

LS1088ARDB-PB



		Digital Networking Product Group 6501 William Cannon Drive West Austin, TX 78735-8598	
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		ICAP Classification: CP: _____ EUO: _____ PUB: X	
Designer: Designer	Drawing Title: LS1088ARDB-PB		
Drawn by: DrawnBy	Page Title: TITLE		
Approved: Approver	Size C	Document Number SCH-34754 PDF: SPF-34754	Rev B
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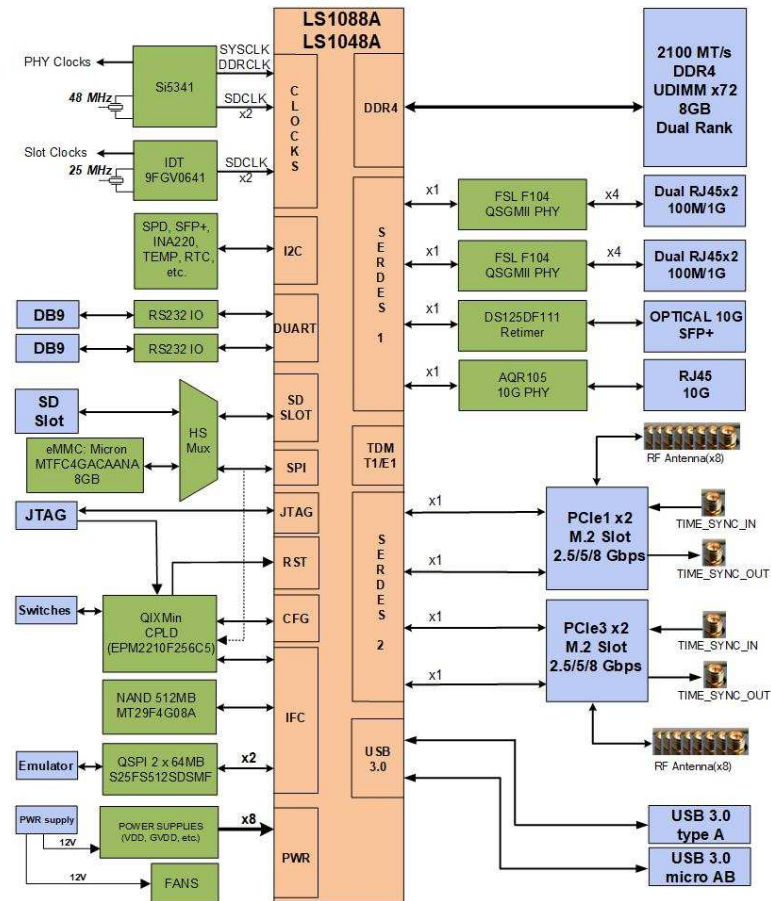
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30	M.2 PEX Slots 1 & 2
31	DUART and RS232 Interface
32	IFC Port: QSPI and NAND
33	RGMI Ethernet and IEEE1588
34	SerDes 1/2, EMI Bus
35	SFP+ Retimer and Module
36	AGR105 10-BASE T PHY
37	AGR105 10-BASE T PHY Power
38	AGR105 10-BASE T RJ45 Connectors
39	F104 QSGMI PHY #1
40	F104 QSGMI PHY #2
41	F104 QSGMI Ethernet Ports

Revisions			
Rev	Description	Date	Approved
X1	A070 Release	06.05.2018	
A	Final Release	06.29.2018	
B	1. DNP R1 2. Change R1126 pull up from 3V3_SB to 3V3 3. Connect net PWR_PB_SW_B to U207 Pin-R13 to support board auto power on 4. Change SD slot shield connection from CGND to GND 5. Change U164 VCC and U99 VDD from 3V_SB to 3V3_SB 6. Change J7 Jumper to be open by default 7. Update PCBREV to B 8. Replace obsolete eMMC U225 (342-00643) with 342-00812 9. Replace Nand Flash U187 (334-77461) with longevity part (342-00811) 10. Replace Y5, Y12 (230-78267) with wide operation voltage part 230-78308 11. Add pull-down RES on QSPI unused DQS pins IFC_A10/IFC_A11	12.17.2018	

All information is subject to change without notice.
No warranty, expressed or applied, is made as to the accuracy of the information contained herein. This schematic is provided for reference purposes only.
Contact your NXP representative to obtain the latest information on this product.

			
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LS1088ARDB-PB BLOCK DIAGRAM



PCB STACKUP

Lay #	Thick (in)	Picture	Type Gk. Df	Description	Drill Picture	
0.0008/0.0016						
1	0.0020		F / S	0.5oz w/plating		
	0.0031		Fill			
2	0.0013		P	1oz		
	0.0040		core			
3	0.0013		S	1oz		
	0.0054		Fill			
4	0.0013		S	1oz		
	0.0040		core			
5	0.0013		P	1oz		
	0.0063		Fill			
6	0.0013		P	1oz		
	0.0180		core			
7	0.0013		P	1oz		
	0.0063		Fill			
8	0.0013		P	1oz		
	0.0040		core			
9	0.0013		S	1oz		
	0.0054		Fill			
10	0.0013		S	1oz		
	0.0040		core			
11	0.0013		P	1oz		
	0.0031		Fill			
12	0.0020		F / S	0.5oz w/plating		
0.0008/0.0016						
	0.0016	Total thickness (in) Over mask on plated copper				
	0.0772	After lamination thickness (in)				
	0.0792	Over laminate thickness (in) (with soldermask)				
	0.0620	Customer Requirement (in)				
	±0.0082	Customer Tolerance (in)				

Impedance Constraint Information (I)

Top #	Impedance Type	Affect (1)	Loc (2)	Cust L/W	Line Width (1)	Line Width (2)	Center To Center (1)	Center To Center (2)	Ref Plane Top	Ref Plane Bot	Targ ohms	Tol ohms	Predicted ohms@28Hz
1	EC HS	1	None	0.006	0.0062	0.0062	0.018		None	2	85	8.5	85.17
2	EC HS	1	None	0.0055	0.0051	0.0051	0.0135		None	2	90	9	90.01
3	EC HS	1	None	0.0045	0.0043	0.0043	0.0145		None	2	100	10	96.97
4	Surf HS	1	None	0.006	0.006				None	2	45	4.5	45.52
5	Surf HS	1	None	0.005	0.0048				None	2	50	5	50.48
6	Surf HS	1	None	0.0045	0.0043				None	2	52	5.2	52.90
7	EC SL	3	None	0.0042	0.004	0.004	0.0142		5	2	100	10	99.96
8	Stripline	3	None	0.0045	0.0045				5	2	50	5	49.99
9	Stripline	3	None	0.0042	0.004				5	2	52	5.2	52.51
10	EC SL	4	None	0.0053	0.0053	0.0053	0.0153		2	5	90	9	88.51
11	EC SL	4	None	0.0042	0.004	0.004	0.0142		2	5	100	10	99.96
12	Stripline	4	None	0.0055	0.0055				2	5	45	4.5	45.57
13	Stripline	4	None	0.0045	0.0045				2	5	50	5	49.99
14	Stripline	4	None	0.0042	0.004				2	5	52	5.2	52.51
15	EC SL	9	None	0.0053	0.0053	0.0053	0.0153		11	8	90	9	88.51
16	Stripline	9	None	0.0055	0.0055				11	8	45	4.5	45.57
17	Stripline	9	None	0.0045	0.0045				11	8	50	5	49.99
18	EC SL	10	None	0.0053	0.0053	0.0053	0.0153		8	11	90	9	88.51
19	EC SL	10	None	0.0042	0.004	0.004	0.0142		8	11	100	10	99.96
20	Stripline	10	None	0.0055	0.0055				8	11	45	4.5	45.57
21	Stripline	10	None	0.0045	0.0045				8	11	50	5	49.99
22	Stripline	10	None	0.0042	0.004				8	11	52	5.2	52.51
23	EC HS	12	None	0.006	0.0062	0.0062	0.018		None	11	85	8.5	85.17
24	EC HS	12	None	0.0055	0.0051	0.0051	0.0135		None	11	90	9	90.01
25	EC HS	12	None	0.0045	0.0043	0.0043	0.0145		None	11	100	10	96.97
26	Surf HS	12	None	0.006	0.006				None	11	45	4.5	45.52
27	Surf HS	12	None	0.005	0.0048				None	11	50	5	50.48
28	Surf HS	12	None	0.0045	0.0043				None	11	52	5.2	52.90



ICAP Classification: CP: NQ: PURR X

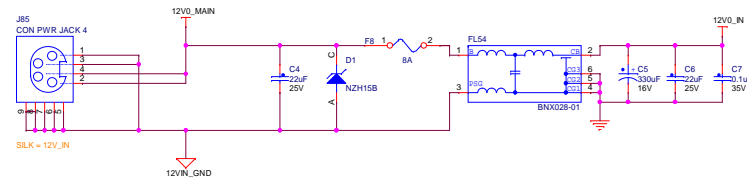
Drawing Title: LS1088ARDB-PB

Page Title: PCB Stackup

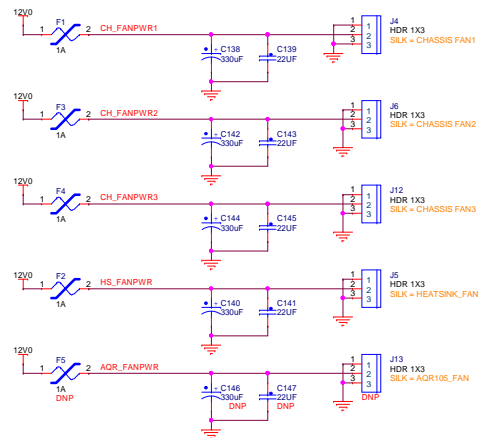
Size C Document Number SCH-34754 PDF: SPF-34754

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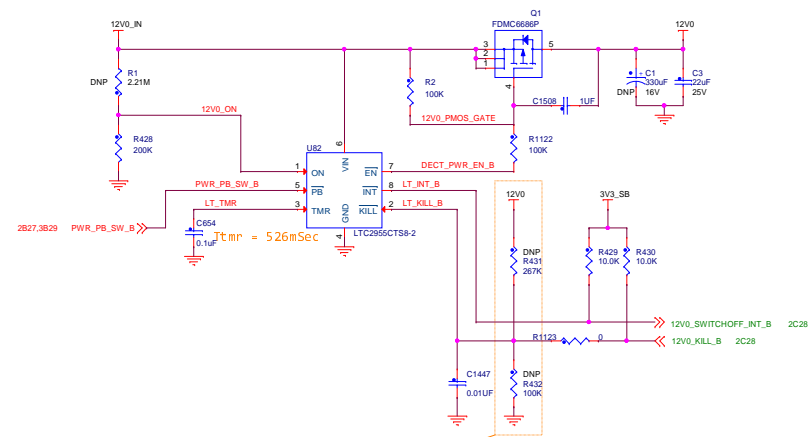
POWER ENTRY



CHASSIS FAN CONNECTORS

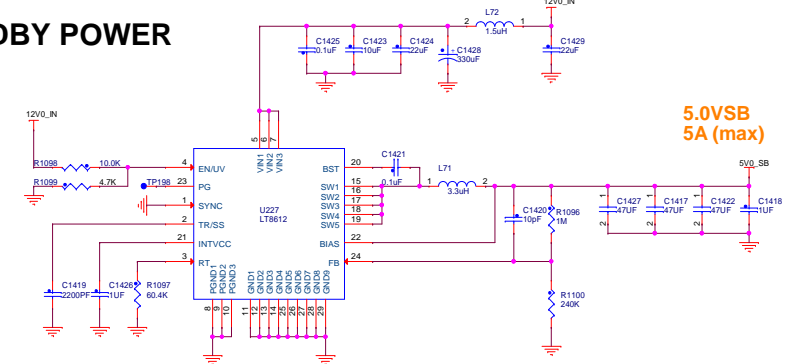


POWER SWITCH



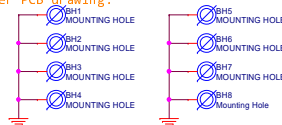
- Mount these resistors to generate KILL from 12V directly.
- Remove Zero OHM jumper to bypass Kill from FPGA

5.0V STANDBY POWER

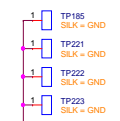


DVDD = 3.3V
EVDD = 1.8/3.3V
GVDD = 1.2V
LVDD = 1.8V
OVDD = 1.8V
SDVDD = 1.0V
SVDD = 1.0V
TVDD = 1.2V
USB_SDVDD = 1.0V
USB_SVDD = 1.0V
VDD = 1.0V
VPP = 2.5V
XVDD = 1.35V

MOUNTING HOLES
Per PCB drawing.

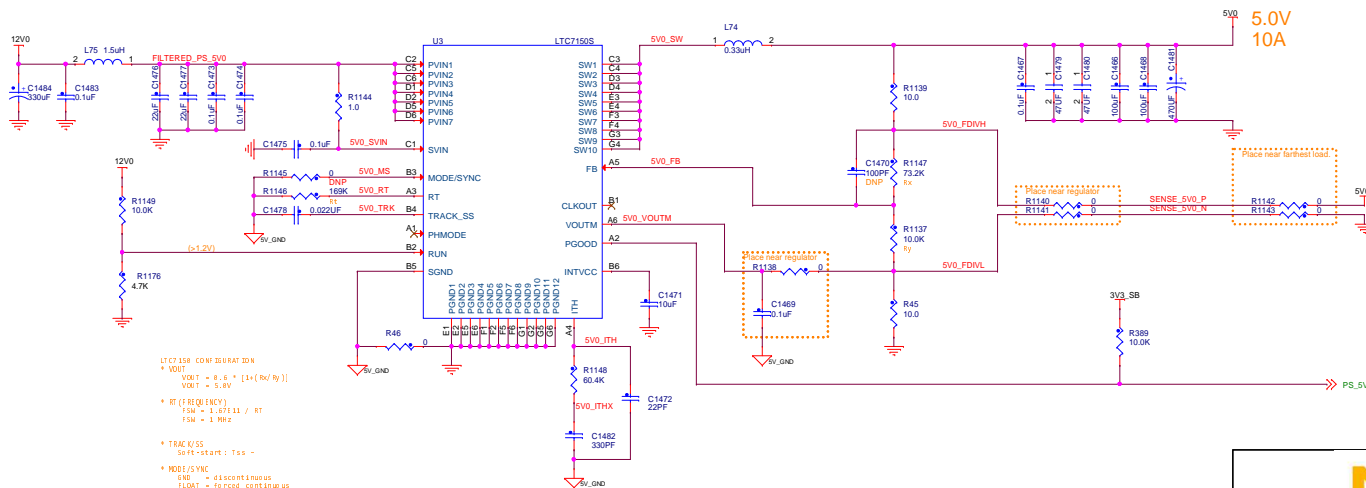
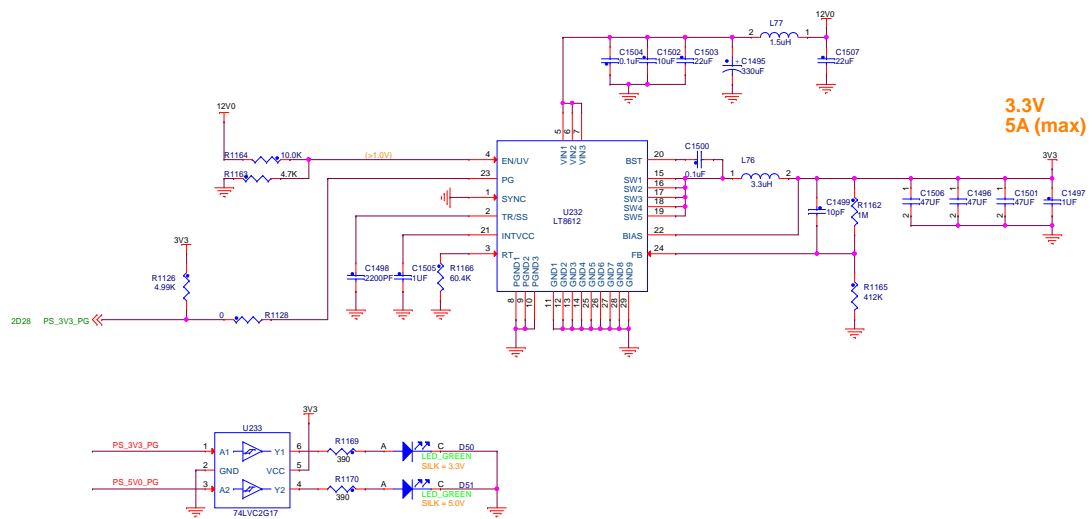


GROUND ATTACH
Place one at each corner of the PCB.



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Drawing Title:	LS1088ARDB-PB		
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3V3 & 5V0 POWER



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LTC7158 CONFIGURATION
* VOUT
  VOUT = 0.6 * [1 + (Rc/Ry)]
  VOUT = 5.0V

* RT (FREQUENCY)
  FSM = 1.67E11 / RT
  FSM = 1 MHz

* TRACK/SS
  Soft-start: Tss =

* MODE/SYNC
  GND = discontinuous
  FLOAT = forced continuous

* PHMODE
  FLOAT = 2phase (internal)

* ITH (LOOP COMPENSATION)
  See spec.

```



ICAP Classification:	CP: ____	IUO: X	PUBt: ____
Division Title:			

LS1088ARDB-PB

Page Title: **LTC7150S 5V0, LT8612 3V3**

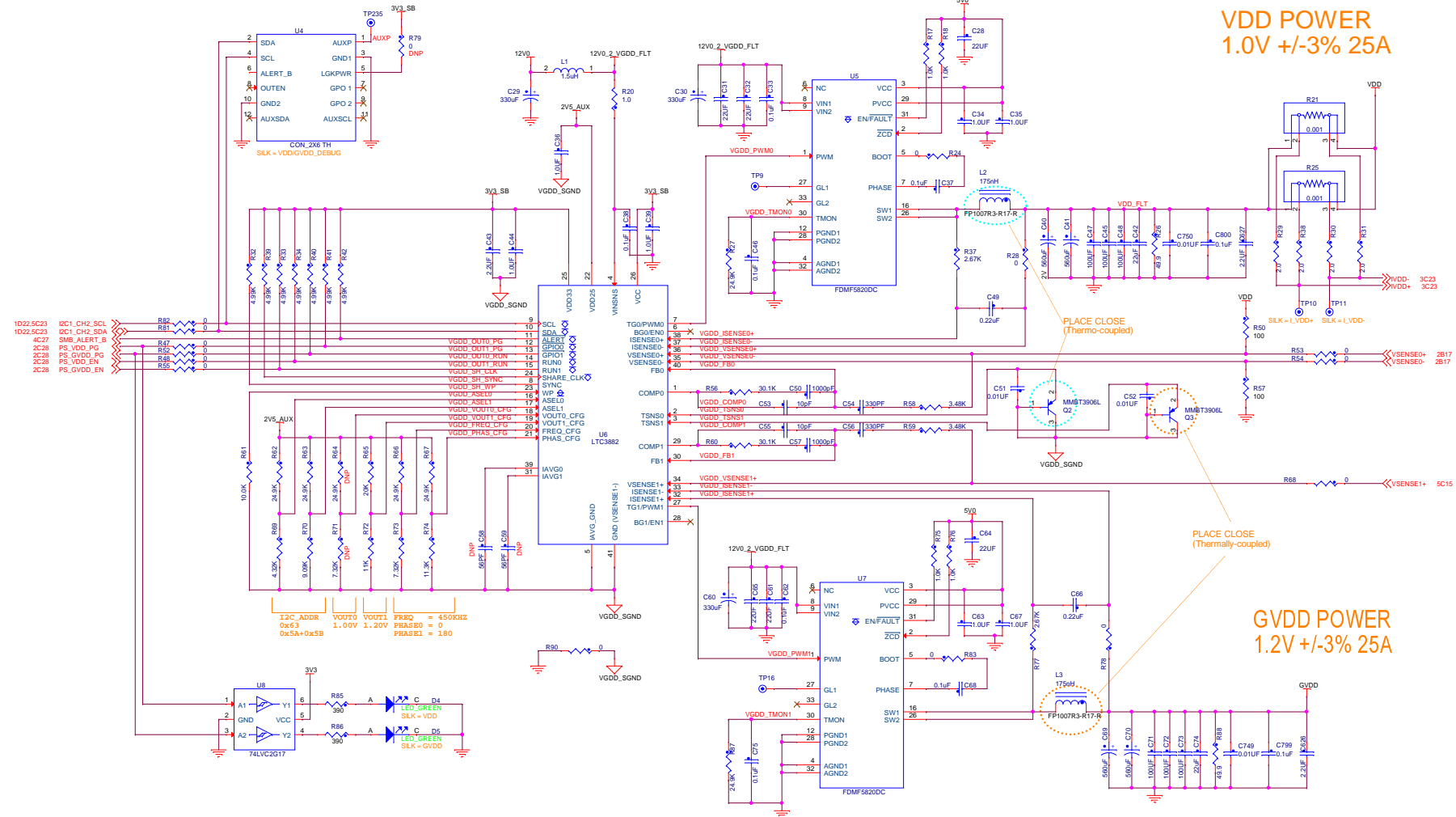
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VDD & GVDD POWER

VDD POWER
1.0V +/-3% 25A

GVDD POWER
1.2V +/-3% 25A



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.1V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V


[illegible]

EVDD Power Switch

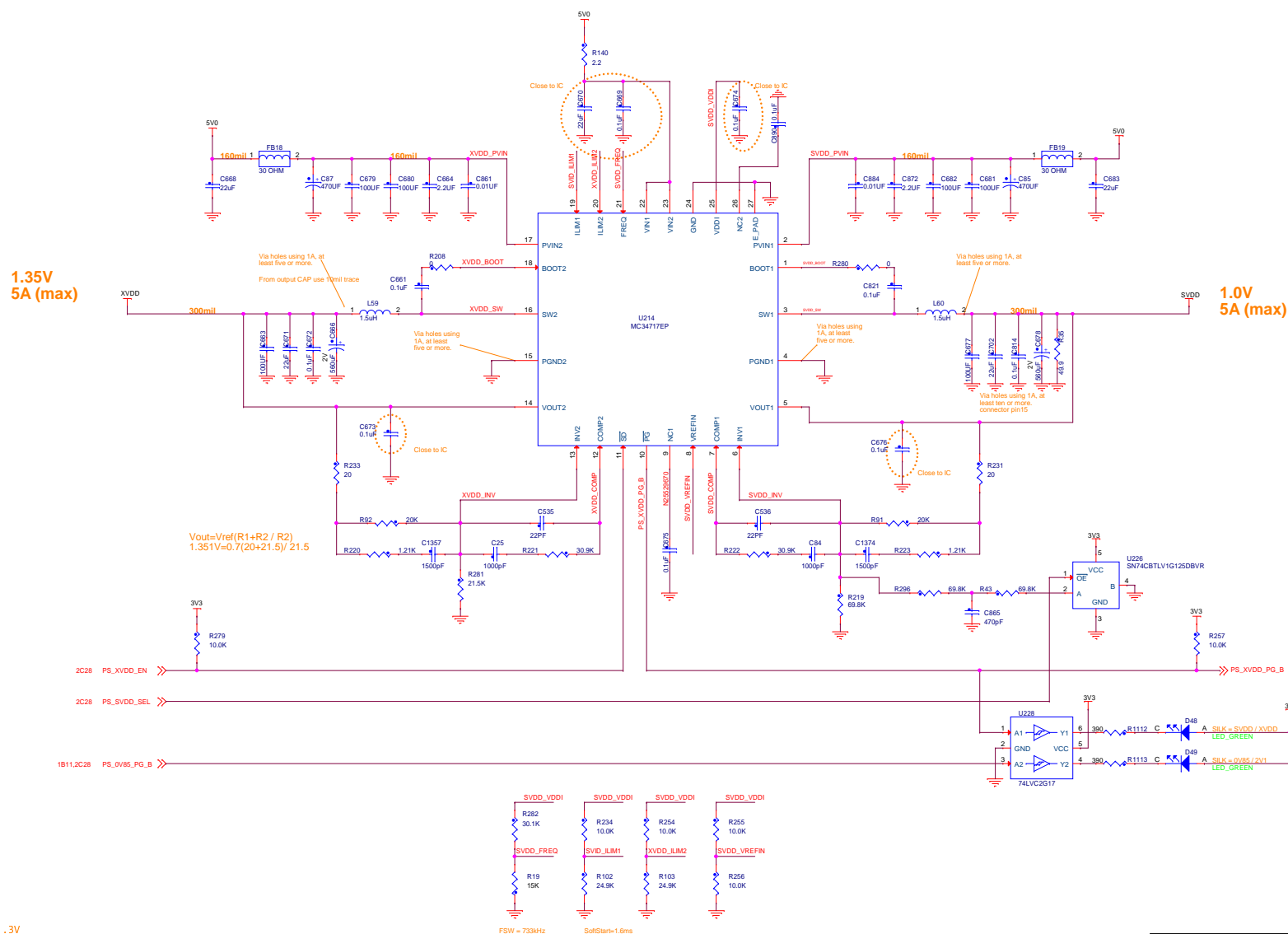
Legend:
 DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

DVDD Power Switch

NXP	
ICAP Classification: CP: IUD: X PUB:	
LS1088ARDB-PB	
M.2_3V3_BB_1V0_EVDD_DVDD_VPP	
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SVDD & XVDD POWER

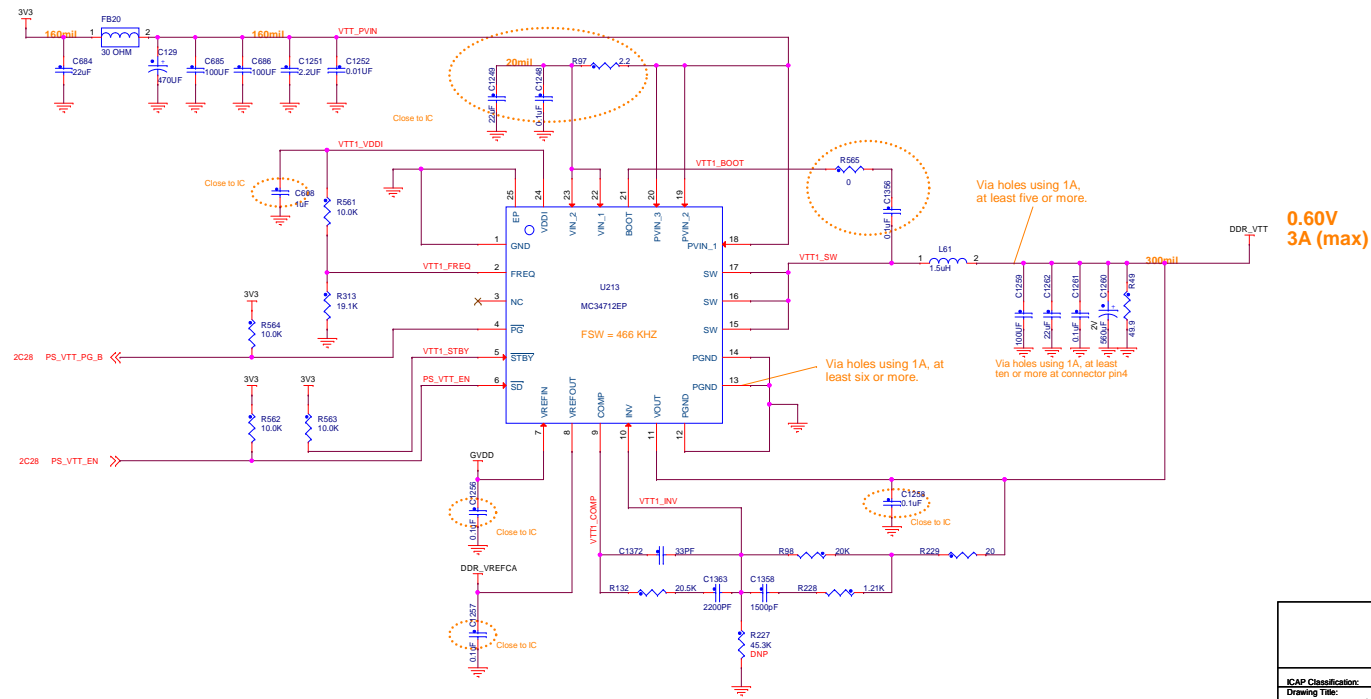
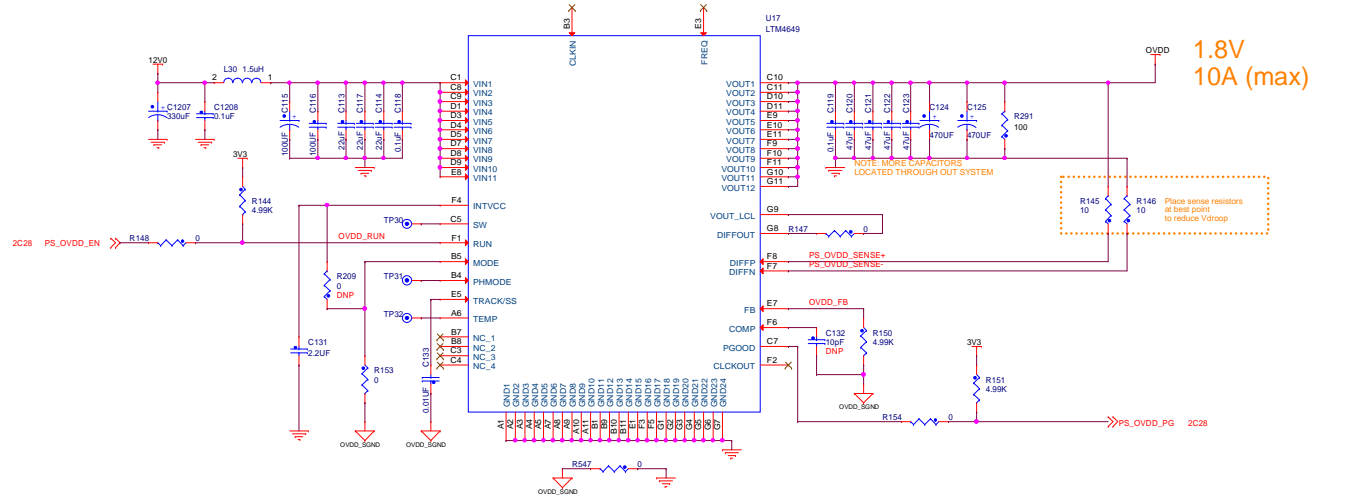


DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
VXDD	=	1.35V



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Page Title: MC34717 XVDD and SVDD				
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OVDD & VTT POWER



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

ICAP Classification:	CP:	I/O:	PURB X
Drawing Title:	LS1088ARDB-PB		
Page Title:	LTM4649 OVDD, MC34712 VTT		
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0.85V & 1.2V POWER

0.85V 5A(max)

2.1V 5A(max)

0.85V & 1.2V POWER

Detailed description of the schematic:
The schematic illustrates the power management for the LS1088ARB-PB, specifically focusing on the 0.85V and 1.2V power rails. Two DC-DC converters are shown, both utilizing the MC3471EP regulator.
1. **Left Converter (0.85V to 0.85V VDD1):** This converter takes a 0.85V input at up to 5A max. It features a feedback network with resistors R664, R665, and R666. The output filter consists of inductor L62 and capacitor C1317. Various other components like C1312-C1315, C1316, C1318, C1319, C1320, C1321, C1322, C1323, C1324, C1325, C1326, C1327, C1328, C1329, C1330, C1331, C1332, C1333, C1334, C1335, C1336, C1337, C1338, C1339, C1340, C1341, C1342, C1343, C1344, C1345, C1346, C1347, C1348, C1349, C1350, C1351, C1352, C1353, C1354, C1355, C1356, C1357, C1358, C1359, C1360, C1361, C1362, C1363, C1364, C1365, C1366, C1367, C1368, C1369, C1370, C1371, C1372, C1373, C1374, C1375, C1376, C1377, C1378, C1379, C1380, C1381, C1382, C1383, C1384, C1385, C1386, C1387, C1388, C1389, C1390, C1391, C1392, C1393, C1394, C1395, C1396, C1397, C1398, C1399, C1400, C1401, C1402, C1403, C1404, C1405, C1406, C1407, C1408, C1409, C1410, C1411, C1412, C1413, C1414, C1415, C1416, C1417, C1418, C1419, C1420, C1421, C1422, C1423, C1424, C1425, C1426, C1427, C1428, C1429, C1430, C1431, C1432, C1433, C1434, C1435, C1436, C1437, C1438, C1439, C1440, C1441, C1442, C1443, C1444, C1445, C1446, C1447, C1448, C1449, C1450, C1451, C1452, C1453, C1454, C1455, C1456, C1457, C1458, C1459, C1460, C1461, C1462, C1463, C1464, C1465, C1466, C1467, C1468, C1469, C1470, C1471, C1472, C1473, C1474, C1475, C1476, C1477, C1478, C1479, C1480, C1481, C1482, C1483, C1484, C1485, C1486, C1487, C1488, C1489, C1490, C1491, C1492, C1493, C1494, C1495, C1496, C1497, C1498, C1499, C1500, C1501, C1502, C1503, C1504, C1505, C1506, C1507, C1508, C1509, C1510, C1511, C1512, C1513, C1514, C1515, C1516, C1517, C1518, C1519, C1520, C1521, C1522, C1523, C1524, C1525, C1526, C1527, C1528, C1529, C1530, C1531, C1532, C1533, C1534, C1535, C1536, C1537, C1538, C1539, C1540, C1541, C1542, C1543, C1544, C1545, C1546, C1547, C1548, C1549, C1550, C1551, C1552, C1553, C1554, C1555, C1556, C1557, C1558, C1559, C1560, C1561, C1562, C1563, C1564, C1565, C1566, C1567, C1568, C1569, C1570, C1571, C1572, C1573, C1574, C1575, C1576, C1577, C1578, C1579, C1580, C1581, C1582, C1583, C1584, C1585, C1586, C1587, C1588, C1589, C1590, C1591, C1592, C1593, C1594, C1595, C1596, C1597, C1598, C1599, C1600, C1601, C1602, C1603, C1604, C1605, C1606, C1607, C1608, C1609, C1610, C1611, C1612, C1613, C1614, C1615, C1616, C1617, C1618, C1619, C1620, C1621, C1622, C1623, C1624, C1625, C1626, C1627, C1628, C1629, C1630, C1631, C1632, C1633, C1634, C1635, C1636, C1637, C1638, C1639, C1640, C1641, C1642, C1643, C1644, C1645, C1646, C1647, C1648, C1649, C1650, C1651, C1652, C1653, C1654, C1655, C1656, C1657, C1658, C1659, C1660, C1661, C1662, C1663, C1664, C1665, C1666, C1667, C1668, C1669, C1670, C1671, C1672, C1673, C1674, C1675, C1676, C1677, C1678, C1679, C1680, C1681, C1682, C1683, C1684, C1685, C1686, C1687, C1688, C1689, C1690, C1691, C1692, C1693, C1694, C1695, C1696, C1697, C1698, C1699, C1700, C1701, C1702, C1703, C1704, C1705, C1706, C1707, C1708, C1709, C1710, C1711, C1712, C1713, C1714, C1715, C1716, C1717, C1718, C1719, C1720, C1721, C1722, C1723, C1724, C1725, C1726, C1727, C1728, C1729, C1730, C1731, C1732, C1733, C1734, C1735, C1736, C1737, C1738, C1739, C1740, C1741, C1742, C1743, C1744, C1745, C1746, C1747, C1748, C1749, C1750, C1751, C1752, C1753, C1754, C1755, C1756, C1757, C1758, C1759, C1760, C1761, C1762, C1763, C1764, C1765, C1766, C1767, C1768, C1769, C1770, C1771, C1772, C1773, C1774, C1775, C1776, C1777, C1778, C1779, C1780, C1781, C1782, C1783, C1784, C1785, C1786, C1787, C1788, C1789, C1790, C1791, C1792, C1793, C1794, C1795, C1796, C1797, C1798, C1799, C1800, C1801, C1802, C1803, C1804, C1805, C1806, C1807, C1808, C1809, C1810, C1811, C1812, C1813, C1814, C1815, C1816, C1817, C1818, C1819, C1820, C1821, C1822, C1823, C1824, C1825, C1826, C1827, C1828, C1829, C1830, C1831, C1832, C1833, C1834, C1835, C1836, C1837, C1838, C1839, C1840, C1841, C1842, C1843, C1844, C1845, C1846, C1847, C1848, C1849, C1850, C1851, C1852, C1853, C1854, C1855, C1856, C1857, C1858, C1859, C1860, C1861, C1862, C1863, C1864, C1865, C1866, C1867, C1868, C1869, C1870, C1871, C1872, C1873, C1874, C1875, C1876, C1877, C1878, C1879, C1880, C1881, C1882, C1883, C1884, C1885, C1886, C1887, C1888, C1889, C1890, C1891, C1892, C1893, C1894, C1895, C1896, C1897, C1898, C1899, C1900, C1901, C1902, C1903, C1904, C1905, C1906, C1907, C1908, C1909, C1910, C1911, C1912, C1913, C1914, C1915, C1916, C1917, C1918, C1919, C1920, C1921, C1922, C1923, C1924, C1925, C1926, C1927, C1928, C1929, C1930, C1931, C1932, C1933, C1934, C1935, C1

DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
TVDD	=	1.0V
UVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_TVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification: CP: ____ IUO: ____ PUBt X

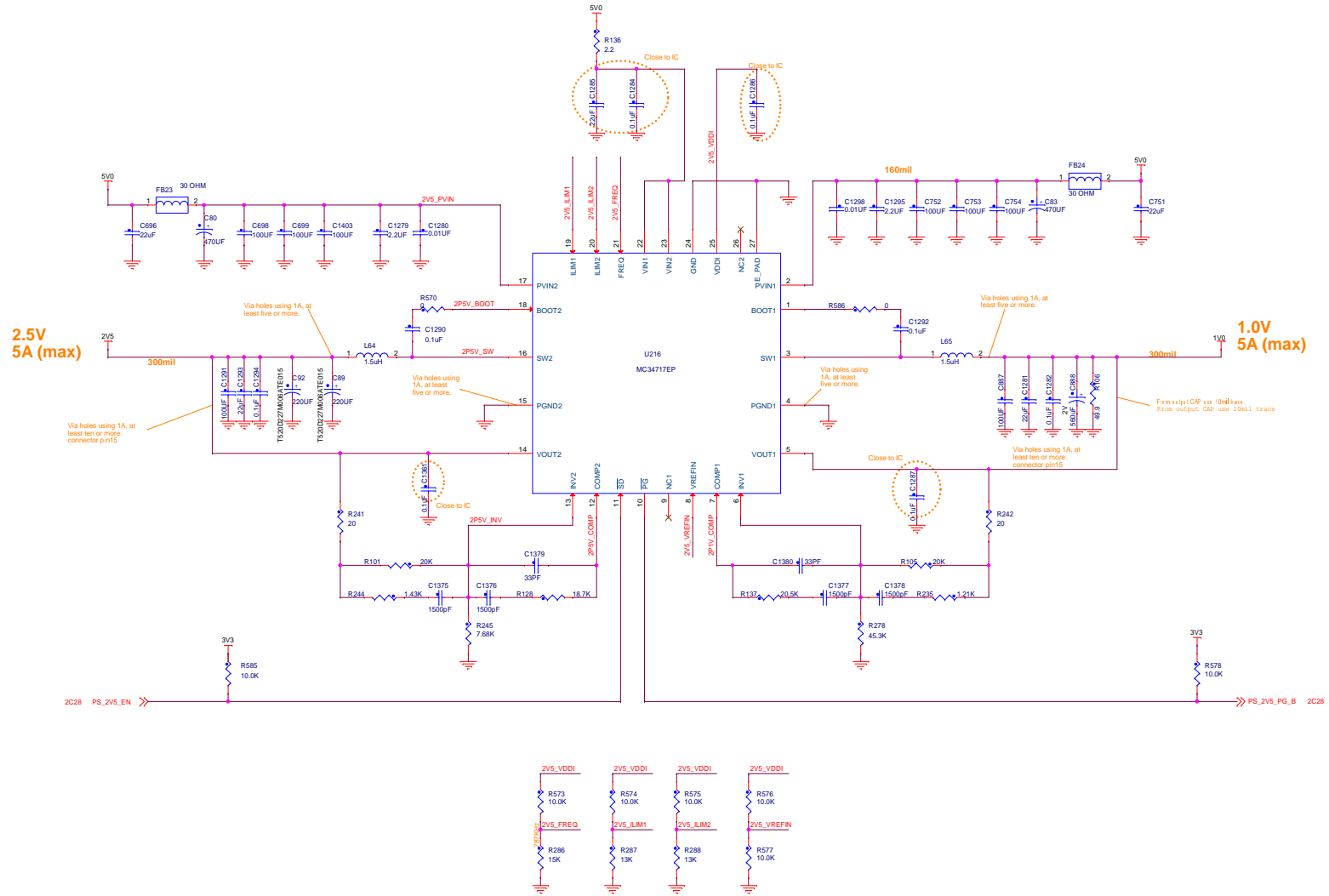
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Page Title: **MC34717 2.1V and 0.85V**

Size C	Document Number SCH-34754 PDF: SPF-34754
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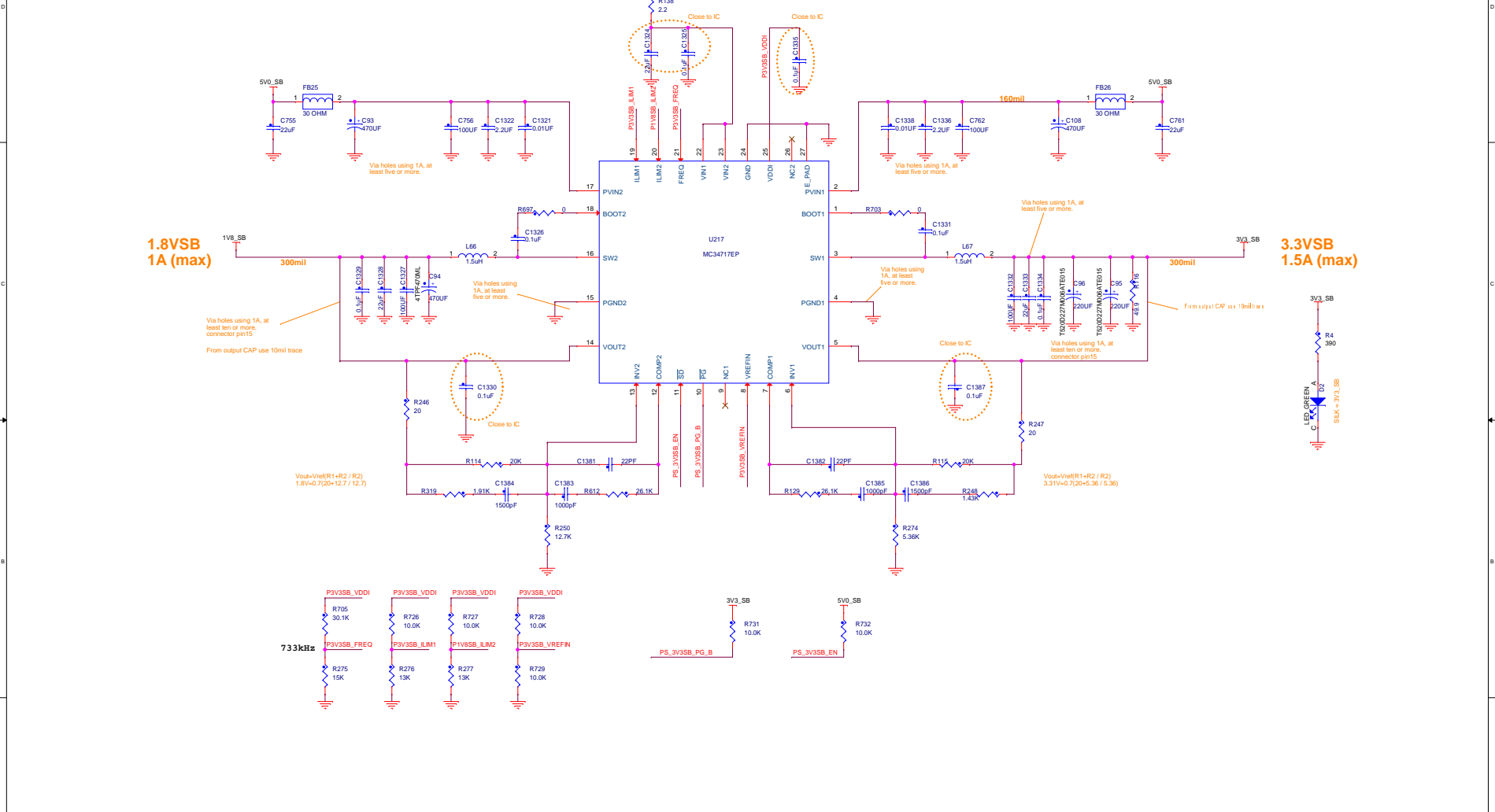
Date:	Monday, January 07, 2019	Sheet	11	of	41
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1.0V & 2.5V POWER



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

ICAP Classification:	CP:	I/O:	PURB X
Drawing Title:	LS1088ARDB-PB		
Page Title:	MC347 2.5V and 1.0V		
Size C	Document Number SCH-34764 PDF: SPF-34764	Rev B	
Date: Monday, January 07, 2019	Sheet 12	of 41	

ICAP Classification: CP: ____ IUO: ____ PUB: X
Device Title:Drawing Title: **LS1088ARDB-PB**

Page Title: **MC34717 1V8_SB and 3V3_BB**

Size C	Document Number SCH-34754 PDF: SPF-34754	Rev B
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Date: Monday, January 07, 2019 Sheet 13 of 41

1.2V & 1.5V POWER

DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
TVDD	=	1.0V
UVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_TVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification: CP: ____ IUO: ____ PUBt X

Drawing Title:

LS1088ARDB-PB

Page Title: **MC34717 1V5 and 1V2**

Size	Document Number
2	2011-01754 DFE: DFE 01754

C	SCH-34754 PDF: SPF-34754		
Date:	Monday, January 07, 2019	Sheet	14 of 41

LS1088A POWER

The schematic illustrates the power supply architecture for the LS1088A, including decoupling and regulation for various voltage domains.

GVDD Decoupling: Place around GVDD planes. This section shows a series of decoupling capacitors (C272, C273, C274, C275, C276, C277, C278, C279, C280, C281, C282, C283, C284, C285, C286, C287, C288, C289, C290, C291, C292, C293, C294, C295, C296, C297, C298, C299, C300, C301, C302, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C780, C781, C782, C783, C784, C785, C786, C787, C788, C789, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C800, C801, C802, C803, C804, C805, C806, C807, C808, C809, C810, C811, C812, C813, C814, C815, C816, C817, C818, C819, C820, C821, C822, C823, C824, C825, C826, C827, C828, C829, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C850, C851, C852, C853, C854, C855, C856, C857, C858, C859, C860, C861, C862, C863, C864, C865, C866, C867, C868, C869, C870, C871, C872, C873, C874, C875, C876, C877, C878, C879, C880, C881, C882, C883, C884, C885, C886, C887, C888, C889, C890, C891, C892, C893, C894, C895, C896, C897, C898, C899, C900, C901, C902, C903, C904, C905, C906, C907, C908, C909, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C930, C931, C932, C933, C934, C935, C936, C937, C938, C939, C940, C941, C942, C943, C944, C945, C946, C947, C948, C949, C950, C951, C952, C953, C954, C955, C956, C957, C958, C959, C960, C961, C962, C963, C964, C965, C966, C967, C968, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C986, C987, C988, C989, C990, C991, C992, C993, C994, C995, C996, C997, C998, C999, C1000, C1001, C1002, C1003, C1004, C1005, C1006, C1007, C1008, C1009, C1010, C1011, C1012, C1013, C1014, C1015, C1016, C1017, C1018, C1019, C1020, C1021, C1022, C1023, C1024, C1025, C1026, C1027, C1028, C1029, C1030, C1031, C1032, C1033, C1034, C1035, C1036, C1037, C1038, C1039, C1040, C1041, C1042, C1043, C1044, C1045, C1046, C1047, C1048, C1049

DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification:	CP: ____	IUO: ____	PUBt X
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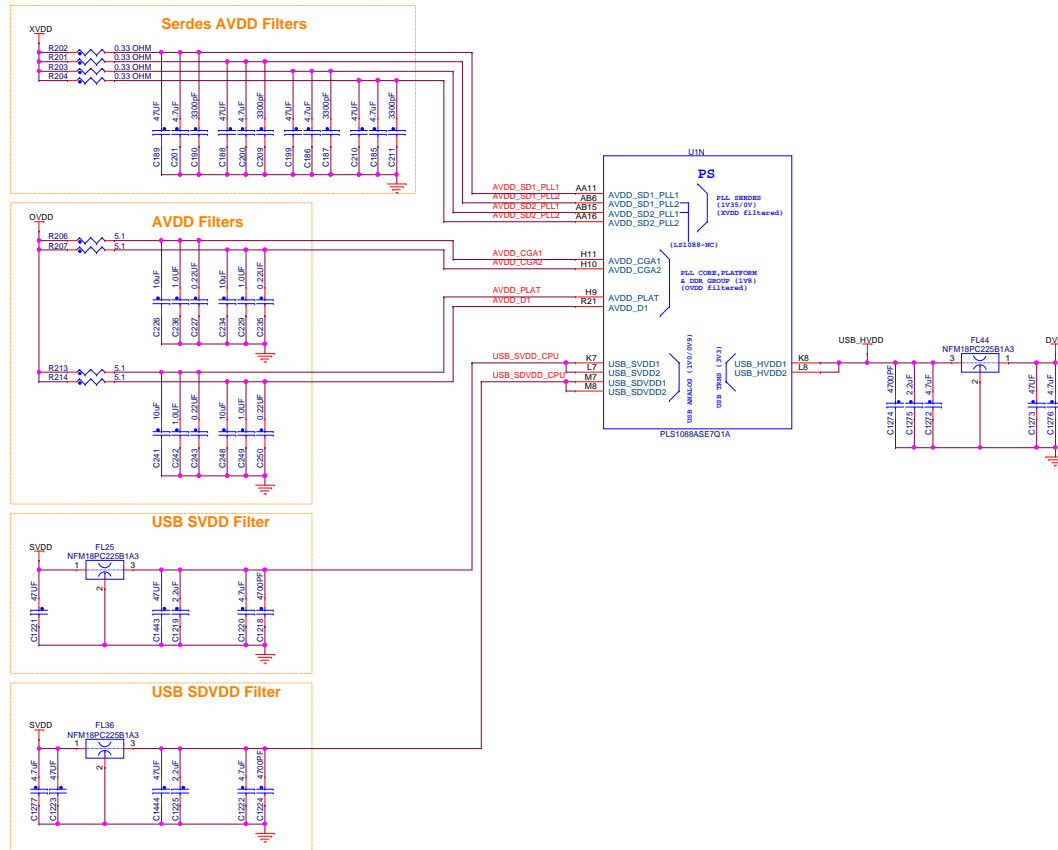
LS1088ARDB-PB

Page Title: **DUT POWER1**

Size C	Document Number SCH-34754 PDF: SPF-34754
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Date: Monday, January 07, 2019 Sheet 15 of 41

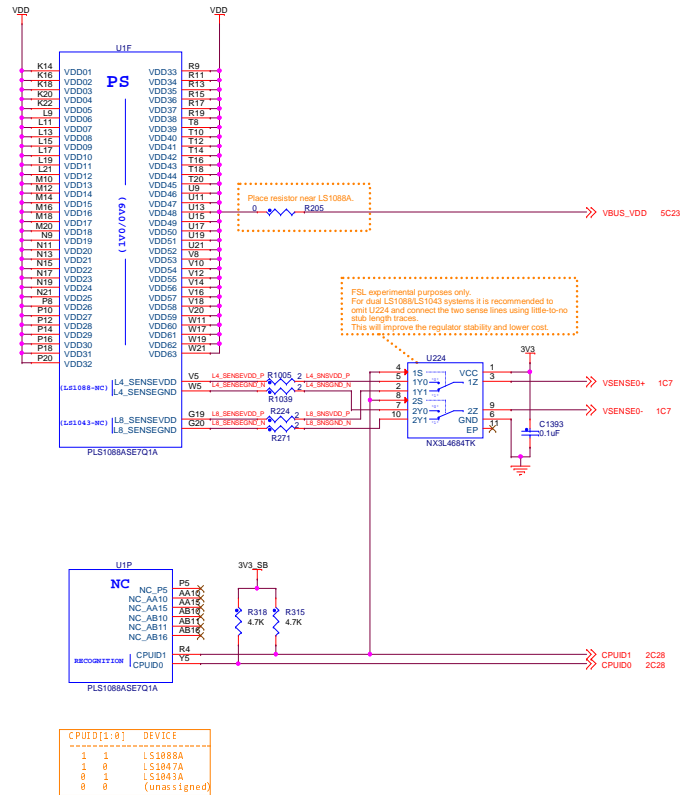
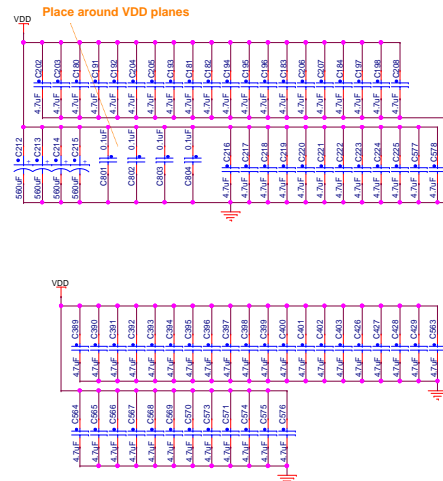
LS1088A PLL FILTERING



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

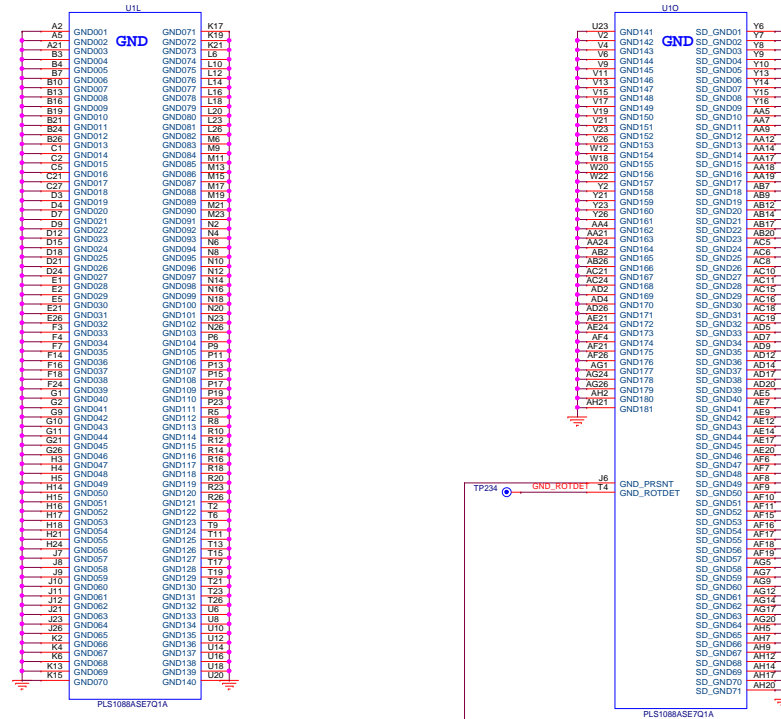
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Page Title:	LS1088A PLL Filtering	
Size	Document Number	Rev
C	SCH-34764 PDF: SPF-34764	B
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LS1088A VDD POWER



DVDD	= 3.3V
EVDD	= 1.8/3.3V
GVDD	= 1.2V
LVDD	= 1.8V
OVDD	= 1.8V
SDVDD	= 1.0V
SVDD	= 1.0V
TVDD	= 1.2V
USB_SDVDD	= 1.0V
USB_SVDD	= 1.0V
VDD	= 1.0V
VPP	= 2.5V
XVDD	= 1.35V

LS1088A GROUND



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

NXP		
ICAP Classification: CP: _____ I/O: _____ PURR X		
Drawing Title: LS1088ARB-PB		
Page Title: LS1088A Ground Connections		
Size C	Document Number SCH-34754 PDF: SPF-34754	Rev B
Date: Monday, January 07, 2019	Sheet 18 of 41	

CLOCK SYNTHESIZERS

Power Supply Voltages:

Supply	Voltage
VDD0	= 3.3V
EVDD	= 1.8/3.3V
GVDD	= 1.2V
LVDD	= 1.8V
OVDD	= 1.8V
SOVDD	= 1.0V
SVDD	= 1.0V
TVDD	= 1.2V
USB_S0VDD	= 1.0V
USB_S1VDD	= 1.0V
VDD	= 1.0V
VPP	= 2.5V
XVDD	= 1.35V

Component Values:

Component	Value
C140	0.1uF
C141	0.1uF
C142	0.1uF
C143	0.1uF
C144	0.1uF
C145	0.1uF
C146	0.1uF
C147	0.1uF
C148	0.1uF
C149	0.1uF
C150	0.1uF
C151	0.1uF
C152	0.1uF
C153	0.1uF
C154	0.1uF
C155	0.1uF
C156	0.1uF
C157	0.1uF
C158	0.1uF
C159	0.1uF
C160	0.1uF
C161	0.1uF
C162	0.1uF
C163	0.1uF
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C289	0.1uF
C290	0.1uF
C291	0.1uF
C292	0.1uF
C293	0.1uF
C294	0.1uF
C295	0.1uF
C296	0.1u

DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
TVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_TVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification: CP: ____ IUO: ____ PUB: X

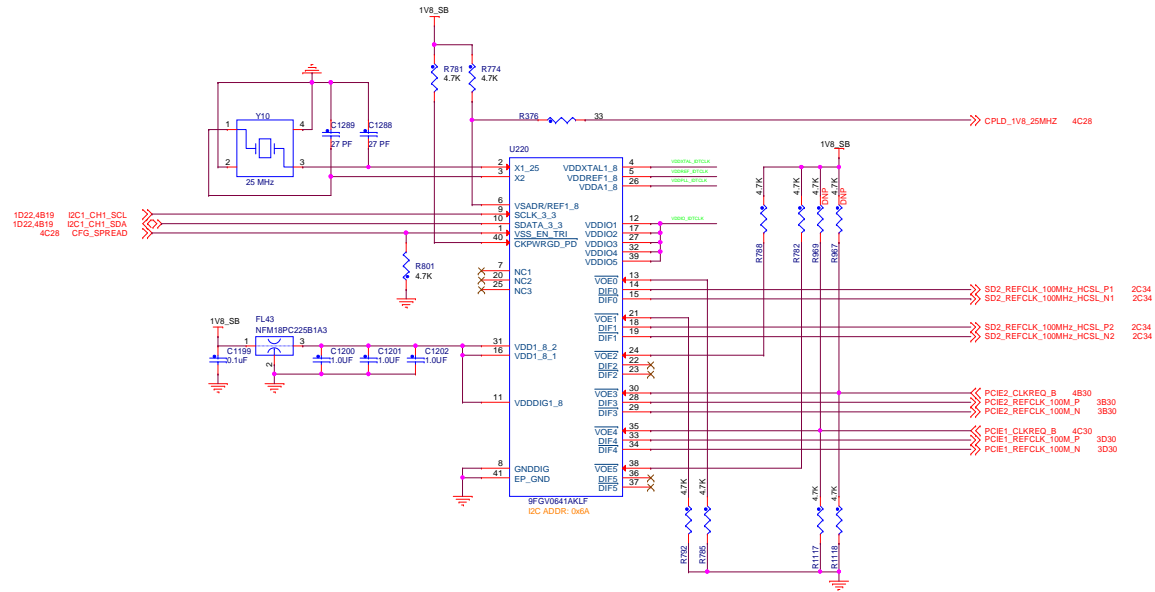
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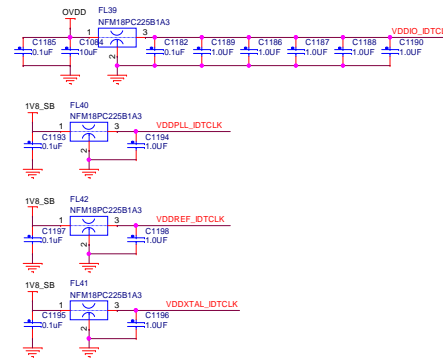
Size C	Document Number SCH-34754 PDF: SPF-34754
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PCIEXPRESS CLOCKS

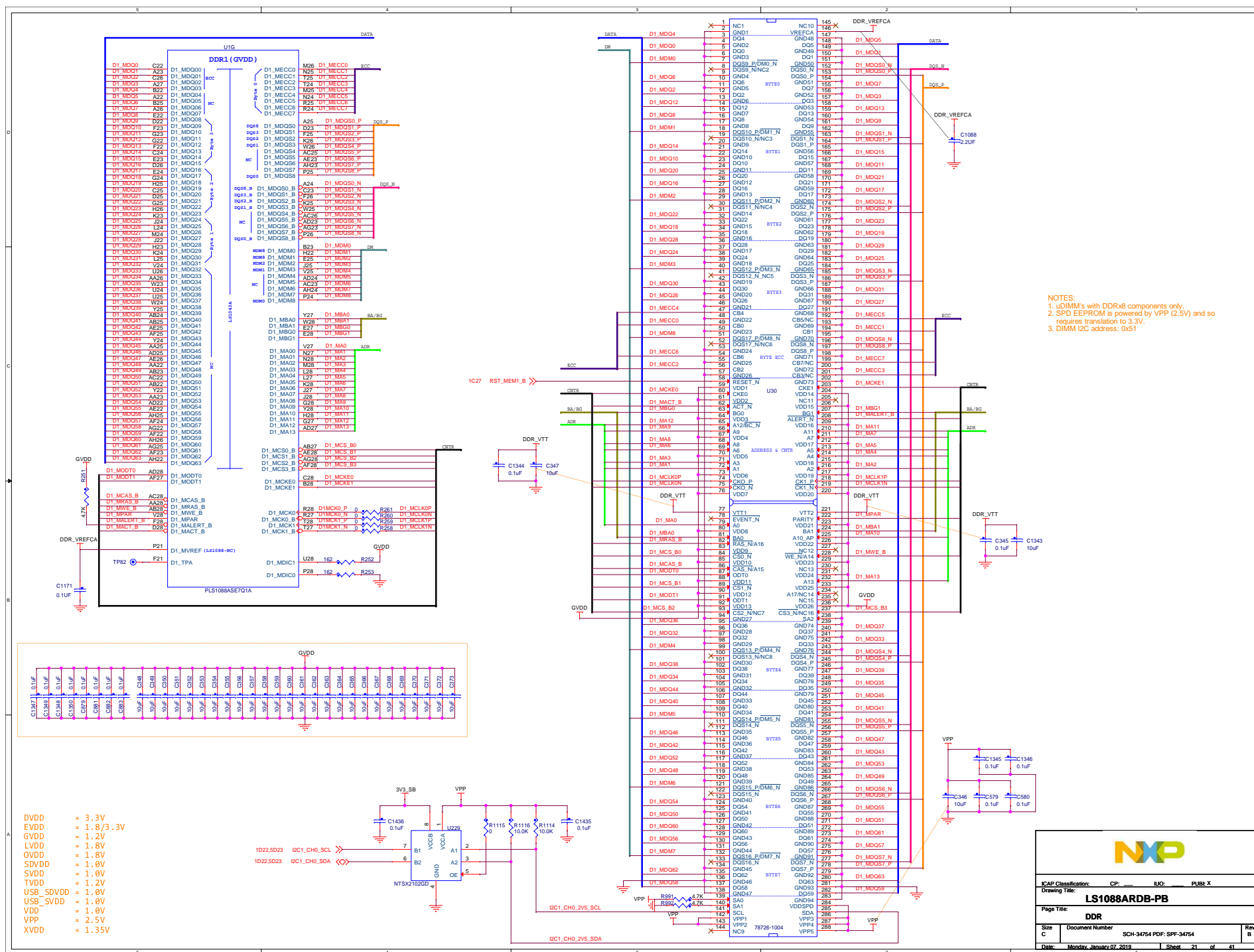


All differential clock outputs from the 9FGV0641 are HCSL

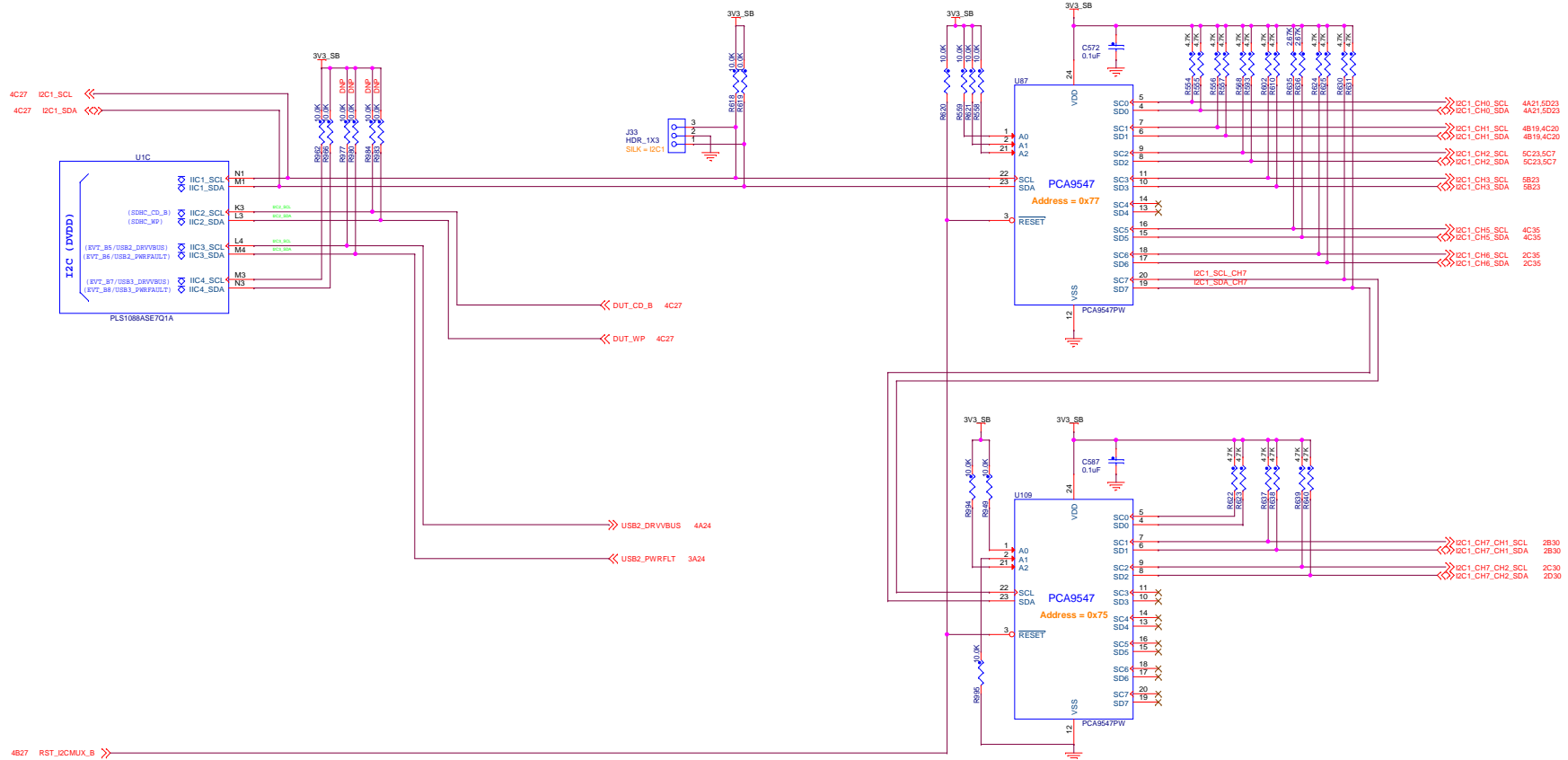


DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

ICAP Classification:	CP:	I/O:	PURB X
Drawing Title:	LS1088ARDB-PB		
Page Title:	PCI Express Clock Synthesizer		
Size	Document Number	SCH-34764 PDF: SPF-34764	Rev
C			B
Date:	Monday, January 07, 2019	Sheet	20 of 41



I2C CONTROLLERS



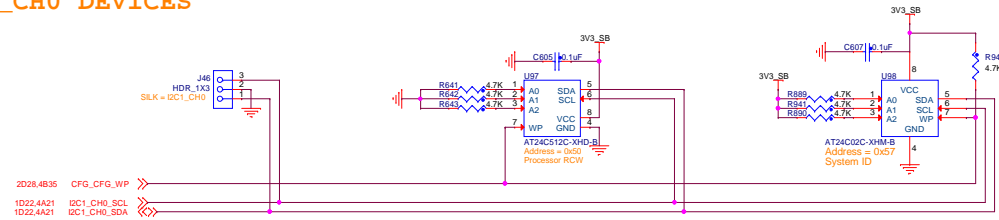
DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

I2C1 Addresses
 ---Qixis: 0x66 / 0x67
 ---PCA9547 (I2C mux): 0x77
 ---I2C1_CH0
 ---RCW EEPROM: 0x50
 ---SYSID EEPROM: 0x57
 ---DDR4 SPD: 0x51
 ---I2C1_CH1
 ---SI341: 0x74
 ---ID79PGL06P1: 0x68
 ---I2C1_CH2
 ---INA220 (IDD, GIDD): 0x40
 ---LTC3882 (VDD, GVDD): 0x66
 ---I2C1_CH3
 ---PCF2129 (RTC): 0x51
 ---AD77461 (THERM): 0x4C
 ---I2C1_CH5
 ---DS250P111 (SFP+ retimer): 0x18
 ---DS250P111 (boot eeprom): 0x50
 ---I2C1_CH6
 ---SFP+ module: 0x53
 ---I2C1_CH7
 ---PCA9546 (I2C mux): 0x75
 ---I2C1_CH7_CH1 ---PCIe Slot 1: (varies)
 ---I2C1_CH7_CH2 ---PCIe Slot 2: (varies)
 ---I2C1_CH7_CH3 ---PCIe Slot 3: (varies)

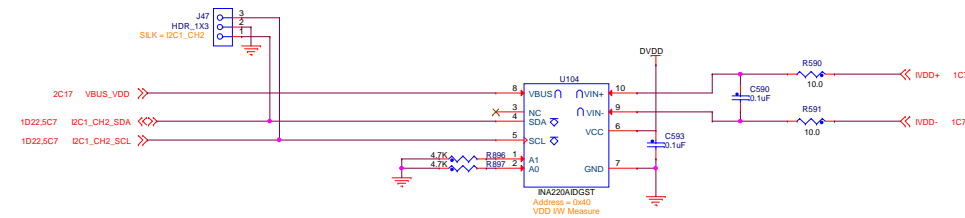
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Page Title:			
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Size	Document Number	SCH-34754 PDF: SPP-34754	Rev
C			B
Date:	Monday, January 07, 2019	Sheet	22 of 41

I2C DEVICES

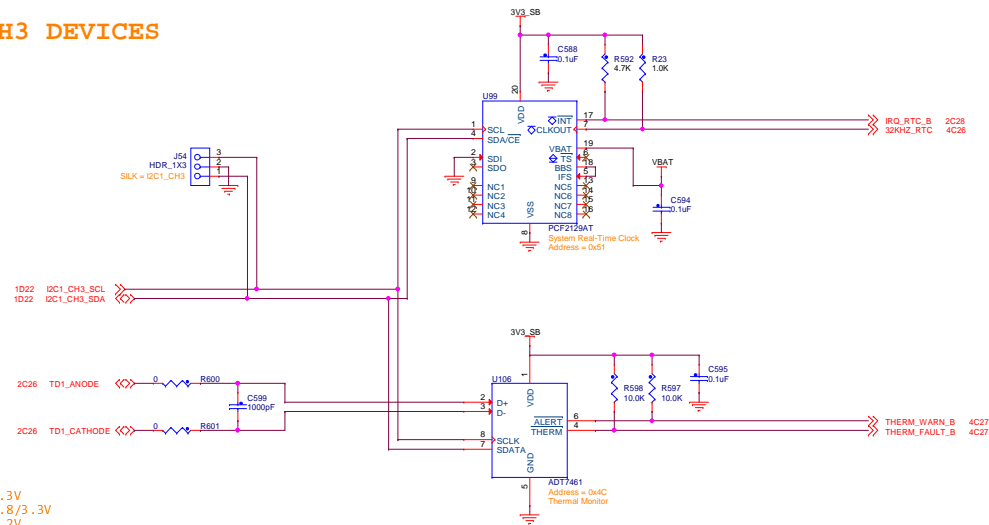
I2C1_CH0 DEVICES



I2C1_CH2 DEVICES



I2C1_CH3 DEVICES



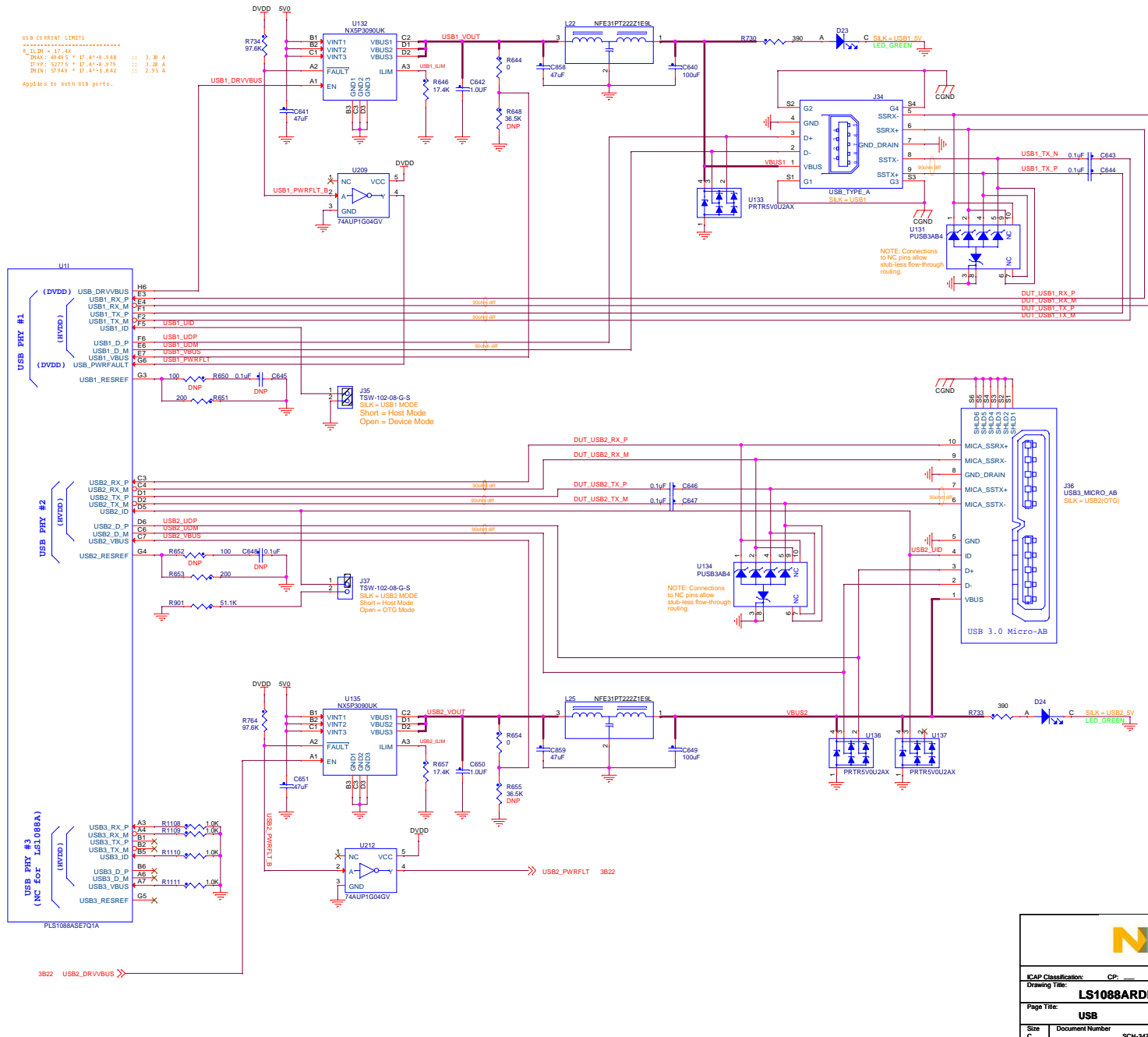
DVDD = 3.3V
EVDD = 1.8/3.3V
GVDD = 1.2V
LVDD = 1.8V
OVDD = 1.8V
SDVDD = 1.0V
SVDD = 1.0V
TVDD = 1.2V
USB_SDVDD = 1.0V
USB_SVDD = 1.0V
VDD = 2.5V
VPP = 1.35V



ICAP Classification: CP: I/O: PURB X	
Drawing Title: LS1088ARDB-PB	
Page Title: I2C DEVICES	
Size C	Document Number SCH-34764 PDF: SPF-34764
Date: Monday, January 07, 2019	Sheet 23 of 41

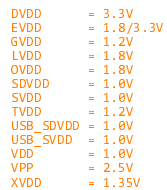
USB PORTS

USB CURRENT LIMITS
 ILIM = 17.4A
 IPRX = 4049.5 * 17.4 = 0.948 :: 3.38 A
 IPRV = 5275.5 * 17.4 = 0.979 :: 3.38 A
 IDIR = 57649 * 17.4 = 1.042 :: 2.95 A
 Applies to both USB ports.

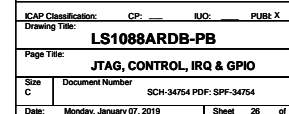
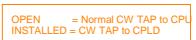


DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

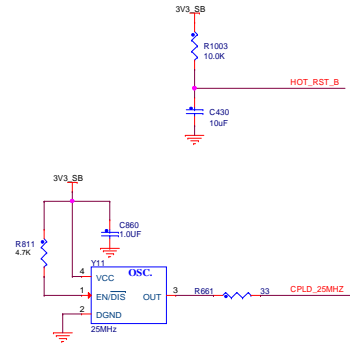
- SDCard Present (SDHC_CD_B=0):
 - MUX = SDCARD
 - EVDD = 3.3V (SW control)
- SDCard Absent (SDHC_CD_B=1):
 - MUX = EMMC
 - EVDD = 1.8V fixed.



DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V

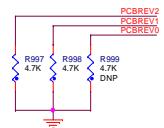


CPLD BANKS 1 & 4

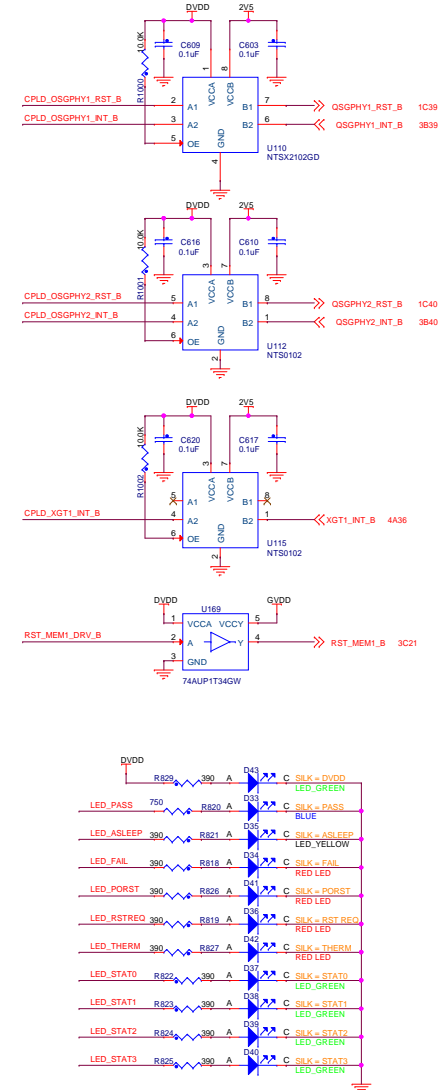
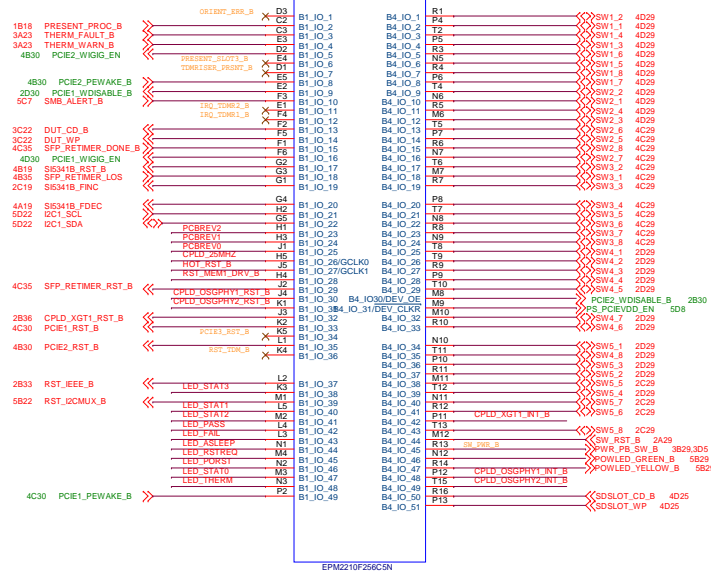


PCB REVISION (PCBREV[2:0])

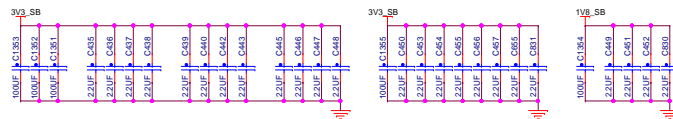
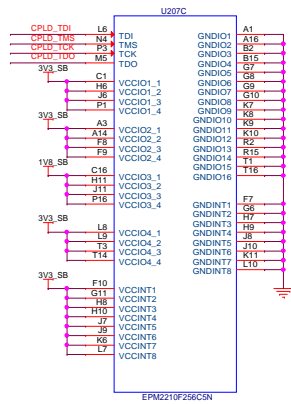
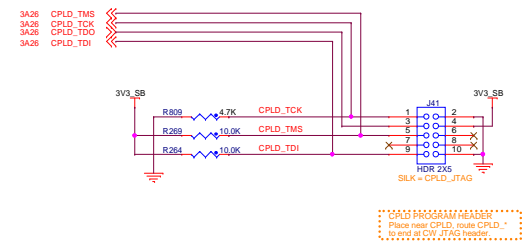
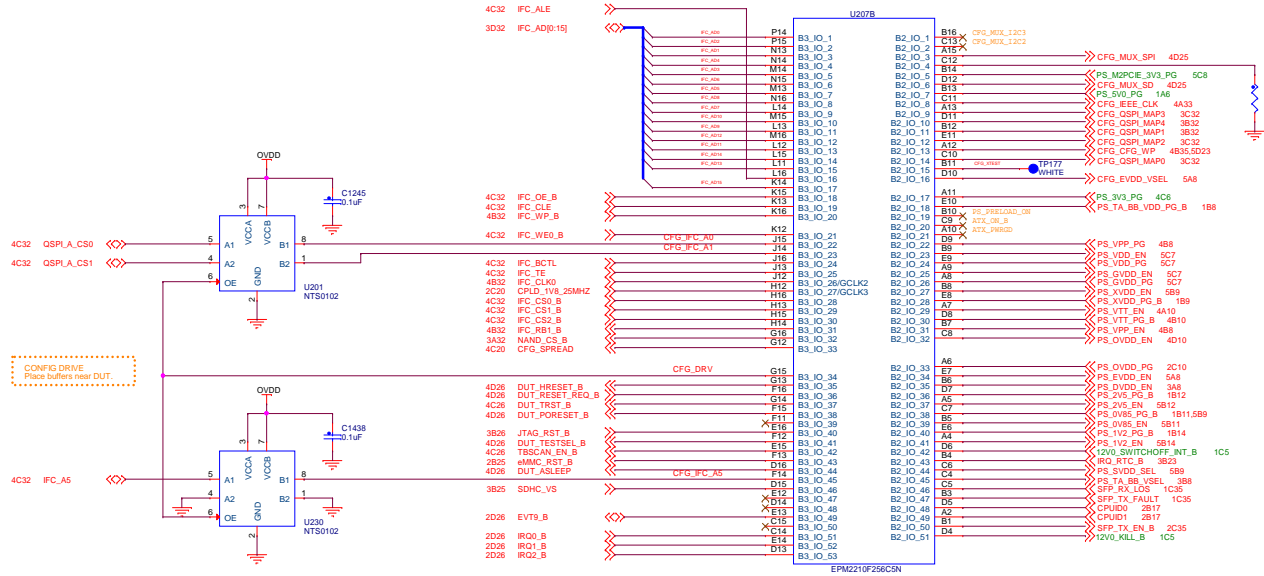
PCBREV	Rev	Description
000	Rev "A"	
001	Rev "B"	DNP
010	Rev "C"	DNP
011	Rev "D"	DNP



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V



CPLD BANKS 2 & 3



DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification: CP: ____ IUO: ____ PUBt X
Drawing Title: _____

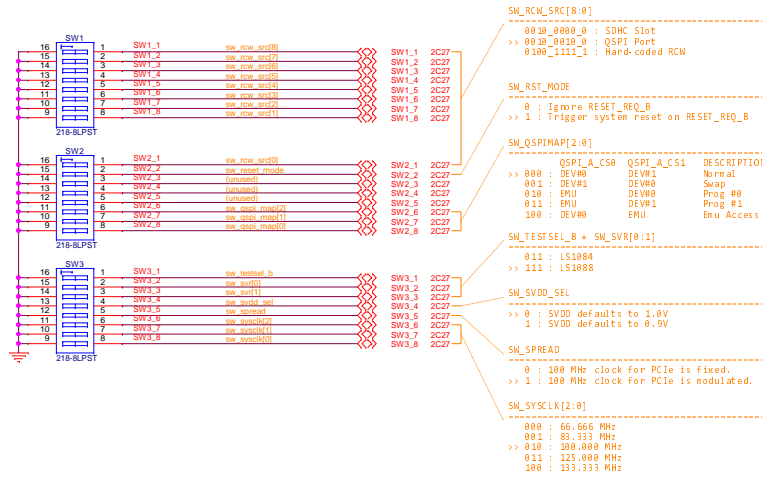
LS1088ARDB-PB

Page Title: CPLD BANK2&3

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SWITCHES



M.2 PCIe SLOTS 1 & 2 (KEY-E, 2230)

The diagram illustrates the electrical connections for two M.2 PCIe slots (KEY-E, 2230). Each slot is connected to a 3.3V power supply, a 1V8 power supply, and a 3.3V signal supply. The diagram includes various components like capacitors, resistors, and connectors. It also shows the connection to the M.2 KEY-E connector and the M.2 SMT KEY-E connector. The diagram is divided into two sections, one for Slot 1 and one for Slot 2, with similar components and connections for each.

Legend:

- DVDD = 3.3V
- EVDD = 1.8/3.3V
- GVDD = 1.2V
- LVDD = 1.8V
- OVDD = 1.8V
- SDVDD = 1.0V
- SVDD = 1.0V
- TVDD = 1.2V
- USB_S0VDD = 1.0V
- USB_S1VDD = 1.0V
- VDD = 1.0V
- VPP = 2.5V
- XVDD = 1.35V

M.2 miniPCIe Mounting Holes

M2 MOUNTING HOLE M2 MOUNTING HOLE

ICAP Classification: CP: IUC: PUB: X

Drawing Title: LS1088ARDB-PB

Page Title: M.2 PEX Slots 1 & 2

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DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V

M.2 miniPCIE Mounting Holes



ICAP Classification: CP: ____ IUO: ____ PUBt X

Drawing Title: **LS4000A PDB PDF**

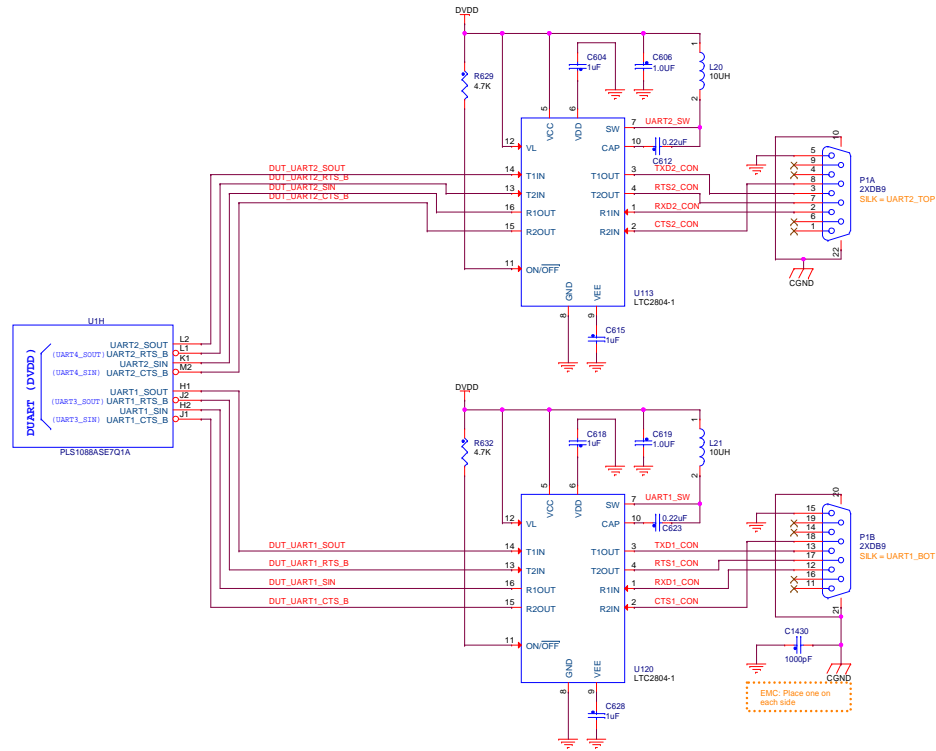
Page Title:

M.2 PEX Slots 1 & 2

Size	Document Number
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SERIAL PORTS

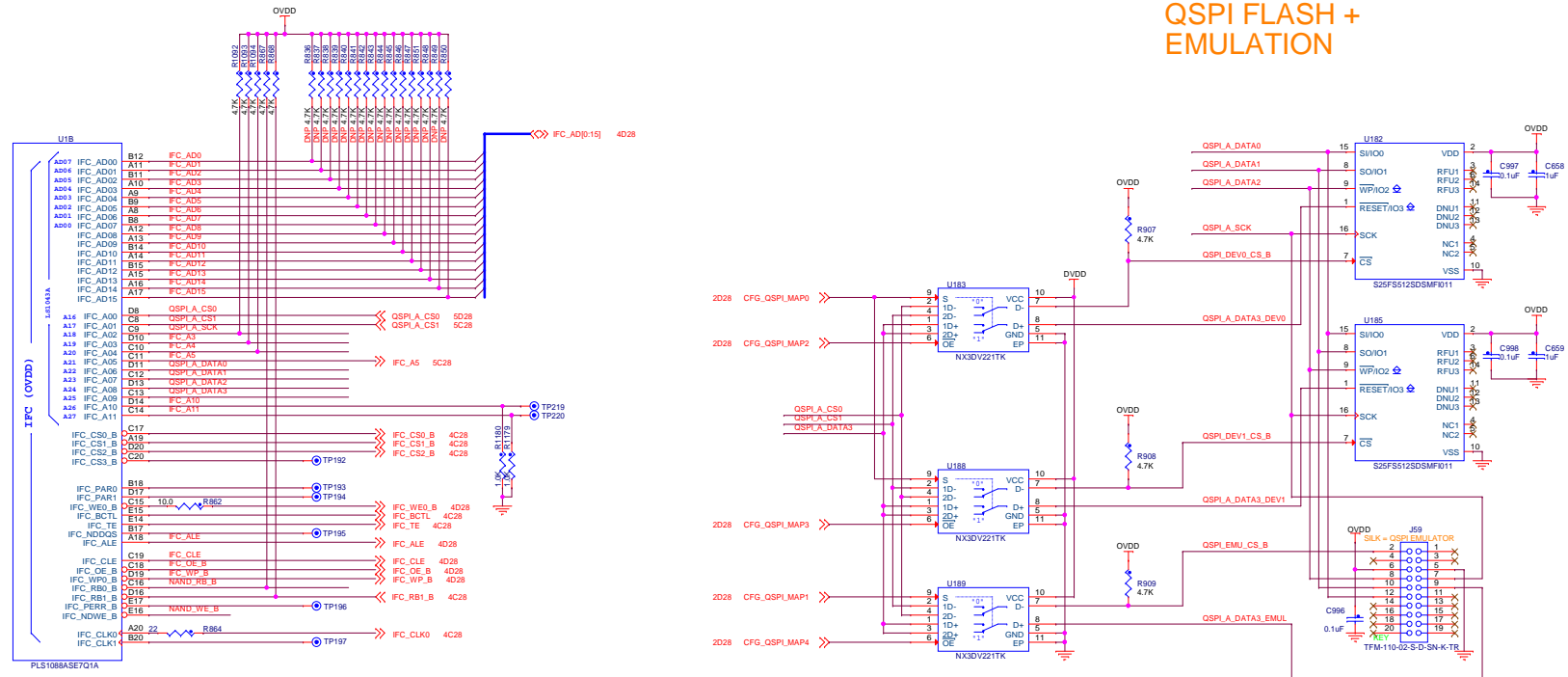


DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

ICAP Classification:	CP:	NO:	PURB X
Drawing Title:	LS1088ARDB-PB		
Page Title:	DUART		
Size	Document Number	Rev	
C	SCH-34754 PDF: SPP-34754	B	
Date:	Monday, January 07, 2019	Sheet	31 of 41

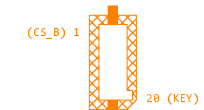
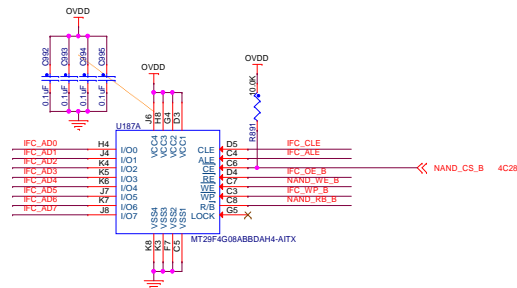
QSPI & NAND INTERFACE

QSPI FLASH + EMULATION

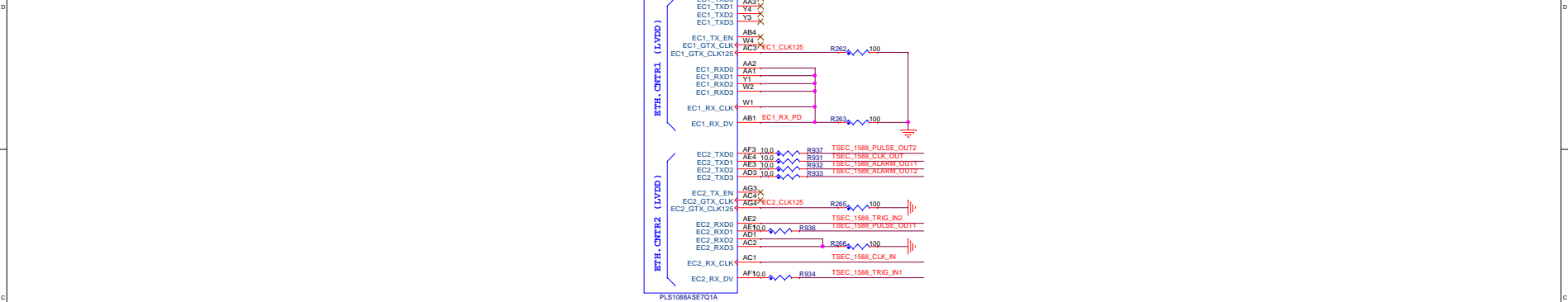
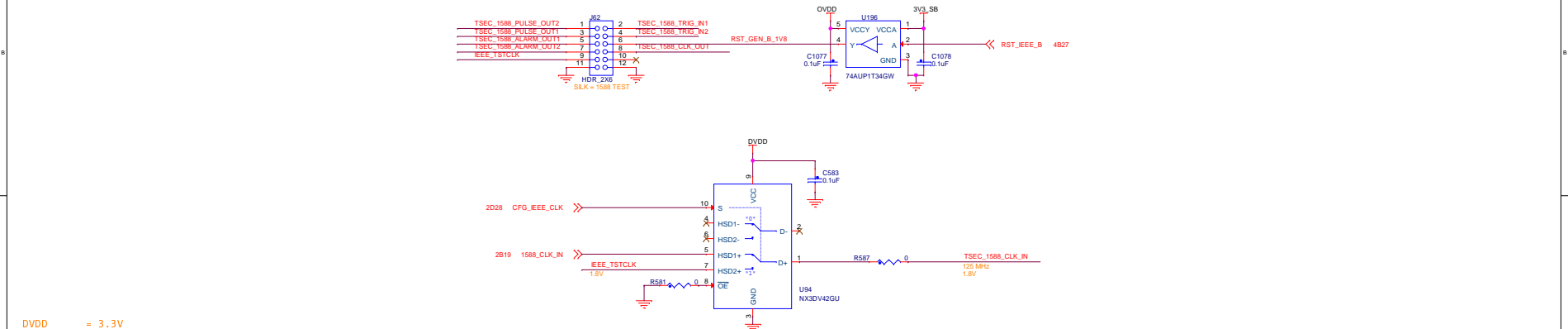


QSPI Emulator
 * DediProg Em100Pro (dediprogram.com)
 * ISP-ADP-intel-B cable
 * 1.8V IO option
 NOTE: Pin 1 is *opposite* the mechanical key/bevel.

NAND FLASH



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

IEEE1588 TEST HEADER/
CLOCK SOURCE SELECT

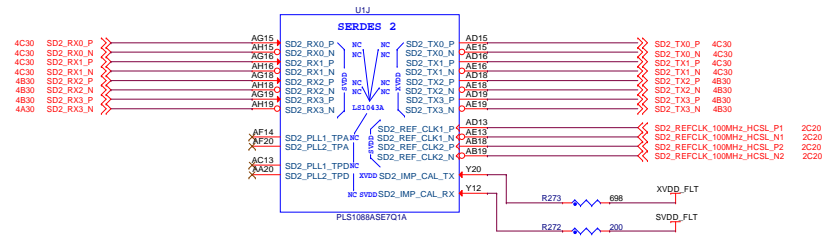
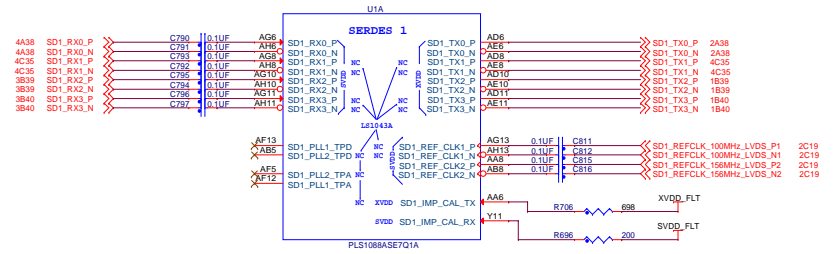
DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD ₋	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V

ICAP Classification: CP: ____ IUO: ____ PUB: X
Device Title:Page Title: **EC1 & 1588**

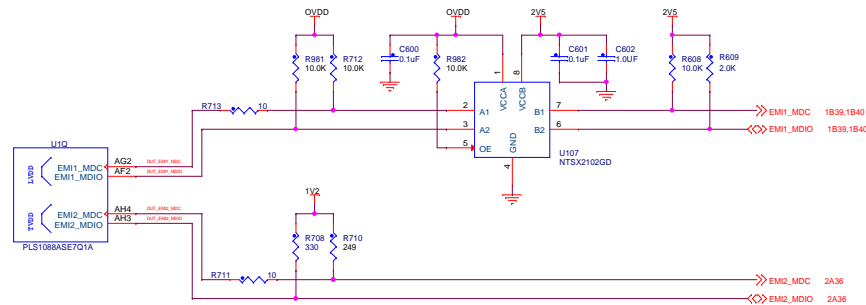
Size C	Document Number SCH-34754 PDF: SPF-34754	Rev B
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SERDES INTERFACES

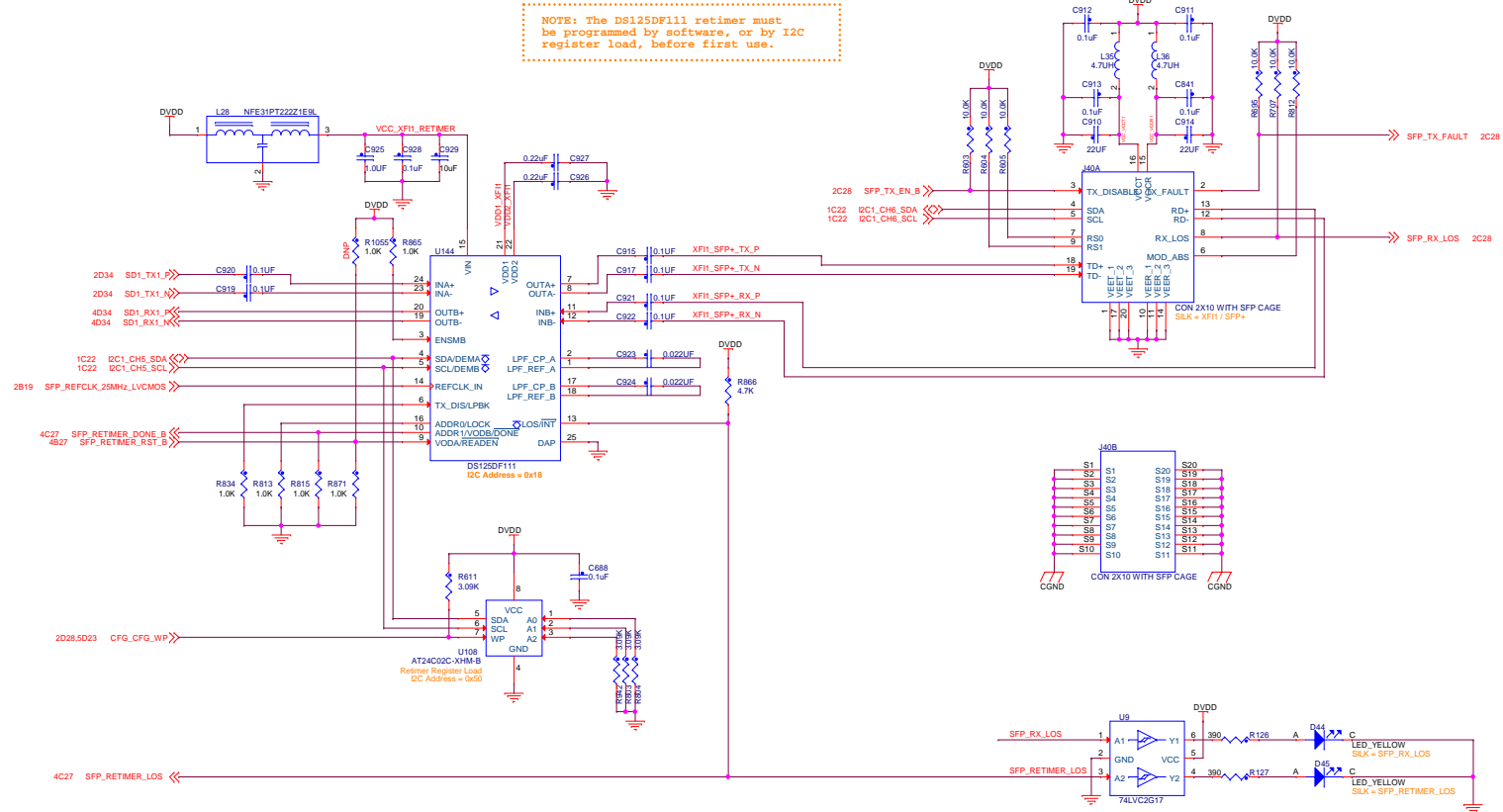


DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V



ICAP Classification:	CP:	I/O:	PURB X
Drawing Title:	LS1088ARDB-PB		
Page Title:	SERDES PORTS, EMI		
Size C	Document Number	SCH-34764 PDF: SPP-34764	Rev B
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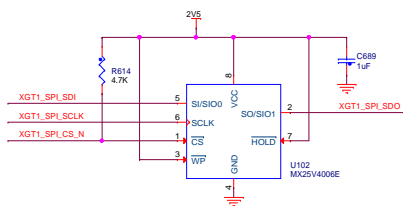
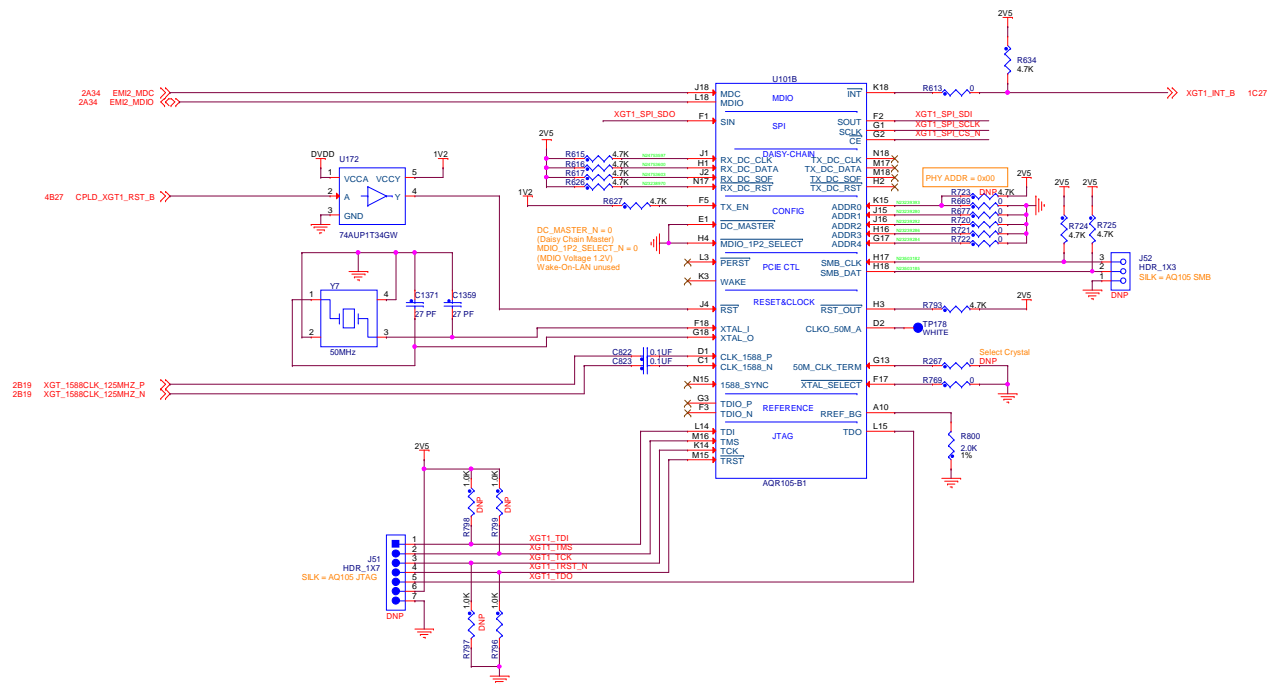
10GE RETIMER & SFP



DVDD = 3.3V
EVDD = 1.8/3.3V
GVDD = 1.2V
LVDD = 1.8V
OVDD = 1.8V
SVDD = 1.0V
TVDD = 1.2V
USB_SDVDD = 1.0V
USB_SVDD = 1.0V
VDD = 2.5V
VPP = 1.35V
XVDD = 1.35V

NXP			
ICAP Classification:	CP:	I/O:	PURR X
Drawing Title:	LS1088ARDB-PB		
Page Title:	SFP+ retimer & module		
Size	Document Number	SCH-34754 PDF: SFP-34754	Rev
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10GE PHY



DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification: CP: ____ IUO: ____ PUB: X

Drawing Title: **LS1088ARDB-PB**

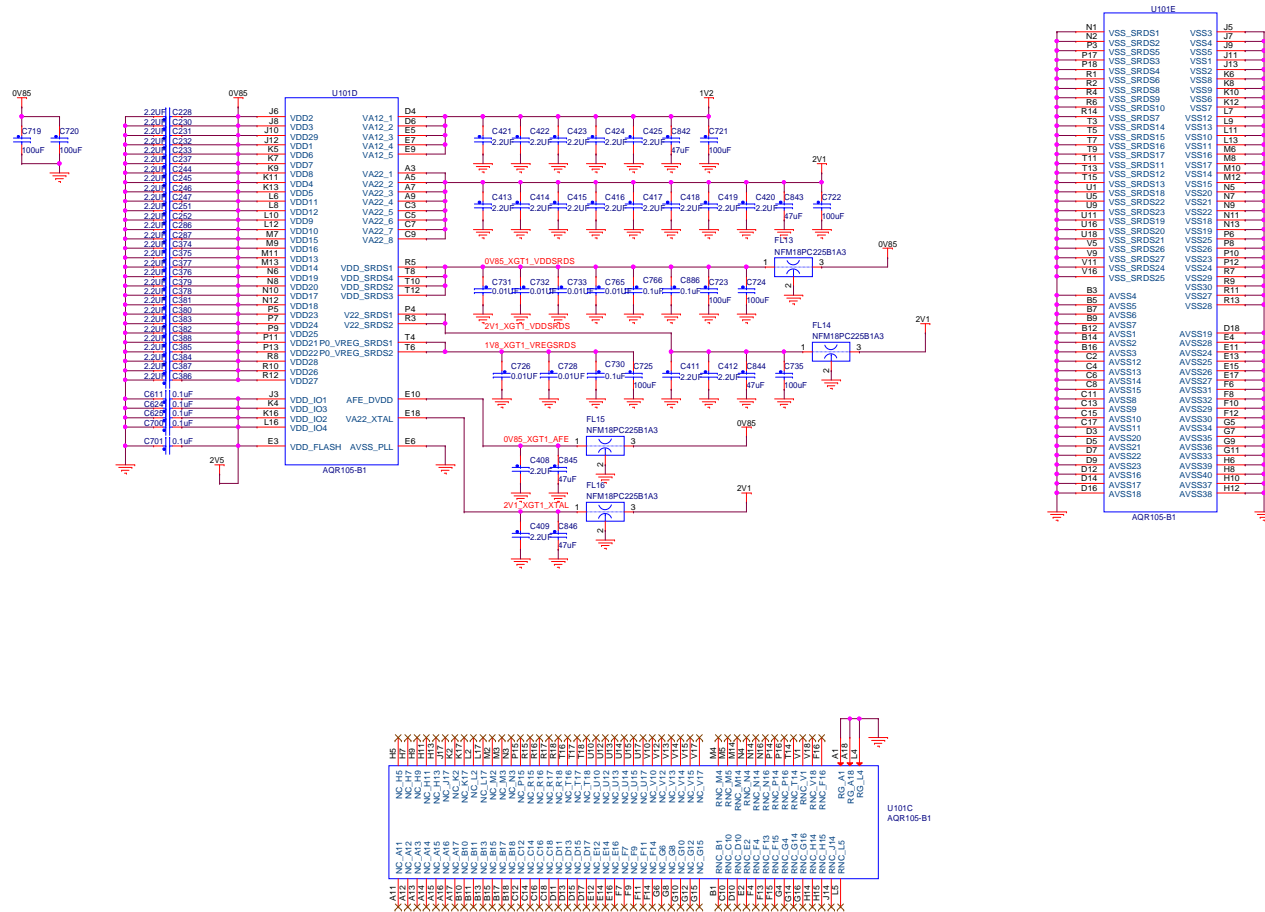
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Size C	Document Number SCH-34754 PDF: SPF-34754
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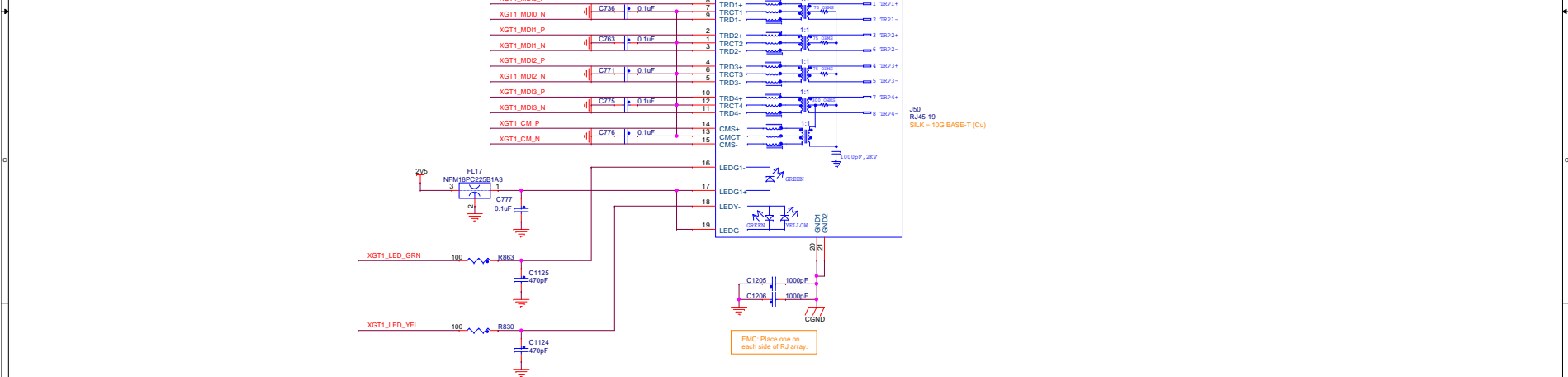
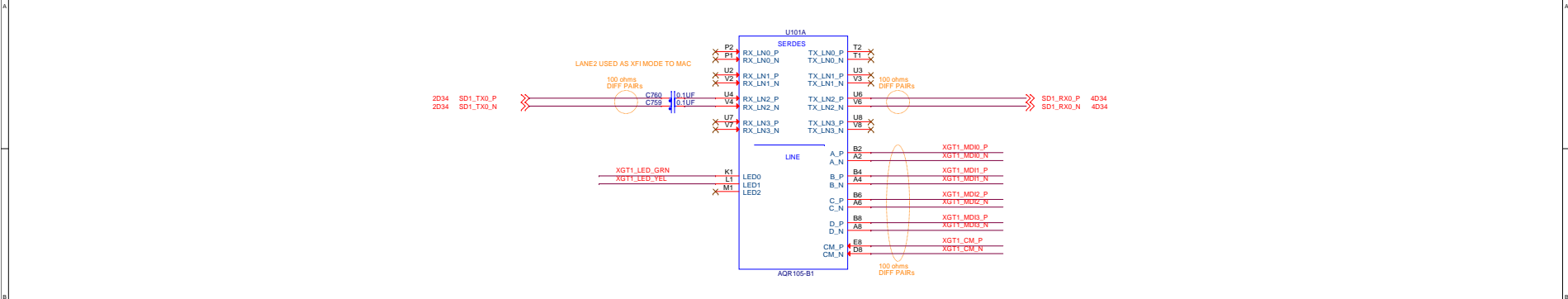
Date: Monday, January 07, 2019 Sheet 36 of 41

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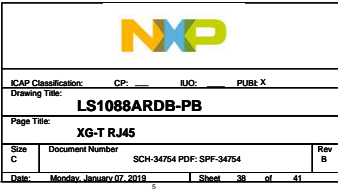
10GE PHY POWER



DVDD	= 3.3V
EVDD	= 1.8/3.3V
GVDD	= 1.2V
LVDD	= 1.8V
OVDD	= 1.8V
SDVDD	= 1.0V
SVDD	= 1.0V
TVDD	= 1.2V
USB_SDVDD	= 1.0V
USB_SVDD	= 1.0V
VDD	= 1.0V
VPP	= 2.5V
XVDD	= 1.35V



DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V

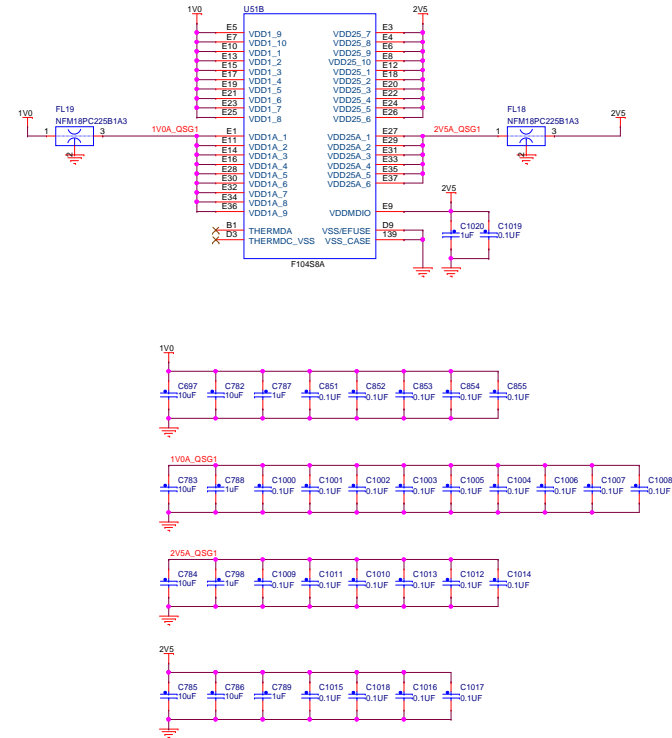
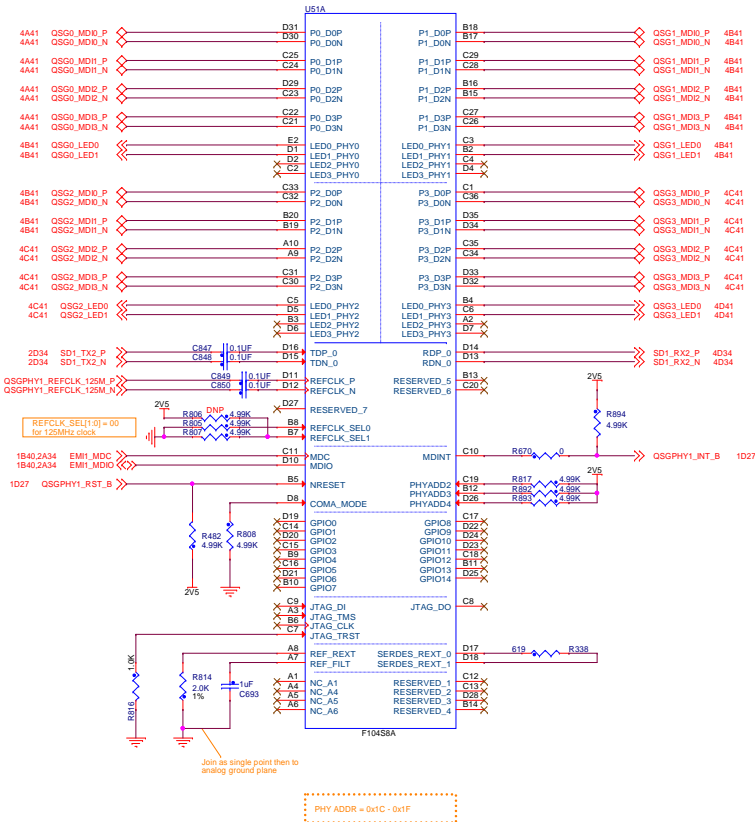


Drawing Title: **LS1088ARDB-PR**

XG-1 RJ45	
Size	Document Number

Date: Monday, January 07, 2019 Sheet: 6

100/1G SGMII PHY #1



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 XVDD = 1.35V

ICAP Classification:		CP:	PUBL X
Drawing Title:		LS1088ARDB-PB	
Page Title:		QSG PHY1 (F104)	
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100/1G SGMII PHY #2

DVDD	=	3.3V
EVDD	=	1.8/3.3V
GVDD	=	1.2V
LVDD	=	1.8V
OVDD	=	1.8V
SDVDD	=	1.0V
SVDD	=	1.0V
TVDD	=	1.2V
USB_SDVDD	=	1.0V
USB_SVDD	=	1.0V
VDD	=	1.0V
VPP	=	2.5V
XVDD	=	1.35V



ICAP Classification: CP: ____ IUO: ____ PUBt X

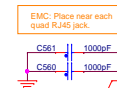
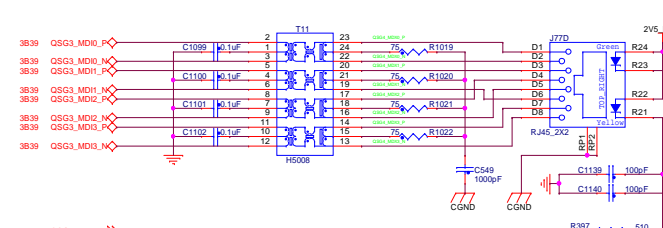
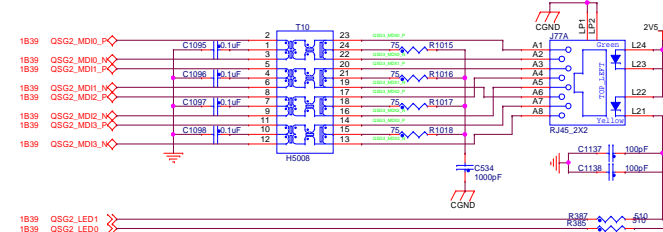
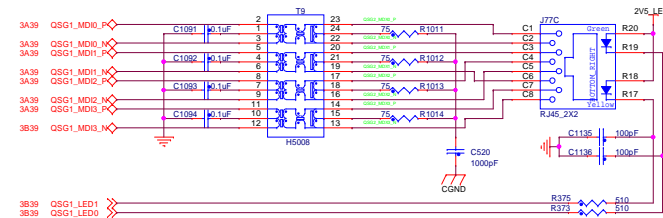
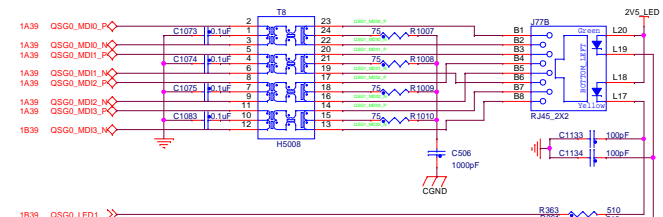
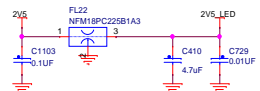
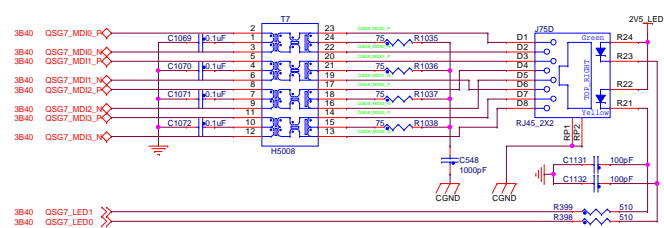
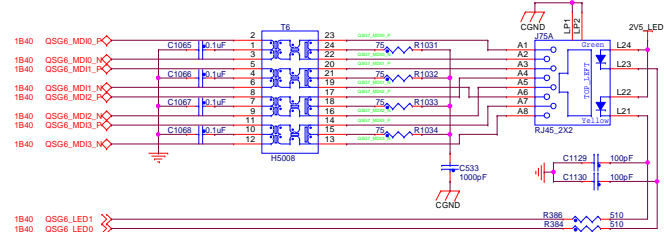
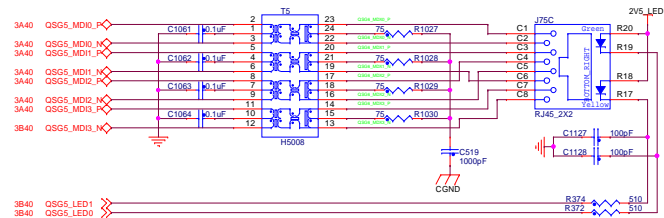
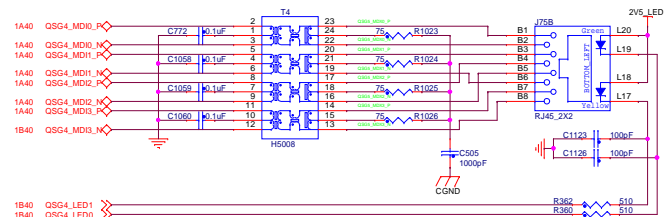
Drawing Title: **LS1088ARDB-PB**

Page Title: QSG PHY2 (F104)

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100/1GE PORTS



DVDD = 3.3V
 EVDD = 1.8/3.3V
 GVDD = 1.2V
 LVDD = 1.8V
 OVDD = 1.8V
 SDVDD = 1.0V
 SVDD = 1.0V
 TVDD = 1.2V
 USB_SDVDD = 1.0V
 USB_SVDD = 1.0V
 VDD = 1.0V
 VPP = 2.5V
 VDD = 1.35V



ICAP Classification: CP: ____ IUO: ____ PUBt X

Drawing Title: **LS1088ARDB-PB**

Page Title: QSG transformer and RJ45

Size C	Document Number SCH-34754 PDE: SRE-34754
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