PG160-B03

TU106 6GB GDDR6, 192b, X16
Tall DVI-D + DP + HDMI

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46	SEQ: DISCHARGE
47	SEQ: MISC
48	LOGO LED
49	LED DRIVER & BOOST
50	DUAL FAN
51	PS: Pre-filter
52	MECH
53	PTC

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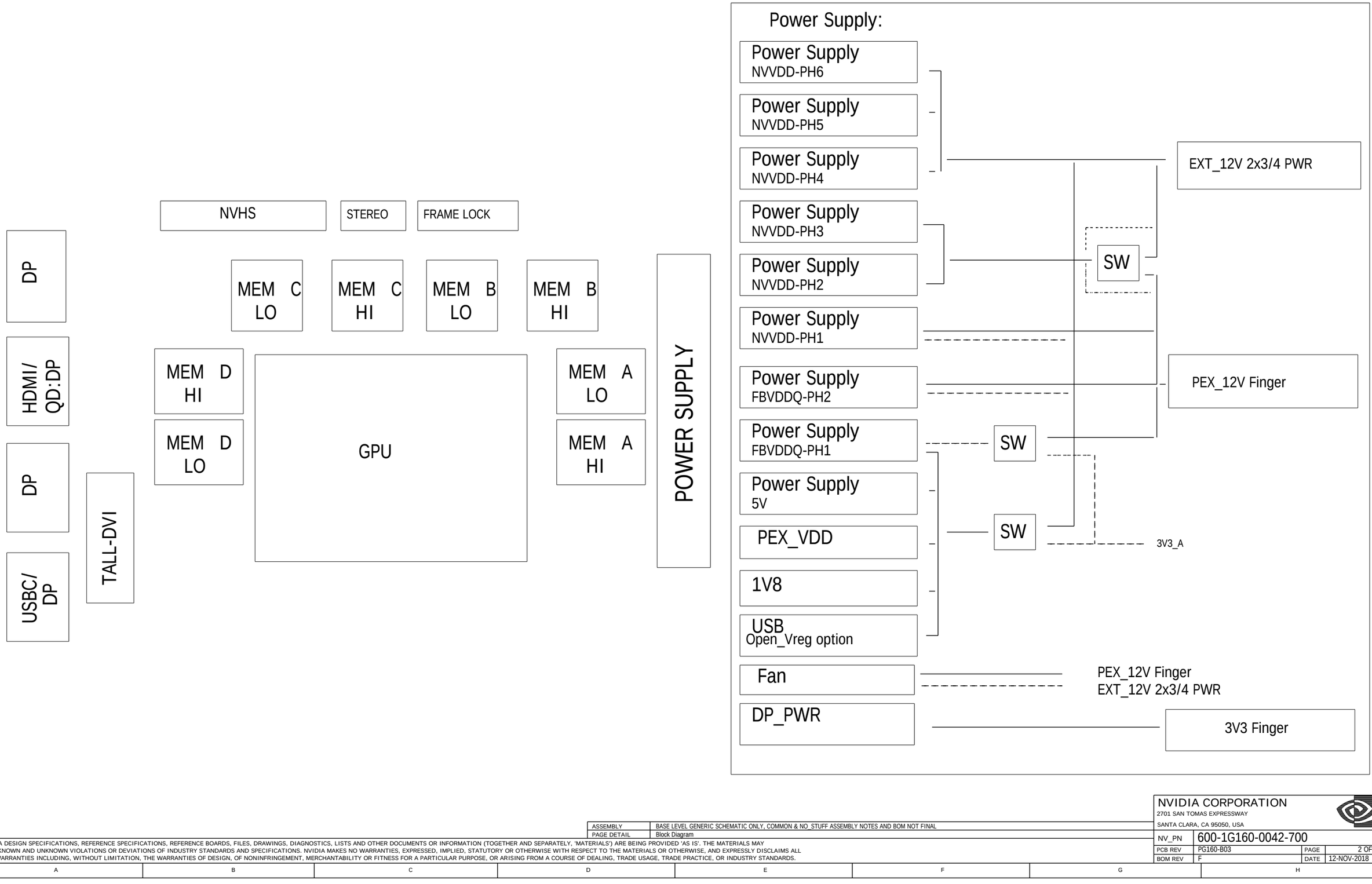
Page2: Block Diagram



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Page3: PCI Express

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
12V NV_SOURCE_POWER_NET	12V	5.5A	0.406
3V3 NV_SOURCE_POWER_NET	3.3V	3.0A	0.400
3V3_AUX_CON NV_SOURCE_POWER_NET	3.3V	1.0A	0.400
GND NV_SOURCE_POWER_NET	0V	8.5A	0.300

CN2
CON_X16
NO STUFF
CON_PCIEXP_X16_EDGE

END OF X1
END OF X4
END OF X8
END OF X16

PCB CO-LAYOUT
PCB CO-LAYOUT

Q522 PJT138K SOT363 NO STUFF
Q522 PJT138K SOT363 NO STUFF
Q523 PJT138K SOT363 NO STUFF
Q523 PJT138K SOT363 NO STUFF

BGA2228
CHANGED
1/22 PCI_EXPRESS

PERP0	A16	PEX_TXX0	C1159 0.22uF 0402 6.3V X7R COMMON	C1137 0.22uF 0402 6.3V X7R COMMON
PERN0	A17	PEX_TXX0*		
PETP0	B14	PEX_RX0	DP_PEX_RX	PEX_TX0 BG26 PEX_TX0
PETN0	B15	PEX_RX0*	DP_PEX_RX	PEX_TX0* BH26 PEX_TX0
PERP1	A21	PEX_TXX1	C1118 0.22uF 0402 6.3V X7R COMMON	C1103 0.22uF 0402 6.3V X7R COMMON
PERN1	A22	PEX_TXX1*		
PETP1	B19	PEX_RX1	DP1_PEX_RX	PEX_TX1 BF26 PEX_TX1
PETN1	B20	PEX_RX1*	DP1_PEX_RX	PEX_TX1* BE26 PEX_TX1
PERP2	A25	PEX_TXX2	C1089 0.22uF 0402 6.3V X7R COMMON	C1073 0.22uF 0402 6.3V X7R COMMON
PERN2	A26	PEX_TXX2*		
PETP2	B23	PEX_RX2	DP2_PEX_RX	PEX_TX2 BF27 PEX_RX1
PETN2	B24	PEX_RX2*	DP2_PEX_RX	PEX_TX2* BG27 PEX_RX1
PERP3	A29	PEX_TXX3	C1050 0.22uF 0402 6.3V X7R COMMON	C1035 0.22uF 0402 6.3V X7R COMMON
PERN3	A30	PEX_TXX3*		
PETP3	B27	PEX_RX3	DP3_PEX_RX	PEX_TX3 BG29 PEX_TX2
PETN3	B28	PEX_RX3*	DP3_PEX_RX	PEX_TX3* BH29 PEX_TX2
PERP4	A35	PEX_TXX4	C976 0.22uF 0402 6.3V X7R COMMON	C956 0.22uF 0402 6.3V X7R COMMON
PERN4	A36	PEX_TXX4*		
PETP4	B33	PEX_RX4	DP4_PEX_RX	PEX_TX4 BF29 PEX_RX2
PETN4	B34	PEX_RX4*	DP4_PEX_RX	PEX_TX4* BE29 PEX_RX2
PERP5	A39	PEX_TXX5	C942 0.22uF 0402 6.3V X7R COMMON	C921 0.22uF 0402 6.3V X7R COMMON
PERN5	A40	PEX_TXX5*		
PETP5	B37	PEX_RX5	DP5_PEX_RX	PEX_TX5 BF30 PEX_TX3
PETN5	B38	PEX_RX5*	DP5_PEX_RX	PEX_TX5* BG30 PEX_TX3
PERP6	A43	PEX_TXX6	C908 0.22uF 0402 6.3V X7R COMMON	C884 0.22uF 0402 6.3V X7R COMMON
PERN6	A44	PEX_TXX6*		
PETP6	B41	PEX_RX6	DP6_PEX_RX	PEX_TX6 BG32 PEX_RX3
PETN6	B42	PEX_RX6*	DP6_PEX_RX	PEX_TX6* BH32 PEX_RX3
PERP7	A47	PEX_TXX7	C878 0.22uF 0402 6.3V X7R COMMON	C872 0.22uF 0402 6.3V X7R COMMON
PERN7	A48	PEX_TXX7*		
PETP7	B45	PEX_RX7	DP7_PEX_RX	PEX_TX7 BF32 PEX_TX4
PETN7	B46	PEX_RX7*	DP7_PEX_RX	PEX_TX7* BE32 PEX_TX4
PERP8	A52	PEX_TXX8	C855 0.22uF 0402 6.3V X7R COMMON	C853 0.22uF 0402 6.3V X7R COMMON
PERN8	A53	PEX_TXX8*		
PETP8	B50	PEX_RX8	DP8_PEX_RX	PEX_TX8 BF33 PEX_RX4
PETN8	B51	PEX_RX8*	DP8_PEX_RX	PEX_TX8* BG33 PEX_RX4
PERP9	A56	PEX_TXX9	C850 0.22uF 0402 6.3V X7R COMMON	C844 0.22uF 0402 6.3V X7R COMMON
PERN9	A57	PEX_TXX9*		
PETP9	B54	PEX_RX9	DP9_PEX_RX	PEX_TX9 BG35 PEX_TX5
PETN9	B55	PEX_RX9*	DP9_PEX_RX	PEX_TX9* BH35 PEX_TX5
PERP10	A60	PEX_TXX10	C839 0.22uF 0402 6.3V X7R COMMON	C838 0.22uF 0402 6.3V X7R COMMON
PERN10	A61	PEX_TXX10*		
PETP10	B58	PEX_RX10	DP_PEX_RX1	PEX_TX10 BF35 PEX_RX5
PETN10	B59	PEX_RX10*	DP_PEX_RX1	PEX_TX10* BE35 PEX_RX5
PERP11	A64	PEX_TXX11	C831 0.22uF 0402 6.3V COMMON X7R 10%	C827 0.22uF 0402 6.3V X7R COMMON
PERN11	A65	PEX_TXX11*		
PETP11	B62	PEX_RX11	DP1_PEX_RX1	PEX_TX11 BF36 PEX_TX6
PETN11	B63	PEX_RX11*	DP1_PEX_RX1	PEX_TX11* BG36 PEX_TX6
PERP12	A68	PEX_TXX12	C823 0.22uF 0402 6.3V COMMON X7R 10%	C822 0.22uF 0402 6.3V X7R COMMON
PERN12	A69	PEX_TXX12*		
PETP12	B66	PEX_RX12	DP2_PEX_RX1	PEX_TX12 BG38 PEX_RX6
PETN12	B67	PEX_RX12*	DP2_PEX_RX1	PEX_TX12* BH38 PEX_RX6
PERP13	A72	PEX_TXX13	C801 0.22uF 0402 6.3V COMMON X7R 10%	C798 0.22uF 0402 6.3V X7R COMMON
PERN13	A73	PEX_TXX13*		
PETP13	B70	PEX_RX13	DP3_PEX_RX1	PEX_TX13 BF38 PEX_TX7
PETN13	B71	PEX_RX13*	DP3_PEX_RX1	PEX_TX13* BE38 PEX_TX7
PERP14	A76	PEX_TXX14	C792 0.22uF 0402 6.3V COMMON X7R 10%	C785 0.22uF 0402 6.3V X7R COMMON
PERN14	A77	PEX_TXX14*		
PETP14	B74	PEX_RX14	DP4_PEX_RX1	PEX_TX14 BF39 PEX_RX7
PETN14	B75	PEX_RX14*	DP4_PEX_RX1	PEX_TX14* BG39 PEX_RX7
PERP15	A80	PEX_TXX15	C773 0.22uF 0402 6.3V COMMON X7R 10%	C768 0.22uF 0402 6.3V X7R COMMON
PERN15	A81	PEX_TXX15*		
PETP15	B78	PEX_RX15	DP5_PEX_RX1	PEX_TX15 BH41 PEX_RX8
PETN15	B79	PEX_RX15*	DP5_PEX_RX1	PEX_TX15* BG41 PEX_RX8

PEX_DVDD	BB35	
PEX_DVDD	BB36	
PEX_DVDD	BC35	
PEX_DVDD	BC36	
PEX_DVDD	BD33	
PEX_DVDD	BD36	
PEX_CVDD	BB33	
PEX_CVDD	BC33	
PEX_HVDD	BB26	
PEX_HVDD	BB27	
PEX_HVDD	BB29	
PEX_HVDD	BB32	
PEX_HVDD	BC26	
PEX_HVDD	BC27	
PEX_HVDD	BC29	
PEX_HVDD	BC30	
PEX_HVDD	BC32	
PEX_HVDD	BD27	
PEX_HVDD	BD30	
PEX_PLL_HVDD	BB30	

Place under GPU

C930 1uF 6.3V 20% X5R 0201 COMMON	C929 1uF 6.3V 20% X5R 0201 COMMON	C928 1uF 6.3V 20% X5R 0201 COMMON	C943 1uF 6.3V 20% X5R 0201 COMMON	C993 4.7uF 6.3V 20% X6S 0603 COMMON	C950 4.7uF 6.3V 20% X6S 0603 COMMON	
C953 1uF 6.3V 20% X5R 0201 COMMON	C931 1uF 6.3V 20% X5R 0201 COMMON	C980 1uF 6.3V 20% X5R 0201 COMMON	C1206 1uF 6.3V 20% X5R 0201 COMMON	C1261 4.7uF 6.3V 20% X6S 0603 COMMON		
C988 1uF 6.3V 20% X5R 0201 COMMON	C966 1uF 6.3V 20% X5R 0201 COMMON	C1003 1uF 6.3V 20% X5R 0201 COMMON	C1021 1uF 6.3V 20% X5R 0201 COMMON			
C1267 1uF 6.3V 20% X5R 0201 COMMON	C1022 1uF 6.3V 20% X5R 0201 COMMON	C1023 1uF 6.3V 20% X5R 0201 COMMON	C1033 1uF 6.3V 20% X5R 0201 COMMON			

Place between GPU and PS

PEX_VDD

C1221 10uF 16V 10% X5R 0805 CHANGED	C158 10uF 16V 10% X5R 0805 CHANGED	C1160 10uF 16V 10% X5R 0805 CHANGED	
3x 10uF and 2x 22uF			
C1134 22uF 4V 20% X6S 0805 CHANGED	C1155 22uF 4V 20% X6S 0805 CHANGED		

1V8_MAIN

C1053 1uF 6.3V 20% X5R 0201 COMMON	C1043 1uF 6.3V 20% X5R 0201 COMMON	C1067 1uF 6.3V 20% X5R 0201 COMMON	C1098 1uF 6.3V 20% X5R 0201 COMMON	C1041 4.7uF 6.3V 20% X6S 0603 COMMON	C1332 4.7uF 6.3V 20% X6S 0603 COMMON	
C1385 10uF 6.3V 20% X5R 0603 CHANGED	C1359 10uF 6.3V 20% X5R 0603 CHANGED	C1383 10uF 6.3V 20% X5R 0603 CHANGED				
3x 10uF and 2x 22uF						
C1071 1uF 6.3V 20% X5R 0201 COMMON	C1109 1uF 6.3V 20% X5R 0201 COMMON	C1083 4.7uF 6.3V 20% X6S 0603 COMMON	C1409 22uF 6.3V 20% X5R 0603W CHANGED	C1404 22uF 4V 20% X6S 0805 CHANGED		
C1082 1uF 6.3V 20% X5R 0201 COMMON	C1094 1uF 6.3V 20% X5R 0201 COMMON	C1101 1uF 6.3V 20% X5R 0201 COMMON	C1112 1uF 6.3V 20% X5R 0201 COMMON			
C1291 1uF 6.3V 20% X5R 0201 COMMON	C1292 1uF 6.3V 20% X5R 0201 COMMON	C1392 4.7uF 6.3V 20% X6S 0603 COMMON	C1394 4.7uF 6.3V 20% X6S 0603 COMMON			

PEX_TERMP BL44 PEX_TERMP 450HM_NETCLASS1 R867 2.49k 0402 1% COMMON

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PAGE DETAIL	PCI Express

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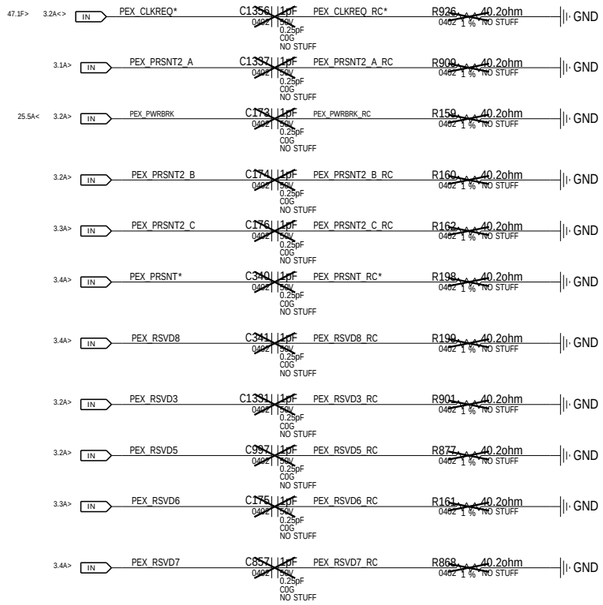
Page4: PCIE RC TERM



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PAGE DETAIL	PCIE_RC TERM

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Page5: MEMORY: GPU Partition A/B

2/22 FBA

G1
BGA2228
CHANGED

compatible

0	FBA_D<0>	U51	FBA_D0
1	FBA_D<1>	U48	FBA_D1
2	FBA_D<2>	U50	FBA_D2
3	FBA_D<3>	U49	FBA_D3
4	FBA_D<4>	R51	FBA_D4
5	FBA_D<5>	R50	FBA_D5
6	FBA_D<6>	R47	FBA_D6
7	FBA_D<7>	U46	FBA_D7
8	FBA_D<8>	V46	FBA_D8
9	FBA_D<9>	Y45	FBA_D9
10	FBA_D<10>	Y47	FBA_D10
11	FBA_D<11>	Y46	FBA_D11
12	FBA_D<12>	V50	FBA_D12
13	FBA_D<13>	V47	FBA_D13
14	FBA_D<14>	U52	FBA_D14
15	FBA_D<15>	V51	FBA_D15
16	FBA_D<16>	AJ44	FBA_D16
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43	FBA_D<43>	AT48	FBA_D43
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47	FBA_D<47>	AV49	FBA_D47
48	FBA_D<48>	AJ48	FBA_D48
49	FBA_D<49>	AJ46	FBA_D49
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53	FBA_D<53>	AM46	FBA_D53
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62	FBA_D<62>	AR47	FBA_D62
63	FBA_D<63>	AR46	FBA_D63

FB_DATA
FBA_D<63..0>

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3	FBA_DBI<3>	AC48	FBA_DQM3
4	FBA_DBI<4>	BB51	FBA_DQM4
5	FBA_DBI<5>	AV50	FBA_DQM5
6	FBA_DBI<6>	AM48	FBA_DQM6
7	FBA_DBI<7>	AR49	FBA_DQM7

FB_DBI
FBA_DBI<7..0>

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2	FBA_EDC<2>	AF44	FBA_DQS_WP2
3	FBA_EDC<3>	AA48	FBA_DQS_WP3
4	FBA_EDC<4>	BB52	FBA_DQS_WP4
5	FBA_EDC<5>	AT50	FBA_DQS_WP5
6	FBA_EDC<6>	AK48	FBA_DQS_WP6
7	FBA_EDC<7>	AR51	FBA_DQS_WP7

FB_EDC
FBA_EDC<7..0>

W45	GND	
W47	GND	
W49	GND	
W51	GND	
W6	GND	
W8	GND	
Y14	GND	
Y15	GND	

GND

1V8_FB_PLL → C895 1uF 6.3V 20% X5R 0201 COMMON; C1068 1uF 6.3V 20% X5R 0201 COMMON → GND

AF42 L29 → FB_REFPLL_AVDD0, FB_REFPLL_AVDD1

1V8_MAIN → LB1 300ohm COMMON BEAD_0603 → 1V8_FB_PLL

1V8_FB_PLL → C118 4.7uF 6.3V 20% X6S 0603 COMMON; C114 4.7uF 6.3V 20% X6S 0603 COMMON; C120 22uF 4V 20% X6S 0805 CHANGED → GND

1.8 V → OUT

Y51	FBA_CMD<0>	0	FBA_CMD0
Y52	FBA_CMD<1>	1	FBA_CMD1
Y49	FBA_CMD<2>	2	FBA_CMD2
AA52	FBA_CMD<3>	3	FBA_CMD3
AA51	FBA_CMD<4>	4	FBA_CMD4
AA50	FBA_CMD<5>	5	FBA_CMD5
AC50	FBA_CMD<6>	6	FBA_CMD6
AC51	FBA_CMD<7>	7	FBA_CMD7
AC52	FBA_CMD<8>	8	FBA_CMD8
AC49	FBA_CMD<9>	9	FBA_CMD9
AD52	FBA_CMD<10>	10	FBA_CMD10
AD51	FBA_CMD<11>	11	FBA_CMD11
AD50	FBA_CMD<12>	12	FBA_CMD12
AF50	FBA_CMD<13>	13	FBA_CMD13
AF51	FBA_CMD<14>	14	FBA_CMD14
AF52	FBA_CMD<15>	15	FBA_CMD15
AN50	FBA_CMD<16>	16	FBA_CMD16
AN51	FBA_CMD<17>	17	FBA_CMD17
AN52	FBA_CMD<18>	18	FBA_CMD18
AM49	FBA_CMD<19>	19	FBA_CMD19
AM52	FBA_CMD<20>	20	FBA_CMD20
AM51	FBA_CMD<21>	21	FBA_CMD21
AM50	FBA_CMD<22>	22	FBA_CMD22
AK50	FBA_CMD<23>	23	FBA_CMD23
AK51	FBA_CMD<24>	24	FBA_CMD24
AK52	FBA_CMD<25>	25	FBA_CMD25
AJ49	FBA_CMD<26>	26	FBA_CMD26
AJ52	FBA_CMD<27>	27	FBA_CMD27
AJ51	FBA_CMD<28>	28	FBA_CMD28
AJ50	FBA_CMD<29>	29	FBA_CMD29
AG50	FBA_CMD<30>	30	FBA_CMD30
AG51	FBA_CMD<31>	31	FBA_CMD31
AF49	FBA_CMD<32>	32	FBA_CMD32
AG52	FBA_CMD<33>	33	FBA_CMD33
Y50	FBA_DEBUG0		
AR50	FBA_DEBUG1		

FB_CMD
FBA_CMD<33..0>

FBA_CMD0 → R854 60.4ohm 0402 1 % NO STUFF
FBA_CMD35 → R858 60.4ohm 0402 1 % NO STUFF
→ FBVDDQ

AA44	SNN_FBA_DBG_RFU1	FBA_DBG_RFU1
AN44	SNN_FBA_DBG_RFU2	FBA_DBG_RFU2

AG45	FBA_CLK0	FB_CLK	FBA_CLK0
AG46	FBA_CLK0*	FB_CLK	FBA_CLK0
AK46	FBA_CLK1	FB_CLK	FBA_CLK1
AK45	FBA_CLK1*	FB_CLK	FBA_CLK1

U45	FBA_WCK01	FBA_WCK01	FBA_WCK01
U44	FBA_WCK01*	FBA_WCK01	FBA_WCK01
V45	FBA_WCKB01	FBA_WCKB01	FBA_WCKB01
V44	FBA_WCKB01*	FBA_WCKB01	FBA_WCKB01
AC45	FBA_WCK23	FBA_WCK23	FBA_WCK23
AC44	FBA_WCK23*	FBA_WCK23	FBA_WCK23
AD46	FBA_WCKB23	FBA_WCKB23	FBA_WCKB23
AD45	FBA_WCKB23*	FBA_WCKB23	FBA_WCKB23
AV47	FBA_WCK45	FBA_WCK45	FBA_WCK45
AV46	FBA_WCK45*	FBA_WCK45	FBA_WCK45
AW48	FBA_WCKB45	FBA_WCKB45	FBA_WCKB45
AW47	FBA_WCKB45*	FBA_WCKB45	FBA_WCKB45
AR45	FBA_WCK67	FBA_WCK67	FBA_WCK67
AR44	FBA_WCK67*	FBA_WCK67	FBA_WCK67
AT45	FBA_WCKB67	FBA_WCKB67	FBA_WCKB67
AT44	FBA_WCKB67*	FBA_WCKB67	FBA_WCKB67

FB_WCK → OUT 6.2C< 6.2C< 6.3C< 6.3C< 6.3D< 6.3D< 6.2D< 6.2D< 7.2C< 7.2C< 7.3C< 7.3C< 7.3D< 7.3D< 7.2D< 7.2D<

AN42 FBA_PLL_AVDD → 1V8_FB_PLL → IN 5.4A< 5.4H< 5.5C> 10.4D< 10.4H<

C1302 1uF 6.3V 20% X5R 0201 COMMON → GND

GDDR6 CMD Mapping

x16 Mode
Lower 0..31 DRAM1 CHA-Byte 0,1
Upper 32..63 DRAM2 CHA-Byte 4,5

CA0_A	CMD0	CMD20
CA1_A	CMD9	CMD28
CA2_A	CMD8	CMD21
CA3_A	CMD32	CMD29
CA4_A	CMD7	CMD23
CA5_A	CMD11	CMD27
CA6_A	CMD15	CMD30
CA7_A	CMD14	CMD31
CA8_A	CMD3	CMD19
CA9_A	CMD1	CMD17
CABI_A	CMD6	CMD22
CKE_A	CMD10	CMD26
	CHB-Byte 2,3	CHB-Byte 6,7
CA0_B	CMD4	CMD16
CA1_B	CMD12	CMD25
CA2_B	CMD5	CMD24
CA3_B	CMD13	CMD33
CA4_B	CMD7	CMD23
CA5_B	CMD11	CMD27
CA6_B	CMD15	CMD30
CA7_B	CMD14	CMD31
CA8_B	CMD3	CMD19
CA9_B	CMD1	CMD17
CABI_B	CMD6	CMD22
CKE_B	CMD10	CMD26
RESET*	CMD2	CMD18

FBVDDQ → R843 10k 1 % 0402 CHANGED (FBA_CMD<10>, FBA_CMD<26>); R842 10k 1 % 0402 CHANGED
R845 10k 1 % 0402 CHANGED (FBA_CMD<2>, FBA_CMD<18>); R844 10k 1 % 0402 CHANGED
→ GND

3/22 FBB

G1
BGA2228
CHANGED

0	FBB_D<0>	H32	FBB_D0
1	FBB_D<1>	D32	FBB_D1
2	FBB_D<2>	A33	FBB_D2
3	FBB_D<3>	B32	FBB_D3
4	FBB_D<4>	E32	FBB_D4
5	FBB_D<5>	G32	FBB_D5
6	FBB_D<6>	J30	FBB_D6
7	FBB_D<7>	F32	FBB_D7
8	FBB_D<8>	H36	FBB_D8
9	FBB_D<9>	G36	FBB_D9
10	FBB_D<10>	J36	FBB_D10
11	FBB_D<11>	F36	FBB_D11
12	FBB_D<12>	F33	FBB_D12
13	FBB_D<13>	D33	FBB_D13
14	FBB_D<14>	J32	FBB_D14
15	FBB_D<15>	G33	FBB_D15
16	FBB_D<16>	E45	FBB_D16
17	FBB_D<17>	D45	FBB_D17
18	FBB_D<18>	F45	FBB_D18
19	FBB_D<19>	G45	FBB_D19
20	FBB_D<20>	D42	FBB_D20
21	FBB_D<21>	E42	FBB_D21
22	FBB_D<22>	F42	FBB_D22
23	FBB_D<23>	H41	FBB_D23
24	FBB_D<24>	E41	FBB_D24
25	FBB_D<25>	F39	FBB_D25
26	FBB_D<26>	E39	FBB_D26
27	FBB_D<27>	D39	FBB_D27
28	FBB_D<28>	F38	FBB_D28
29	FBB_D<29>	E38	FBB_D29
30	FBB_D<30>	D36	FBB_D30
31	FBB_D<31>	E36	FBB_D31
32	FBB_D<32>	M50	FBB_D32
33	FBB_D<33>	P48	FBB_D33
34	FBB_D<34>	M51	FBB_D34
35	FBB_D<35>	M49	FBB_D35
36	FBB_D<36>	P47	FBB_D36
37	FBB_D<37>	P52	FBB_D37
38	FBB_D<38>	R46	FBB_D38
39	FBB_D<39>	P46	FBB_D39
40	FBB_D<40>	L50	FBB_D40
41	FBB_D<41>	L51	FBB_D41
42	FBB_D<42>	L52	FBB_D42
43	FBB_D<43>	L49	FBB_D43
44	FBB_D<44>	M46	FBB_D44
45	FBB_D<45>	L47	FBB_D45
46	FBB_D<46>	M48	FBB_D46
47	FBB_D<47>	M47	FBB_D47
48	FBB_D<48>	D48	FBB_D48
49	FBB_D<49>	C50	FBB_D49
50	FBB_D<50>	C48	FBB_D50
51	FBB_D<51>	C49	FBB_D51
52	FBB_D<52>	E49	FBB_D52
53	FBB_D<53>	E50	FBB_D53
54	FBB_D<54>	F49	FBB_D54
55	FBB_D<55>	F48	FBB_D55
56	FBB_D<56>	F50	FBB_D56
57	FBB_D<57>	D52	FBB_D57
58	FBB_D<58>	J50	FBB_D58
59	FBB_D<59>	H48	FBB_D59
60	FBB_D<60>	H51	FBB_D60
61	FBB_D<61>	J51	FBB_D61
62	FBB_D<62>	H49	FBB_D62
63	FBB_D<63>	H52	FBB_D63

FB_DATA
FBB_D<63..0>

0	FBB_DBI<0>	C32	FBB_DQM0
1	FBB_DBI<1>	E33	FBB_DQM1
2	FBB_DBI<2>	E44	FBB_DQM2
3	FBB_DBI<3>	G38	FBB_DQM3
4	FBB_DBI<4>	F49	FBB_DQM4
5	FBB_DBI<5>	L48	FBB_DQM5
6	FBB_DBI<6>	D50	FBB_DQM6
7	FBB_DBI<7>	H50	FBB_DQM7

FB_DBI
FBB_DBI<7..0>

0	FBB_EDC<0>	B33	FBB_DQS_WP0
1	FBB_EDC<1>	E35	FBB_DQS_WP1
2	FBB_EDC<2>	G44	FBB_DQS_WP2
3	FBB_EDC<3>	H38	FBB_DQS_WP3
4	FBB_EDC<4>	P50	FBB_DQS_WP4
5	FBB_EDC<5>	J48	FBB_DQS_WP5
6	FBB_EDC<6>	D51	FBB_DQS_WP6
7	FBB_EDC<7>	F51	FBB_DQS_WP7

FB_EDC
FBB_EDC<7..0>

Y16	GND	
Y17	GND	
Y18	GND	
Y19	GND	
Y20	GND	
Y21	GND	
Y22	GND	
Y23	GND	

GND

B35	FBB_CMD<0>	0	FBB_CMD0
A35	FBB_CMD<1>	1	FBB_CMD1
D35	FBB_CMD<2>	2	FBB_CMD2
A36	FBB_CMD<3>	3	FBB_CMD3
B36	FBB_CMD<4>	4	FBB_CMD4
C36	FBB_CMD<5>	5	FBB_CMD5
C38	FBB_CMD<6>	6	FBB_CMD6
B38	FBB_CMD<7>	7	FBB_CMD7
A38	FBB_CMD<8>	8	FBB_CMD8
D38	FBB_CMD<9>	9	FBB_CMD9
A39	FBB_CMD<10>	10	FBB_CMD10
B39	FBB_CMD<11>	11	FBB_CMD11
C39	FBB_CMD<12>	12	FBB_CMD12
C41	FBB_CMD<13>	13	FBB_CMD13
B41	FBB_CMD<14>	14	FBB_CMD14
A41	FBB_CMD<15>	15	FBB_CMD15
B49	FBB_CMD<16>	16	FBB_CMD16
A49	FBB_CMD<17>	17	FBB_CMD17
A48	FBB_CMD<18>	18	FBB_CMD18
D47	FBB_CMD<19>	19	FBB_CMD19
A47	FBB_CMD<20>	20	FBB_CMD20
B47	FBB_CMD<21>	21	FBB_CMD21
C47	FBB_CMD<22>	22	FBB_CMD22
C45	FBB_CMD<23>	23	FBB_CMD23
B45	FBB_CMD<24>	24	FBB_CMD24
A45	FBB_CMD<25>	25	FBB_CMD25
D44	FBB_CMD<26>	26	FBB_CMD26
A44	FBB_CMD<27>	27	FBB_CMD27
B44	FBB_CMD<28>	28	FBB_CMD28
C44	FBB_CMD<29>	29	FBB_CMD29
C42	FBB_CMD<30>	30	FBB_CMD30
B42	FBB_CMD<31>	31	FBB_CMD31
D41	FBB_CMD<32>	32	FBB_CMD32
A42	FBB_CMD<33>	33	FBB_CMD33
C35	FBB_DEBUG0		
B50	FBB_DEBUG1		

FB_CMD
FBB_CMD<33..0>

FBB_CMD0 → R875 60.4ohm 0402 1 % NO STUFF
FBB_CMD35 → R865 60.4ohm 0402 1 % NO STUFF
→ FBVDDQ

J35	SNN_FBB_DBG_RFU1	FBB_DBG_RFU1
J41	SNN_FBB_DBG_RFU2	FBB_DBG_RFU2

H42	FBB_CLK0	FB_CLK	FBB_CLK0
G42	FBB_CLK0*	FB_CLK	FBB_CLK0
F47	FBB_CLK1	FB_CLK	FBB_CLK1
E47	FBB_CLK1*	FB_CLK	FBB_CLK1

J33	FBB_WCK01	FBB_WCK01	FBB_WCK01
H33	FBB_WCK01*	FBB_WCK01	FBB_WCK01
J35	FBB_WCKB01	FBB_WCKB01	FBB_WCKB01
H35	FBB_WCKB01*	FBB_WCKB01	FBB_WCKB01
J39	FBB_WCK23	FBB_WCK23	FBB_WCK23
H39	FBB_WCK23*	FBB_WCK23	FBB_WCK23
F41	FBB_WCKB23	FBB_WCKB23	FBB_WCKB23
G41	FBB_WCKB23*	FBB_WCKB23	FBB_WCKB23
L46	FBB_WCK45	FBB_WCK45	FBB_WCK45
L45	FBB_WCK45*	FBB_WCK45	FBB_WCK45
M44	FBB_WCKB45	FBB_WCKB45	FBB_WCKB45
M45	FBB_WCKB45*	FBB_WCKB45	FBB_WCKB45
H47	FBB_WCK67	FBB_WCK67	FBB_WCK67
H46	FBB_WCK67*	FBB_WCK67	FBB_WCK67
J47	FBB_WCKB67	FBB_WCKB67	FBB_WCKB67
J46	FBB_WCKB67*	FBB_WCKB67	FBB_WCKB67

FB_WCK → OUT 8.2C< 8.2C< 8.3C< 8.3C< 8.3D< 8.3D< 8.2D< 8.2D< 9.2C< 9.3C< 9.3C< 9.3D< 9.3D< 9.3E< 9.3E< 9.3E<

FBB_PLL_AVDD → 1V8_FB_PLL → IN 5.4A< 5.4C< 5.5C> 10.4D< 10.4H<

C1248 1uF 6.3V 20% X5R 0201 COMMON → GND

FBVDDQ → R874 10k 1 % 0402 CHANGED (FBB_CMD<10>, FBB_CMD<26>); R852 10k 1 % 0402 CHANGED
R853 10k 1 % 0402 CHANGED (FBB_CMD<2>, FBB_CMD<18>); R876 10k 1 % 0402 CHANGED
→ GND

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PAGE DETAIL	MEMORY: GPU FB_AB

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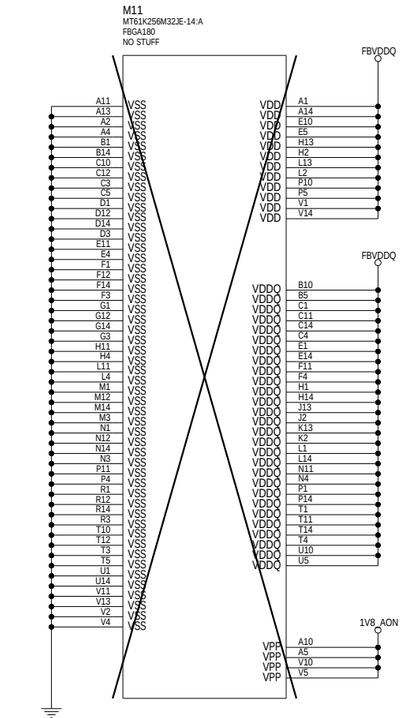
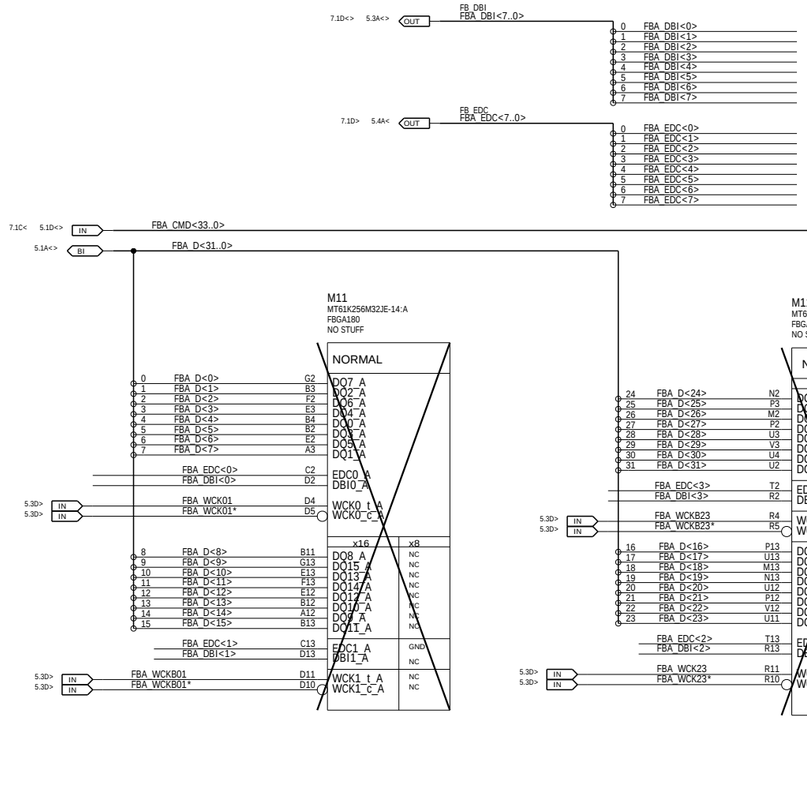
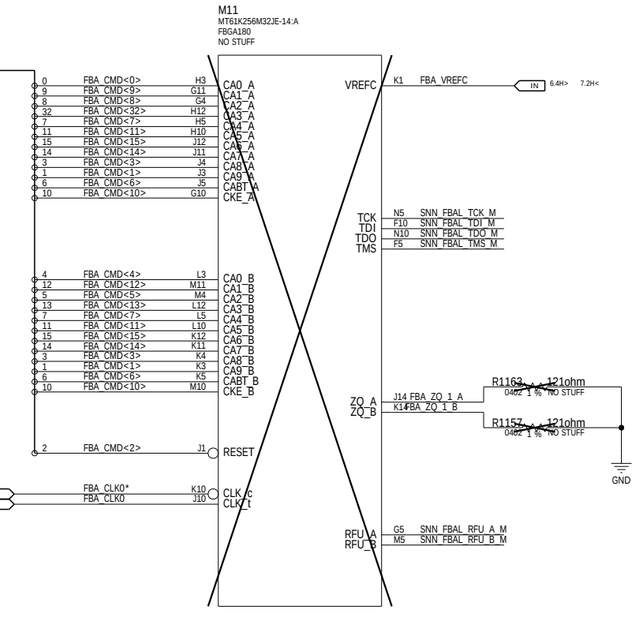
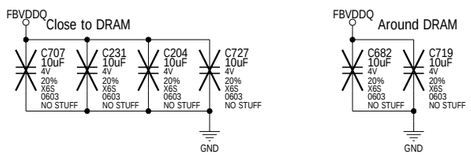
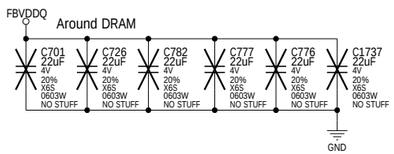
Page6: MEMORY: FBA Partition 31..0

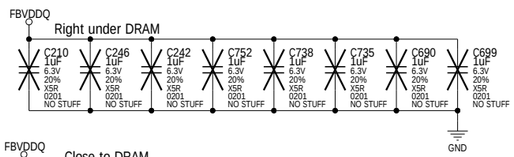


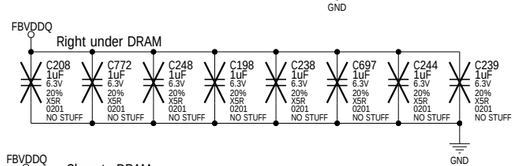


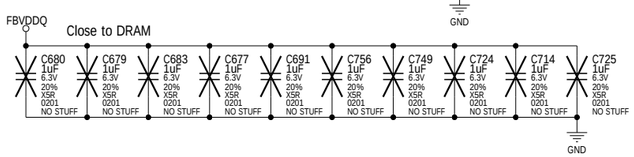


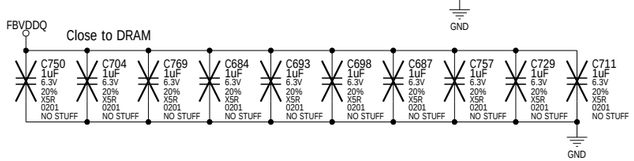




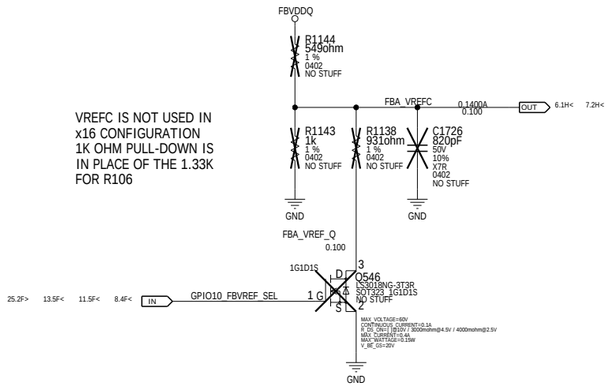


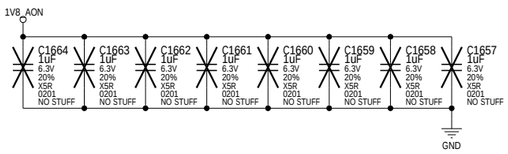






VREFC IS NOT USED IN
x16 CONFIGURATION
1K OHM PULL-DOWN IS
IN PLACE OF THE 1.33K
FOR R106





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MEMORY: FBA[31:0]

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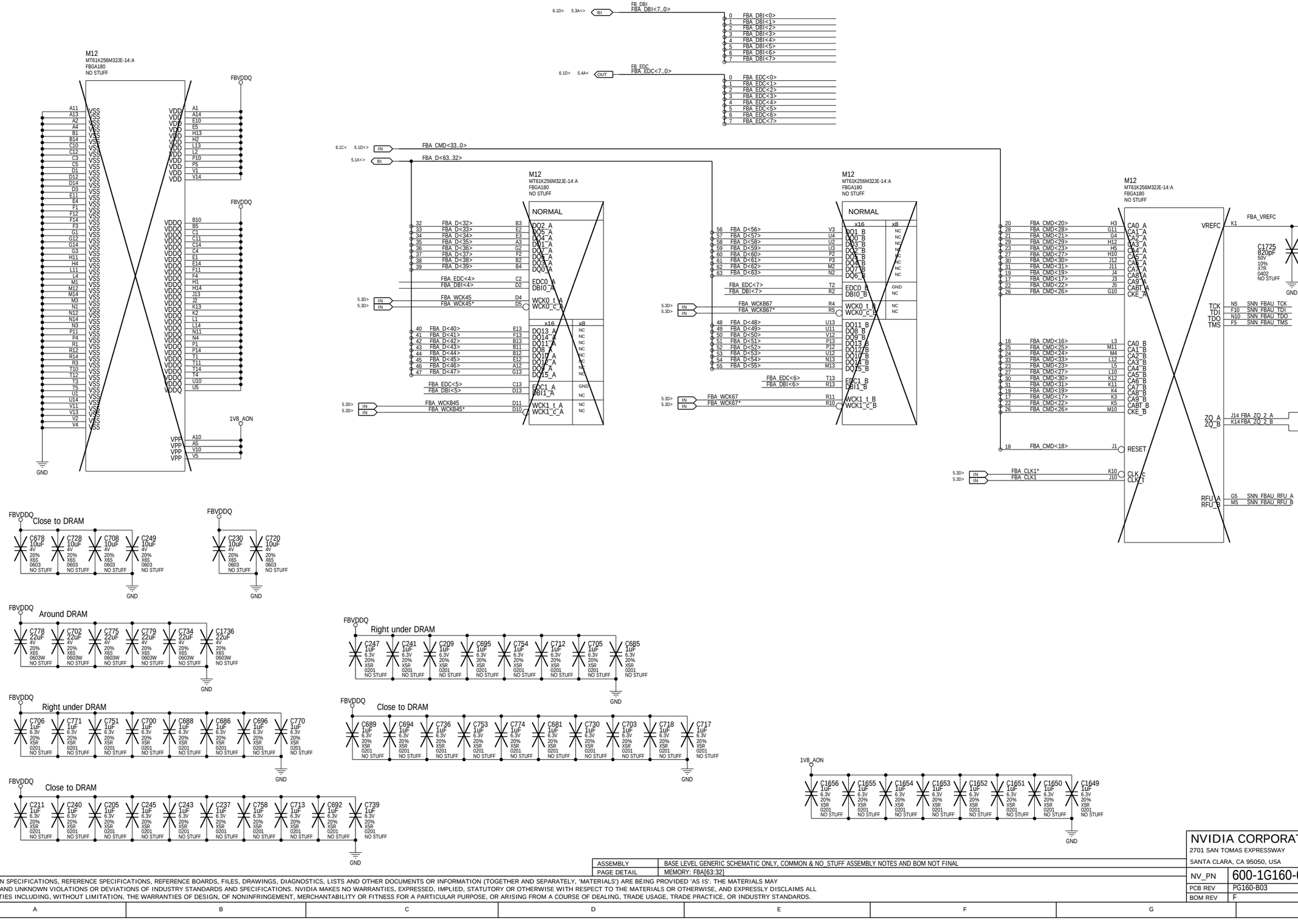
Page7: MEMORY: FBA Partition 63..32



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PAGE DETAIL	MEMORY: FBA[63:32]

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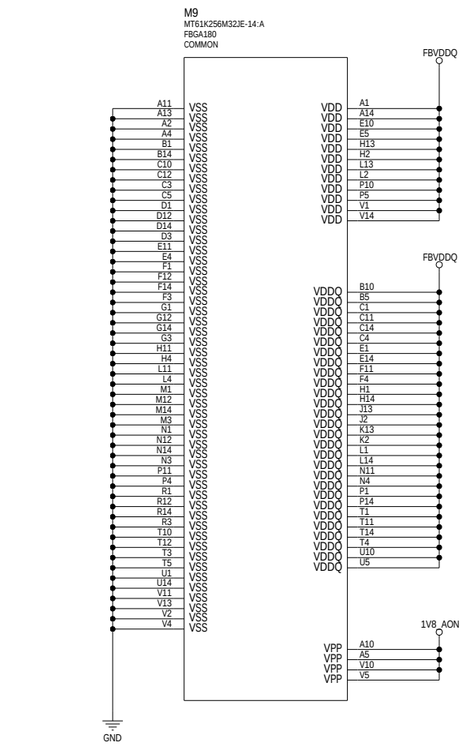
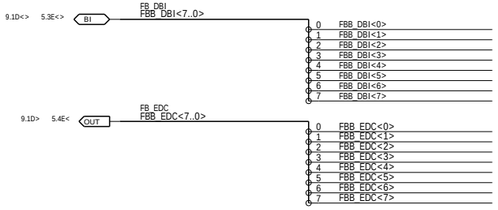
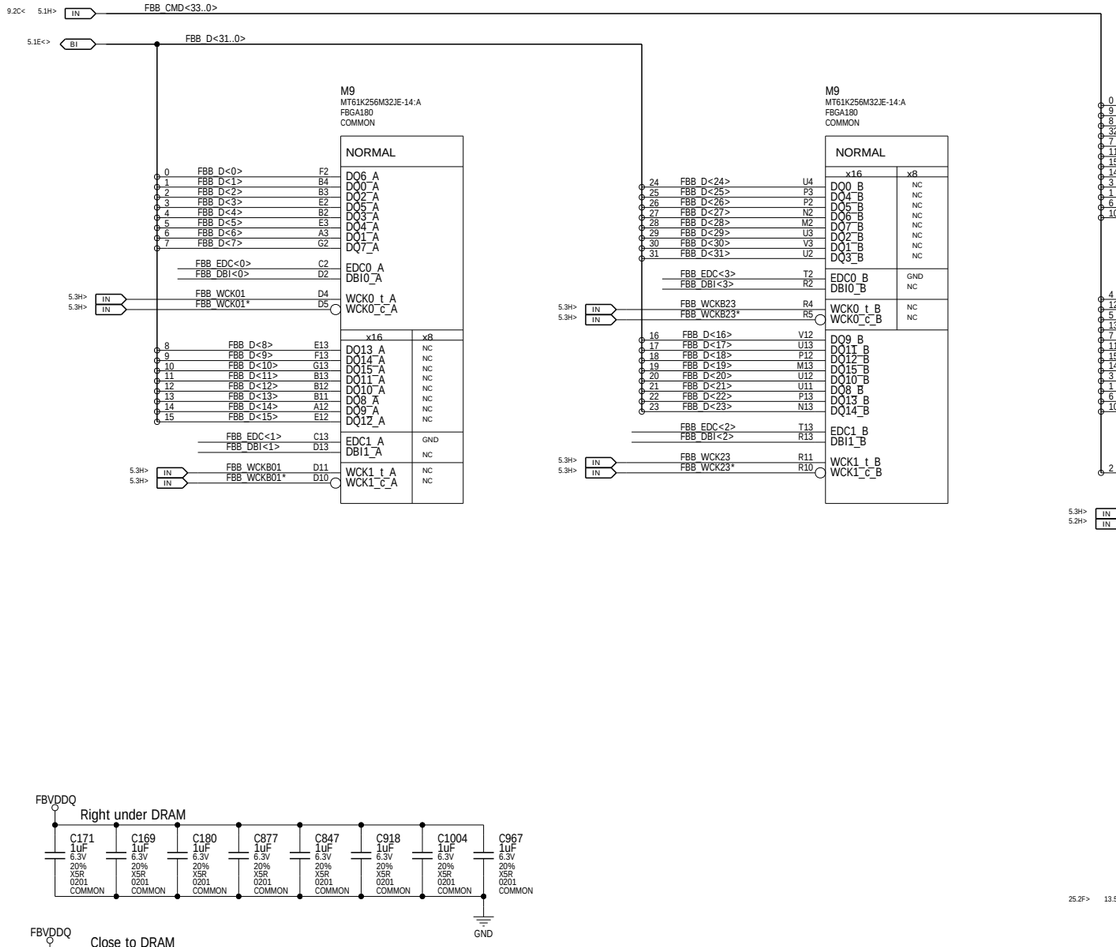
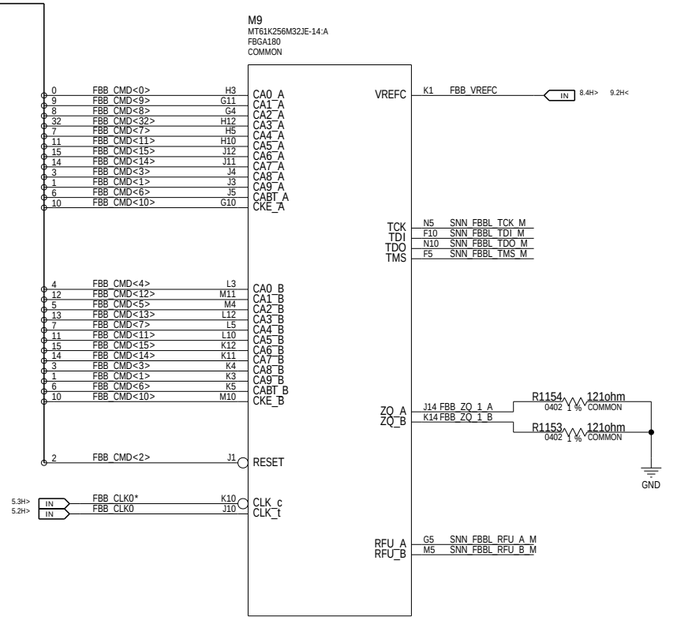
PCB REV	PG160-B03	PAGE	7 OF 53
BOM REV	F	DATE	12-NOV-2018

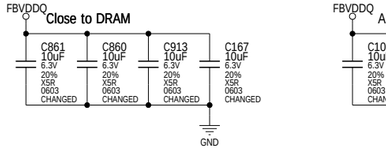
Page8: MEMORY: FBB Partition 31..0

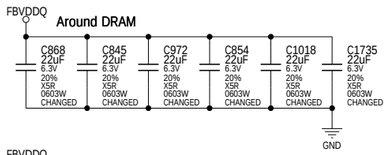


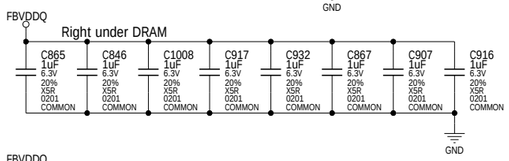


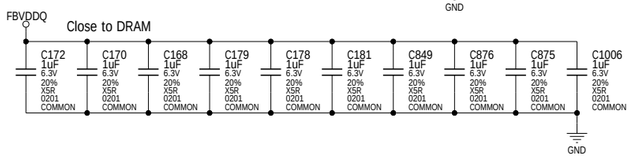


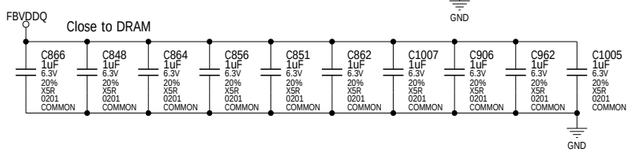


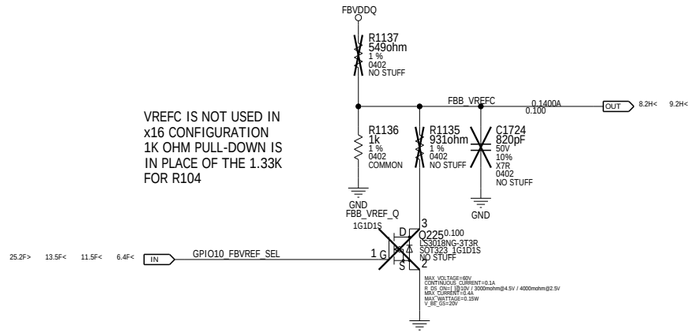


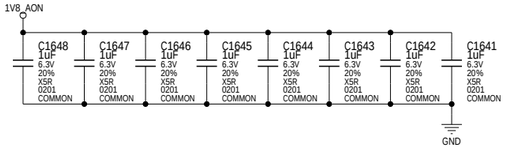












ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MEMORY: FBB[31:0]

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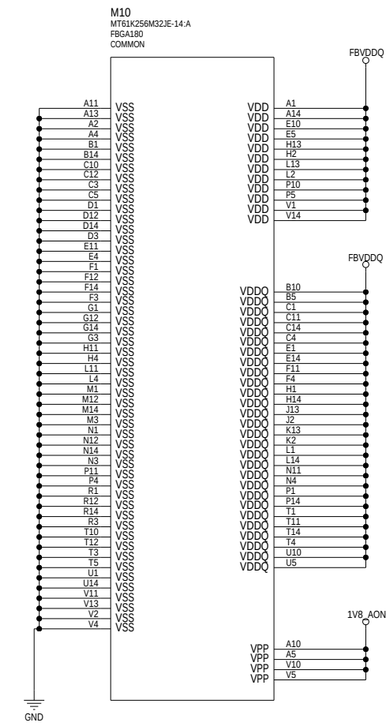
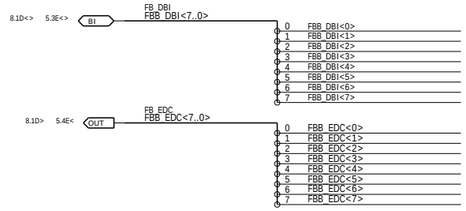
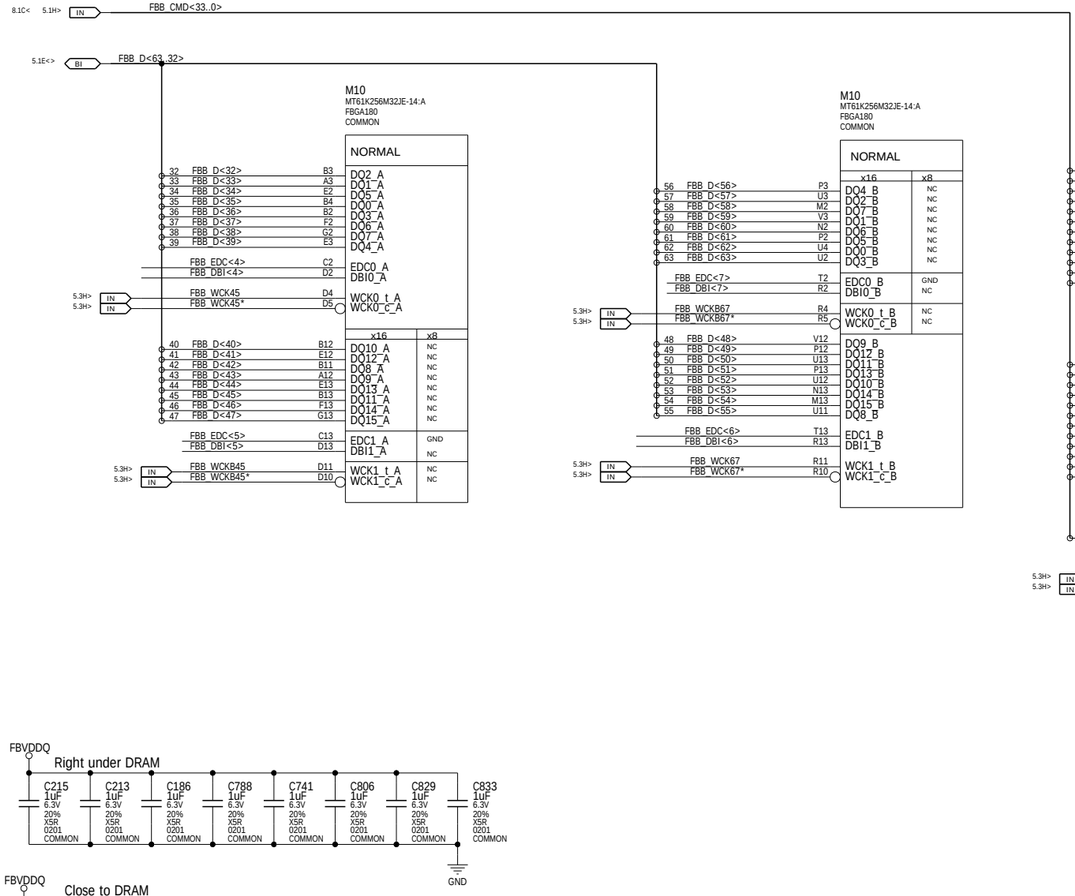
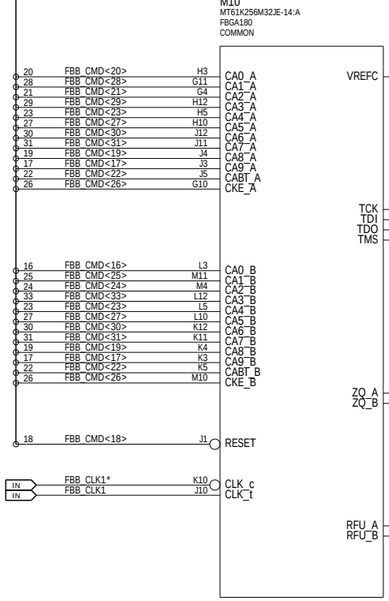
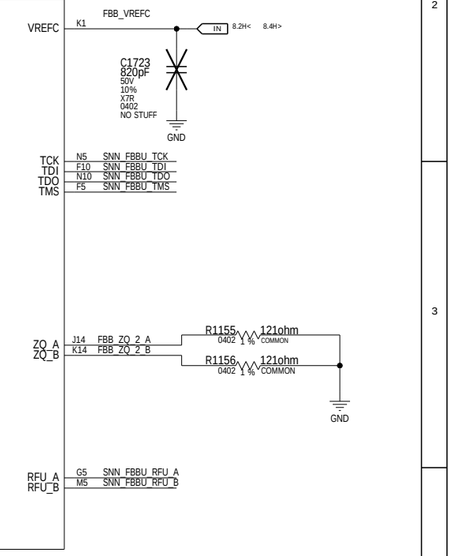
Page9: MEMORY: FBB Partition 63..32

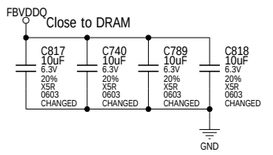


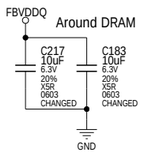


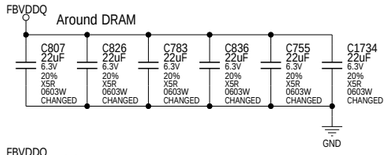


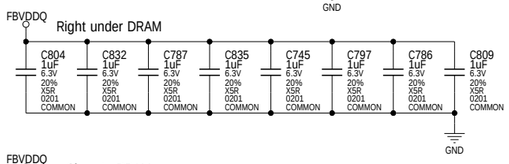


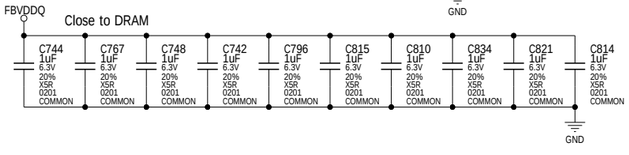


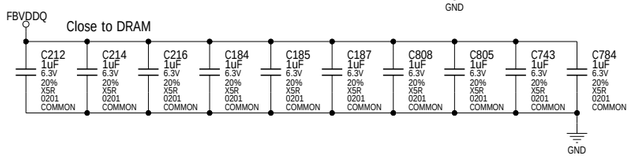


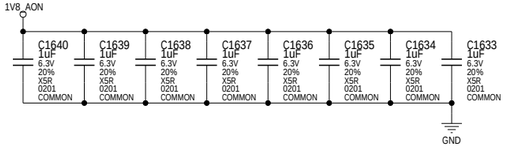












ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MEMORY: FBB[63:32]

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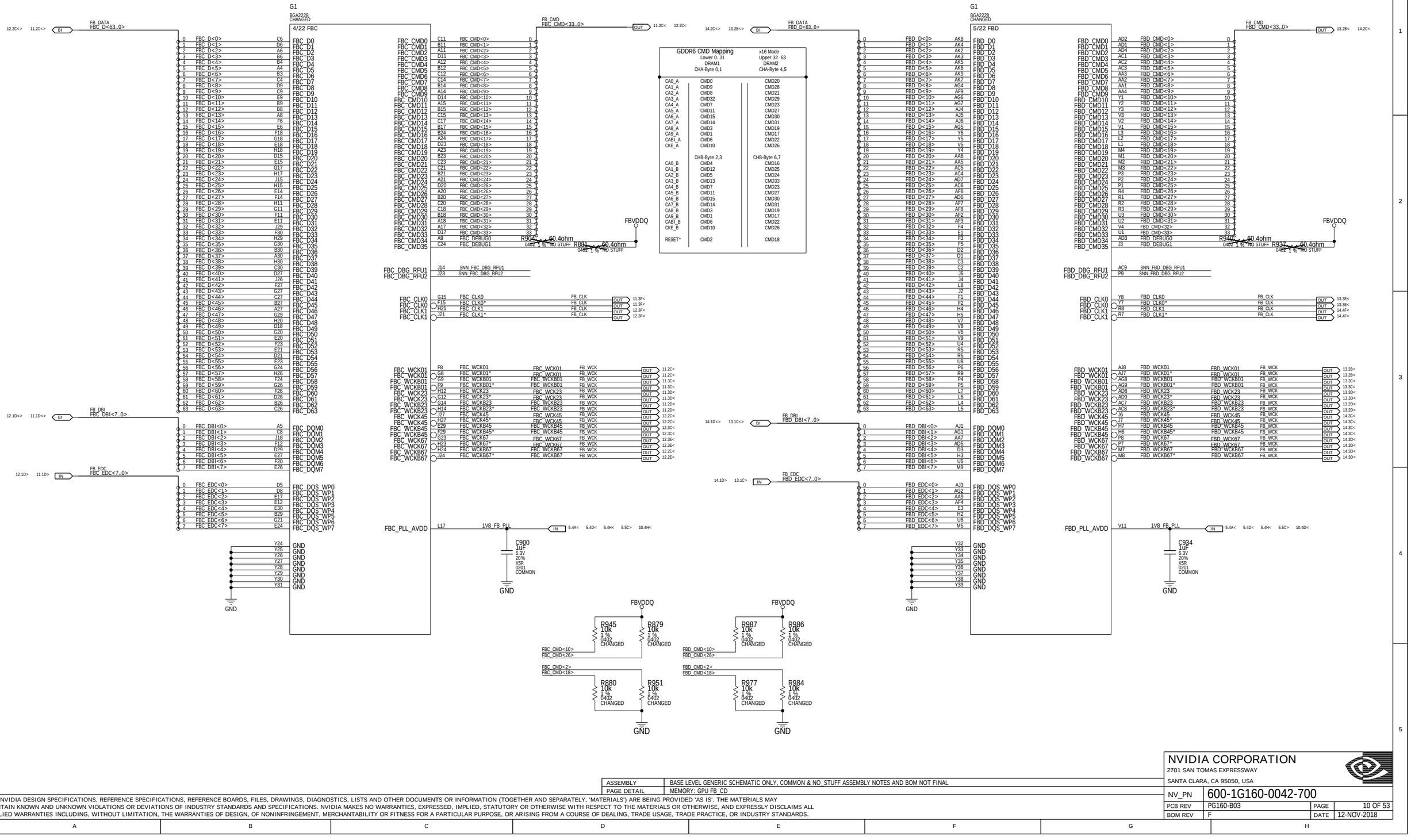
Page10: MEMORY: GPU Partition C/D



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MEMORY: GPU FB_CD

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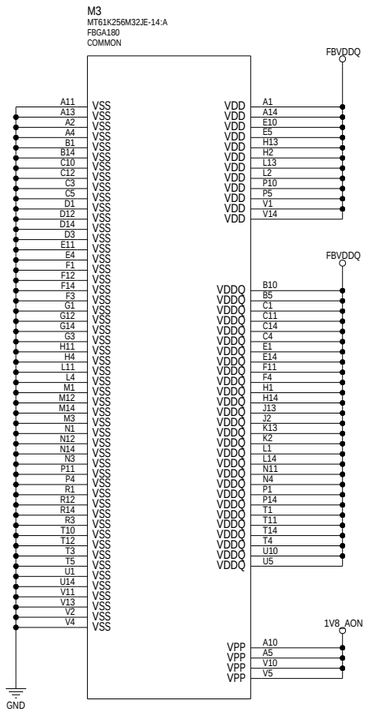
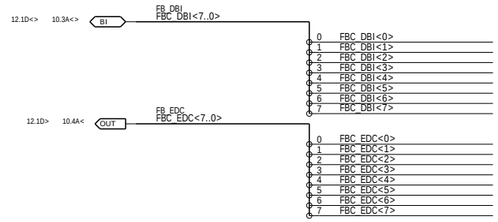
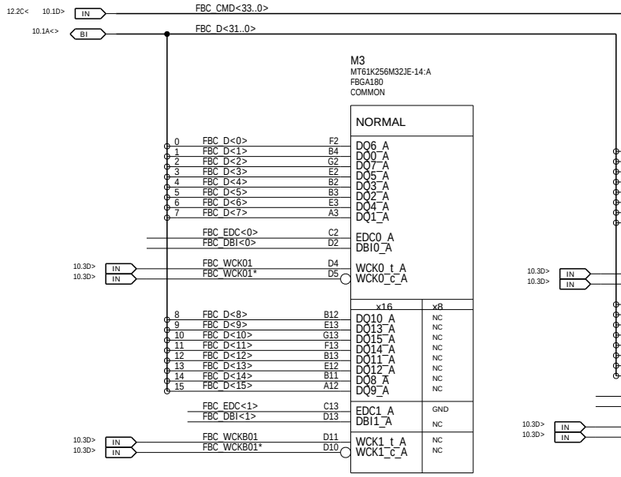
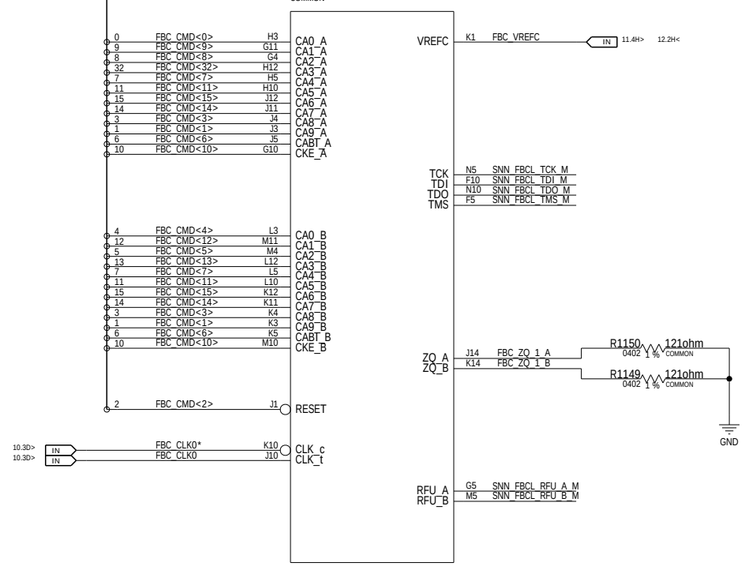
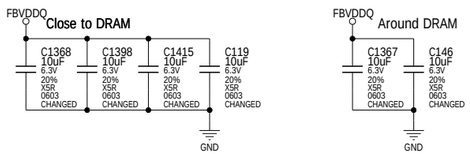
Page11: MEMORY: FBC Partition 31..0

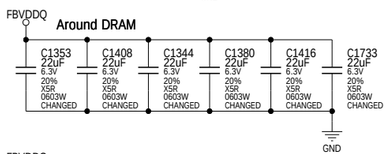


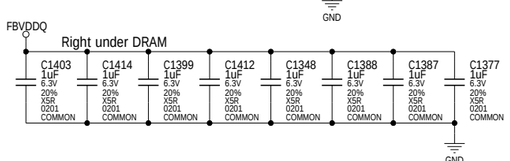


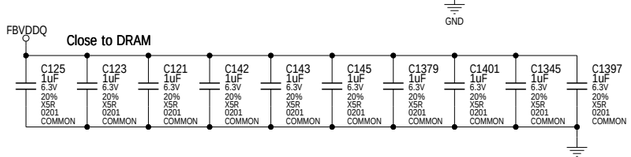


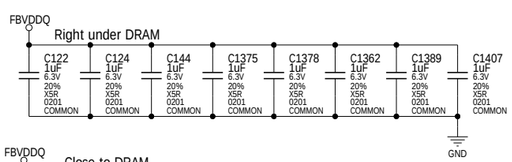


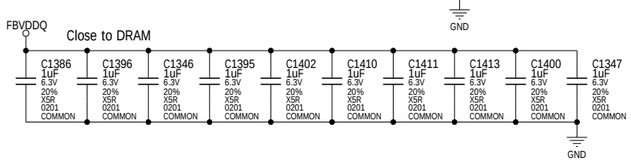




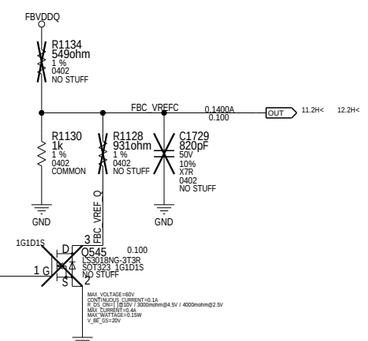


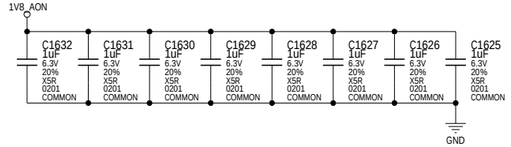






VREFC IS NOT USED IN x16 CONFIGURATION
1K OHM PULL-DOWN IS IN PLACE OF THE 1.33K FOR R75





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PAGE DETAIL	MEMORY: FBC[31:0]

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Page12: MEMORY: FBC Partition 63..32

M4
MT61K256M32JE-14:A
FBGA180
COMMON

FBVDDQ

VSS: A11, A13, A2, A4, B1, B14, C10, C12, C3, C5, D1, D12, D14, D3, E11, E4, F1, F12, F14, F3, G1, G12, G14, G3, H11, H4, L11, L4, M1, M12, M14, M3, N1, N12, N14, N3, P11, P4, R1, R12, R14, R3, T10, T12, T3, T5, U1, U14, V11, V13, V2, V4

VDD: A1, A14, E10, E5, H13, H2, L13, L2, P10, P5, V1, V14

FBVDDQ

VDDQ: B10, B5, C1, C11, C14, C4, E1, E14, F11, F4, H1, H14, J13, J2, K13, K2, L1, L14, N11, N4, P1, P14, T1, T11, T14, T4, U10, U5

1V8_AON

VPP: A10, A5, V10, V5

GND

11.1D<> 10.3A<> BI FB_DBI
FBC_DBI<7..0>

0 FBC_DBI<0>
1 FBC_DBI<1>
2 FBC_DBI<2>
3 FBC_DBI<3>
4 FBC_DBI<4>
5 FBC_DBI<5>
6 FBC_DBI<6>
7 FBC_DBI<7>

11.1D> 10.4A< OUT FB_EDC
FBC_EDC<7..0>

0 FBC_EDC<0>
1 FBC_EDC<1>
2 FBC_EDC<2>
3 FBC_EDC<3>
4 FBC_EDC<4>
5 FBC_EDC<5>
6 FBC_EDC<6>
7 FBC_EDC<7>

11.2C< 10.1D> IN FBC_CMD<33..0>

10.1A<> BI FBC_D<63..32>

M4
MT61K256M32JE-14:A
FBGA180
COMMON

NORMAL

32	FBC_D<32>	E2	DQ5_A
33	FBC_D<33>	F2	DQ6_A
34	FBC_D<34>	A3	DQ1_A
35	FBC_D<35>	E3	DQ4_A
36	FBC_D<36>	B3	DQ2_A
37	FBC_D<37>	G2	DQ7_A
38	FBC_D<38>	B4	DQ0_A
39	FBC_D<39>	B2	DQ3_A
	FBC_EDC<4>	C2	EDC0_A
	FBC_DBI<4>	D2	DBI0_A
10.3D> IN	FBC_WCK45	D4	WCK0_t_A
10.3D> IN	FBC_WCK45*	D5	WCK0_c_A

x16			x8
40	FBC_D<40>	B11	DQ8_A
41	FBC_D<41>	G13	DQ15_A
42	FBC_D<42>	B13	DQ11_A
43	FBC_D<43>	A12	DQ9_A
44	FBC_D<44>	E12	DQ12_A
45	FBC_D<45>	E13	DQ13_A
46	FBC_D<46>	B12	DQ10_A
47	FBC_D<47>	F13	DQ14_A
	FBC_EDC<5>	C13	EDC1_A
	FBC_DBI<5>	D13	DBI1_A
10.3D> IN	FBC_WCKB45	D11	WCK1_t_A
10.3D> IN	FBC_WCKB45*	D10	WCK1_c_A

M4
MT61K256M32JE-14:A
FBGA180
COMMON

NORMAL

			x16	x8
56	FBC_D<56>	U4	DQ0_B	NC
57	FBC_D<57>	V3	DQ1_B	NC
58	FBC_D<58>	U3	DQ2_B	NC
59	FBC_D<59>	U2	DQ3_B	NC
60	FBC_D<60>	P3	DQ4_B	NC
61	FBC_D<61>	P2	DQ5_B	NC
62	FBC_D<62>	N2	DQ6_B	NC
63	FBC_D<63>	M2	DQ7_B	NC
	FBC_EDC<7>	T2	EDC0_B	GND
	FBC_DBI<7>	R2	DBI0_B	NC
10.3D> IN	FBC_WCKB67	R4	WCK0_t_B	NC
10.3D> IN	FBC_WCKB67*	R5	WCK0_c_B	NC

48	FBC_D<48>	U12	DQ10_B
49	FBC_D<49>	U13	DQ11_B
50	FBC_D<50>	V12	DQ9_B
51	FBC_D<51>	U11	DQ8_B
52	FBC_D<52>	P13	DQ13_B
53	FBC_D<53>	P12	DQ12_B
54	FBC_D<54>	M13	DQ15_B
55	FBC_D<55>	N13	DQ14_B
	FBC_EDC<6>	T13	EDC1_B
	FBC_DBI<6>	R13	DBI1_B
10.3D> IN	FBC_WCK67	R11	WCK1_t_B
10.3D> IN	FBC_WCK67*	R10	WCK1_c_B

M4
MT61K256M32JE-14:A
FBGA180
COMMON

20	FBC_CMD<20>	H3	CA0_A
28	FBC_CMD<28>	G11	CA1_A
21	FBC_CMD<21>	G4	CA2_A
29	FBC_CMD<29>	H12	CA3_A
23	FBC_CMD<23>	H5	CA4_A
27	FBC_CMD<27>	H10	CA5_A
30	FBC_CMD<30>	J12	CA6_A
31	FBC_CMD<31>	J11	CA7_A
19	FBC_CMD<19>	J4	CA8_A
17	FBC_CMD<17>	J3	CA9_A
22	FBC_CMD<22>	J5	CABT_A
26	FBC_CMD<26>	G10	CKE_A
16	FBC_CMD<16>	L3	CA0_B
25	FBC_CMD<25>	M11	CA1_B
24	FBC_CMD<24>	M4	CA2_B
33	FBC_CMD<33>	L12	CA3_B
23	FBC_CMD<23>	L5	CA4_B
27	FBC_CMD<27>	L10	CA5_B
30	FBC_CMD<30>	K12	CA6_B
31	FBC_CMD<31>	K11	CA7_B
19	FBC_CMD<19>	K4	CA8_B
17	FBC_CMD<17>	K3	CA9_B
22	FBC_CMD<22>	K5	CABT_B
26	FBC_CMD<26>	M10	CKE_B
18	FBC_CMD<18>	J1	RESET
10.3D> IN	FBC_CLK1*	K10	CLK_c
10.3D> IN	FBC_CLK1	J10	CLK_t

VREFC K1 FBC_VREFC
IN 11.2H< 11.4H>

C1722
820pF
50V
10%
X7R
0402
NO STUFF

GND

TCK	N5	SNN_FBCU_TCK
TDI	F10	SNN_FBCU_TDI
TDO	N10	SNN_FBCU_TDO
TMS	F5	SNN_FBCU_TMS

ZQ_A J14 FBC_ZQ_2_A
ZQ_B K14 FBC_ZQ_2_B

R1152 121ohm 0402 1% COMMON
R1151 121ohm 0402 1% COMMON

GND

RFU_A G5 SNN_FBCU_RFU_A
RFU_B M5 SNN_FBCU_RFU_B

FBVDDQ
Close to DRAM

C1149 10uF 6.3V 20% X5R 0603 CHANGED
C1253 10uF 6.3V 20% X5R 0603 CHANGED
C1252 10uF 6.3V 20% X5R 0603 CHANGED
C148 10uF 6.3V 20% X5R 0603 CHANGED

GND

FBVDDQ
Around DRAM

C1055 10uF 6.3V 20% X5R 0603 CHANGED
C1140 10uF 6.3V 20% X5R 0603 CHANGED

GND

FBVDDQ
Around DRAM

C1130 22uF 6.3V 20% X5R 0603W CHANGED
C1228 22uF 6.3V 20% X5R 0603W CHANGED
C1319 22uF 6.3V 20% X5R 0603W CHANGED
C1087 22uF 6.3V 20% X5R 0603W CHANGED
C1283 22uF 6.3V 20% X5R 0603W CHANGED
C1732 22uF 6.3V 20% X5R 0603W CHANGED

GND

FBVDDQ
Right under DRAM

C153 1uF 6.3V 20% X5R 0201 COMMON
C163 1uF 6.3V 20% X5R 0201 COMMON
C165 1uF 6.3V 20% X5R 0201 COMMON
C1061 1uF 6.3V 20% X5R 0201 COMMON
C1062 1uF 6.3V 20% X5R 0201 COMMON
C1060 1uF 6.3V 20% X5R 0201 COMMON
C1314 1uF 6.3V 20% X5R 0201 COMMON
C1164 1uF 6.3V 20% X5R 0201 COMMON

GND

FBVDDQ
Right under DRAM

C1316 1uF 6.3V 20% X5R 0201 COMMON
C1237 1uF 6.3V 20% X5R 0201 COMMON
C1213 1uF 6.3V 20% X5R 0201 COMMON
C1212 1uF 6.3V 20% X5R 0201 COMMON
C1313 1uF 6.3V 20% X5R 0201 COMMON
C1058 1uF 6.3V 20% X5R 0201 COMMON
C1147 1uF 6.3V 20% X5R 0201 COMMON
C1059 1uF 6.3V 20% X5R 0201 COMMON

GND

FBVDDQ
Close to DRAM

C1063 1uF 6.3V 20% X5R 0201 COMMON
C1165 1uF 6.3V 20% X5R 0201 COMMON
C1315 1uF 6.3V 20% X5R 0201 COMMON
C1266 1uF 6.3V 20% X5R 0201 COMMON
C1235 1uF 6.3V 20% X5R 0201 COMMON
C1057 1uF 6.3V 20% X5R 0201 COMMON
C1227 1uF 6.3V 20% X5R 0201 COMMON
C1214 1uF 6.3V 20% X5R 0201 COMMON
C1244 1uF 6.3V 20% X5R 0201 COMMON
C1251 1uF 6.3V 20% X5R 0201 COMMON

GND

FBVDDQ
Close to DRAM

C152 1uF 6.3V 20% X5R 0201 COMMON
C151 1uF 6.3V 20% X5R 0201 COMMON
C166 1uF 6.3V 20% X5R 0201 COMMON
C150 1uF 6.3V 20% X5R 0201 COMMON
C164 1uF 6.3V 20% X5R 0201 COMMON
C162 1uF 6.3V 20% X5R 0201 COMMON
C1236 1uF 6.3V 20% X5R 0201 COMMON
C1141 1uF 6.3V 20% X5R 0201 COMMON
C1144 1uF 6.3V 20% X5R 0201 COMMON
C1132 1uF 6.3V 20% X5R 0201 COMMON

GND

1V8_AON

C1624 1uF 6.3V 20% X5R 0201 COMMON
C1623 1uF 6.3V 20% X5R 0201 COMMON
C1622 1uF 6.3V 20% X5R 0201 COMMON
C1621 1uF 6.3V 20% X5R 0201 COMMON
C1620 1uF 6.3V 20% X5R 0201 COMMON
C1619 1uF 6.3V 20% X5R 0201 COMMON
C1618 1uF 6.3V 20% X5R 0201 COMMON
C1617 1uF 6.3V 20% X5R 0201 COMMON

GND

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MEMORY: FBC[63:32]

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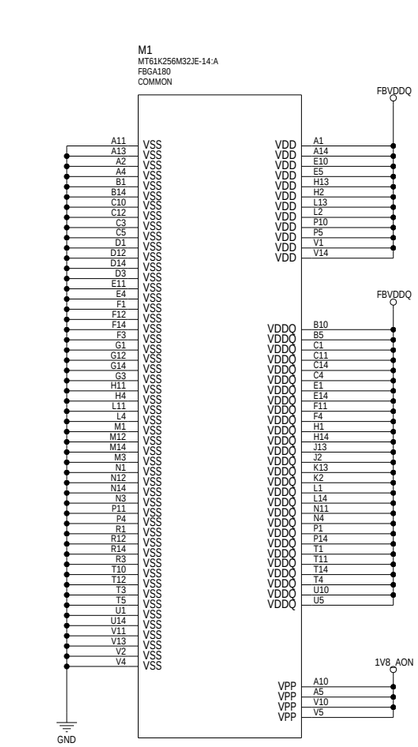
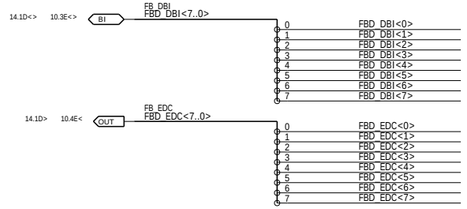
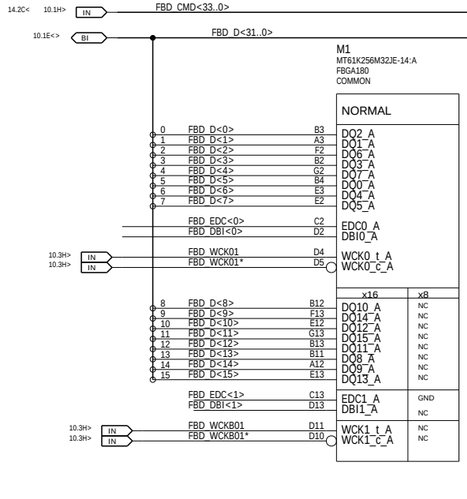
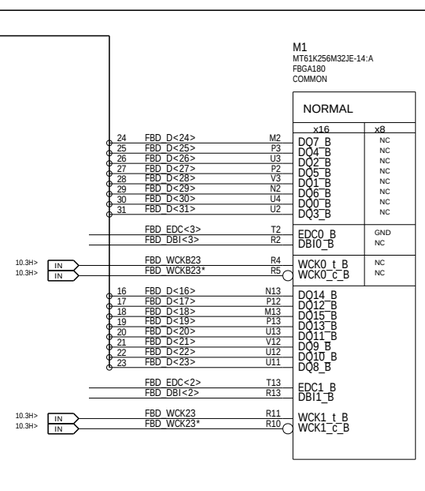
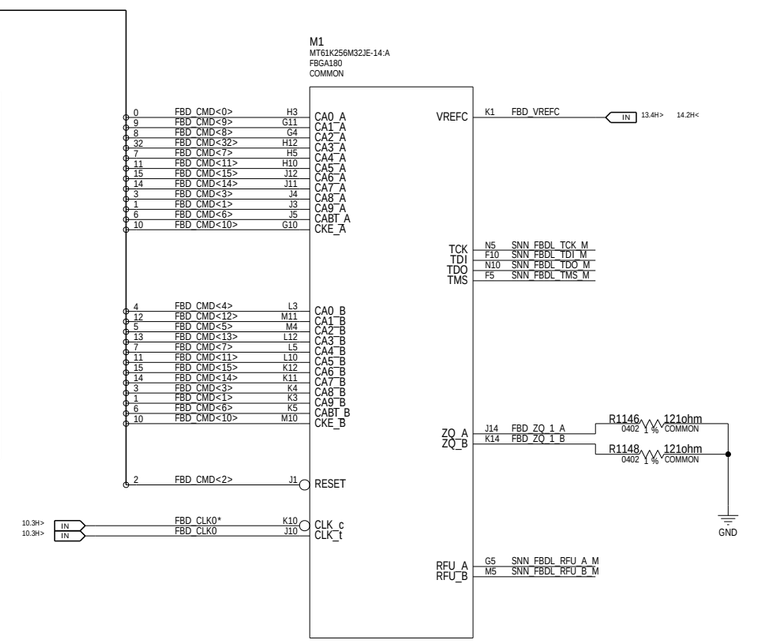
Page13: MEMORY: FBD Partition 31..0

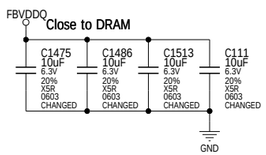


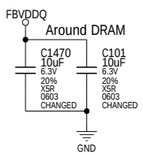


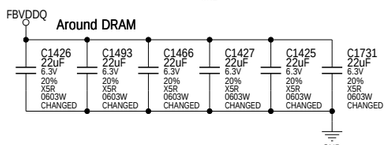


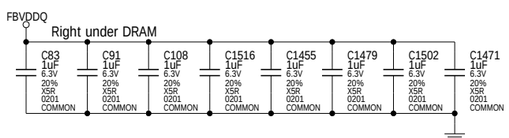


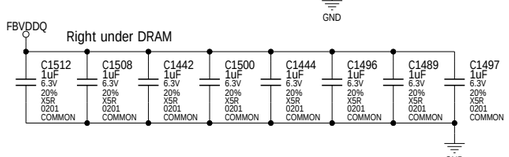


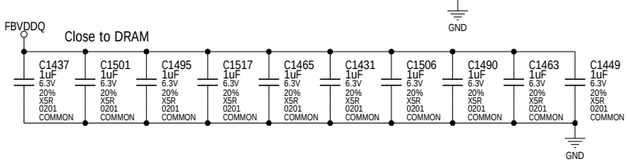


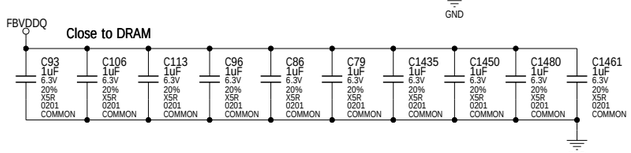


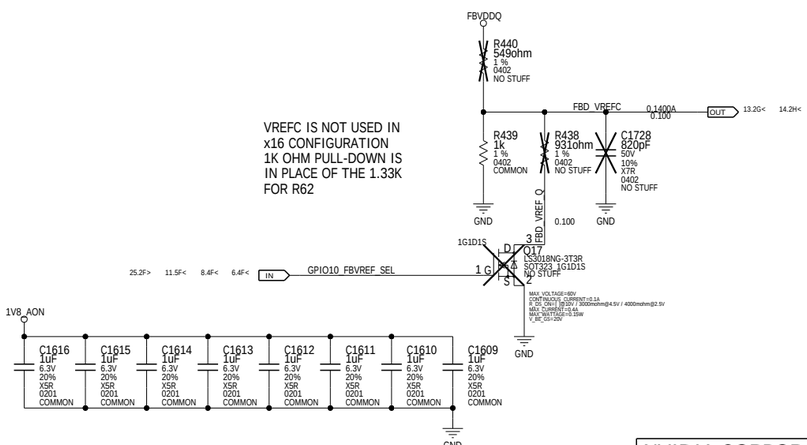












VREFC IS NOT USED IN
x16 CONFIGURATION
1K OHM PULL-DOWN IS
IN PLACE OF THE 1.33K
FOR R62

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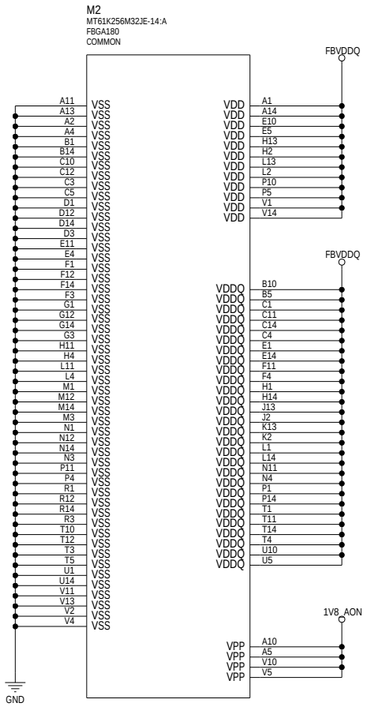
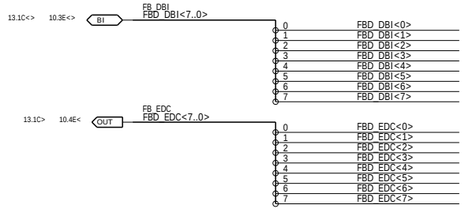
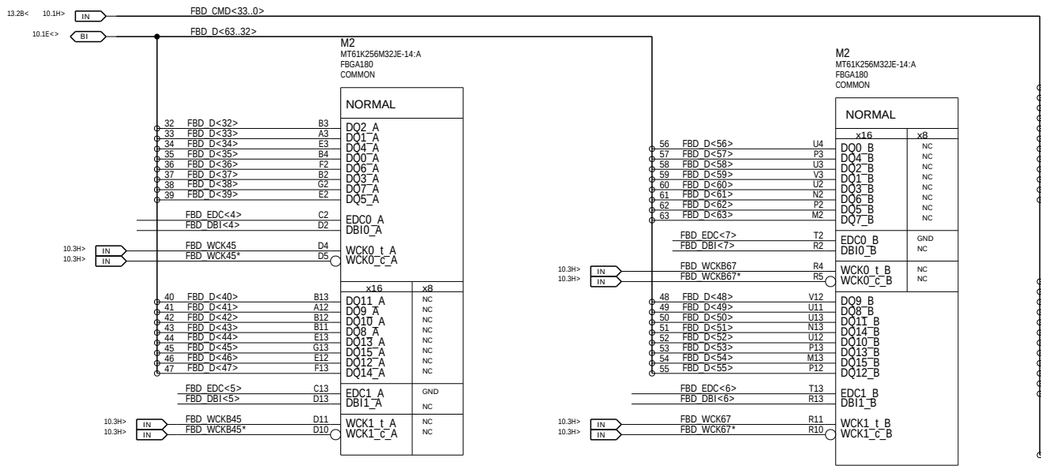
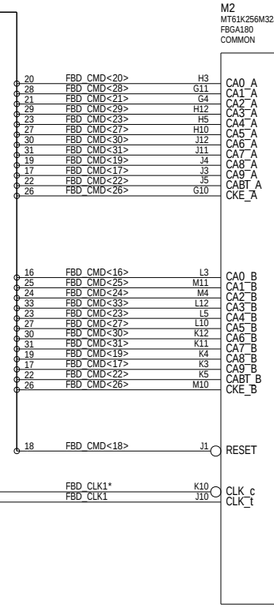
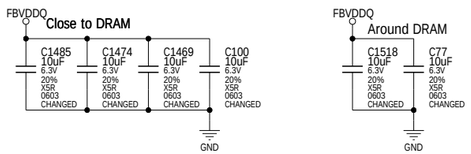
Page14: MEMORY: FBD Partition 63..32

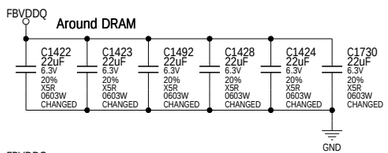


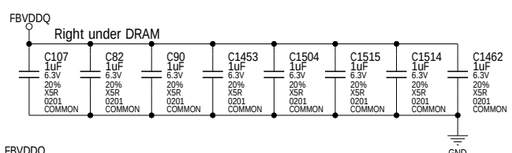


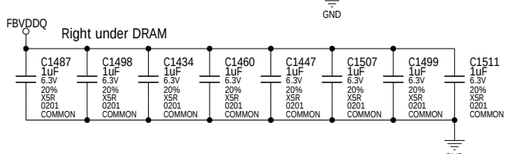


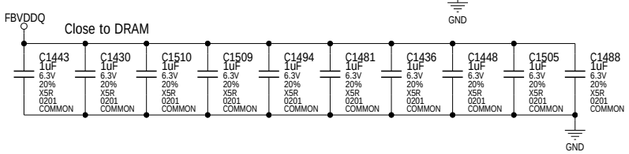


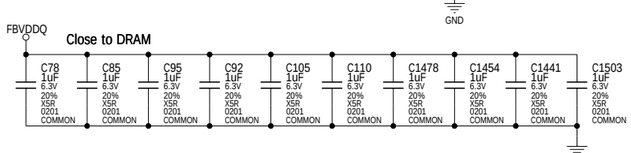


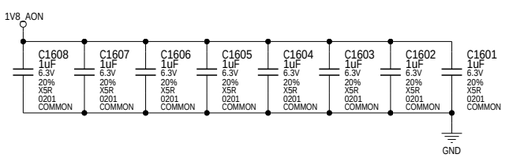












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PAGE DETAIL	MEMORY: FBD[63:32]

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Page15: GPU PWR and GND

G1 BGA2228 CHANGED — 15/22 GND_1/3

A2	GND	GND	AH6
A26	GND	GND	AH8
A29	GND	GND	AJ14
A3	GND	GND	AJ15
A32	GND	GND	AJ16
A50	GND	GND	AJ17
A51	GND	GND	AJ18
AA49	GND	GND	AJ19
AA8	GND	GND	AJ2
AB10	GND	GND	AJ20
AB14	GND	GND	AJ21
AB15	GND	GND	AJ22
AB16	GND	GND	AJ23
AB17	GND	GND	AJ24
AB18	GND	GND	AJ25
AB19	GND	GND	AJ26
AB2	GND	GND	AJ27
AB20	GND	GND	AJ28
AB21	GND	GND	AJ29
AB22	GND	GND	AJ30
AB23	GND	GND	AJ31
AB24	GND	GND	AJ32
AB25	GND	GND	AJ33
AB26	GND	GND	AJ34
AB27	GND	GND	AJ35
AB28	GND	GND	AJ36
AB29	GND	GND	AJ37
AB30	GND	GND	AJ38
AB31	GND	GND	AJ39
AB32	GND	GND	AK1
AB33	GND	GND	AK44
AB34	GND	GND	AK47
AB35	GND	GND	AL10
AB36	GND	GND	AL14
AB37	GND	GND	AL15
AB38	GND	GND	AL16
AB39	GND	GND	AL17
AB4	GND	GND	AL18
AB43	GND	GND	AL19
AB45	GND	GND	AL2
AB47	GND	GND	AL20
AB49	GND	GND	AL21
AB51	GND	GND	AL22
AB6	GND	GND	AL23
AB8	GND	GND	AL24
AD14	GND	GND	AL25
AD15	GND	GND	AL26
AD16	GND	GND	AL27
AD17	GND	GND	AL28
AD18	GND	GND	AL29
AD19	GND	GND	AL30
AD20	GND	GND	AL31
AD21	GND	GND	AL32
AD22	GND	GND	AL33
AD23	GND	GND	AL34
AD24	GND	GND	AL35
AD25	GND	GND	AL36
AD26	GND	GND	AL37
AD27	GND	GND	AL38
AD28	GND	GND	AL39
AD29	GND	GND	AL4
AD30	GND	GND	AL43
AD31	GND	GND	AL45
AD32	GND	GND	AL47
AD33	GND	GND	AL49
AD34	GND	GND	AL51
AD35	GND	GND	AL6
AD36	GND	GND	AL8
AD37	GND	GND	AM4
AD38	GND	GND	AM9
AD39	GND	GND	AN14
AD44	GND	GND	AN15
AE10	GND	GND	AN16
AE2	GND	GND	AN17
AE4	GND	GND	AN18
AE43	GND	GND	AN19
AE45	GND	GND	AN20
AE47	GND	GND	AN21
AE49	GND	GND	AN22
AE51	GND	GND	AN23
AE6	GND	GND	AN24
AE8	GND	GND	AN25
AF1	GND	GND	AN26
AF19	GND	GND	AN27
AF20	GND	GND	AN28
AF21	GND	GND	AN29
AF22	GND	GND	AN30
AF23	GND	GND	AN31
AF27	GND	GND	AN32
AF28	GND	GND	AN33
AF29	GND	GND	AN34
AF35	GND	GND	AN35
AF36	GND	GND	AN36
AF37	GND	GND	AN37
AF38	GND	GND	AN38
AF39	GND	GND	AN39
AF45	GND	GND	AN4
AF5	GND	GND	AN5
AG14	GND	GND	AN8
AG15	GND	GND	AP10
AG16	GND	GND	AP2
AG17	GND	GND	AP4
AG18	GND	GND	AP43
AG24	GND	GND	AP45
AG25	GND	GND	AP47
AG26	GND	GND	AP49
AG3	GND	GND	AP51
AG30	GND	GND	AP6
AG31	GND	GND	AP8
AG32	GND	GND	AR14
AG33	GND	GND	AR15
AG34	GND	GND	AR16
AG44	GND	GND	AR17
AH10	GND	GND	AR18
AH2	GND	GND	AR19
AH4	GND	GND	BL34
AH43	GND	GND	BC24
AH45	GND		
AH47	GND		
AH49	GND		
AH51	GND		

GND GND GND

G1 BGA2228 CHANGED — 16/22 GND_2/3

AR20	GND	GND	BS2
AR21	GND	GND	B7
AR22	GND	GND	BA48
AR23	GND	GND	BA9
AR24	GND	GND	BB49
AR25	GND	GND	BC13
AR26	GND	GND	BC16
AR27	GND	GND	BC19
AR28	GND	GND	BC2
AR29	GND	GND	BC22
AR30	GND	GND	BC25
AR31	GND	GND	BC28
AR32	GND	GND	BC31
AR33	GND	GND	BC34
AR34	GND	GND	BC37
AR35	GND	GND	BC4
AR36	GND	GND	BC51
AR37	GND	GND	BC6
AR38	GND	GND	BC8
AR39	GND	GND	BD26
AR4	GND	GND	BD29
AR52	GND	GND	BD32
AR9	GND	GND	BD35
AT4	GND	GND	BD38
AT5	GND	GND	BD52
AT51	GND	GND	BE10
AT52	GND	GND	BE13
AT8	GND	GND	BE15
AU10	GND	GND	BE16
AU14	GND	GND	BE18
AU15	GND	GND	BE19
AU16	GND	GND	BE21
AU17	GND	GND	BE22
AU18	GND	GND	BE24
AU19	GND	GND	BE25
AU2	GND	GND	BE27
AU20	GND	GND	BE28
AU21	GND	GND	BE30
AU22	GND	GND	BE31
AU23	GND	GND	BE33
AU24	GND	GND	BE34
AU25	GND	GND	BE36
AU26	GND	GND	BE37
AU27	GND	GND	BE39
AU28	GND	GND	BE40
AU29	GND	GND	BF2
AU30	GND	GND	BF4
AU31	GND	GND	BF41
AU32	GND	GND	BF6
AU33	GND	GND	BG10
AU34	GND	GND	BG13
AU35	GND	GND	BG16
AU36	GND	GND	BG19
AU37	GND	GND	BG22
AU38	GND	GND	BG25
AU39	GND	GND	BG28
AU4	GND	GND	BG31
AU45	GND	GND	BG34
AU47	GND	GND	BG37
AU49	GND	GND	BG40
AU51	GND	GND	BG42
AU6	GND	GND	BG7
AU8	GND	GND	BH15
AV4	GND	GND	BH18
AV45	GND	GND	BH2
AV9	GND	GND	BH21
AW14	GND	GND	BH24
AW15	GND	GND	BH27
AW16	GND	GND	BH30
AW17	GND	GND	BH33
AW18	GND	GND	BH36
AW19	GND	GND	BH39
AW20	GND	GND	BH42
AW21	GND	GND	BH5
AW22	GND	GND	BJ10
AW23	GND	GND	BJ12
AW24	GND	GND	BJ13
AW25	GND	GND	BJ14
AW26	GND	GND	BJ15
AW27	GND	GND	BJ16
AW28	GND	GND	BJ17
AW29	GND	GND	BJ18
AW30	GND	GND	BJ19
AW31	GND	GND	BJ20
AW32	GND	GND	BJ21
AW33	GND	GND	BJ22
AW34	GND	GND	BJ23
AW35	GND	GND	BJ24
AW36	GND	GND	BJ25
AW37	GND	GND	BJ26
AW38	GND	GND	BJ27
AW39	GND	GND	BJ28
AW4	GND	GND	BJ29
AW46	GND	GND	BJ30
AW5	GND	GND	BJ31
AW52	GND	GND	BJ32
AW8	GND	GND	BJ33
AY10	GND	GND	BJ34
AY2	GND	GND	BJ35
AY4	GND	GND	BJ36
AY47	GND	GND	BJ37
AY49	GND	GND	BJ38
AY51	GND	GND	BJ39
AY6	GND	GND	BJ40
AY8	GND	GND	BJ41
B1	GND	GND	BJ42
B10	GND	GND	BJ43
B13	GND	GND	BJ7
B16	GND	GND	BK1
B19	GND	GND	BL1
B2	GND	GND	BL10
B22	GND	GND	BL13
B25	GND	GND	BL16
B28	GND	GND	BL19
B31	GND	GND	BL2
B34	GND	GND	BL22
B37	GND	GND	BL25
B40	GND	GND	BL28
B43	GND	GND	BL31
B46	GND	GND	B5
B48	GND	GND	B51

GND GND GND

G1 BGA2228 CHANGED — 21/22 GND_3/3

BL40	GND	GND	N51
BL43	GND	GND	N6
BL5	GND	GND	N8
BL7	GND	GND	P14
BM2	GND	GND	P15
BM3	GND	GND	P16
C1	GND	GND	P17
C29	GND	GND	P18
C33	GND	GND	P19
C5	GND	GND	P20
C51	GND	GND	P21
C52	GND	GND	P22
D10	GND	GND	P23
D12	GND	GND	P24
D13	GND	GND	P25
D16	GND	GND	P26
D19	GND	GND	P27
D22	GND	GND	P28
D24	GND	GND	P29
D25	GND	GND	P30
D28	GND	GND	P31
D30	GND	GND	P32
D31	GND	GND	P33
D34	GND	GND	P34
D37	GND	GND	P35
D4	GND	GND	P36
D40	GND	GND	P37
D43	GND	GND	P38
D46	GND	GND	P39
D49	GND	GND	P51
D7	GND	GND	R49
E2	GND	GND	R52
E4	GND	GND	T10
E48	GND	GND	T14
E5	GND	GND	T15
E51	GND	GND	T16
E8	GND	GND	T17
F10	GND	GND	T18
F13	GND	GND	T19
F16	GND	GND	T2
F17	GND	GND	T20
F19	GND	GND	T21
F21	GND	GND	T22
F22	GND	GND	T23
F25	GND	GND	T24
F28	GND	GND	T25
F31	GND	GND	T26
F34	GND	GND	T27
F35	GND	GND	T28
F37	GND	GND	T29
F40	GND	GND	T30
F43	GND	GND	T31
F44	GND	GND	T32
F46	GND	GND	T33
F52	GND	GND	T34
F7	GND	GND	T35
G2	GND	GND	T36
G38	GND	GND	T37
G4	GND	GND	T38
G47	GND	GND	T39
G49	GND	GND	T4
G51	GND	GND	T43
G6	GND	GND	T45
H1	GND	GND	T47
H10	GND	GND	T49
H13	GND	GND	T51
H16	GND	GND	T6
H19	GND	GND	T8
H22	GND	GND	U7
H25	GND	GND	U9
H28	GND	GND	V14
H31	GND	GND	V15
H34	GND	GND	V16
H37	GND	GND	V17
H40	GND	GND	V18
H43	GND	GND	V19
J1	GND	GND	V20
J12	GND	GND	V21
J17	GND	GND	V22
J20	GND	GND	V23
J38	GND	GND	V24
J49	GND	GND	V25
J52	GND	GND	V26
K13	GND	GND	V27
K16	GND	GND	V28
K19	GND	GND	V29
K2	GND	GND	V30
K22	GND	GND	V31
K25	GND	GND	V32
K28	GND	GND	V33
K31	GND	GND	V34
K34	GND	GND	V35
K37	GND	GND	V36
K4	GND	GND	V37
K40	GND	GND	V38
K45	GND	GND	V39
K47	GND	GND	V49
K49	GND	GND	V52
K51	GND	GND	W10
K6	GND	GND	W2
K8	GND	GND	W4
M52	GND	GND	W43
M6	GND	GND	Y9
N10	GND		
N2	GND		
N4	GND		
N43	GND		
N45	GND		
N47	GND		
N49	GND		
BL37	GND		

GND

NVVDD

G1 BGA2228 CHANGED — 17/22 VDD_1/3

AA13	VDD	VDD	AE28
AA14	VDD	VDD	AE29
AA15	VDD	VDD	AE30
AA16	VDD	VDD	AE31
AA17	VDD	VDD	AE32
AA18	VDD	VDD	AE33
AA19	VDD	VDD	AE34
AA20	VDD	VDD	AE35
AA21	VDD	VDD	AE36
AA22	VDD	VDD	AE37
AA23	VDD	VDD	AE38
AA24	VDD	VDD	AE39
AA25	VDD	VDD	AE40
AA26	VDD	VDD	AF13
AA27	VDD	VDD	AF14
AA28	VDD	VDD	AF15
AA29	VDD	VDD	AF16
AA30	VDD	VDD	AF17
AA31	VDD	VDD	AF18
AA32	VDD	VDD	AF24
AA33	VDD	VDD	AF25
AA34	VDD	VDD	AF26
AA35	VDD	VDD	AF30
AA36	VDD	VDD	AF31
AA37	VDD	VDD	AF32
AA38	VDD	VDD	AF33
AA39	VDD	VDD	AF34
AA40	VDD	VDD	AF40
AB13	VDD	VDD	AG13
AB40	VDD	VDD	AG19
AC13	VDD	VDD	AG20
AC14	VDD	VDD	AG21
AC15	VDD	VDD	AG22
AC16	VDD	VDD	AG23
AC17	VDD	VDD	AG27
AC18	VDD	VDD	AG28
AC19	VDD	VDD	AG29
AC20	VDD	VDD	AG35
AC21	VDD	VDD	AG36
AC22	VDD	VDD	AG37
AC23	VDD	VDD	AG38
AC24	VDD	VDD	AG39
AC25	VDD	VDD	AG40
AC26	VDD	VDD	AH13
AC27	VDD	VDD	AH14
AC28	VDD	VDD	AH15
AC29	VDD	VDD	AH16
AC30	VDD	VDD	AH17
AC31	VDD	VDD	AH18
AC32	VDD	VDD	AH19
AC33	VDD	VDD	AH20
AC34	VDD	VDD	AH21
AC35	VDD	VDD	AH22
AC36	VDD	VDD	AH23
AC37	VDD	VDD	AH24
AC38	VDD	VDD	AH25
AC39	VDD	VDD	AH26
AC40	VDD	VDD	AH27
AD13	VDD	VDD	AH28
AD40	VDD	VDD	AH29
AE13	VDD	VDD	AH30
AE14	VDD	VDD	AH31
AE15	VDD	VDD	AH32
AE16	VDD	VDD	AH33
AE17	VDD	VDD	AH34
AE18	VDD	VDD	AH35
AE19	VDD	VDD	AH36
AE20	VDD	VDD	AH37
AE21	VDD	VDD	AH38
AE22	VDD	VDD	AV28
AE23	VDD	VDD	AV29
AE24	VDD	VDD	AV30
AE25	VDD	VDD	AV31
AE26	VDD	VDD	AV32
AE27	VDD	VDD	AV33
AT30	VDD	VDD	AV34
AT31	VDD	VDD	AV35
AT32	VDD	VDD	AV36
AT33	VDD	VDD	AV37
AT34	VDD	VDD	AV38
AT35	VDD	VDD	AV39
AT36	VDD	VDD	AV40
AT37	VDD	VDD	AV42
AT38	VDD	VDD	AV43
AT39	VDD	VDD	AV44
AT40	VDD	VDD	AW13
AT42	VDD	VDD	AW40
AU13	VDD	VDD	AW42
AU40	VDD	VDD	AW43
AU43	VDD	VDD	AW44
AV13	VDD	VDD	AW45
AV14	VDD	VDD	AY13
AV15	VDD	VDD	AY14
AV16	VDD	VDD	AY15
AV17	VDD	VDD	AY16
AV18	VDD	VDD	AY17
AV19	VDD	VDD	AY18
AV20	VDD	VDD	AY19
AV21	VDD	VDD	AY20
AV22	VDD	VDD	AY21
AV23	VDD	VDD	AY22
AV24	VDD	VDD	AY23
AV25	VDD	VDD	AY24
AV26	VDD	VDD	AY25
AV27	VDD		

GND

NVVDD

G1 BGA2228 CHANGED — 22/22 VDD_3/3

BG45	VDD	VDD	R23
BG46	VDD	VDD	R24
BG47	VDD	VDD	R25
BG48	VDD	VDD	R26
BG49	VDD	VDD	R27
BG50	VDD	VDD	R28
BG51	VDD	VDD	R29
BG52	VDD	VDD	R30
BH44	VDD	VDD	R31
BH45	VDD	VDD	R32
BH47	VDD	VDD	R33
BH48	VDD	VDD	R34
BH49	VDD	VDD	R35
BH50	VDD	VDD	R36
BH51	VDD	VDD	R37
BH52	VDD	VDD	R38
BJ44	VDD	VDD	R39
BJ45	VDD	VDD	R40
BJ46	VDD	VDD	T13
BJ47	VDD	VDD	T40
BJ48	VDD	VDD	U13
BJ49	VDD	VDD	U14
BJ50	VDD	VDD	U15
BJ51	VDD	VDD	U16
BJ52	VDD	VDD	U17
BK47	VDD	VDD	U18
BK48	VDD	VDD	U19
BK49	VDD	VDD	U20
BK50	VDD	VDD	U21
BK51	VDD	VDD	U22
BK52	VDD	VDD	U23
BL46	VDD	VDD	U24
BL47	VDD	VDD	U25
BL48	VDD	VDD	U26
BL49	VDD	VDD	U27
BL50	VDD	VDD	U28
BL51	VDD	VDD	U29
BL52	VDD	VDD	U30
BM47	VDD	VDD	U31
BM48	VDD	VDD	U32
BM49	VDD	VDD	U33
BM50	VDD	VDD	U34
BM51	VDD	VDD	U35
N13	VDD	VDD	U36
N14	VDD	VDD	U37
N15	VDD	VDD	U38
N16	VDD	VDD	U39
N17	VDD	VDD	U40
N18	VDD	VDD	V13
N19	VDD	VDD	V40
N20	VDD	VDD	W13
N21	VDD	VDD	W14
N22	VDD	VDD	W15
N23	VDD	VDD	W16
N24	VDD	VDD	W17
N25	VDD	VDD	W18
N26	VDD	VDD	W19
N27	VDD	VDD	W20
N28	VDD	VDD	W21
N29	VDD	VDD	W22
N30	VDD	VDD	W23
N31	VDD	VDD	W24
N32	VDD	VDD	W25
N33	VDD	VDD	W26
N34	VDD	VDD	W27
N35	VDD	VDD	W28
N36	VDD	VDD	W29
N37	VDD	VDD	W30
N38	VDD	VDD	W31
N39	VDD	VDD	W32
N40	VDD	VDD	W33
P13	VDD	VDD	W34
P40	VDD	VDD	W35
R13	VDD	VDD	W36
R14	VDD	VDD	W37
R15	VDD	VDD	W38
R16	VDD	VDD	W39
R17	VDD	VDD	W40
R18	VDD	VDD	Y13
R19	VDD	VDD	Y40
R20	VDD		
R21	VDD		
R22	VDD		

NVVDD

G1 BGA2228 CHANGED — 18/22 VDD_2/3

AH39	VDD	VDD	AP23
AH40	VDD	VDD	AP24
AJ13	VDD	VDD	AP25
AJ40	VDD	VDD	AP26
AK13	VDD	VDD	AP27
AK14	VDD	VDD	AP28
AK15	VDD	VDD	AP29
AK16	VDD	VDD	AP30
AK17	VDD	VDD	AP31
AK18	VDD	VDD	AP32
AK19	VDD	VDD	AP33
AK20	VDD	VDD	AP34
AK21	VDD	VDD	AP35
AK22	VDD	VDD	AP36
AK23	VDD	VDD	AP37
AK24	VDD	VDD	AP38
AK25	VDD	VDD	AP39
AK26	VDD	VDD	AP40
AK27	VDD	VDD	AR13
AK28	VDD	VDD	AR40
AK29	VDD	VDD	AT13
AK30	VDD	VDD	AT14
AK31	VDD	VDD	AT15
AK32	VDD	VDD	AT16
AK33	VDD	VDD	AT17
AK34	VDD	VDD	AT18
AK35	VDD	VDD	AT19
AK36	VDD	VDD	AT20
AK37	VDD	VDD	AT21
AK38	VDD	VDD	AT22
AK39	VDD	VDD	AT23
AK40	VDD	VDD	AT24
AL13	VDD	VDD	AT25
AL40	VDD	VDD	AT26
AM13	VDD	VDD	AT27
AM14	VDD	VDD	AT28
AM15	VDD	VDD	AT29
AM16	VDD	VDD	AY26
AM17	VDD	VDD	AY27
AM18	VDD	VDD	AY28
AM19	VDD	VDD	AY29
AM20	VDD	VDD	AY30
AM21	VDD	VDD	AY31
AM22	VDD	VDD	AY32
AM23	VDD	VDD	AY33
AM24	VDD	VDD	AY34
AM25	VDD	VDD	AY35
AM26	VDD	VDD	AY36
AM27	VDD	VDD	AY37
AM28	VDD	VDD	AY38
AM29	VDD	VDD	AY39
AM30	VDD	VDD	AY40
AM31	VDD	VDD	AY43
AM32	VDD	VDD	AY45
AM33	VDD	VDD	BA43
AM34	VDD	VDD	BA44
AM35	VDD	VDD	BA45
AM36	VDD	VDD	BA46
AM37	VDD	VDD	BA47
AM38	VDD	VDD	BB38
AM39	VDD	VDD	BB39
AM40	VDD	VDD	BB45
AN13	VDD	VDD	BB46
AN40	VDD	VDD	BB47
AP13	VDD	VDD	BB48
AP14	VDD	VDD	BB49
AP15	VDD	VDD	BC39
AP16	VDD	VDD	BC40
AP17	VDD	VDD	BC41
AP18	VDD	VDD	BC45
AP19	VDD	VDD	BC47
AP20	VDD	VDD	BC49
AP21	VDD	VDD	BD39
AP22	VDD	VDD	BE49
BD41	VDD	VDD	BE50
BD46	VDD	VDD	BE51
BD47	VDD	VDD	BE52
BD48	VDD	VDD	BF42
BD49	VDD	VDD	BF44
BD50	VDD	VDD	BF45
BD51	VDD	VDD	BF47
BE41	VDD	VDD	BF49
BE42	VDD	VDD	BF51
BE43	VDD	VDD	BG43
BE46	VDD	VDD	BG44
BE47	VDD	VDD	

NVVDD FBVDDQ

G1 BGA2228 CHANGED — 19/22 FBVDDQ

AA10	FBVDDQ	FBVDDQ	AT43
AA11	FBVDDQ	FBVDDQ	K12
AA42	FBVDDQ	FBVDDQ	K14
AA43	FBVDDQ	FBVDDQ	K15
AC10	FBVDDQ	FBVDDQ	K17
AC11	FBVDDQ	FBVDDQ	K18
AC42	FBVDDQ	FBVDDQ	K20
AC43	FBVDDQ	FBVDDQ	K21
AD10	FBVDDQ	FBVDDQ	K23
AD11	FBVDDQ	FBVDDQ	K24
AD42	FBVDDQ	FBVDDQ	K26
AD43	FBVDDQ	FBVDDQ	K27
AF10	FBVDDQ	FBVDDQ	K29
AF43	FBVDDQ	FBVDDQ	K30
AG10	FBVDDQ	FBVDDQ	K32
AG11	FBVDDQ	FBVDDQ	K33
AG42	FBVDDQ	FBVDDQ	K35
AG43	FBVDDQ	FBVDDQ	K36
AJ10	FBVDDQ	FBVDDQ	K38
AJ11	FBVDDQ	FBVDDQ	K39
AJ42	FBVDDQ	FBVDDQ	K41
AJ43	FBVDDQ	FBVDDQ	L14
AK10	FBVDDQ	FBVDDQ	L15
AK11	FBVDDQ	FBVDDQ	L18
AK42	FBVDDQ	FBVDDQ	L20
AK43	FBVDDQ	FBVDDQ	L21
AM42	FBVDDQ	FBVDDQ	L23
AM43	FBVDDQ	FBVDDQ	L24
AN43	FBVDDQ	FBVDDQ	L26
AR42	FBVDDQ	FBVDDQ	L27
AR43	FBVDDQ	FBVDDQ	L30
R42	FBVDDQ	FBVDDQ	L32
R43	FBVDDQ	FBVDDQ	L33
U10	FBVDDQ	FBVDDQ	L35
U11	FBVDDQ	FBVDDQ	L36
U43	FBVDDQ	FBVDDQ	L39
V10	FBVDDQ	FBVDDQ	M10
V42	FBVDDQ	FBVDDQ	M43
V43	FBVDDQ	FBVDDQ	P10
Y10	FBVDDQ	FBVDDQ	P11
Y11	FBVDDQ	FBVDDQ	P42
Y42	FBVDDQ	FBVDDQ	P43
Y43	FBVDDQ	FBVDDQ	R10
	FBVDDQ	FBVDDQ	R11

FBVDDQ_SENSE — E52 PS_FBVDDQ_SENSE — OUT 30.4H<

FB_VREF — P45 FB_VREF — R855 49.9ohm 0402 1 % COMMON — C8901 3.9pF 0402 — GND

FBVDDQ

FB_CAL_PD_VDDQ — R44 FB_CAL_PD_VDDQ — R869 40.2ohm 0402 1 % COMMON

FB_CAL_PU_GND — P44 FB_CAL_PU_GND — R856 40.2ohm 0402 1 % COMMON

FB_CALTERM_GND — R45 FB_CAL_TERM_GND — R857 40.2ohm 0402 1 % COMMON

GND

NVVDD_SENSE — BK45 — GPU_NVVDD_SENSE — OUT 32.1A< 33.4H<

GND_SENSE — BL45 — GPU_NVVDD_FBRTN — OUT 32.1A< 33.4H<

1V8_AON

C676 2.2uF 6.3V 20% X6S 0402 CHANGED

U518 GS7616SC-R SOT363 COMMON — VIN1 5, VIN2 6, EN 3, VOUT1 1, VOUT2 2, GND 4

GPIO26_FP_FUSE — 25.3E> — IN

R825 10k 1 % 0402 COMMON

C659 2.2uF 6.3V 20% X6S 0402 CHANGED

R832 2.2k 5 % 0402 COMMON

FP_FUSE_GPU — BD14 — FP_FUSE_SRC

G1 BGA2228 CHANGED — 20/22 NC/1V8

1V8_AON — BA10, BB14, BC14

NC — BD24 SNN_BD24; BM44 SNN_BM44; BM45 SNN_BM45

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PAGE DETAIL	GPU PWR & GND

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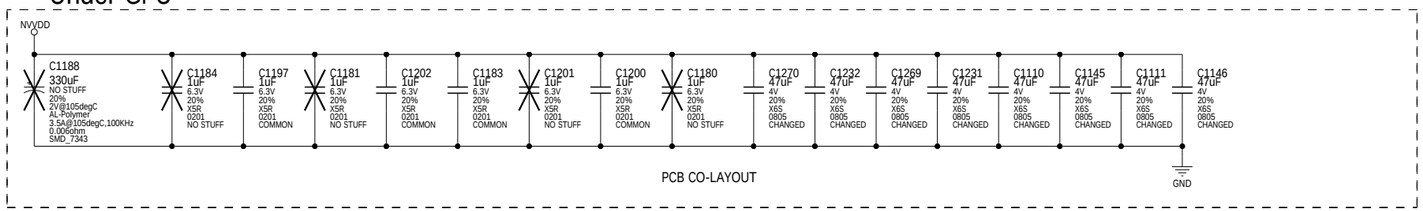
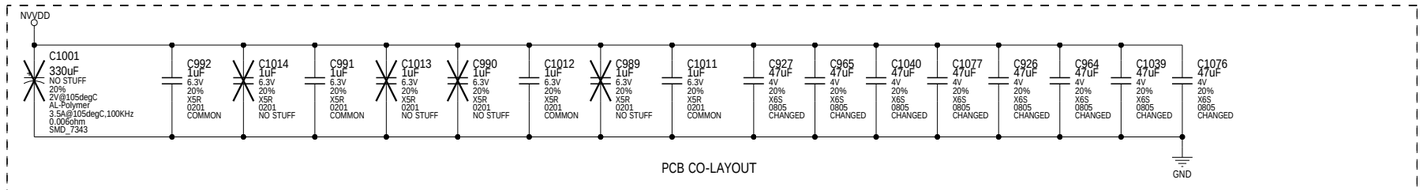
Page16: GPU Decoupling 1

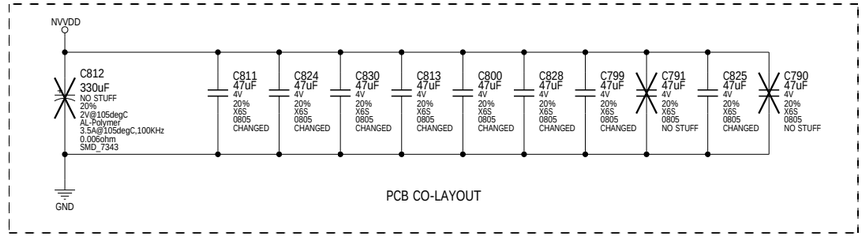
FBVDDQ

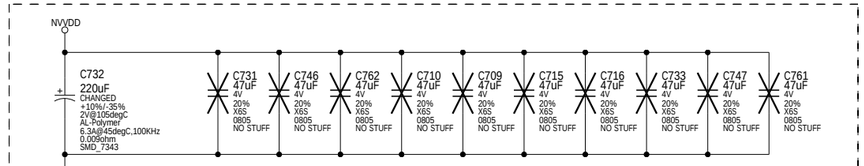
Under GPU

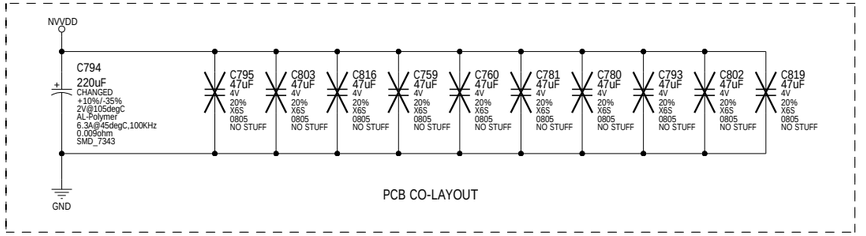




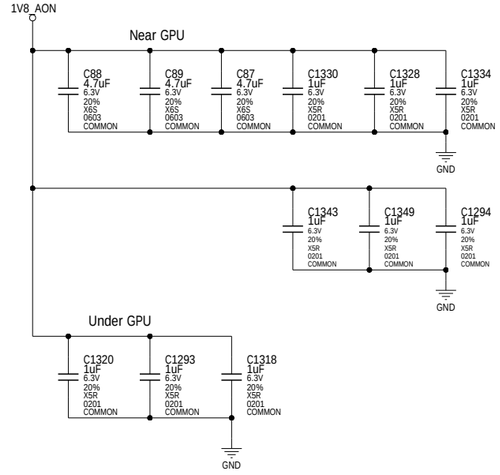
Near GPU







1V8_AON



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PAGE DETAIL	GPU Decoupling

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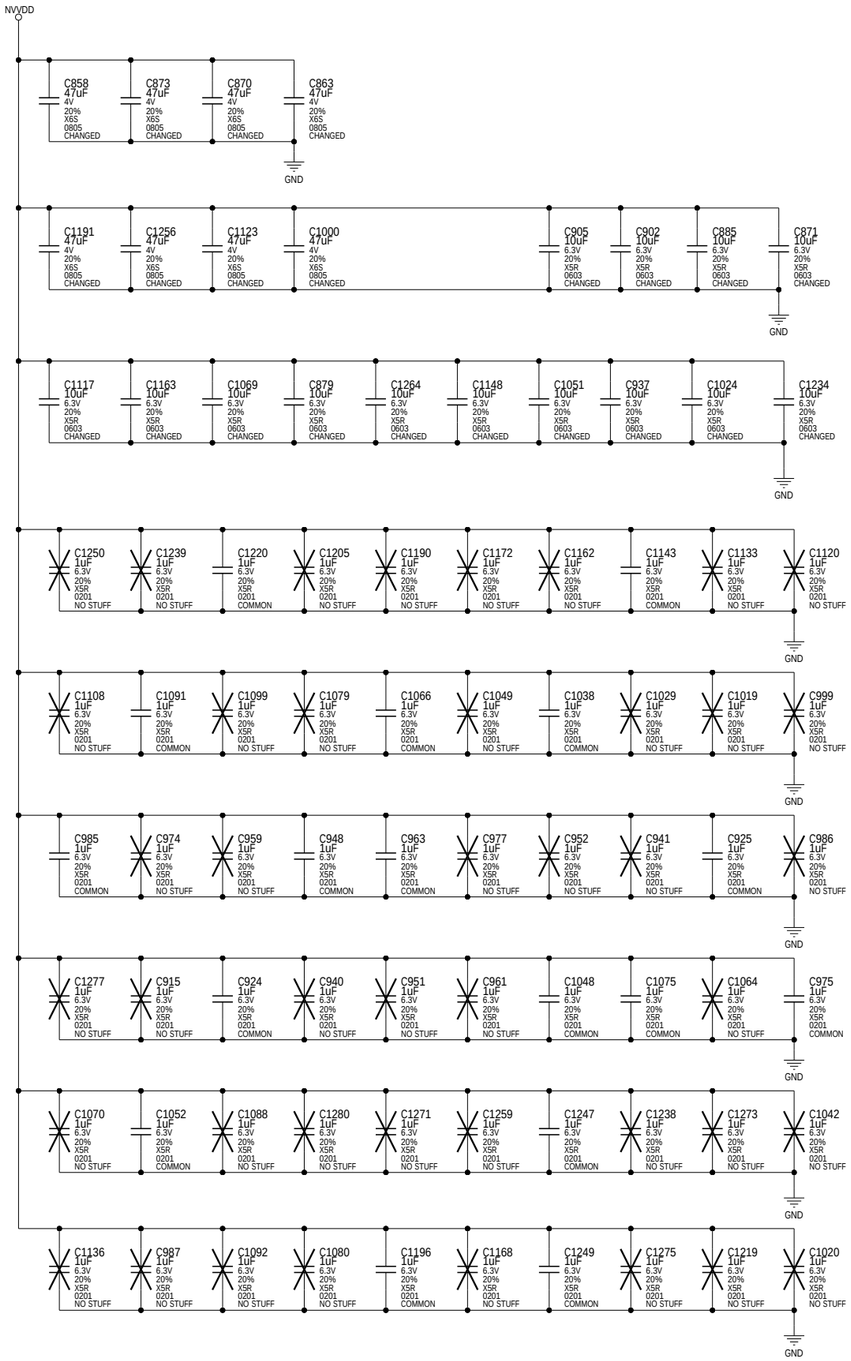
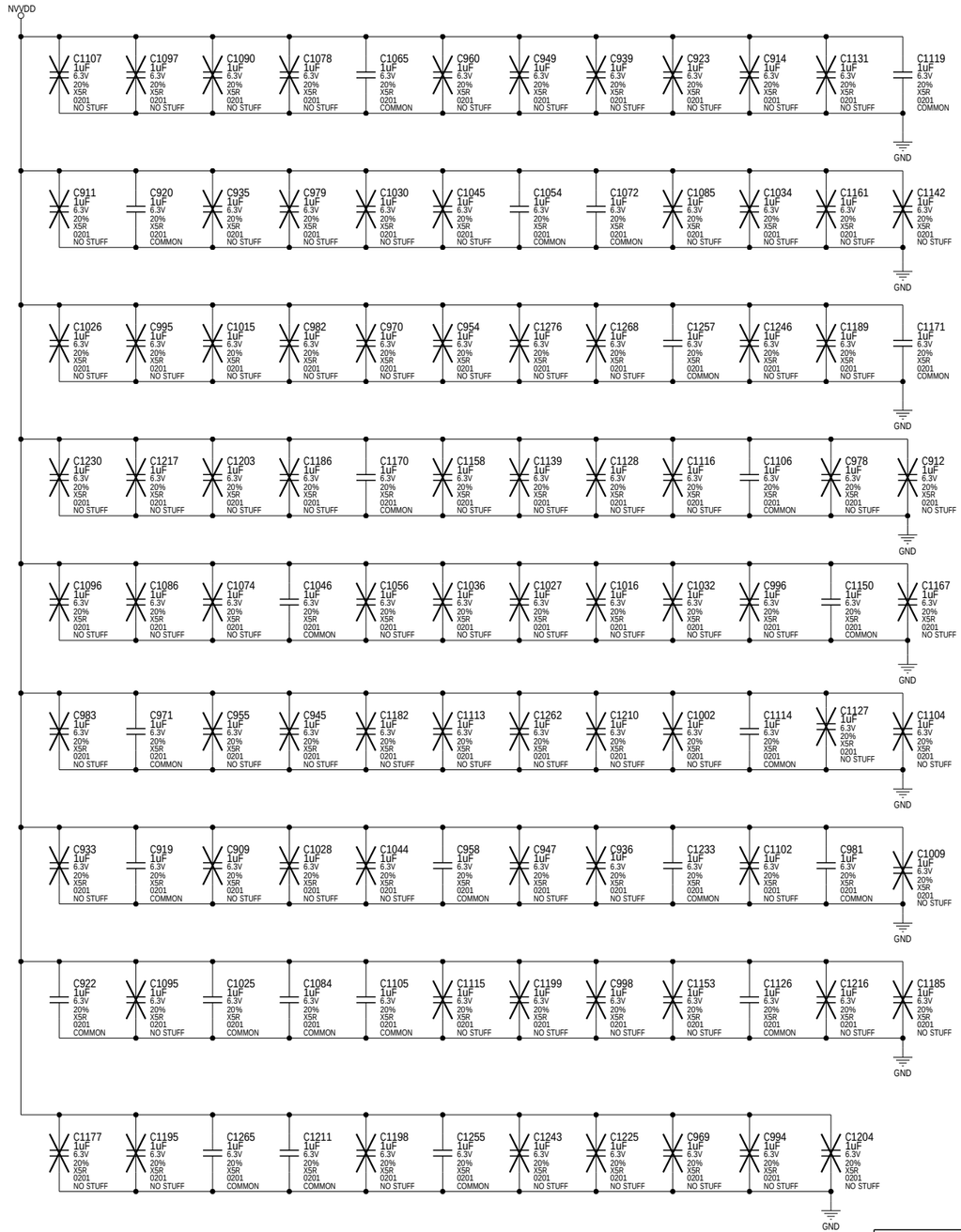
Page17: GPU Decoupling 2

NVVDD





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PAGE DETAIL	GPU Decoupling2

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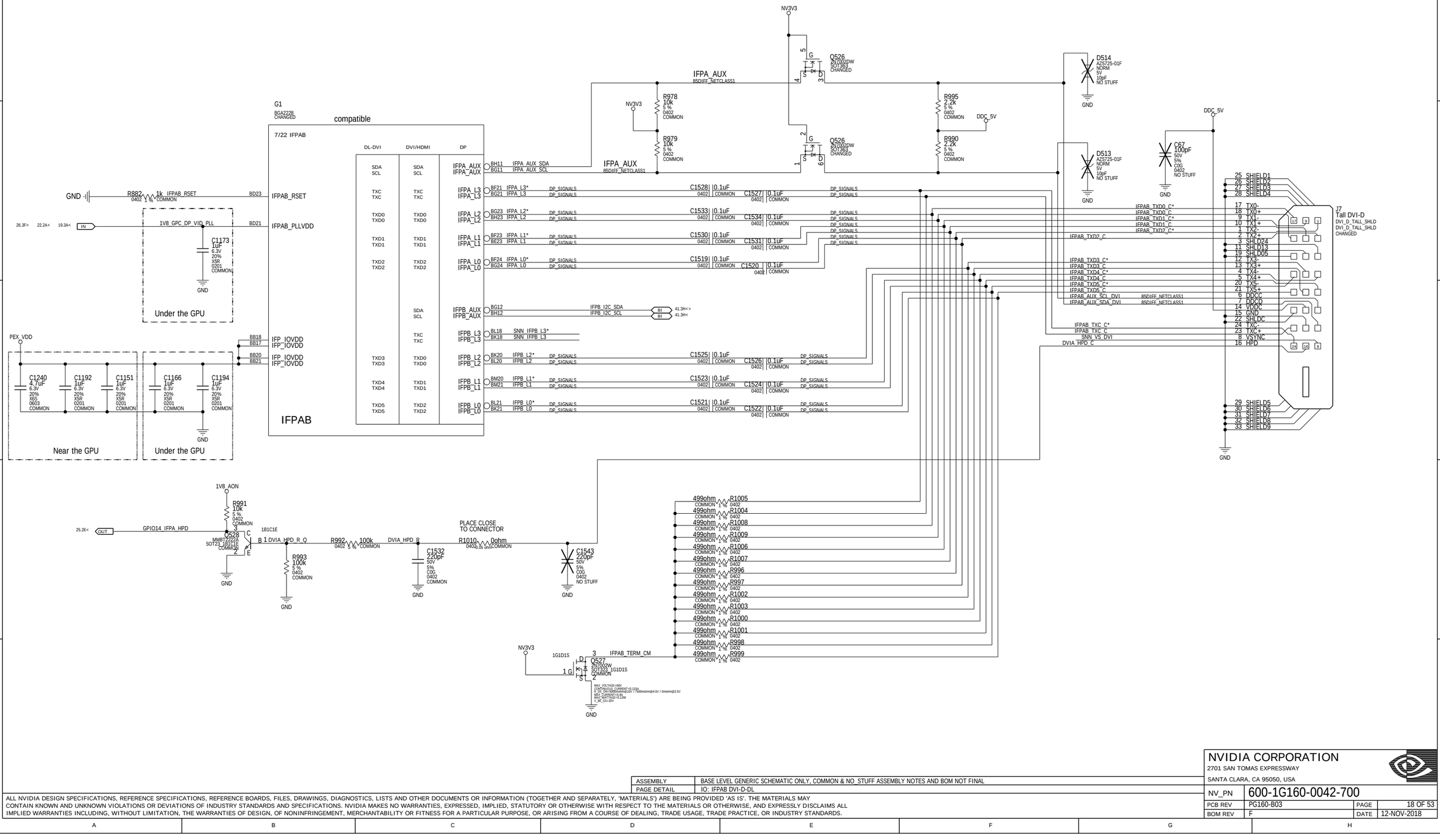
Page18: IFPAB DVI-D-DL



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IO: IFPAB DVI-D-DL

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Page19: IFPE DP

Two cases to be considered:
1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through

Hotplug Detection

Fused DP_PWR

Place Bulk CAP close to connector

CO-LAYOUT WITH C20

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IO: IFPE DP

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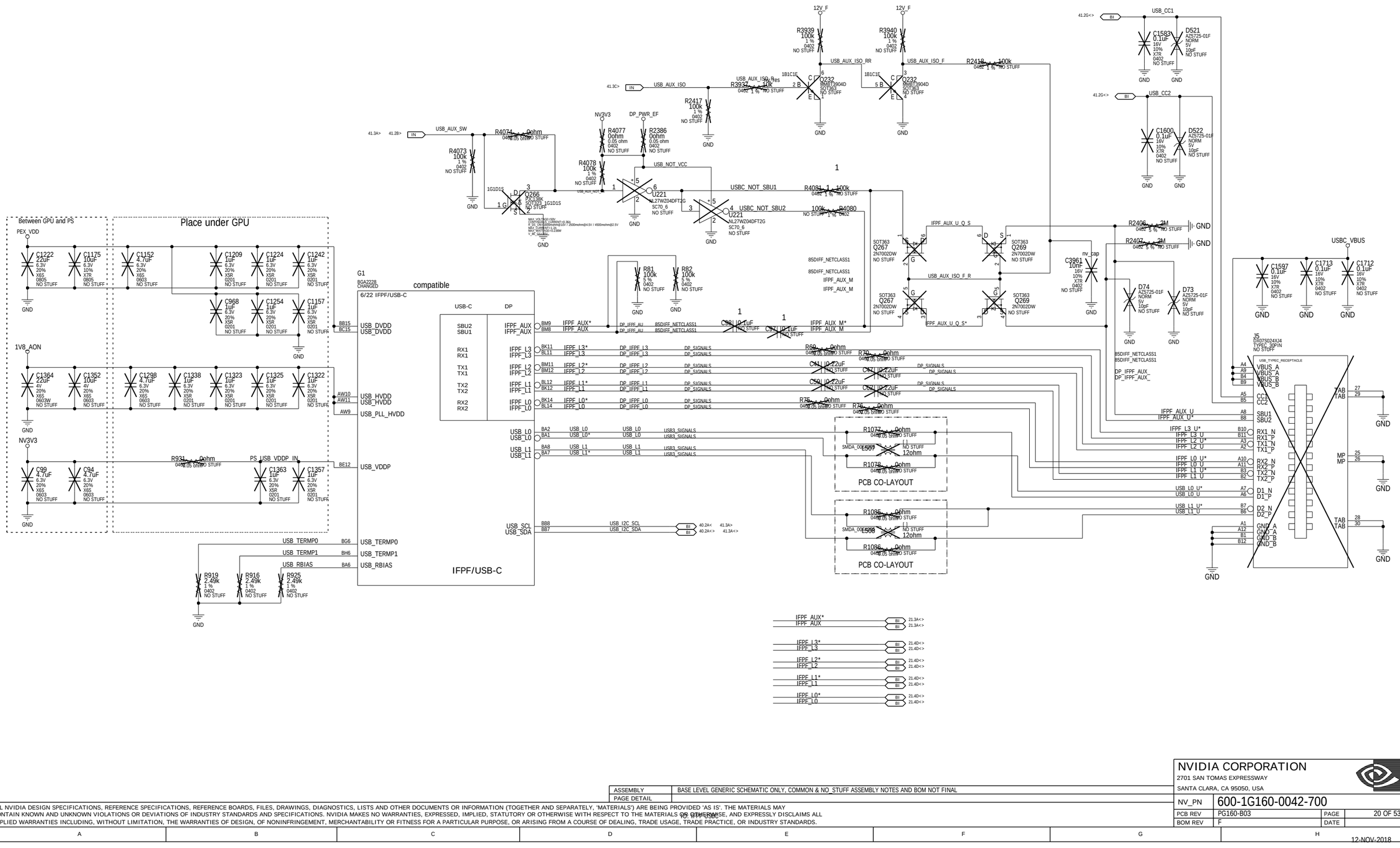
Page20: IFPF USB-C



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
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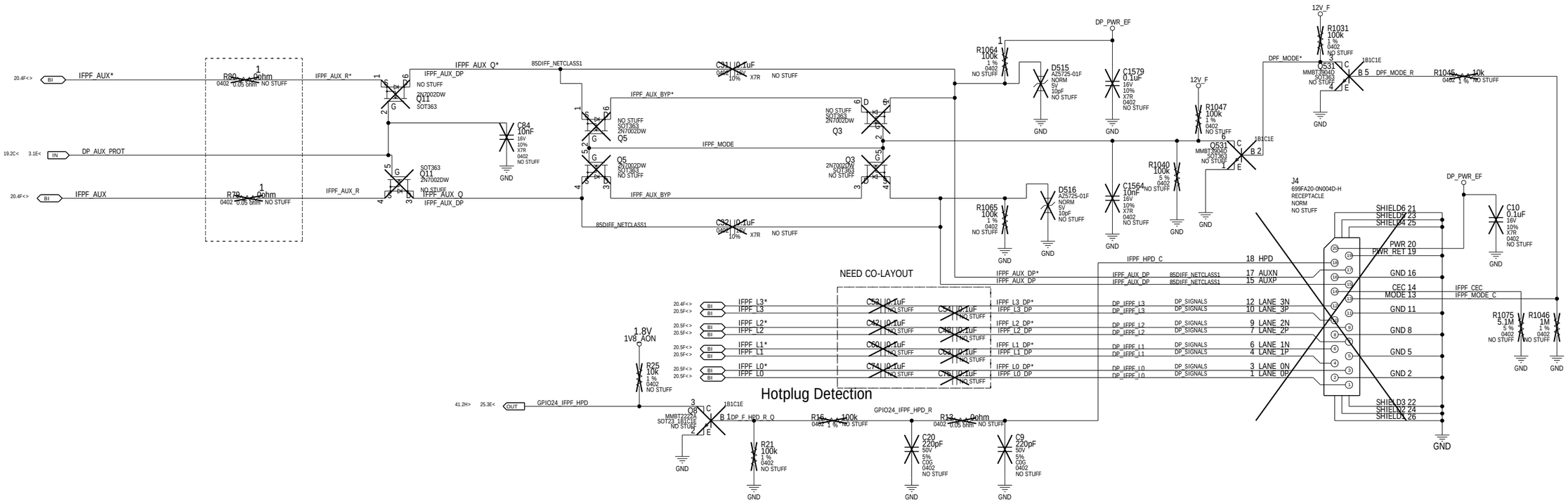
Page21: IFPF DP



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IO: IFPF DP

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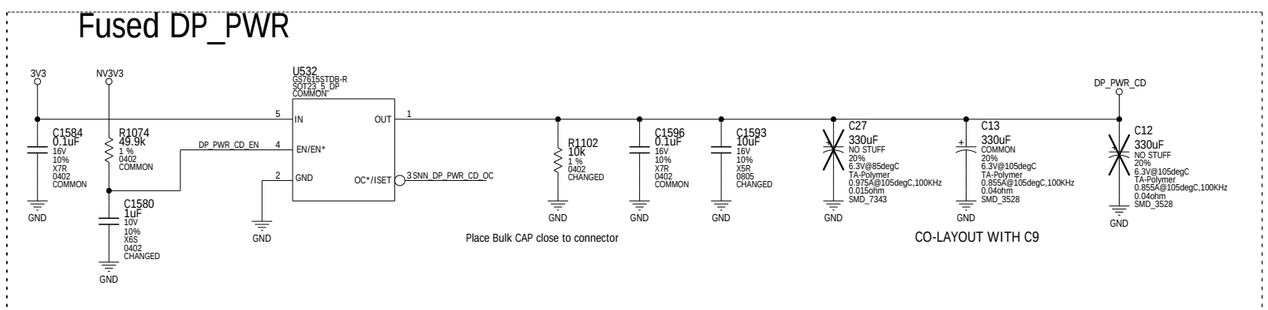
Page22: IFPC HDMI/DP

Fused DP_PWR



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IO: IFPC HDMI/DP

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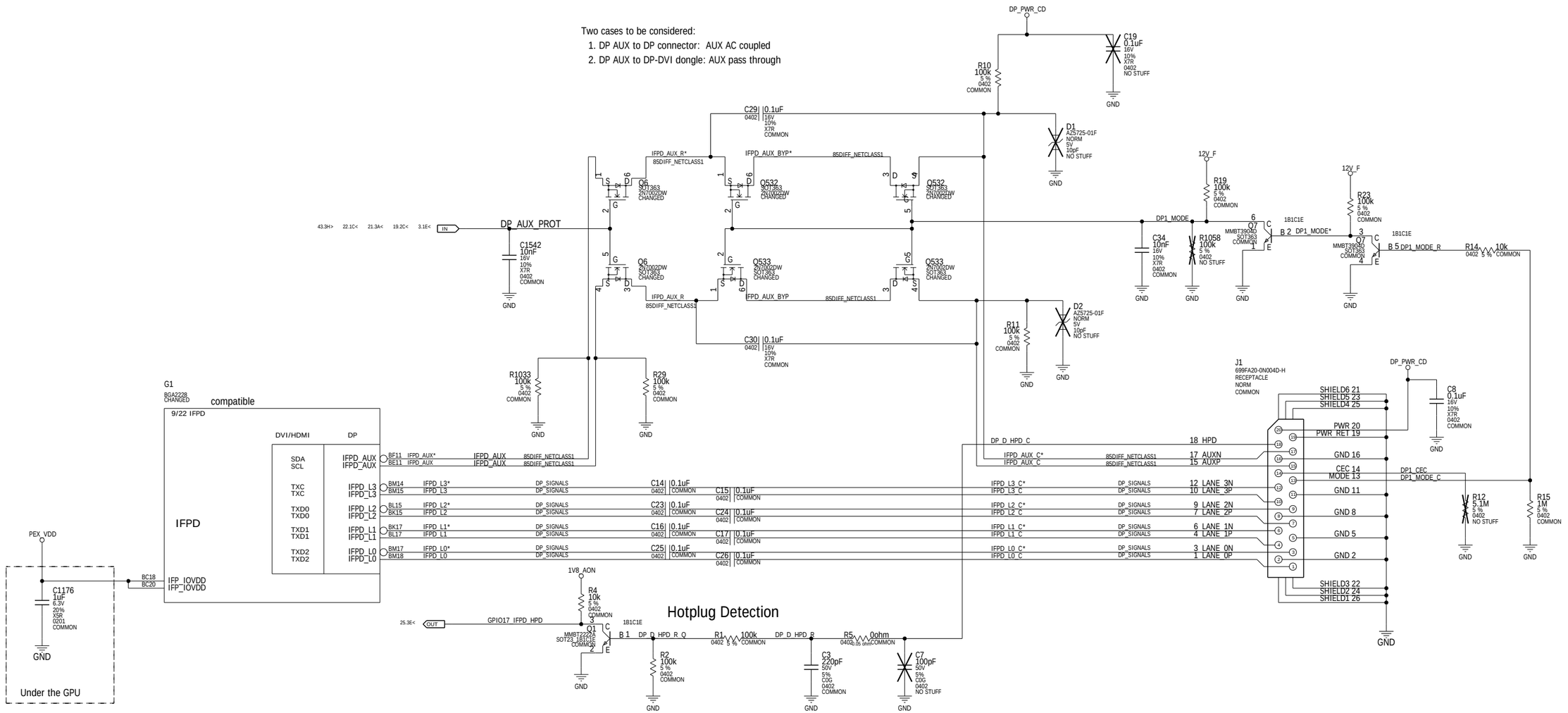
Page23: IFPD DP

Two cases to be considered:
1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IO: IFPD DP

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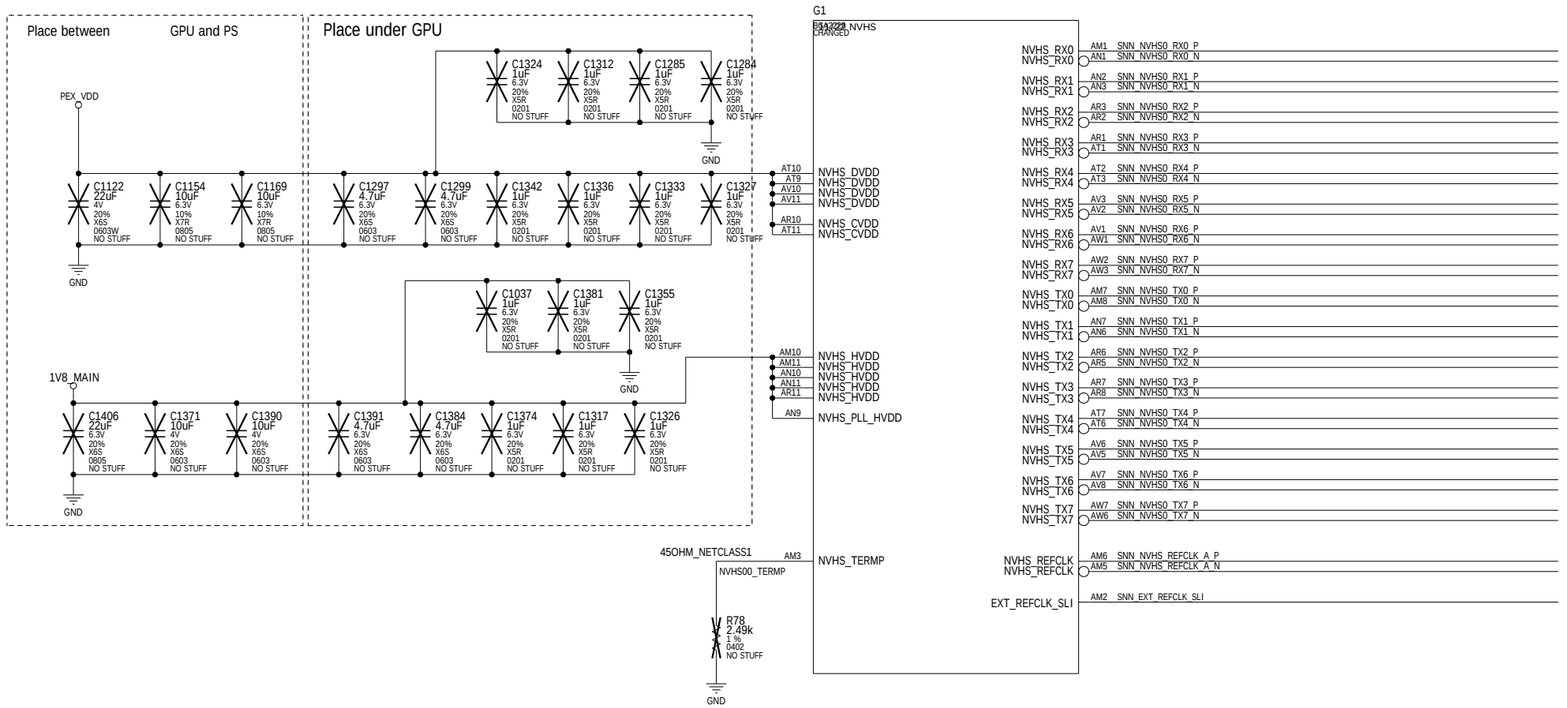
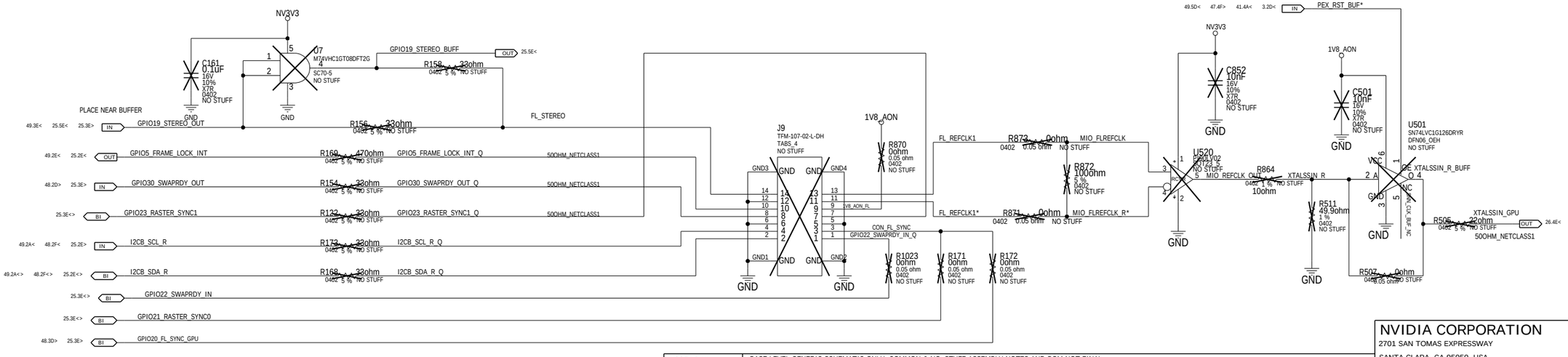
Page24: NVHS Interface and Frame Lock





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IO: NVHS Interface and Frame Lock

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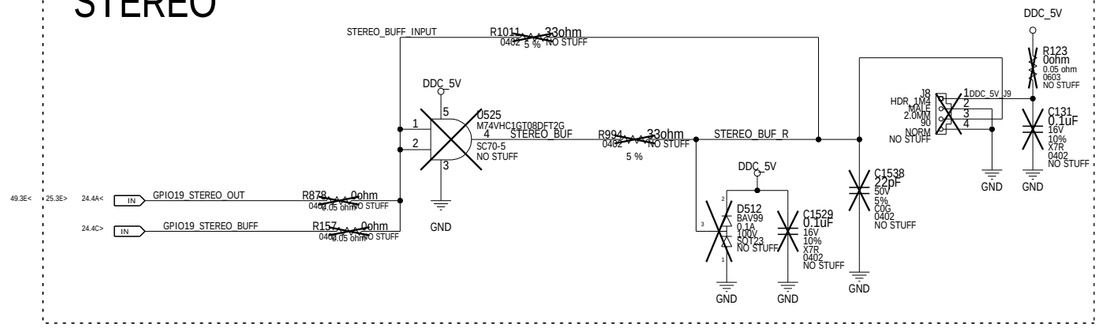
Page25: MISC1: Fan, Thermal, JTAG, GPIO

STEREO



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	MISC1: Thermal, JTAG, GPIO,STEREO

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Page26: MISC2: ROM, XTAL, Straps

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

RAMCFG[4:0]	DENSITY	WIDTH	VENDOR	DIE
00000	8Gb	256-bit	Samsung	C
00001	8Gb	256-bit	Micron	A
00010	8Gb	256-bit	Hynix	M
00011	8Gb	256-bit	Samsung	C
00100	8Gb	256-bit	Micron	A
00101	8Gb	256-bit	Hynix	M
00110	16Gb	256-bit	Samsung	M
00111				

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	M	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	H	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

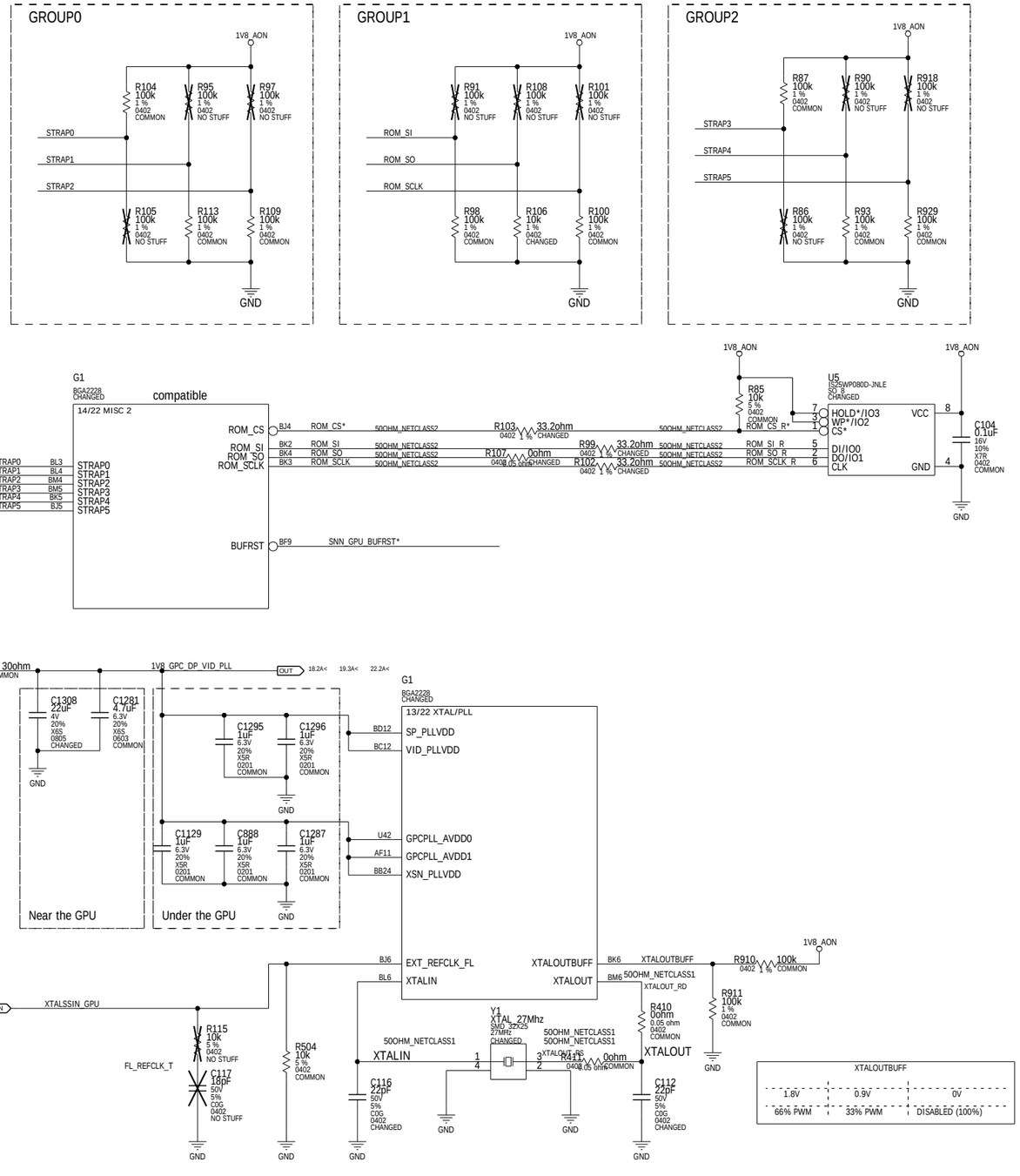
H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V

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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PAGE DETAIL	MISC2: ROM, XTAL,STRAPS

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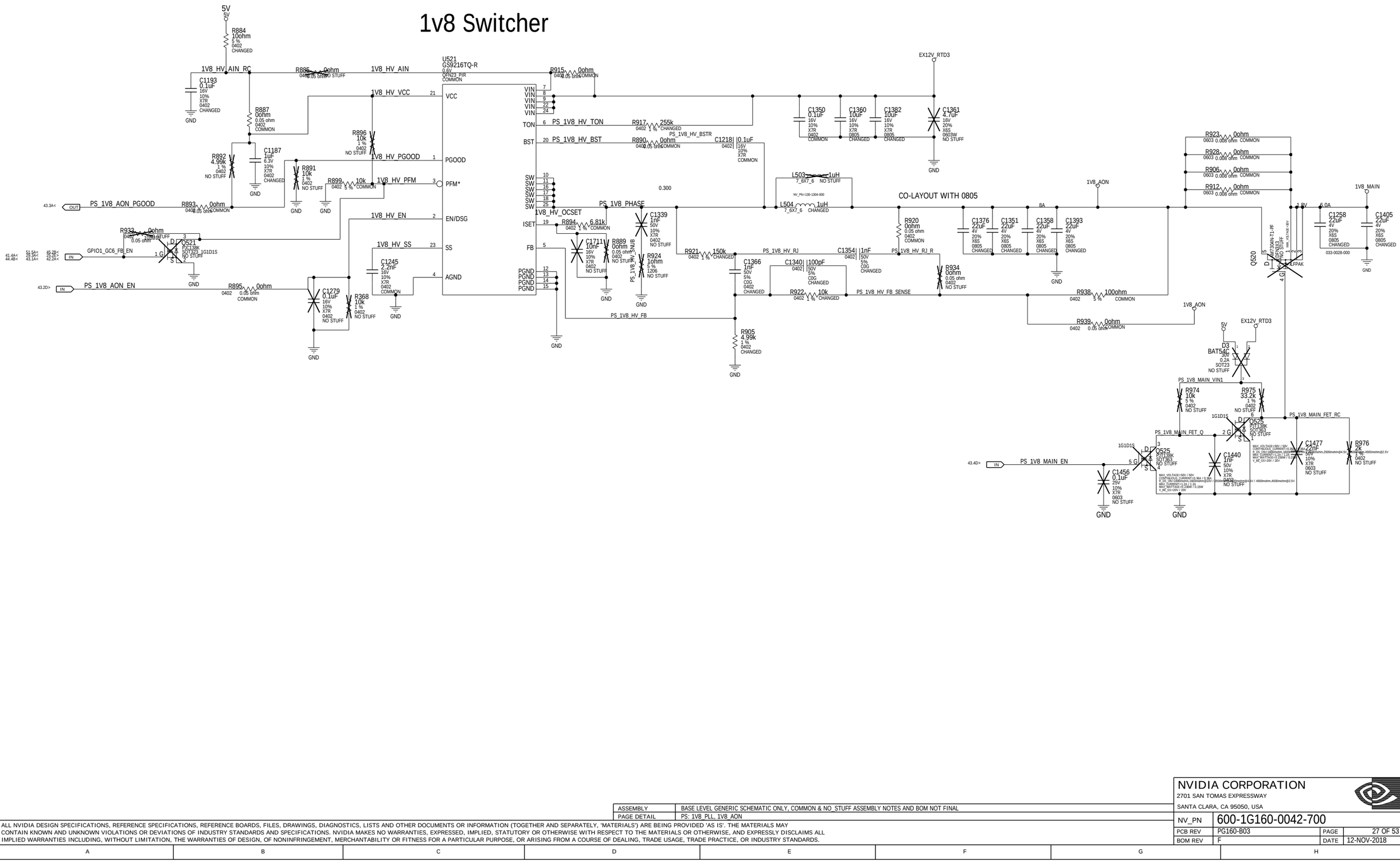
Page27: PS: 1V8 PLL, 1V8_AON

1v8 Switcher



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PAGE DETAIL	PS: 1V8_PLL, 1V8_AON

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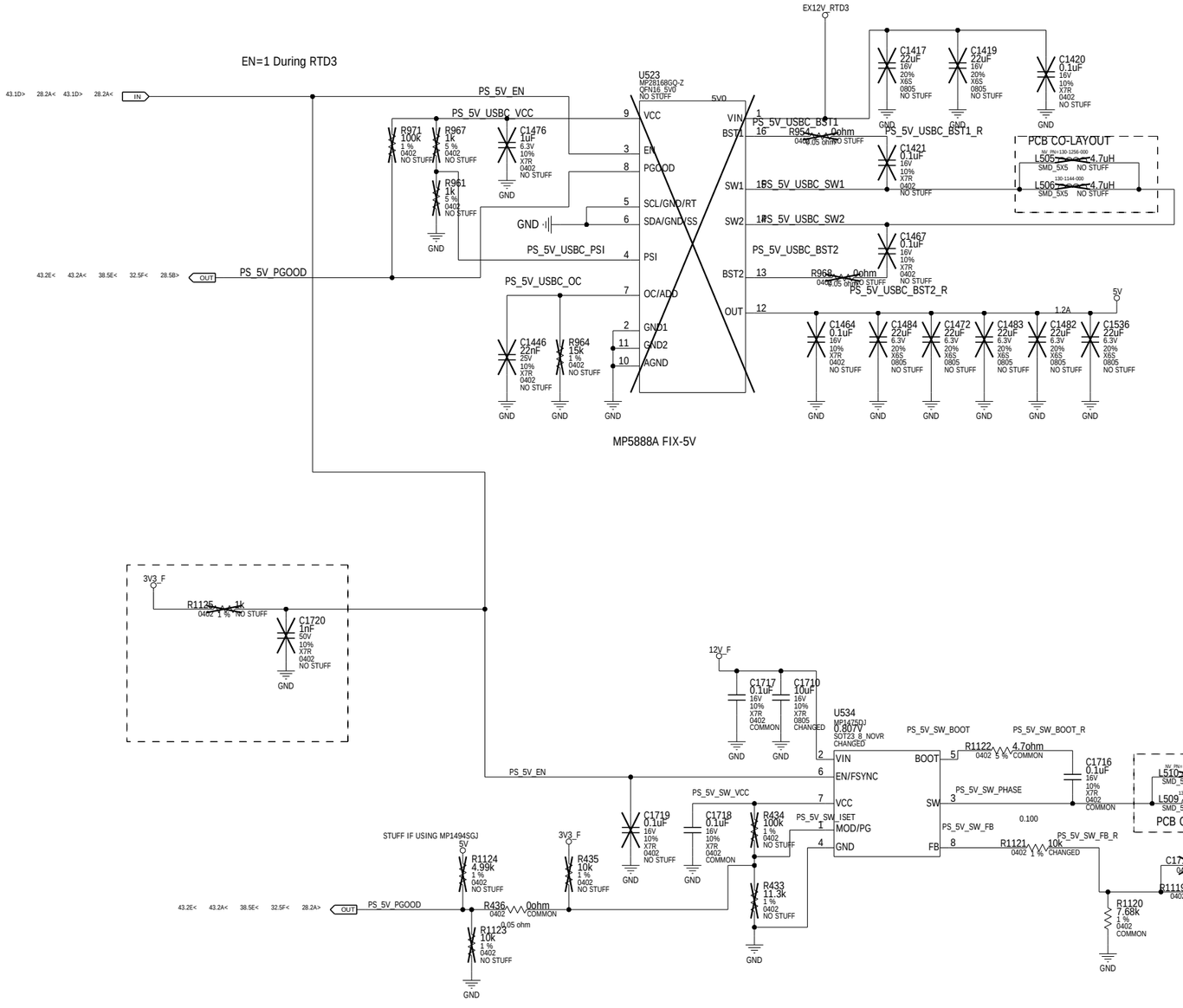
Page28: PS: 5V



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: 5V

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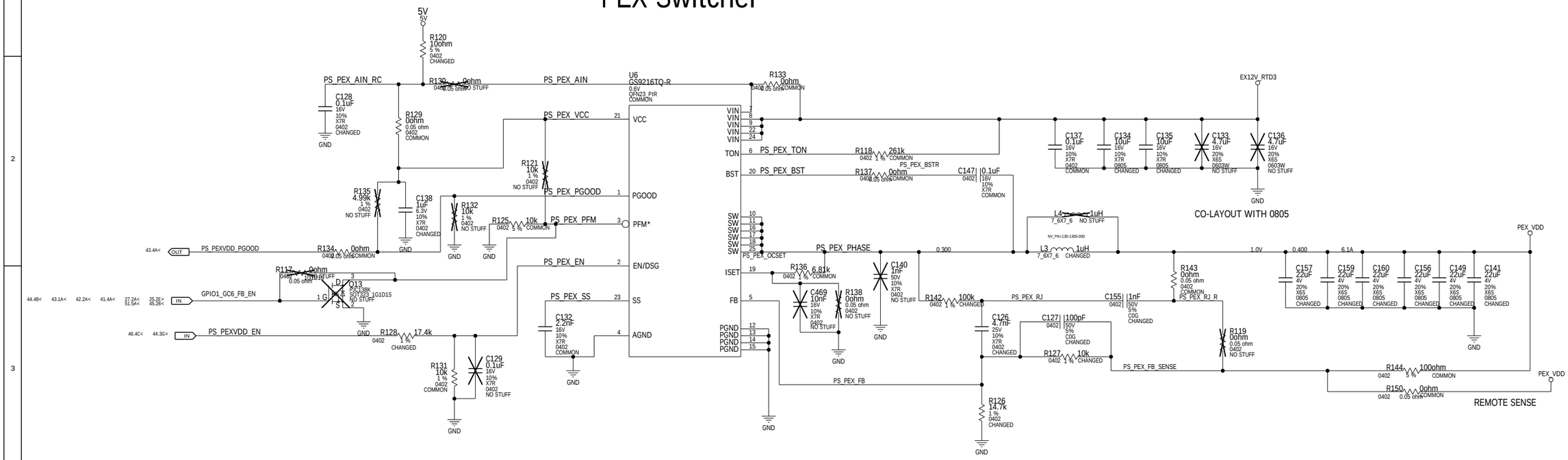
Page29: PS: PEXVDD

PEX Switcher



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: PEXVDD

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Page30: PS: FBVDDQ

2. OPTION TO CONNECT FBVDD+FBVDDQ

12V OPTION TO CHECK

GDDR5X IS 1.35 ONLY

OP Amp Compensation

GM Amp Compensation

A RESISTOR IS PLACED ON C206 FOOTPRINT

Close to MOS

Close to MOS

Close to P20

Close to P16

ind_nonrko_smd_090x081

ind_nonrko_smd_130x081

8x8.8x12 Co-layout PLACEHOLDER FOR INDUCTOR LOCAL LAYOUT SYMBOL- FAKE NVPN

LOCAL SENSE

Remote Sense, To farthest Mem

Remote Sense, To nearest Mem

LOCAL SENSE

Remote Sense, To farthest Mem

Remote Sense, To nearest Mem

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: FBVDDQ

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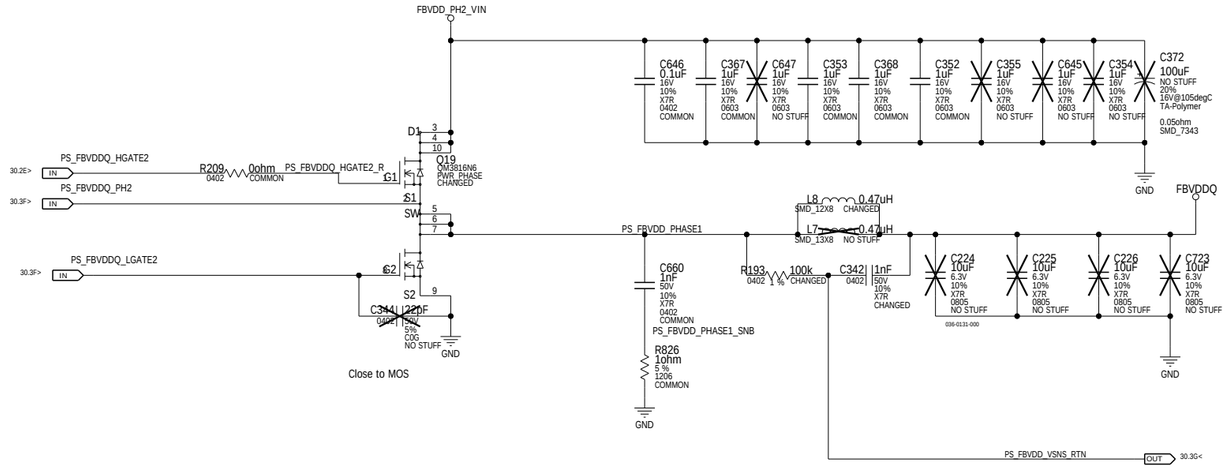
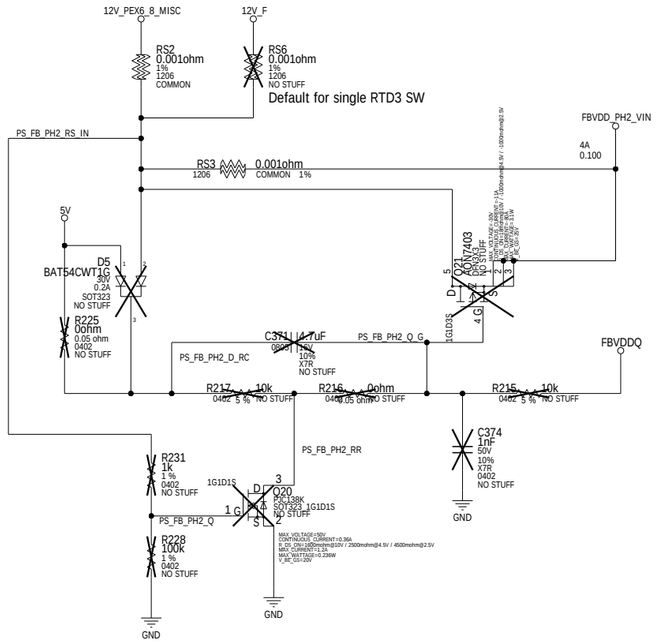
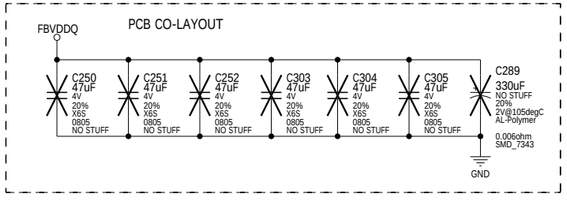
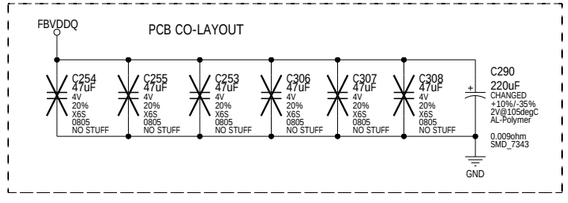
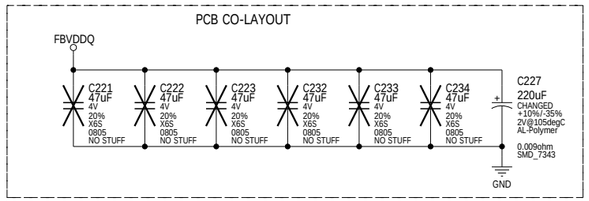
Page31: PS: FBVDDQ PH2

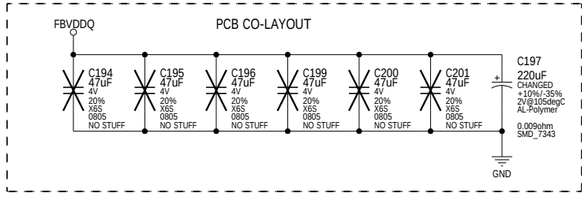


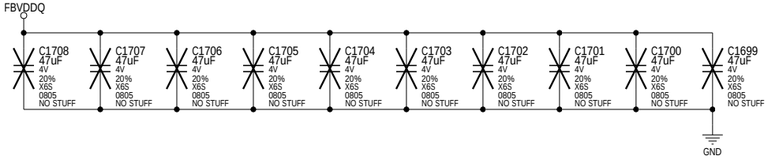












ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: FBVDDQ PH2

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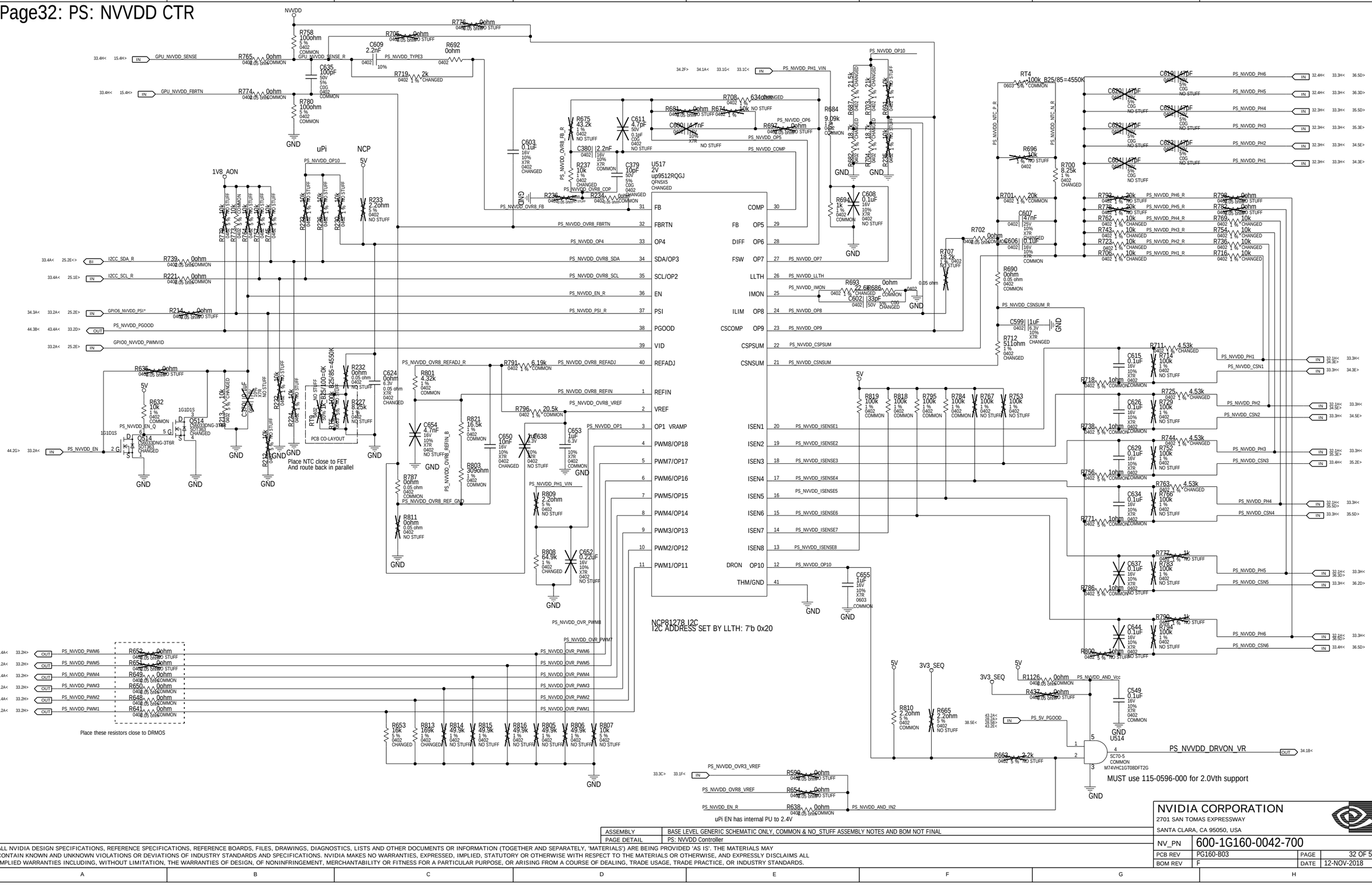
Page32: PS: NVVDD CTR



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: NVVDD Controller

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Page33: PS: NVVDD CTR OVR3i

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: NVVDD Controller OVR3i

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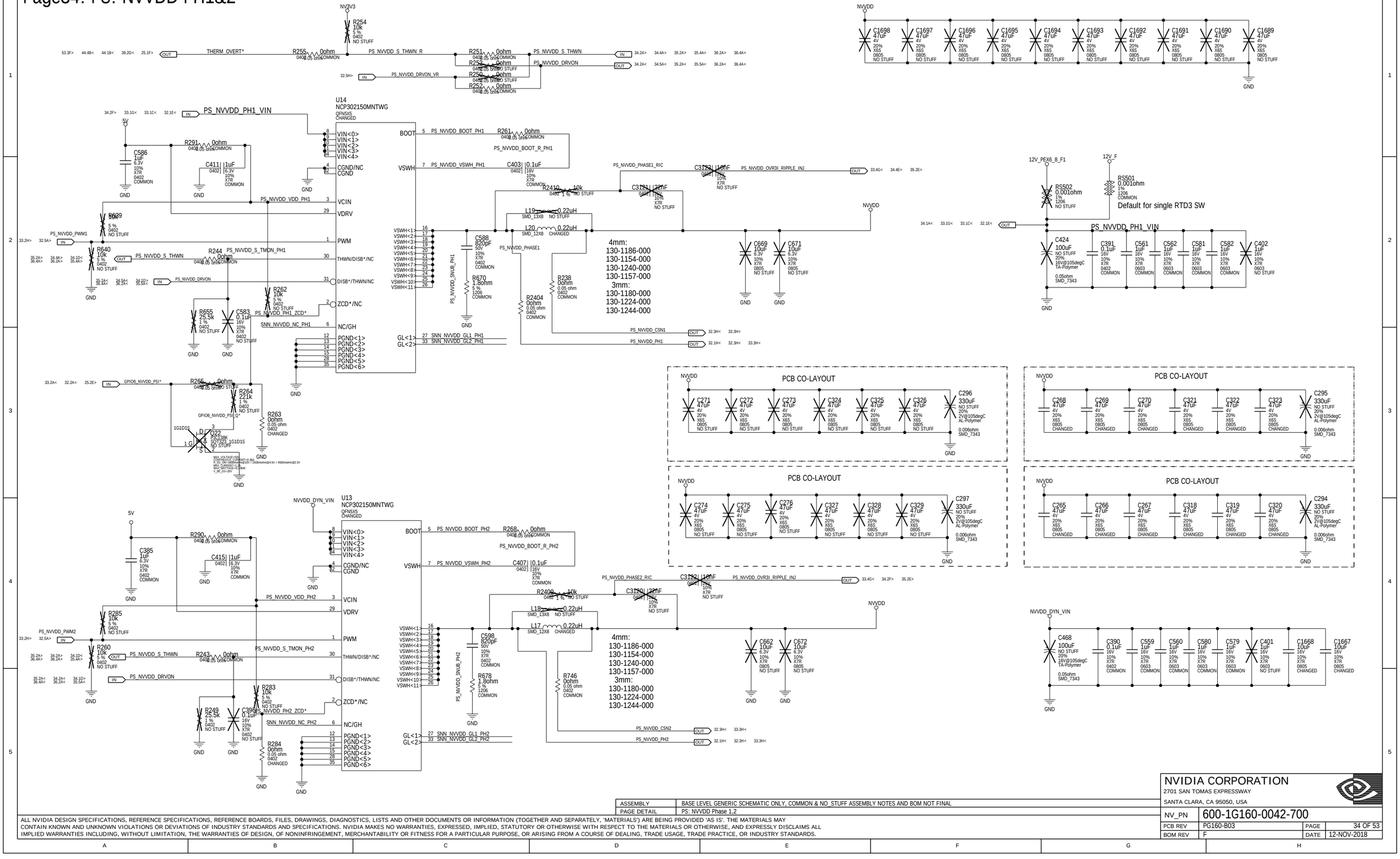
Page34: PS: NVVDD PH1&2



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: NVVDD Phase 1,2

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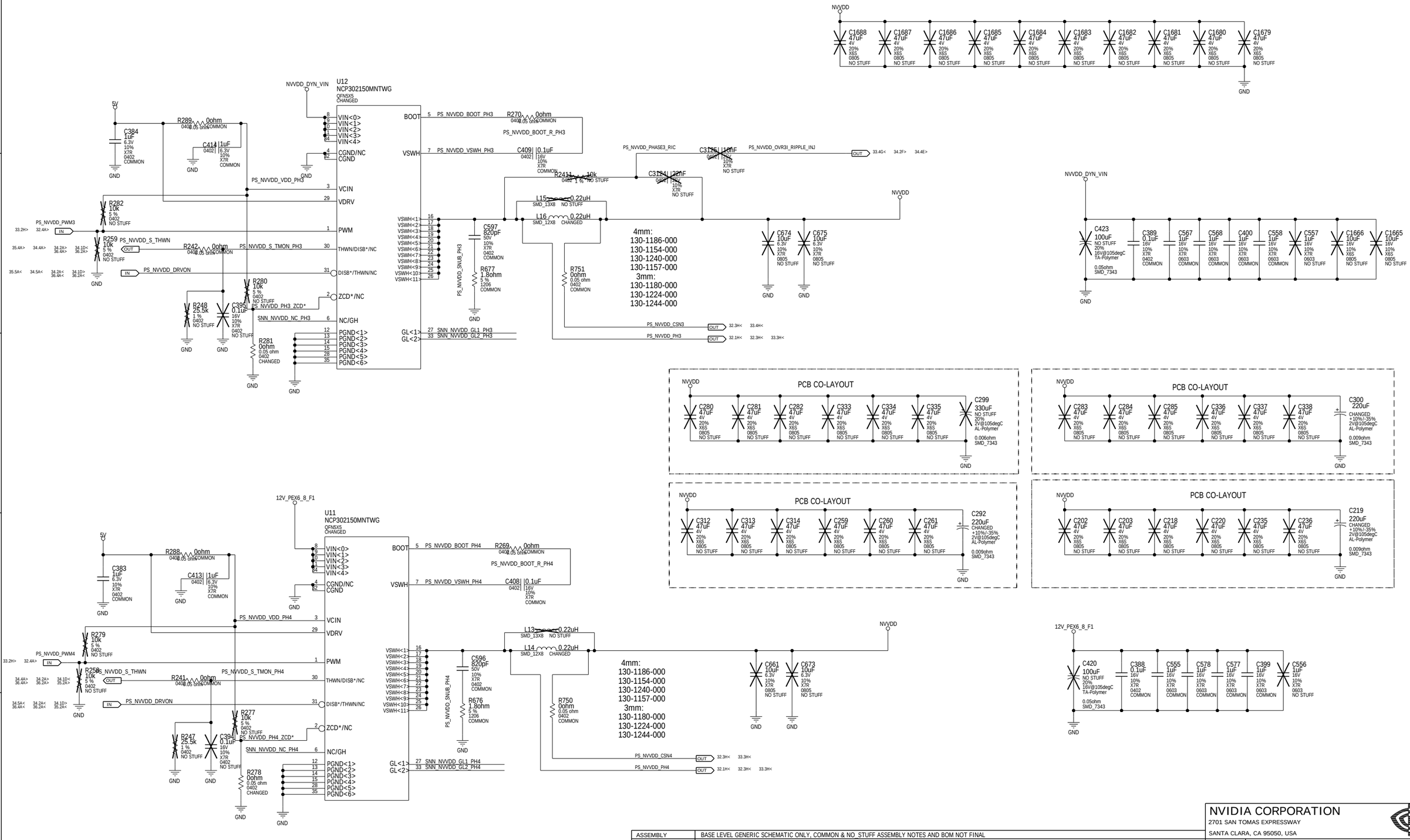
Page35: PS: NVVDD PH3&4



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: NVVDD Phase 3,4

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Page36: PS: NVVDD PH5&6

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: NVVDD Phase 5,6

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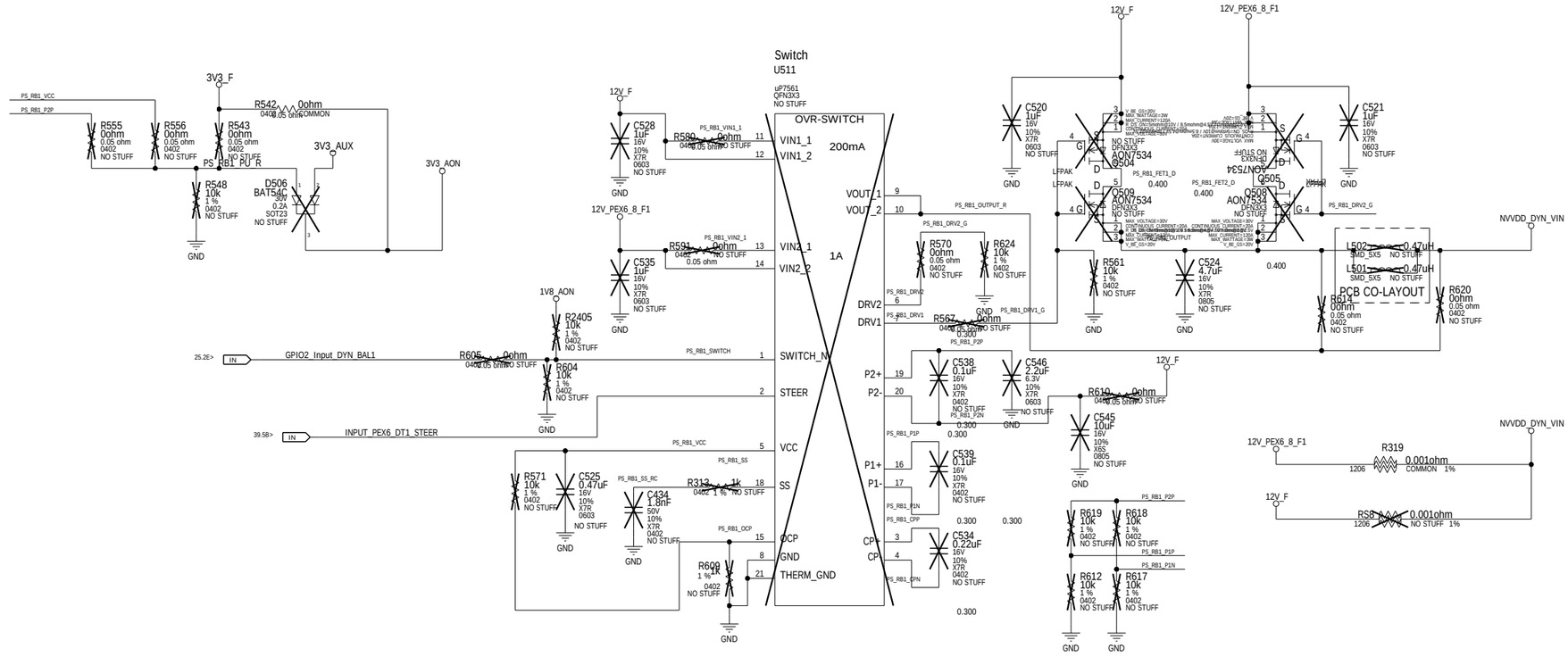
Page37: Input Power Balancing Switcher



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: Input Power Balancing Switcher

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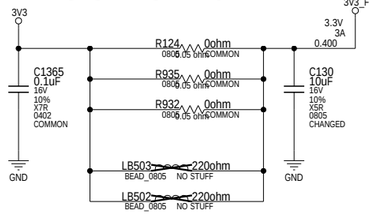
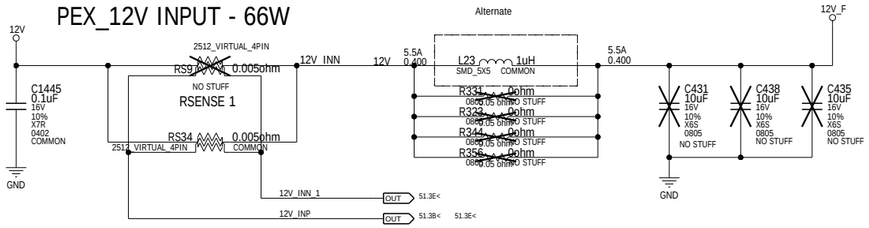
Page38: PS: Inputs, Filtering, and Monitoring

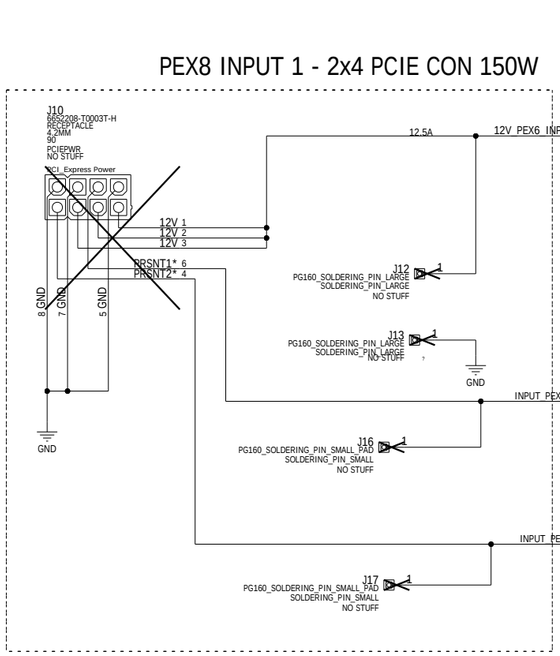
PEX 3V3 INPUT - 10W

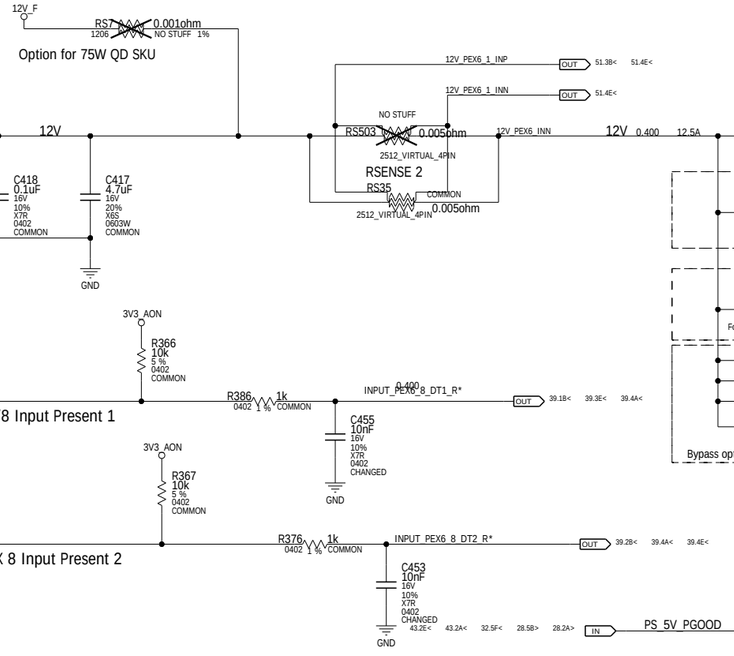


PEX_12V INPUT - 66W



PEX8 INPUT 1 - 2x4 PCIE CON 150W





ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: Input, Filtering, and Monitoring

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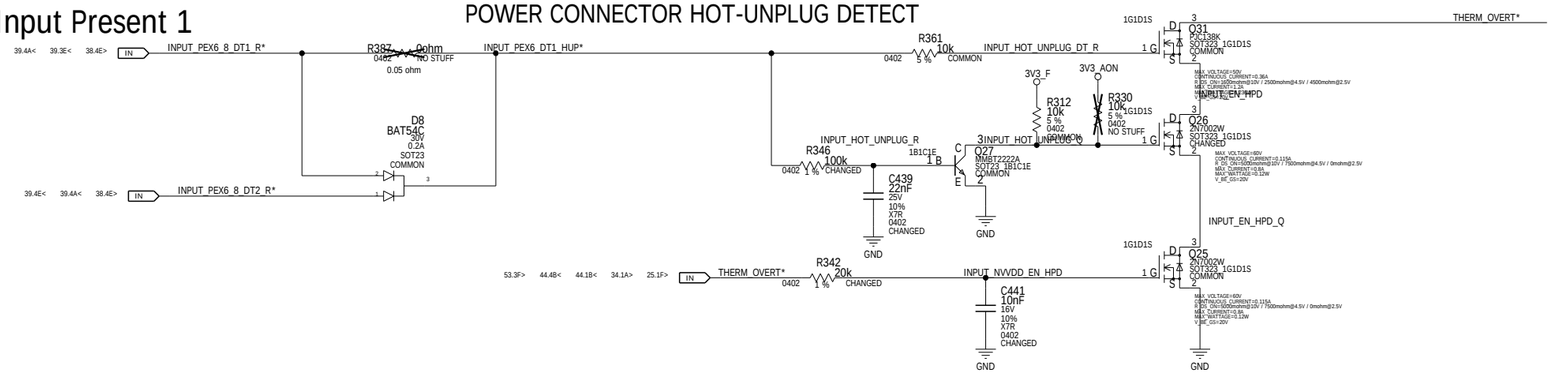
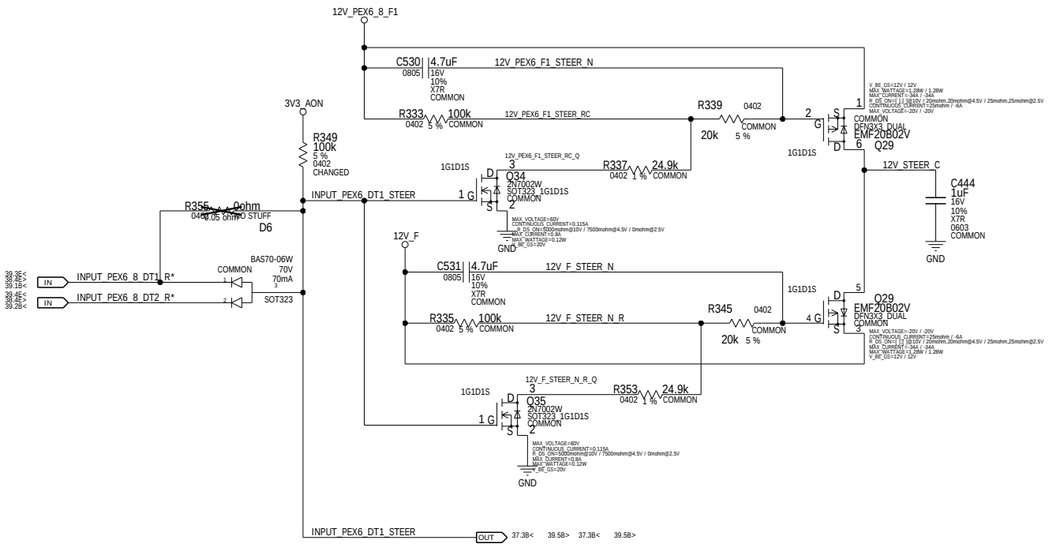
Page39: PS: STEERING, UNDER POWER BOOT & HOT-UNPLUG

PEX Input Present 1

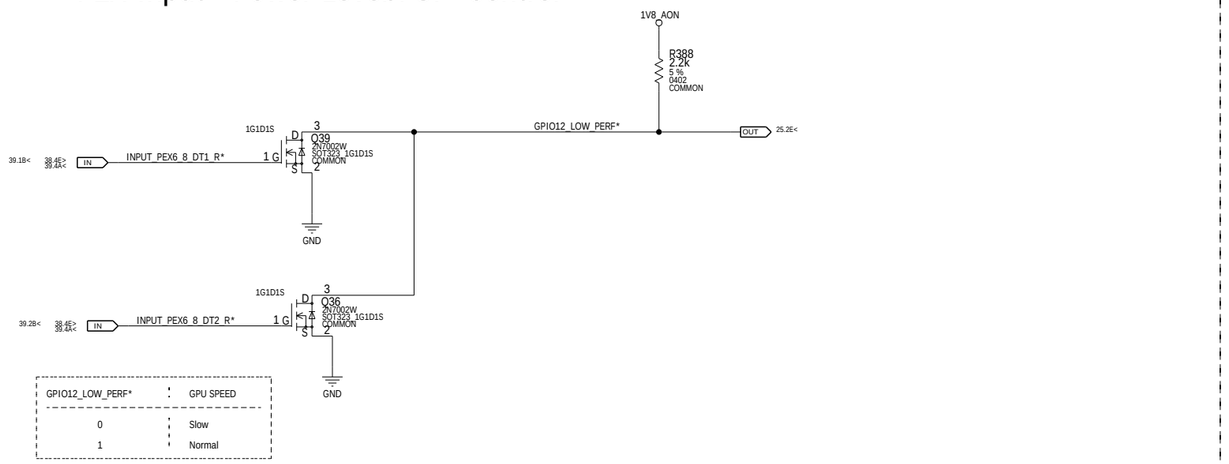


12V CURRENT STEERING (UNDER POWER BOOT):

GUIDES CURRENT FROM PEX EDGE TO PEX 6 PIN INPUT AREA



PEX Input - Power Level/PSI* Control



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: STEERING, UPB & HOT-UNPLUG

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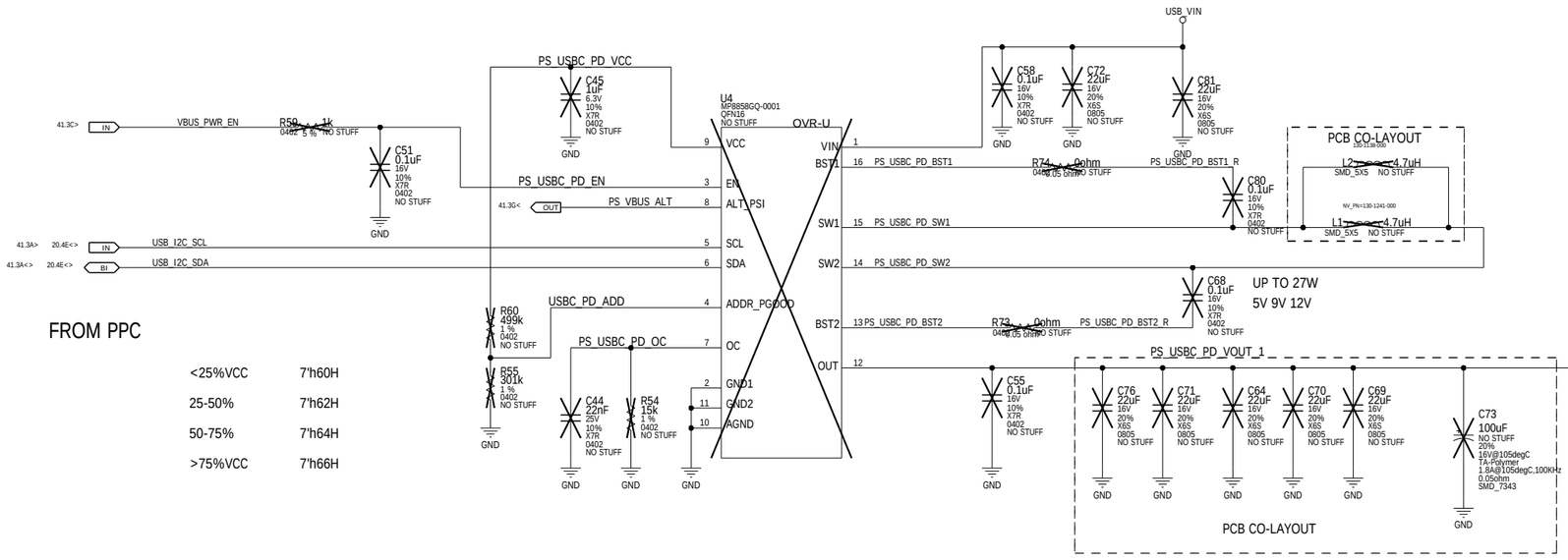
Page40: BUCKBOOST



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PAGE DETAIL	PS: Type-C BuckBoost

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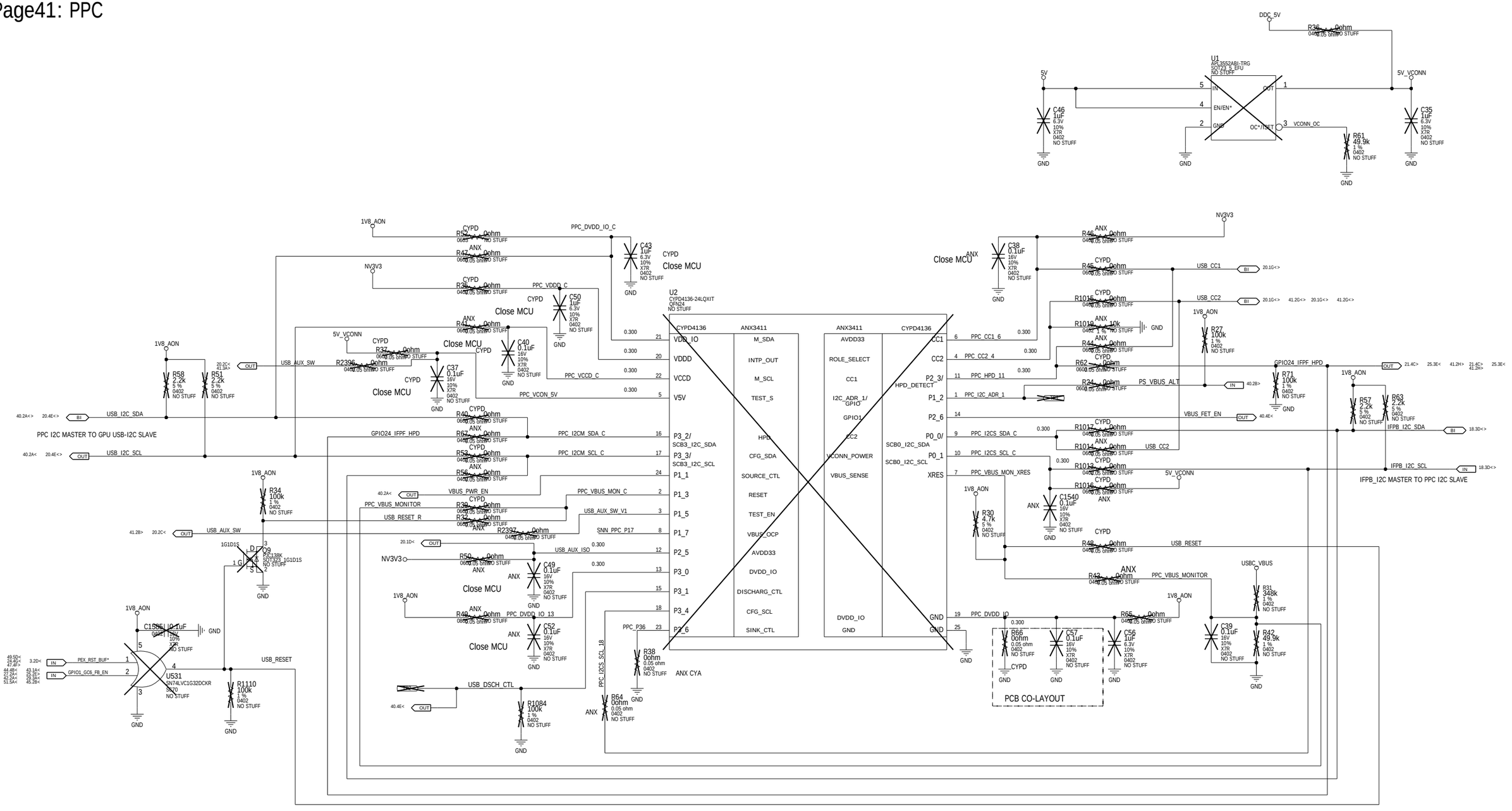
Page41: PPC



	SCL	SDA
CYPD I2C SLAVE	PIN 10	PIN 9
CYPD I2C MASTER	PIN 17	PIN 16
ANX I2C SLAVE	PIN 18	PIN 17
ANX I2C MASTER	PIN 22	PIN 21

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PD PPC

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Page42: 12V & 3V3_A SWITCHER

SWITCH	VOUT
0	VOUT = VIN1
1	VOUT = VIN2

AND GATE LOGIC

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

working as pure switch

internal Pull to Vcc: Use internal MOSFET

SPLIT RTD3 SW:
STUFF BOTH 12V SWITCHER
NO STUFF JUMPER

MERGE RTD3 SW:
NO STUFF 12V_RTD3 SWITCHER
STUFF JUMPER

PCB CO-LAYOUT

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: 12V & 3V3_A SWITCHER

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Page43: SEQ:5V,1V8,NV3V3 ENABLE

5V ENABLE

GPIO1_GC6_FB_EN → R2387 10k 0402 1 % NO STUFF → PS_5V_EN_Q_B

Default: R2388 100k 1 % 0402 NO STUFF; R2389 100k 1 % 0402 NO STUFF → PS_5V_EN_Q_C_R

Q231 MMBT3904D SOT363 NO STUFF (1B1C1E)

PS_5V_EN_Q_C_2nd → R2390 66.5k 0402 1 % NO STUFF

Q231 MMBT3904D SOT363 NO STUFF (1B1C1E)

EX12V_RTD3 → R955 100k 1 % 0402 NO STUFF

12V_RTD3 → R963 100k 1 % 0402 COMMON

R956 27.4k 1 % 0402 CHANGED

C1429 10nF 16V 10% X7R 0402 CHANGED

PS_5V_EN → OUT 28.2A<

For 5V Buck-Boost

1V8AON/VPP ENABLE

PS_5V_PGOOD → R362 0ohm 0402 0.05 ohm COMMON → PS_5V_PGOOD_AND_IN1

PS_VMON_PGOOD → R369 0ohm 0402 0.05 ohm COMMON → PS_VMON_PGOOD_AND

3V3_SEQ → R384 10k 1 % 0402 COMMON

5V → R351 4.99k 1 % 0402 COMMON

R352 10k 1 % 0402 COMMON

U19 M74VHC1GT08DFT2G SC70-5 COMMON

PS_1V8_AON_EN_AND

C457 0.1uF 0402 16V 10% X7R COMMON

D7 RB521S30T1G SOD523 30V 0.2A COMMON

R374 100k 0402 1 % NO STUFF

PS_1V8_AON_EN → OUT 27.2A<

C447 0.1uF 16V 10% X7R CHANGED

R360 100k 1 % 0402 COMMON

VPP is merged to 1V8AON for G5X/G6

NV3V3 ENABLE

1V8_AON → R400 10k 1 % 0402 COMMON

PS_VMON_PGOOD → R398 0ohm 0402 0.05 ohm NO STUFF

PS_1V8_AON_PGOOD → R396 0ohm 0402 0.05 ohm COMMON → PS_1V8_AON_VMON_PGOOD

U21 M74VHC1GT08DFT2G SC70-5 COMMON

C454 0.1uF 0402 16V 10% X7R COMMON

PS_NV3V3_EN → OUT 43.3D> 44.1B< 43.3D> 44.1B<

R395 100k 1 % 0402 COMMON

C462 0.1uF 16V 10% X7R 0402 NO STUFF

R389 0ohm 0402 0.05 ohm NO STUFF

1V8MAIN ENABLE

3V3_SEQ → R2391 0ohm 0.05 ohm 0402 NO STUFF

1V8_AON → R2392 0ohm 0.05 ohm 0402 NO STUFF

SEQ_1V8_MAIN_OR_VCC

C458 0.1uF 0402 16V 10% X7R NO STUFF

1V8_AON → R378 10k 1 % 0402 NO STUFF

GPIO4_GC6_1V8_MAIN_EN

PS_SLI_FGC6_OR

U20 SN74LVC1G32DCKR SC70 NO STUFF

PS_1V8_MAIN_EN → OUT 27.3F<

R379 100k 1 % 0402 NO STUFF

NVPEX PGOOD

NV3V3 → R186 10k 1 % 0402 COMMON

NV3V3 → R178 10k 1 % 0402 COMMON

3V3_SEQ → C737 0.1uF 0402 16V 10% X7R NO STUFF

PS_PEXVDD_PGOOD

PS_NVVDD_PGOOD

U519 M74VHC1GT08DFT2G SC70-5 NO STUFF

PS_NVPEX_PGOOD → OUT 47.2C< 49.4C<

R1059 100k 1 % 0402 NO STUFF

3V3_SEQ

5V → C2 1uF 6.3V 10% X7R 0402 COMMON

U533 3.3V NCP114AMX330TCG UDFN4 NOVR COMMON

R1114 0ohm 0.05 ohm 0402 NO STUFF

PS_3V3_SEQ_EN_R

R1113 0ohm 0.05 ohm 0402 COMMON

3V3_SEQ → C1587 4.7uF 6.3V 20% X6S 0603 COMMON

C1598 4.7uF 6.3V 20% X6S 0603 COMMON

PS_5V_PGOOD

Used for Power Sequence Only

NV3V3

5V → C1572 1uF 6.3V 10% X7R COMMON

U530 3.3V NCP114AMX330TCG UDFN4 NOVR COMMON

PS_NV3V3_EN

NV3V3 → C1577 4.7uF 6.3V 20% X6S 0603 COMMON

GPIO PU, USB_VPP:27mA

DDC5V

5V → R1024 10k 1 % 0402 NO STUFF

R1021 0ohm 0402 0.05 ohm COMMON

DDC5V_EN

U527 GS7612S9MA-R SOT23_5_EFU COMMON

0.400 5V 0.5A

DDC_5V → C1539 220pF 50V 5% C0G 0402 COMMON

C1535 4.7uF 6.3V 20% X6S 0603 COMMON

C1537 10uF 6.3V 10% X7R 0805 NO STUFF

SNN_DDC_5V_OC

Place it closed to 5V regulator

DP_AUX Protection

12V_F → R1027 10k 1 % 0402 CHANGED

12V_F → R1032 10k 1 % 0402 COMMON

Q529 MMBT3904D SOT363 COMMON (1B1C1E)

R1026 10k 0402 1 % COMMON

DP_AUX_PROT_R

DP_AUX_PROT_Q

DP_AUX_PROT → OUT 3.1E< 19.2C< 21.3A< 22.1C< 23.2C<

3V3_PROT

3V3_F → C1574 1uF 6.3V 10% X7R 0402 NO STUFF

U529 GS7612S9MA-R SOT23_5_EFU NO STUFF

0.200 3.3V 0.2A

3V3_PROT → C1561 4.7uF 6.3V 20% X6S 0603 NO STUFF

SNN_3V3PROT_OC

NVHS 3V3,190mA

3V3 FOR NVLINK CLK Generator

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	SEQ: 5V, 1V8, NV3V3 ENABLE

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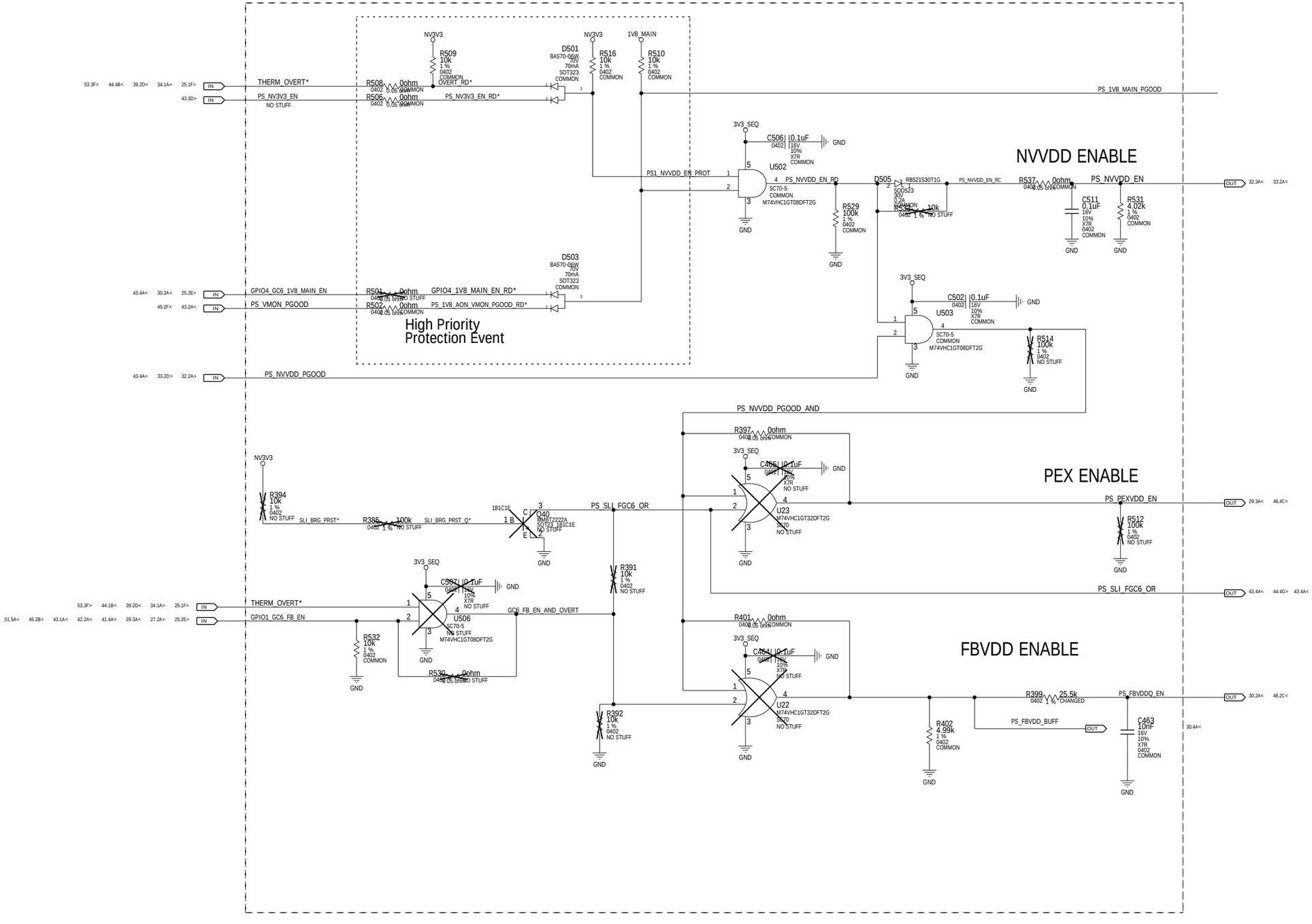
Page44: SEQ:NV,PEX,FB ENABLE



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PAGE DETAIL	SEQ: NV, PEX, FB ENABLE

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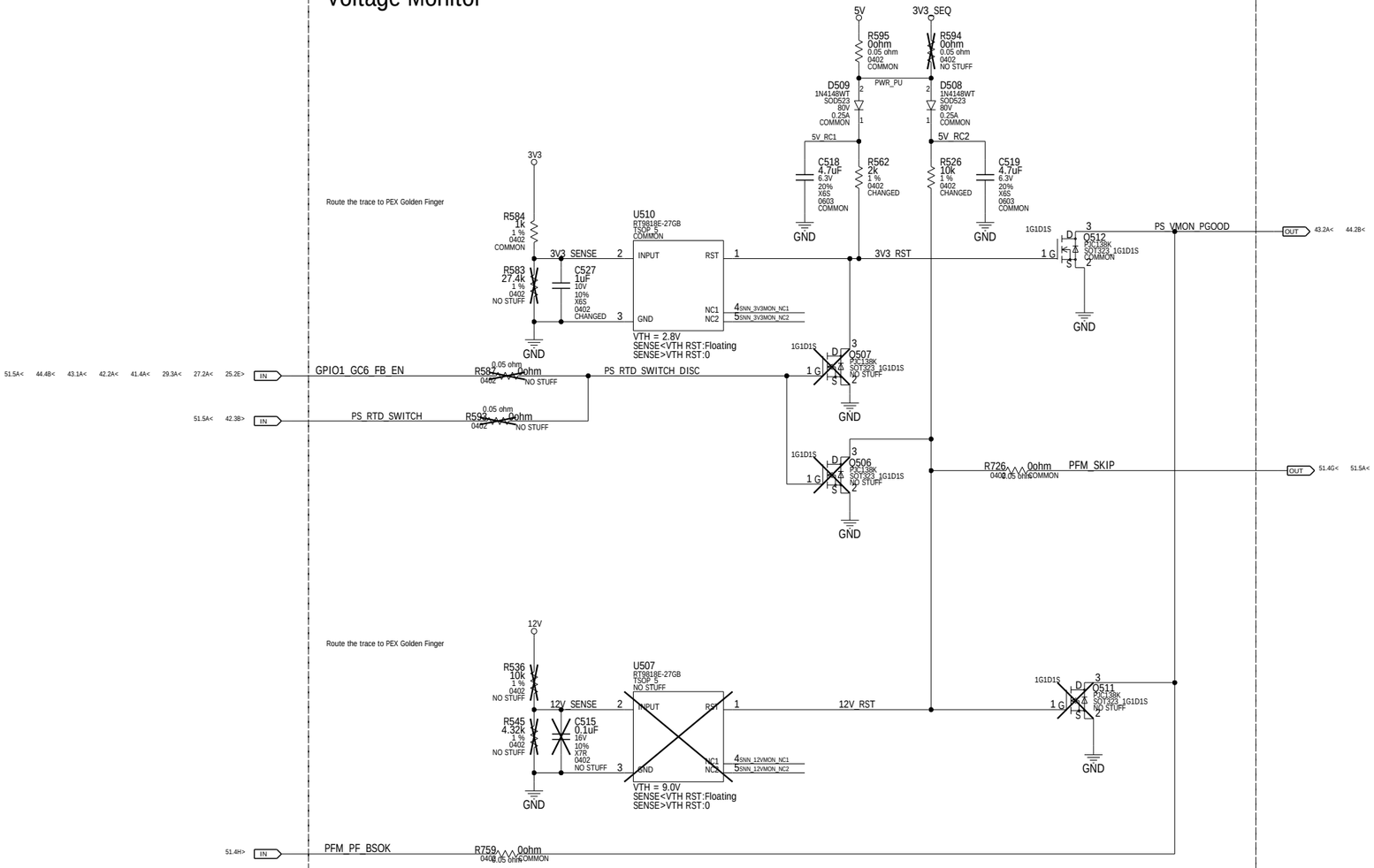
Page45: SEQUENCE:Voltage Monitor

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)

BOM Configuration

OPTIONS	PEX3V3_SENSE	PEX12V_SENSE	OTHER_12V_SENSE
Use Pre-Filter	Pre-Filter	Pre-Filter	Pre-Filter
Use INA3221	Voltage_Monitor	INA3221	INA3221
NO INA3221 NO Pre-Filter	Voltage_Monitor	Voltage_Monitor	N/A

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ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	SEQ: VOLTAGE MONITOR

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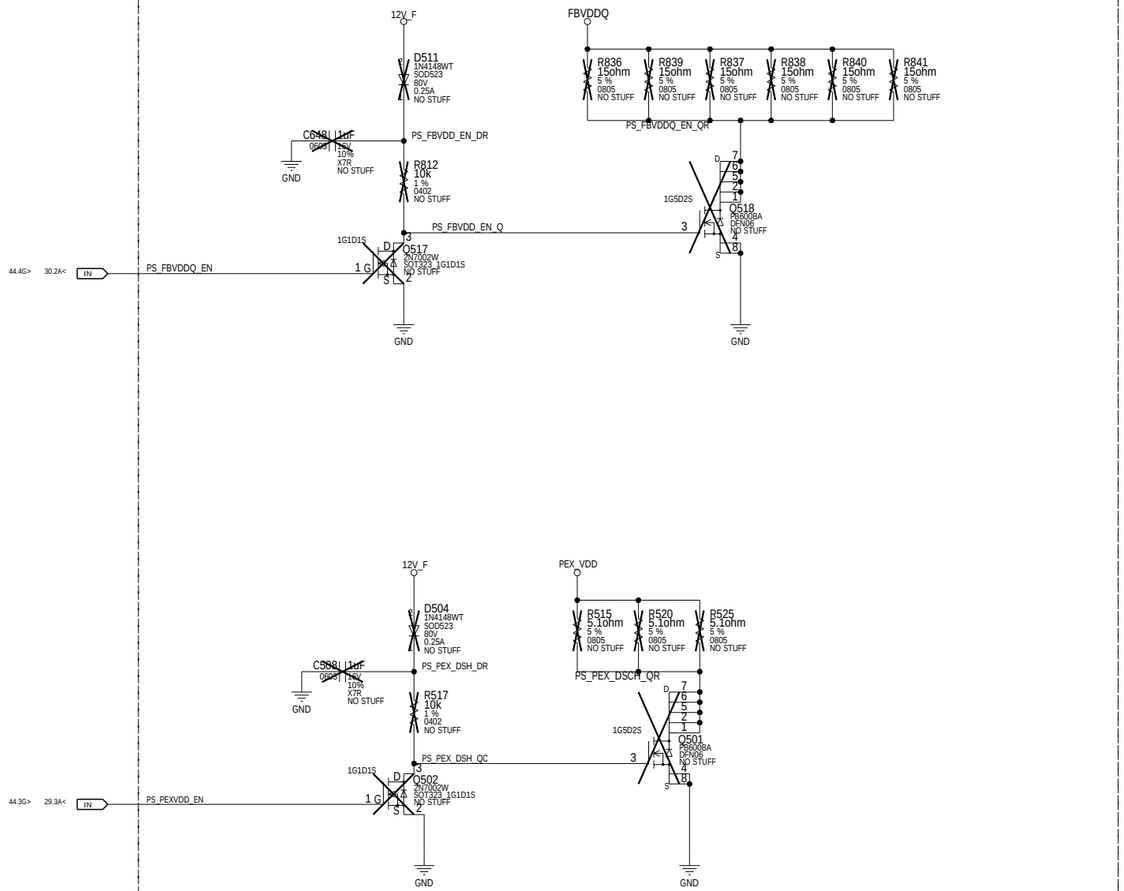
Page46: SEQUENCE:Discharge



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PAGE DETAIL	SEQ: DISCHARGE

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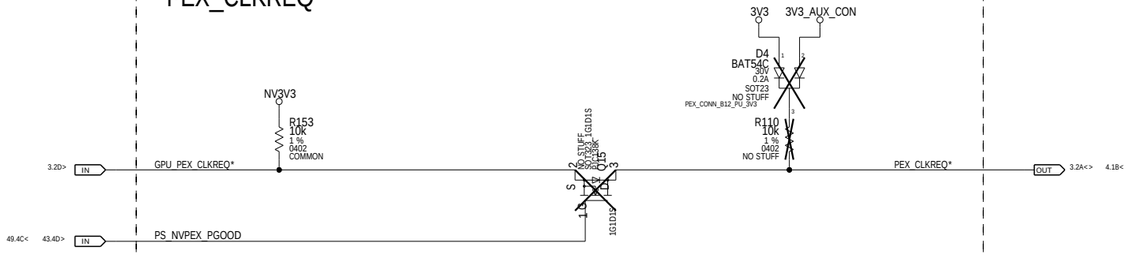
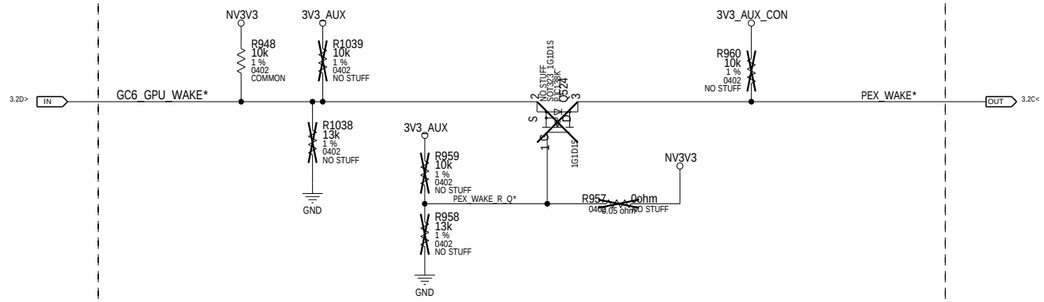
Page47: SEQUENCE:MISC

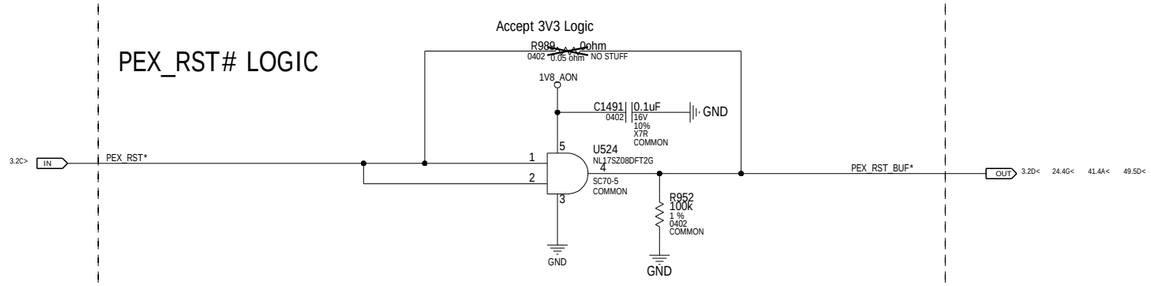
PEX_CLKREQ*



GPU_WAKE*



PEX_RST# LOGIC



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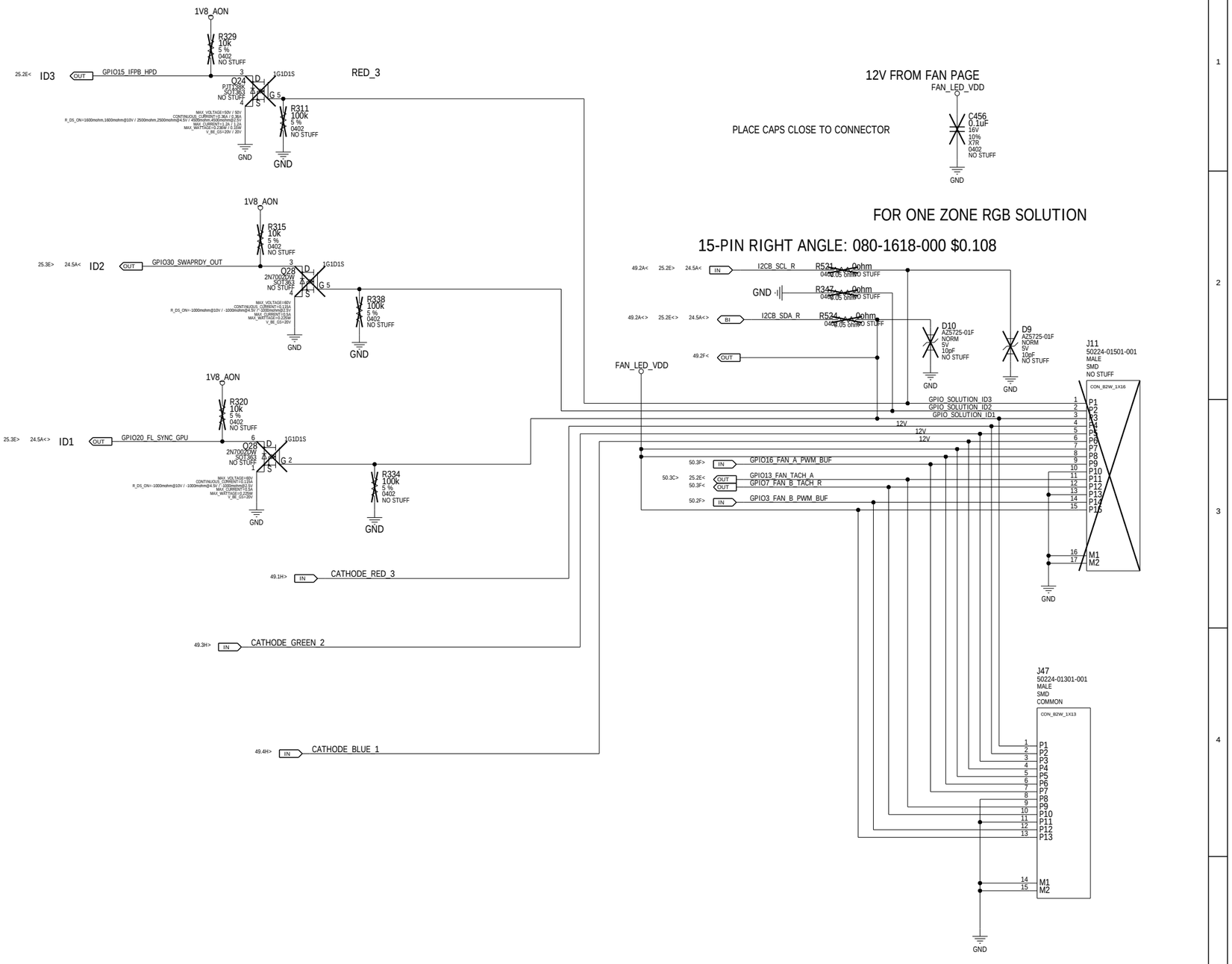
Page48: LOGO LED

For ONE ZONE RGB/cable	
PIN SEQ	Pin Name
1	ID3
2	ID2
3	ID1
4	DRIVE3/R
5	DRIVE2/G
6	DRIVE1/B
7	12V
8	12V
9	FAN_PWM1
10	GND
11	FAN_TACH1
12	FAN_TACH2
13	GND
14	FAN_PWM2
15	12V



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	LOGO LED

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Page49: LED DRIVER & Boost

INPUT LEAKAGE CURRENT OF ADC_INx PINS: -0.2uA~0.2uA(max)

8-bit I2C Address of MCU on GPU BOARD: 0x92

U135
STM32F051K8U6TR
UFQFPN32
NO STUFF

BOOT0	BOOT MODE
0	Main Flash Memory
1	System Memory

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	LED DRIVER & BOOST

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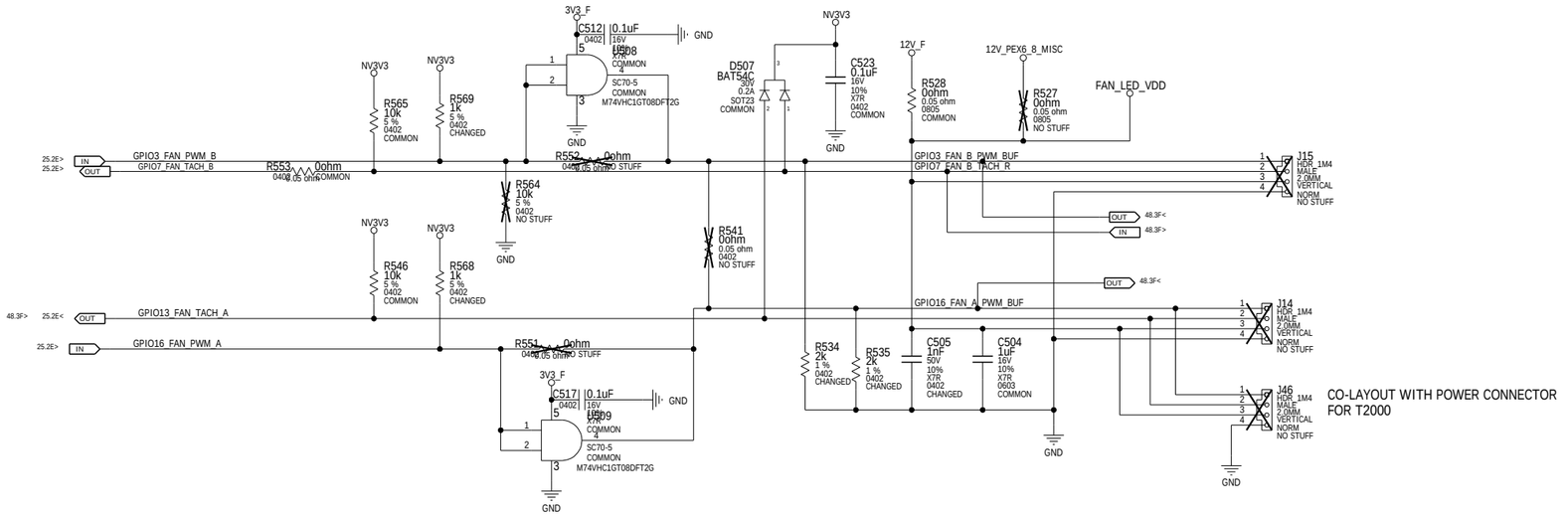
Page50: DUAL FAN



CO-LAYOUT WITH POWER CONNECTOR FOR T2000

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DUAL FAN

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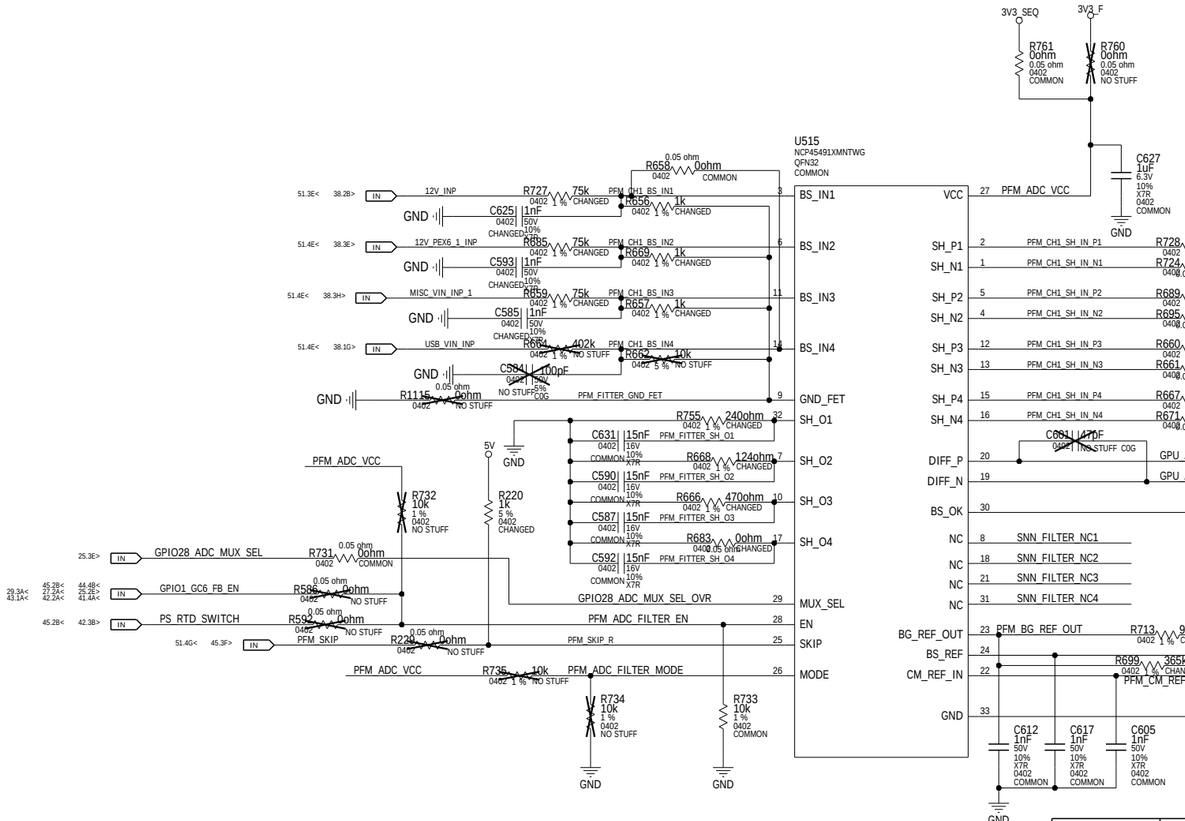
Page51: PWR SENSE



MODE PIN STATUS	MULTIPLEXER OPERATION
LOW	DEVICE A
TRI-STATE(FLOATING)	STAND-ALONE
HIGH	DEVICE B

ENABLE PIN STATUS	MULTIPLEXER OPERATION
LOW	FULLY FUNCTIONAL
TRI-STATE(FLOATING)	LIMITTED FUNCTION
HIGH	STANDBY

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PS: Pre-filter

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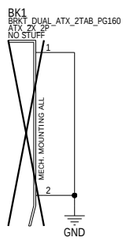
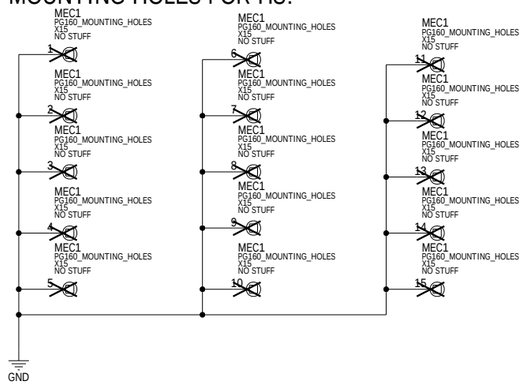
Page52: MECH

Brackets:



MOUNTING HOLES FOR HS:



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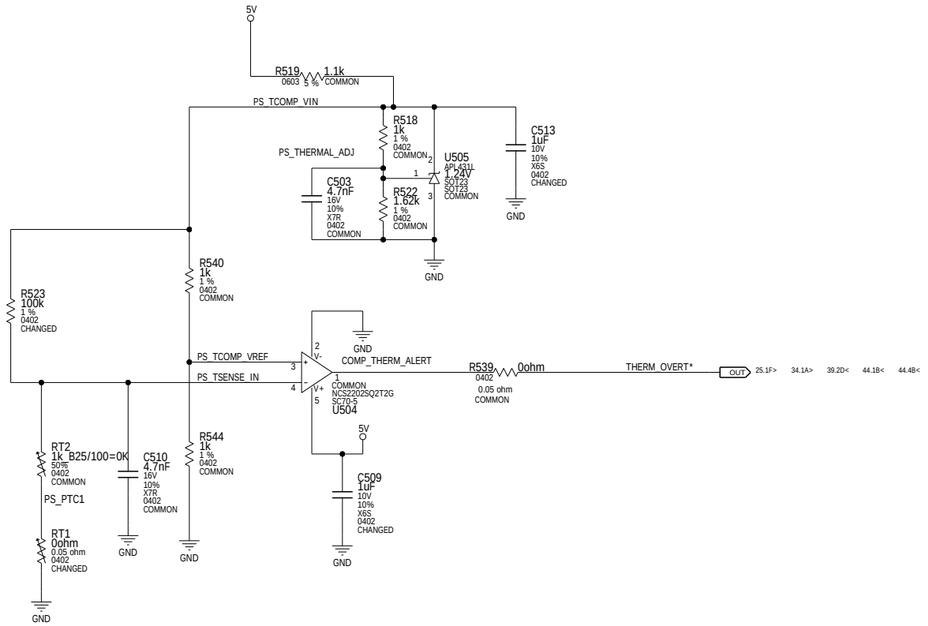

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