PG142-B00

DP + DP + DP + HDMI/DP

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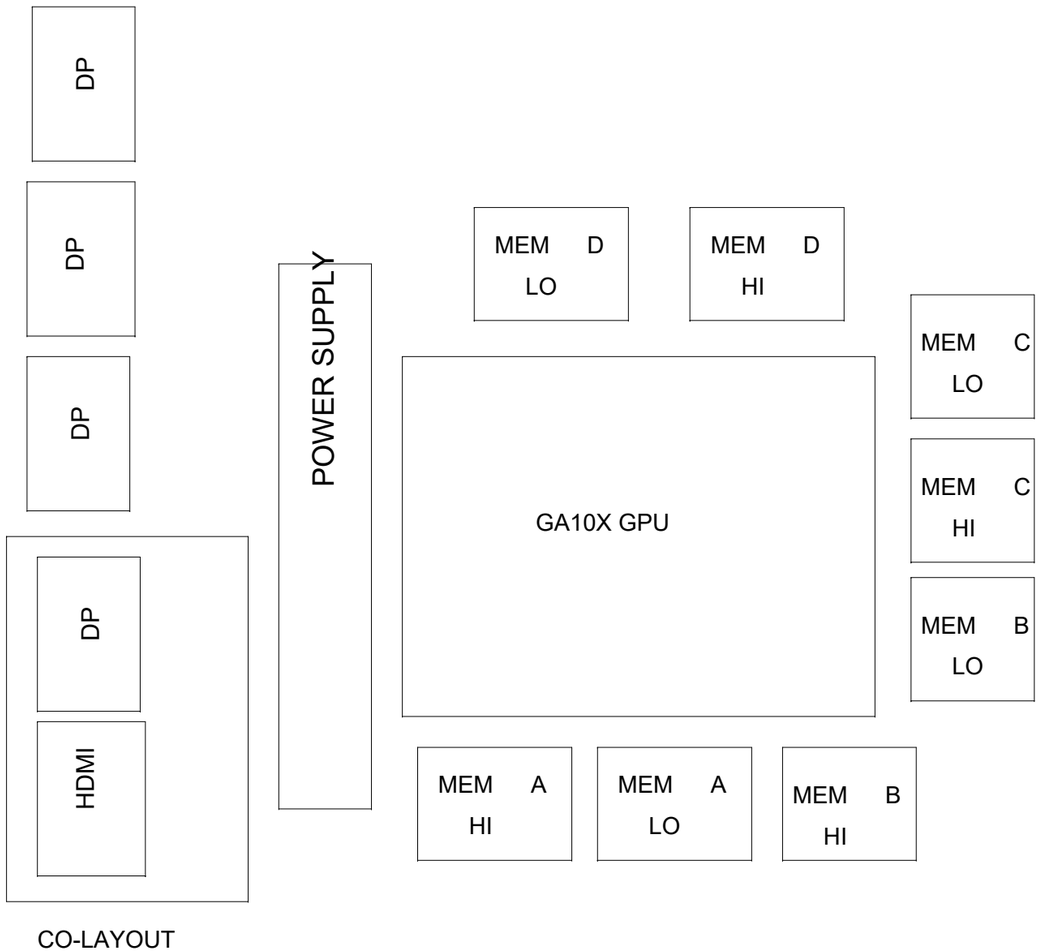

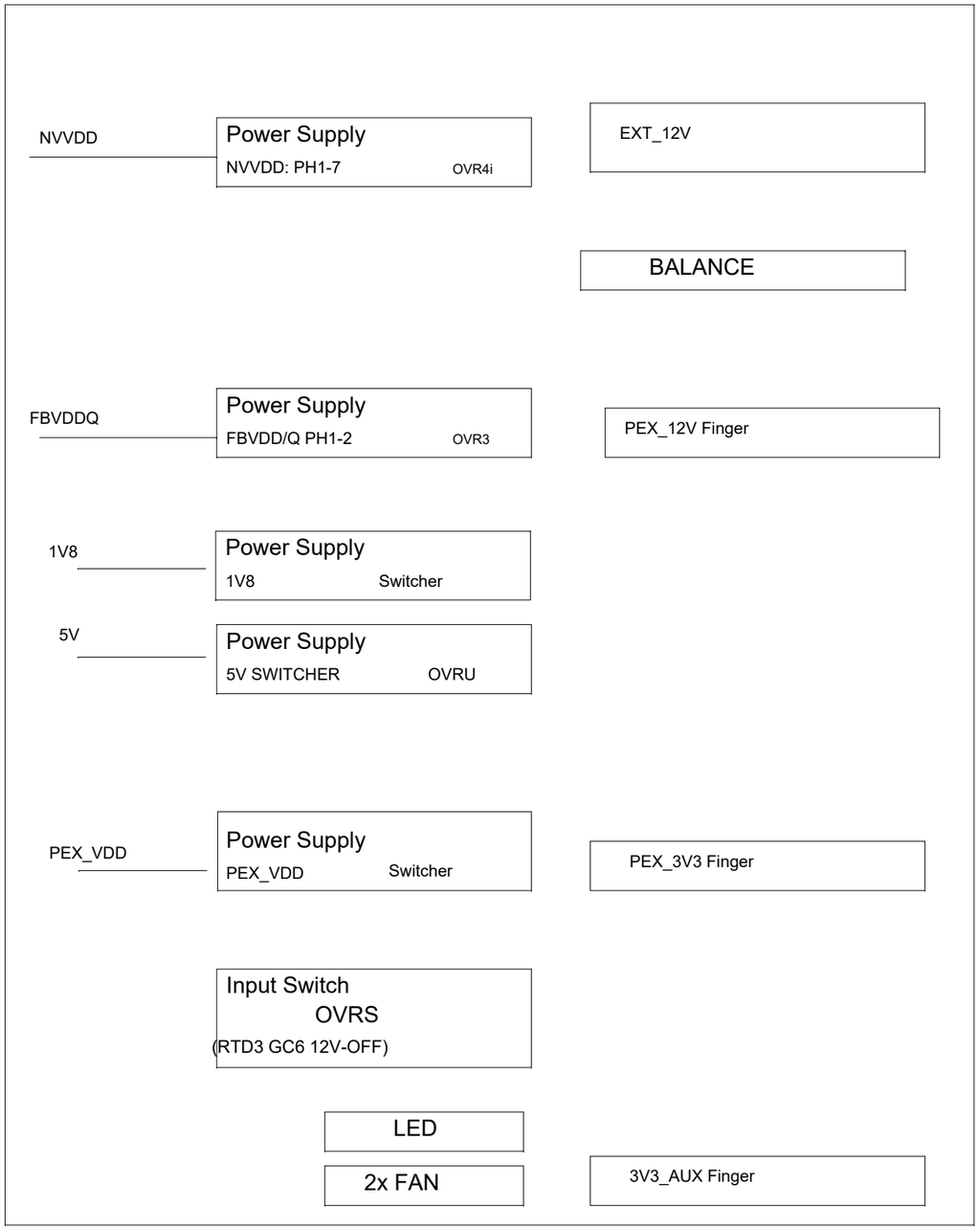

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Page3: PCI Express

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
12V	12V	5.5A	0.406
3V3	3.3V	3.0A	0.125
GND	0V	8.5A	0.245

CN1
CON_X16
NO STUFF
CON_PCIEXP_X16_EDGE

G1A
BGA2714
COMMON
1/24 PCI_EXPRESS

Place under GPU
6x 0402 1uF
2x 0603 4.7uF

Place between GPU and PS
1x 0805 10uF
1x 0805 22uF

1x 0805 47uF
Placed by PEX_VDD PS

9x 0402 1uF
2x 0603 4.7uF

2x 0805 10uF
1x 0805 22uF

3x 0805 47uF
Placed by 1v8 PS

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

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PCI Express

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Page4: PCIE GEN4 RC TERMINATIONS

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Page5: MEMORY: GPU Partition A/B

//syseng/Projects/GA1xx/GA1XX_CMD-Mapping.xlsx

compatible

G1B — BGA2714 COMMON — 2/24 FBA

G1C — BGA2714 COMMON — 3/24 FBB

GA1XX GDDR6 CMD Mapping

	Lower 0..31 DRAM1 CHA-Byte 0,1	Upper 32..63 DRAM2 CHA-Byte 4,5
CA0_A	CMD1	CMD33
CA1_A	CMD13	CMD45
CA2_A	CMD12	CMD35
CA3_A	CMD24	CMD46
CA4_A	CMD11	CMD36
CA5_A	CMD15	CMD43
CA6_A	CMD22	CMD48
CA7_A	CMD23	CMD47
CA8_A	CMD0	CMD34
CA9_A	CMD2	CMD32
CABI_A	CMD10	CMD37
CKE_A	CMD14	CMD44
	CHB-Byte 2,3	CHB-Byte 6,7
CA0_B	CMD5	CMD29
CA1_B	CMD18	CMD52
CA2_B	CMD7	CMD40
CA3_B	CMD20	CMD50
CA4_B	CMD8	CMD39
CA5_B	CMD16	CMD42
CA6_B	CMD21	CMD49
CA7_B	CMD19	CMD51
CA8_B	CMD6	CMD38
CA9_B	CMD4	CMD30
CABI_B	CMD9	CMD38
CKE_B	CMD17	CMD41
RESET*	CMD3	CMD31

2x 0603 4.7uF
1x 0805 22uF
Near the GPU

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: GPU FB_AB

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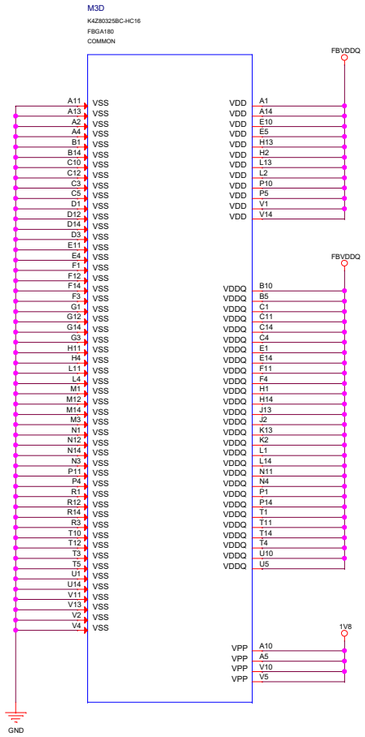
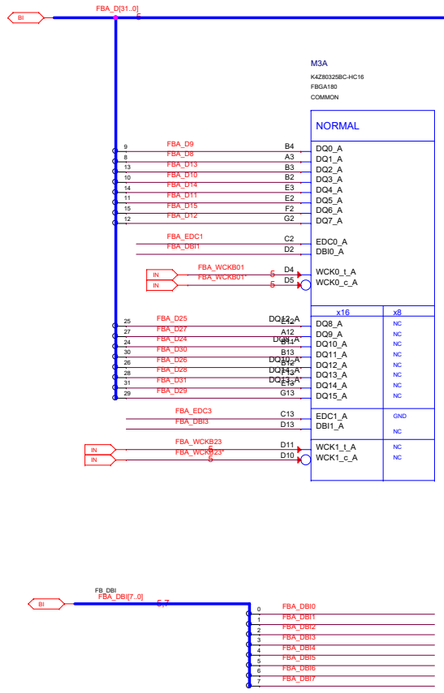
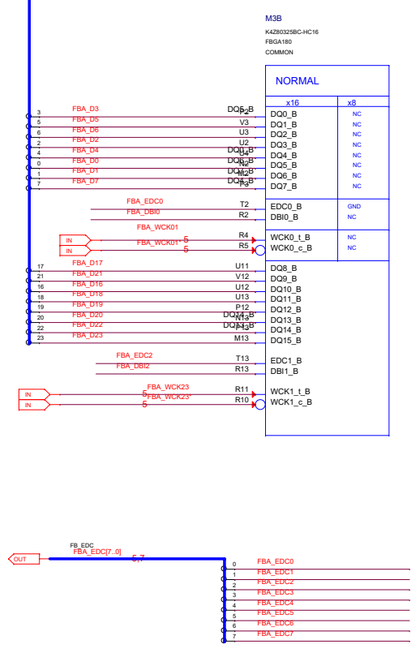
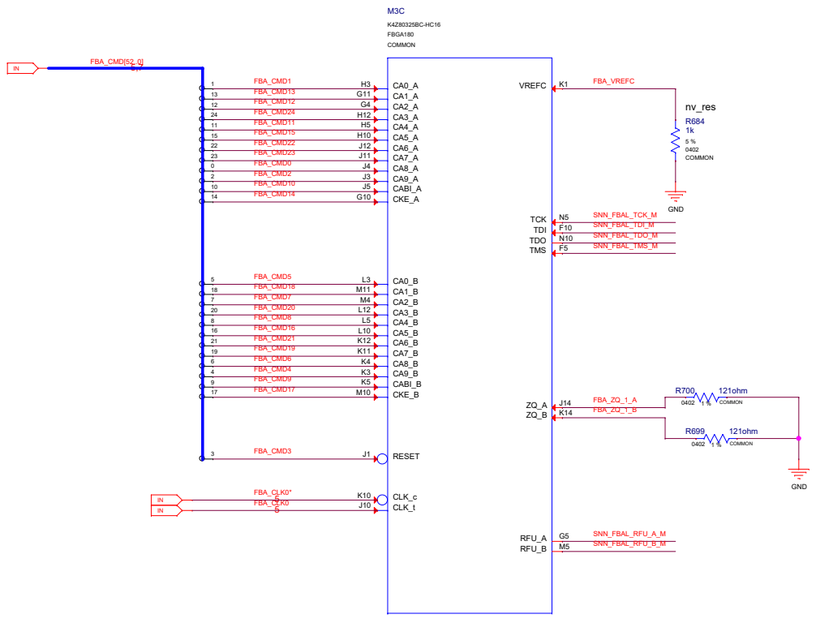
Page6: MEMORY: FBA Partition 31..0

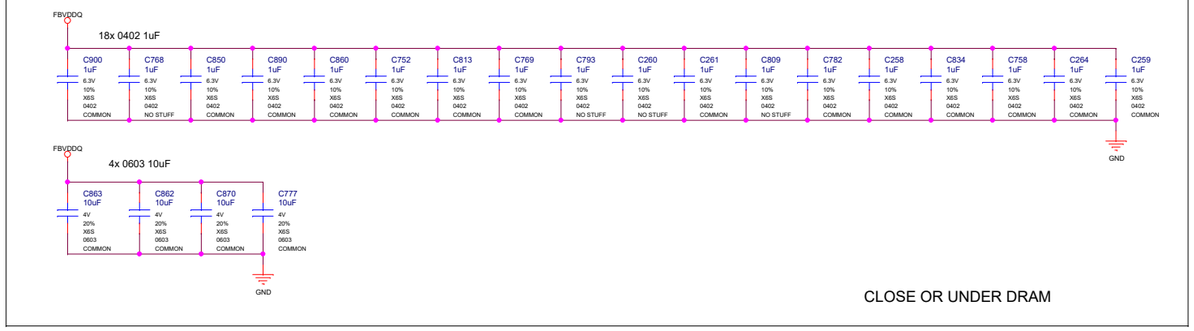


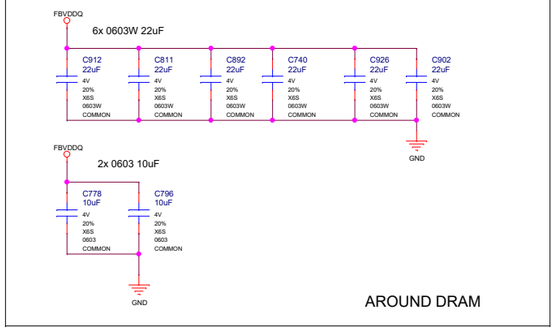


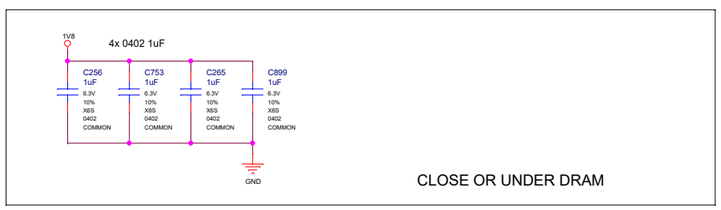




decap via : at least 2 gnd vias and 2 power vias for each cap







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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
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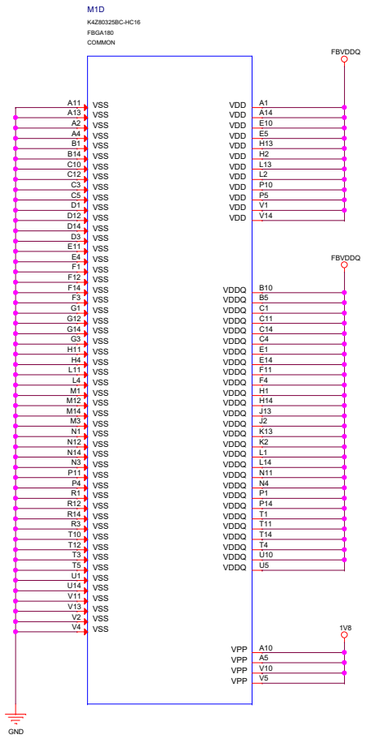

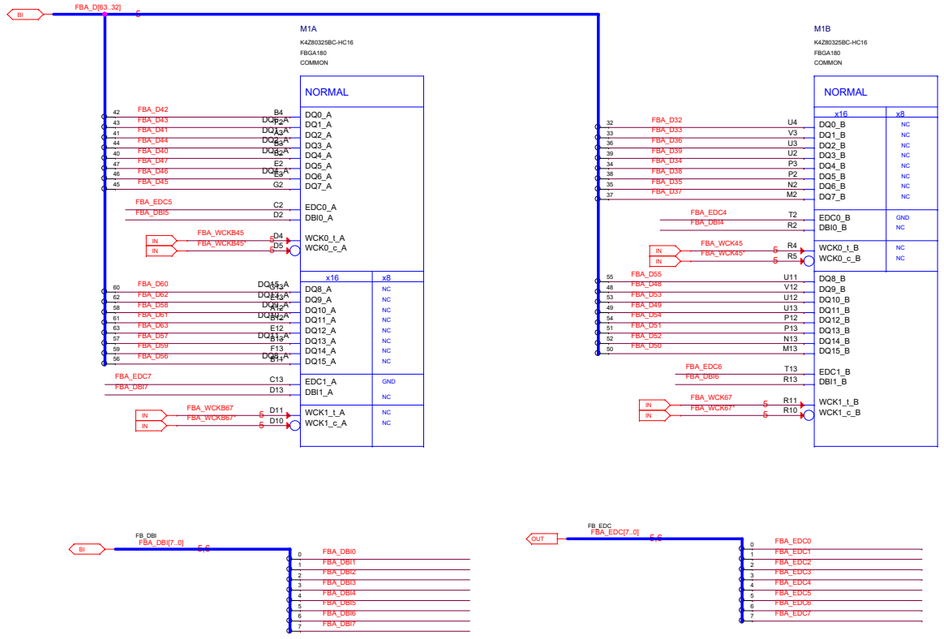

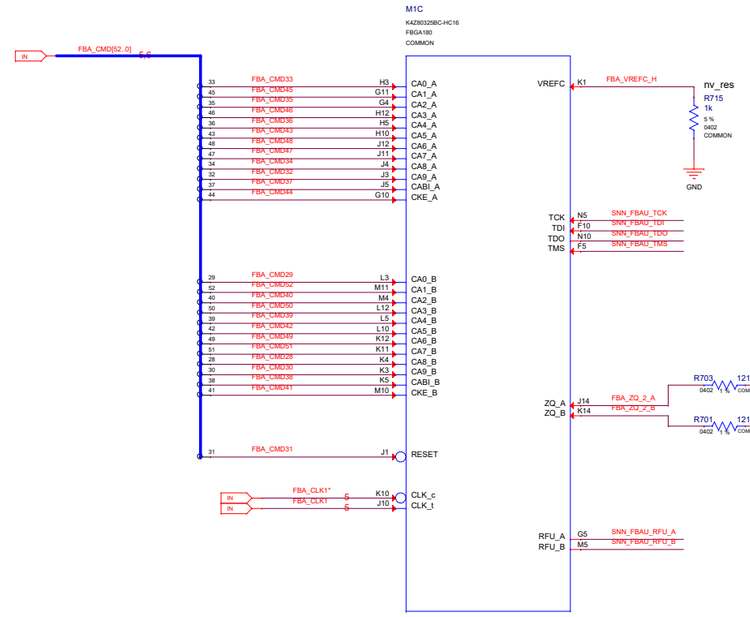

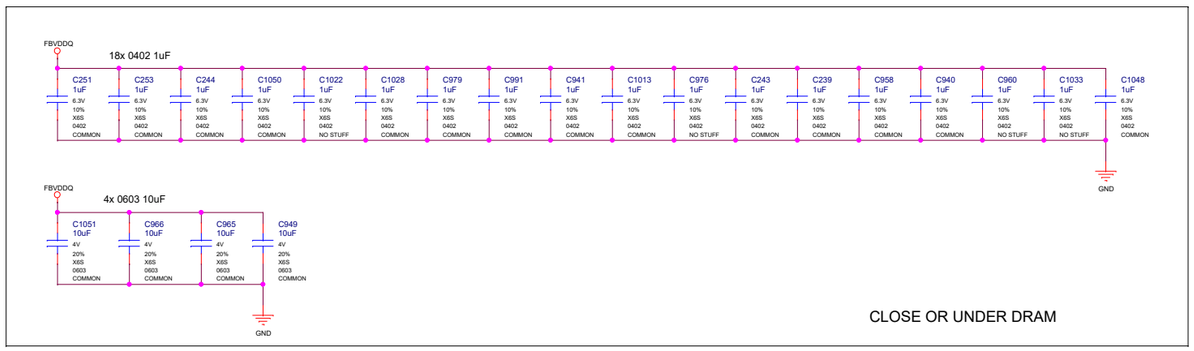

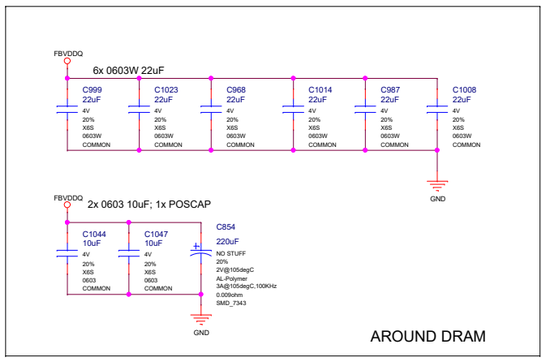

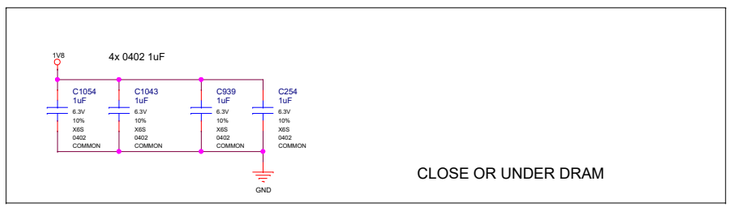

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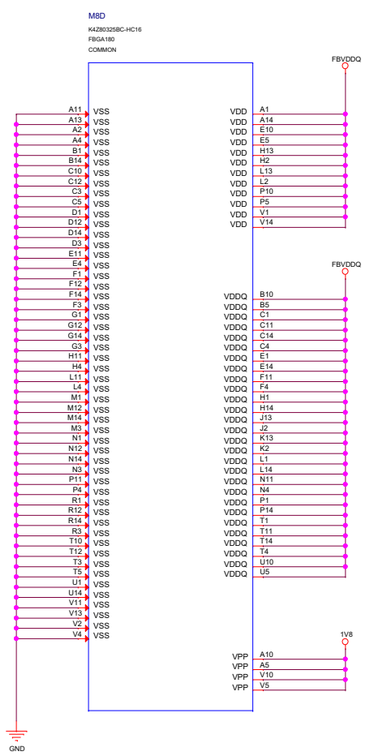

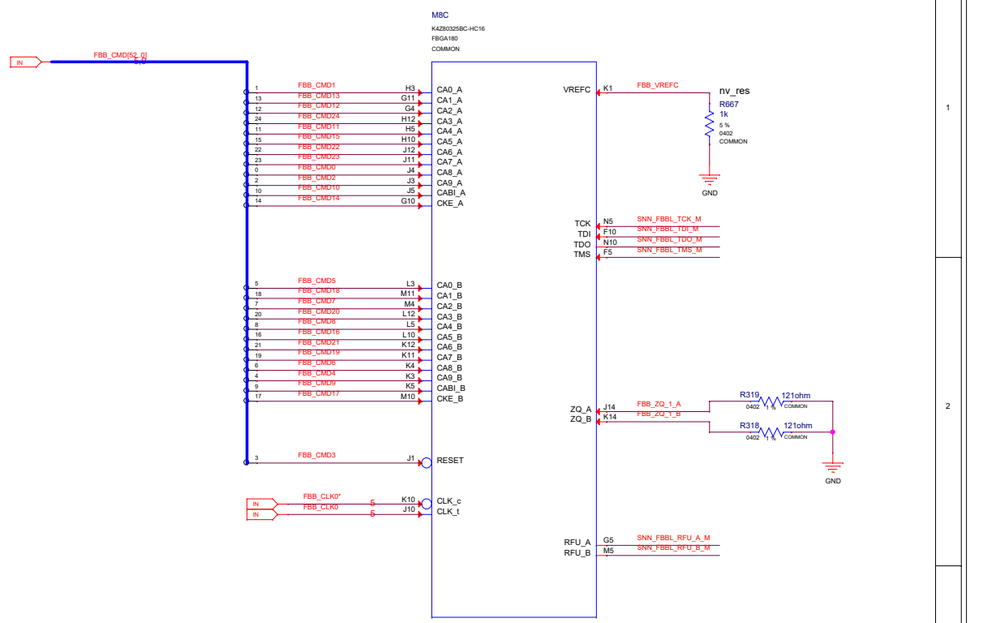

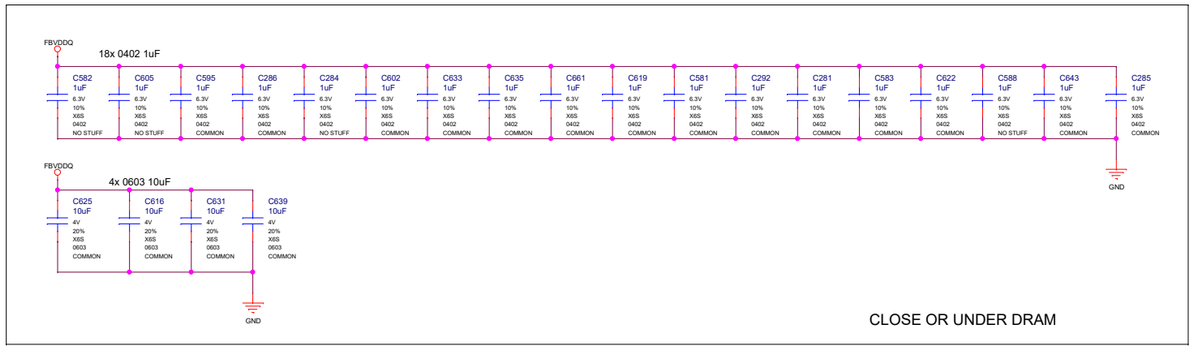

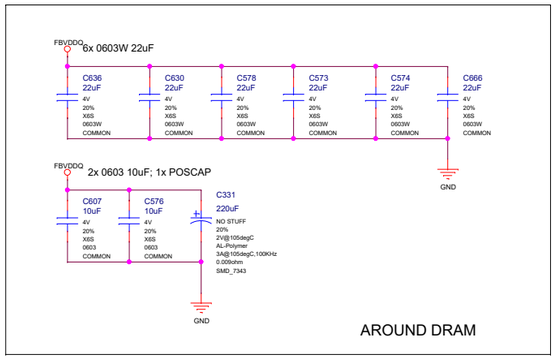

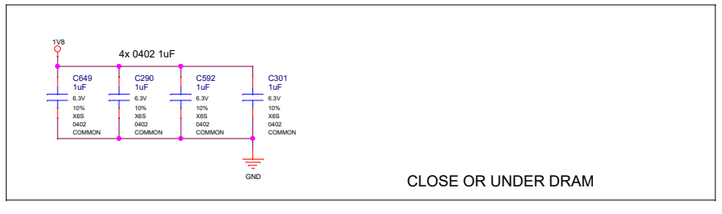

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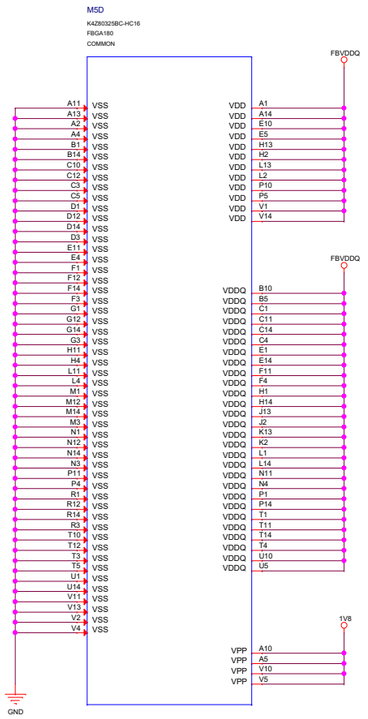

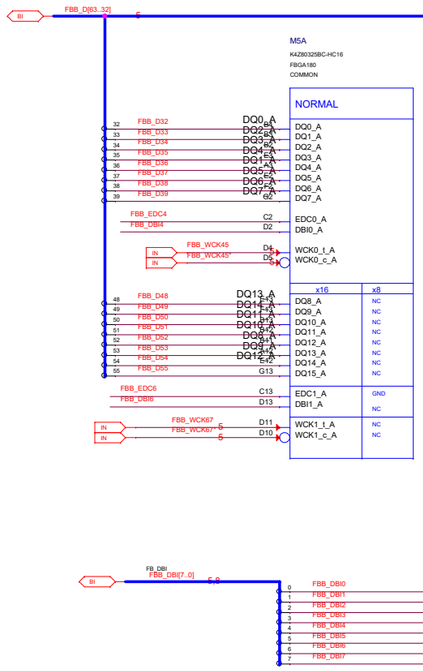

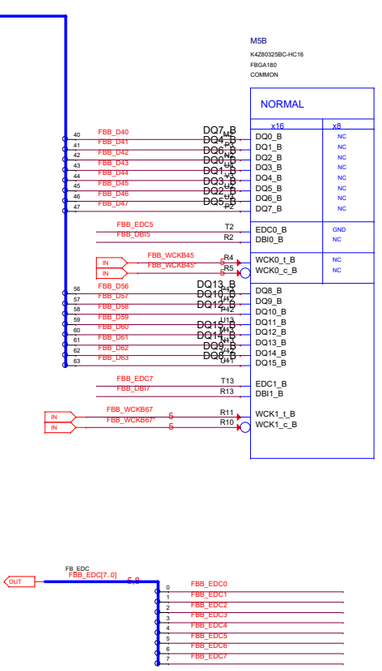

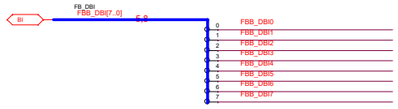

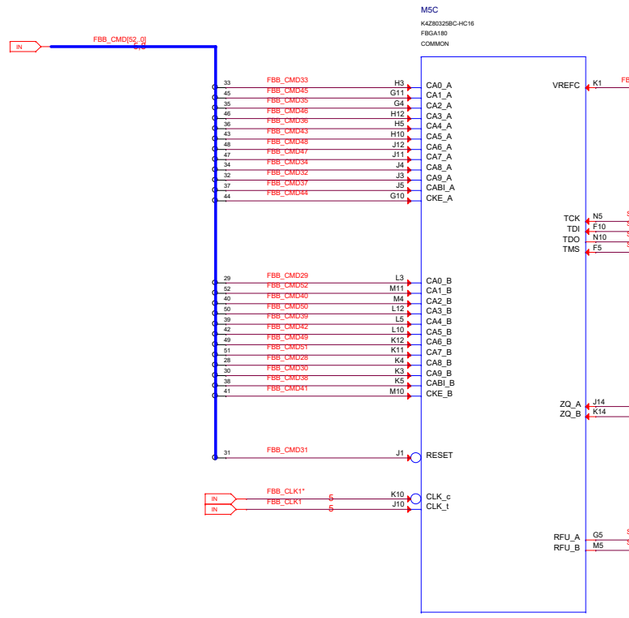

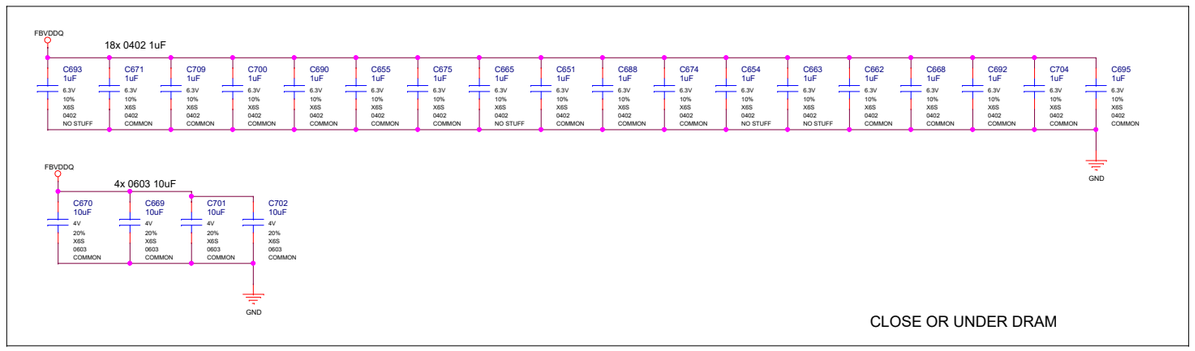

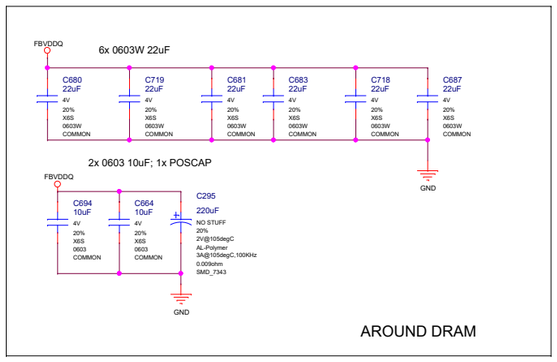

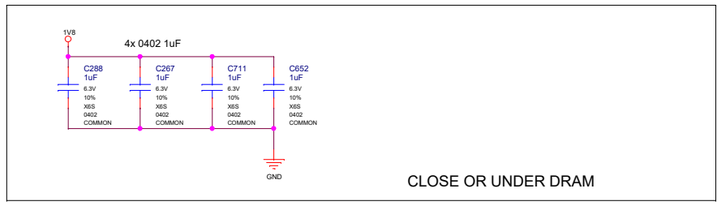

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Page10: MEMORY: GPU Partition C/D

G1D

BGA2714
COMMON
4/24 FBC

FB_DATA
FBC_D[63..0]
FBC_DBI[7..0]
FB_EDC
FBC_EDC[7..0]
FB_CMD
FBC_CMD[52..0]
FB_DBI
FBC_DBI[7..0]

FBC_D0	F7	FBC_D0	
FBC_D1	H5	FBC_D1	
FBC_D2	F8	FBC_D2	
FBC_D3	G5	FBC_D3	
FBC_D4	H8	FBC_D4	
FBC_D5	E8	FBC_D5	
FBC_D6	C8	FBC_D6	
FBC_D7	D10	FBC_D7	
FBC_D8	D2	FBC_D8	
FBC_D9	E1	FBC_D9	
FBC_D10	C2	FBC_D10	
FBC_D11	D3	FBC_D11	
FBC_D12	C3	FBC_D12	
FBC_D13	B4	FBC_D13	
FBC_D14	E4	FBC_D14	
FBC_D15	D5	FBC_D15	
FBC_D16	F17	FBC_D16	
FBC_D17	E14	FBC_D17	
FBC_D18	C14	FBC_D18	
FBC_D19	H14	FBC_D19	
FBC_D20	E17	FBC_D20	
FBC_D21	F16	FBC_D21	
FBC_D22	C17	FBC_D22	
FBC_D23	H17	FBC_D23	
FBC_D24	F10	FBC_D24	
FBC_D25	G10	FBC_D25	
FBC_D26	C11	FBC_D26	
FBC_D27	E11	FBC_D27	
FBC_D28	F11	FBC_D28	
FBC_D29	F13	FBC_D29	
FBC_D30	F14	FBC_D30	
FBC_D31	H11	FBC_D31	
FBC_D32	F26	FBC_D32	
FBC_D33	E26	FBC_D33	
FBC_D34	H26	FBC_D34	
FBC_D35	D28	FBC_D35	
FBC_D36	C26	FBC_D36	
FBC_D37	E29	FBC_D37	
FBC_D38	F28	FBC_D38	
FBC_D39	G28	FBC_D39	
FBC_D40	F31	FBC_D40	
FBC_D41	K29	FBC_D41	
FBC_D42	H29	FBC_D42	
FBC_D43	J28	FBC_D43	
FBC_D44	D31	FBC_D44	
FBC_D45	G31	FBC_D45	
FBC_D46	E32	FBC_D46	
FBC_D47	H31	FBC_D47	
FBC_D48	F19	FBC_D48	
FBC_D49	K17	FBC_D49	
FBC_D50	C20	FBC_D50	
FBC_D51	J19	FBC_D51	
FBC_D52	E20	FBC_D52	
FBC_D53	F20	FBC_D53	
FBC_D54	K20	FBC_D54	
FBC_D55	H20	FBC_D55	
FBC_D56	G22	FBC_D56	
FBC_D57	F22	FBC_D57	
FBC_D58	C23	FBC_D58	
FBC_D59	D22	FBC_D59	
FBC_D60	E23	FBC_D60	
FBC_D61	F23	FBC_D61	
FBC_D62	F25	FBC_D62	
FBC_D63	H23	FBC_D63	
FBC_DBI0	G7	FBC_DQM0	
FBC_DBI1	E3	FBC_DQM1	
FBC_DBI2	G16	FBC_DQM2	
FBC_DBI3	G13	FBC_DQM3	
FBC_DBI4	F29	FBC_DQM4	
FBC_DBI5	F32	FBC_DQM5	
FBC_DBI6	G19	FBC_DQM6	
FBC_DBI7	G25	FBC_DQM7	
FBC_EDC0	D7	FBC_DQS_WP0	
FBC_EDC1	B3	FBC_DQS_WP1	
FBC_EDC2	D16	FBC_DQS_WP2	
FBC_EDC3	D13	FBC_DQS_WP3	
FBC_EDC4	C29	FBC_DQS_WP4	
FBC_EDC5	C32	FBC_DQS_WP5	
FBC_EDC6	D19	FBC_DQS_WP6	
FBC_EDC7	D25	FBC_DQS_WP7	

BP32 BP34 BP36 BP38 BP40 BP42 BP44 BP46 — GND

FBC_CMD0	B5	FBC_CMD0	0
FBC_CMD1	A5	FBC_CMD1	1
FBC_CMD2	C5	FBC_CMD2	2
FBC_CMD3	A6	FBC_CMD3	3
FBC_CMD4	B7	FBC_CMD4	4
FBC_CMD5	A7	FBC_CMD5	5
FBC_CMD6	A8	FBC_CMD6	6
FBC_CMD7	D8	FBC_CMD7	7
FBC_CMD8	A9	FBC_CMD8	8
FBC_CMD9	B10	FBC_CMD9	9
FBC_CMD10	A10	FBC_CMD10	10
FBC_CMD11	A11	FBC_CMD11	11
FBC_CMD12	D11	FBC_CMD12	12
FBC_CMD13	A12	FBC_CMD13	13
FBC_CMD14	B13	FBC_CMD14	14
FBC_CMD15	A13	FBC_CMD15	15
FBC_CMD16	A14	FBC_CMD16	16
FBC_CMD17	D14	FBC_CMD17	17
FBC_CMD18	A15	FBC_CMD18	18
FBC_CMD19	B16	FBC_CMD19	19
FBC_CMD20	A16	FBC_CMD20	20
FBC_CMD21	A17	FBC_CMD21	21
FBC_CMD22	D17	FBC_CMD22	22
FBC_CMD23	A18	FBC_CMD23	23
FBC_CMD24	B19	FBC_CMD24	24
FBC_CMD25_NC	A19		
FBC_CMD26_NC	A20		
FBC_CMD27	B20	FBC_DEBUG0	
FBC_CMD28	A26	FBC_CMD28	28
FBC_CMD29	D35	FBC_CMD29	29
FBC_CMD30	A35	FBC_CMD30	30
FBC_CMD31	A34	FBC_CMD31	31
FBC_CMD32	B34	FBC_CMD32	32
FBC_CMD33	A33	FBC_CMD33	33
FBC_CMD34	D32	FBC_CMD34	34
FBC_CMD35	A32	FBC_CMD35	35
FBC_CMD36	A31	FBC_CMD36	36
FBC_CMD37	B31	FBC_CMD37	37
FBC_CMD38	A30	FBC_CMD38	38
FBC_CMD39	D29	FBC_CMD39	39
FBC_CMD40	A29	FBC_CMD40	40
FBC_CMD41	A28	FBC_CMD41	41
FBC_CMD42	B28	FBC_CMD42	42
FBC_CMD43	A27	FBC_CMD43	43
FBC_CMD44	D26	FBC_CMD44	44
FBC_CMD45	A26	FBC_CMD45	45
FBC_CMD46	A25	FBC_CMD46	46
FBC_CMD47	B25	FBC_CMD47	47
FBC_CMD48	A24	FBC_CMD48	48
FBC_CMD49	D23	FBC_CMD49	49
FBC_CMD50	A23	FBC_CMD50	50
FBC_CMD51	A22	FBC_CMD51	51
FBC_CMD52	B22	FBC_CMD52	52
FBC_CMD53_NC	A21		
FBC_CMD54_NC	D20		
FBC_CMD55	B23	FBC_DEBUG1	

R669 (0R) — GND
R670 (0R) — GND

FBC_CLK0	K22	FBC_CLK0	11 FB_CLK OUT
FBC_CLK0	J22	FBC_CLK0*	11 FB_CLK OUT
FBC_CLK1	K23	FBC_CLK1	12 FB_CLK OUT
FBC_CLK1	J23	FBC_CLK1*	12 FB_CLK OUT
FBC_WCK01	K13	FBC_WCK01	FBC_WCK01 11 FB_WCK OUT
FBC_WCK01	J13	FBC_WCK01*	FBC_WCK01 11 FB_WCK OUT
FBC_WCKB01	K11	FBC_WCKB01	FBC_WCKB01 11 FB_WCK OUT
FBC_WCKB01	J11	FBC_WCKB01*	FBC_WCKB01 11 FB_WCK OUT
FBC_WCK23	J16	FBC_WCK23	FBC_WCK23 11 FB_WCK OUT
FBC_WCK23	K16	FBC_WCK23*	FBC_WCK23 11 FB_WCK OUT
FBC_WCKB23	J14	FBC_WCKB23*	FBC_WCKB23 11 FB_WCK OUT
FBC_WCKB23	K14	FBC_WCKB23	FBC_WCKB23 11 FB_WCK OUT
FBC_WCK45	K31	FBC_WCK45	FBC_WCK45 12 FB_WCK OUT
FBC_WCK45	J31	FBC_WCK45*	FBC_WCK45 12 FB_WCK OUT
FBC_WCKB45	K32	FBC_WCKB45	FBC_WCKB45 12 FB_WCK OUT
FBC_WCKB45	J32	FBC_WCKB45*	FBC_WCKB45 12 FB_WCK OUT
FBC_WCK67	K25	FBC_WCK67	FBC_WCK67 12 FB_WCK OUT
FBC_WCK67	J25	FBC_WCK67*	FBC_WCK67 12 FB_WCK OUT
FBC_WCKB67	J26	FBC_WCKB67*	FBC_WCKB67 12 FB_WCK OUT
FBC_WCKB67	K26	FBC_WCKB67	FBC_WCKB67 12 FB_WCK OUT

FB_PLLVDD — L35 (5,10) 1V8_FB_PLL IN
C707 1uF 6.3V 10% X6S 0402 COMMON — GND

GA1XX GDDR6 CMD Mapping

	Lower 0..31 DRAM1 CHA-Byte 0,1	Upper 32..63 DRAM2 CHA-Byte 4,5
CA0_A	CMD1	CMD33
CA1_A	CMD13	CMD45
CA2_A	CMD12	CMD35
CA3_A	CMD24	CMD46
CA4_A	CMD11	CMD36
CA5_A	CMD15	CMD43
CA6_A	CMD22	CMD48
CA7_A	CMD23	CMD47
CA8_A	CMD0	CMD34
CA9_A	CMD2	CMD32
CABI_A	CMD10	CMD37
CKE_A	CMD14	CMD44
	CHB-Byte 2,3	CHB-Byte 6,7
CA0_B	CMD5	CMD29
CA1_B	CMD18	CMD52
CA2_B	CMD7	CMD40
CA3_B	CMD20	CMD50
CA4_B	CMD8	CMD39
CA5_B	CMD16	CMD42
CA6_B	CMD21	CMD49
CA7_B	CMD19	CMD51
CA8_B	CMD6	CMD28
CA9_B	CMD4	CMD30
CABI_B	CMD9	CMD38
CKE_B	CMD17	CMD41
RESET*	CMD3	CMD31

G1E

BGA2714
COMMON
5/24 FBD

FB_DATA
FBD_D[63..0]
FBD_DBI[7..0]
FB_EDC
FBD_EDC[7..0]
FB_CMD
FBD_CMD[52..0]
FB_DBI
FBD_DBI[7..0]

FBD_D0	AR4	FBD_D0	
FBD_D1	AP8	FBD_D1	
FBD_D2	AP6	FBD_D2	
FBD_D3	AR6	FBD_D3	
FBD_D4	AM6	FBD_D4	
FBD_D5	AP3	FBD_D5	
FBD_D6	AP5	FBD_D6	
FBD_D7	AM9	FBD_D7	
FBD_D8	AU5	FBD_D8	
FBD_D9	AV6	FBD_D9	
FBD_D10	AV9	FBD_D10	
FBD_D11	AU3	FBD_D11	
FBD_D12	AU8	FBD_D12	
FBD_D13	AU8	FBD_D13	
FBD_D14	AU10	FBD_D14	
FBD_D15	AR7	FBD_D15	
FBD_D16	AF6	FBD_D16	
FBD_D17	AH5	FBD_D17	
FBD_D18	AH3	FBD_D18	
FBD_D19	AF9	FBD_D19	
FBD_D20	AE6	FBD_D20	
FBD_D21	AE8	FBD_D21	
FBD_D22	AE5	FBD_D22	
FBD_D23	AE10	FBD_D23	
FBD_D24	AL6	FBD_D24	
FBD_D25	AL3	FBD_D25	
FBD_D26	AL5	FBD_D26	
FBD_D27	AL8	FBD_D27	
FBD_D28	AJ6	FBD_D28	
FBD_D29	AL10	FBD_D29	
FBD_D30	AH6	FBD_D30	
FBD_D31	AH8	FBD_D31	
FBD_D32	T5	FBD_D32	
FBD_D33	T6	FBD_D33	
FBD_D34	P6	FBD_D34	
FBD_D35	T8	FBD_D35	
FBD_D36	T3	FBD_D36	
FBD_D37	N5	FBD_D37	
FBD_D38	N3	FBD_D38	
FBD_D39	N6	FBD_D39	
FBD_D40	L6	FBD_D40	
FBD_D41	N8	FBD_D41	
FBD_D42	K6	FBD_D42	
FBD_D43	L9	FBD_D43	
FBD_D44	K3	FBD_D44	
FBD_D45	K5	FBD_D45	
FBD_D46	J2	FBD_D46	
FBD_D47	K8	FBD_D47	
FBD_D48	AC7	FBD_D48	
FBD_D49	AE3	FBD_D49	
FBD_D50	AC6	FBD_D50	
FBD_D51	AC4	FBD_D51	
FBD_D52	AB3	FBD_D52	
FBD_D53	AB5	FBD_D53	
FBD_D54	AB6	FBD_D54	
FBD_D55	AB8	FBD_D55	
FBD_D56	W6	FBD_D56	
FBD_D57	W8	FBD_D57	
FBD_D58	W5	FBD_D58	
FBD_D59	Y6	FBD_D59	
FBD_D60	W3	FBD_D60	
FBD_D61	U9	FBD_D61	
FBD_D62	U8	FBD_D62	
FBD_D63	T10	FBD_D63	
FBD_DBI0	AM7	FBD_DQM0	
FBD_DBI1	AV7	FBD_DQM1	
FBD_DBI2	AF7	FBD_DQM2	
FBD_DBI3	AJ7	FBD_DQM3	
FBD_DBI4	P7	FBD_DQM4	
FBD_DBI5	L7	FBD_DQM5	
FBD_DBI6	Y7	FBD_DQM6	
FBD_DBI7	U7	FBD_DQM7	
FBD_EDC0	AM4	FBD_DQS_WP0	
FBD_EDC1	AV4	FBD_DQS_WP1	
FBD_EDC2	AF4	FBD_DQS_WP2	
FBD_EDC3	AJ4	FBD_DQS_WP3	
FBD_EDC4	P4	FBD_DQS_WP4	
FBD_EDC5	L4	FBD_DQS_WP5	
FBD_EDC6	Y4	FBD_DQS_WP6	
FBD_EDC7	U4	FBD_DQS_WP7	

BP48 BR1 BR12 BR15 BR18 BR2 BR21 BR24 — GND

FBD_CMD0	AU1	FBD_CMD0	0
FBD_CMD1	AU4	FBD_CMD1	1
FBD_CMD2	AT1	FBD_CMD2	2
FBD_CMD3	AR2	FBD_CMD3	3
FBD_CMD4	AR1	FBD_CMD4	4
FBD_CMD5	AP1	FBD_CMD5	5
FBD_CMD6	AP4	FBD_CMD6	6
FBD_CMD7	AN1	FBD_CMD7	7
FBD_CMD8	AM2	FBD_CMD8	8
FBD_CMD9	AM1	FBD_CMD9	9
FBD_CMD10	AL1	FBD_CMD10	10
FBD_CMD11	AL4	FBD_CMD11	11
FBD_CMD12	AK1	FBD_CMD12	12
FBD_CMD13	AJ2	FBD_CMD13	13
FBD_CMD14	AJ1	FBD_CMD14	14
FBD_CMD15	AH1	FBD_CMD15	15
FBD_CMD16	AH4	FBD_CMD16	16
FBD_CMD17	AG1	FBD_CMD17	17
FBD_CMD18	AF2	FBD_CMD18	18
FBD_CMD19	AF1	FBD_CMD19	19
FBD_CMD20	AE1	FBD_CMD20	20
FBD_CMD21	AE4	FBD_CMD21	21
FBD_CMD22	AD1	FBD_CMD22	22
FBD_CMD23	AC2	FBD_CMD23	23
FBD_CMD24	AC1	FBD_CMD24	24
FBD_CMD25_NC	AB1		
FBD_CMD26_NC	AB4		
FBD_CMD27	AB2	FBD_DEBUG0	
FBD_CMD28	G2	FBD_CMD28	28
FBD_CMD29	G1	FBD_CMD29	29
FBD_CMD30	G3	FBD_CMD30	30
FBD_CMD31	H1	FBD_CMD31	31
FBD_CMD32	H2	FBD_CMD32	32
FBD_CMD33	J1	FBD_CMD33	33
FBD_CMD34	K4	FBD_CMD34	34
FBD_CMD35	K1	FBD_CMD35	35
FBD_CMD36	K2	FBD_CMD36	36
FBD_CMD37	L1	FBD_CMD37	37
FBD_CMD38	L2	FBD_CMD38	38
FBD_CMD39	M1	FBD_CMD39	39
FBD_CMD40	N4	FBD_CMD40	40
FBD_CMD41	N1	FBD_CMD41	41
FBD_CMD42	P1	FBD_CMD42	42
FBD_CMD43	P2	FBD_CMD43	43
FBD_CMD44	R1	FBD_CMD44	44
FBD_CMD45	T4	FBD_CMD45	45
FBD_CMD46	T1	FBD_CMD46	46
FBD_CMD47	U1	FBD_CMD47	47
FBD_CMD48	U2	FBD_CMD48	48
FBD_CMD49	V1	FBD_CMD49	49
FBD_CMD50	W4	FBD_CMD50	50
FBD_CMD51	W1	FBD_CMD51	51
FBD_CMD52	Y1	FBD_CMD52	52
FBD_CMD53_NC	Y2		
FBD_CMD54_NC	AA1		
FBD_CMD55	W2	FBD_DEBUG1	

R692 (0R) — GND
R688 (0R) — GND

FBD_CLK0	AC10	FBD_CLK0	13 FB_CLK OUT
FBD_CLK0	AC9	FBD_CLK0*	13 FB_CLK OUT
FBD_CLK1	AB10	FBD_CLK1	14 FB_CLK OUT
FBD_CLK1	AB9	FBD_CLK1*	14 FB_CLK OUT
FBD_WCK01	AP9	FBD_WCK01	FBD_WCK01 13 FB_WCK OUT
FBD_WCK01	AP10	FBD_WCK01*	FBD_WCK01 13 FB_WCK OUT
FBD_WCKB01	AR9	FBD_WCKB01	FBD_WCKB01 13 FB_WCK OUT
FBD_WCKB01	AR10	FBD_WCKB01*	FBD_WCKB01 13 FB_WCK OUT
FBD_WCK23	AH10	FBD_WCK23	FBD_WCK23 13 FB_WCK OUT
FBD_WCK23	AH9	FBD_WCK23*	FBD_WCK23 13 FB_WCK OUT
FBD_WCKB23	AJ10	FBD_WCKB23	FBD_WCKB23 13 FB_WCK OUT
FBD_WCKB23	AJ9	FBD_WCKB23*	FBD_WCKB23 13 FB_WCK OUT
FBD_WCK45	P10	FBD_WCK45*	FBD_WCK45 14 FB_WCK OUT
FBD_WCK45	P9	FBD_WCK45	FBD_WCK45 14 FB_WCK OUT
FBD_WCKB45	N10	FBD_WCKB45*	FBD_WCKB45 14 FB_WCK OUT
FBD_WCKB45	N9	FBD_WCKB45	FBD_WCKB45 14 FB_WCK OUT
FBD_WCK67	Y10	FBD_WCK67*	FBD_WCK67 14 FB_WCK OUT
FBD_WCK67	Y9	FBD_WCK67	FBD_WCK67 14 FB_WCK OUT
FBD_WCKB67	W9	FBD_WCKB67*	FBD_WCKB67 14 FB_WCK OUT
FBD_WCKB67	W10	FBD_WCKB67	FBD_WCKB67 14 FB_WCK OUT

FB_PLLVDD — T46 (5,10) 1V8_FB_PLL IN
C993 1uF 6.3V 10% X6S 0402 COMMON — GND

CKE_A

FBVDDQ
R659 10k 5% 0402 COMMON — FBC_CMD14
R312 10k 5% 0402 COMMON — FBC_CMD44
R697 10k 5% 0402 COMMON — FBD_CMD14
R309 10k 5% 0402 COMMON — FBD_CMD44

RST*

FBVDDQ
R668 10k 5% 0402 COMMON — FBC_CMD3
R316 10k 5% 0402 COMMON — FBC_CMD31
R674 10k 5% 0402 COMMON — FBD_CMD3
R705 10k 5% 0402 COMMON — FBD_CMD31
GND

CKE_B

FBVDDQ
R313 10k 5% 0402 COMMON — FBC_CMD17
R663 10k 5% 0402 COMMON — FBC_CMD41
R302 10k 5% 0402 COMMON — FBD_CMD17
R678 10k 5% 0402 COMMON — FBD_CMD41

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: GPU FB_CD

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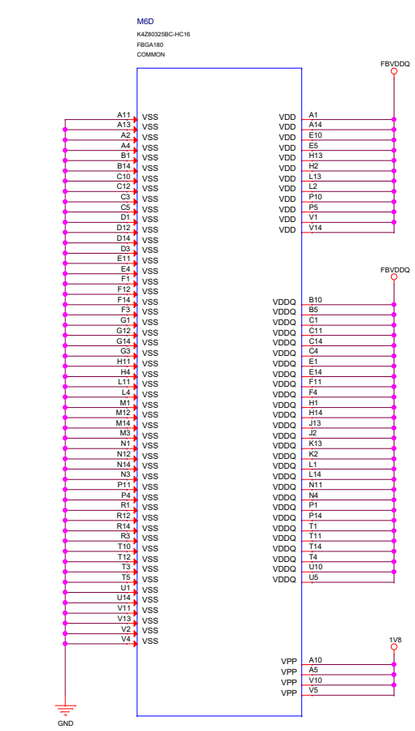

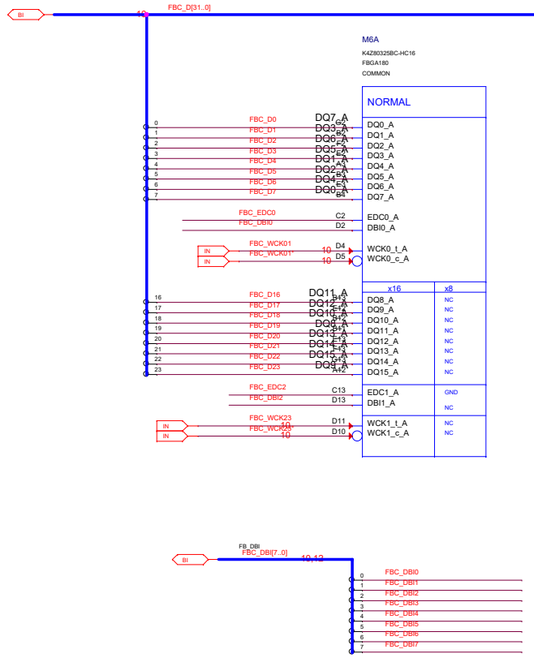

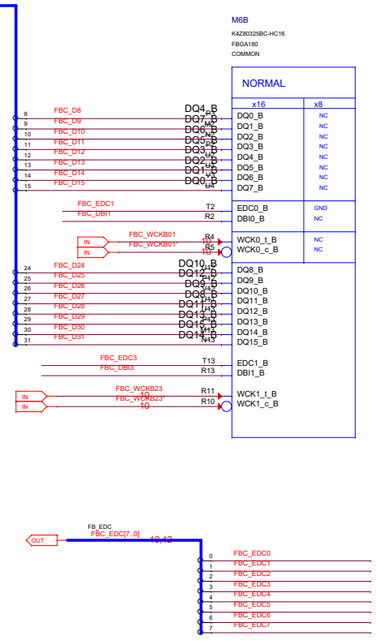

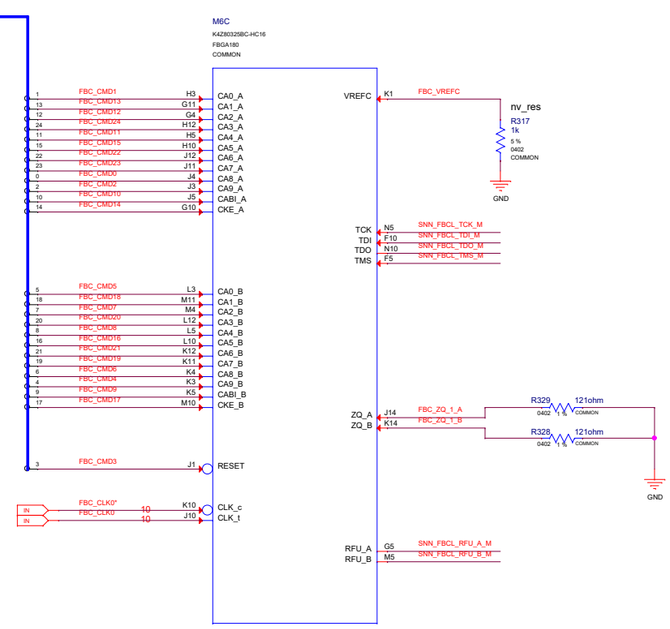

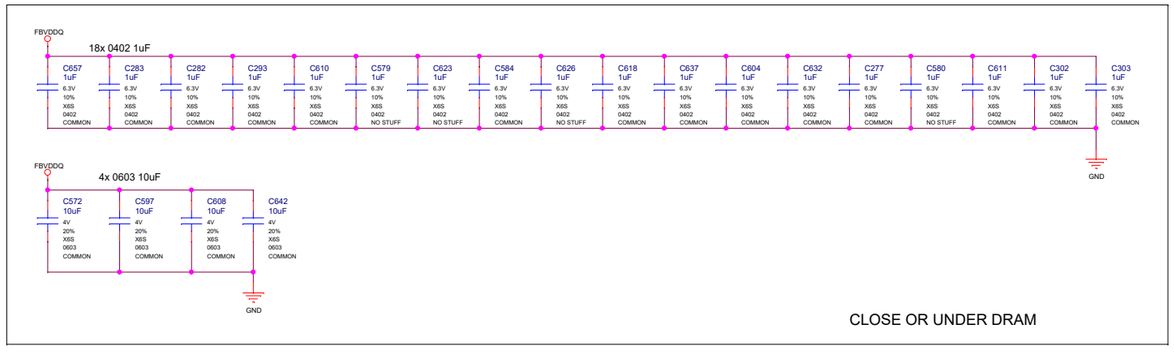

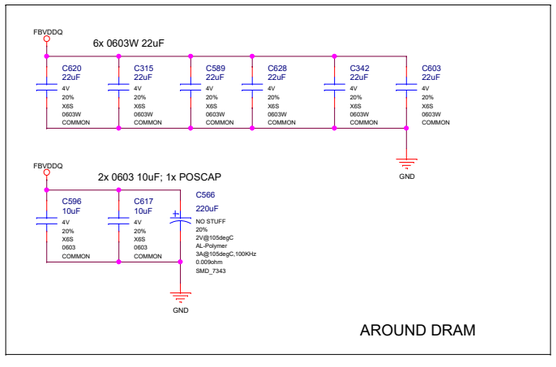

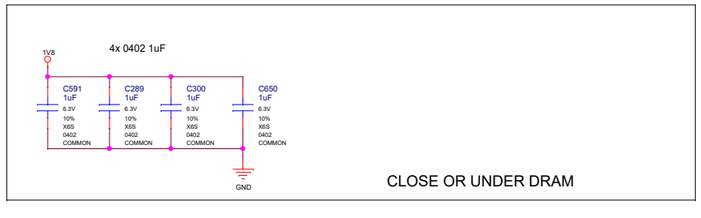

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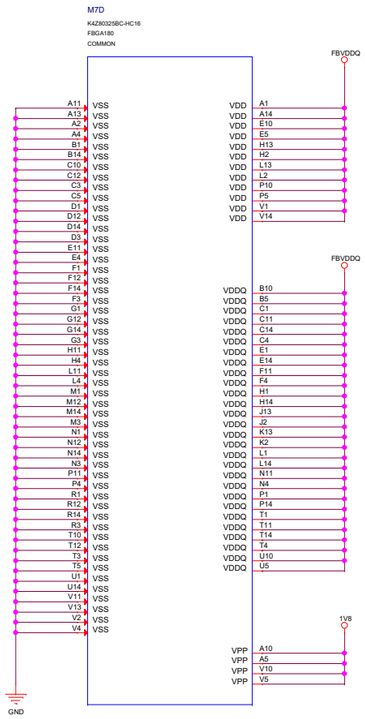

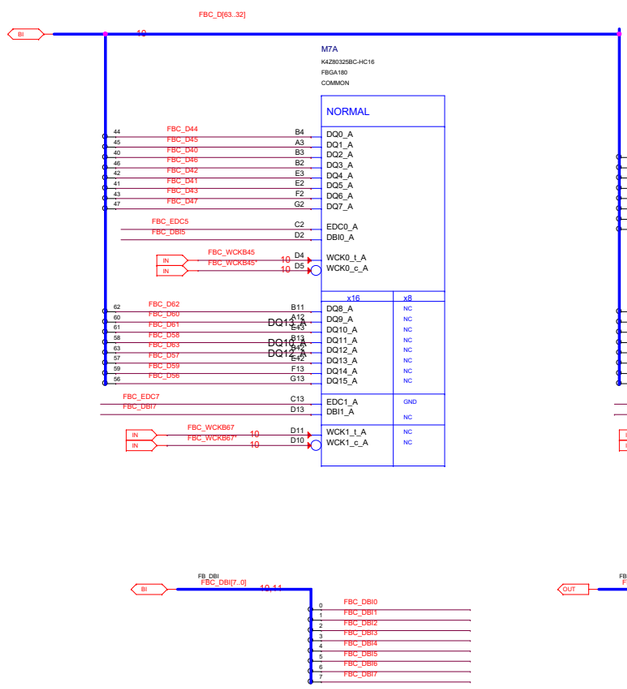

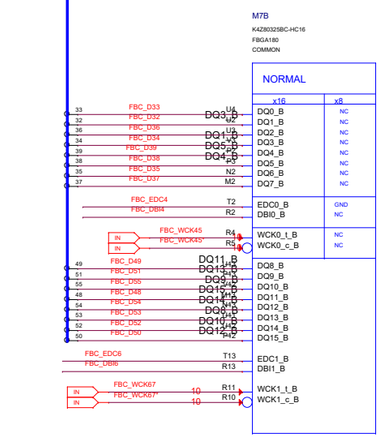

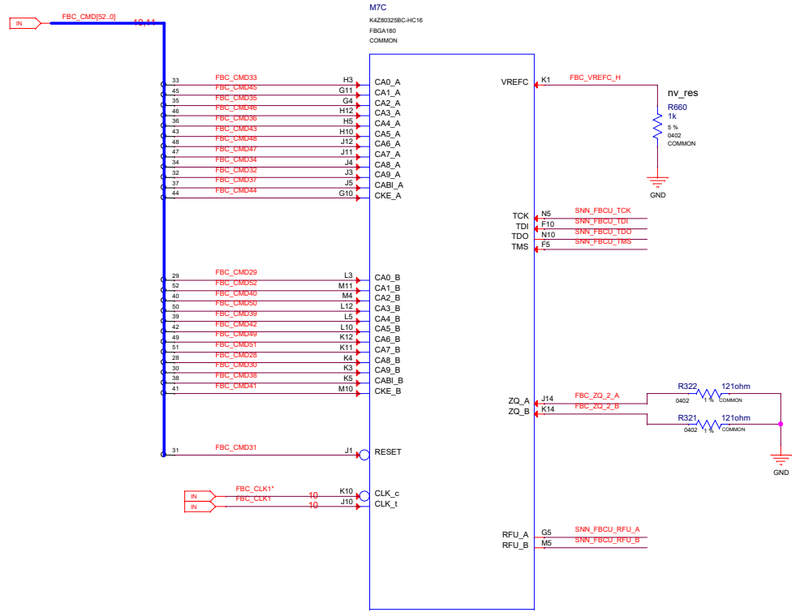

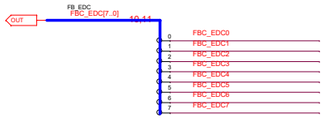

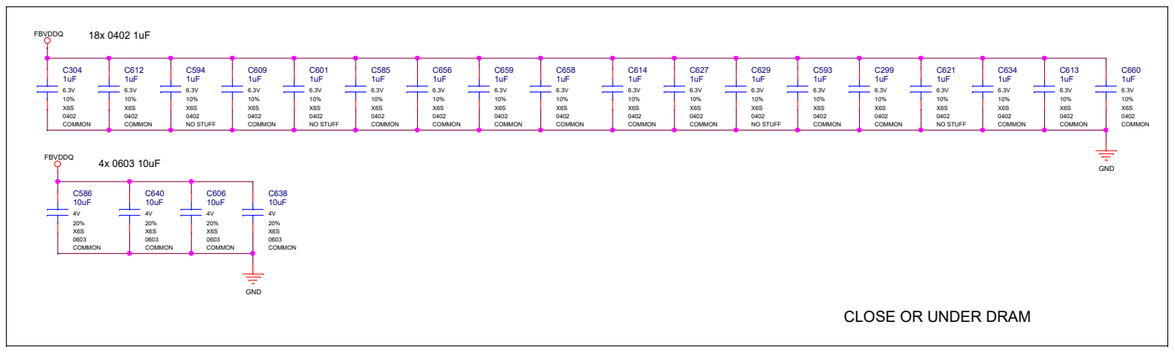

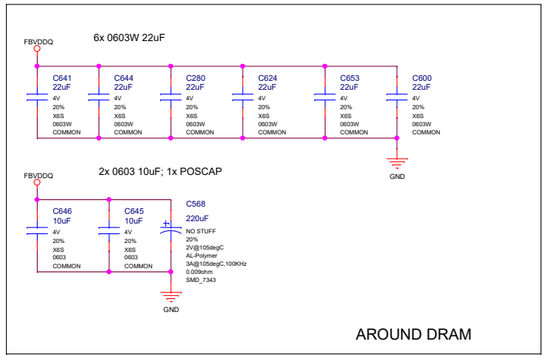

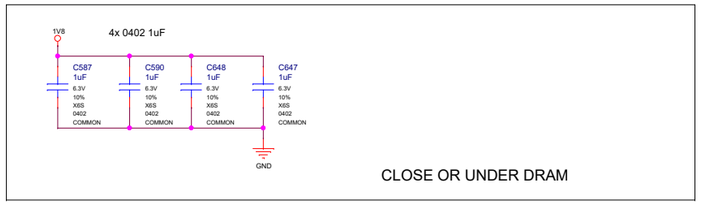

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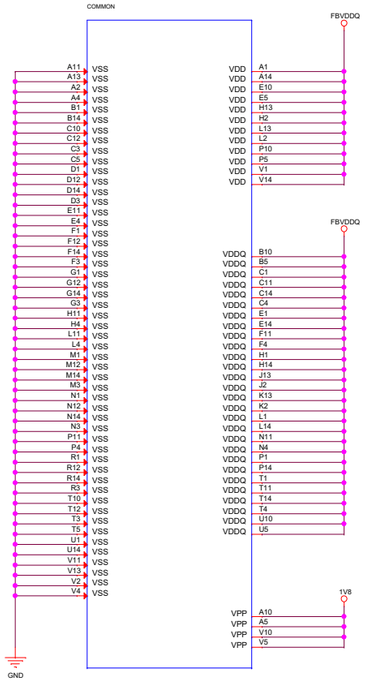

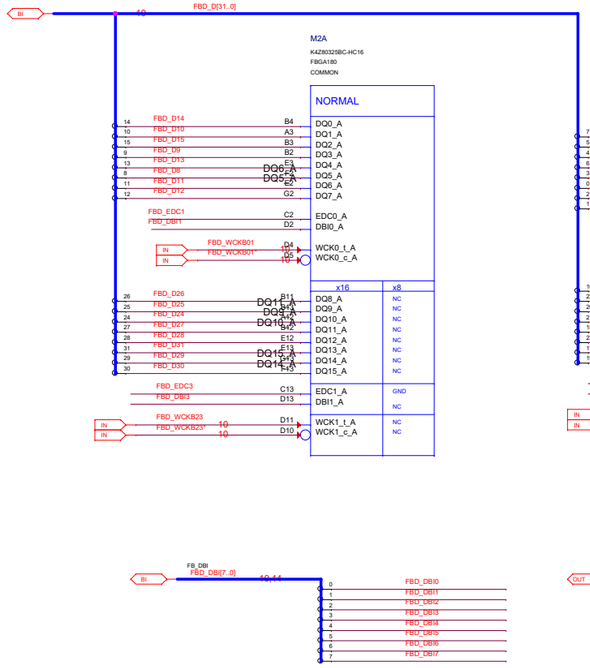

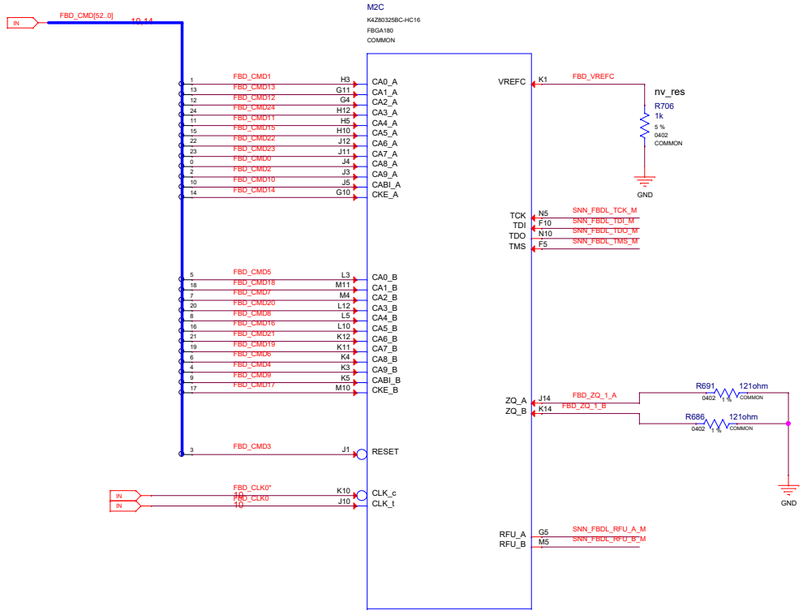

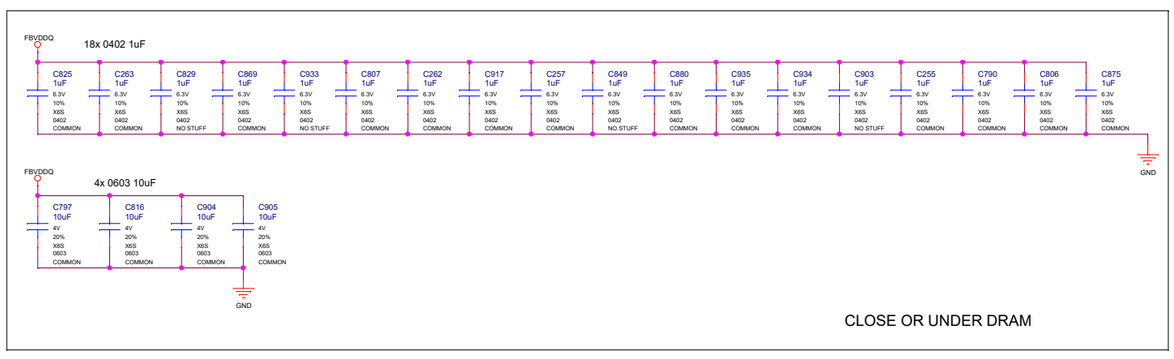

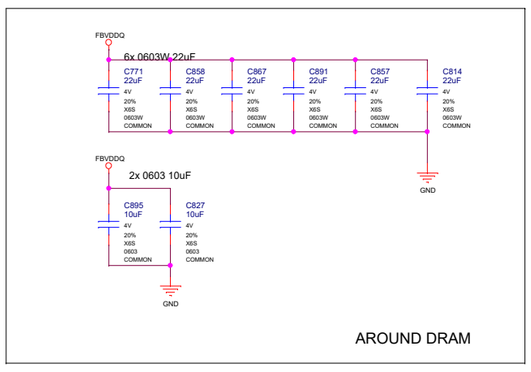

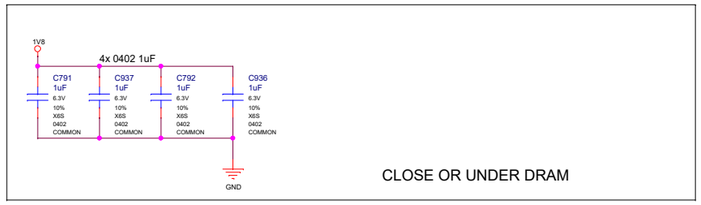

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBD[31:0]

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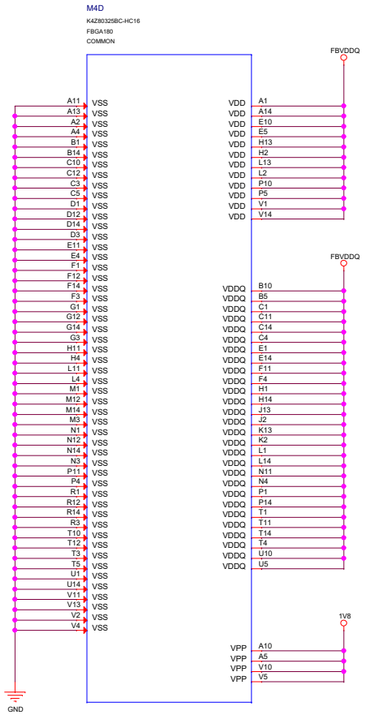

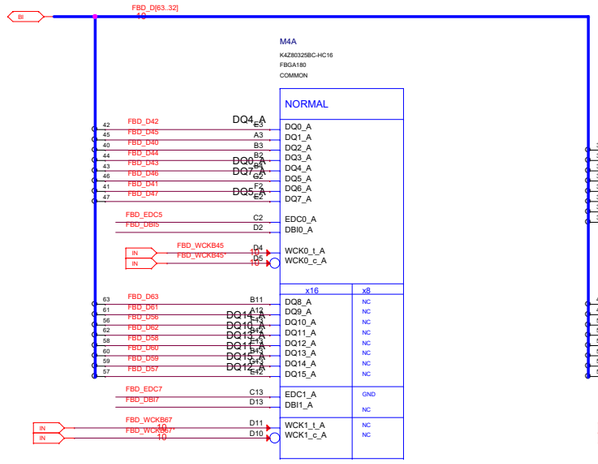

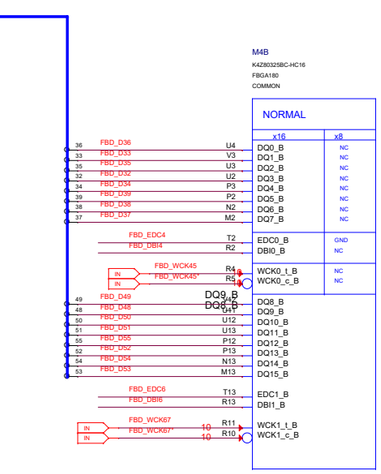

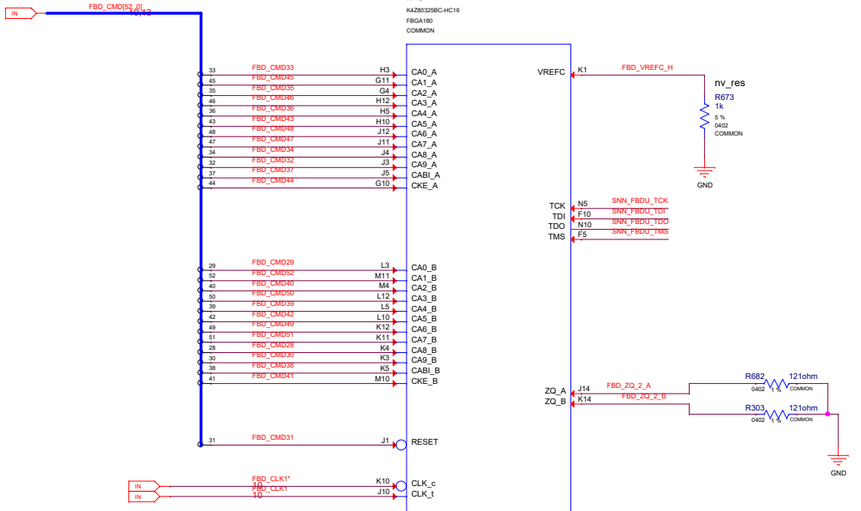

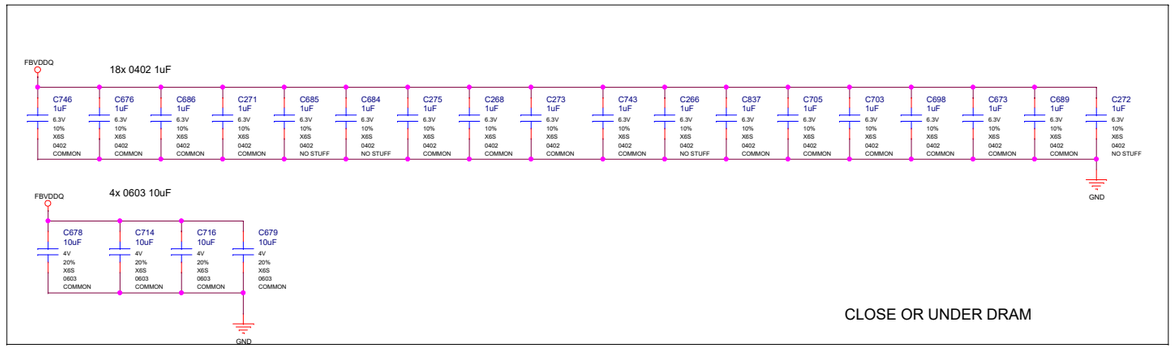

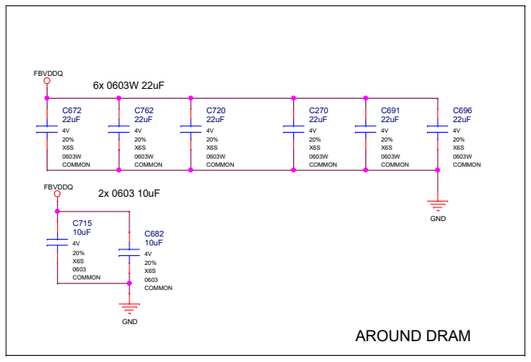

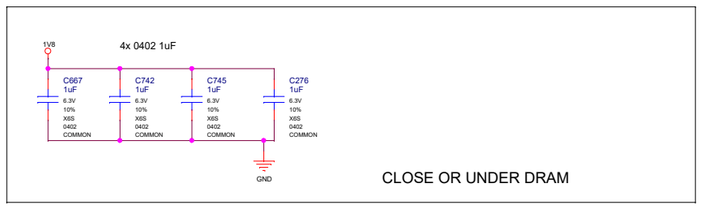

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU PWR & GND

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G1M

BGA2714
COMMON

23/24 GND_4/5

BR6	GND	GND	F30
BR9	GND	GND	F33
BT2	GND	GND	F36
BT3	GND	GND	F39
C1	GND	GND	F4
C10	GND	GND	F42
C13	GND	GND	F45
C16	GND	GND	F47
C19	GND	GND	F48
C22	GND	GND	F51
C25	GND	GND	F53
C28	GND	GND	F55
C31	GND	GND	F6
C34	GND	GND	F9
C37	GND	GND	G11
C4	GND	GND	G14
C40	GND	GND	G17
C43	GND	GND	G20
C46	GND	GND	G23
C56	GND	GND	G26
C7	GND	GND	G29
D12	GND	GND	G32
D15	GND	GND	G35
D18	GND	GND	G38
D21	GND	GND	G4
D24	GND	GND	G41
D27	GND	GND	G44
D30	GND	GND	G49
D33	GND	GND	G52
D36	GND	GND	G54
D39	GND	GND	G8
D4	GND	GND	H10
D42	GND	GND	H12
D45	GND	GND	H13
D48	GND	GND	H15
D49	GND	GND	H16
D51	GND	GND	H18
D53	GND	GND	H19
D6	GND	GND	H21
D9	GND	GND	H22
E10	GND	GND	H24
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E16	GND	GND	H27
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E7	GND	GND	H43
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F12	GND	GND	H46
F15	GND	GND	H47
F18	GND	GND	H48
F2	GND	GND	H50
F21	GND	GND	H55
F24	GND	GND	H6
F27	GND		

GND GND

G1N

BGA2714
COMMON

24/24 GND_5/5

H7	GND	GND	R41
H9	GND	GND	R42
J10	GND	GND	R43
J17	GND	GND	R44
J20	GND	GND	R47
J29	GND	GND	R49
J35	GND	GND	R51
J4	GND	GND	R53
J49	GND	GND	R55
J51	GND	GND	R6
J53	GND	GND	R8
J55	GND	GND	T2
J5	GND	GND	T49
J8	GND	GND	T52
K12	GND	GND	T54
K15	GND	GND	T7
K18	GND	GND	T9
K19	GND	GND	U10
K21	GND	GND	U13
K24	GND	GND	U14
K27	GND	GND	U15
K28	GND	GND	U16
K30	GND	GND	U17
K33	GND	GND	U18
K36	GND	GND	U19
K37	GND	GND	U20
K39	GND	GND	U21
K42	GND	GND	U22
K45	GND	GND	U23
K49	GND	GND	U24
K52	GND	GND	U25
K54	GND	GND	U26
K7	GND	GND	U27
K9	GND	GND	U28
L10	GND	GND	U29
L3	GND	GND	U3
L5	GND	GND	U30
L50	GND	GND	U31
L55	GND	GND	U32
L8	GND	GND	U33
M10	GND	GND	U34
M2	GND	GND	U35
M4	GND	GND	U36
M47	GND	GND	U37
M49	GND	GND	U38
M51	GND	GND	U39
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M55	GND	GND	U41
M6	GND	GND	U42
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N14	GND	GND	U44
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N18	GND	GND	U5
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N39	GND	GND	V6
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N52	GND	GND	W15
N54	GND	GND	W16
N7	GND	GND	W17
P3	GND	GND	W18
P5	GND	GND	W19
P50	GND	GND	W20
P55	GND	GND	W21
P6	GND	GND	W22
R10	GND	GND	W23
R13	GND	GND	W24
R14	GND	GND	W25
R15	GND	GND	W26
R16	GND	GND	W27
R17	GND	GND	W28
R18	GND	GND	W29
R19	GND	GND	W30
R2	GND	GND	W31
R20	GND	GND	W32
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R26	GND	GND	W38
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R28	GND	GND	W40
R29	GND	GND	W41
R30	GND	GND	W42
R31	GND	GND	W43
R32	GND	GND	W44
R33	GND	GND	W52
R34	GND	GND	W54
R35	GND	GND	W7
R36	GND	GND	Y3
R37	GND	GND	Y48
R38	GND	GND	Y5
R39	GND	GND	Y50
R4	GND	GND	Y55
R40	GND	GND	Y8

GND GND

G1O

BGA2714
COMMON

22/24 VDDMS

NVVDD NVVDD

AY27	VDDMS	VDDMS	AB13
AY28	VDDMS	VDDMS	AB44
AY29	VDDMS	VDDMS	AD13
AY30	VDDMS	VDDMS	AD44
AY31	VDDMS	VDDMS	AF13
AY32	VDDMS	VDDMS	AF44
AY33	VDDMS	VDDMS	AH13
AY34	VDDMS	VDDMS	AH44
AY35	VDDMS	VDDMS	AK13
AY36	VDDMS	VDDMS	AK44
AY37	VDDMS	VDDMS	AM13
AY38	VDDMS	VDDMS	AM44
AY39	VDDMS	VDDMS	AP13
AY40	VDDMS	VDDMS	AP44
AY41	VDDMS	VDDMS	AT13
AY42	VDDMS	VDDMS	AT14
AY43	VDDMS	VDDMS	AT15
AY44	VDDMS	VDDMS	AT16
BA13	VDDMS	VDDMS	AT17
BA44	VDDMS	VDDMS	AT18
BB13	VDDMS	VDDMS	AT19
BB14	VDDMS	VDDMS	AT20
BB15	VDDMS	VDDMS	AT21
BB16	VDDMS	VDDMS	AT22
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BB18	VDDMS	VDDMS	AT24
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BB20	VDDMS	VDDMS	AT26
BB21	VDDMS	VDDMS	AT27
BB22	VDDMS	VDDMS	AT28
BB23	VDDMS	VDDMS	AT29
BB24	VDDMS	VDDMS	AT30
BB25	VDDMS	VDDMS	AT31
BB26	VDDMS	VDDMS	AT32
BB27	VDDMS	VDDMS	AT33
BB28	VDDMS	VDDMS	AT34
BB29	VDDMS	VDDMS	AT35
BB30	VDDMS	VDDMS	AT36
BB31	VDDMS	VDDMS	AT37
BB32	VDDMS	VDDMS	AT38
BB33	VDDMS	VDDMS	AT39
BB34	VDDMS	VDDMS	AT40
BB35	VDDMS	VDDMS	AT41
BB36	VDDMS	VDDMS	AT42
BB37	VDDMS	VDDMS	AT43
BB38	VDDMS	VDDMS	AT44
BB39	VDDMS	VDDMS	AU13
BB40	VDDMS	VDDMS	AU44
BB41	VDDMS	VDDMS	AV13
BB42	VDDMS	VDDMS	AV14
BB43	VDDMS	VDDMS	AV15
BB44	VDDMS	VDDMS	AV16
BC13	VDDMS	VDDMS	AV17
BC44	VDDMS	VDDMS	AV18
BD13	VDDMS	VDDMS	AV19
BD14	VDDMS	VDDMS	AV20
BD17	VDDMS	VDDMS	AV21
BD18	VDDMS	VDDMS	AV22
BD21	VDDMS	VDDMS	AV23
BD22	VDDMS	VDDMS	AV24
BD25	VDDMS	VDDMS	AV25
BD26	VDDMS	VDDMS	AV26
BD29	VDDMS	VDDMS	AV27
BD29	VDDMS	VDDMS	AV28
BD31	VDDMS	VDDMS	AV29
BD32	VDDMS	VDDMS	AV30
BD35	VDDMS	VDDMS	AV31
BD36	VDDMS	VDDMS	AV32
BD39	VDDMS	VDDMS	AV33
BD40	VDDMS	VDDMS	AV34
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N13	VDDMS	VDDMS	AV37
N15	VDDMS	VDDMS	AV38
N17	VDDMS	VDDMS	AV39
N19	VDDMS	VDDMS	AV40
N21	VDDMS	VDDMS	AV41
N23	VDDMS	VDDMS	AV42
N25	VDDMS	VDDMS	AV43
N27	VDDMS	VDDMS	AV44
N30	VDDMS	VDDMS	AW13
N32	VDDMS	VDDMS	AW44
N34	VDDMS	VDDMS	AY13
N36	VDDMS	VDDMS	AY14
N38	VDDMS	VDDMS	AY15
N40	VDDMS	VDDMS	AY16
N42	VDDMS	VDDMS	AY17
N44	VDDMS	VDDMS	AY18
P13	VDDMS	VDDMS	AY19
P44	VDDMS	VDDMS	AY20
T13	VDDMS	VDDMS	AY21
T44	VDDMS	VDDMS	AY22
V13	VDDMS	VDDMS	AY23
V44	VDDMS	VDDMS	AY24
Y13	VDDMS	VDDMS	AY25
Y44	VDDMS	VDDMS	AY26

VDDMS_SENSE	BP49	TP501 GPU_MSVDD_SENSE
GNDMS_SENSE	BR49	NO STUFF GPU_MSVDD_FBRTN
		TP502 NO STUFF

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU PWR & GND 2

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Page17: XVDD

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU PWR & GND 3 (XVDD)

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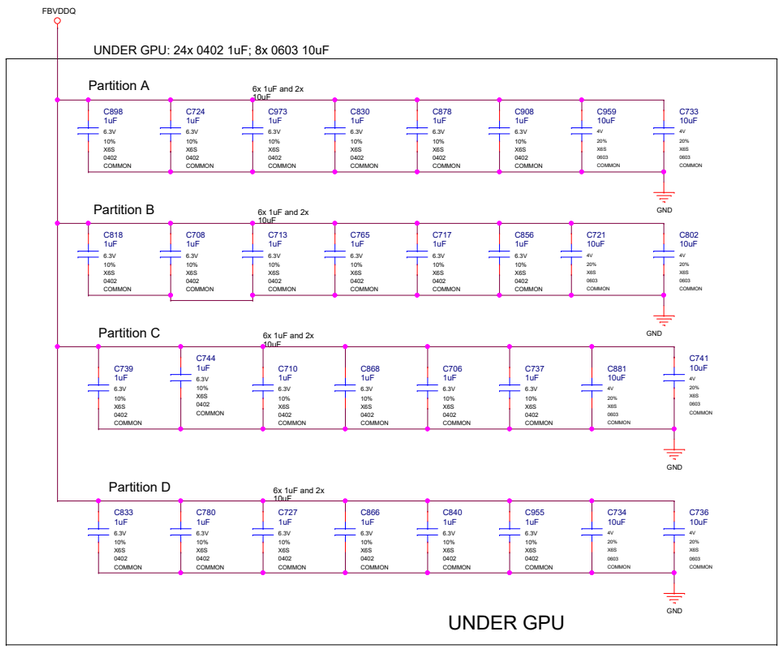
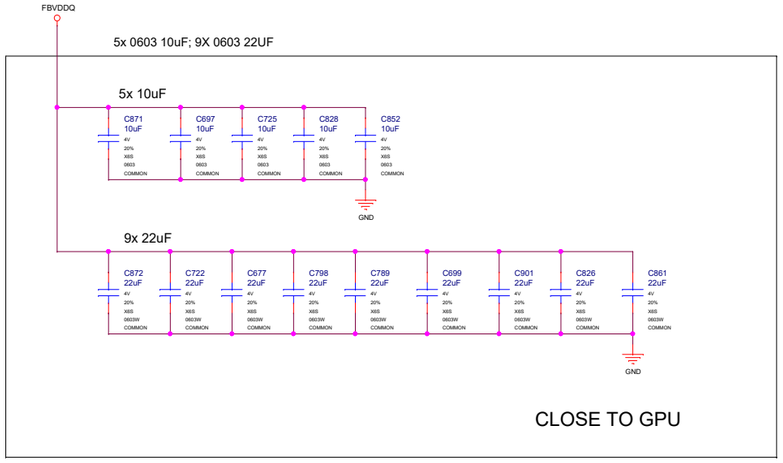
Page18: GPU DECOUPLING FBVDDQ

FBVDDQ





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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU DECOUPLING FBVDDQ

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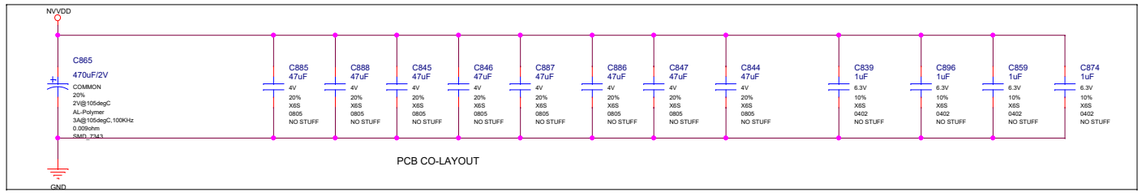
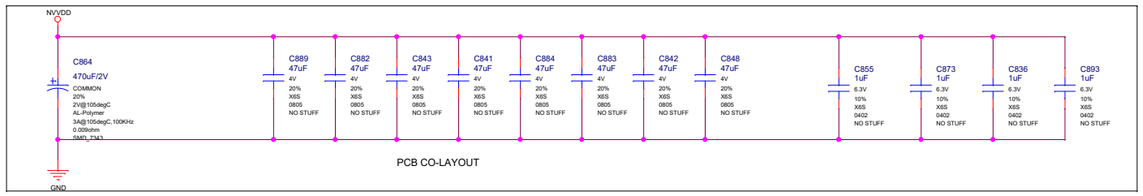
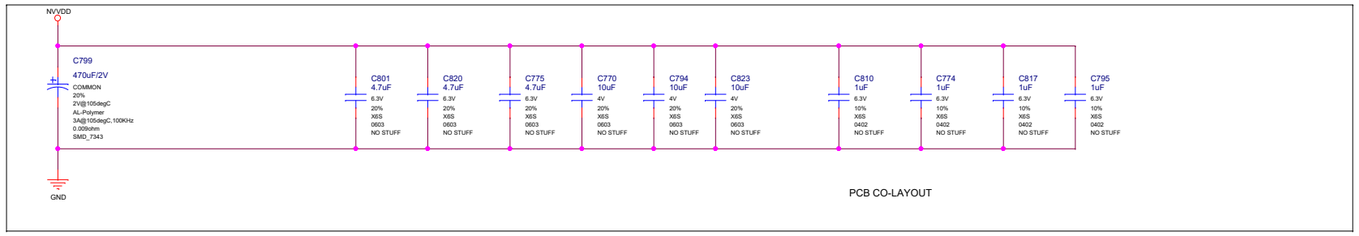
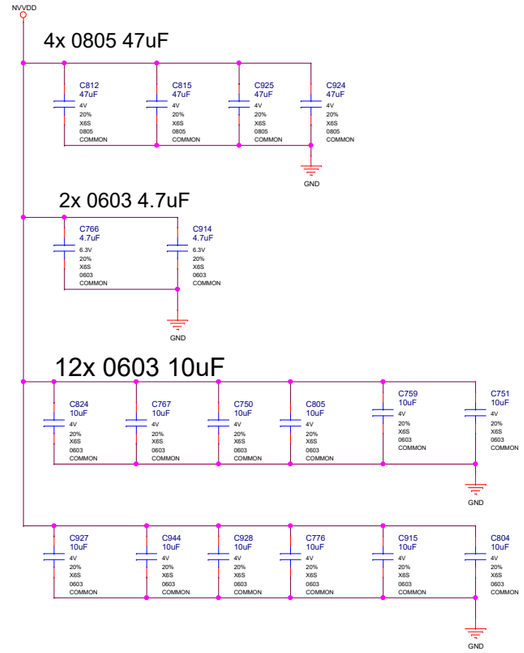
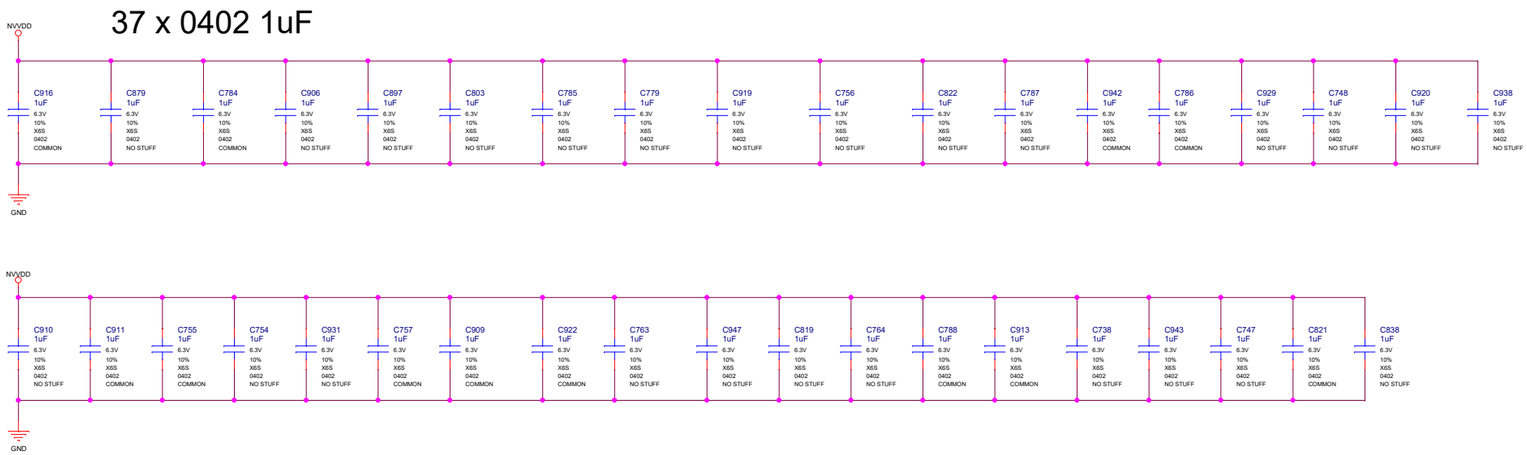
Page19: GPU DECOUPLING NVVDD











UNDER GPU

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU DECOUPLING NVVDD

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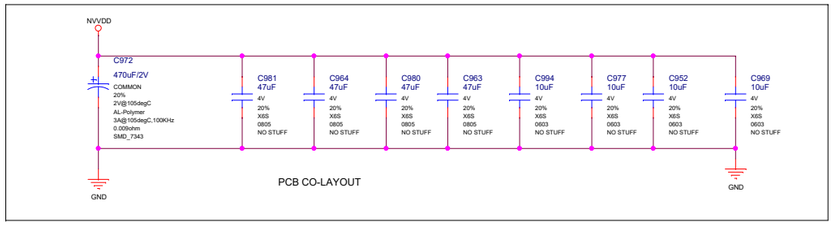
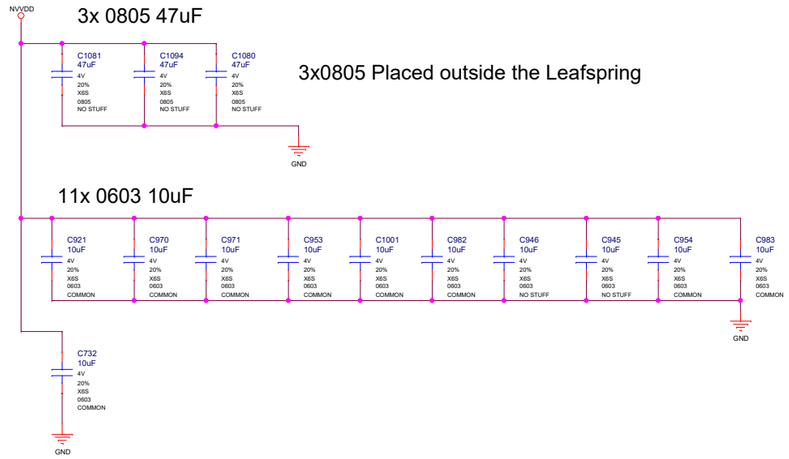
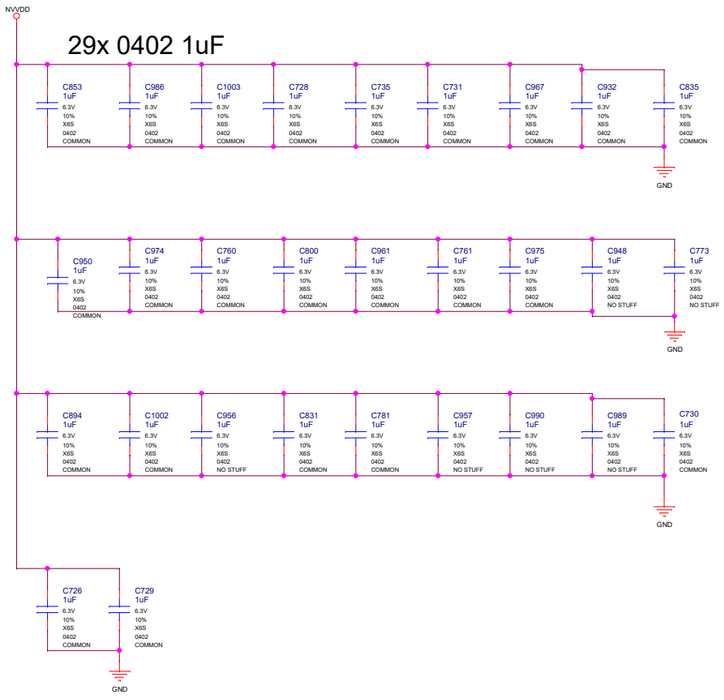
Page20: GPU DECOUPLING NVVDD







UNDER GPU

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU DECOUPLING NVVDD

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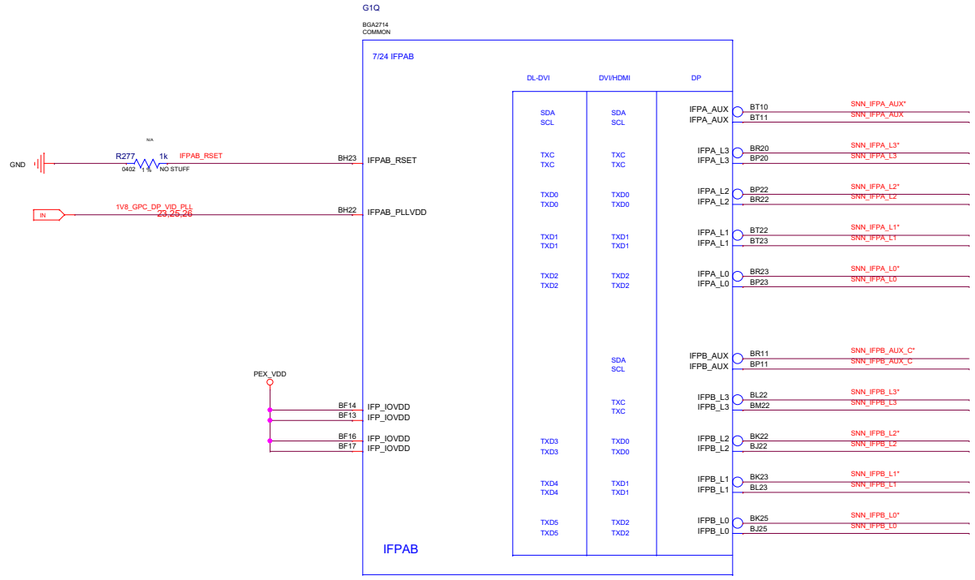
Page21: IFPAB DVI-D-DL



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IO: IFPAB NC

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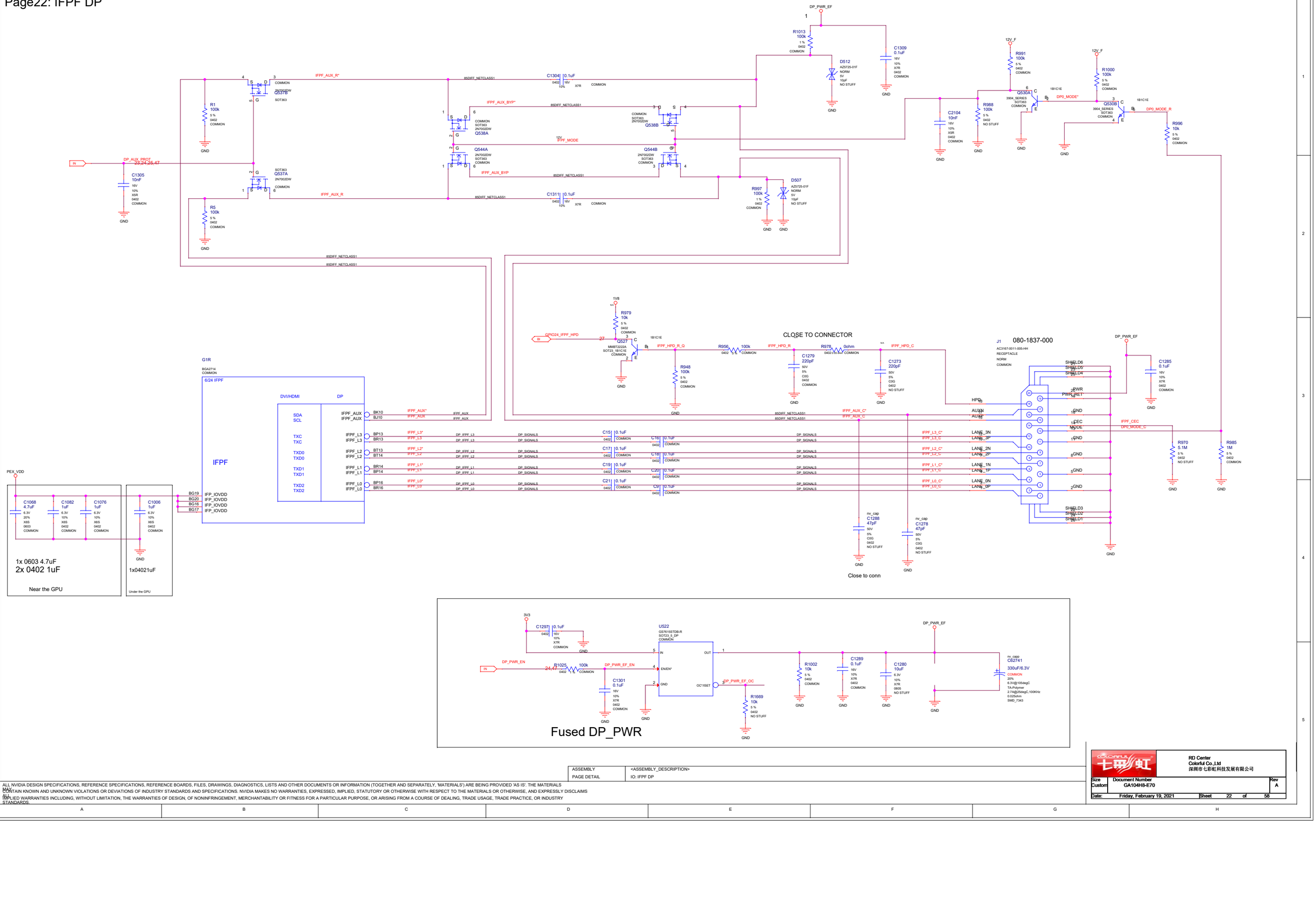
Page22: IFPF DP



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IO: IFPF DP

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Page23: IFPE DP

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IO: IFPE DP

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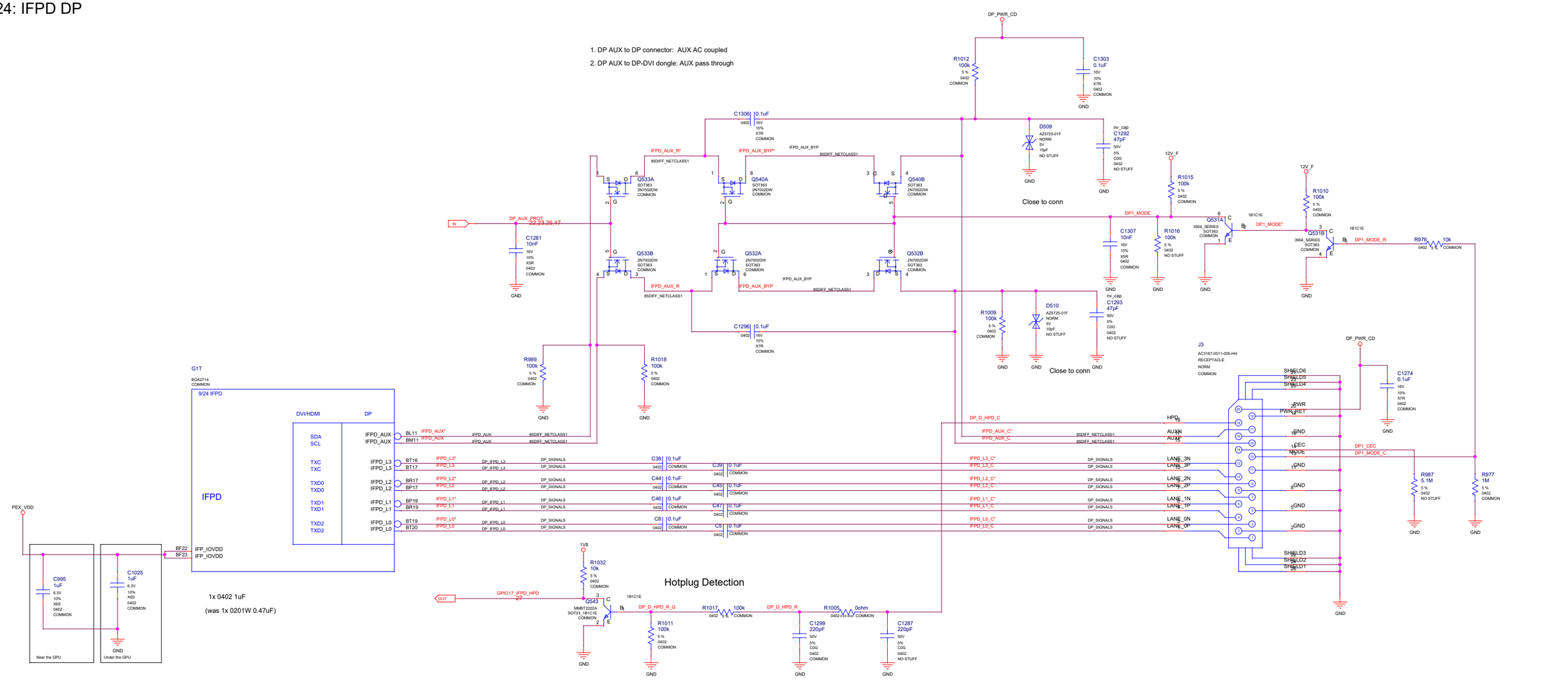
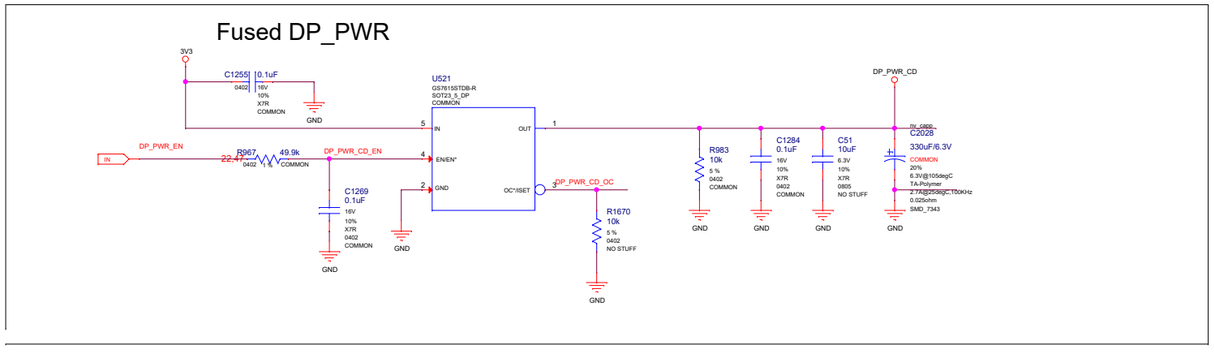
Page24: IFPD DP

1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through





ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	

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IO: IFPD DP

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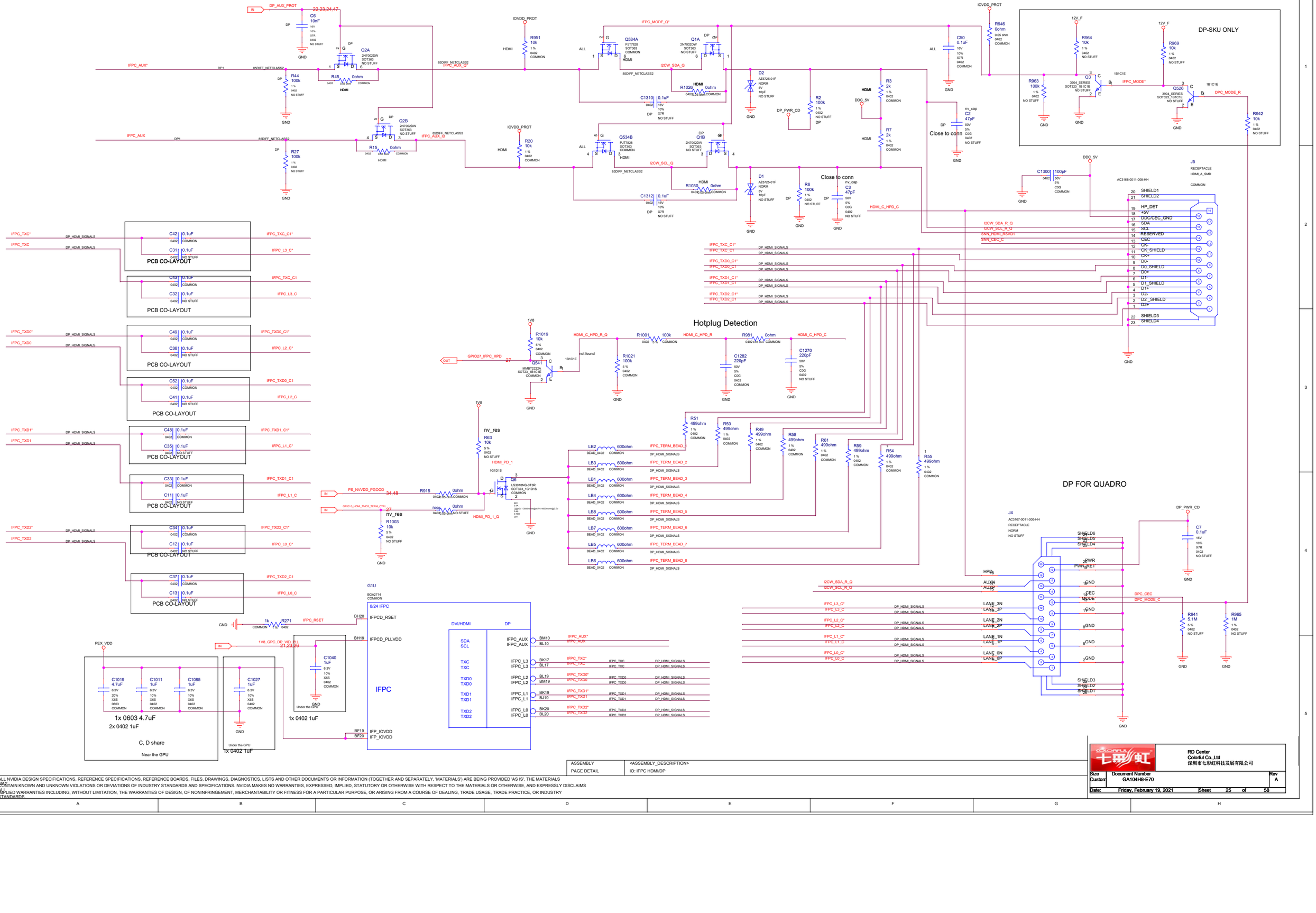
27-JUN-2020

Page25: IFPC HDMI/DP



ASSEMBLY: <ASSEMBLY_DESCRIPTION>

PAGE DETAIL: IO: IFPC HDMI/DP

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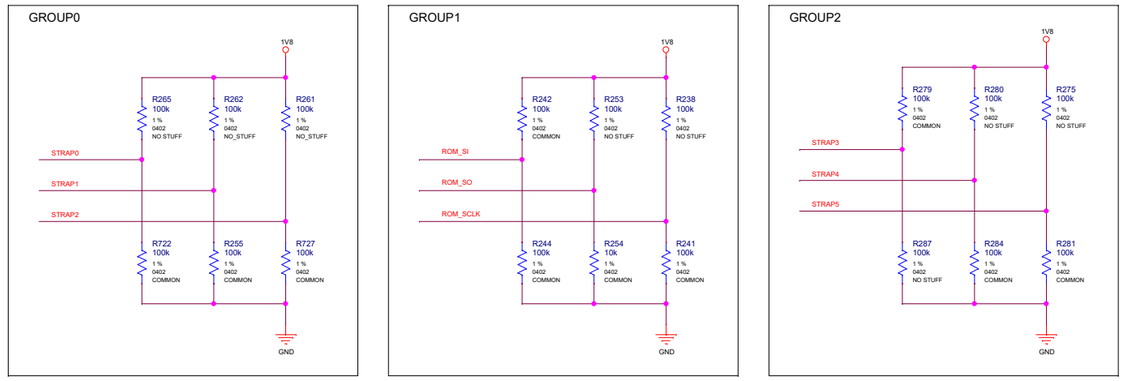
Page26: MISC2: ROM, XTAL, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	00000	RAMCFG SAMSUNG 8Gb 7GHz
L	L	H	00001	RAMCFG MICRON 8Gb 7GHz
L	H	L	00010	RAMCFG HYNIX 8Gb 7GHz
H	H	L	00110	RAMCFG SAMSUNG 16Gb 8GHz
		TBD		

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

JU1按下高频 Pin(1,2) 相连 BIOS2(U16)
JU1弹起 低频Pin(2,3) 相连 BIOS1(U10828)



ROM_SO	ROM_SI	ROM_SCLK	SMARTFAN[2:0],FS_OVERT	1:ENABLE 0:DISABLE
H	H	H	0111	FS_OVERT ENABLE
H	H	M	0000	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

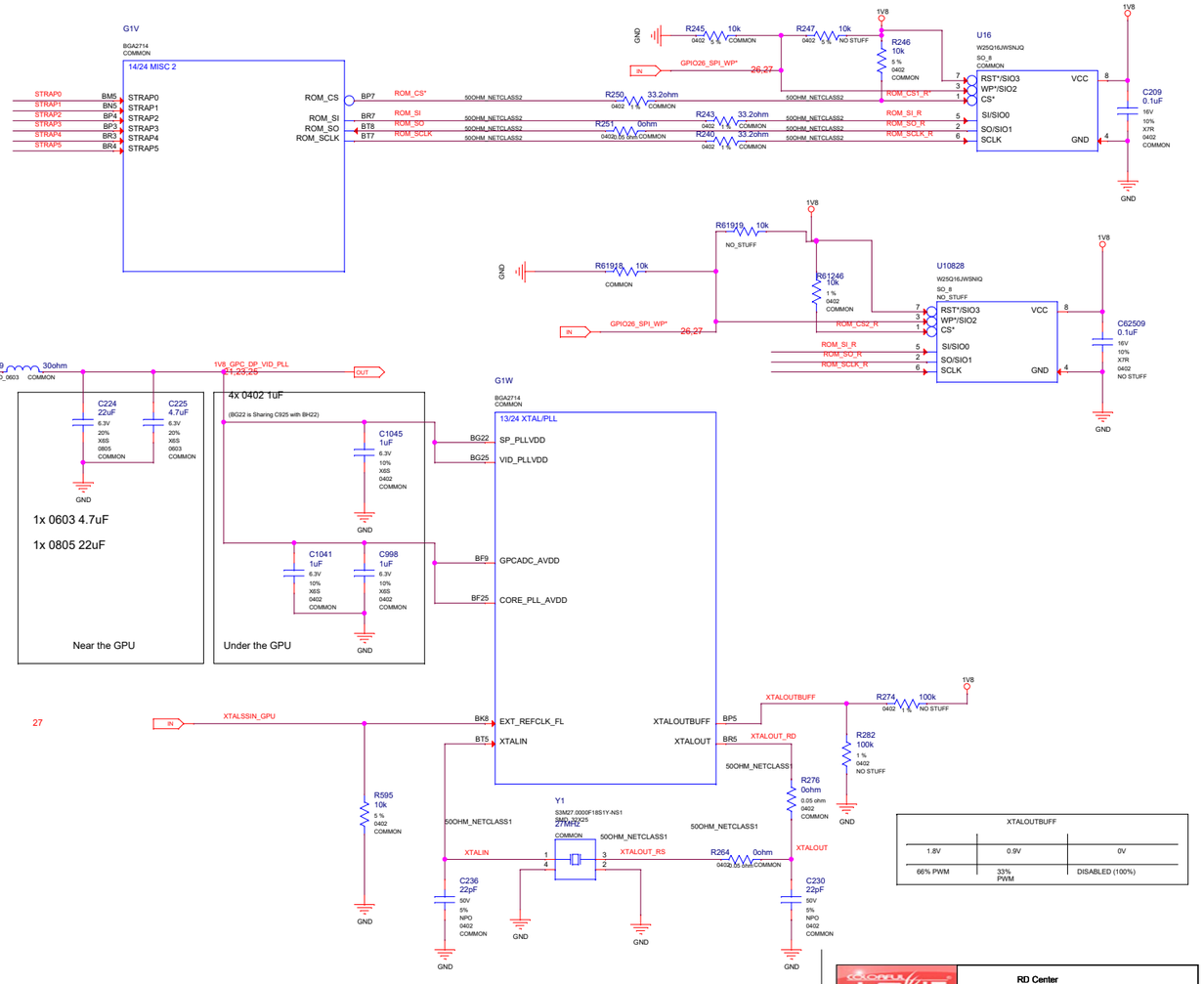
1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

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

DEFAULT



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC1: ROM, XTAL,STRAPS

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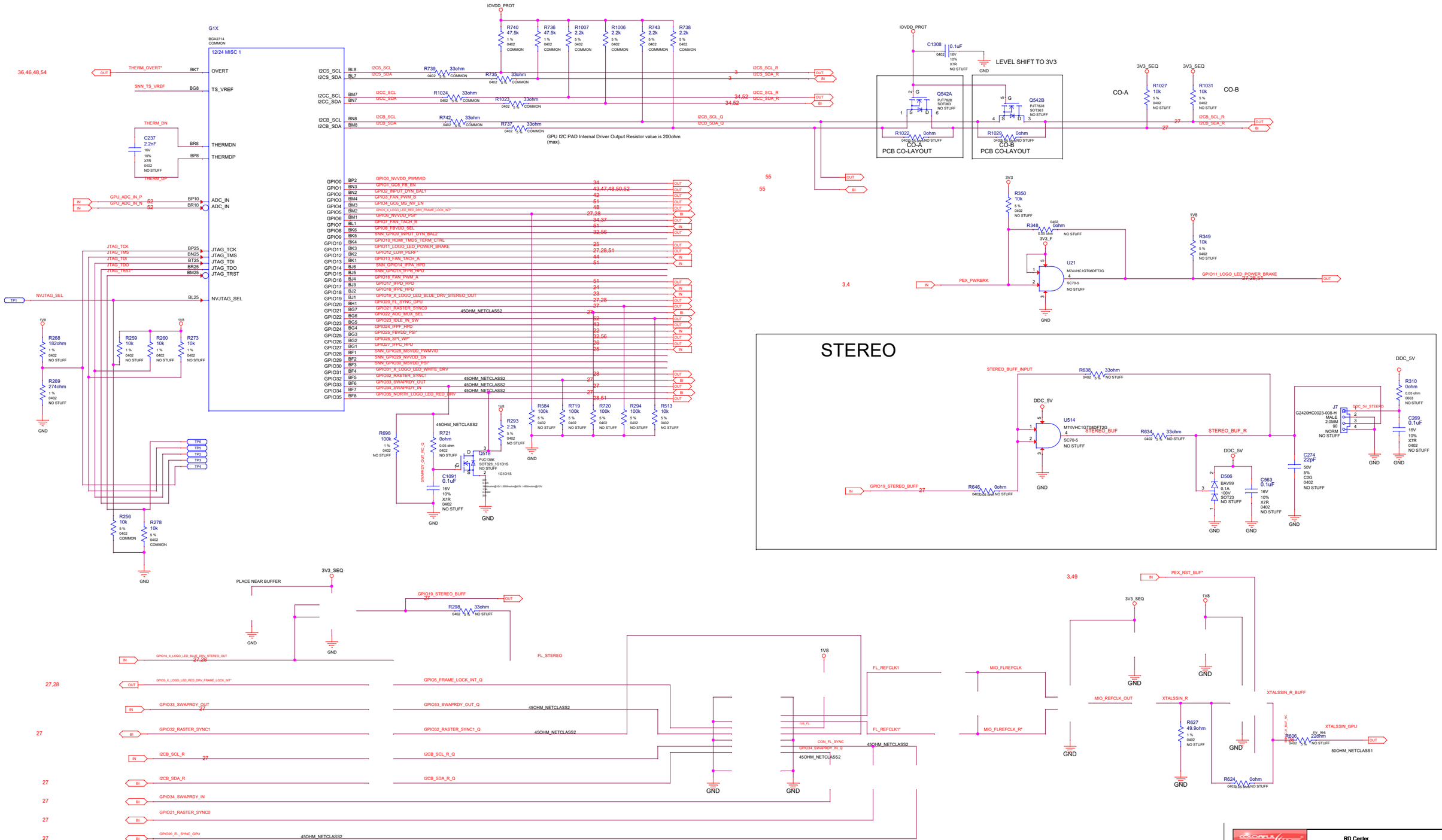
Page27: MISC1: JTAG, GPIO, ADC, I2C, OVERT



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC2: JTAG,GPIO,ADC,I2C,FL,STEERO

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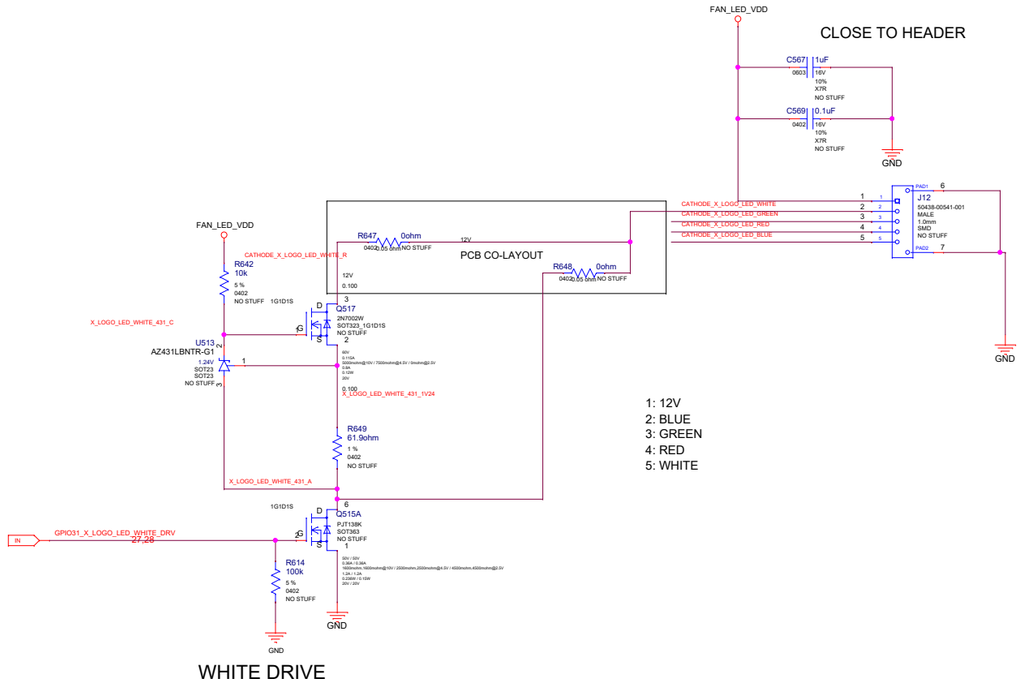
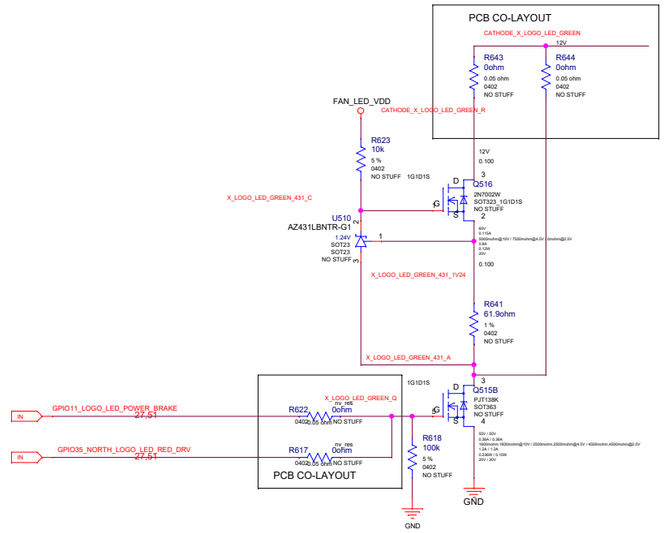
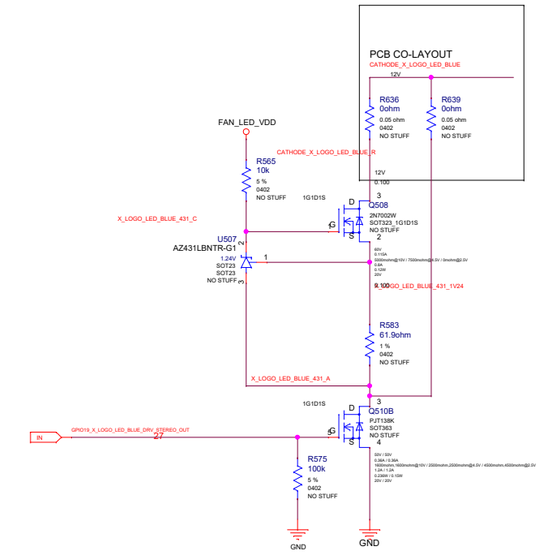
Page28: RGB







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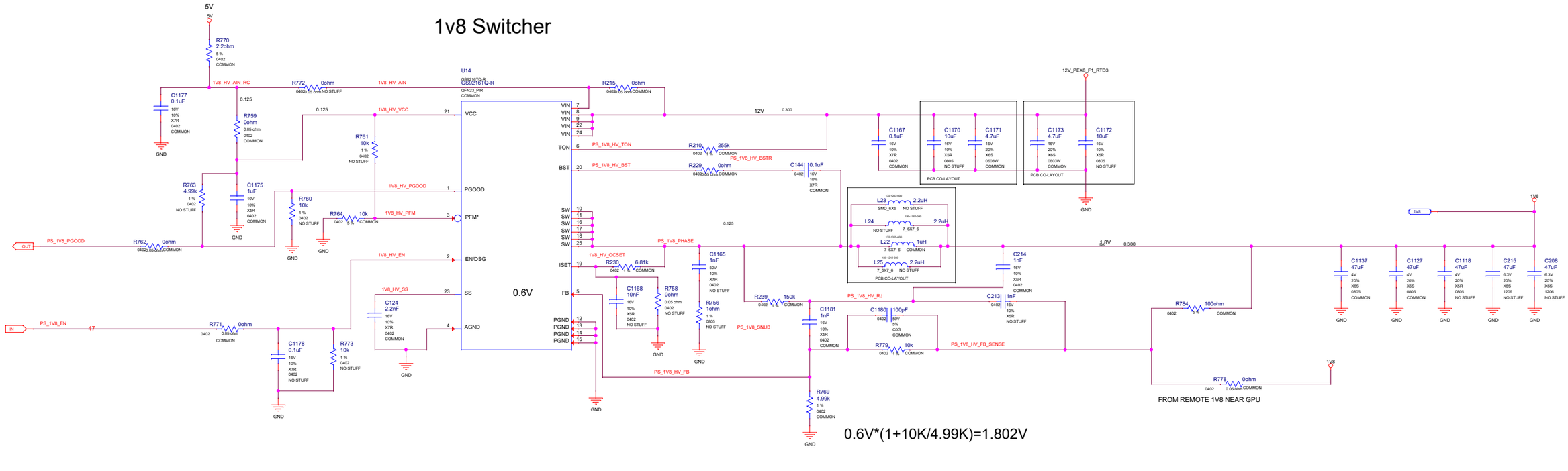
Page29: PS: 1V8

1v8 Switcher



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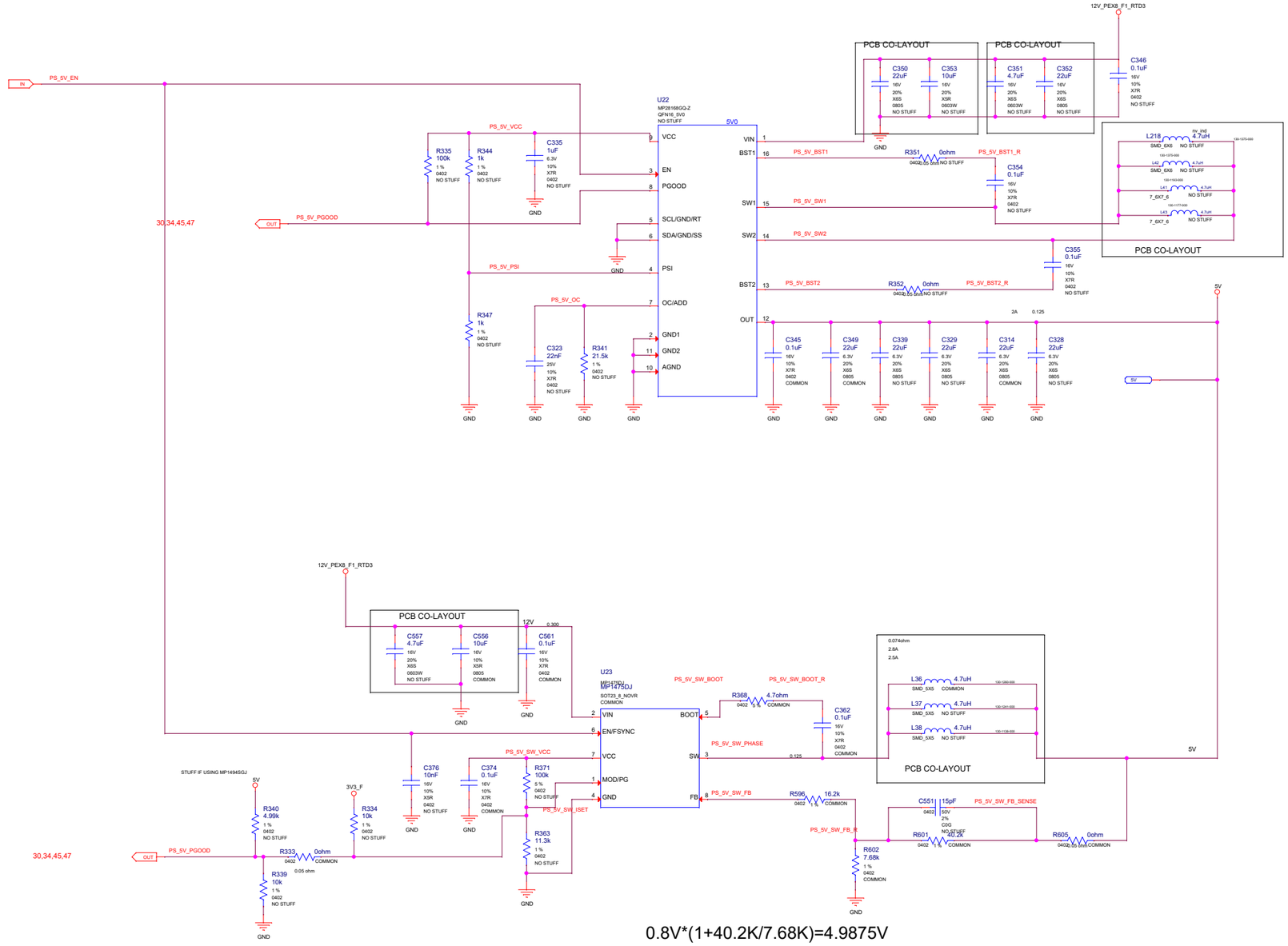
Page30: PS: 5V



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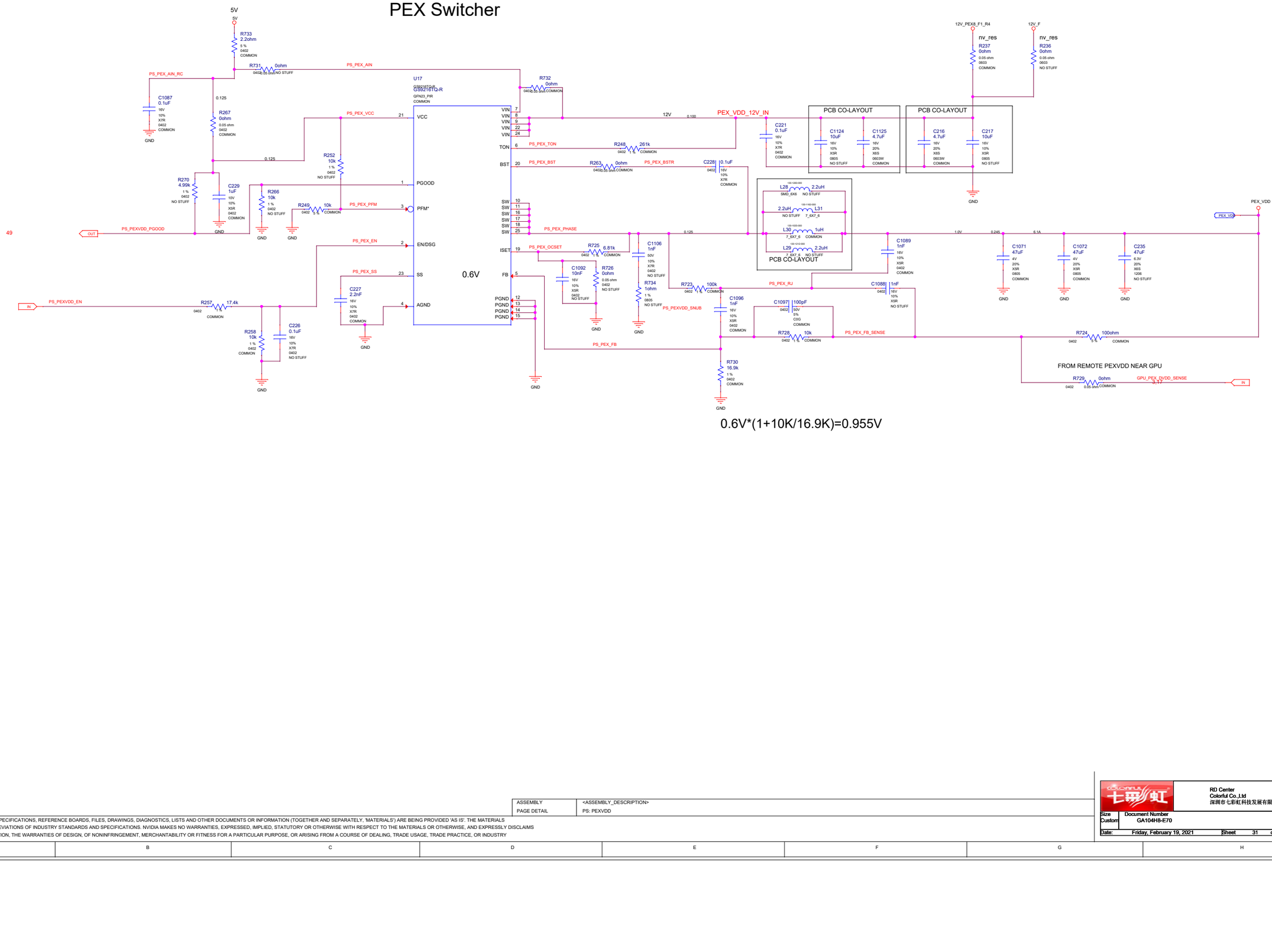
PEX Switcher



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Page32: PS: FBVDDQ

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	.PS: FBVDDQ

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Page33: PS: FBVDDQ PH2

FBVDD PH2 INPUT ANTI-BACKDRIVE

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: FBVDDQ PH2

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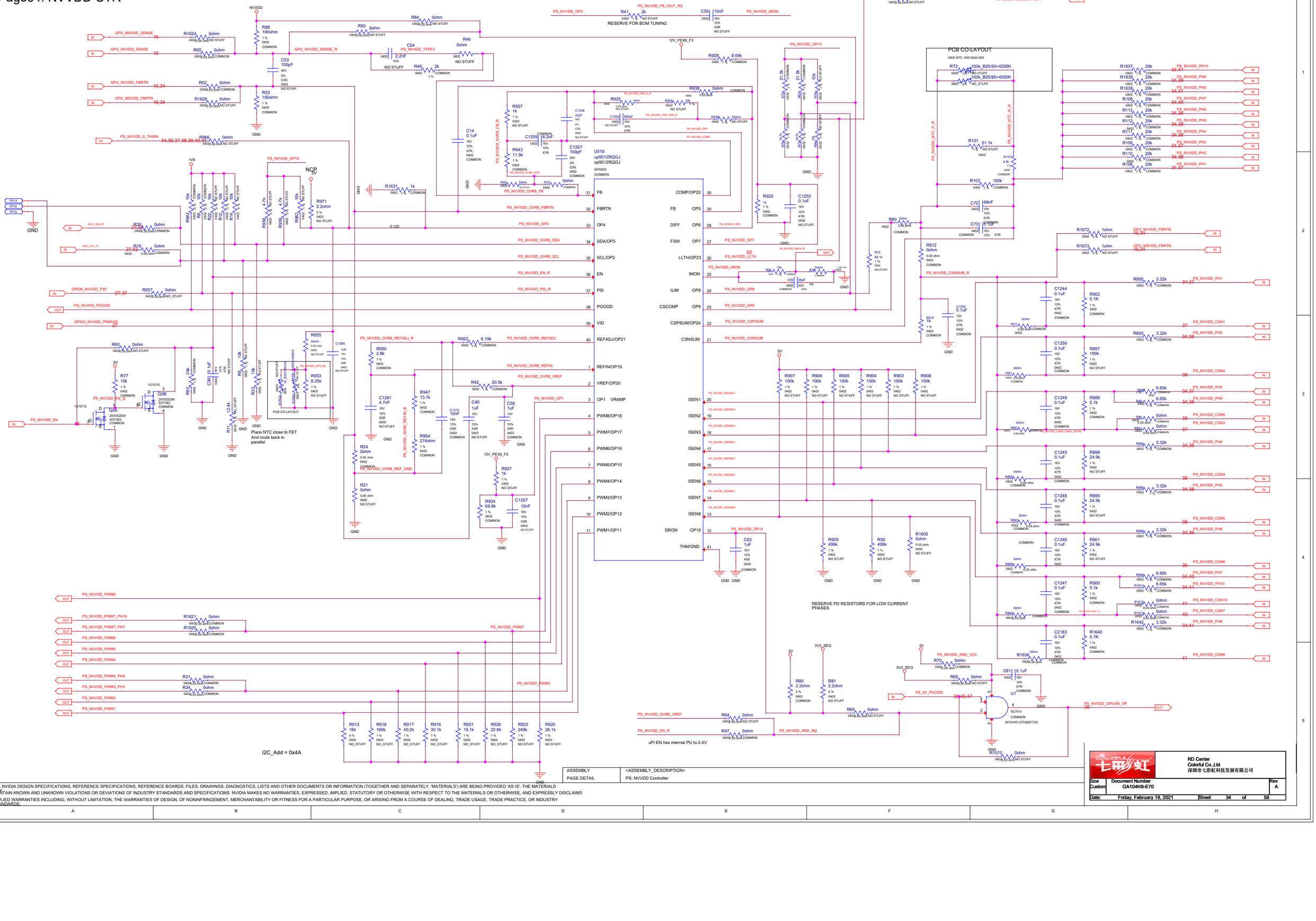
Page34: NVVDD CTR



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: NVVDD Controller

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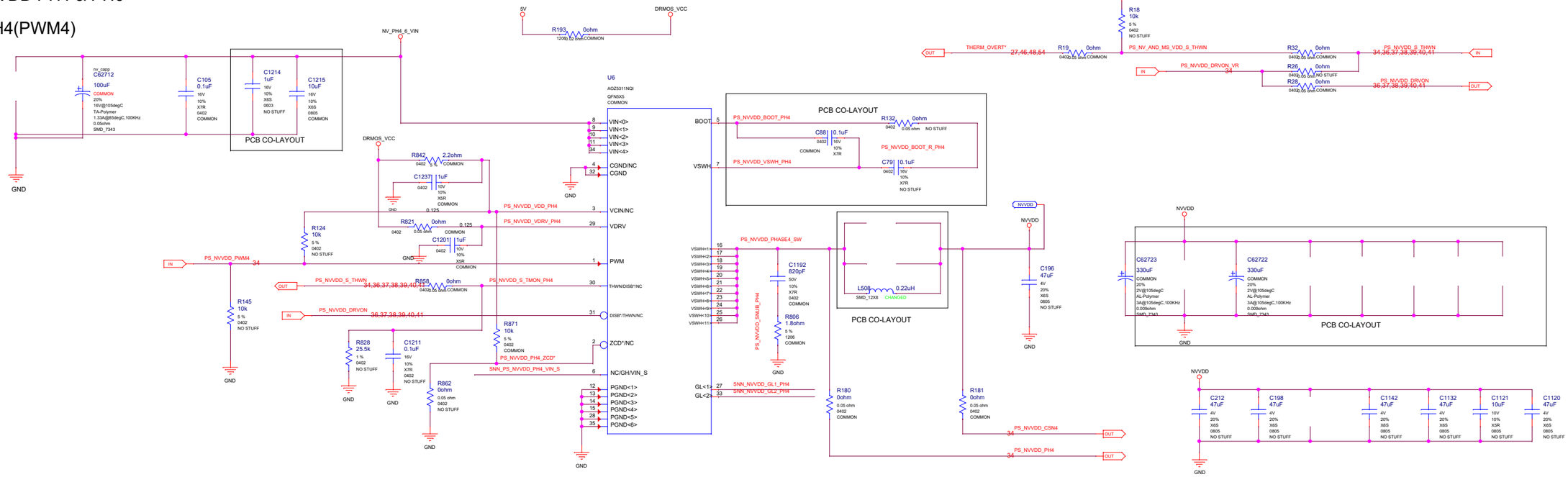
Page36: NVVDD PH4 & PH6

NVVDD PH4(PWM4)



NVVDD PH6(PWM6)

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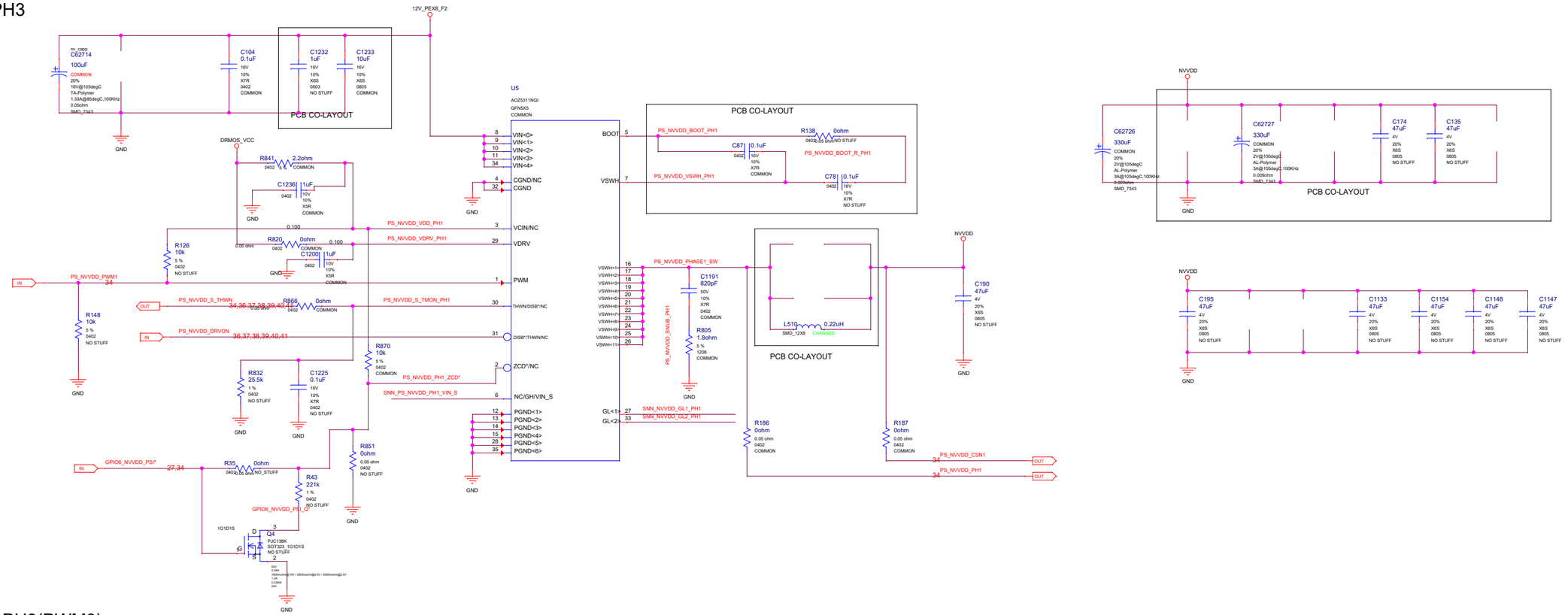
Page37: NVVDD PH1 & PH3

NVVDD PH1(PWM1)



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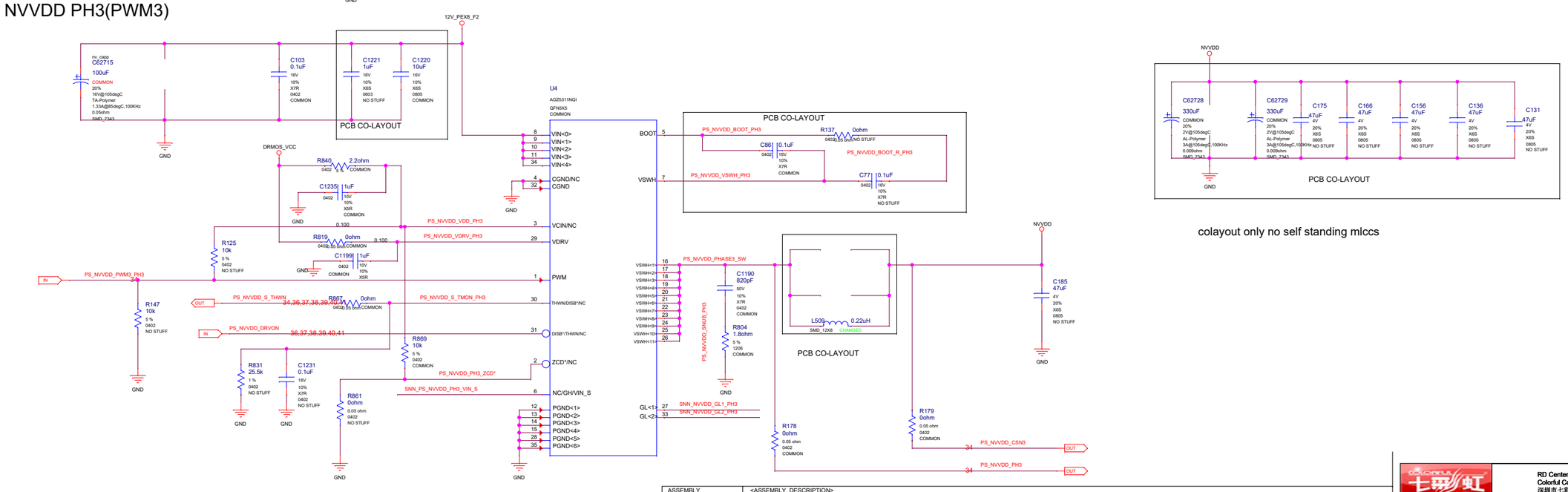

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PAGE DETAIL	PS: NVVDD PH1, PH3

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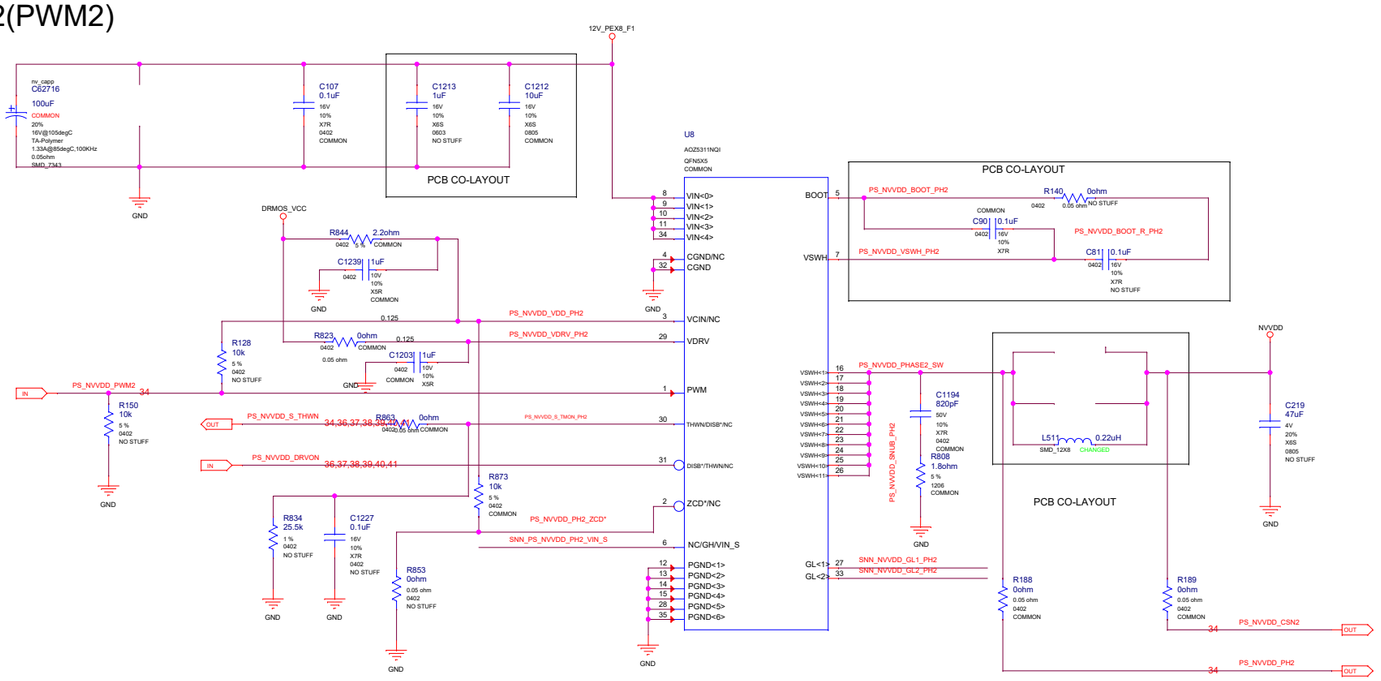
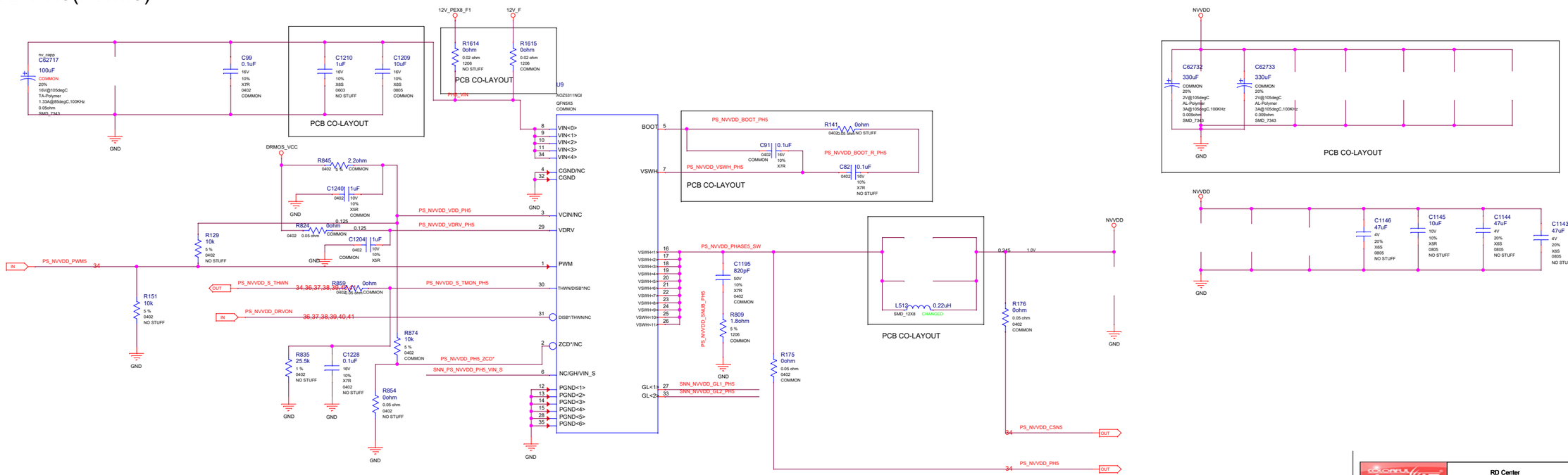
Page38: NVVDD PH2 & PH5

NVVDD PH2(PWM2)



NVVDD PH5(PWM5)



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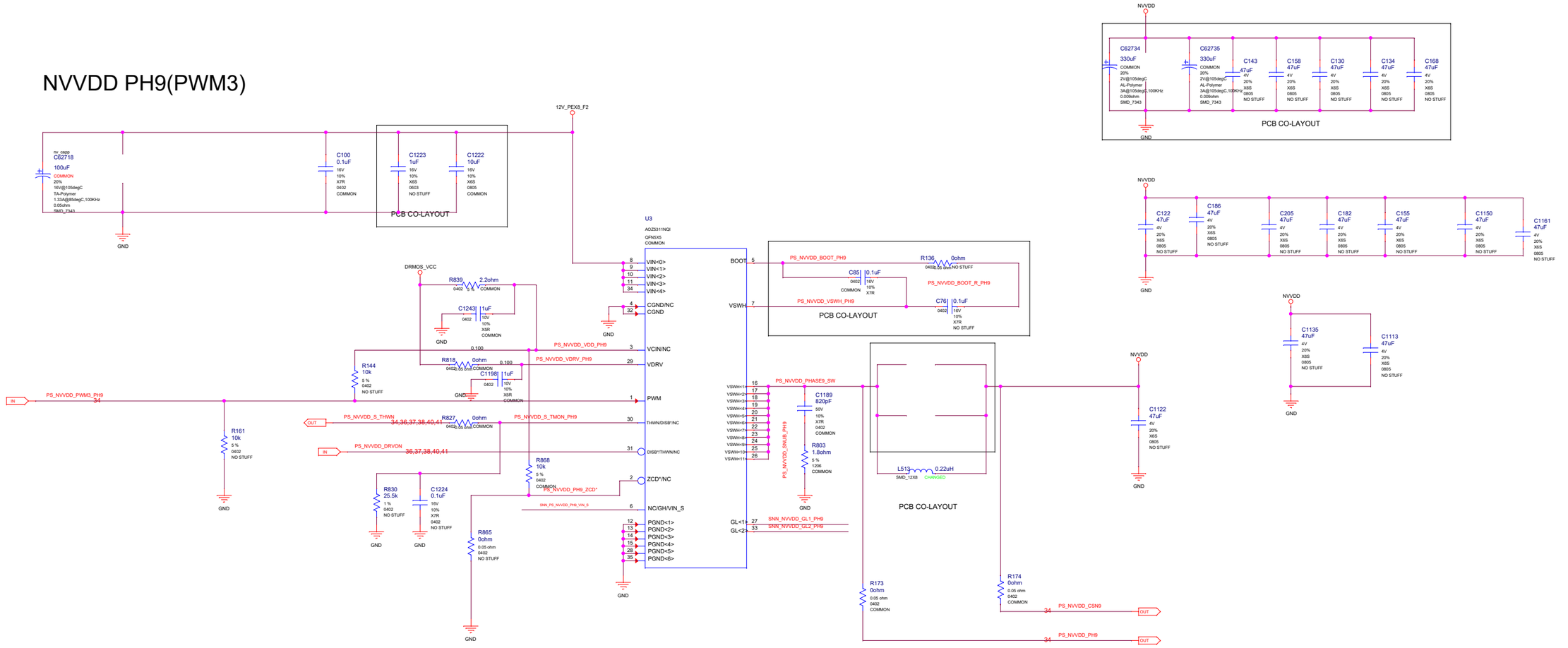
Page39: NVVDD PH9

NVVDD PH9(PWM3)



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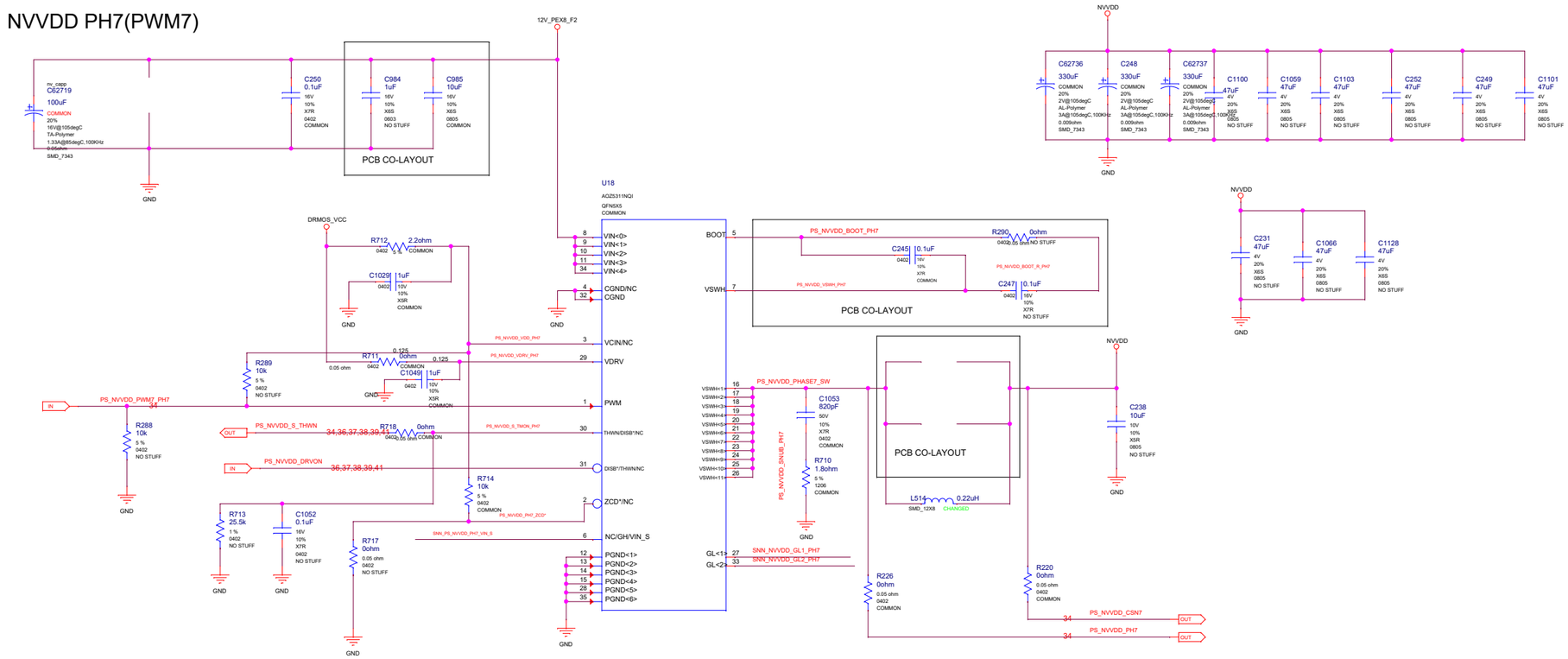
NVVDD PH7(PWM7)



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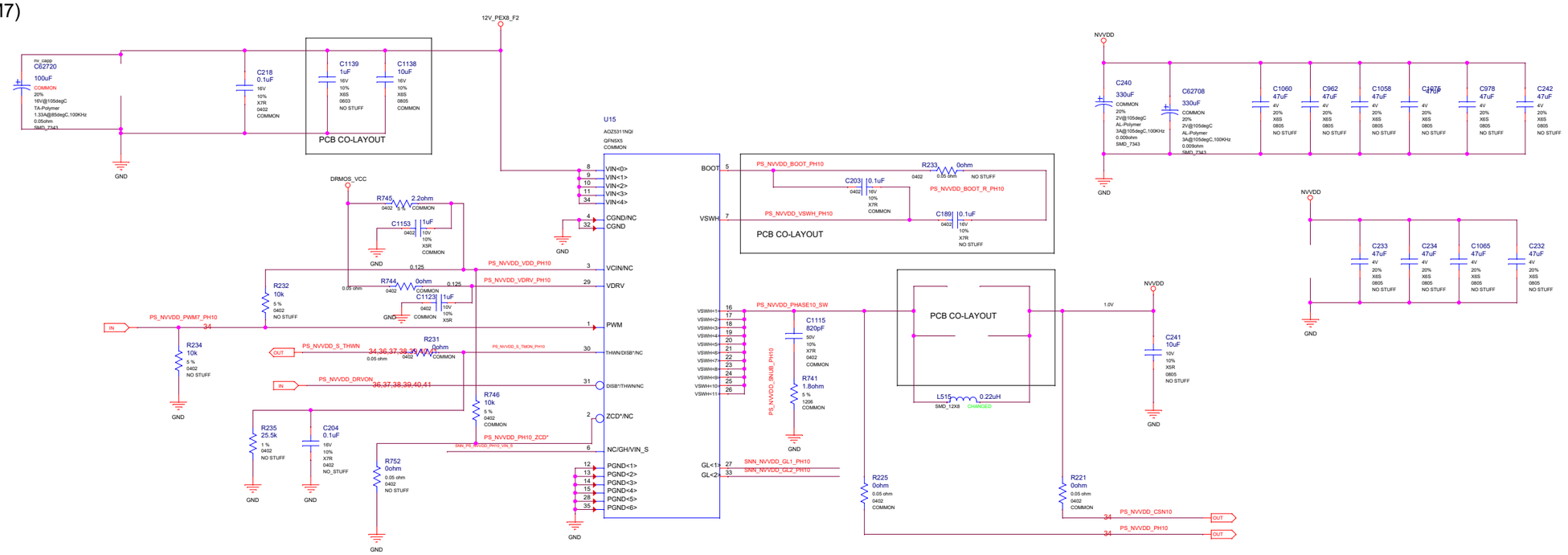
Page41: NVVDD PH10 & 8

NVVDD PH10(PWM7)



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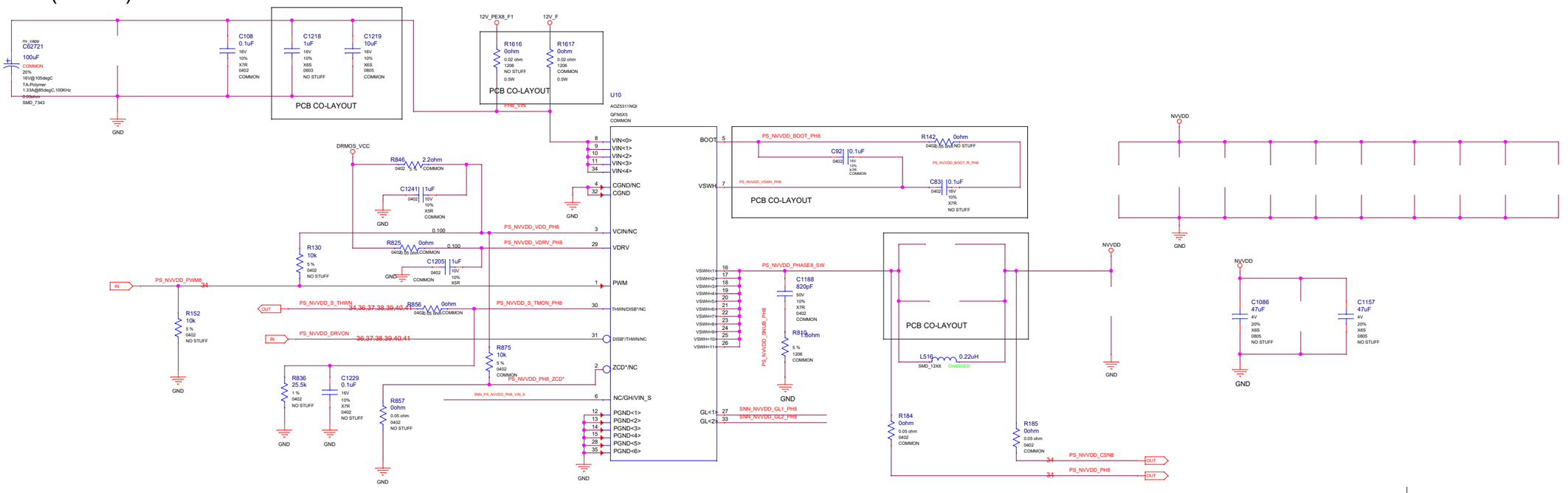

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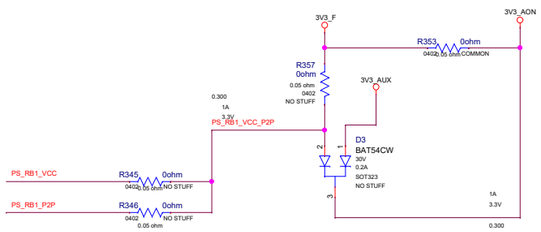
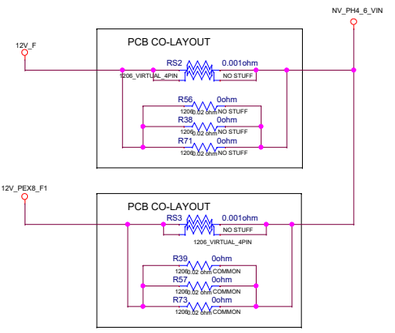
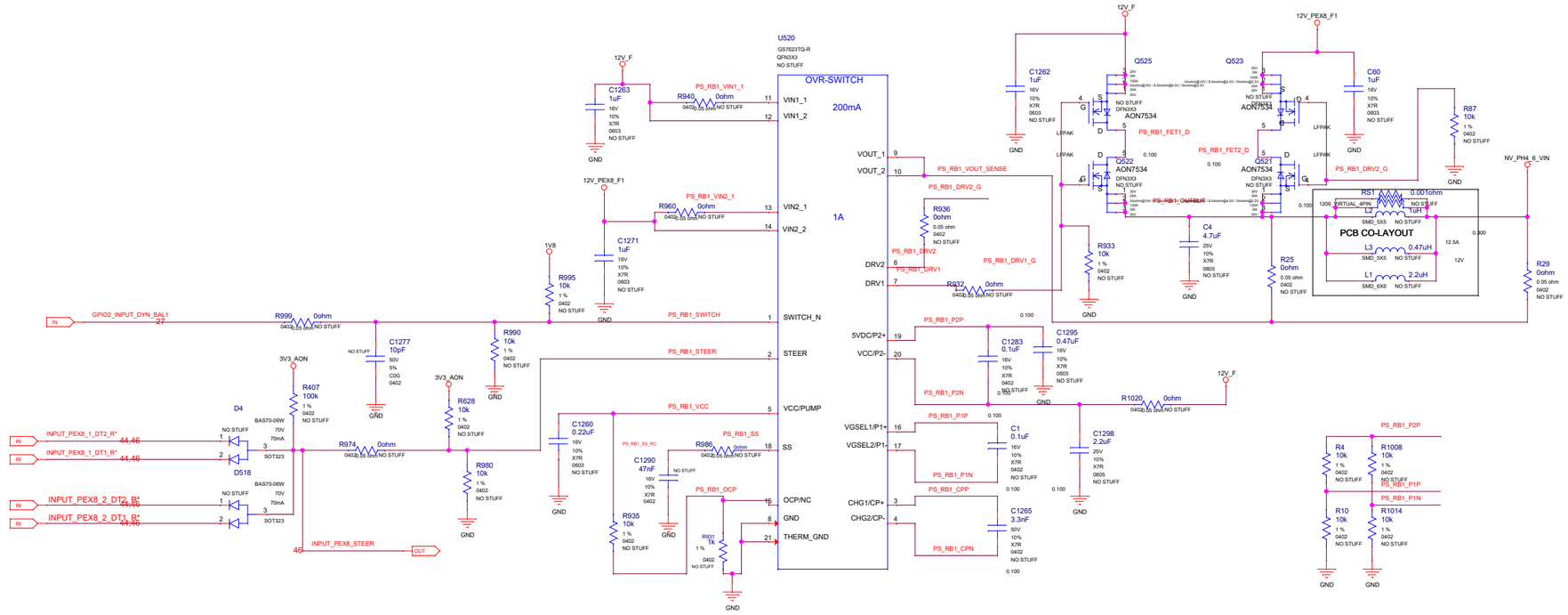
Page42: Input Power Balancing Switcher







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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: OVRS_INPUT POWER BALANCE

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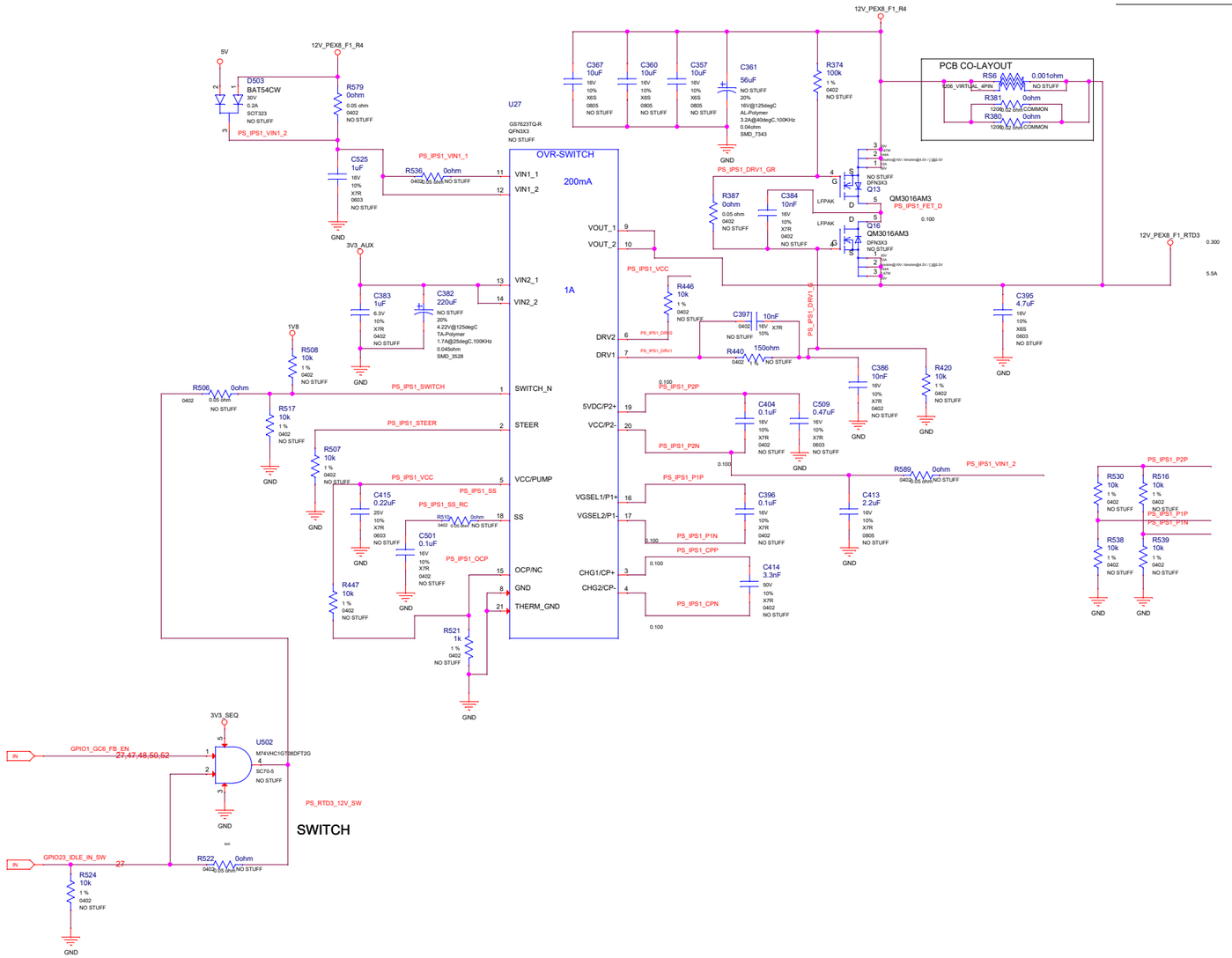
Page43: INPUT SWITCH RTD3 (12V & 3V3_A SWITCHER)

AND GATE LOGIC

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

SWITCH	VOUT
0	VOUT = VIN1
1	VOUT = VIN2



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: RDT3_12V & 3V3_A Switcher

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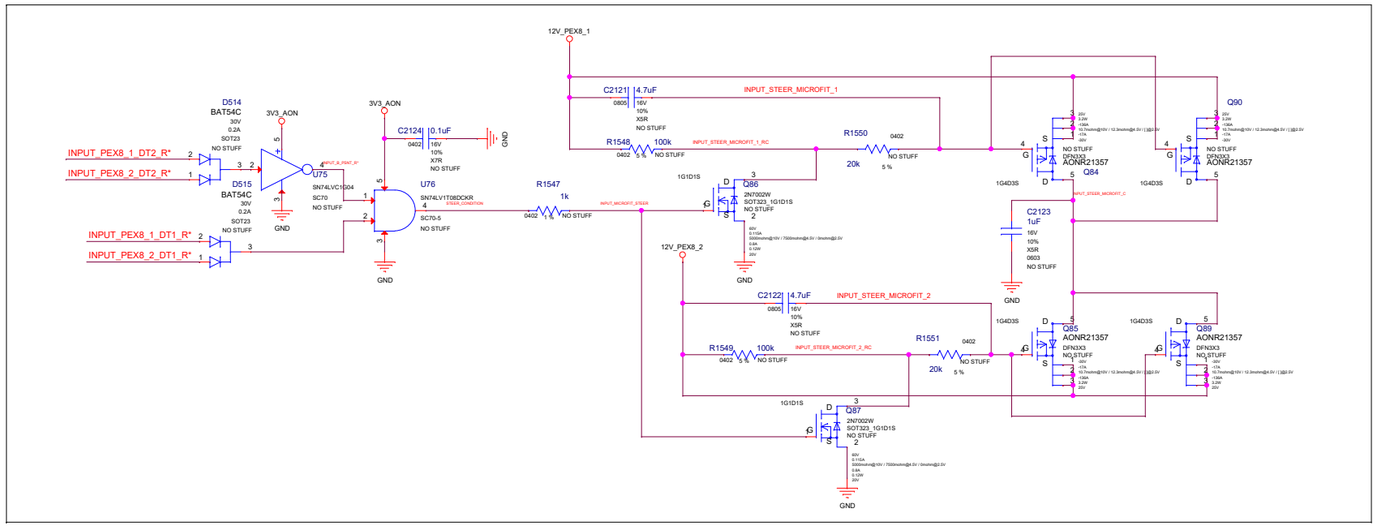
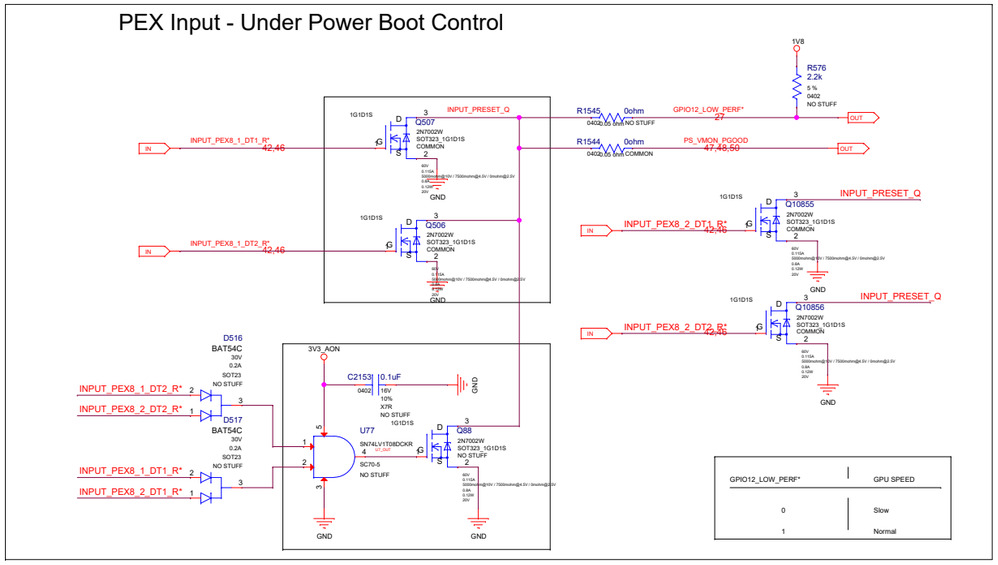
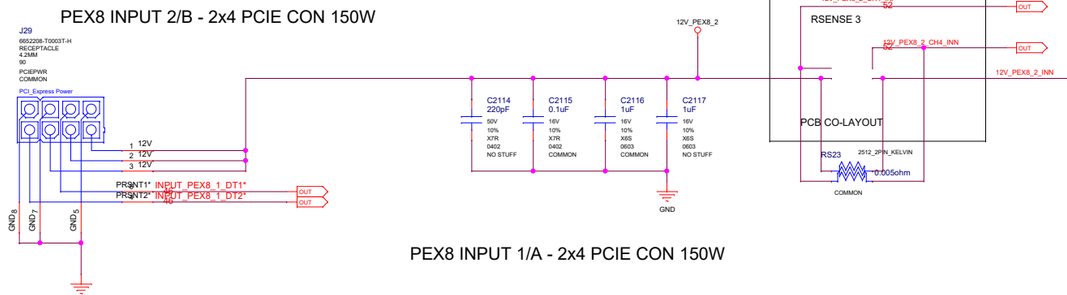
Page44: 12V_EXT_INPUT, FILTERING & UNDER POWER BOOT



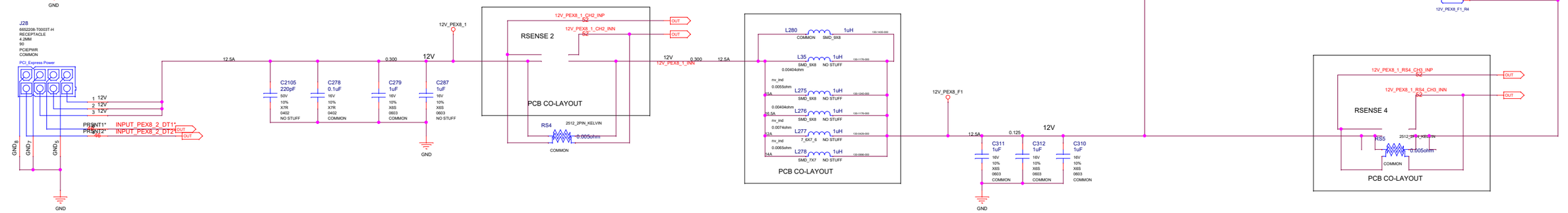
PEX Input - Under Power Boot Control



PEX8 INPUT 2/B - 2x4 PCIE CON 150W



PEX8 INPUT 1/A - 2x4 PCIE CON 150W



$CDS_IMAGE|clipboard_0_2.jpg|3896|1097

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: INPUTS, FILTERING and MONITORING

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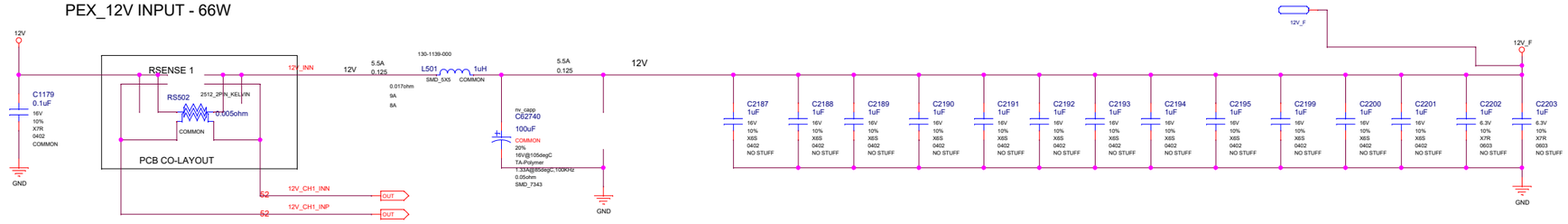
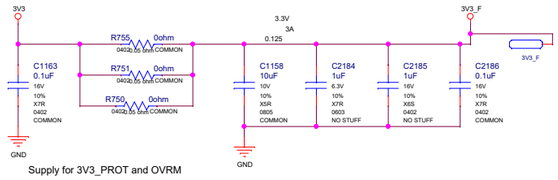
Page45: PEX_INPUT & FILTERING, PEX_3V3, 3V3_AUX

PEX_12V INPUT - 66W

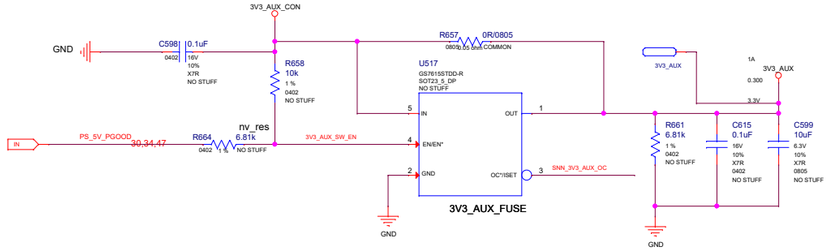


PEX 3V3 INPUT - 10W



Supply for 3V3_PROT and OVRM

3V3_AUX



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: PEX_12V, PEX_3V3 AND A3V3_AUX

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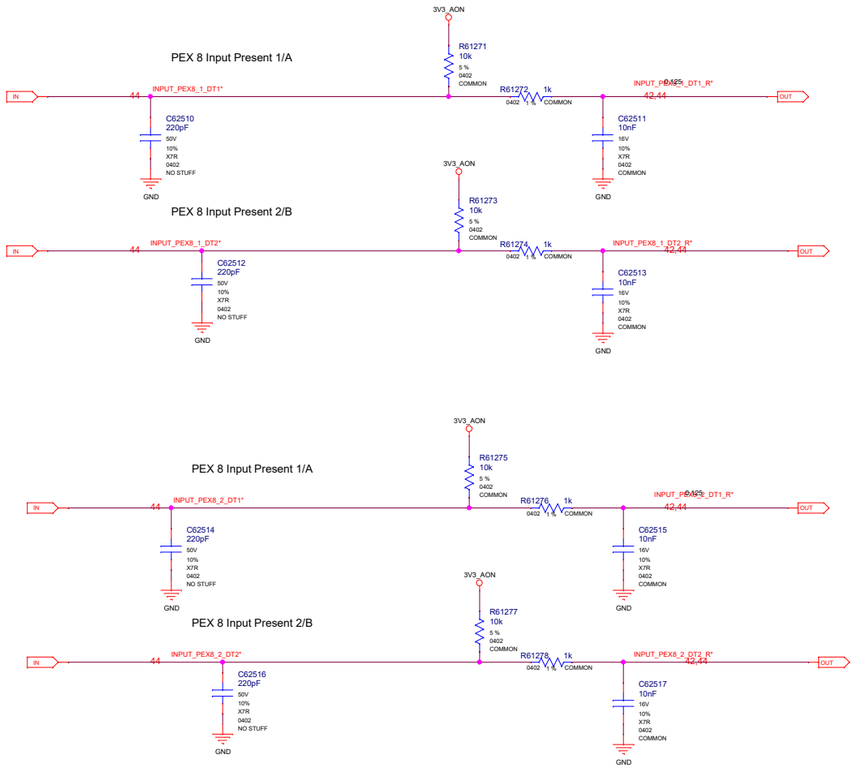
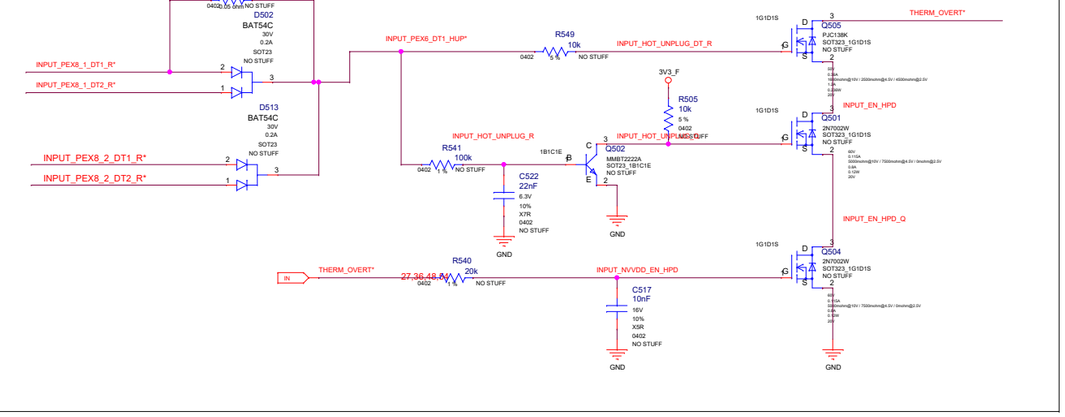
Page46: STEERING, UPB, HOT UNPLUG

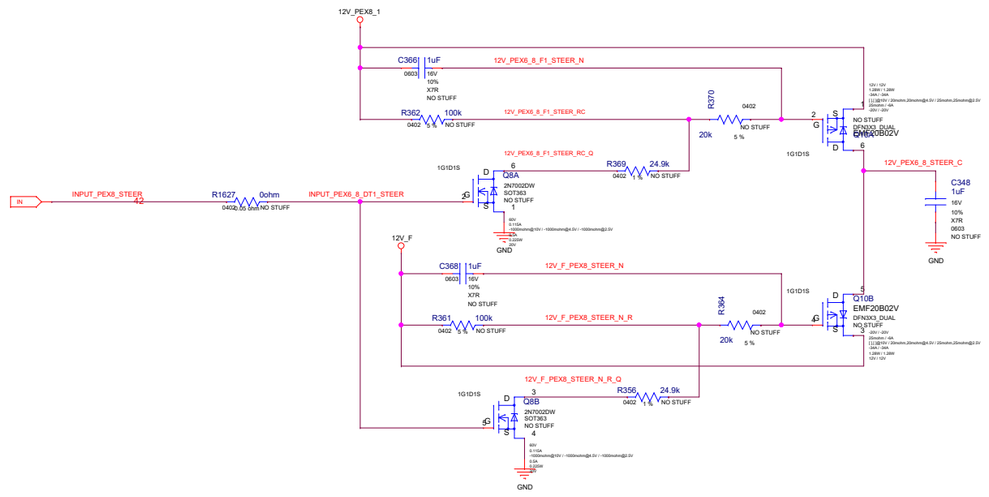


POWER CONNECTOR HOT-UNPLUG DETECT



12V CURRENT STEERING (UNDER POWER BOOT):

GUIDES CURRENT FROM PEX EDGE TO PEX 8 PIN INPUT AREA



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: STEERING, UPB, HOT UNPLUG

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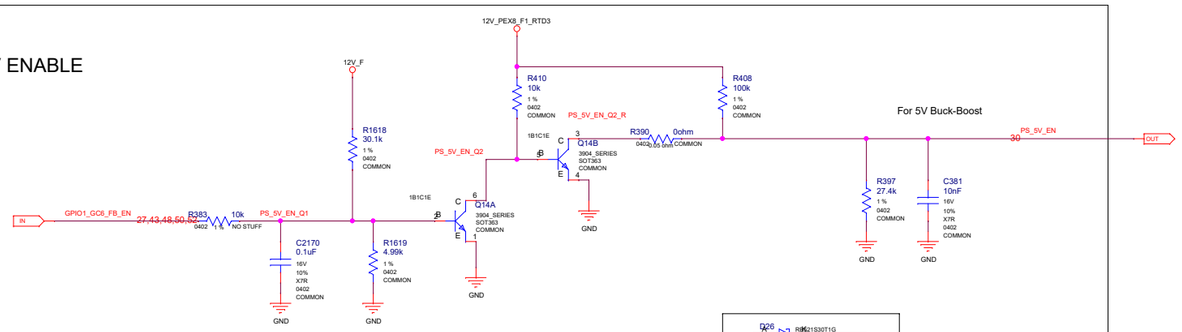
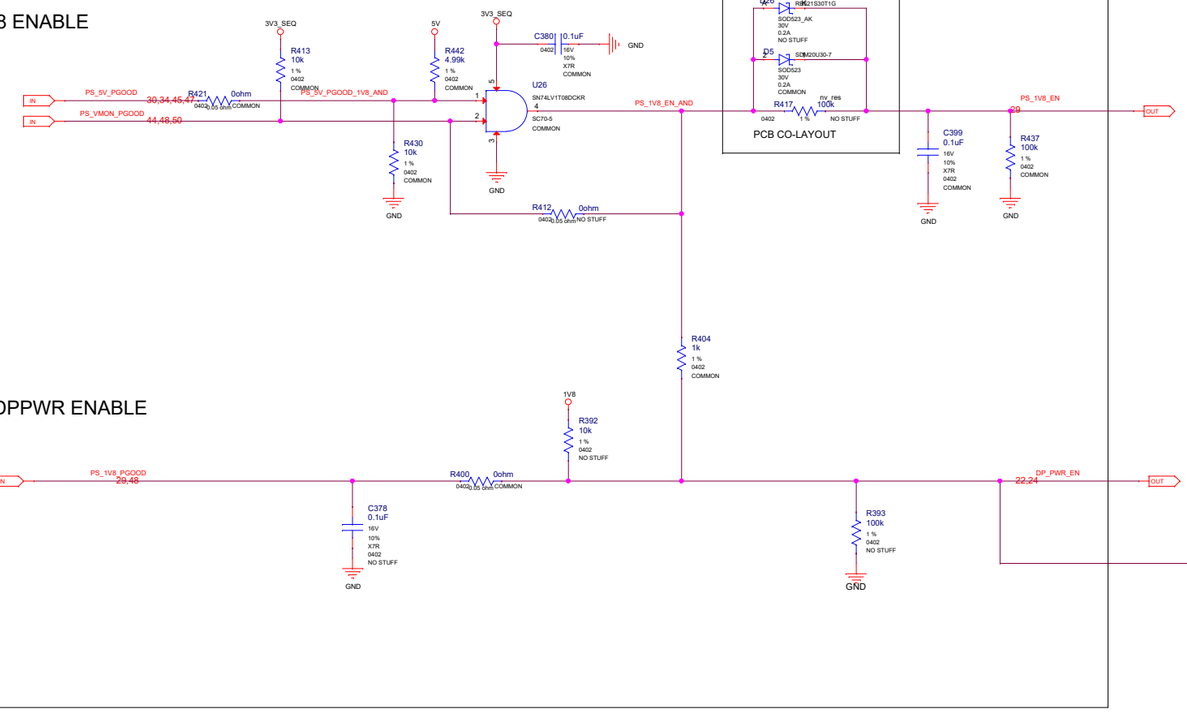
Page47: SEQ: 5V, 1V8, 3V3_SEQ, DDC_5V, DP_AUX_PROT

5V ENABLE

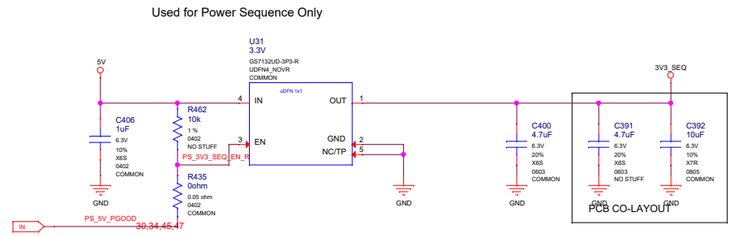


1V8 ENABLE

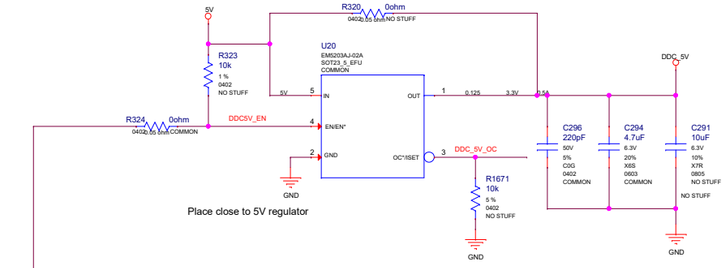


DPPWR ENABLE

3V3_SEQ

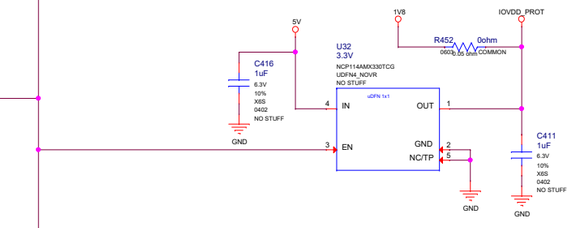


DDC_5V

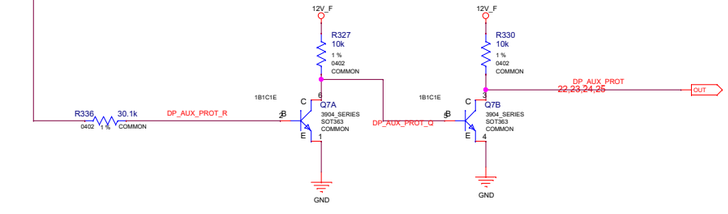


IOVDD_PROT

IOVDD_PROT LDO (NV3V3 OR 1V8 JUMPER)



DP_AUX PROTECTION



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: 5V, 1V8, 3V3_SEQ

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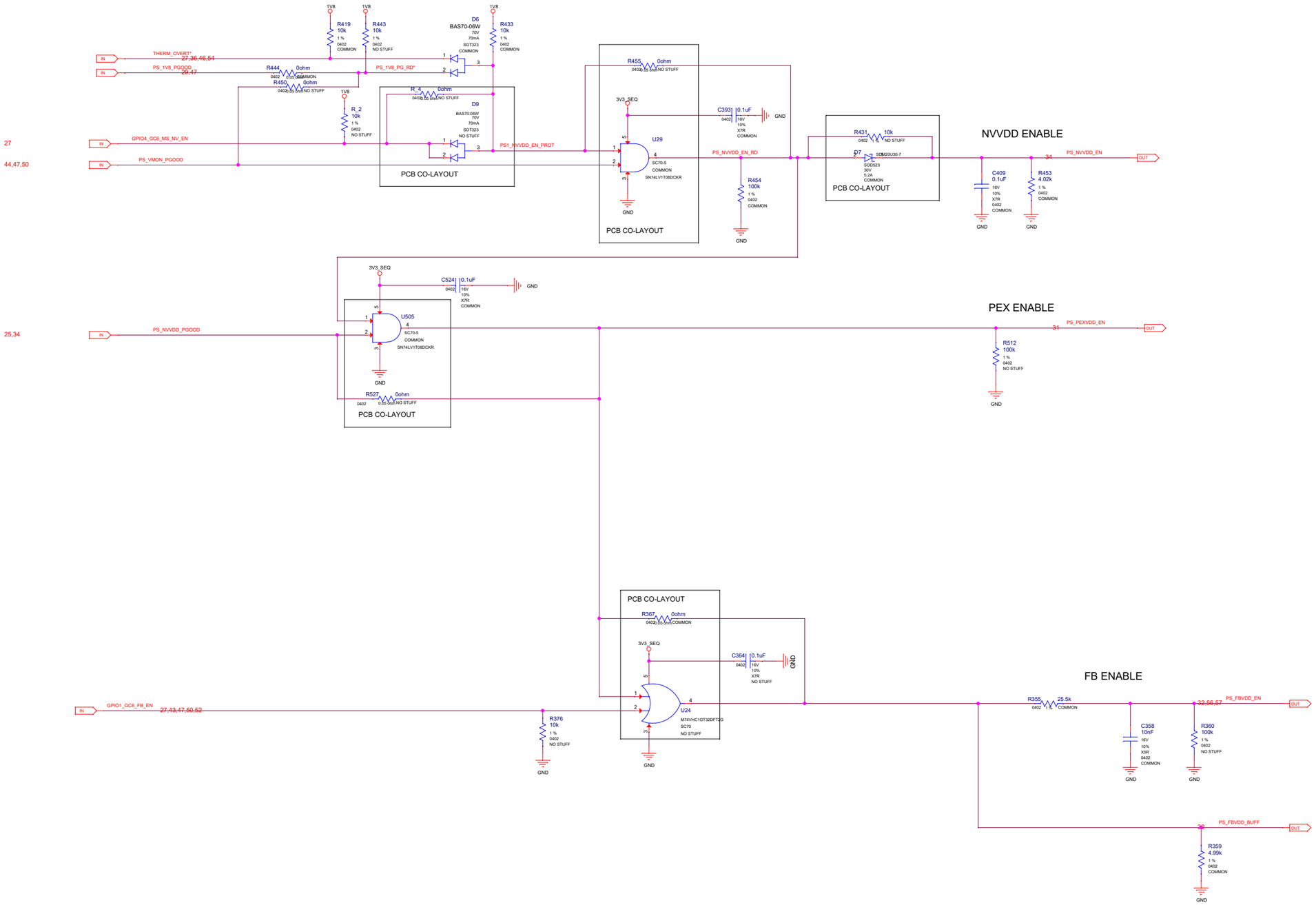
Page48: SEQ:NVVDD, PEX, FBVDDQ ENABLE



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: NVVDD, PEX, FBVDDQ ENABLE

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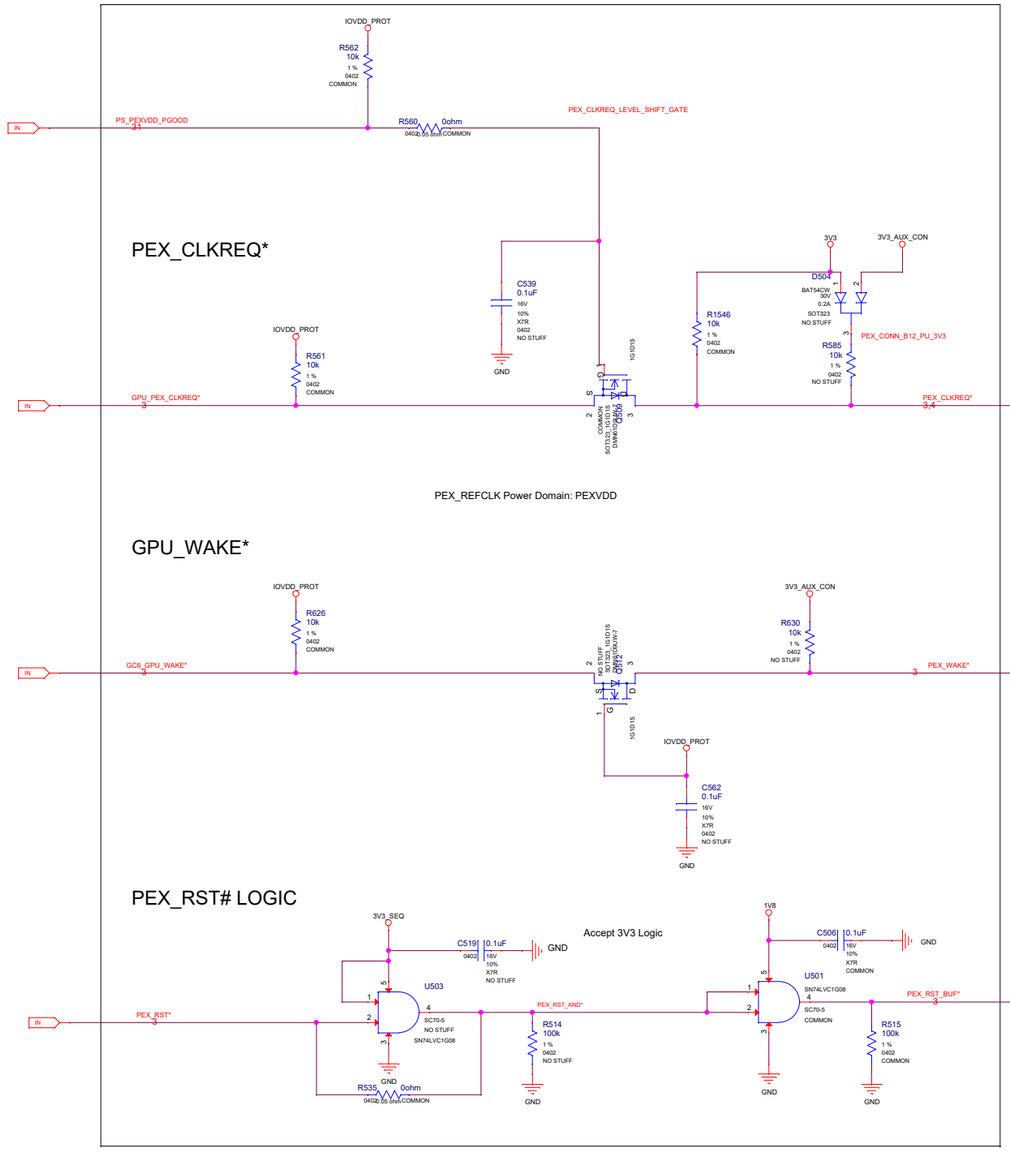
Page49: SEQ:MISC



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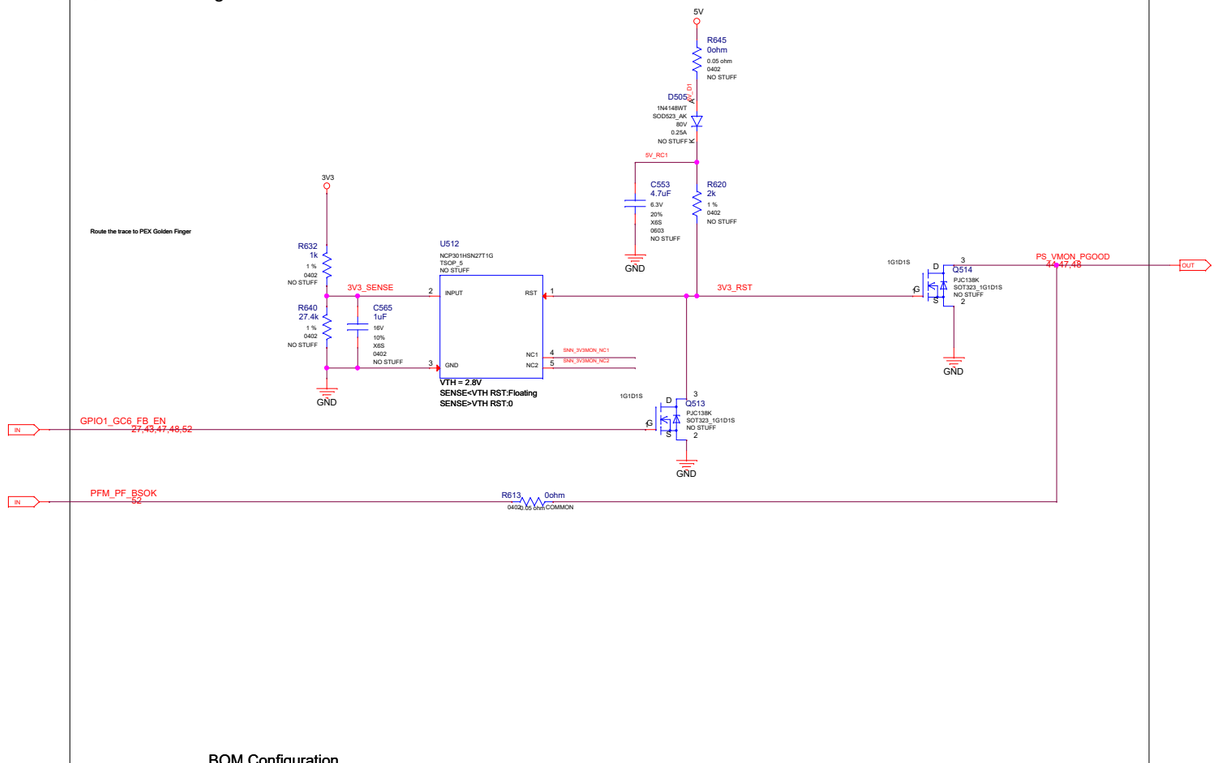
Page 50: SEQUENCE:Voltage Monitor

3V3PEX Voltage Monitor



BOM Configuration

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

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)

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: VOLTAGE MONITOR

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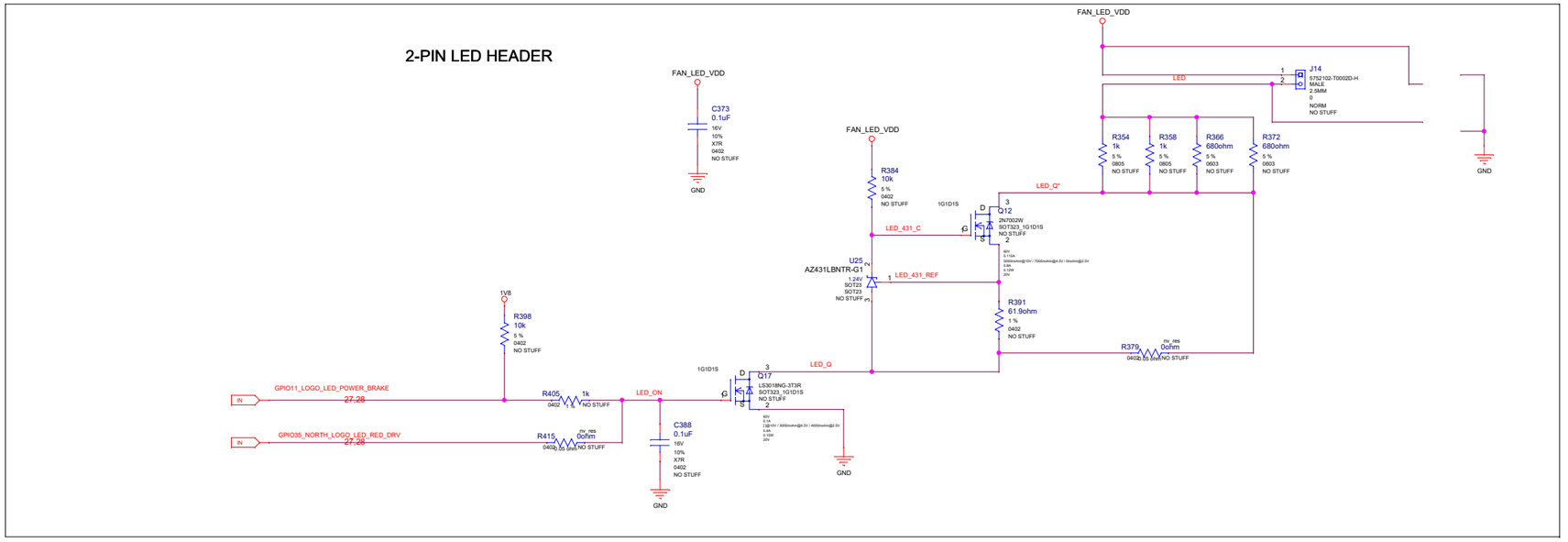
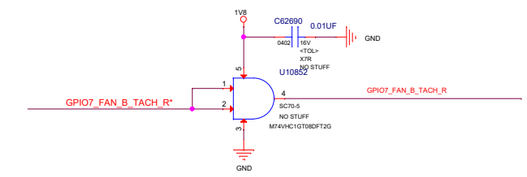
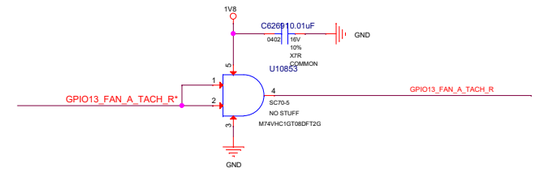
Page51: FAN&LED

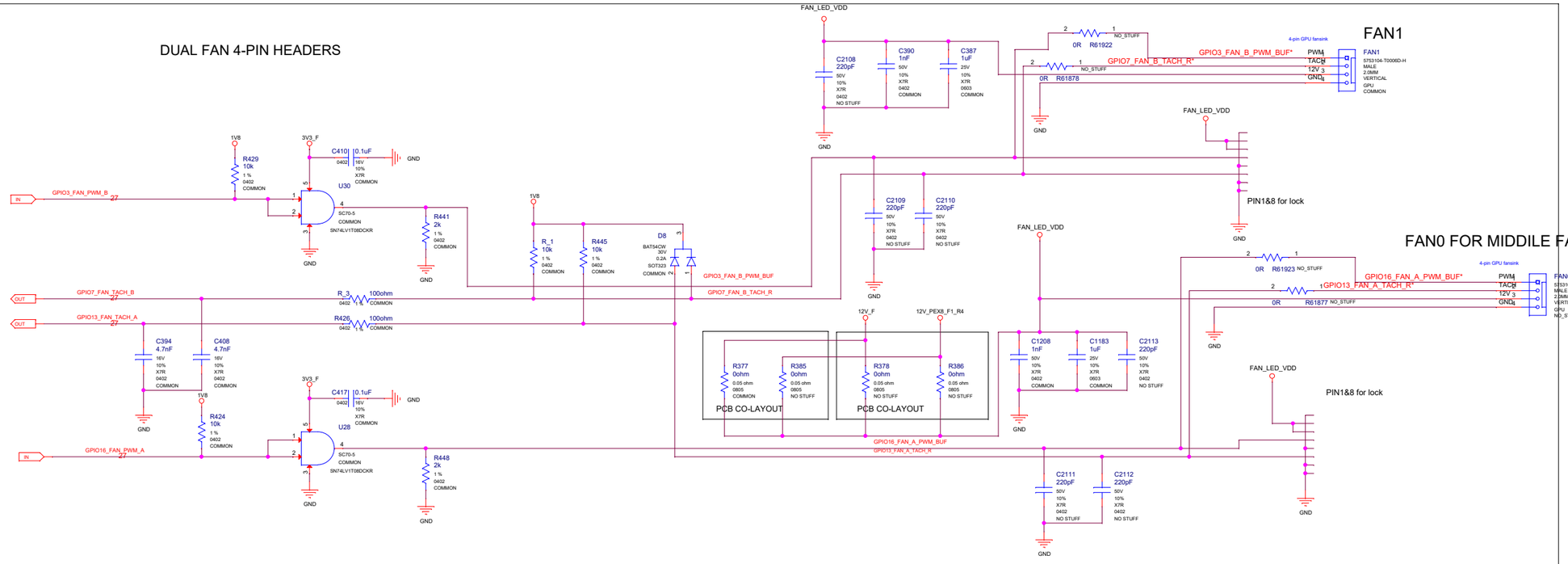
2-PIN LED HEADER







DUAL FAN 4-PIN HEADERS



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	FAN & LED

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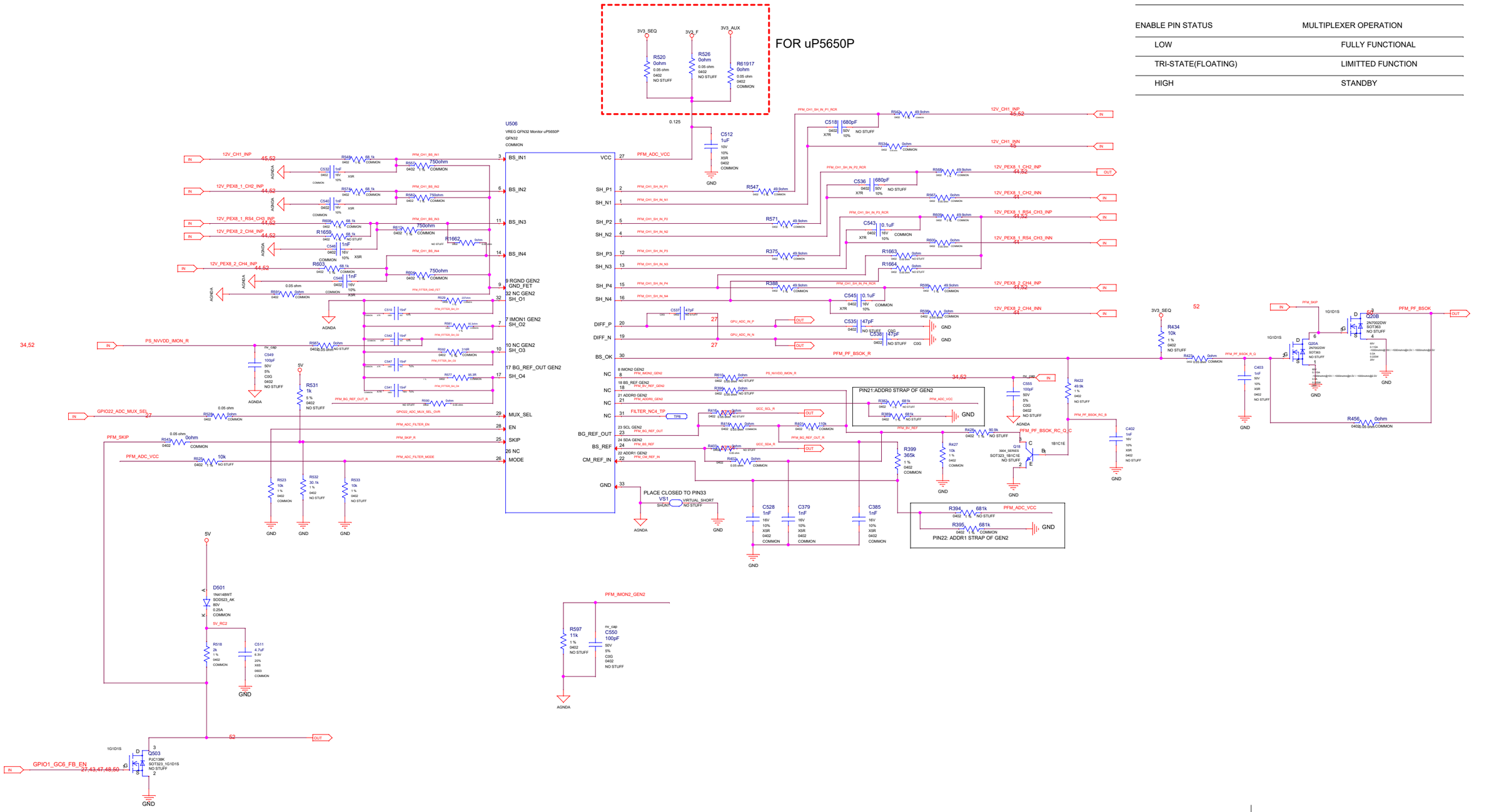
Page52: OVRM_PWR SENSE

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



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS:OVRM_PWR_SENSE

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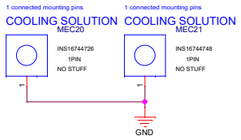
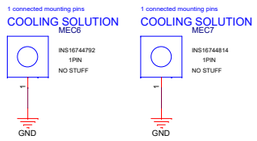
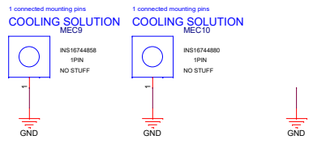
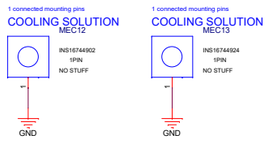
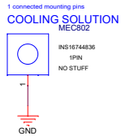
Page53: MECH

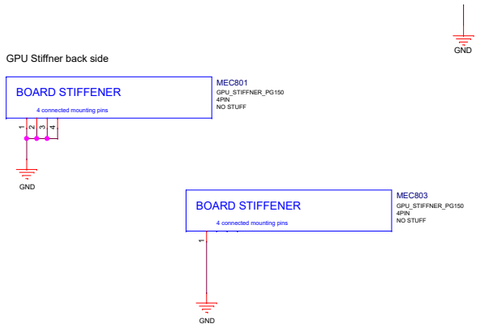


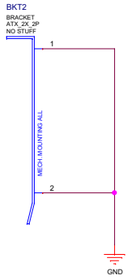


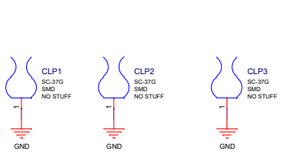












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PAGE DETAIL	MECH

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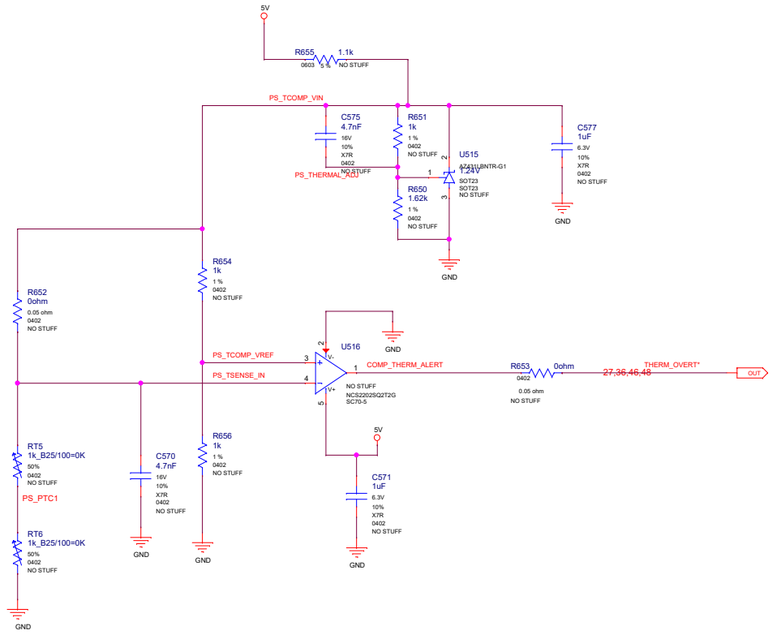

Close to FBVDD MOS

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LEVEL SHIFT TO 3V3

I2CB_SDA_Q

I2CB_SCL_Q

I2CB_SDA_Q*

I2CB_SCL_Q*

IOVDD_PROT

3V3_F

3V3_LED

Q10854A PJT7828 SOT363 COMMON

Q10854B PJT7828 SOT363 COMMON

R61224 2.2k 5% 0402 COMMON

R61231 2.2k COMMON 0402 5%

R61227 0 0402 COMMON 5%

R61229 0 0402 COMMON 5%

R61862 2.2k 5% 0402 COMMON

Q10852A PJT7828W1_R1_00001 SOT363 CHANGED

LED_ADJ_3V3_PORT

R61297 0 NO_STUFF0402 5%

R61298 0 NO_STUFF0402 5%

XTALOUT1

XTALIN1

I2CS_I2CB_SDA

I2CS_I2CB_SCL

R61226 0 COMMON 0402 5%

R61228 0 COMMON 0402 5%

R61867 0 0402 NO STUFF 5%

R61868 0 0402 NO STUFF 5%

SDA_LED

SCL_LED

SOT363 PJT7828W1_R1_00001 CHANGED

Q10852B 2.2k

R61873 2.2k 5% 0402 COMMON

R61232 0_ohm 0.05 ohm 0402 COMMON

LED_ADJ_3V3_PORT

FAN_TACH_IN

R61295 0 NO_STUFF0402 5%

R61294 0 COMMON 0402 5%

R61296 0 NO_STUFF0402 5%

R61424 0R 5% 0402 NO_STUFF

C62633 1NF

C62625 0.1uF

C62628 2.2uF 0603 X7R 6.3V 10% COMMON

CLDO

U10825

HT32F52231

NO_STUFF

PB7 PB8 VDDA PA0 PA1 PA2 PA3 PA4 PA5 CLDO VDD VSS

PB4 PB3 PB2 PB1 PB0 PA13/SWDIO PA12/SWCLK PA9_BOOST PB14/XTALOUT PB13/XTALIN PB12 nRST

LED_B LED_G1 LED_R FAN_PWM0 SWDIO SWCLK BOOST XTALOUT1 XTALIN1 RST

LED_POWER

R61279 1M

Y2 S3M27.0000F18S1Y-NS1

C62626 C0G 50V 5% NO STUFF 0402

C62629 10pF NO STUFF 5% 0402 C0G 50V

C62632 0.1uF 0402 X7R 16V 10% NO_STUFF

FAN_PWM_GPU

R61864 0R 5% 0402 COMMON

R61863 2.2k

R61865 2.2k

R61866 2.2k

R61869 2.2k/nc

COMMON

NO STUFF

R61830 2.2k

R61831 2.2k

R61832 2.2k

COMMON NO_STUFF COMMON

FAN_TACH_IN

FAN_PWM0

FAN_PWM_GPU

FAN_TACH_GPU

R61876 0R/0603 5% COMMON 0402

C62641 0.1uF

C62640 0.1uF

C62642 0.1uF

CLOSE TO MCU

GND

LED_BLUE_A

LED_GREEN_A

LED_RED_A

Q10858 Q10859 Q10860 1G1D1S SOT23 NO_STUFF AO3416L

R61280 560 COMMON

R61281 560 COMMON

R61874 560 COMMON

R61282 10K 5% 0402 COMMON

R61283 10K 5% 0402 COMMON

R61284 10K 5% 0402 COMMON

U10829 HT7022 NO_STUFF

OUT VDD VSS NC#2 NC#1

R61285 0K COMMON

RST

5V

FAN_LED_VDD

R61292 0R COMMON

R61293 0R NO_STUFF

R61288 10K

R61290 2.2k COMMON

Q10861 QM3001K NO_STUFF

R61836 2.2k COMMON

R61291 2.2k COMMON

LED_POWER

INS16894227 SOT23_1B1C1E NO_STUFF

LED_VCC

C62630 10uF 16V COMMON

C62631 0.1uF 0402 X7R 16V 10% COMMON

LED_BLUE_A

LED_GREEN_A

LED_RED_A

R61286 0R COMMON

R61287 0R COMMON

R61289 0R COMMON

LED_VCC

LED INS16894046 MALE 2.0MM VERTICAL NORM NO_STUFF

LED Connect

NO_STUFF J1X3P25_NV Header_3_Pin_1X3

JU2

SWDIO SWCLK

Debug

GPIO7_FAN_B_TACH_R* 64 GB

GPIO13_FAN_A_TACH_R* 64 GB

R61425 0ohm NO_STUFF

R61426 0ohm NO_STUFF

FAN_TACH_IN

PA2 风扇转速侦测(有BUG，需改成PA0或PA1)
PA3 MCU to GPU TACH
PA5 为LED电源控制口 高电压有效
PB0 风扇转速控制
PB2 MCU to GPU PWM
PB1 LED_RED
PB3 LED_GREEN
PB4 LED_BLUE

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PS: FBVDDQ OVR2+1

NCP81273 EN VIH >1.5V, VIL < 0.7V
UP9509/10 EN VIH >1.2V, VIL < 0.6V
RT8817A EN VIH >1.2V, VIL < 0.6V

12V uP9510 NCP81273

5V uP9509 RT8813 RT8817

PCB CO-LAYOUT

OPENVREG

Set OCP per phase =100A

Roc=500mV/((OCP*Rds(on)*1.5-40mV)/360*255(uA)/8 + 5uA)

Set SS

Stuff for 2 phases

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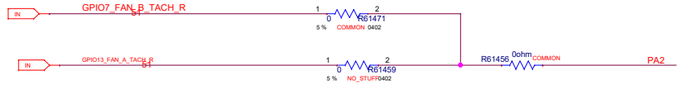

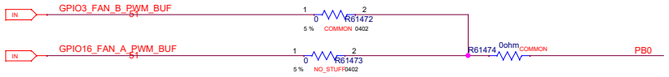

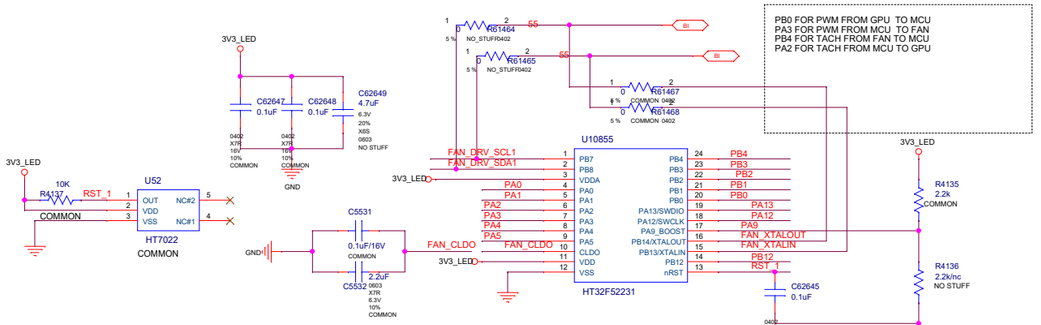

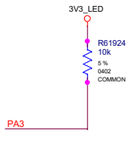

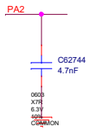

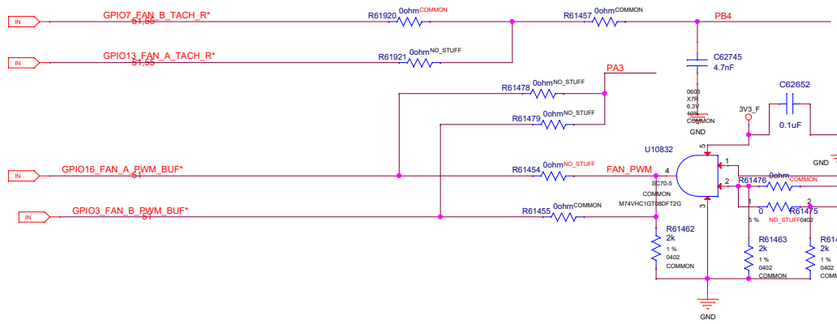

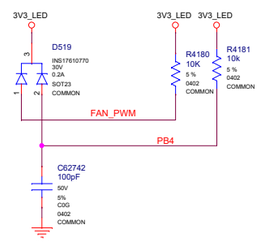

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