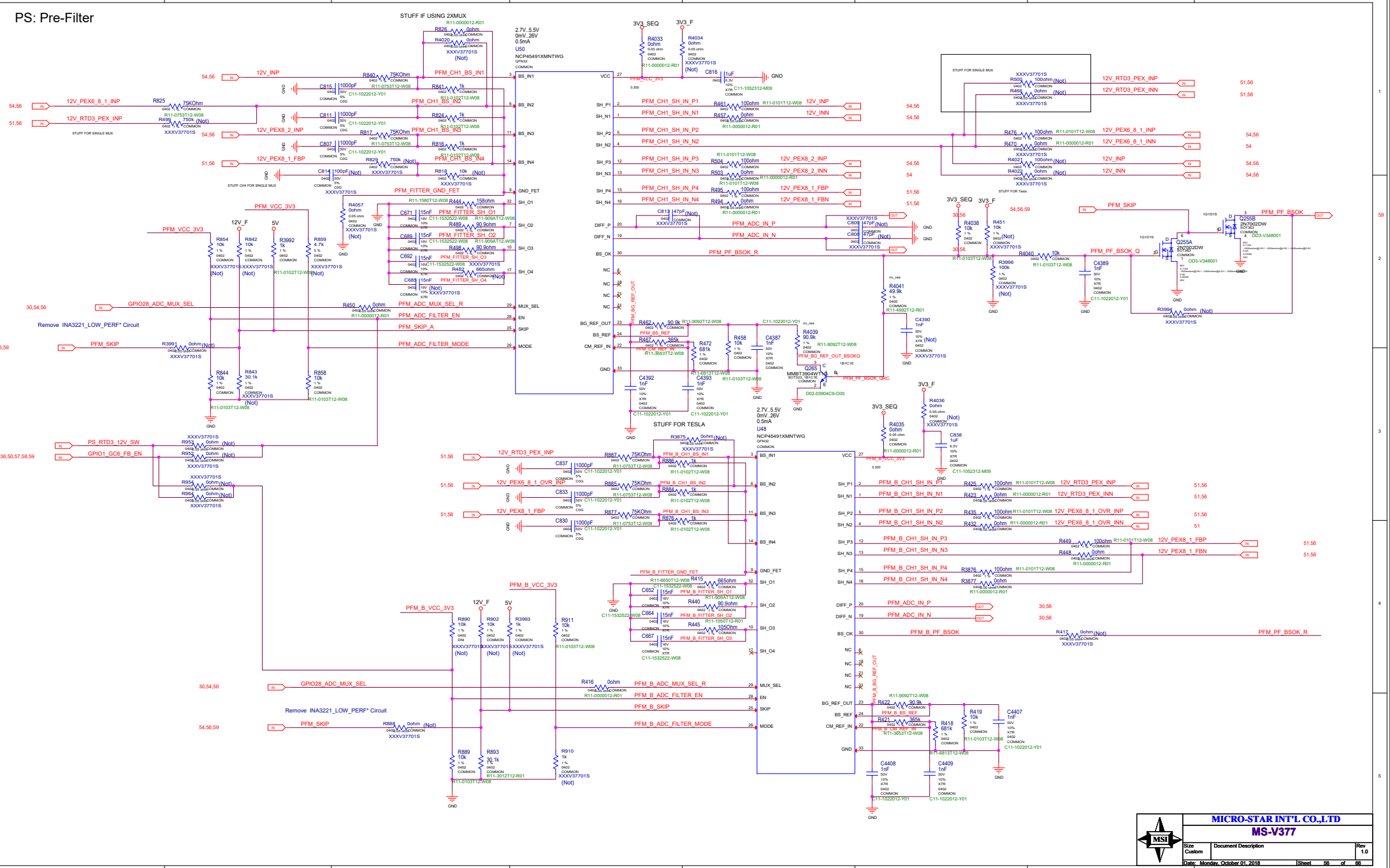
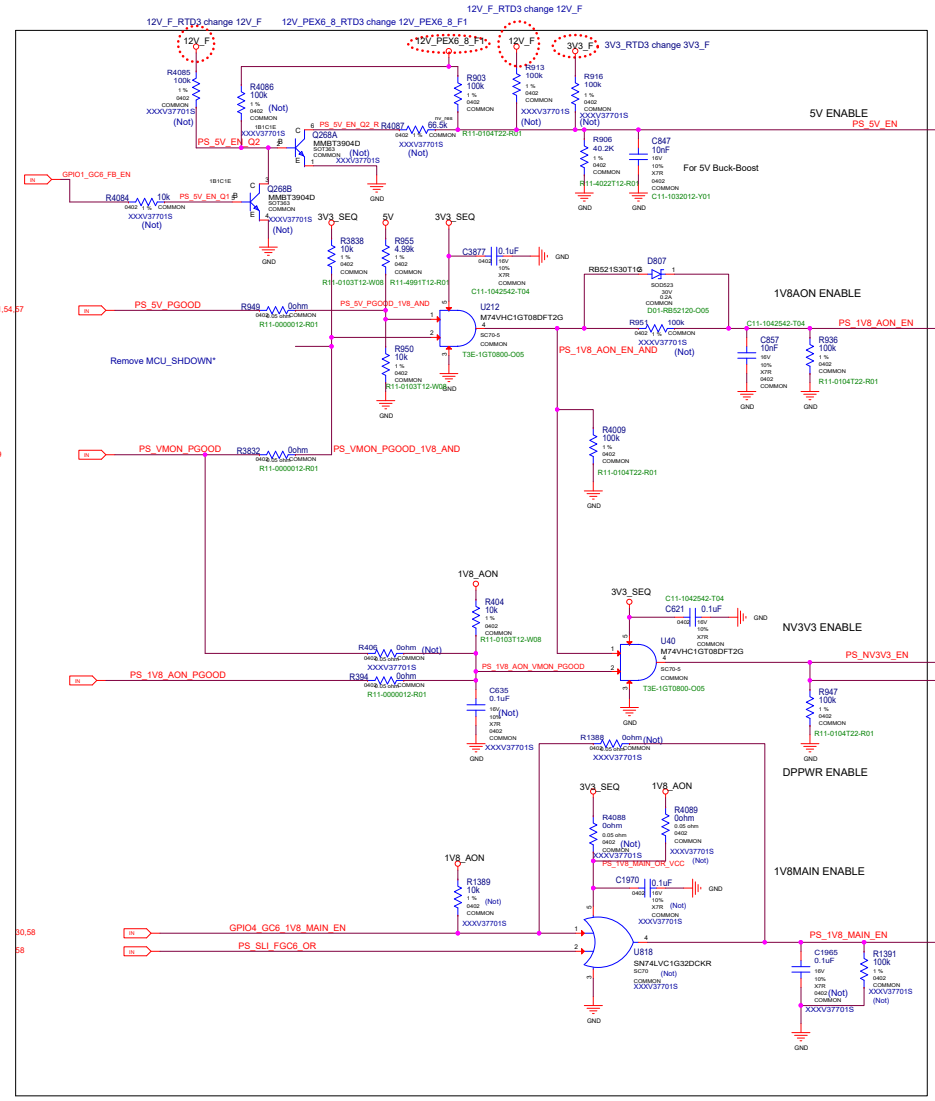
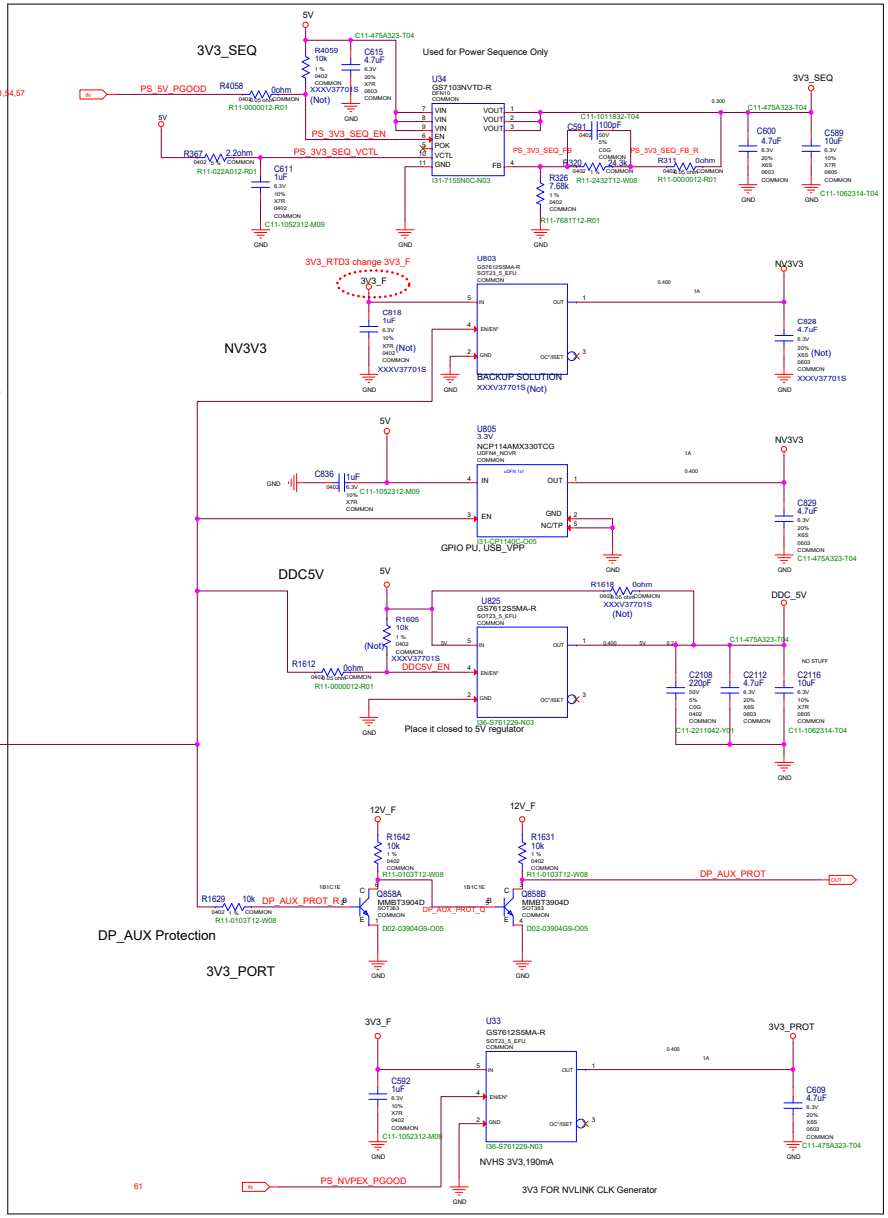
PS: Pre-Filter



SEQUENCE:5V,1V8,NV3V3 ENABLE





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Size: Custom	Document Description: 5V,1V8,NV3V3 ENABLE
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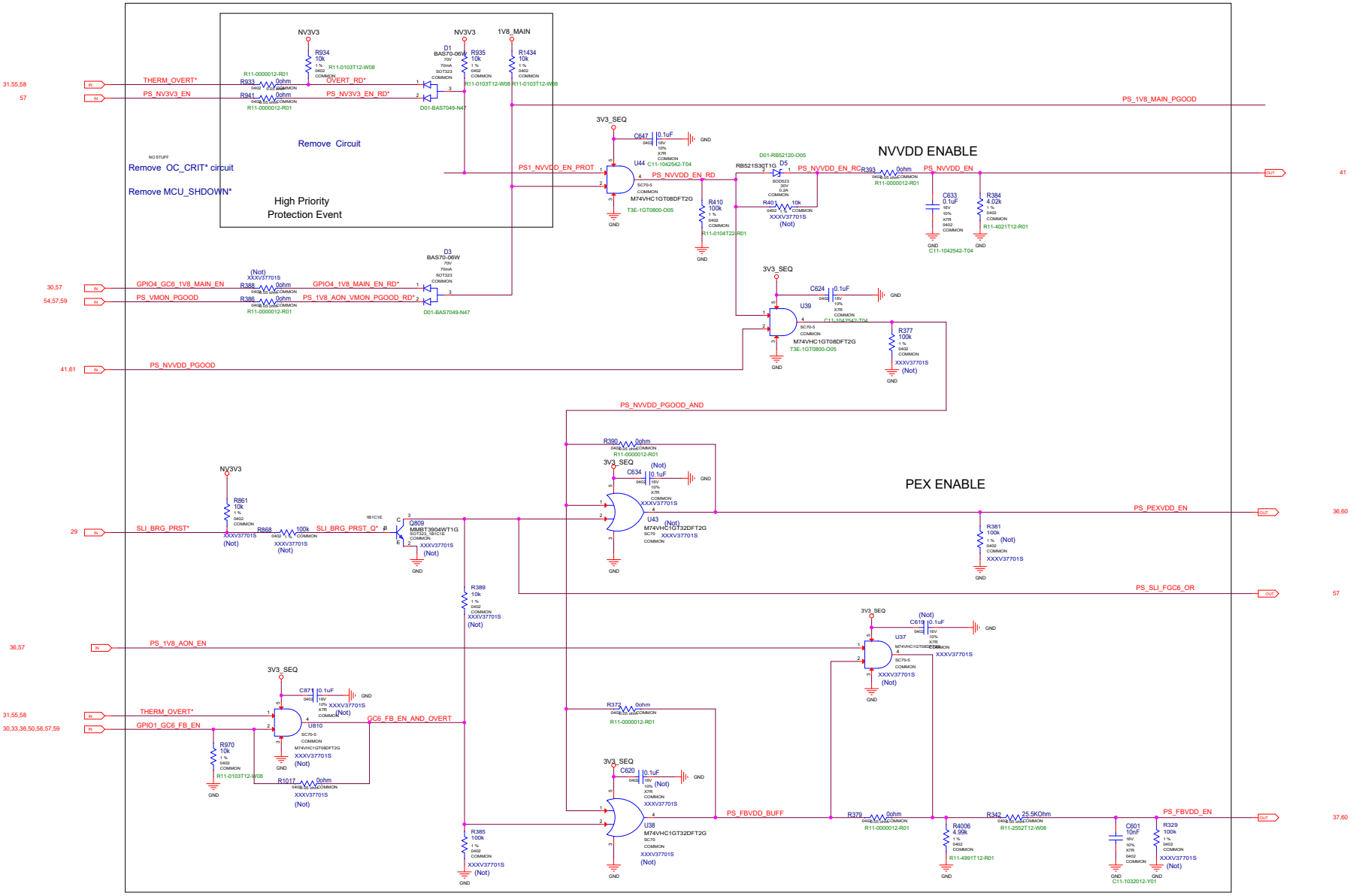
SEQUENCE:NV,PEX,FB ENABLE



MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: NV,PEX,FB ENABLE
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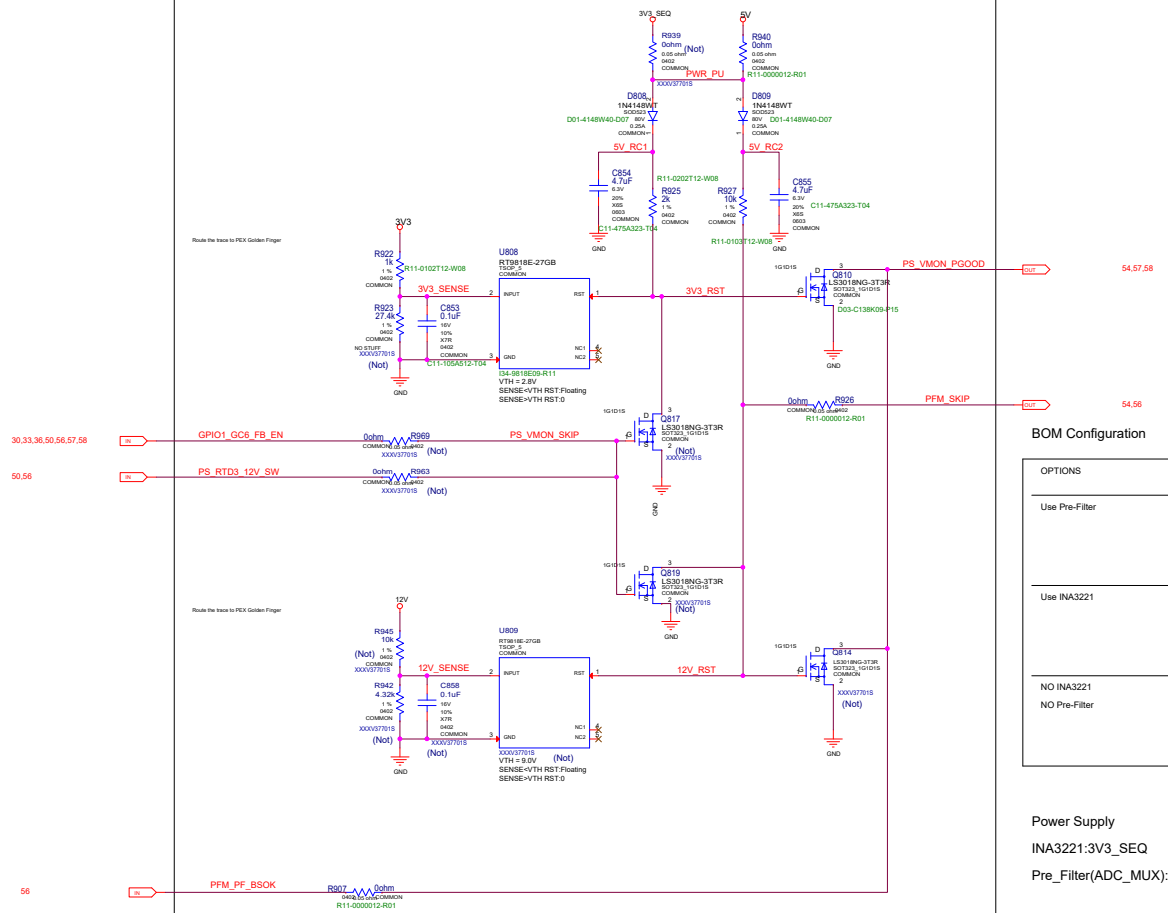
SEQUENCE:PCIE Voltage Monitor

PCIE Voltage Monitor



Signal	Direction	Function
3V3	INPUT	Sense the 3V3 Voltage from PCIE golden finger
12V	INPUT	Sense the 12V Voltage from PCIE golden finger
PS_VMON_PGOOD	OPEN-DRAIN	Floating(H) once both 3V3 and 12V reach Vth
GC6_FB_EN	INPUT	Indicator for RTD3/GC6 residence,Use to Mask the VMON_PGOOD
PS_PF_SKIP	INPUT	From INA3221(VPU) or Pre-filter(SKIP)
PS_PF_BSOK	INPUT	From INA3221(PV) or Pre-filter(BS_OK)
PS_RTD3_12V_SW	INPUT	GC6_FB_EN && IDLE_IN_SW

BOM Configuration

OPTIONS	PEX3V3_SENSE	PEX12V_SENSE	OTHER_12V_SENSE
Use Pre-Filter	Pre-Filter NO STUFF U12 NO STUFF Q3,Q5 NO STUFF D15	Pre-Filter NO STUFF U13 NO STUFF Q4	Pre-Filter
Use INA3221	Voltage_Monitor	INA3221 NO STUFF U12 NO STUFF Q4	INA3221
NO INA3221 NO Pre-Filter	Voltage_Monitor	Voltage_Monitor	N/A

Power Supply

INA3221:3V3_SEQ

Pre_Filter(ADC_MUX):3V3(PEX)

Dual Pre-Filter case:

Only use the Primary Pre-Filter to sense 3V3PEX

and All Input 12Vs

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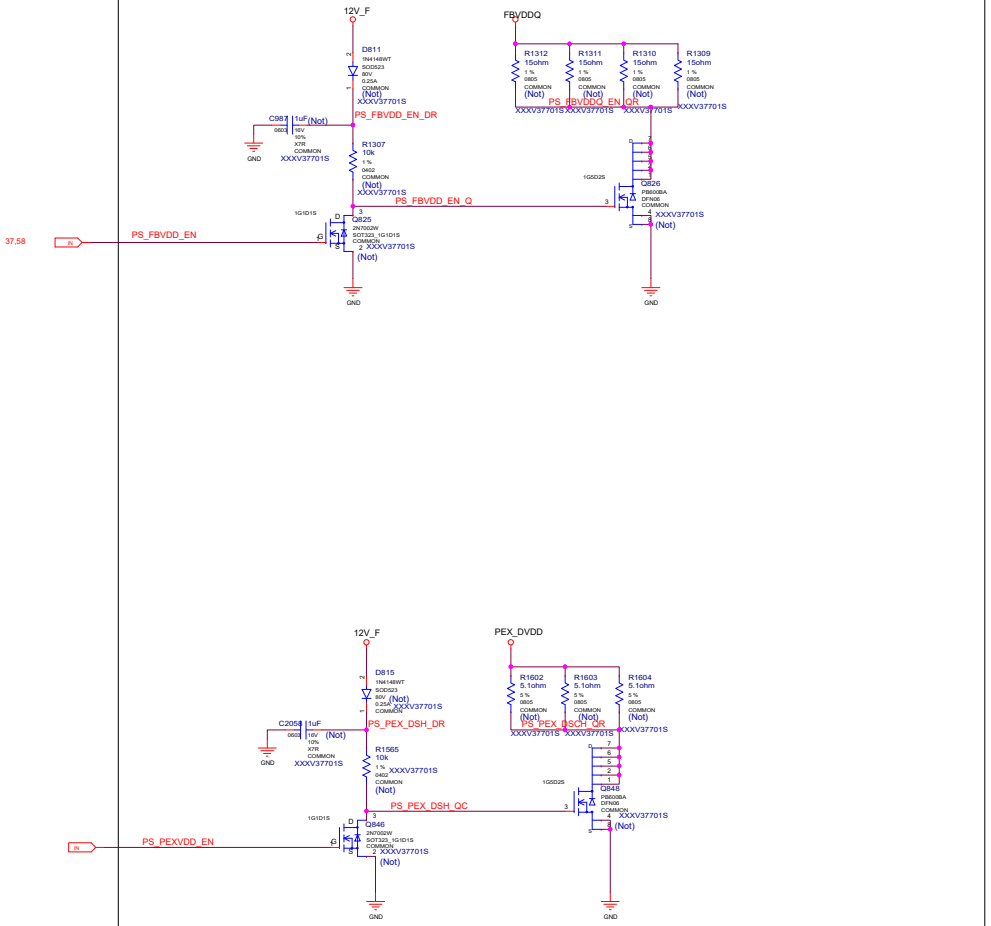
SEQUENCE:Discharge



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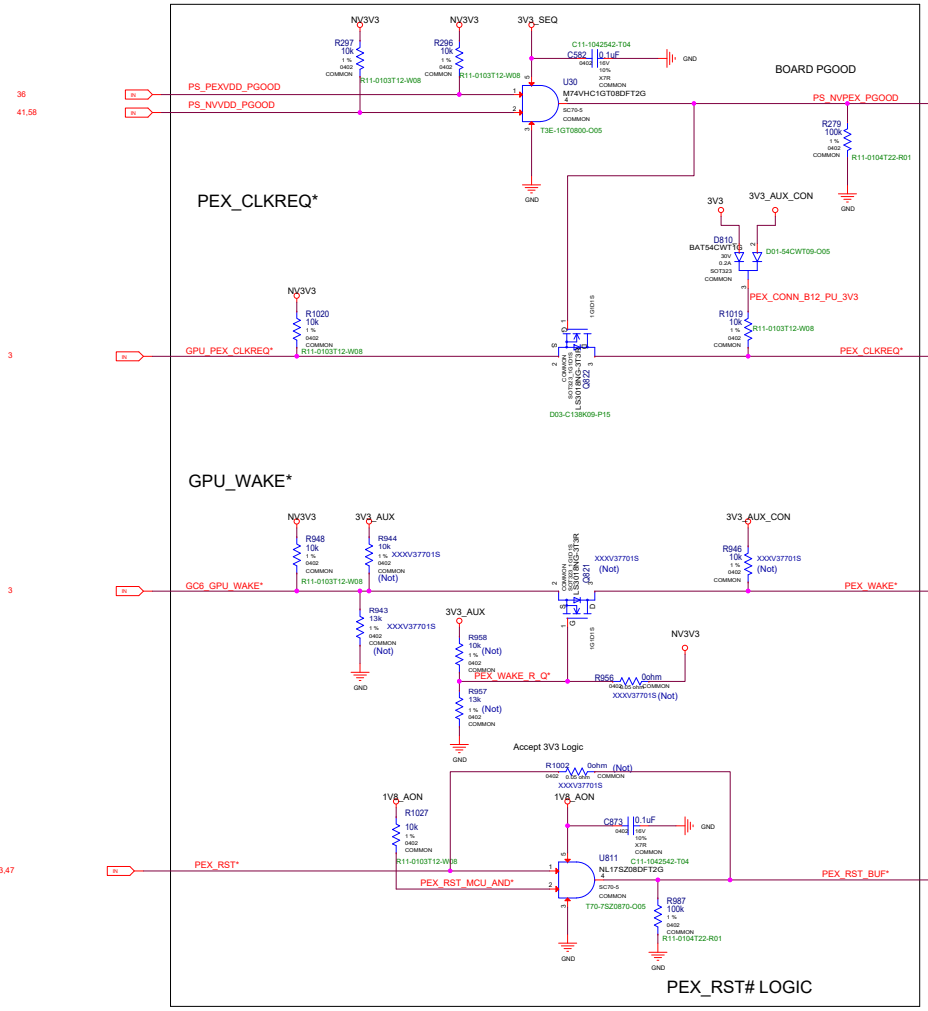
SEQUENCE:MISC



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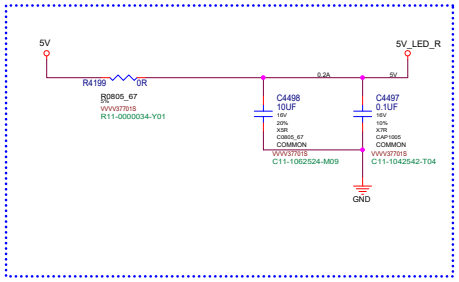
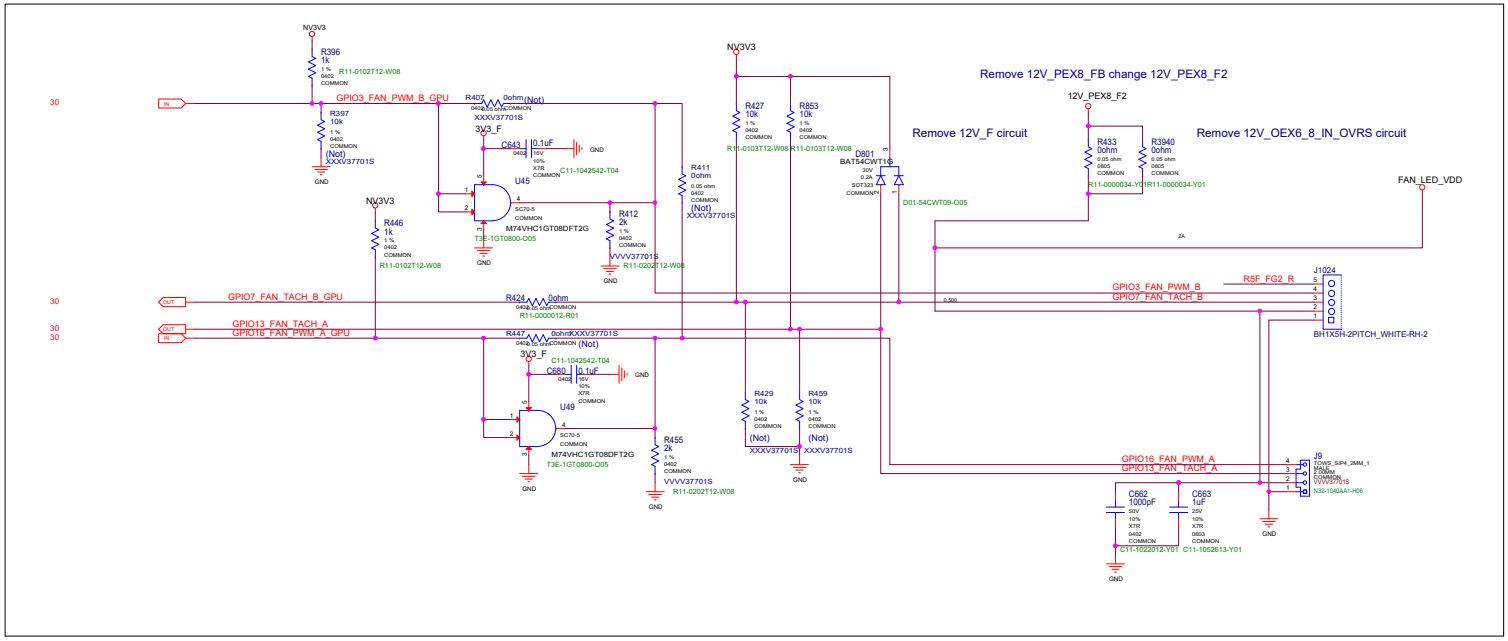
MISC: FAN





LED BOOST

Remove LED BOOST

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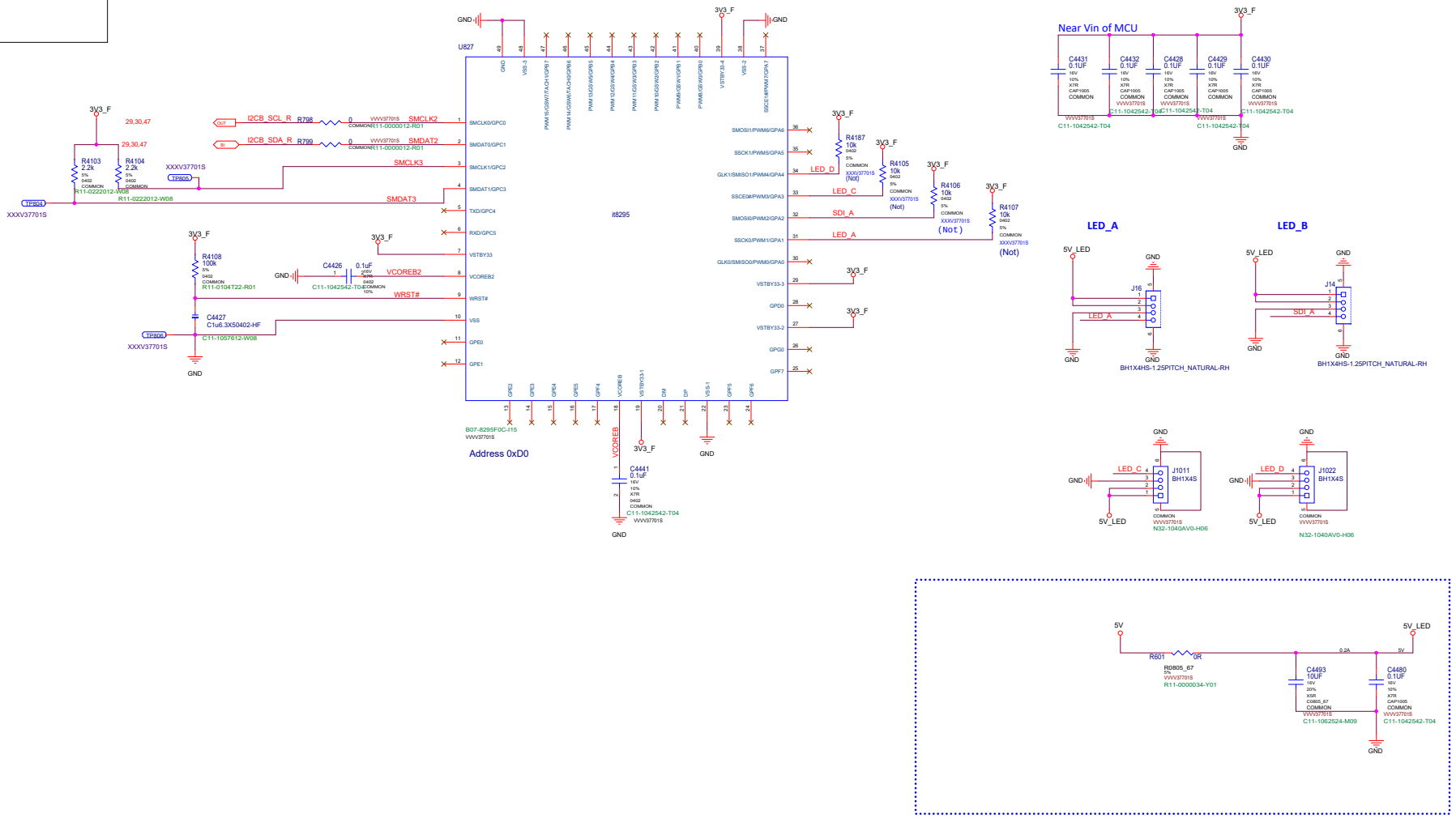
MISC: LED2

LED_CONTROLLER_IT8295

9/27 Remove J803
9/27 ADD TP804 / TP805

Firmware Programming

Debug



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ZERO IDLE POWER MCU

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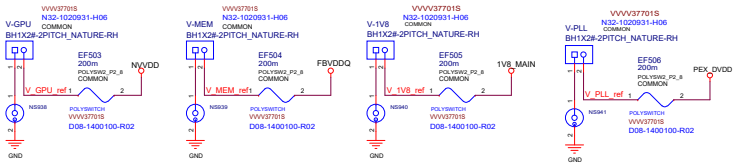
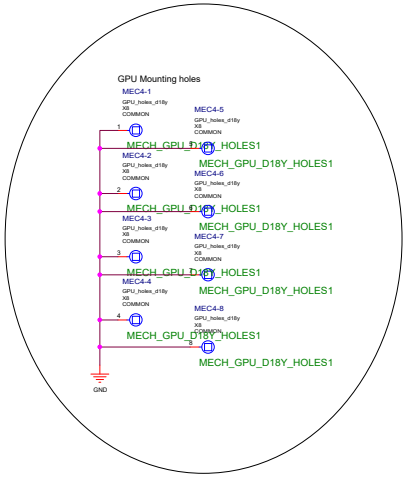
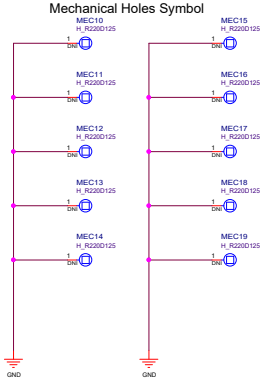
Mechanical: Bracket/Thermal Solution

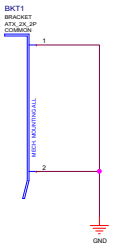




Mechanical Holes Symbol

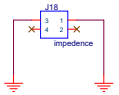


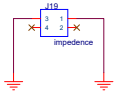
Brackets:

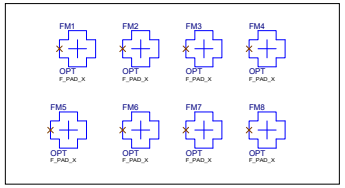


Bracket Screw

Bracket Screw | Screw







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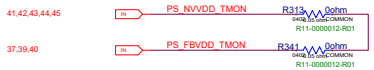
VR THERMAL PROTECTION



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