

PG210 B00

GP107 128b GDDR5, 75W , PCB 5.7"
DVI-D_DL (DP + DP) + HDMI (DP) + DP

TABLE OF CONTENTS

Page	Description
1	Table of Contents
2	Block Diagram
3	PCI Express
4	MEMORY: GPU Partition A/B
5	MEMORY: FBA[31:0]
6	MEMORY: FBA[63:32]
7	MEMORY: FBB[31:0]
8	MEMORY: FBB[63:32]
9	GPU FBVDDQ & 1V8 Decoupling
10	GPU NVVDD & NVVDDS DECOUPLING
11	IFPAB DVI-DL
12	IFPD DP
13	IFPC HDMI
14	IFPEF UNUSED
15	MISC1: Fan, Thermal, JTAG, GPIO
16	MISC2: ROM, XTAL, Straps
17	Power Inputs and Filtering
18	Power Sequence
19	PS: NV3V3 & NV12V
20	PSI: 1V8
21	PSII: 5V & 12V_FAN
22	PS III: PEXVDD
23	PS IV: FBVDDQ
24	PS V: NVVDD OVR2+1
25	PS V: NVVDD Phase 1,2

Page	Description
26	PS V: NVVDD Phase 3
27	MECH: Bracket/Thermal


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PAGE: DETAIL	Table of Contents

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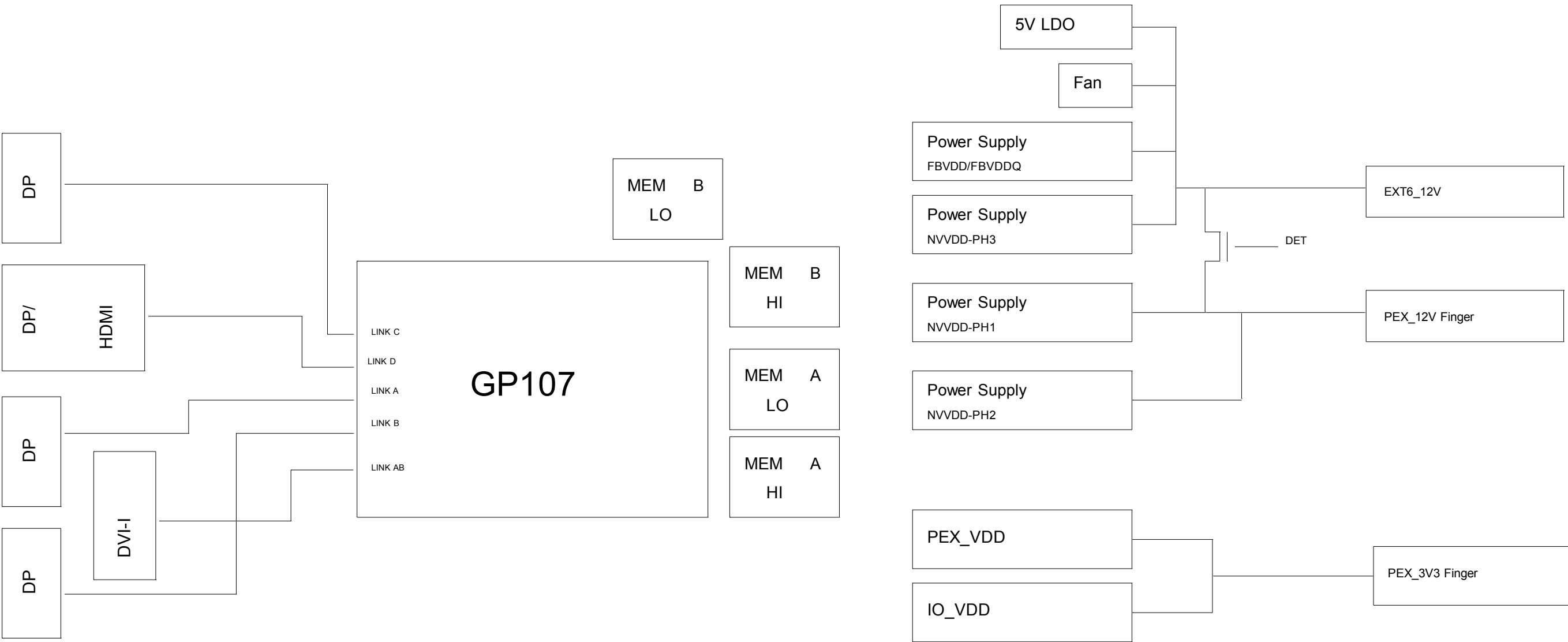
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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	1 OF 27
BOM REV	A	DATE	dd-mon-year

Block Diagram



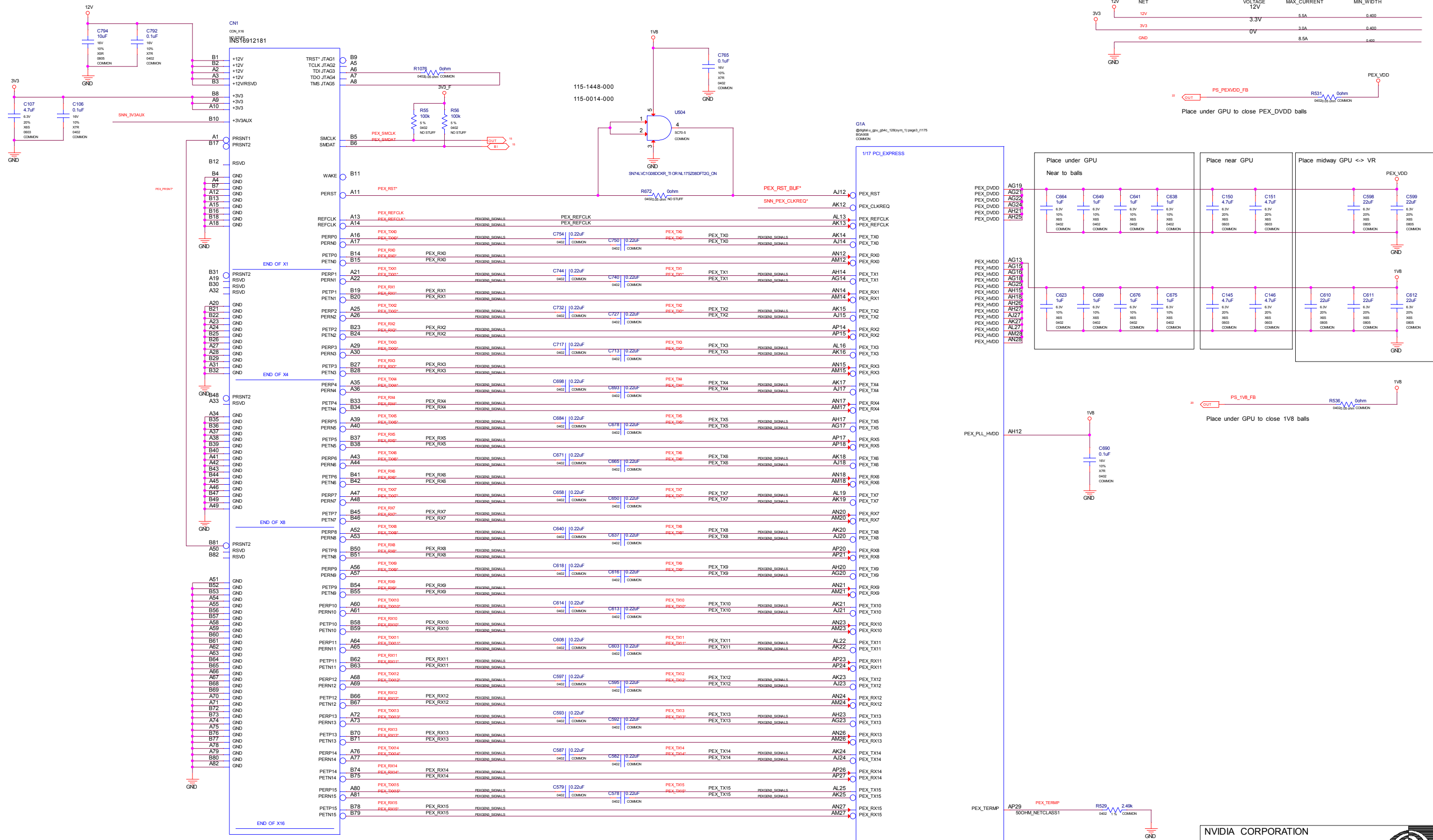
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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	2 OF 27
BOM REV	A	DATE	18-DEC-2015



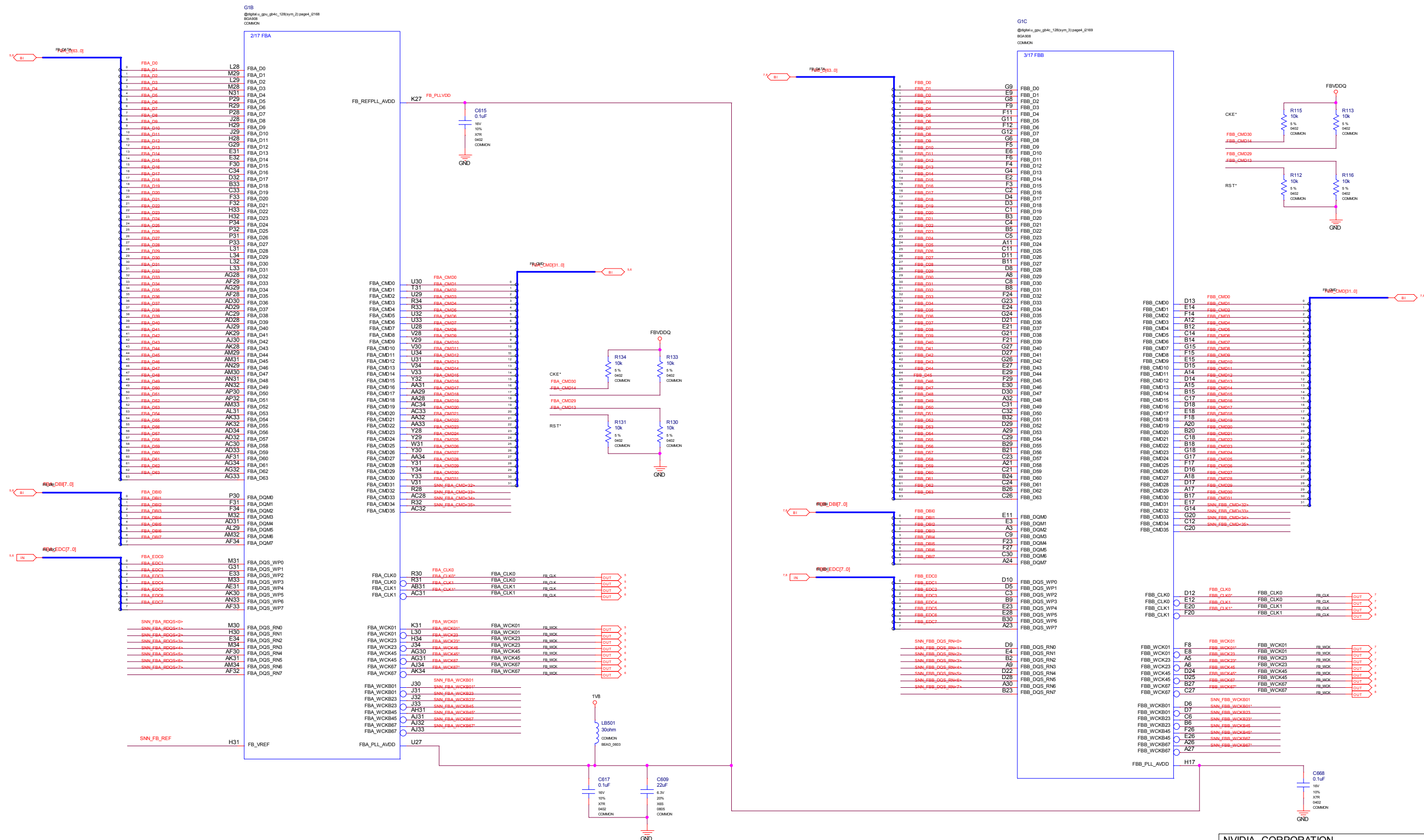
PCI Express



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PCB REV	PG210-B00	PAGE	3 OF 27
BOM REV	A	DATE	18-DEC-2015

MEMORY: GPU Partition A/B



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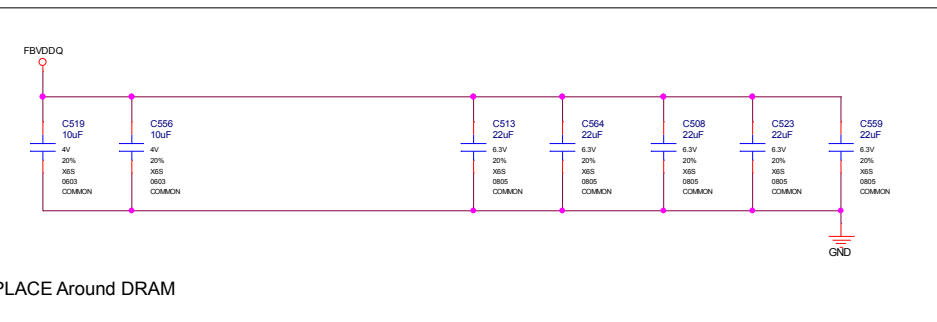
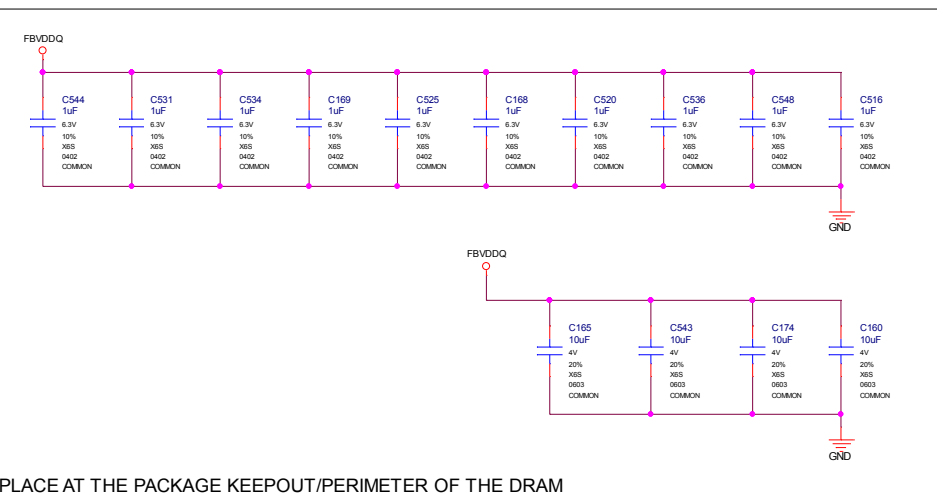
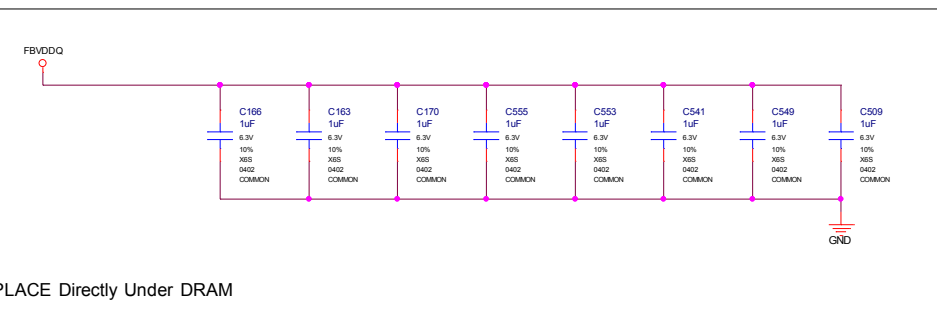
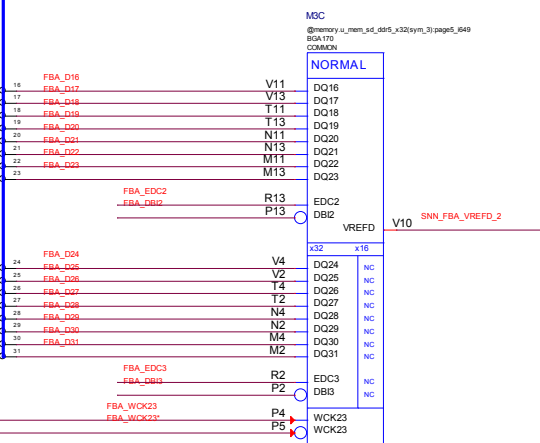
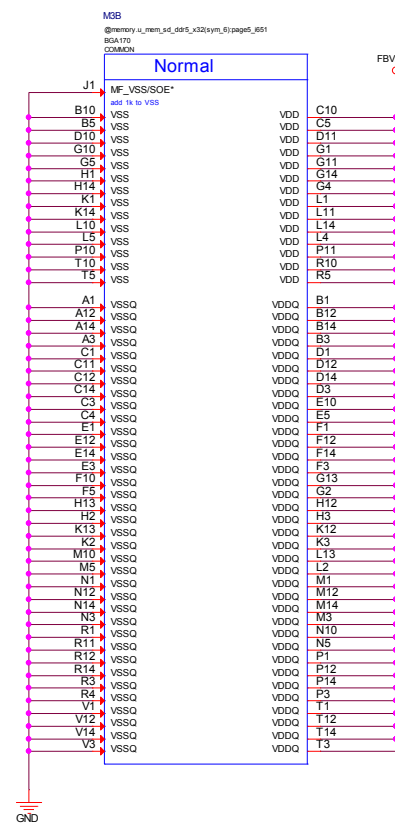
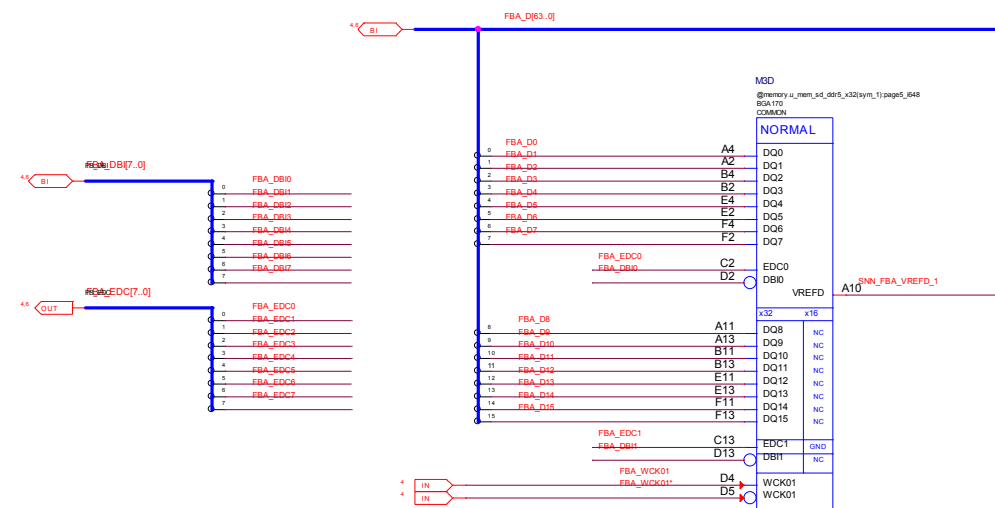
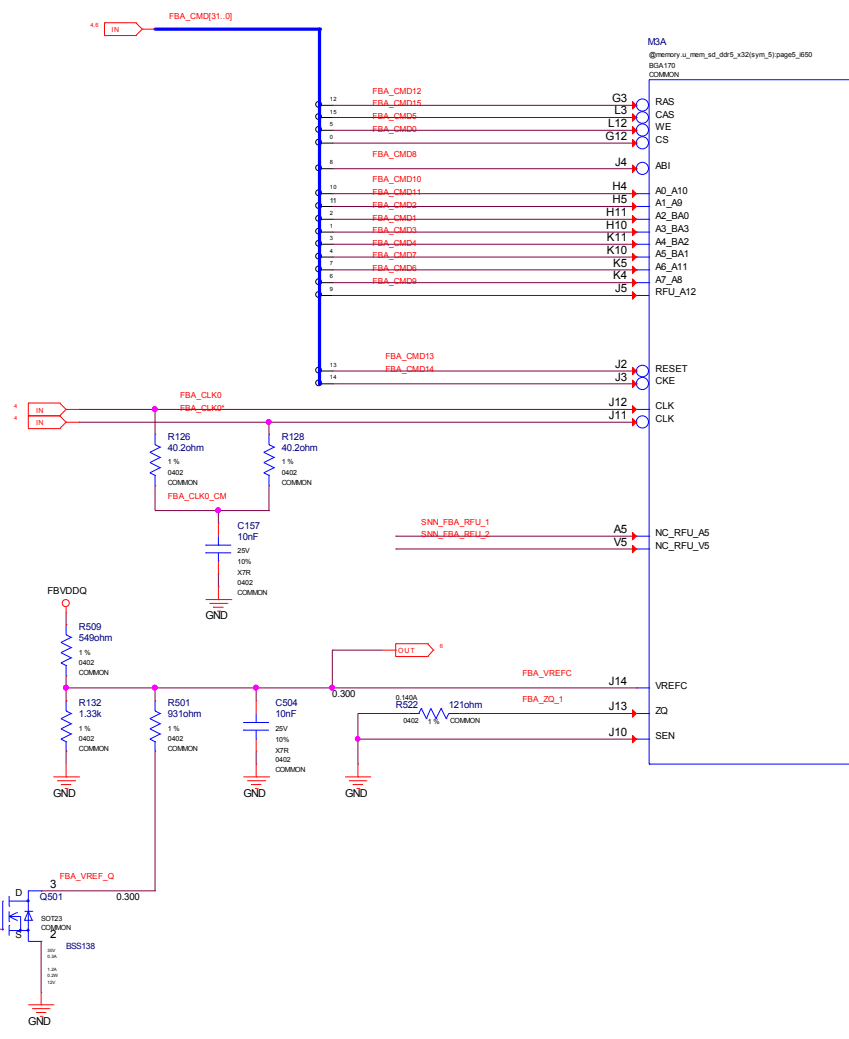
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PAGE	4 OF 27
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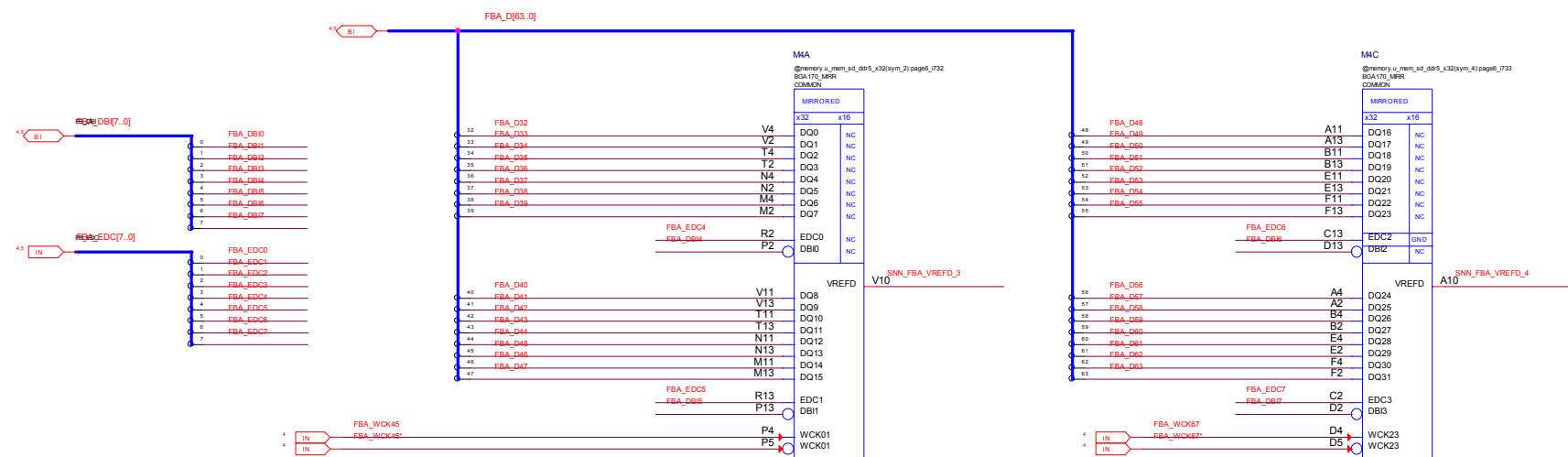
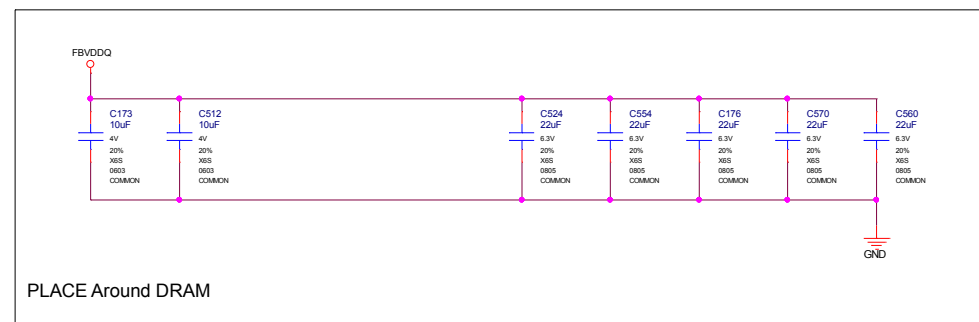
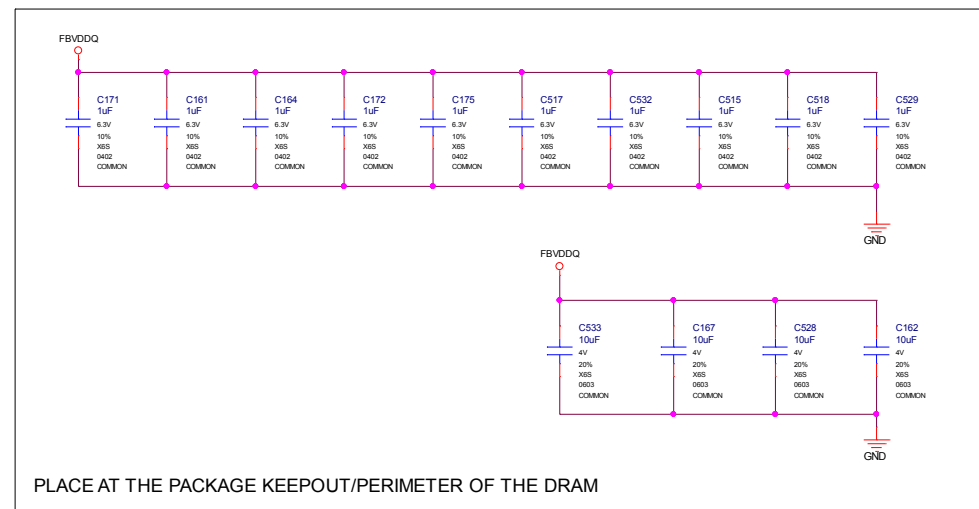
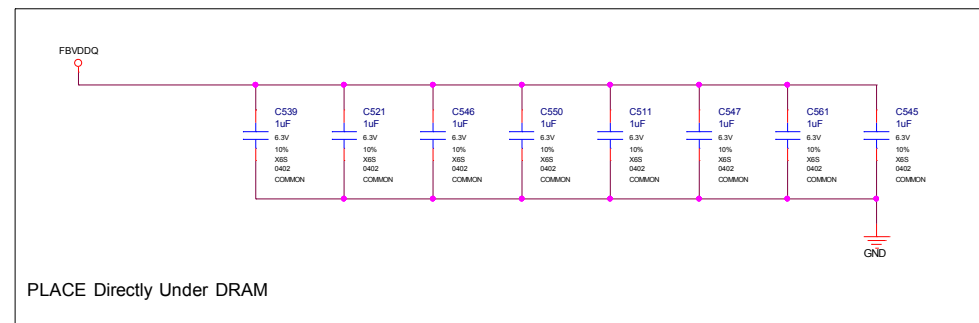
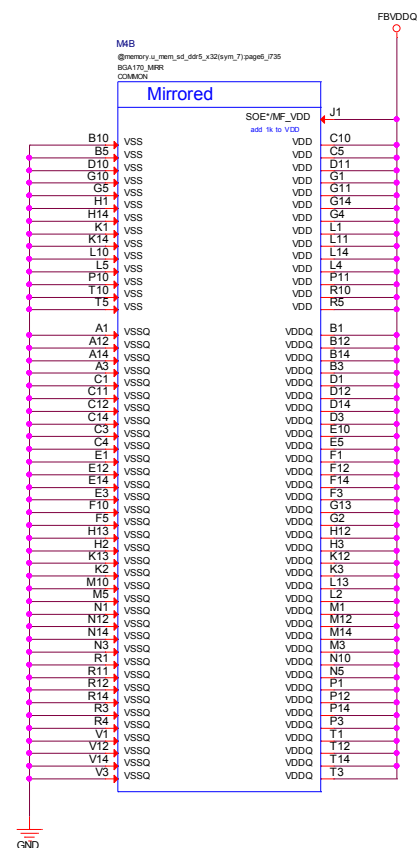
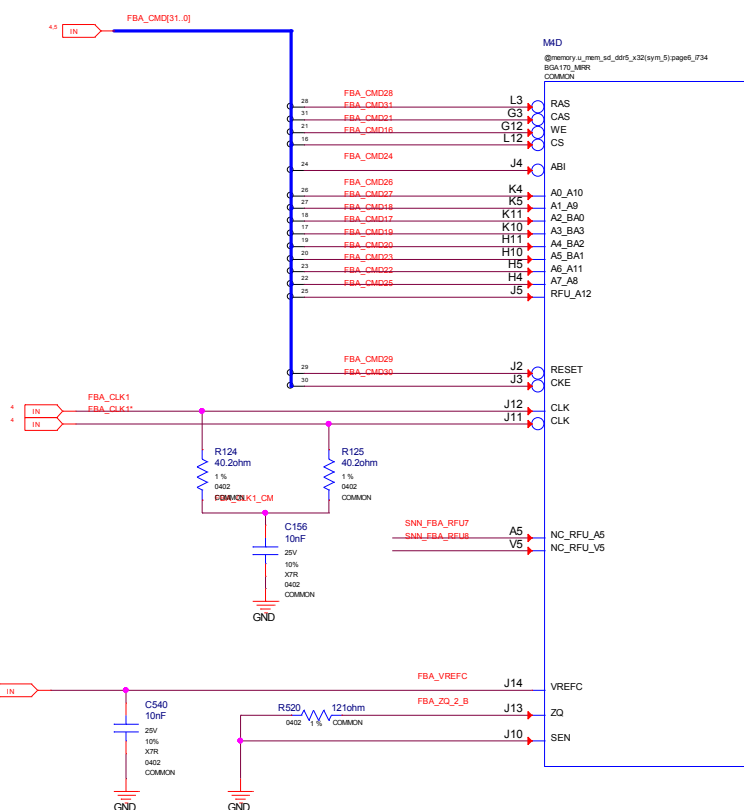


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CMD0	CS*	
CMD1	A3_BA3	
CMD2	A2_BA0	
CMD3	A4_BA2	
CMD4	A5_BA1	
CMD5	WE*	
CMD6	A7_A8	
CMD7	A6_A11	
CMD8	ABI*	
CMD9	A12_RFU	
CMD10	A0_A10	
CMD11	A1_A8	
CMD12	RAS*	
CMD13	RST*	
CMD14	CKE*	
CMD15	CAS*	
CMD16		CS*
CMD17		A3_BA3
CMD18		A2_BA0
CMD19		A4_BA2
CMD20		A5_BA1
CMD21		WE*
CMD22		A7_A8
CMD23		A6_A11
CMD24		A1_A8
CMD25		A12_RFU
CMD26		A0_A10
CMD27		A1_A8
CMD28		RAS*
CMD29		RST*
CMD30		CKE*
CMD31		CAS*



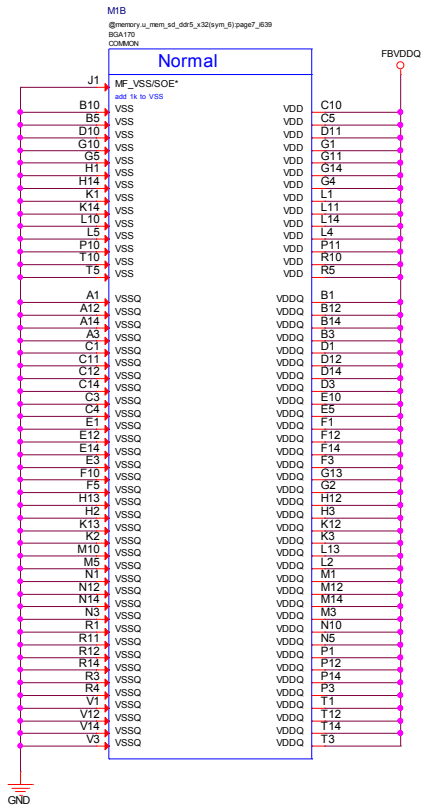
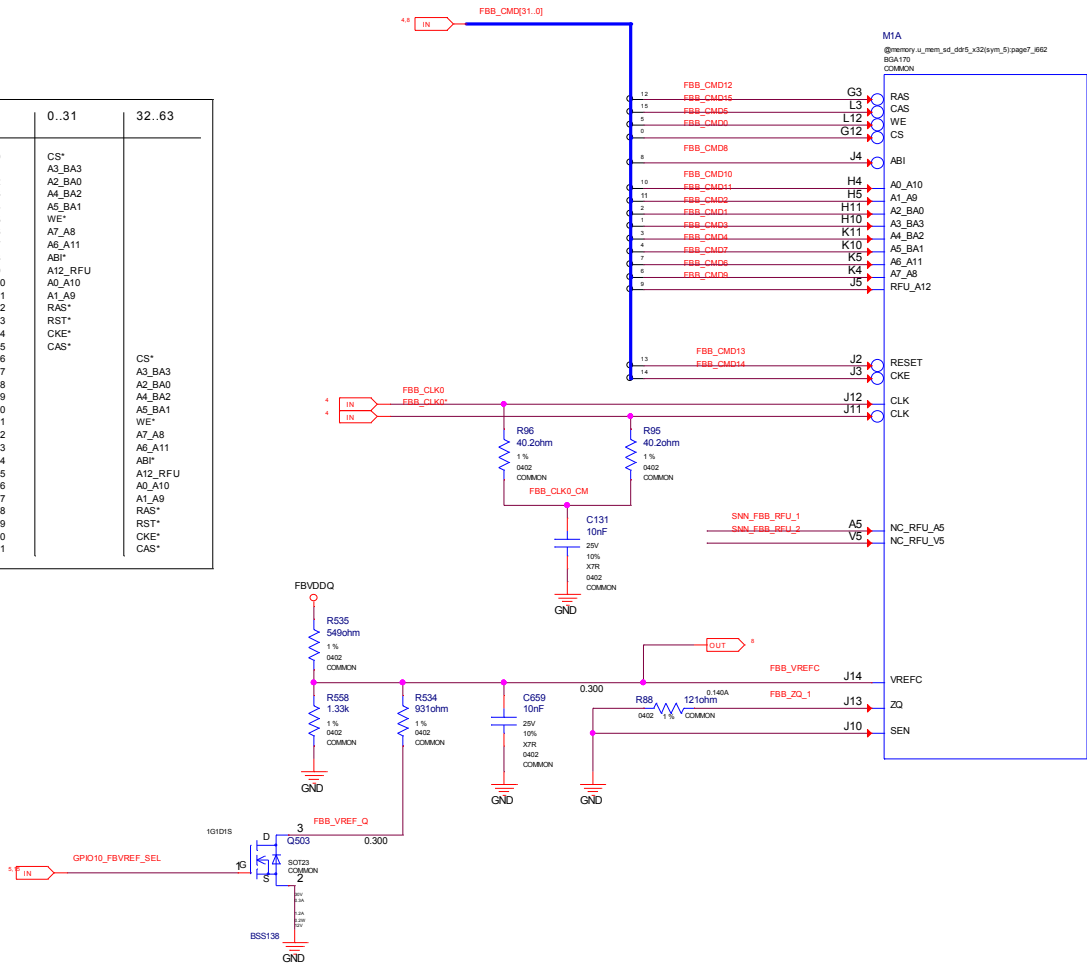
MEMORY: FBA Partition 63..32

CMD	0..31	32..63
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CMD1	A3_BA3	
CMD2	A2_BA0	
CMD3	A4_BA2	
CMD4	A5_BA1	
CMD5	WE*	
CMD6	A7_A8	
CMD7	AE_A11	
CMD8	AB*	
CMD9	A12_RFU	
CMD10	A0_A10	
CMD11	A1_A9	
CMD12	RAS*	
CMD13	RST*	
CMD14	CKE*	
CMD15	CAS*	
CMD16		CS*
CMD17		A3_BA3
CMD18		A2_BA0
CMD19		A4_BA2
CMD20		A5_BA1
CMD21		WE*
CMD22		A7_A8
CMD23		AE_A11
CMD24		AB*
CMD25		A12_RFU
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CMD27		A1_A9
CMD28		RAS*
CMD29		RST*
CMD30		CKE*
CMD31		CAS*



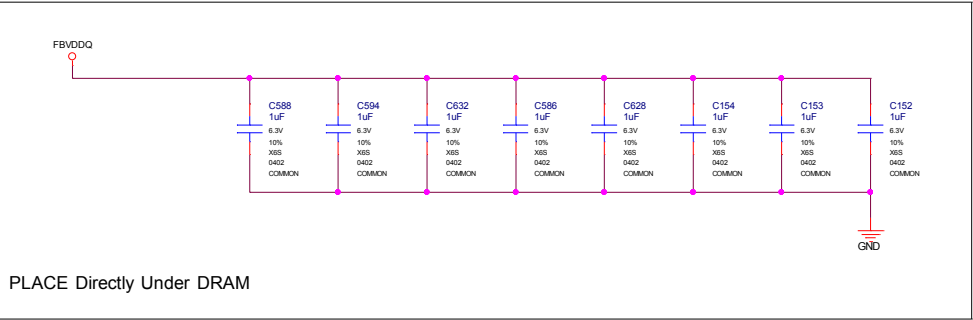
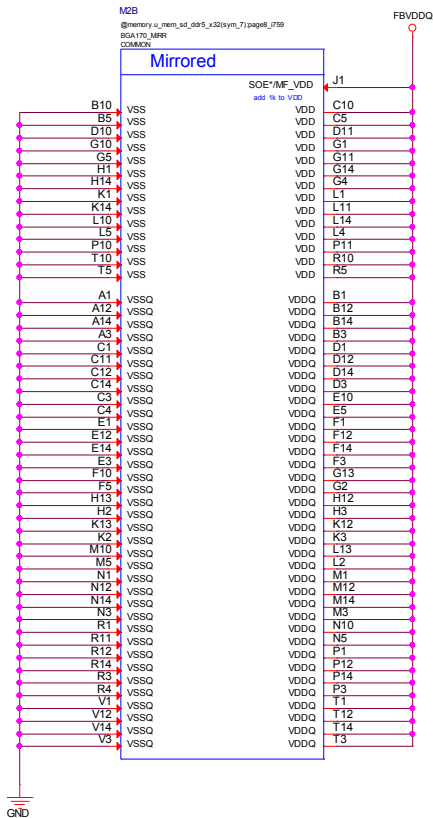
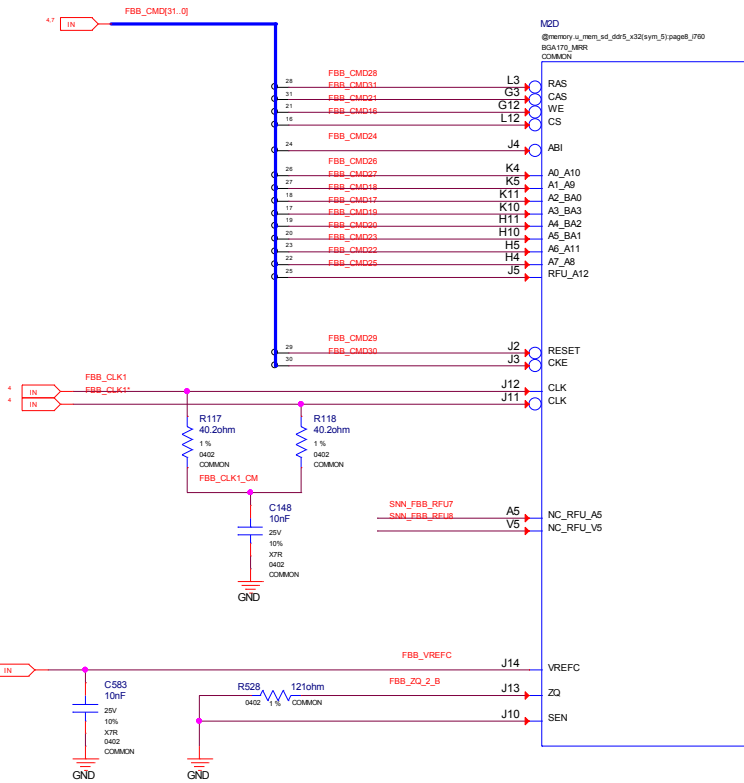
MEMORY: FBB Partition 31..0

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CMD1	A3_BA3	
CMD2	A2_BA0	
CMD3	A4_BA2	
CMD4	A5_BA1	
CMD5	WE*	
CMD6	A7_A8	
CMD7	A6_A11	
CMD8	AB*	
CMD9	A12_RFU	
CMD10	A0_A10	
CMD11	A1_A9	
CMD12	RAS*	
CMD13	RST*	
CMD14	CKE*	
CMD15	CAS*	
CMD16		CS*
CMD17	A3_BA3	
CMD18	A2_BA0	
CMD19	A4_BA2	
CMD20	A5_BA1	
CMD21	WE*	
CMD22	A7_A8	
CMD23	A6_A11	
CMD24	AB*	
CMD25	A12_RFU	
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CMD27	A1_A9	
CMD28	RAS*	
CMD29	RST*	
CMD30	CKE*	
CMD31	CAS*	

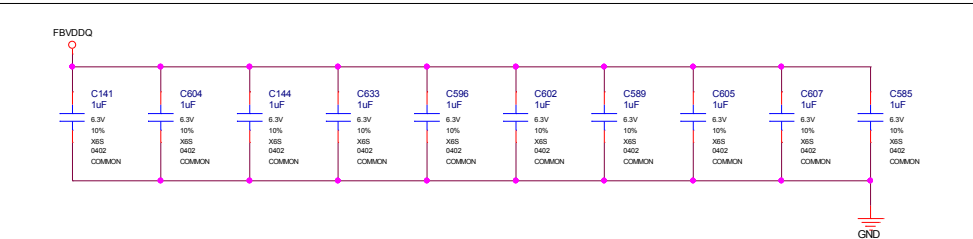


MEMORY: FBB Partition 63..32

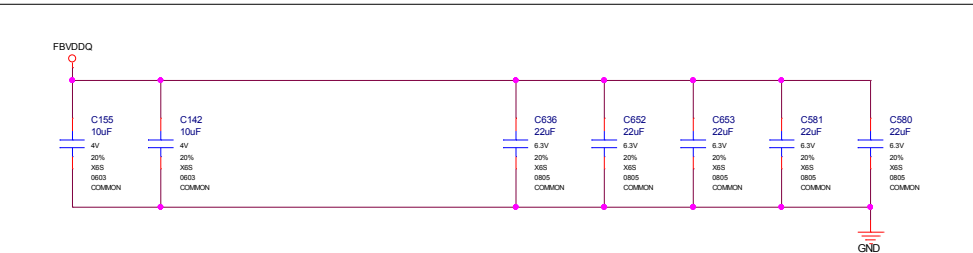
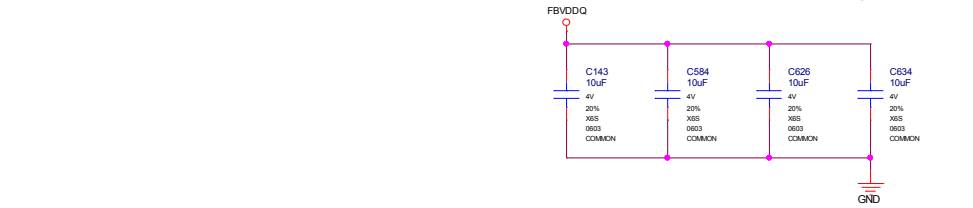
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CMD5	WE*	
CMD6	A7_A8	
CMD7	A6_A11	
CMD8	AB*	
CMD9	A12_RFU	
CMD10	A0_A10	
CMD11	A1_A9	
CMD12	RAS*	
CMD13	RST*	
CMD14	CKE*	
CMD15	CAS*	
CMD16		CS*
CMD17		A3_BA3
CMD18		A2_BA0
CMD19		A4_BA2
CMD20		A5_BA1
CMD21		WE*
CMD22		A7_A8
CMD23		A6_A11
CMD24		AB*
CMD25		A12_RFU
CMD26		A0_A10
CMD27		A1_A9
CMD28		RAS*
CMD29		RST*
CMD30		CKE*
CMD31		CAS*



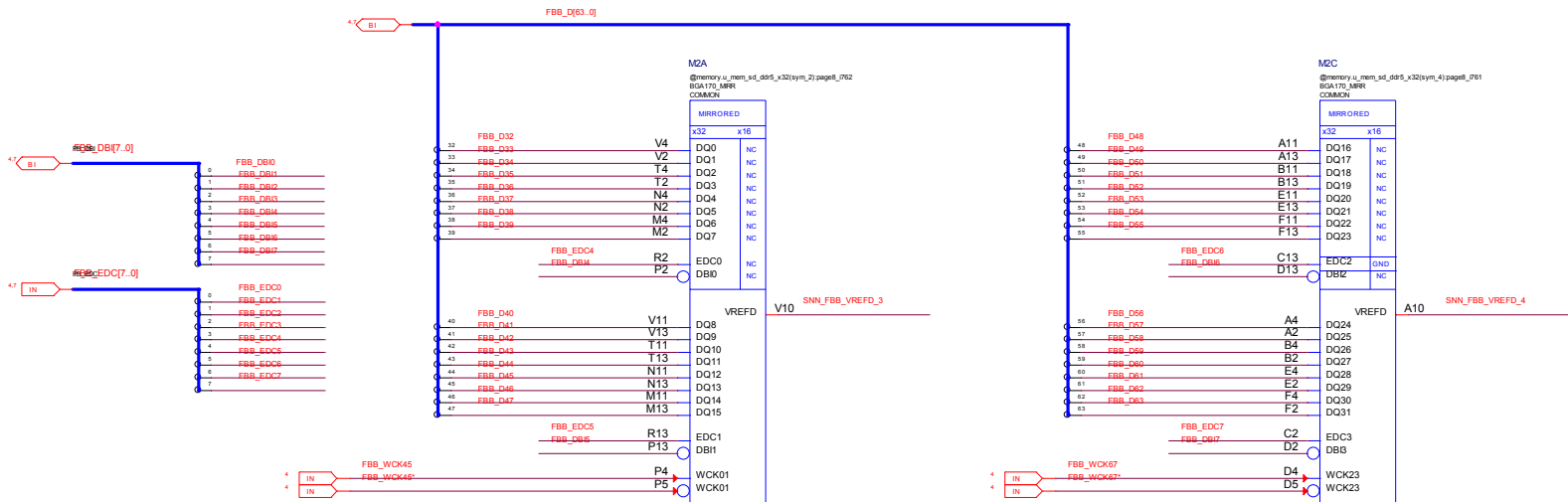
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PLACE AT THE PACKAGE KEEPOUT/PERIMETER OF THE DRAM

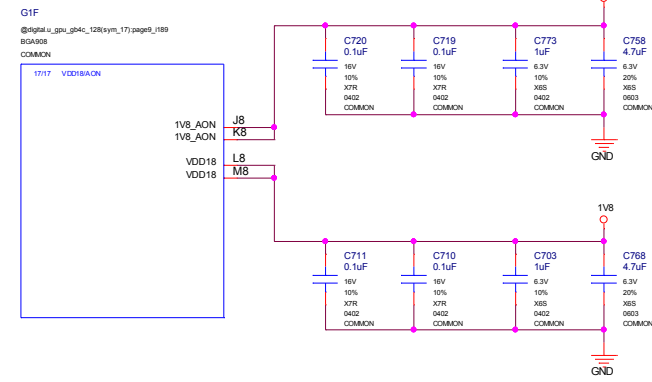
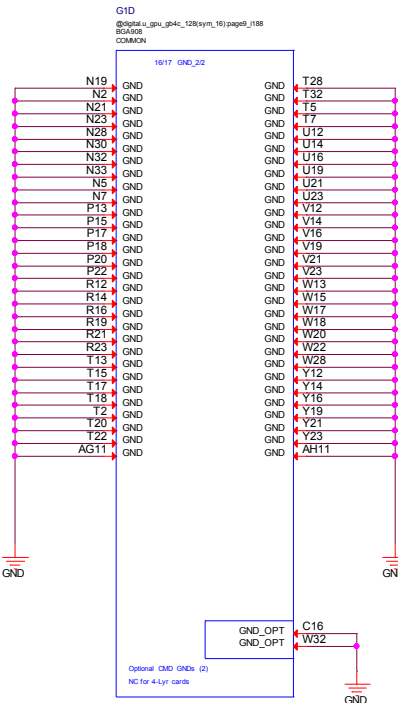
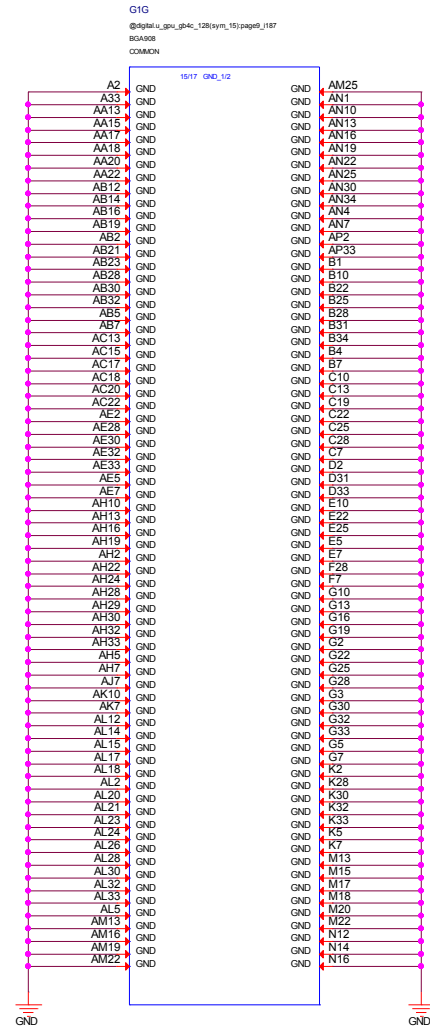
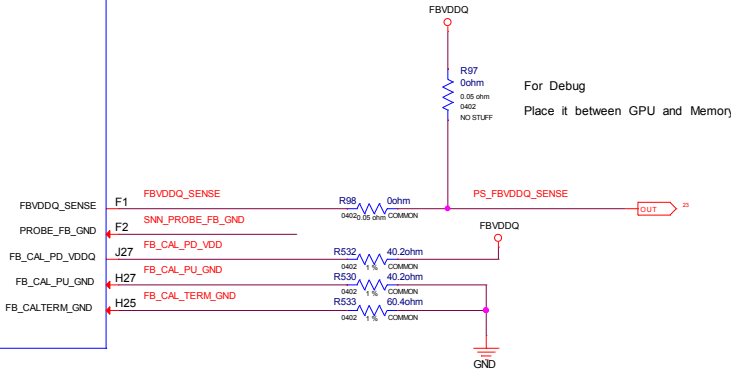
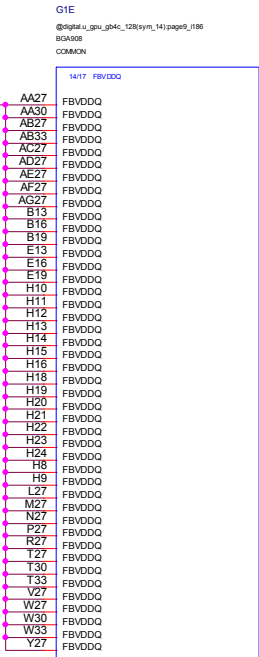
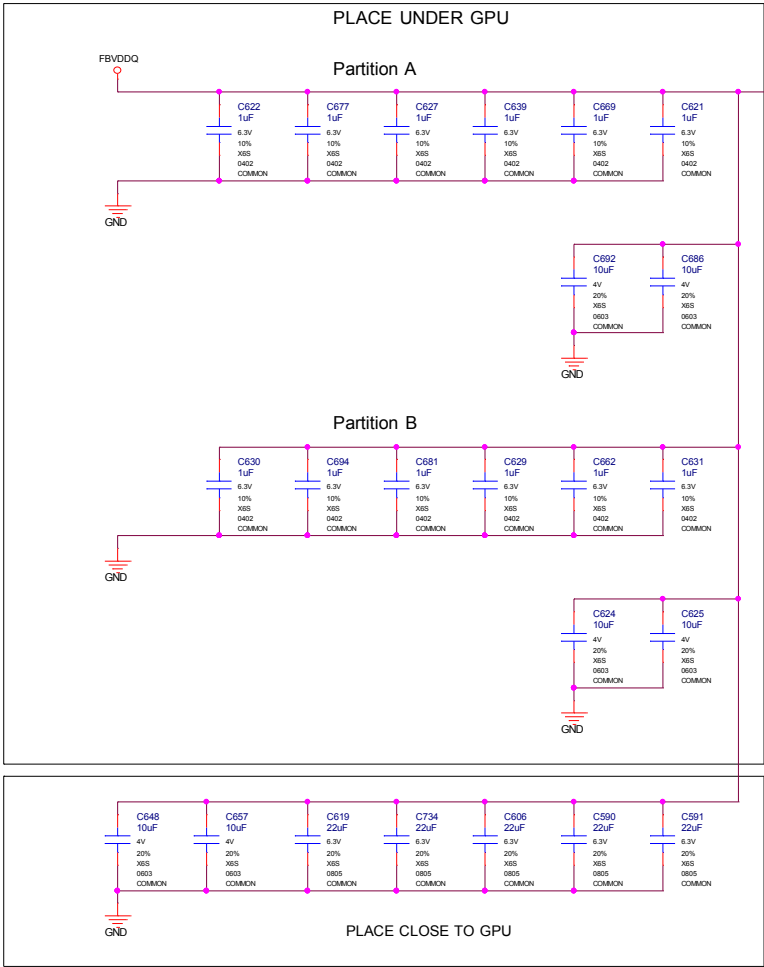


PLACE Around DRAM



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GPU FBVDDQ & 1V8 Decoupling

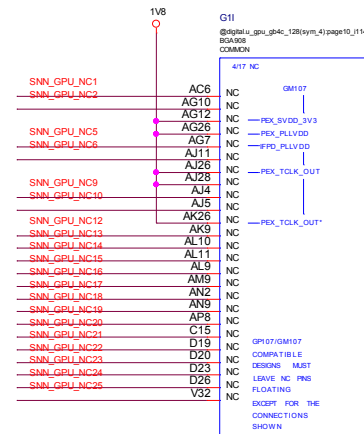
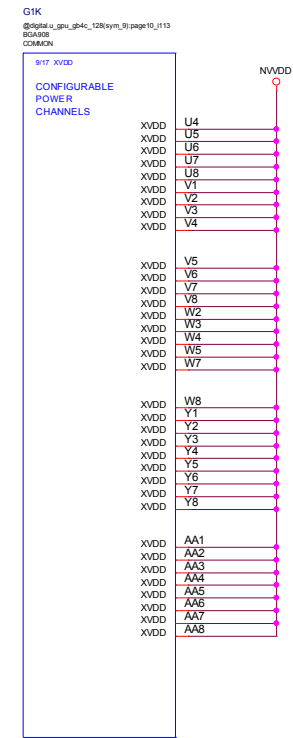
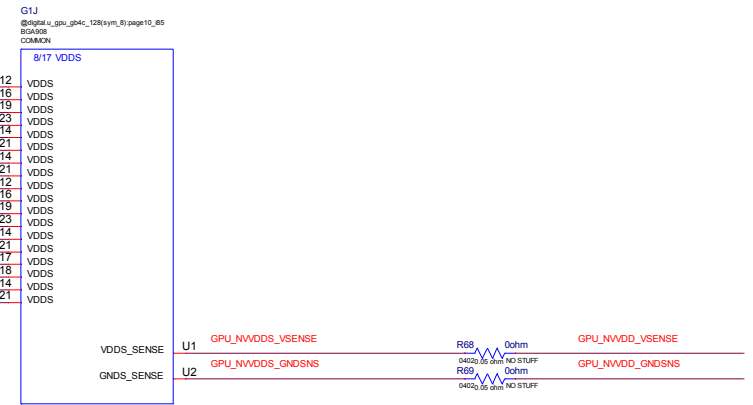
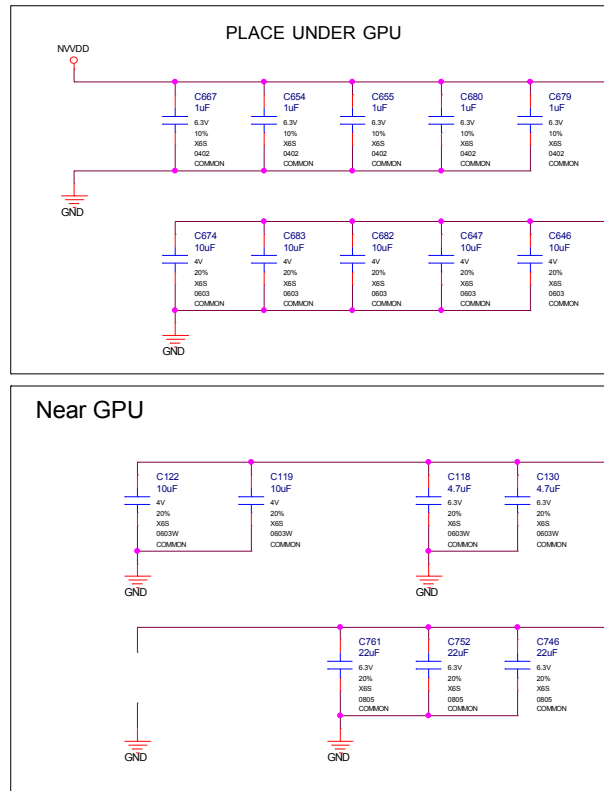
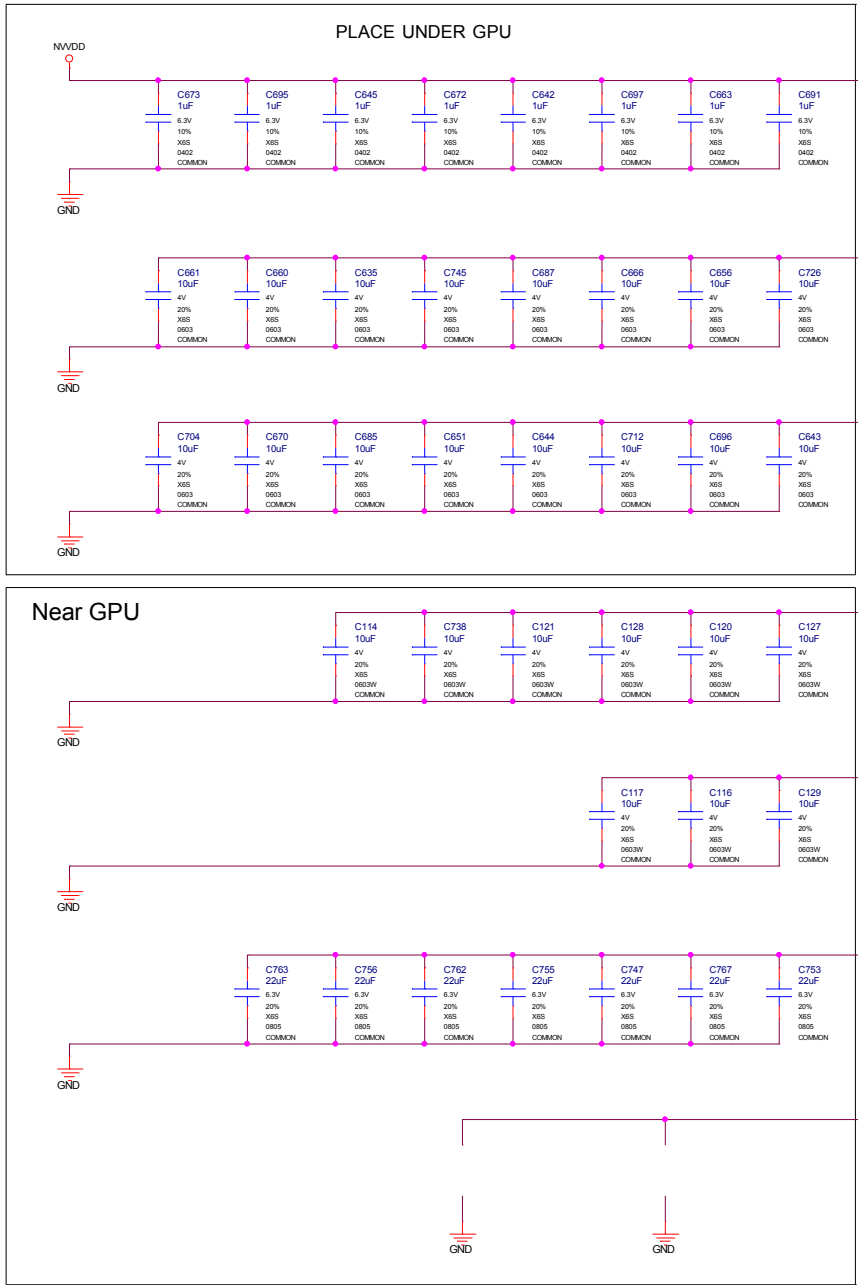


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PAGE: DETAIL	GPU FBVDDQ & 1V8 Decoupling

NVIDIA CORPORATION		7701 SAN TOMAS EXPRESSWAY	
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NV_PN	600-1G210-BASE-SCH	PAGE	9 OF 27
PCB REV	PG210-B00	DATE	18-DEC-2015
BOM REV	A		

GPU NVVDD & NVVDDS Decoupling



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU NVDD & NVDDS DECOUPLING

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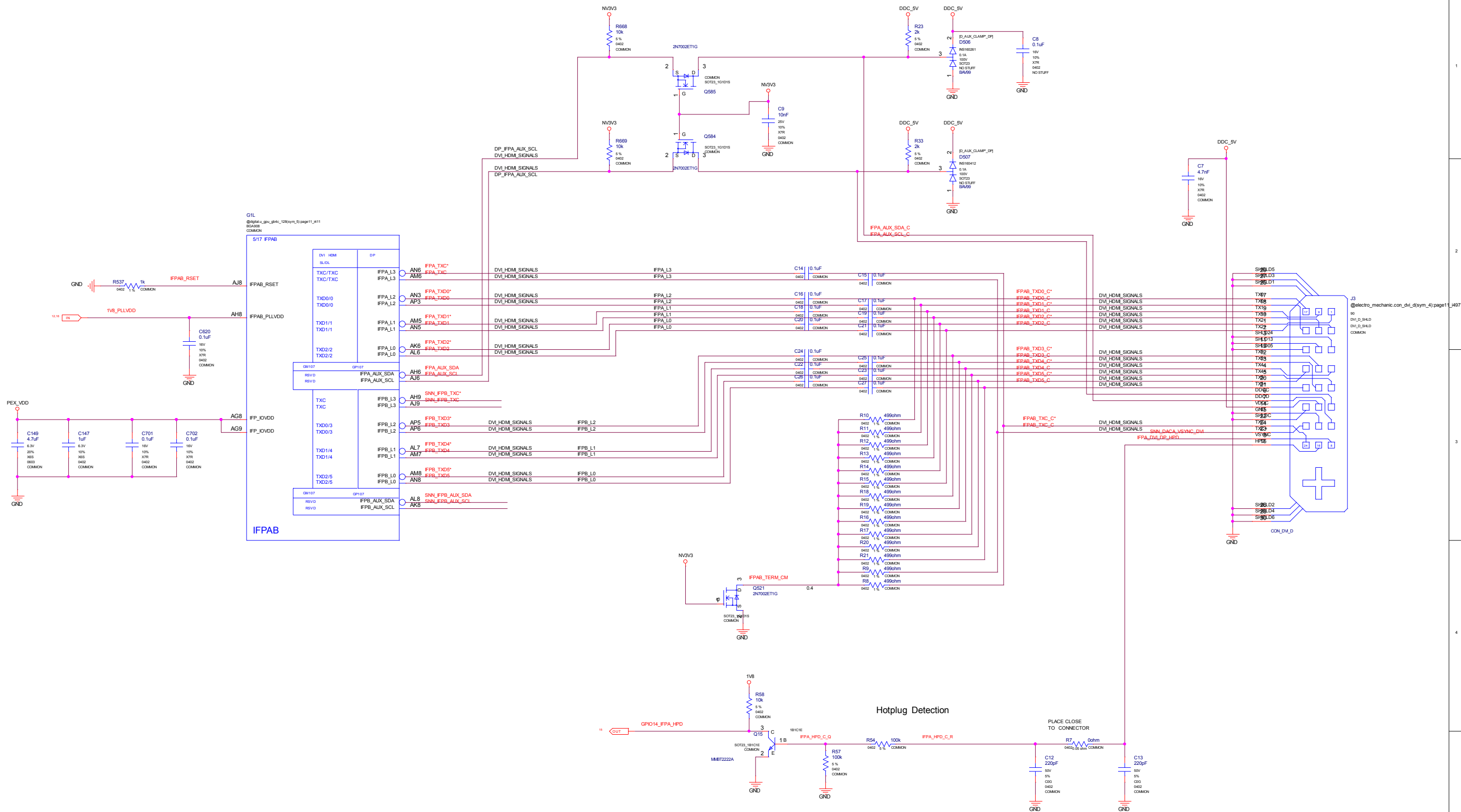
PCB REV	PG210-B00
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BOM REV	A
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PAGE 10 OF 27

DATE	18-DEC-2015
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IFPAB DVI-DL



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IFPAB DVI-DL

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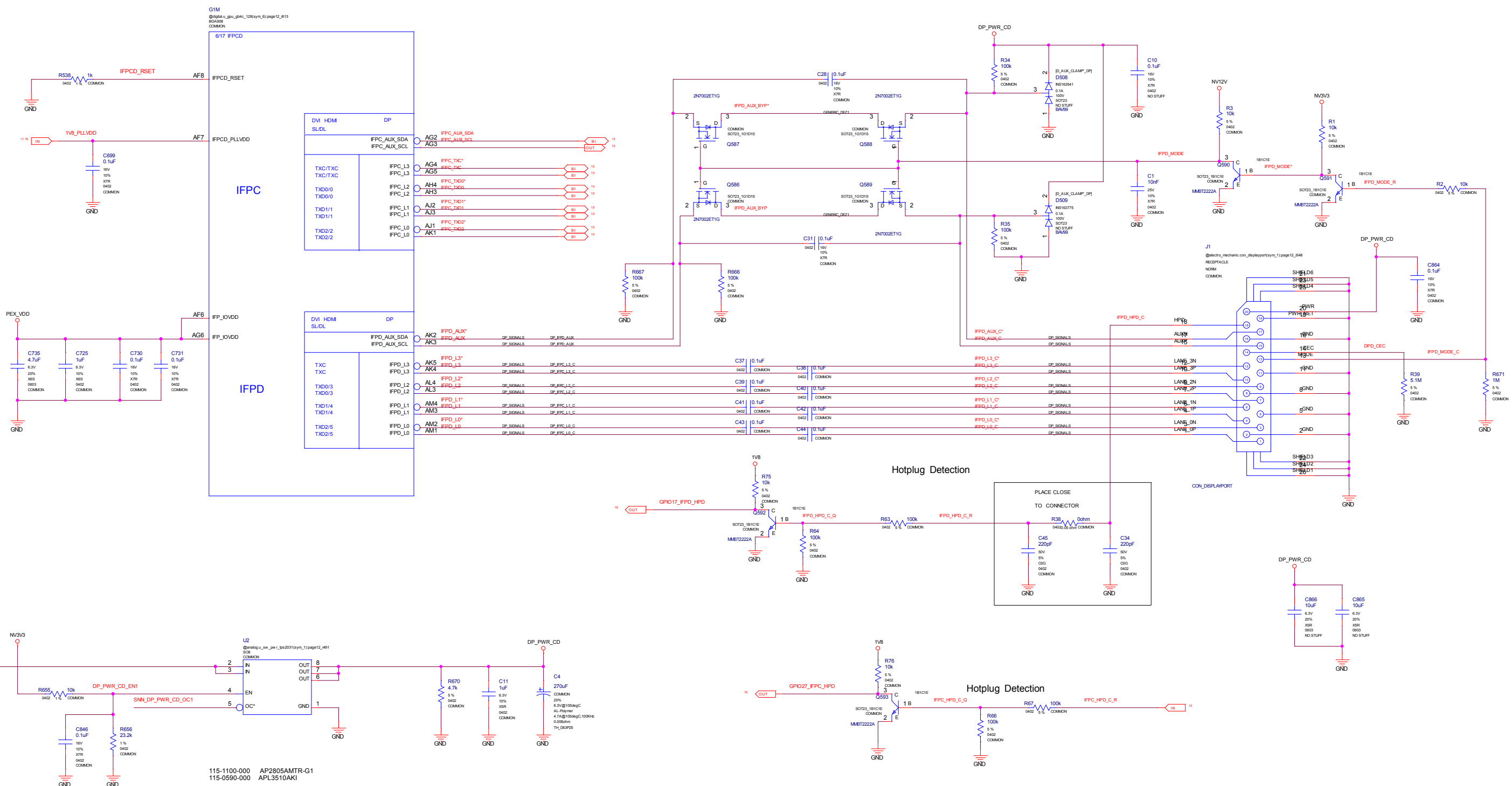
PCB REV	PG210-B00
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PAGE	11 OF 27
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BOM REV	A
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DATE	18-DEC-2015
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IFPD DP



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IFPD DP

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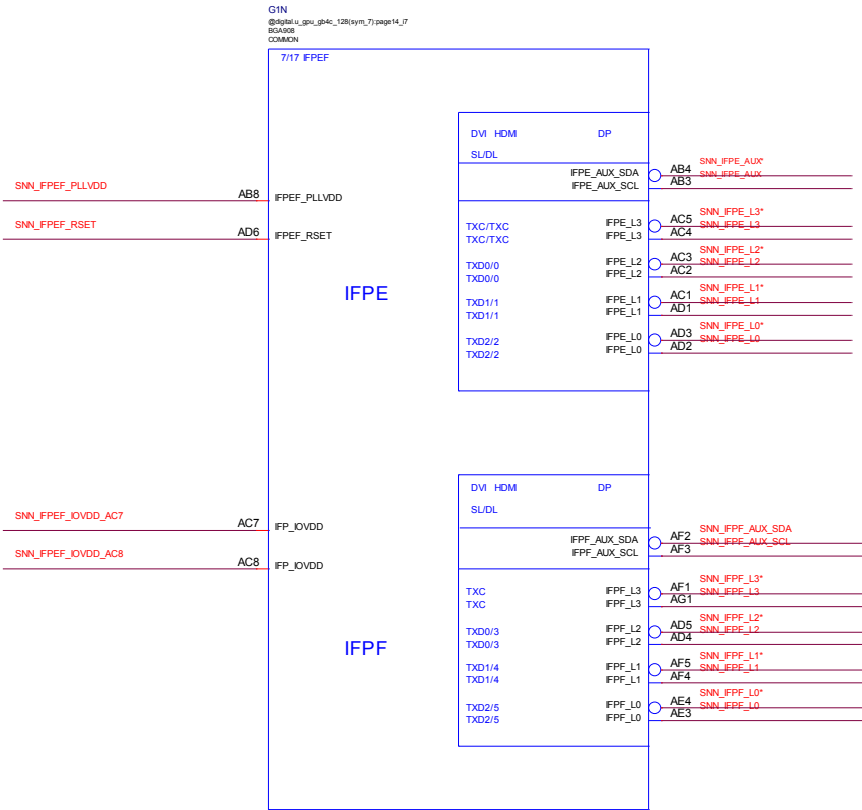
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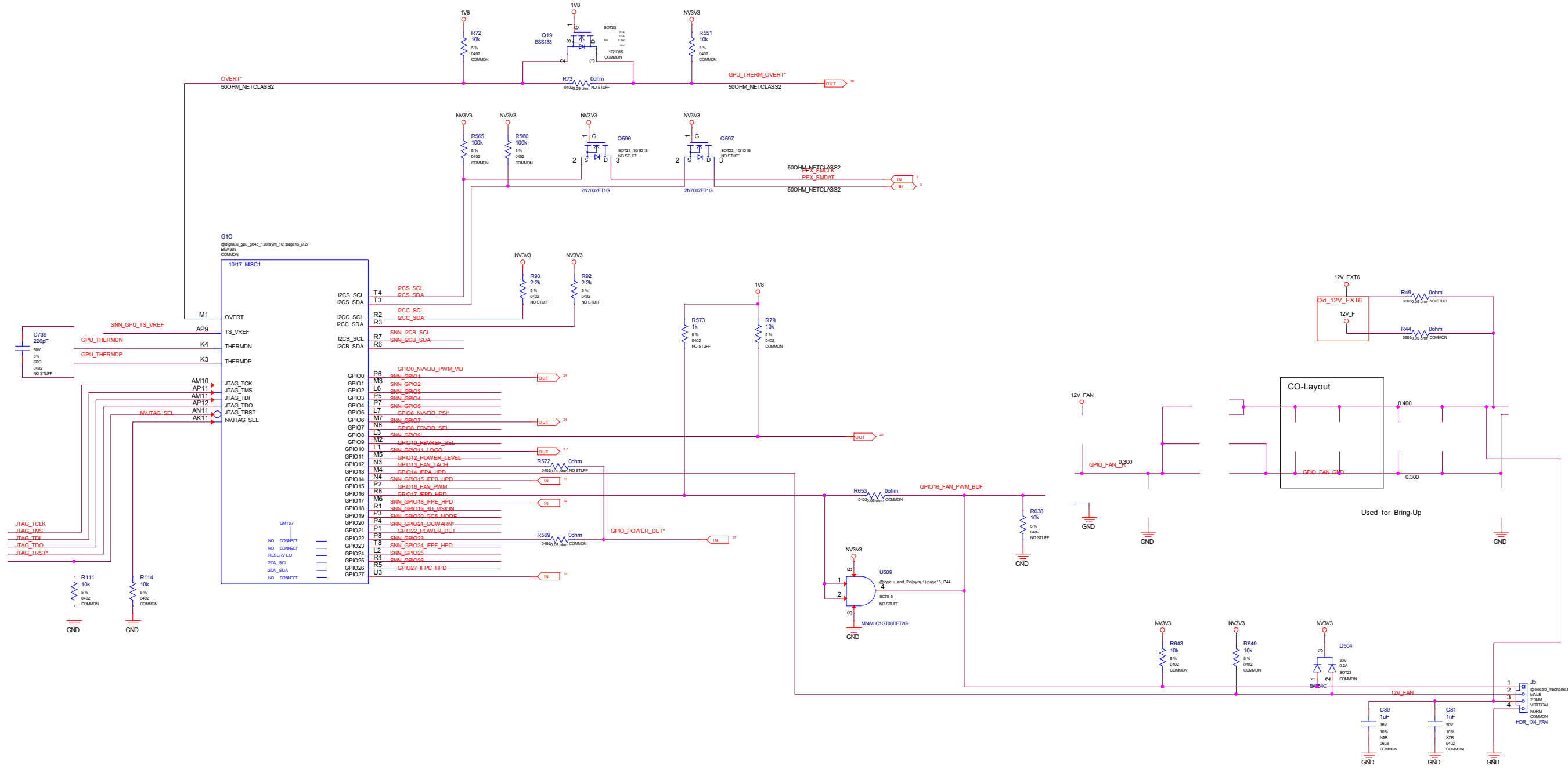
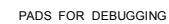
NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	12 OF 27
ROM REV	A	DATE	18-DEC-2015

IFPEF UNUSED




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MISC1: GPIO, Fan, Thermal, JTAG



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MISC1: Fan, Thermal, JTAG, G

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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	15 OF 27
BOM REV	A	DATE	18-DEC-2015

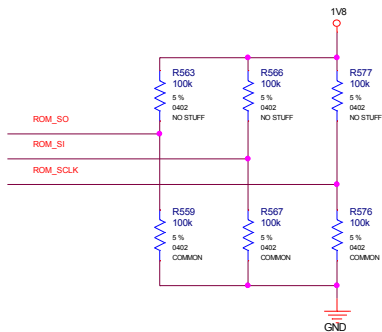


MISC2: ROM, XTAL, Straps

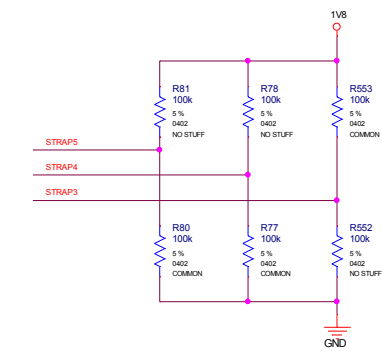
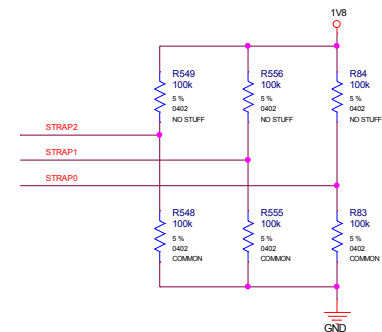
ROM_SO	ROM_SI	ROM_SCLK	SOR_EXPOSED[3:0]	1:ENABLE 0:DISABLE
L	L	L	1111	Default
L	L	H	1110	
L	H	L	1101	
L	H	H	1100	
H	L	L	1011	
H	L	H	1010	
H	H	L	1001	
H	H	H	1000	
L	L	M	0111	
L	M	L	0110	
L	M	H	0101	
L	H	M	0100	
H	L	M	0011	
H	M	L	0010	
H	M	H	0001	
H	H	M	0000	

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	0000	Samsung B-Die 8Gb 256Mx32
L	L	H	0001	Micron F-Die 8Gb 256Mx32
L	H	L	0010	Hynix M-Die 8Gb 256Mx32
L	H	H	0011	
H	H	L	0110	Hynix A-Die 4Gb 128Mx32
H	H	H	0111	Samsung E-Die 4Gb 128Mx32
L	L	M	1000	Micron B-Die 4Gb 128Mx32
L	M	L	1001	

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

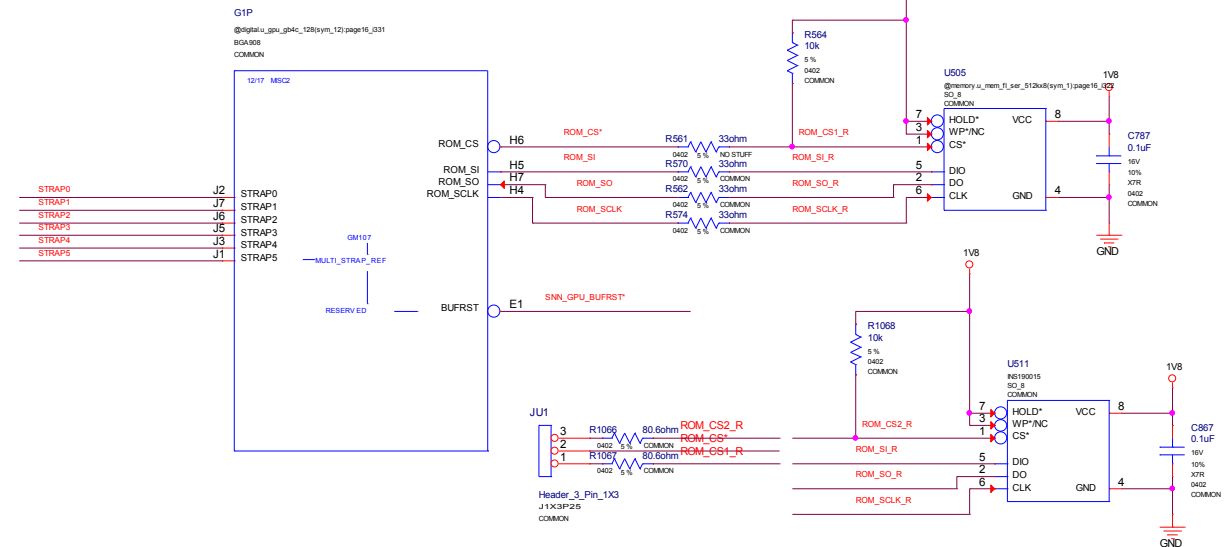


1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

```
1:DEVID_SEL REBRAND
0:DEVID_SEL ORIGNAL
```

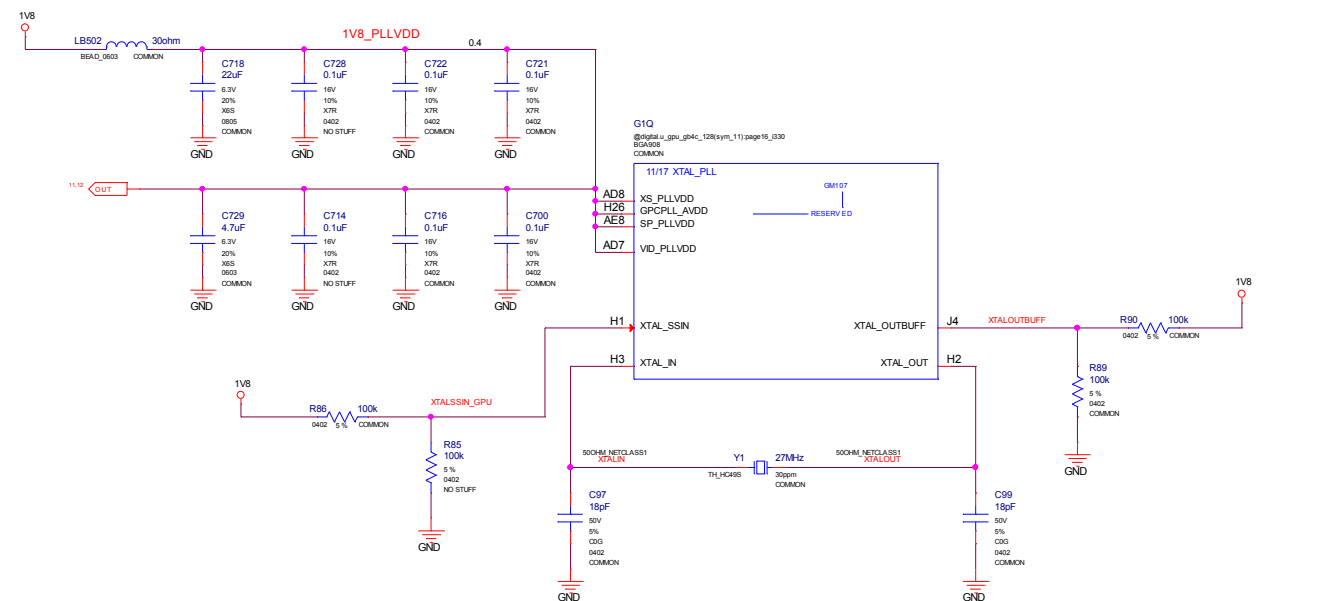
1:PCIE_CFG LOW POWER
0:PCIE_CFG HIGH POWER


1:VGA_DEVICE ENABLE
0:VGA_DEVICE DISABLE



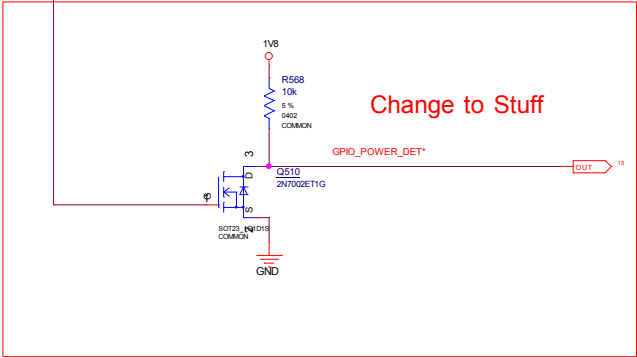
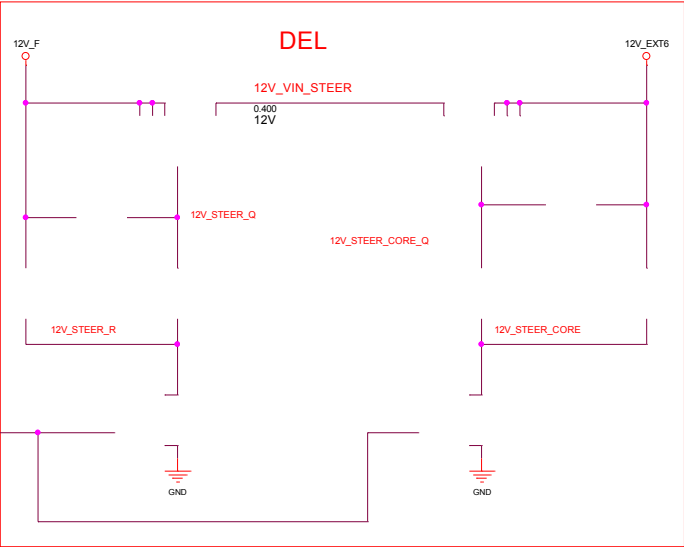
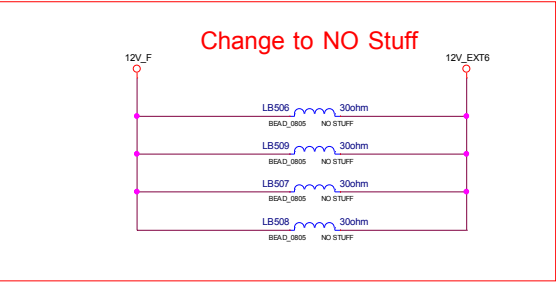
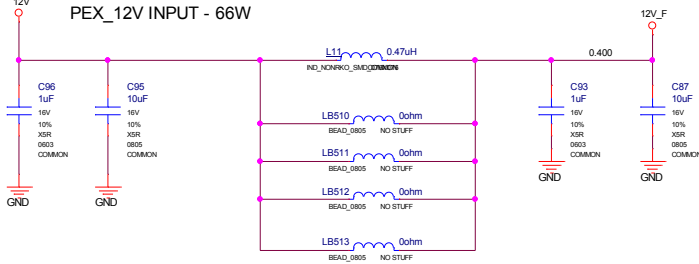
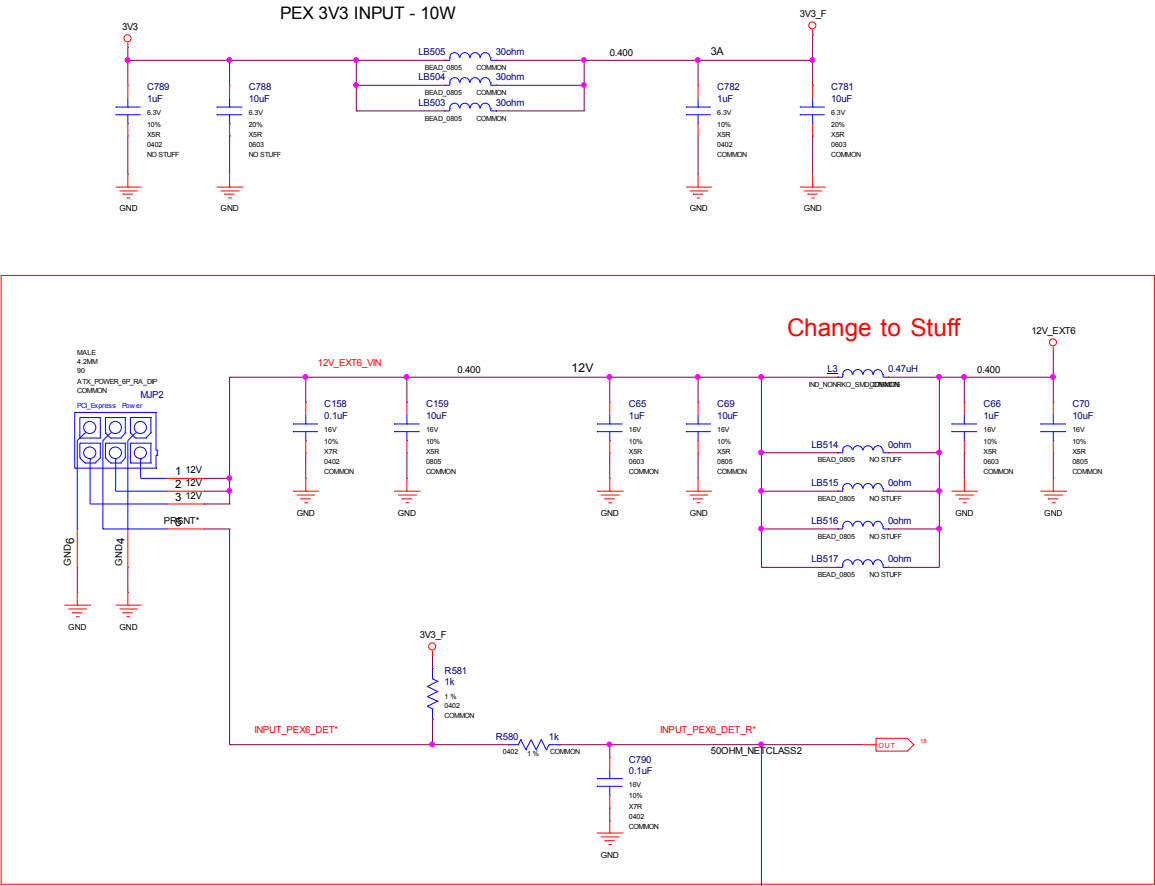
Smart Fan

XTALOUTBUFF	Volatge	SmartFan PWM	GPIO/PWM at the FAN
Low	0V	GPIO Disabled	100%
Middle	0.9V	66% PWM	33% PWM (Typical)
High	1.8V	33% PWM	66% PWM



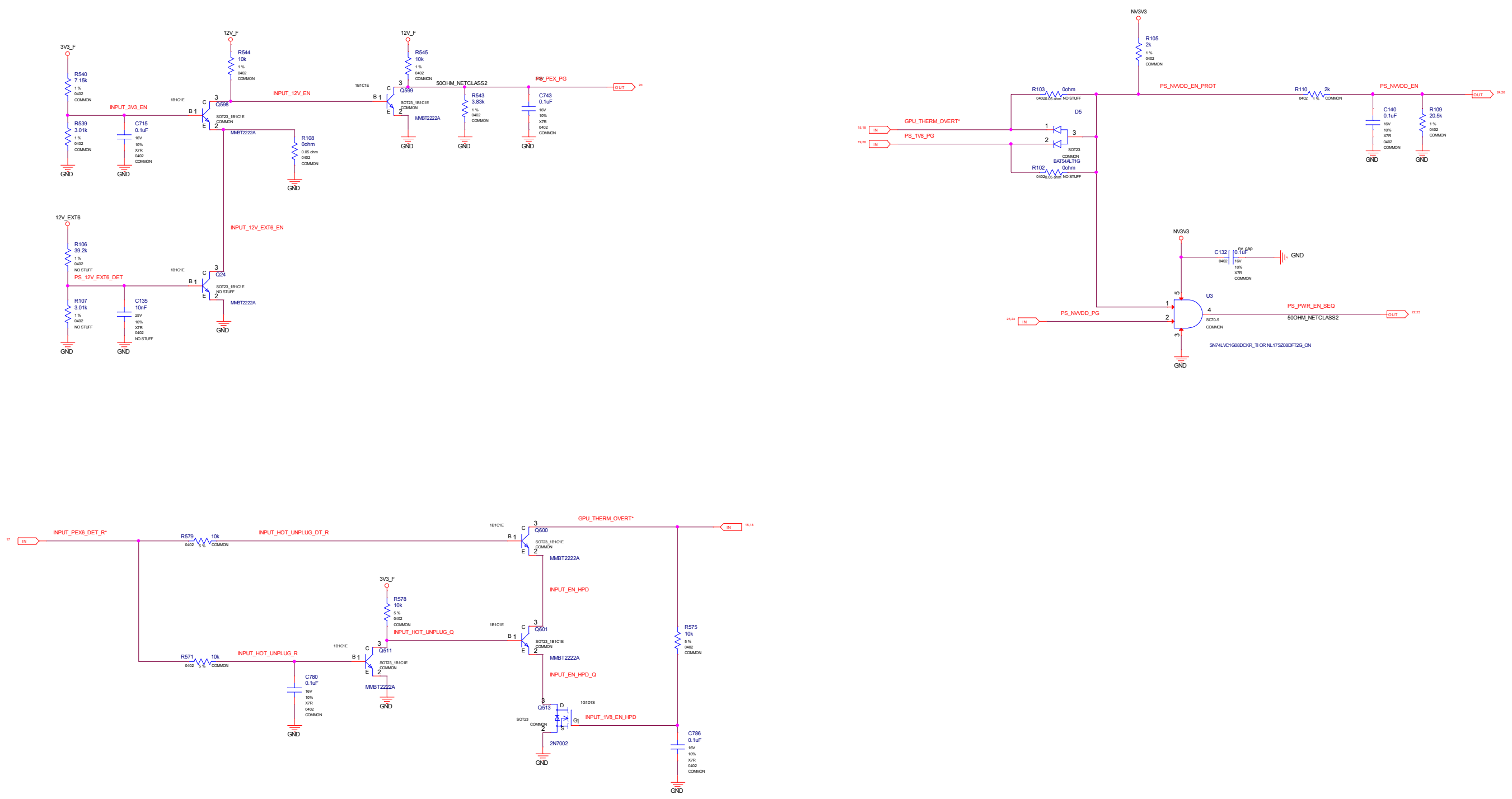
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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	16 OF 27
BOM REV	A	DATE	18-DEC-2015

Power Inputs and Filtering




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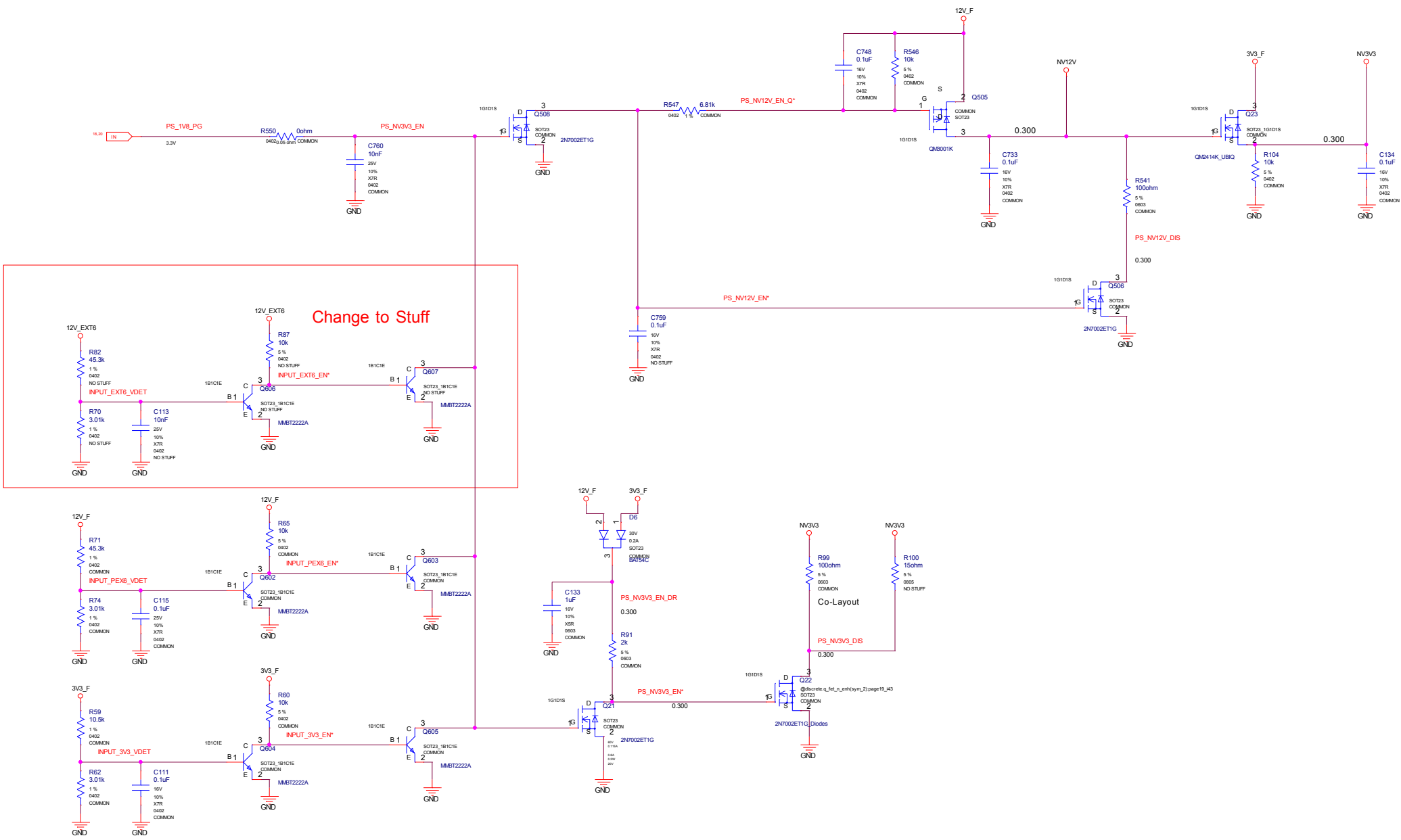
Power sequence



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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	18 OF 27
BOM REV	A	DATE	18-DEC-2015

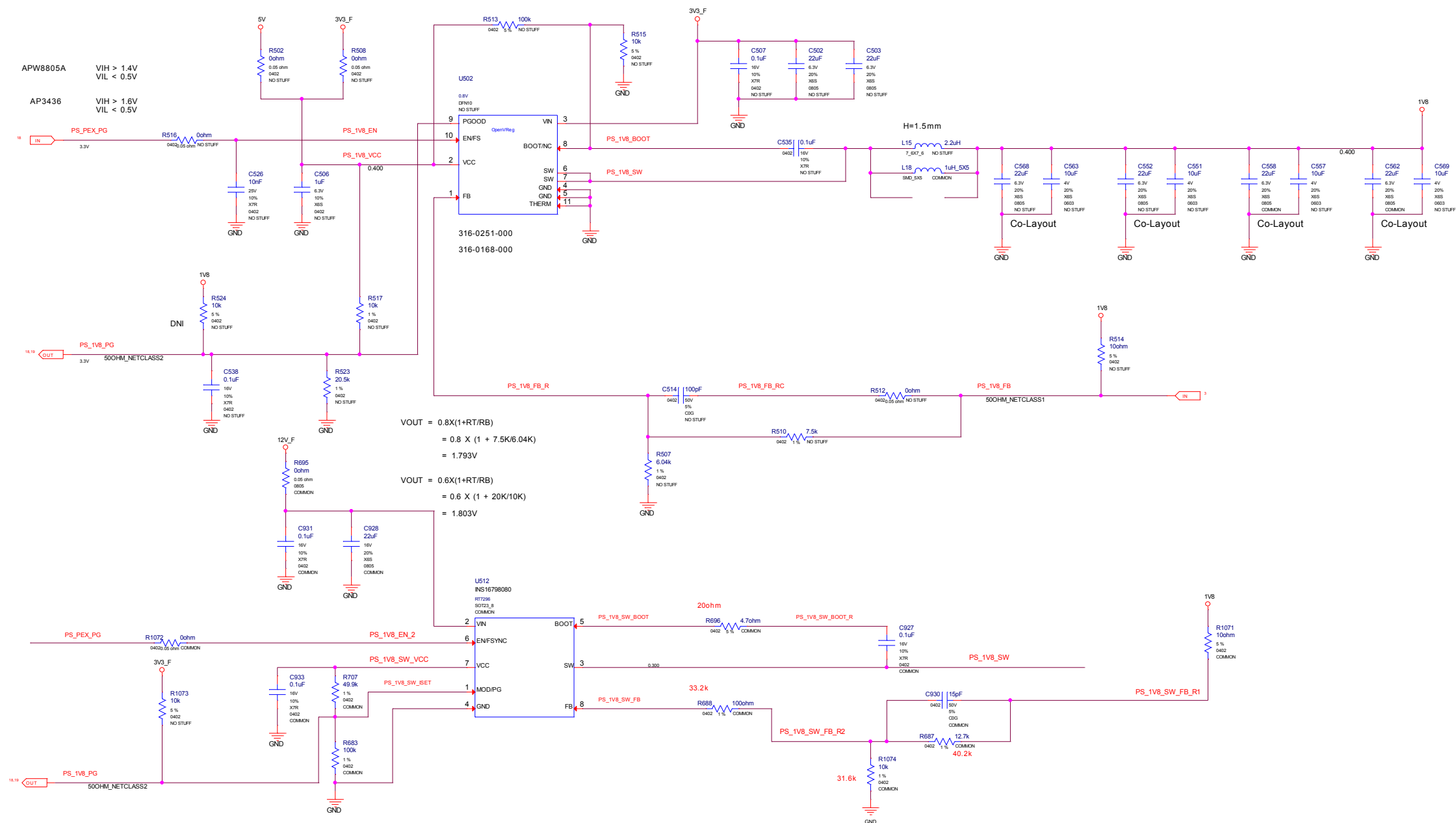
PS: NV3V3 & NV12V



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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	19 OF 27
BOM REV	A	DATE	18-DEC-2015

PS I: 1V8



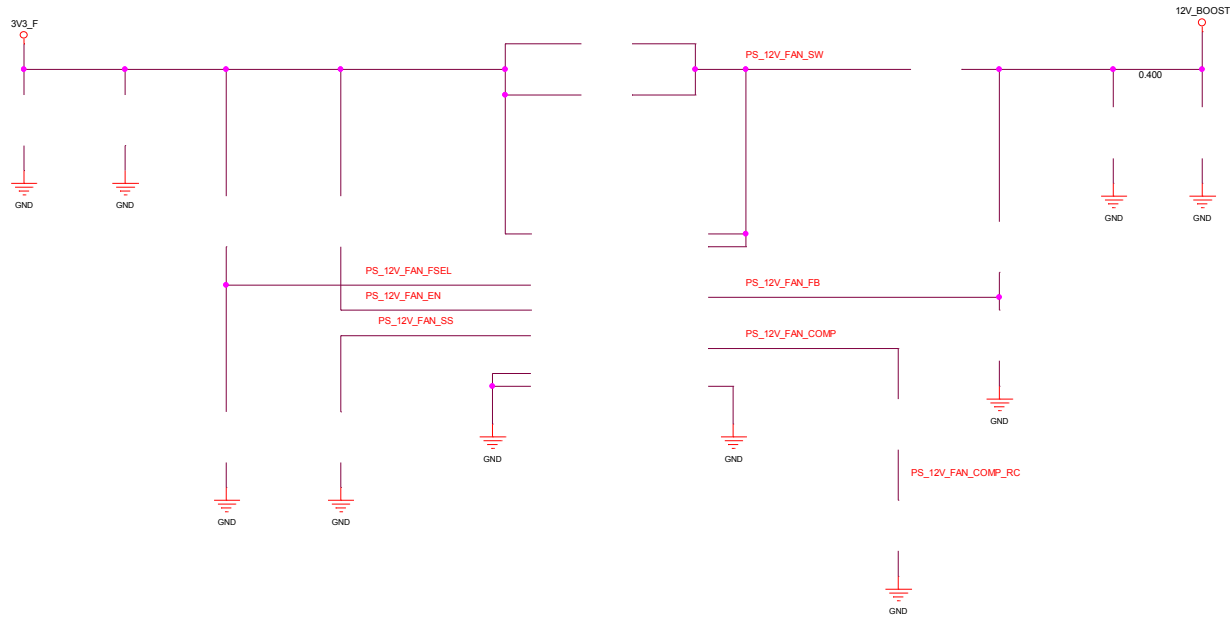
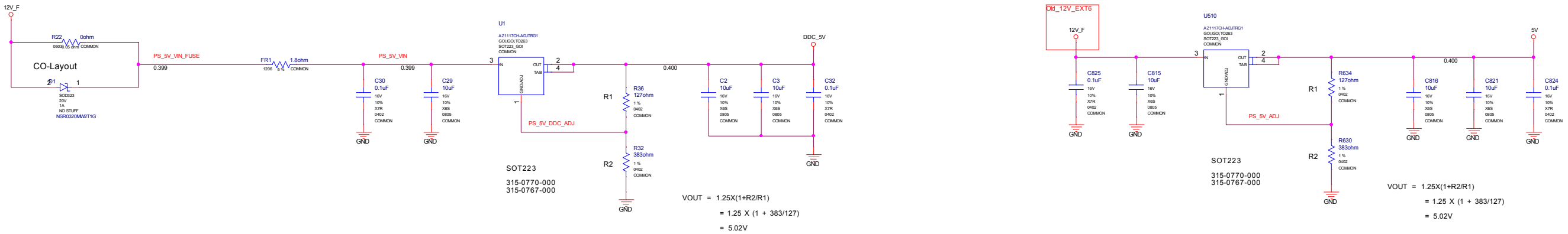
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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS1: 1V8

NVIDIA CORPORATION 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
NV_PN	600-1G210-BASE-SCH		
PCB REV	P0210-B00	PAGE	20 OF 27
BOM REV	A	DATE	18-DEC-2015



PSII:5V & 12V_FAN

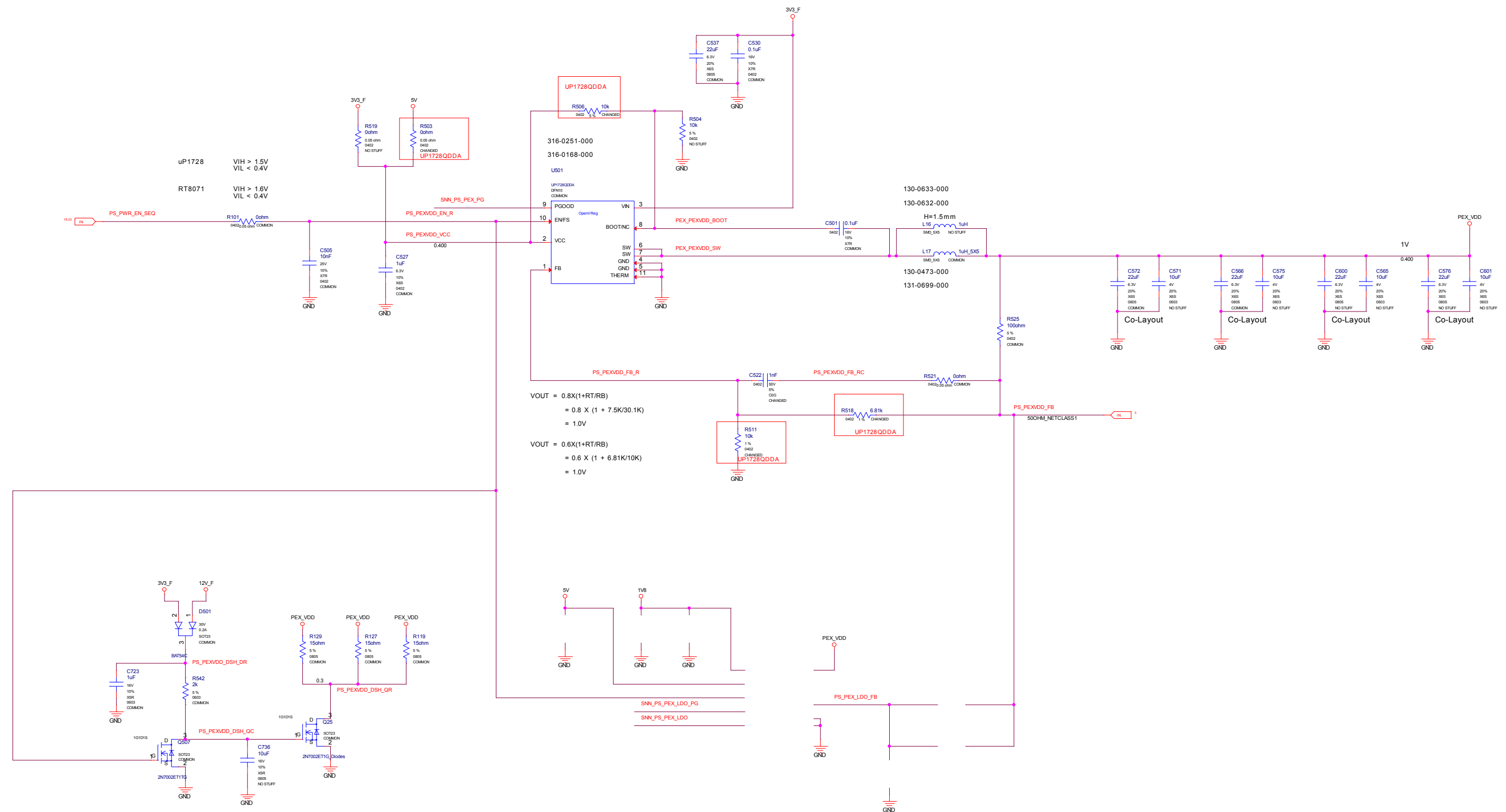



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PSII: 5V & 12V_FAN

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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-800	PAGE	21 OF 27
BOM REV	A	DATE	18-DEC-2015

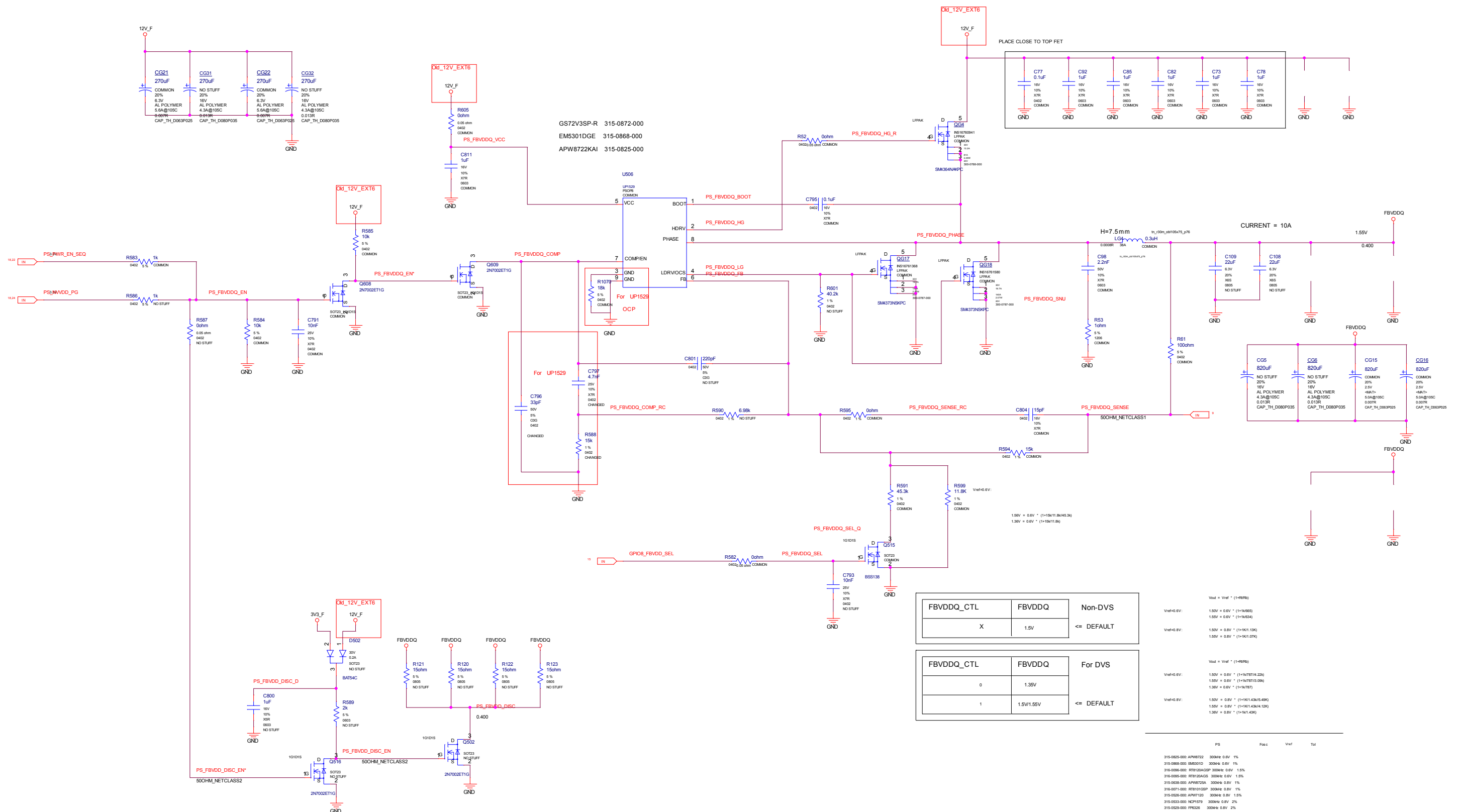
PS III: PEXVDD


$$\begin{aligned} V_{OUT} &= 0.8X(1+R_T/R_B) \\ &= 0.8 \times (1 + 7.5K/30.1K) \\ &= 1.0V \end{aligned}$$
$$\begin{aligned} V_{OUT} &= 0.6X(1+R_T/R_B) \\ &= 0.6 \times (1 + 6.81K/10K) \\ &= 1.0V \end{aligned}$$

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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	22 OF 27
BOM REV	A	DATE	18-DEC-2015

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PS IV: FBVDDQ



FBVDDQ_CTL	FBVDDQ	For DVS
0	1.35V	
1	1.5V/1.55V	<= DEFAULT

	$V_{out} = V_{ref} * (1+R2/R1b)$
$V_{ref}=0.5V:$	$1.50V = 0.5V * (1+1/66)$ $1.55V = 0.5V * (1+1/63)$
$V_{ref}=0.8V:$	$1.50V = 0.8V * (1+1/91)$ $1.55V = 0.8V * (1+1/91)$
	$V_{out} = V_{ref} * (1+R2/R1b)$
$V_{ref}=0.5V:$	$1.50V = 0.5V * (1+1/78)$ $1.55V = 0.5V * (1+1/78)$ $1.36V = 0.5V * (1+1/78)$
$V_{ref}=0.8V:$	$1.50V = 0.8V * (1+1/91)$ $1.55V = 0.8V * (1+1/91)$ $1.36V = 0.8V * (1+1/91)$

5)
6)
13K)
07K)
17/04.22K)
17/3.09K)
7)
43K/15.49K)
43K/4.12K)
39K)

PS	Fosc	Vref	To
----	------	------	----

315-0825-000: APW8722	300kHz: 0.6V
315-0868-000: EM5301D	300kHz: 0.6V
316-0096-000: RT8120AGSP	300kHz: 0.6V
316-0095-000: RT8120AGS	300kHz: 0.6V
315-0638-000: APW8725A	300kHz: 0.8V
316-0071-000: RT8101GSP	300kHz: 0.8V
315-0526-000: APW7120	300kHz: 0.8V
315-0533-000: NCP1579	300kHz: 0.8V
315-0529-000: FP6326	300kHz: 0.8V

0%
1%
1.5%
1.5%
1%
1%
1.5%
%
%

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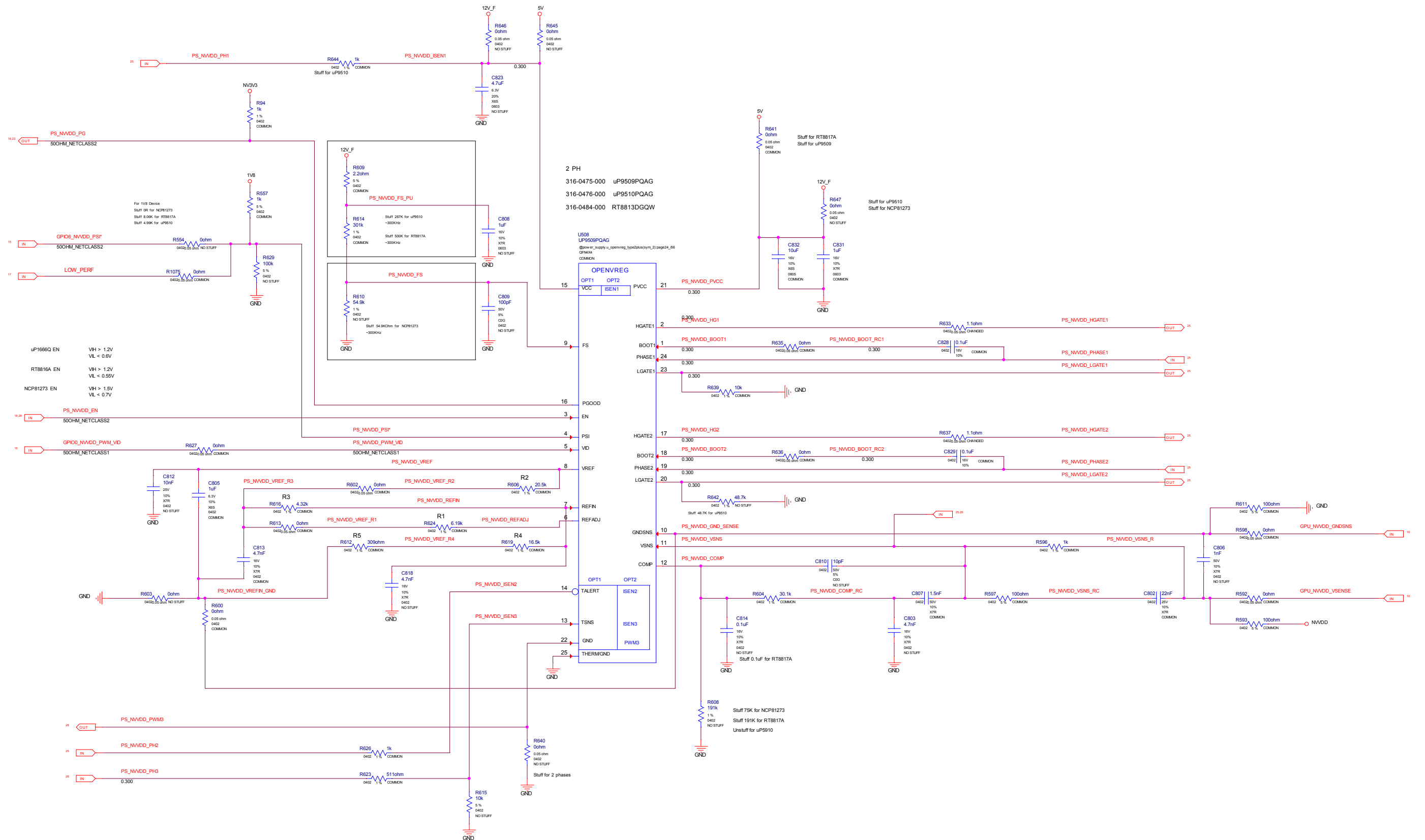
NV_PN	600-1G210-BASE-SCH
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PCB REV	PG210-B00	PAGE	23 OF
BOM REV	A	DATE	18-DEC-2015

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS M: FBVDDQ

PS V: NVVDD OVR2+1



ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS V: NVDD OVR2+1

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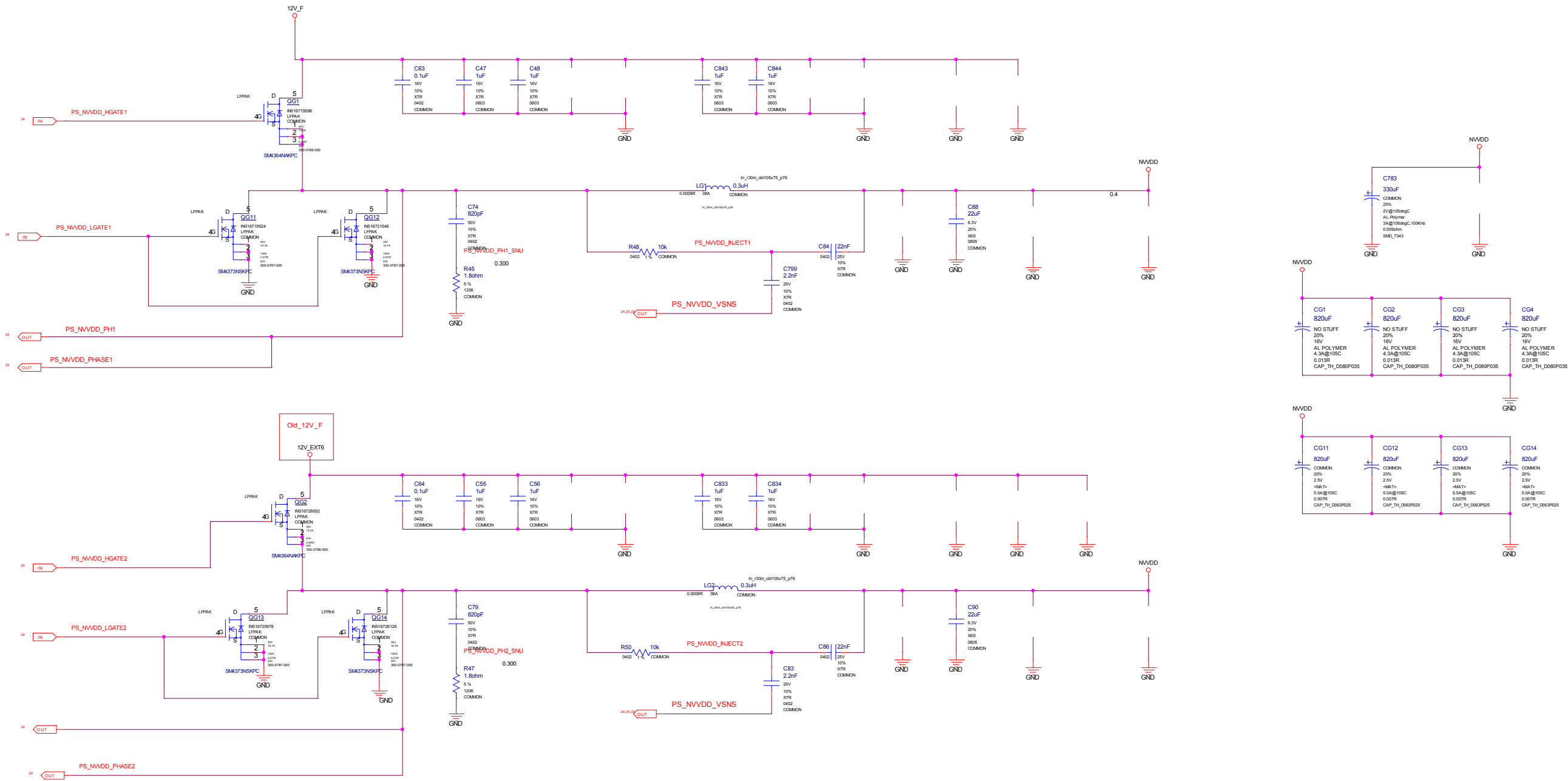
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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	24 Of 27
BOM REV	A	DATE	18-DEC-2015

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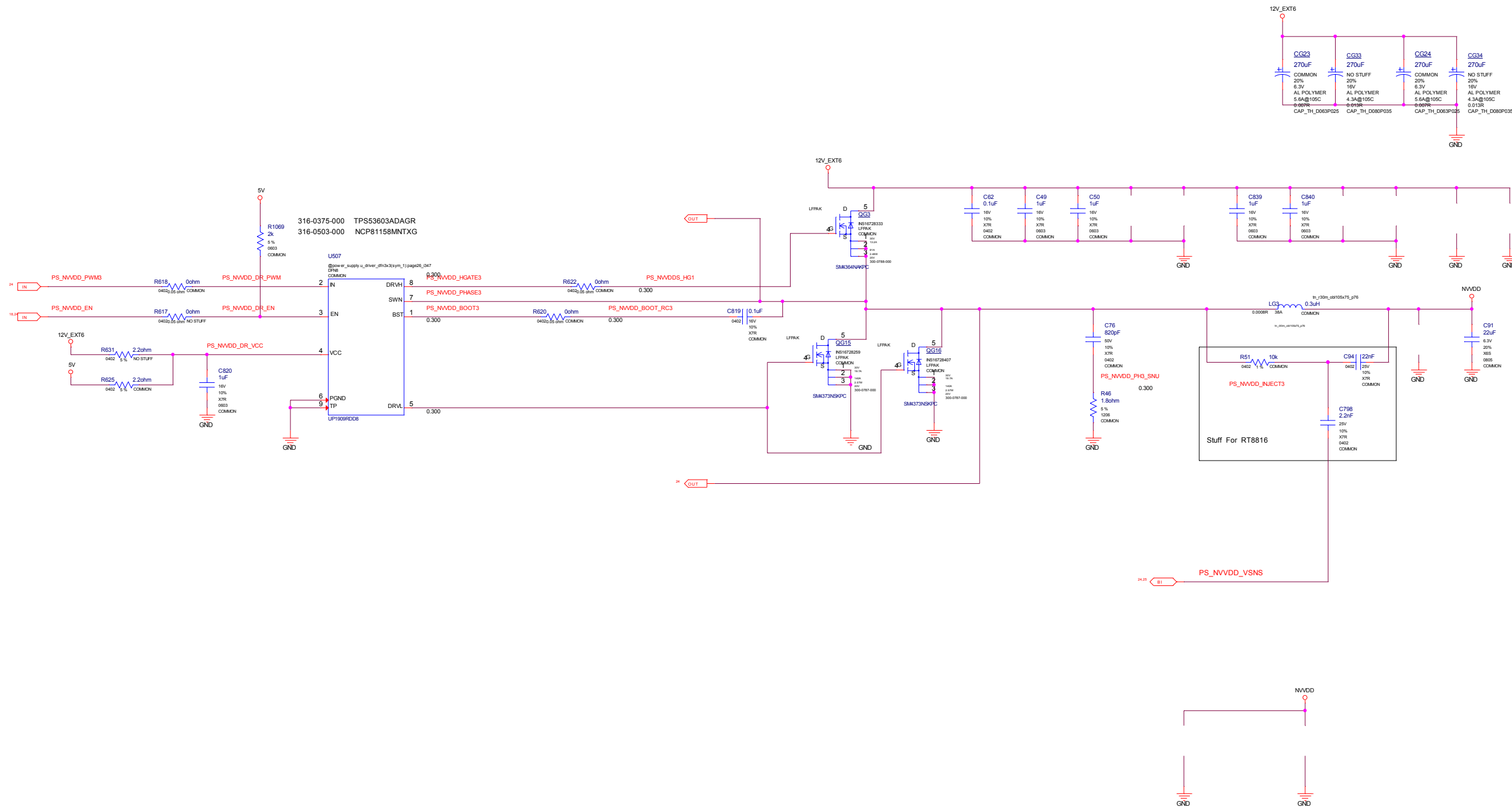
PS V: NVVDD Phase 1,2



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NV_PN	600-1G210-BASE-SCH		
PCB REV	PG210-B00	PAGE	25 OF 27
BOM REV	A	DATE	18-DEC-2015

PS V: NVVDD Phase 3



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS V: NVVDD Phase 3

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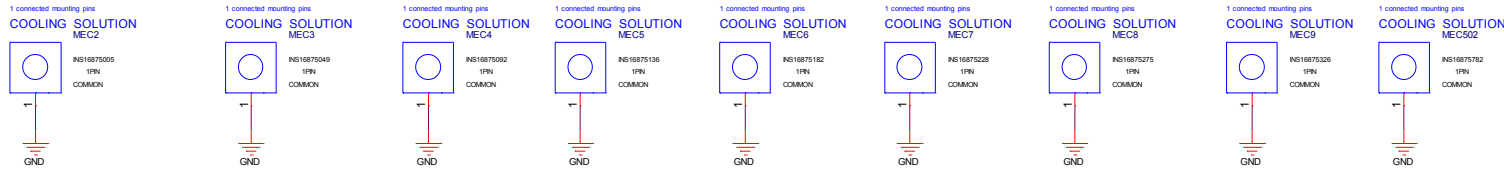
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BOM REV A

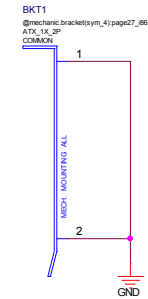
PAGE 26 OF 27

DATE 18-DEC-2015

Mechanical: Bracket/Thermal Solution




Brackets:



GPU Stiffener:



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PAGE: DETAIL		MECH: Bracket/Thermal						
Y				NV_PN		600-1G210-BASE-SCH		
CLAIMS ALL				PCB REV		PG210-B00	PAGE	27 OF 27
STANDARDS.				BOM REV		A	DATE	18-DEC-2015