

PG165-A00

TU116 6GB GDDR5, 192b, X32 DVI-D + DP + HDMI

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Page Description

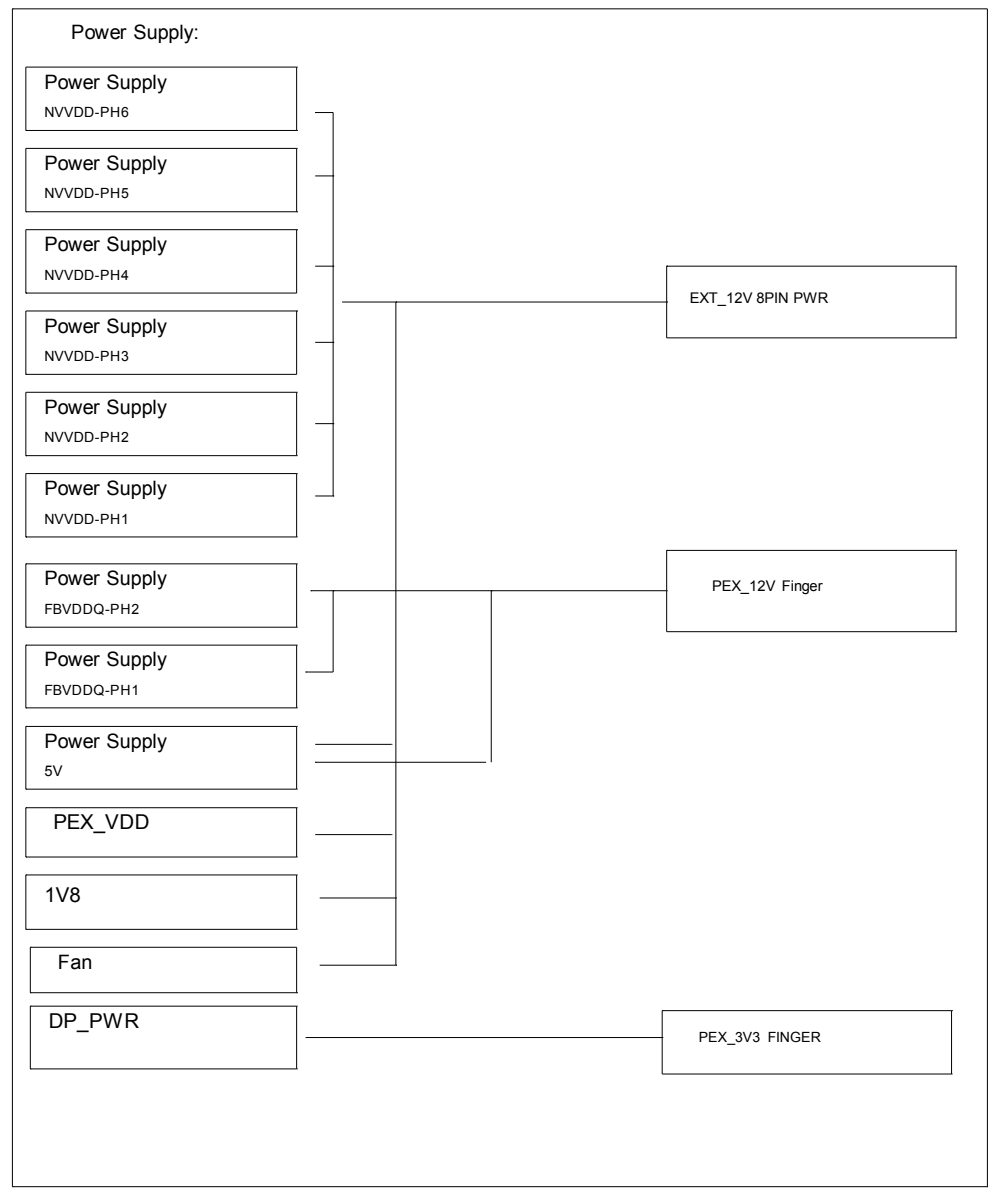
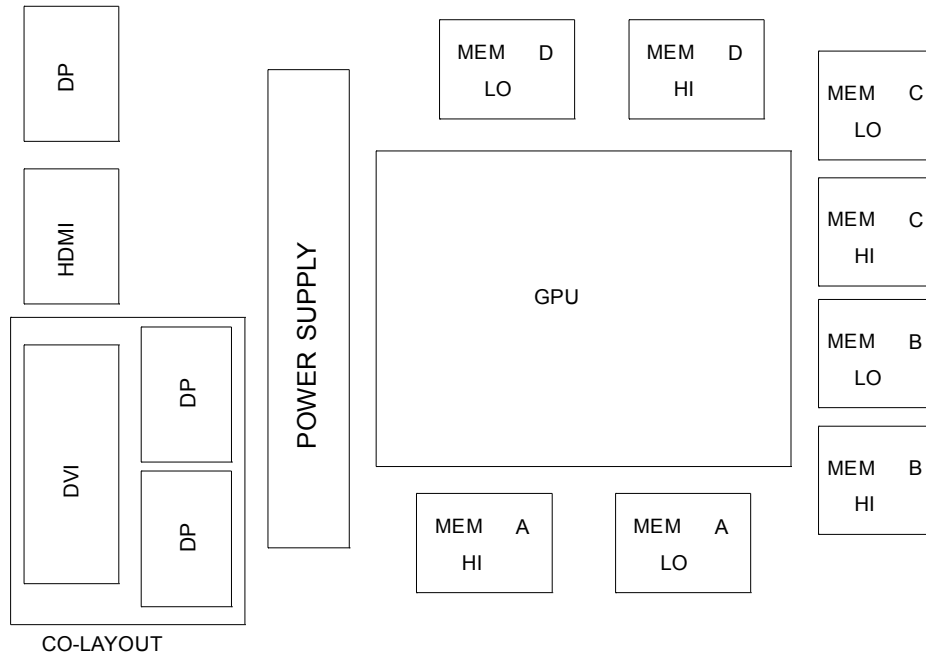
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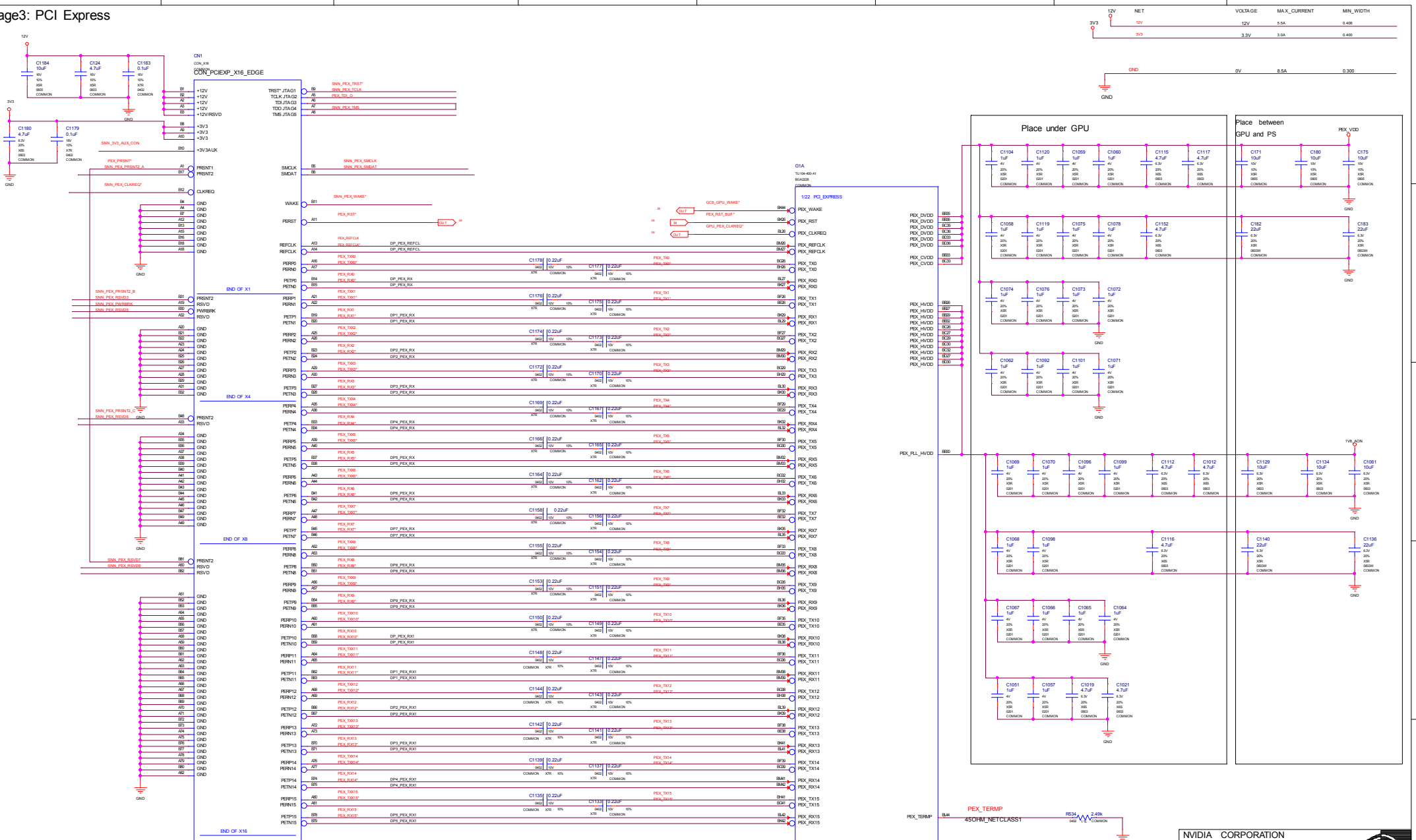


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ASSEMBLY	ASSEMBLY DESCRIPTION
PCB DETAIL	Block Diagram

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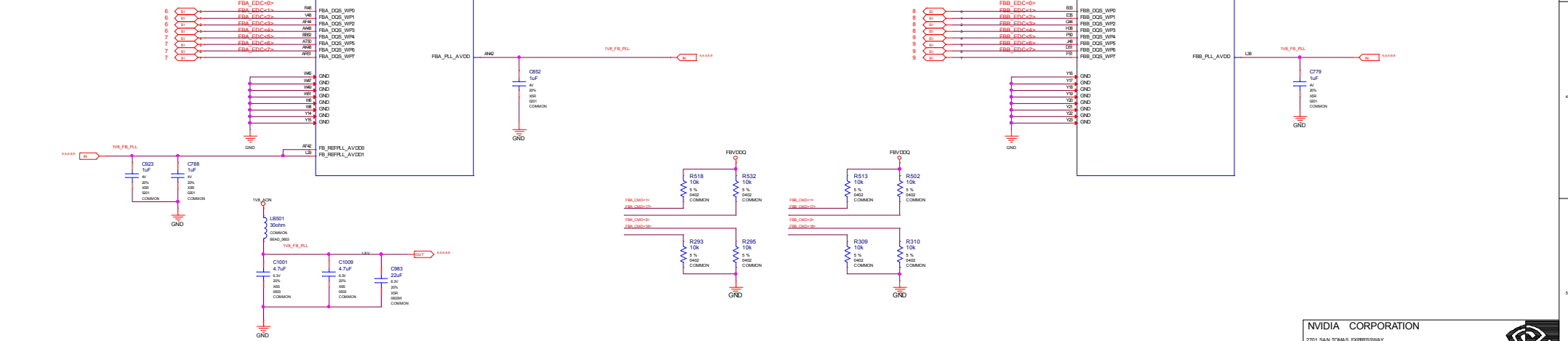
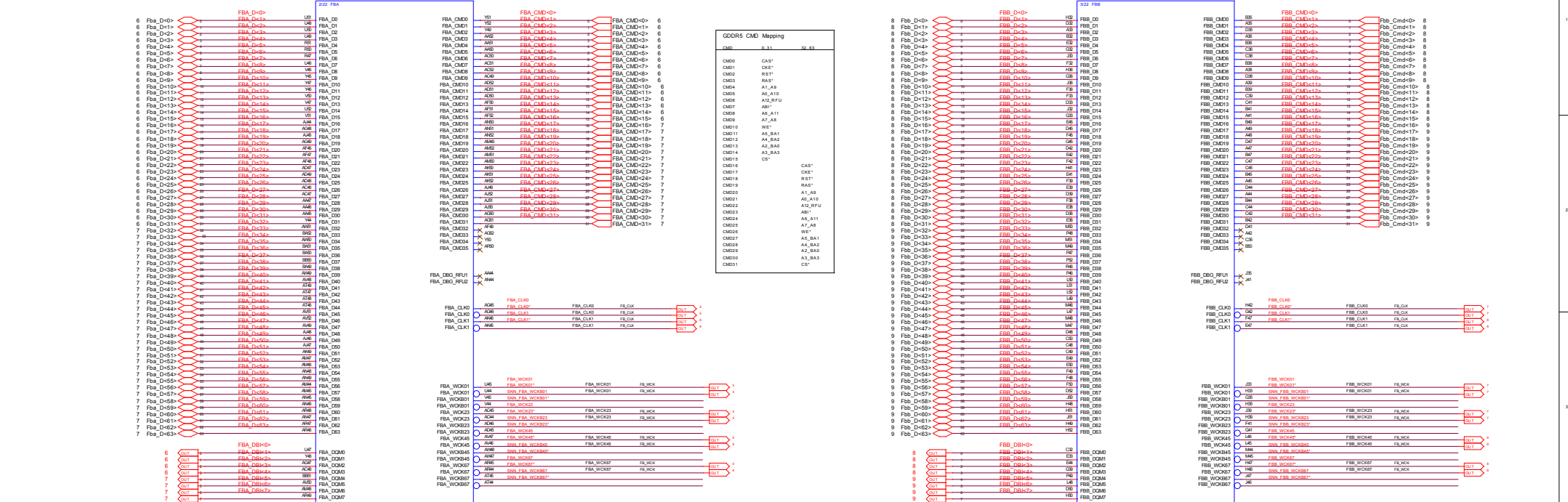
AF49+CMD32, AQ52+CMD33 IN TU104
AF49+CMD33, AQ52+CMD32 IN GP104

G1B TU104B-A1
BRIDGE

compatible

G1C TU104B-A1
BRIDGE

D41+CMD32, A42+CMD33 IN TU104
D41+CMD33, A42+CMD32 IN GP104



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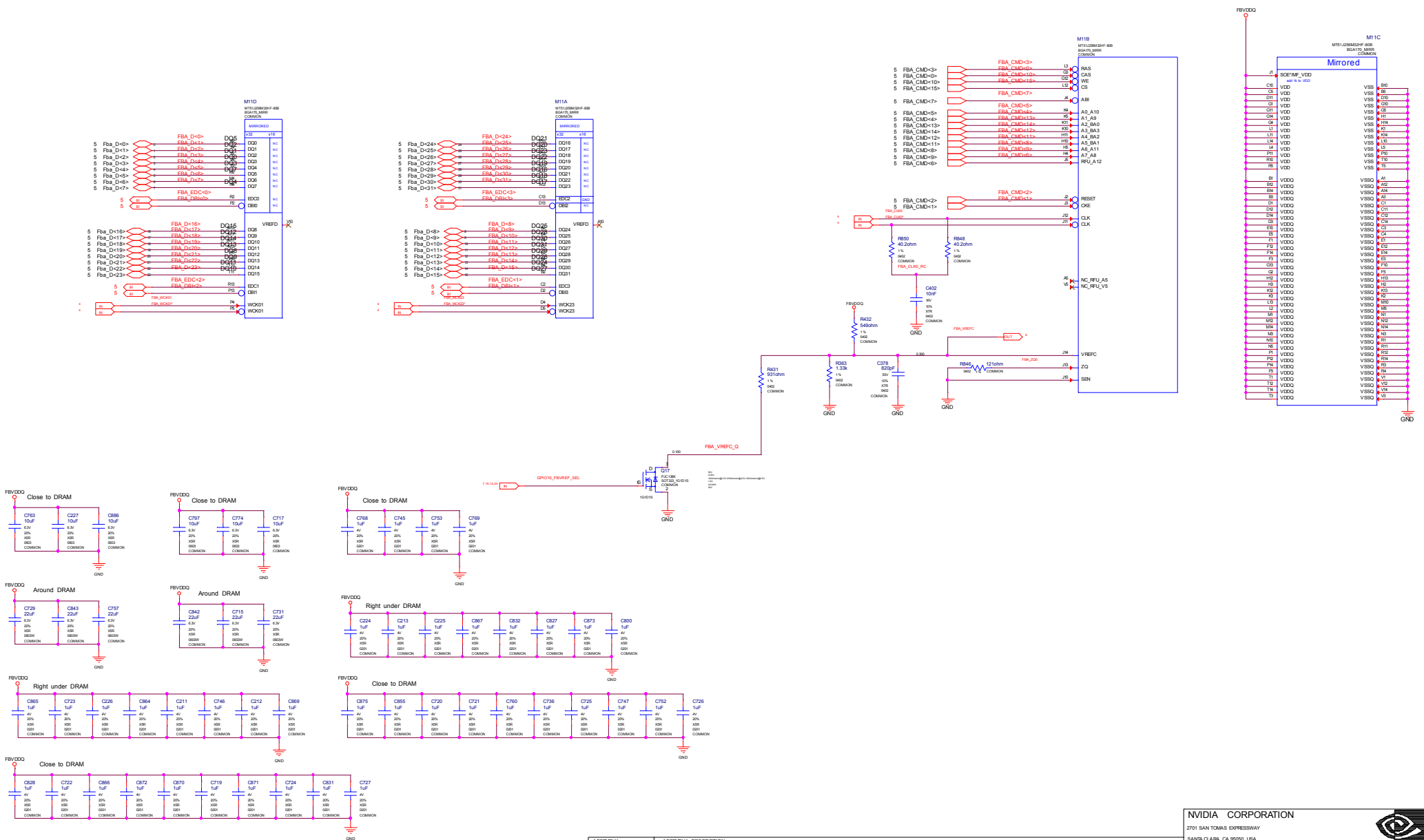
ASSEMBLY	ASSEMBLY DESCRIPTION
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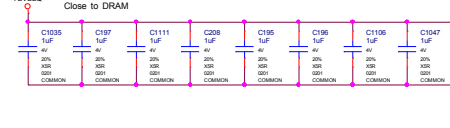
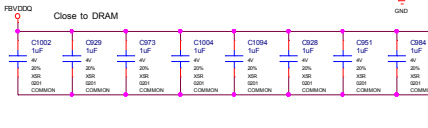
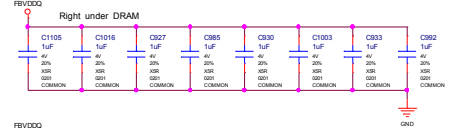
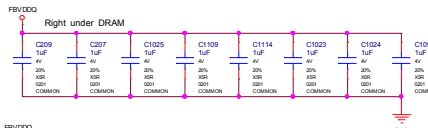
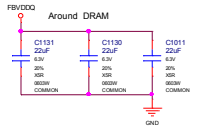
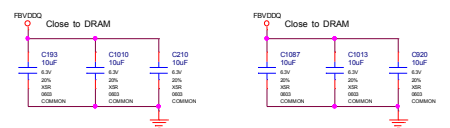
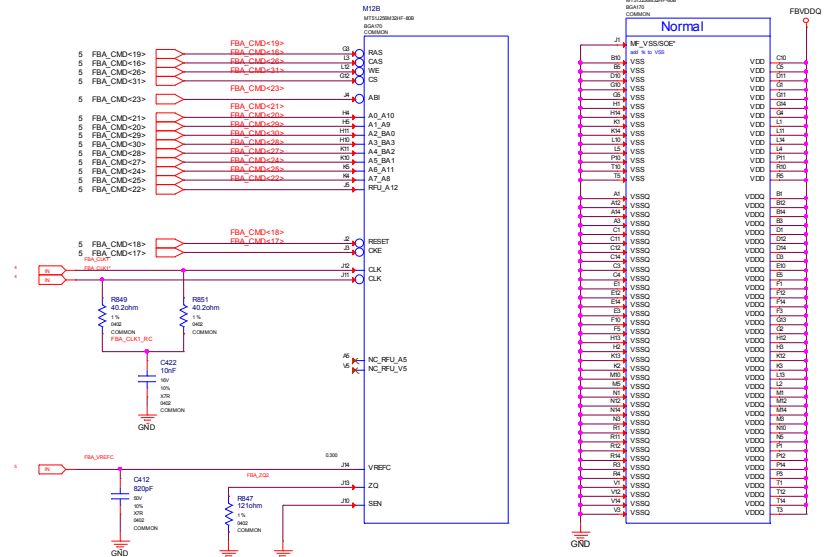
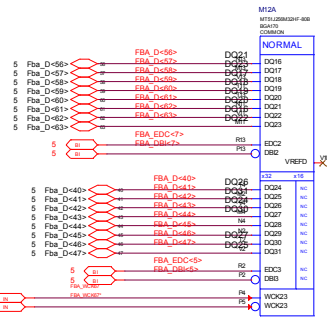
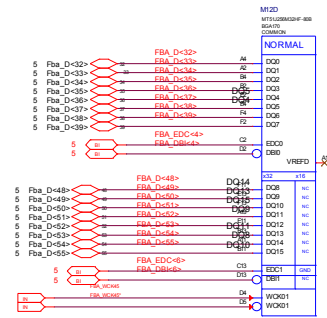
FRGE REV PG165-A00 **FRGE** 4 of 42

BOB REV B **DATE** 14-DEC-2018



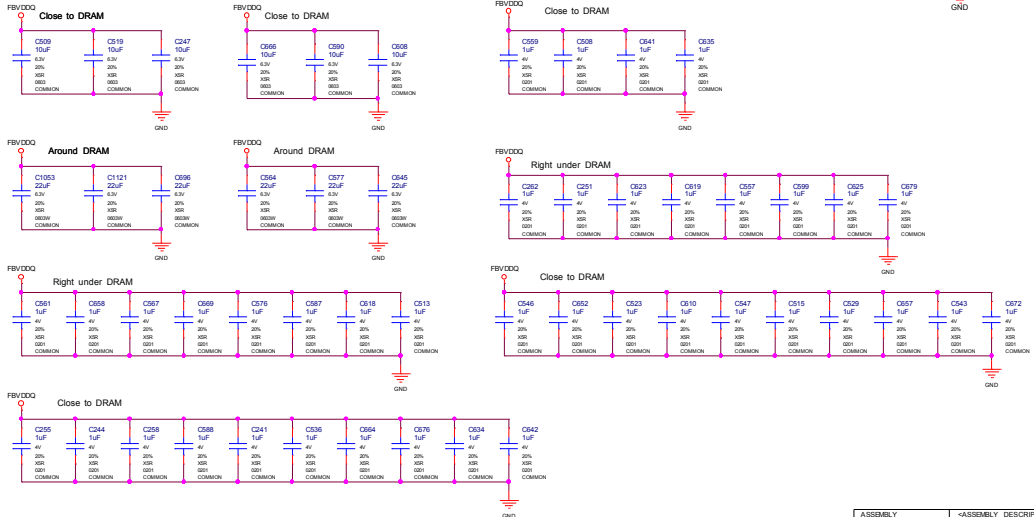
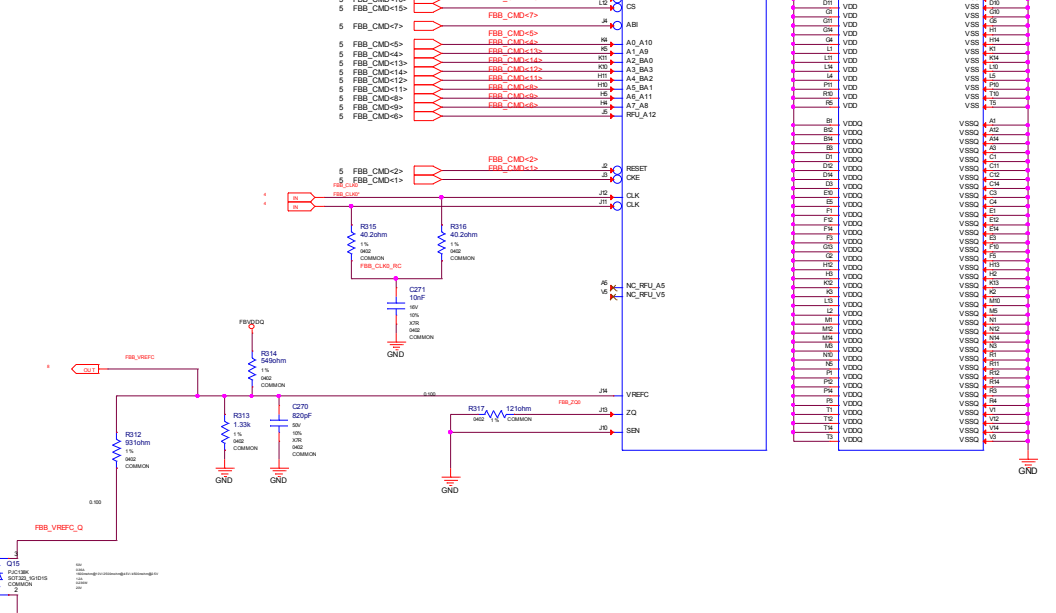
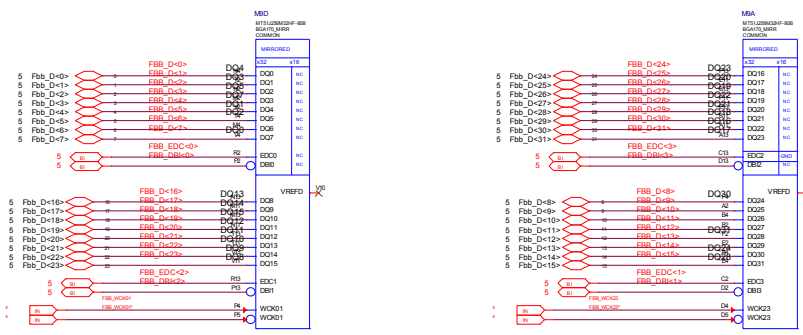
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FRGE DETAIL		MEMORY: FBA(31)E	
NVIDIA CORPORATION		NVIDIA CORPORATION	
2701 SAN TOMAS EXPRESSWAY		2701 SAN TOMAS EXPRESSWAY	
SANTA CLARA, CA 95050, USA		SANTA CLARA, CA 95050, USA	
Nv_PN	600-1G165-BASE-000	PRGE	5 OF 42
PCB REV	PG165-ADD	DATE	14-DEC-2018
BOM REV	01		

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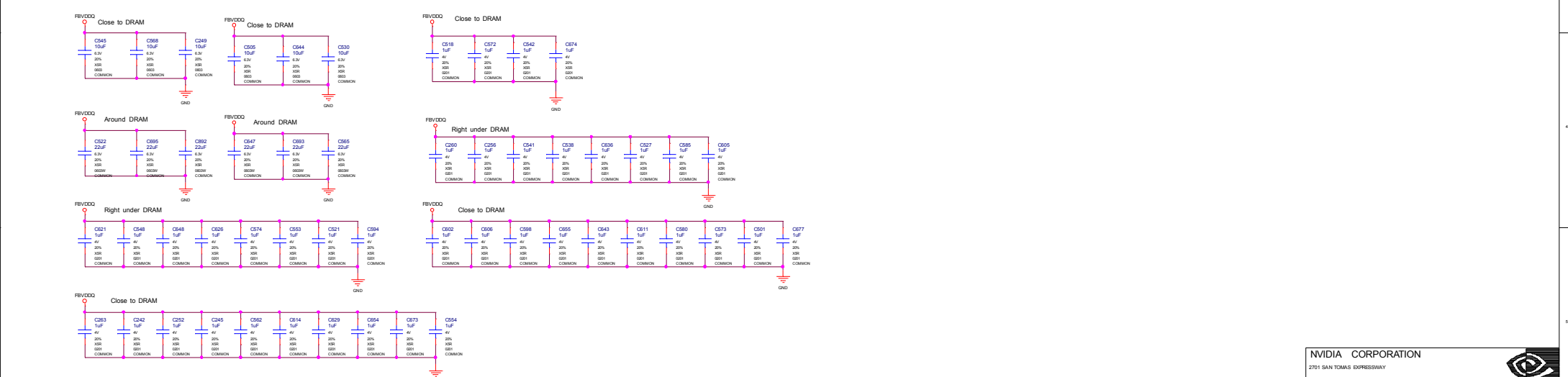
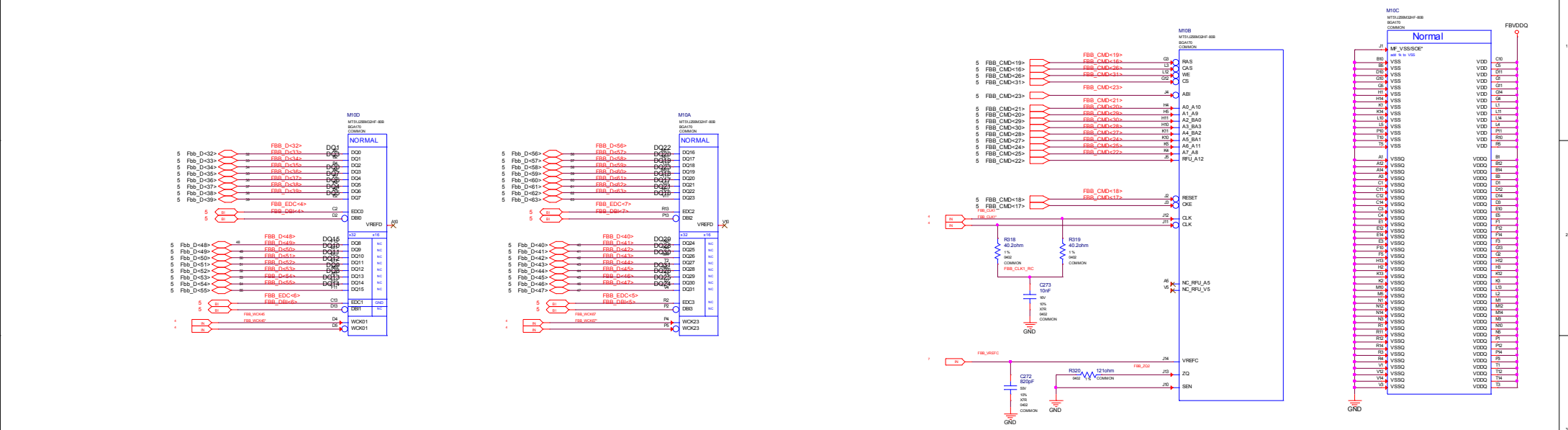


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FRAGE DETAIL		MEMORY: FBA(63..32)	
NV_PN		600-1G165-BASE-000	
PCB REV	B	PG165-A00	FRAGE 8 OF 42
BCM REV	B	DATE	14-DEC-2018

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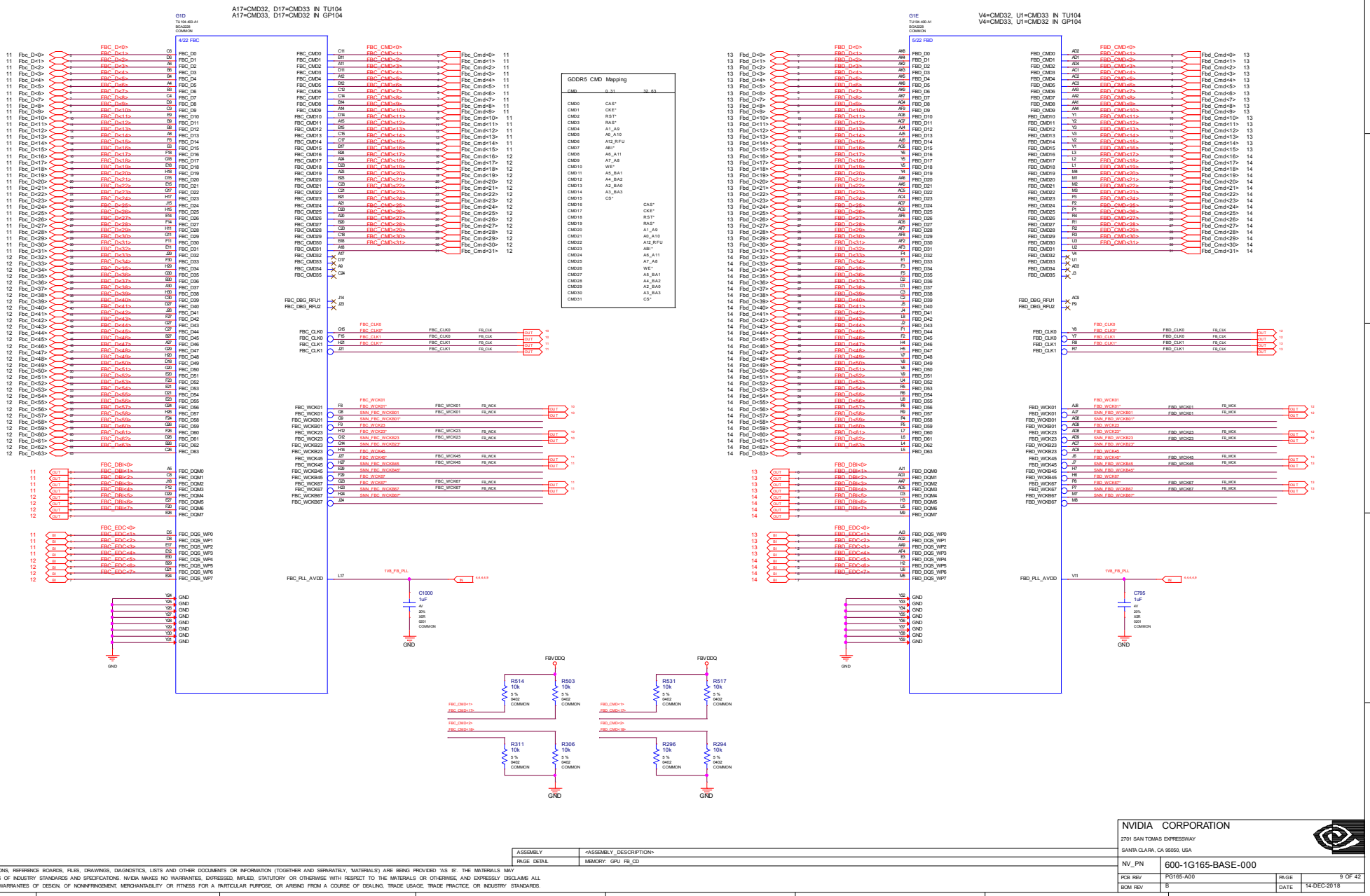
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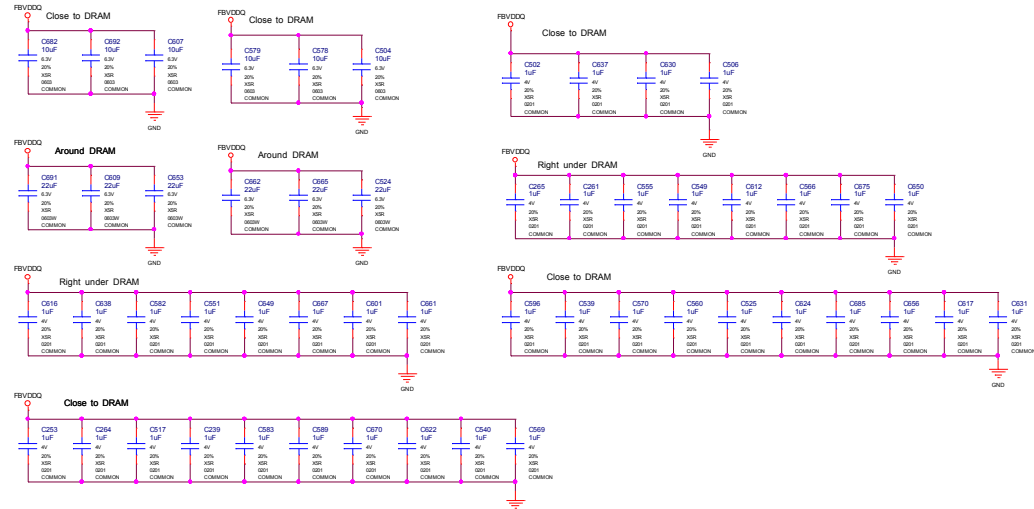
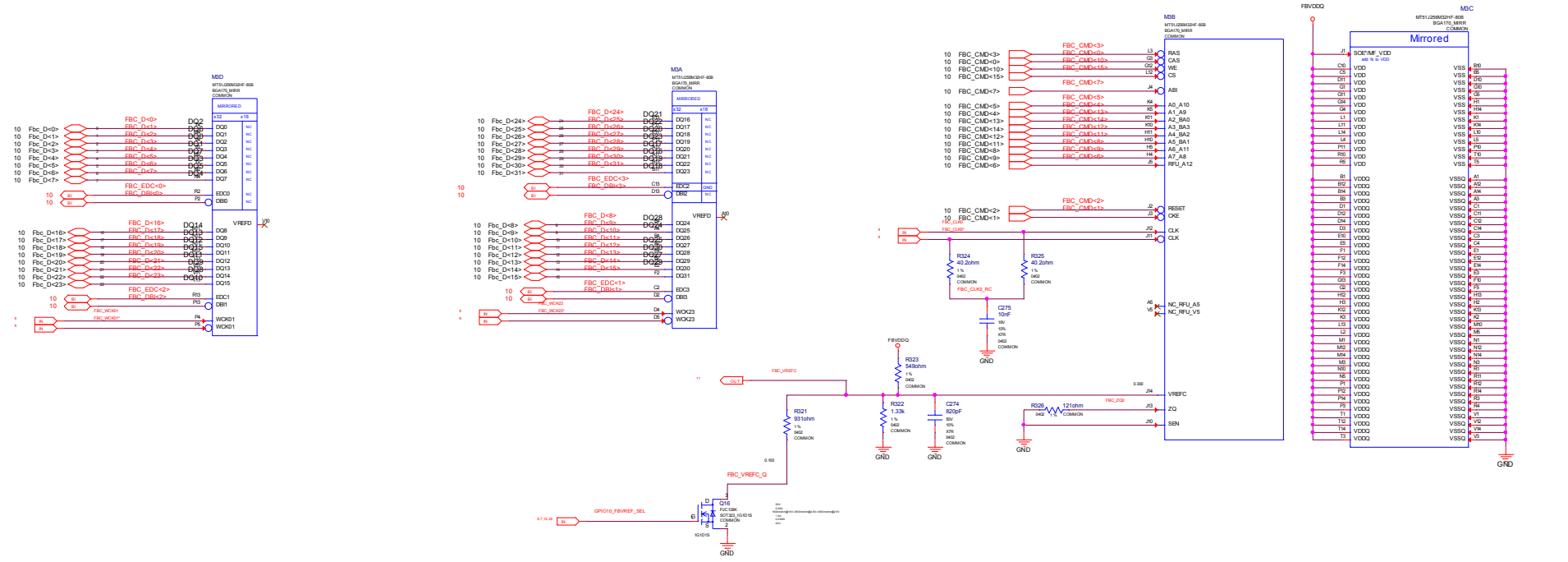


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BCM REV	S		

ASSEMBLY DETAIL: MEMORY: FBB(63..32)

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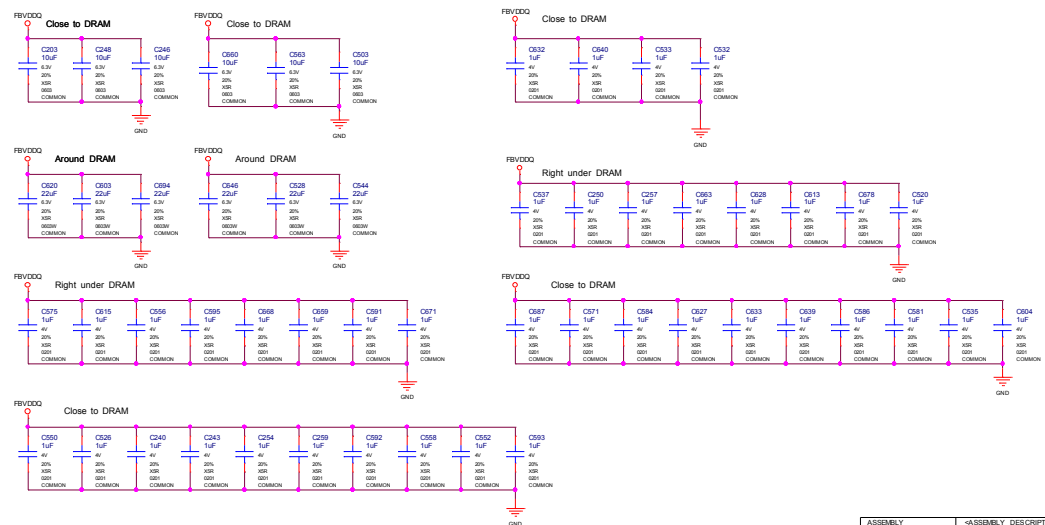
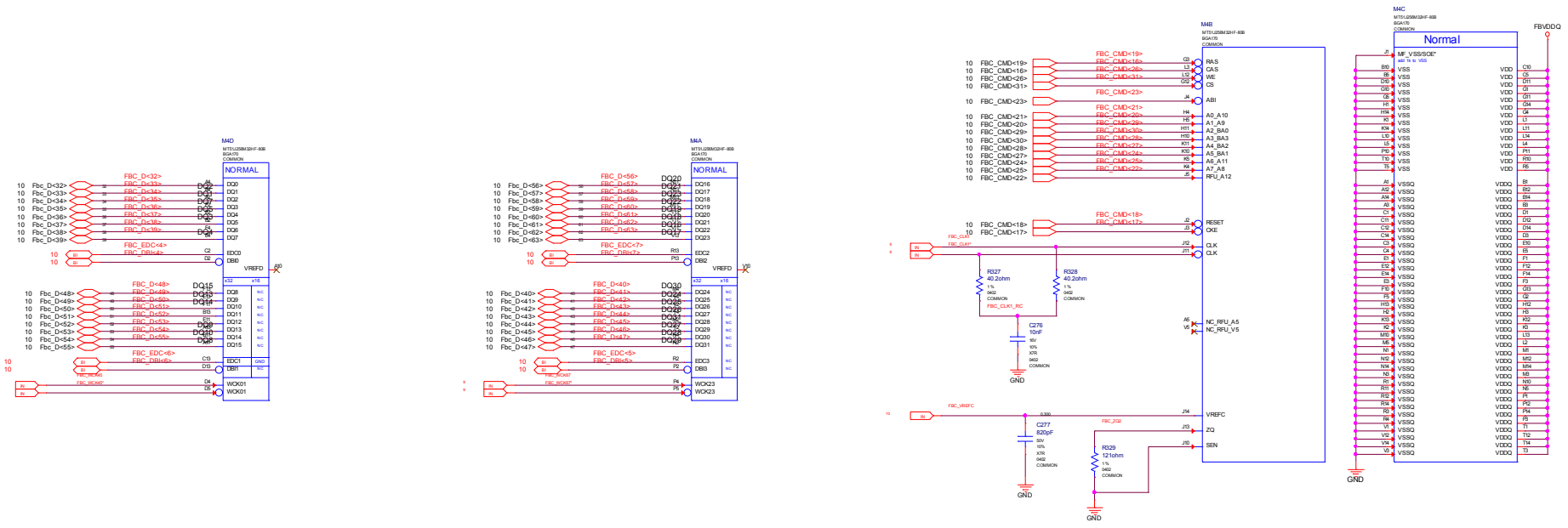
ASSEMBLY	ASSEMBLY DESCRIPTION
FRG DETAIL	MEMORY FRQ31-Q

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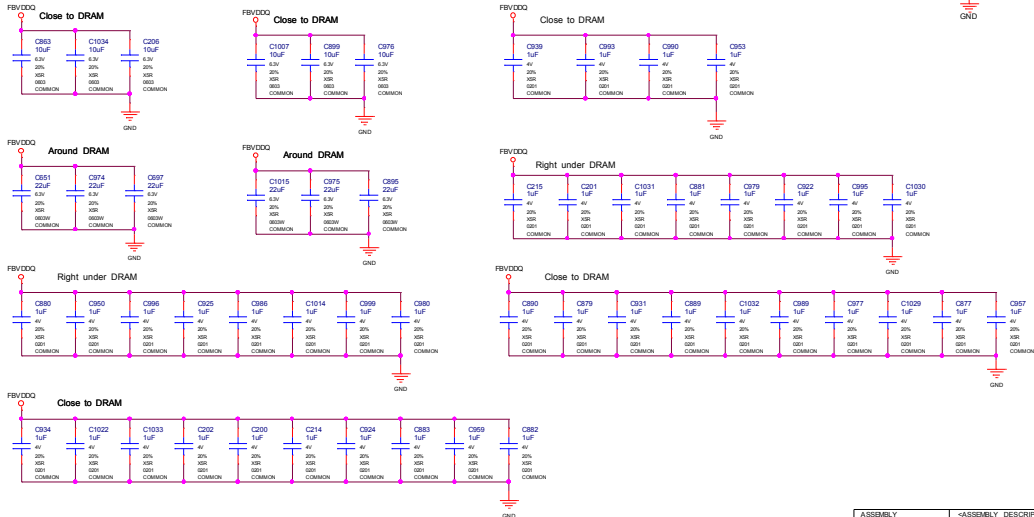
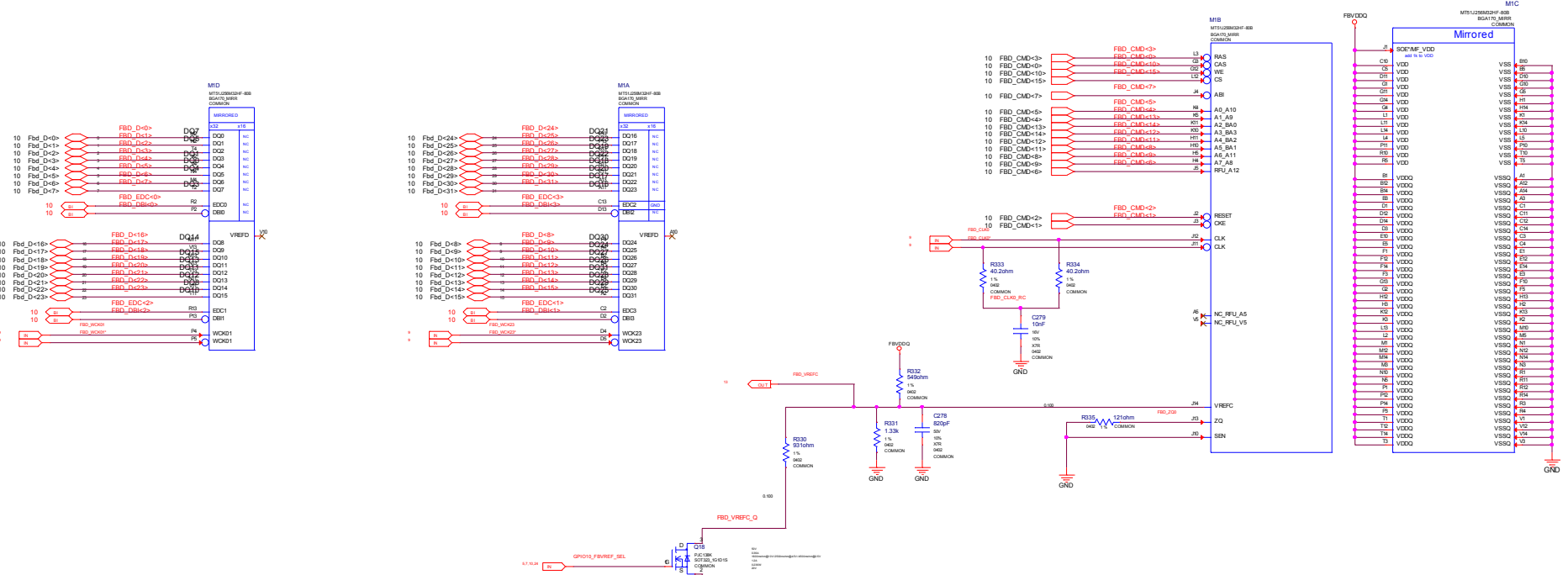
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FRAGE DETAIL	MEMORY FRQ(32)

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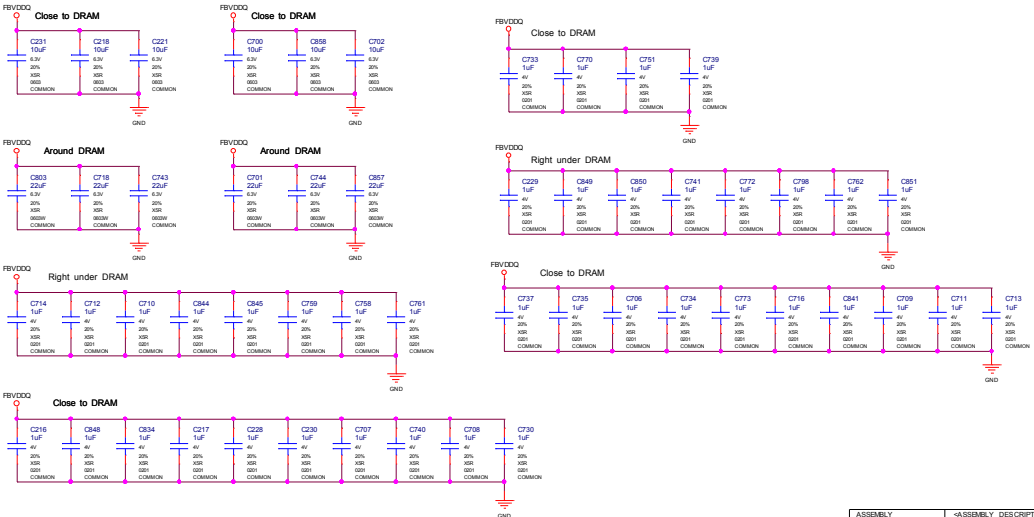
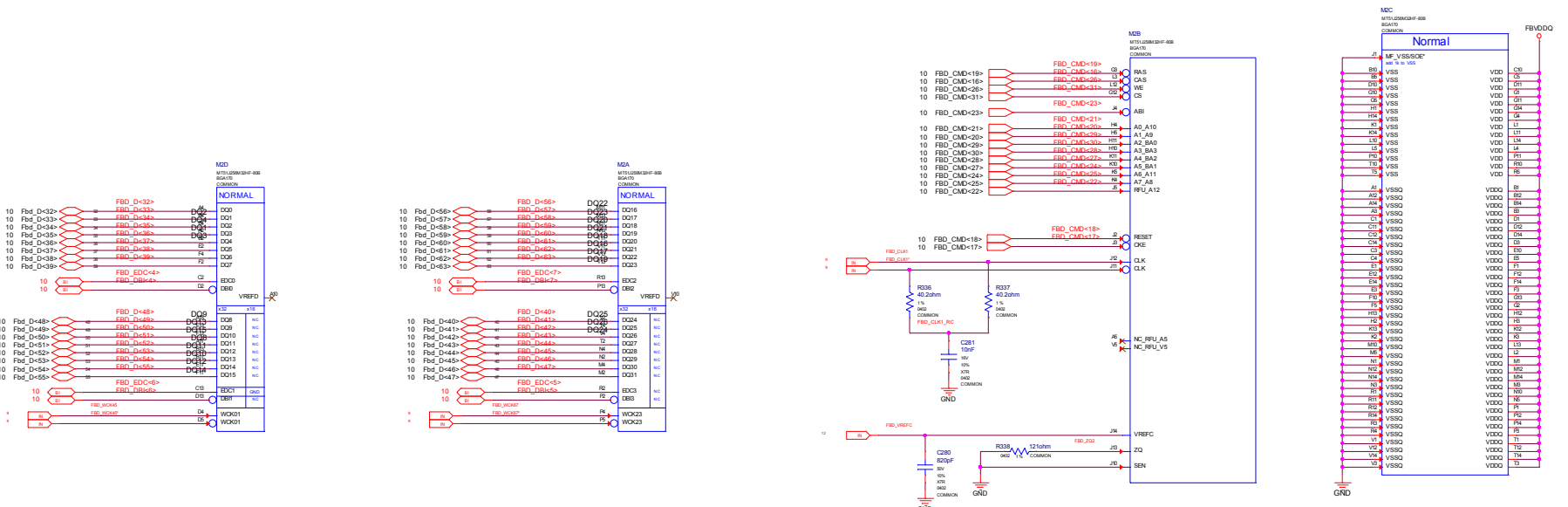


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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PCB REV	MEMORY: FB31[10]
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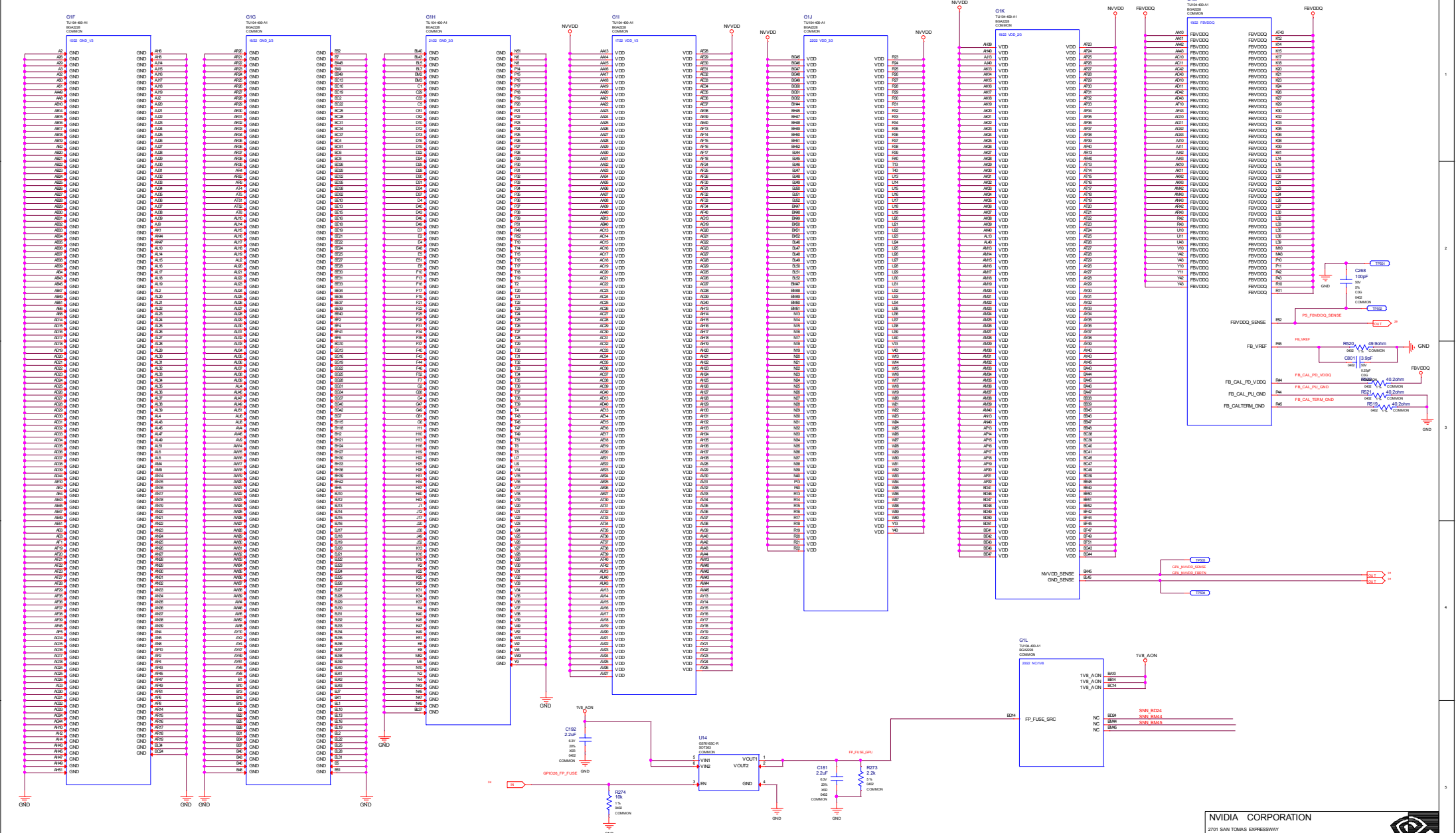


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ASSEMBLY	*ASSEMBLY DESCRIPTION*		
FRG DETAIL	MEMORY FRQ(32)		
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ASSEMBLY <ASSEMBLY_DESCRIPTION>
GPU PWR & GND

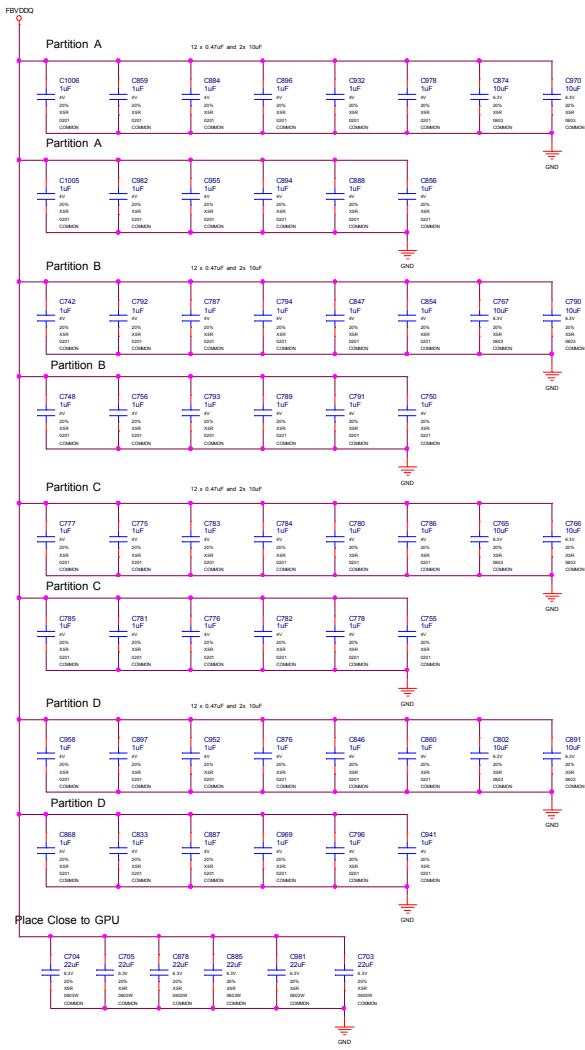
FRAGE DETAIL

NV_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
DATE	14 DEC 2018
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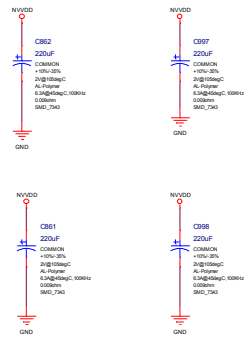
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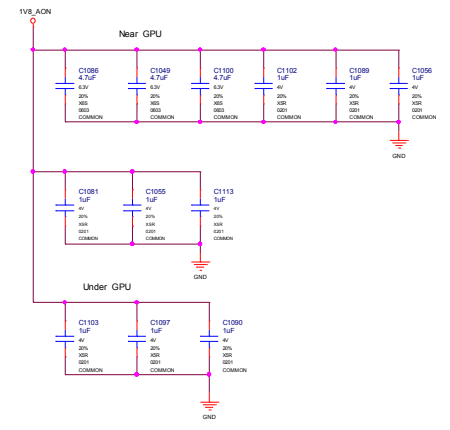
FBVDDQ



NVDD



1V8_AON



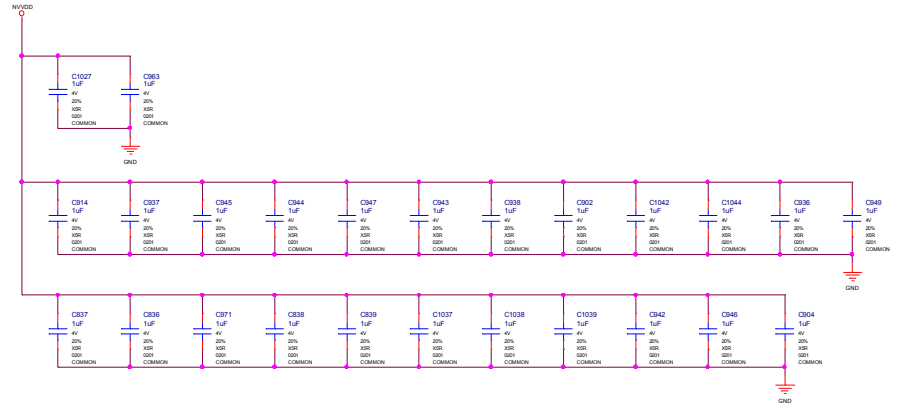
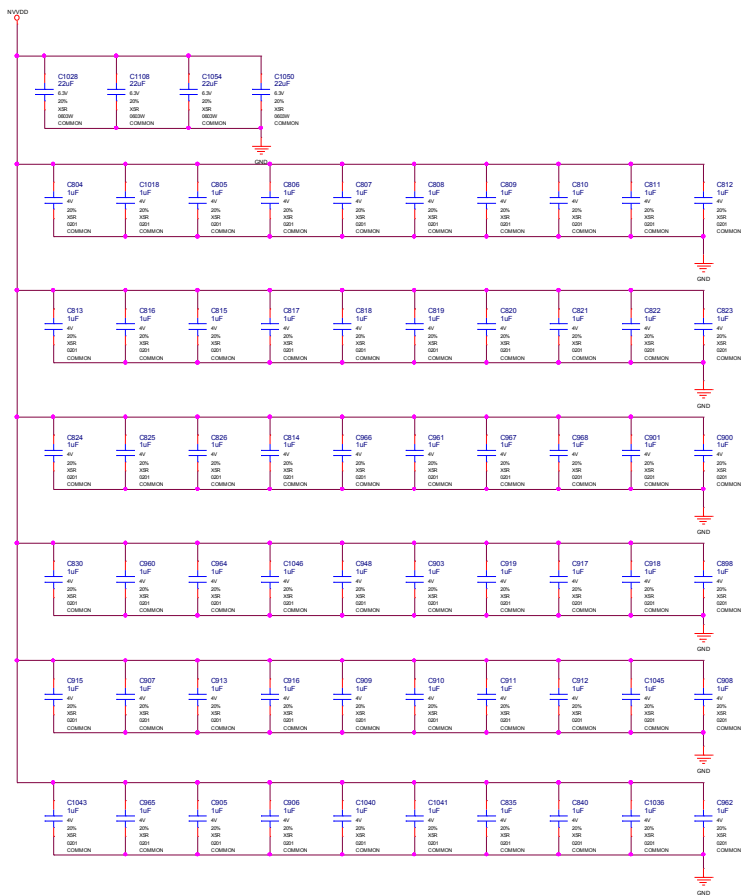
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ASSEMBLY	ASSEMBLY DESCRIPTION
FRGE DETAIL	GPU DECOUPLING 1

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NV_PN	600-1G165-BASE-000	PKG	15 OF 42
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NVDD



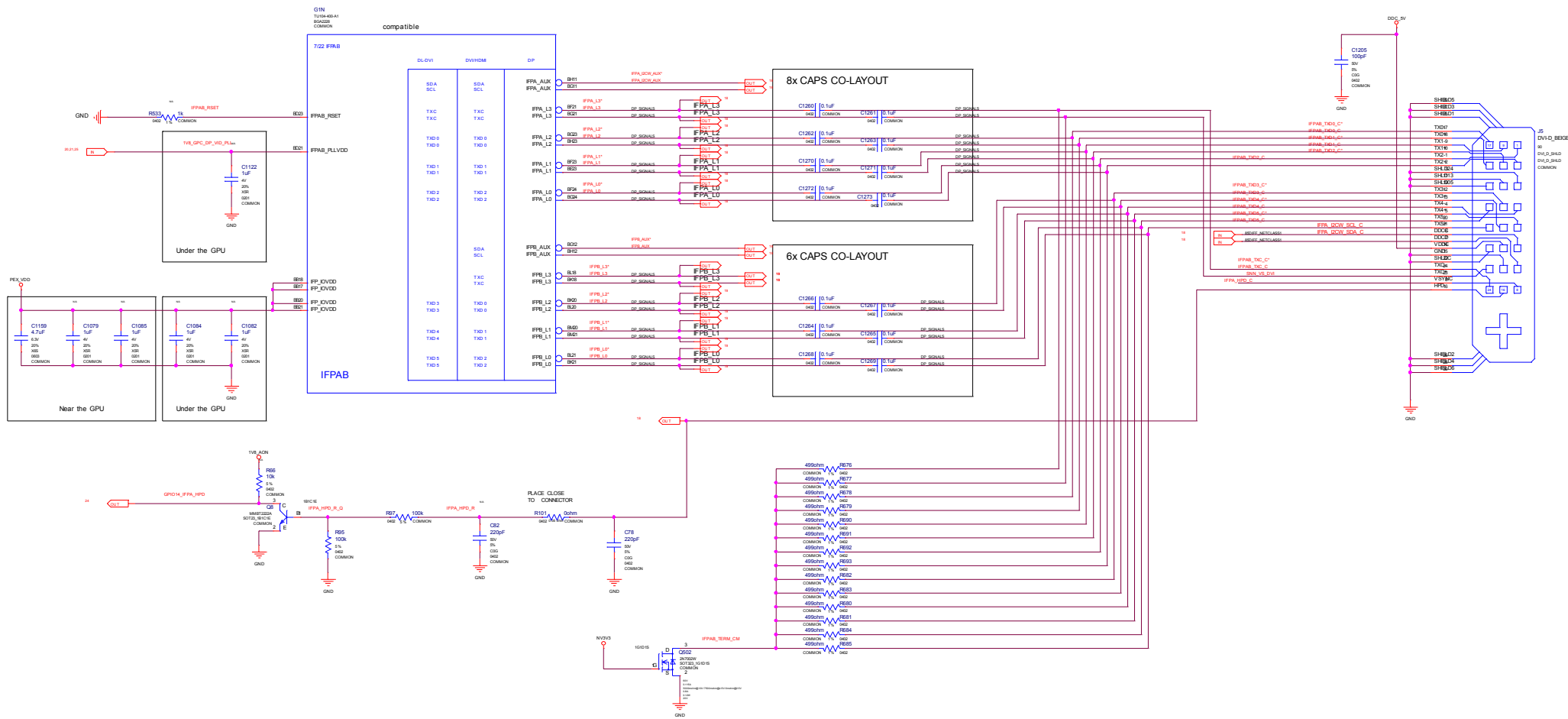
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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
FIGURE DETAIL	GPU DECOUPLING 2

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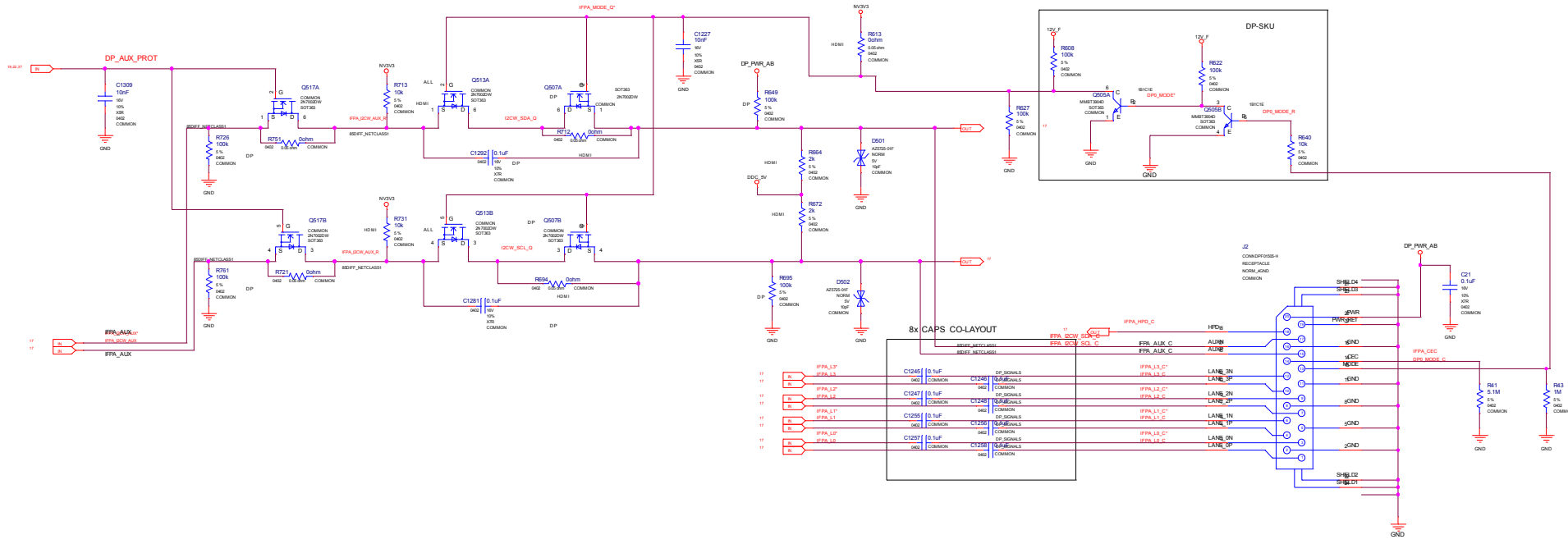
Nv_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
RCM REV	1P1
PRG#	16 OF 42
DATE	14-DEC-2018



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NV_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
DATE	14-DEC-2018
PGE	17 OF 42

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	ID: IFPAB DVI-D-DL




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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
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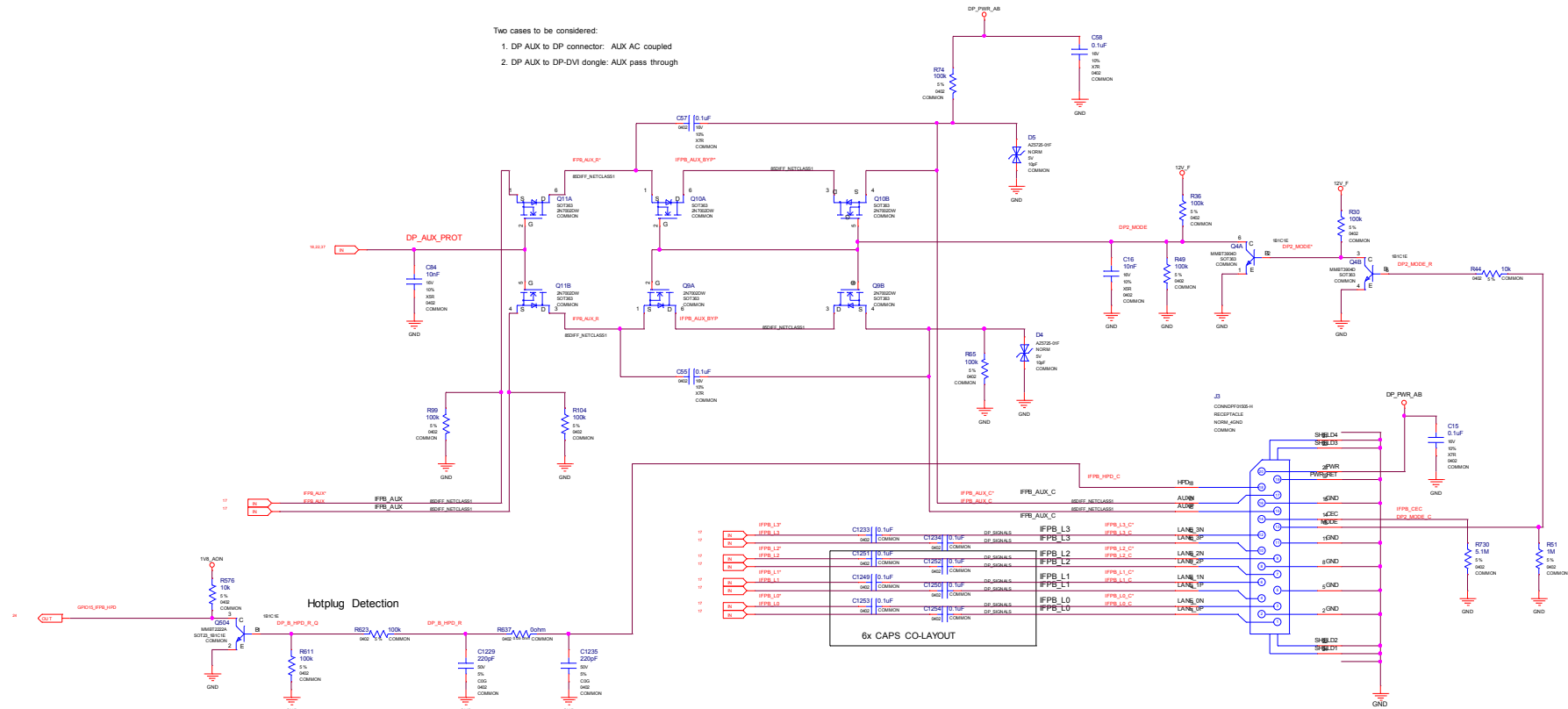
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NV_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
RCM REV	B

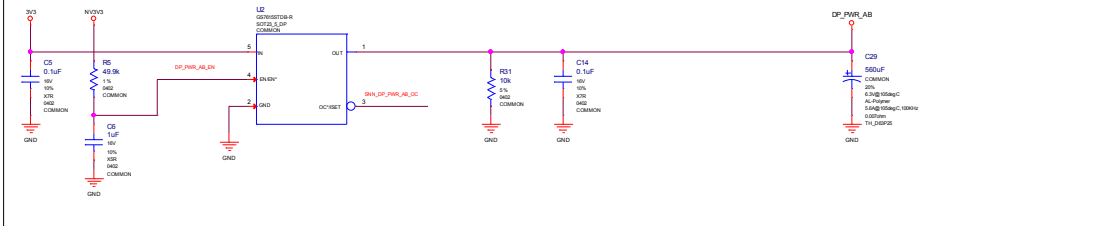
PRG#E	18 OF 42
DATE	14-DEC-2018



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



Fused DP_PWR

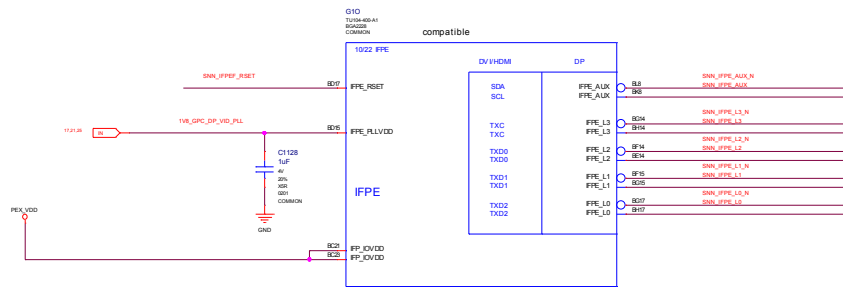
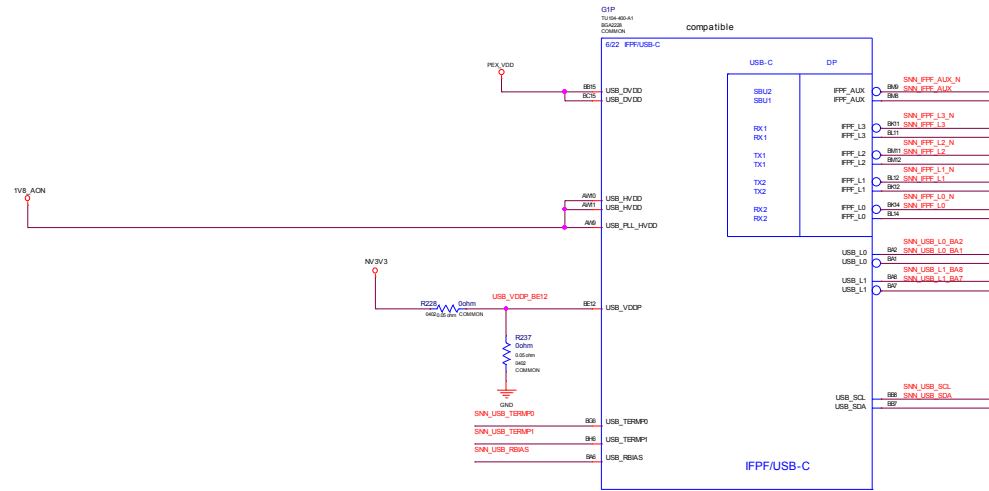


ASSEMBLY	ASSEMBLY DESCRIPTION
FRGE DETAIL	ID: IFPB DP

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NV_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
REV	DATE
	14-DEC-2018

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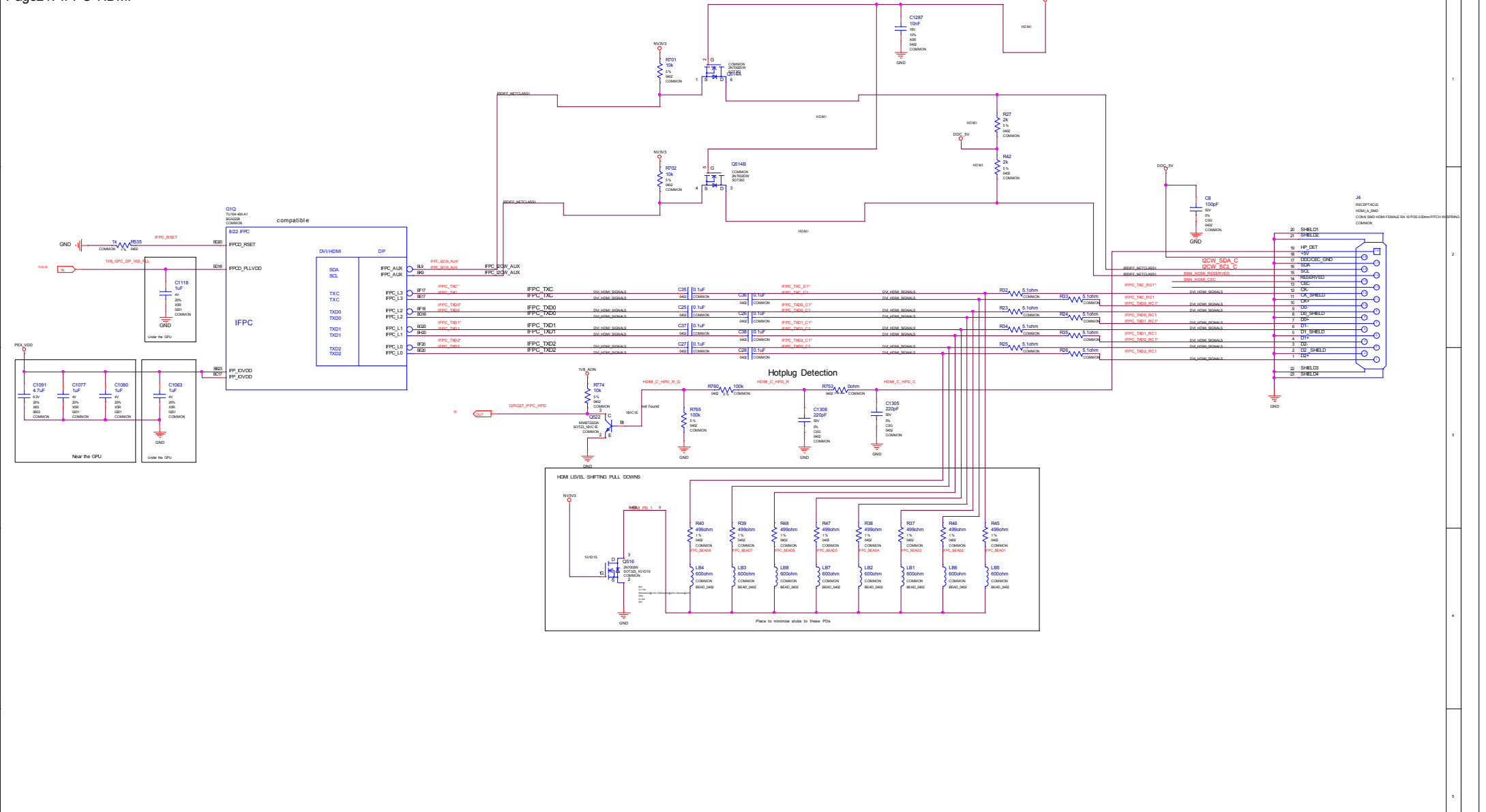
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ASSEMBLY	<ASSEMBLY_DESCRIPTION>		
PCB REV	B	PGE	20 OF 42
DATE			

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ID: IFPE & IFPF NC



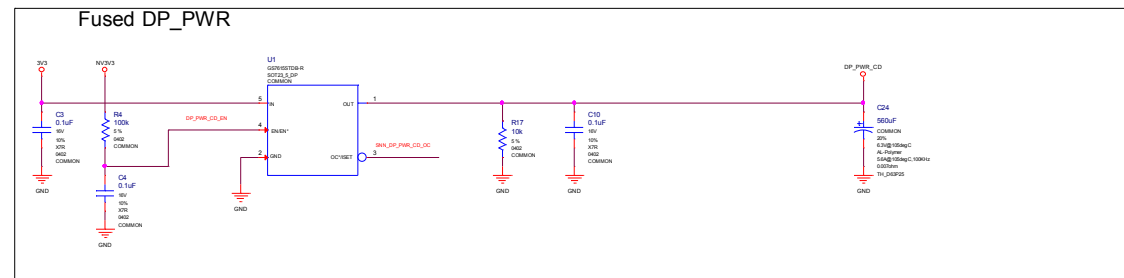
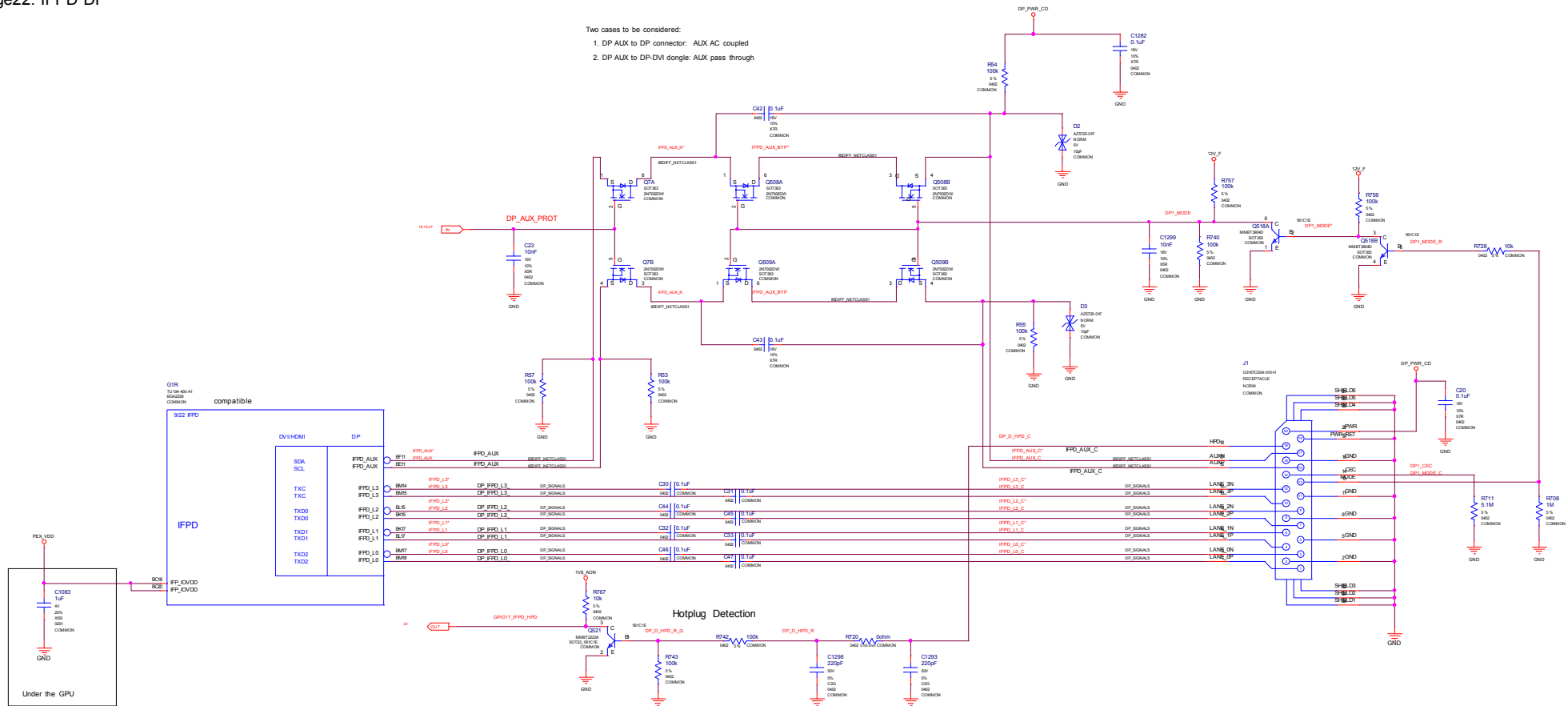
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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IG-IFPC-HDMI

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NV_PN	600-IG165-BASE-000
PCB REV	PG165-A00
ICM REV	B
FRGE	21 OF 42
DATE	14 DEC 2018



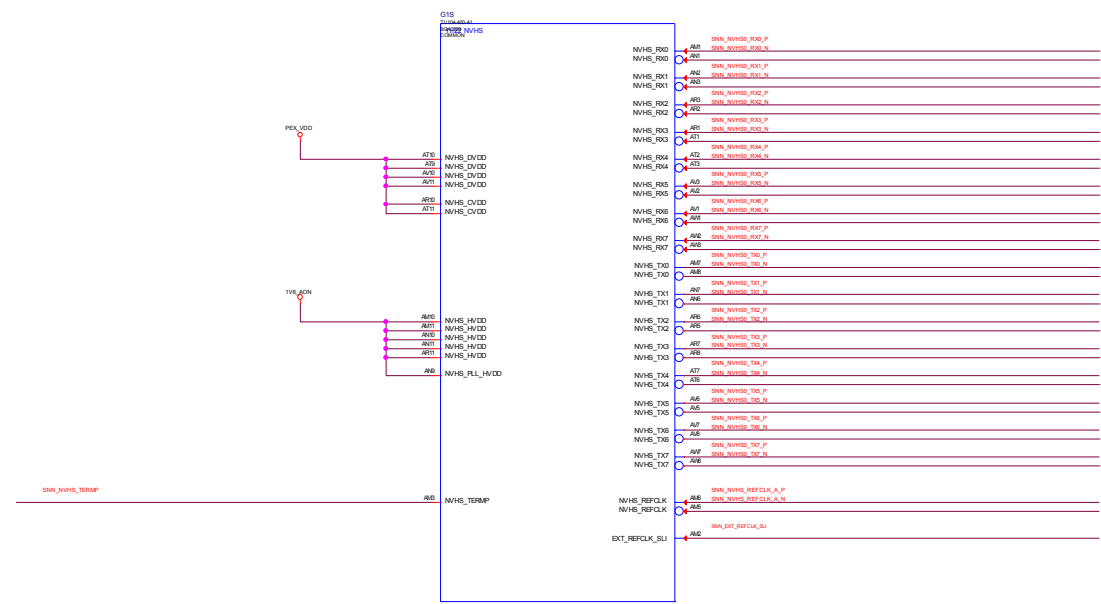
Two cases to be considered:
 1. DP ALIX to DP connector: ALIX AC coupled
 2. DP ALIX to DP-DVI dongle: ALIX pass through




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NV_PN	600-1G165-BASE-000	FR/GE	22 OF 42
PCB REV	PG165-A00	DATE	14-DEC-2018
BCW REV	B		

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ASSEMBLY	ASSEMBLY DESCRIPTION
FRGE DETAIL	ID: IFPD DP



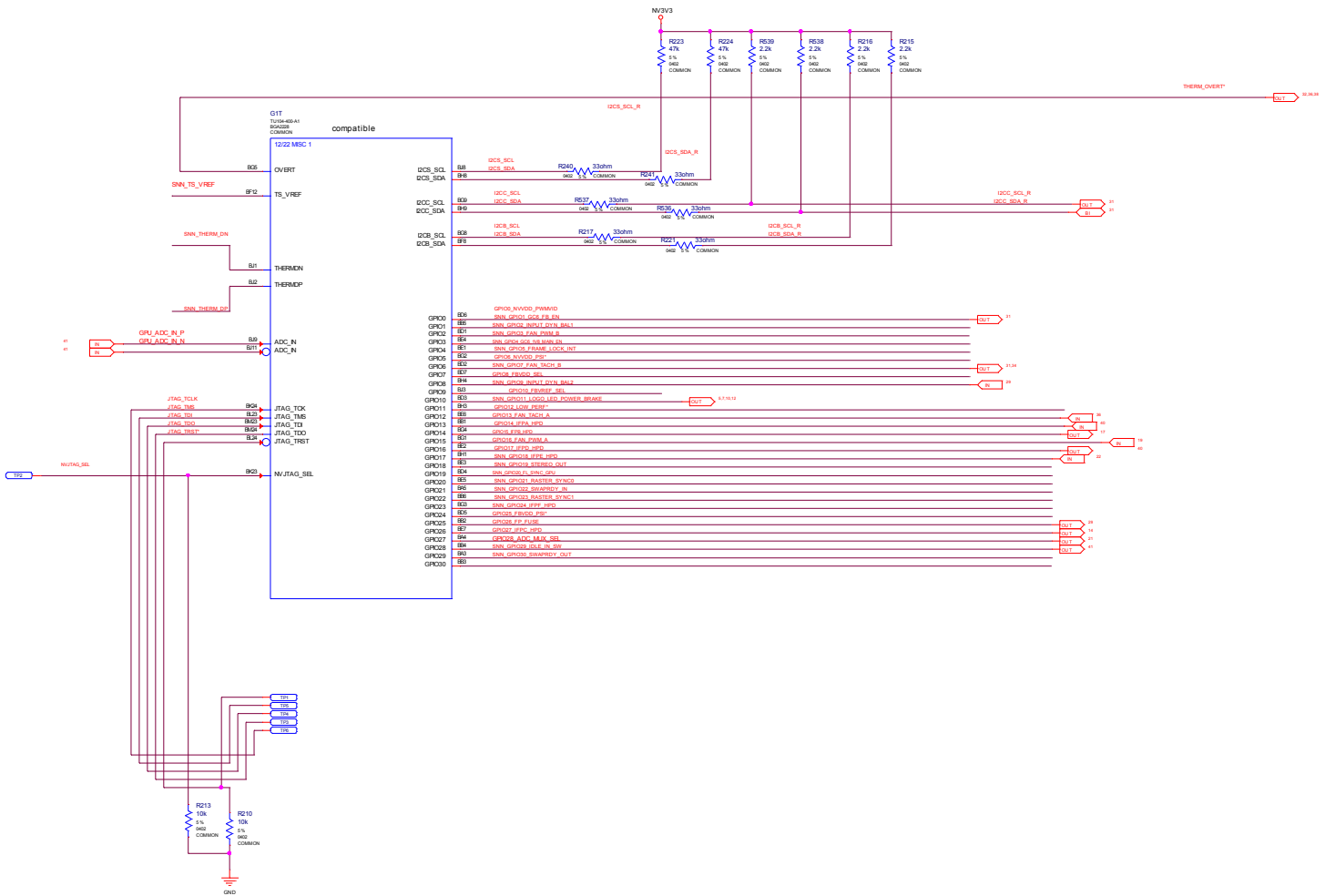
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ASSEMBLY	ASSEMBLY DESCRIPTION
PAGE DETAIL	ID: NVHS INTERFACE AND FRAME LOCK

NV_PN	600-1G165-BASE-000		
PCB REV	PG165-ADD	PRGE	23 OF 42
RCM REV	B	DATE	14 DEC 2018

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STRAP2	STRAP1	STRAP0	RAMCFG[4:0]
L	L	L	0000
L	L	H	0001
L	H	L	0010
L	H	H	0011
H	H	L	00110
H	H	H	00111
L	L	M	01000

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	0000	Samsung 8Gb 256Mx32 K4G80325FC-HC25
L	L	H	0001	Micron 8Gb 256Mx32 MT51J256M32HF-80:B
L	H	L	0010	Hynix 8Gb 256Mx32 H5G8H24AJR-R2C
L	H	H	0011	Hynix 8Gb 256Mx32 H5G8H24MJR-R4C
H	H	L	0110	
H	H	H	0111	
L	L	M	1000	
L	M	L	1001	

ROM_SO	ROM_SI	ROM_SCLK	DUMMY[2:0].FS_OVERT	1:ENABLE 0:DISABLE	DEFAULT
L	L	L	XXX1	FS_OVERT ENABLE	
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	L	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
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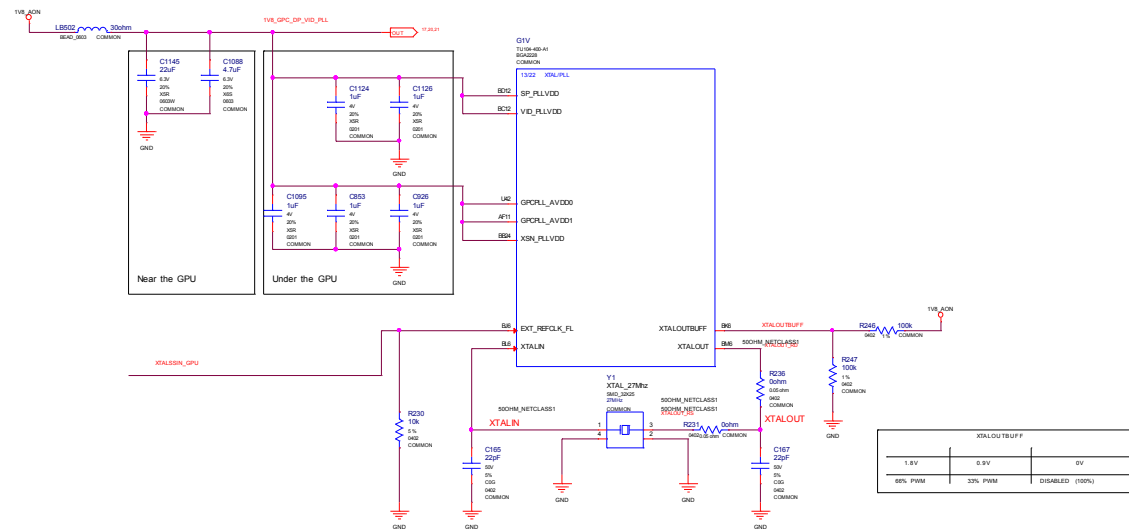
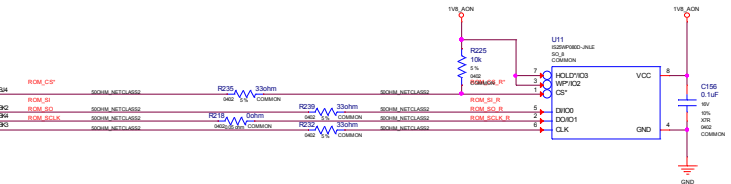
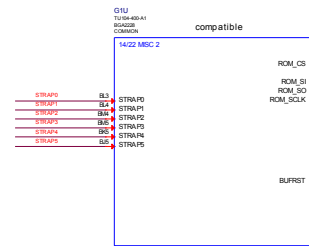
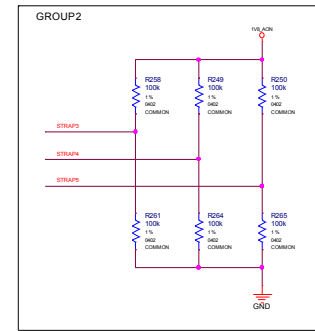
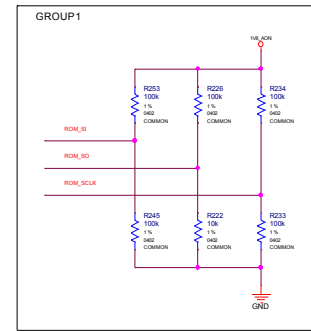
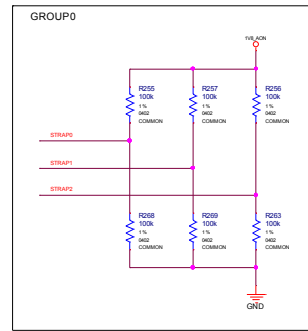
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M=Middle:Tied to 0.9V
L=Low :Tied to 0V

1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

1:PCIE_CFG LOW POWER
0:PCIE_CFG HIGH POWER

1:DEVID_SEL REBRAND
0:DEVID_SEL ORIGINAL

1:VGA_DEVICE ENABLE
0:VGA_DEVICE DISABLE



XTALOUTBUFF		
1.8V	0.9V	0V
80% PWM	33% PWM	DISABLED (100%)

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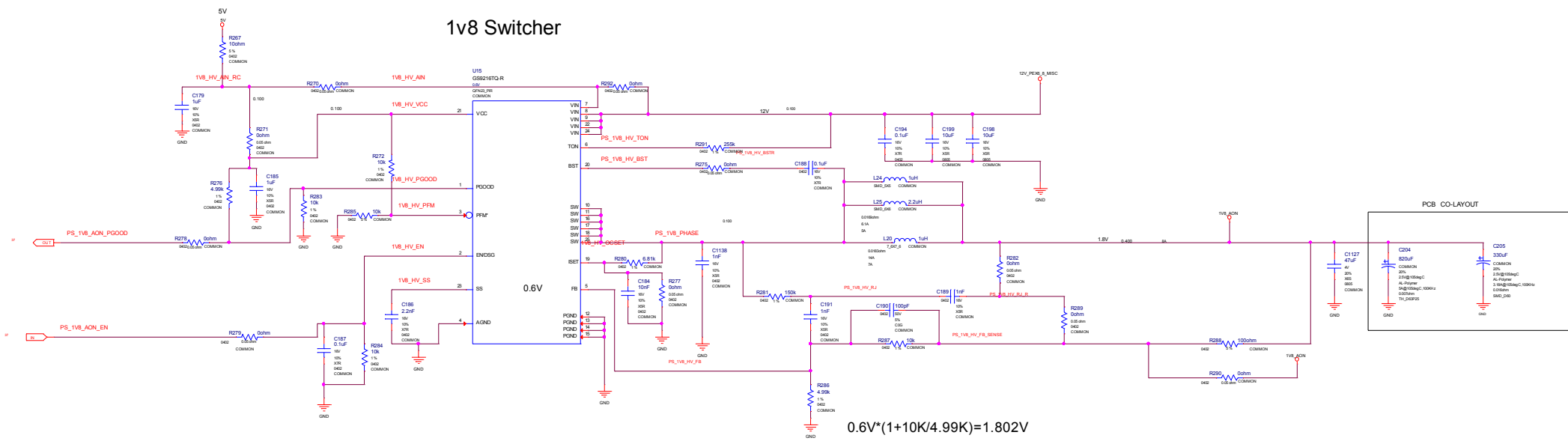


NV_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
BCM REV	B
FRGE	25 OF 42
DATE	14 DEC 2018

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
FRGE DETAIL	MISC2: ROM_XTAL_STRAPS

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1v8 Switcher



$0.6V * (1 + 10K / 4.99K) = 1.802V$

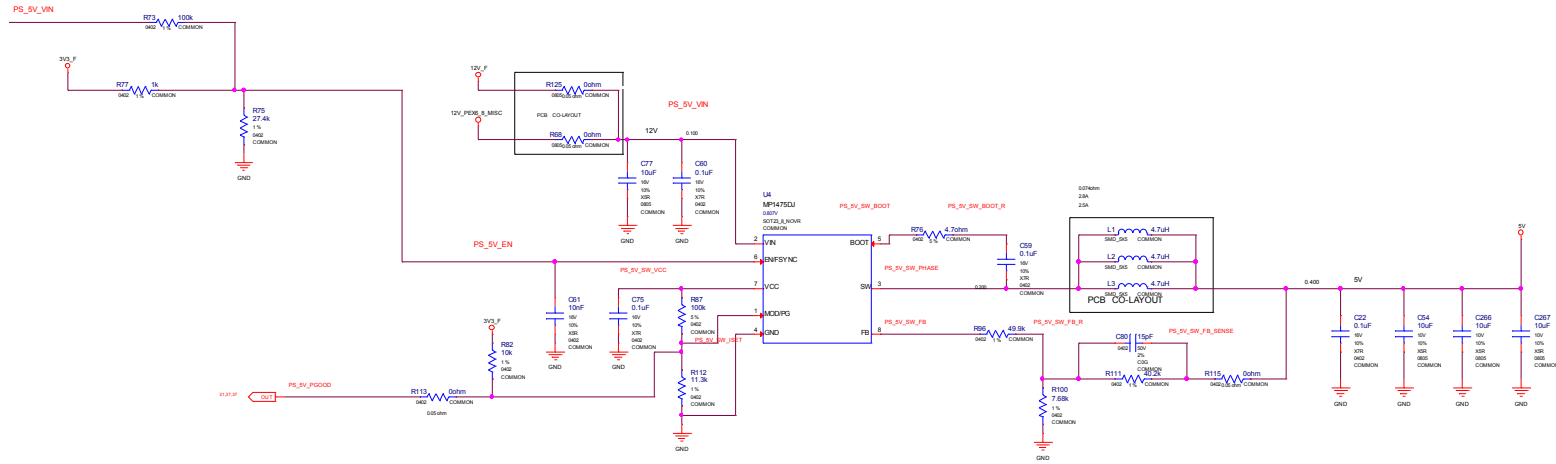
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ASSEMBLY	"ASSEMBLY DESCRIPTION"
PCB DETAIL	PS: 1V8_AON

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NV_PN	600-1G165-BASE-000	PKG#	28 OF 42
PCB REV	PG165-A00	DATE	14-DEC-2018
BCM REV	B		



$$0.8V * (1 + 40.2K / 7.68K) = 4.9875V$$

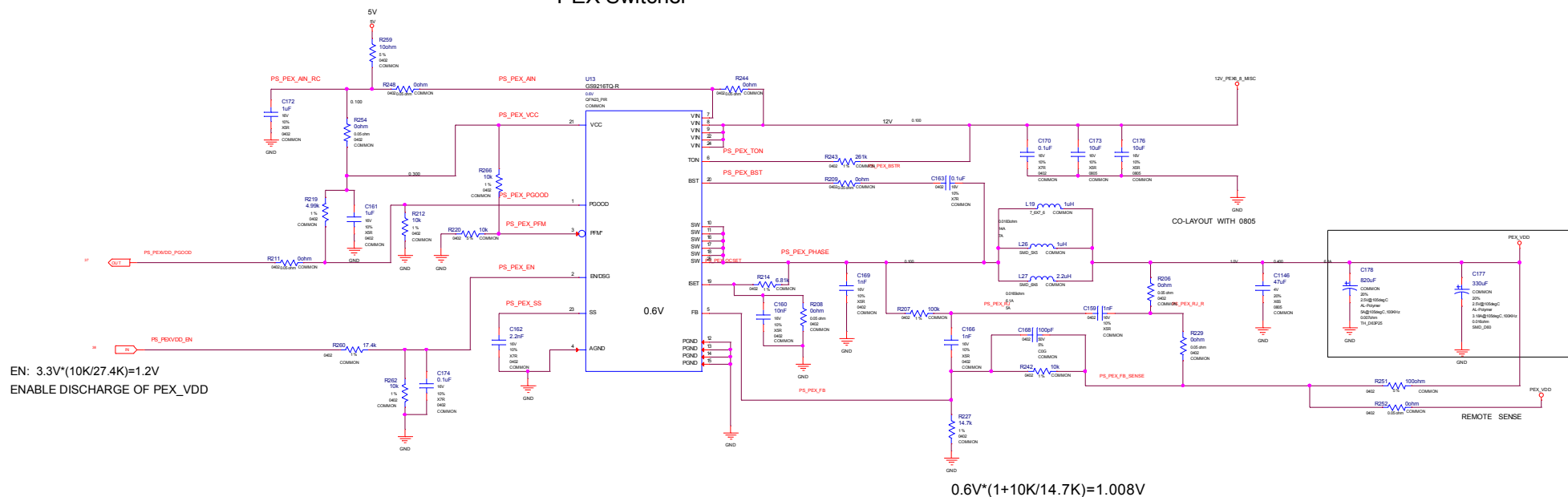
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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PCB DETAIL	PS_5V

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NV_PN	600-1G165-BASE-000	PG#E	27 OF 42
PCB REV	PG165-ADD	DATE	14-DEC-2018
BOM REV	B		



PEX Switcher



EN: $3.3V \cdot (10K/27.4K) = 1.2V$
 ENABLE DISCHARGE OF PEX_VDD

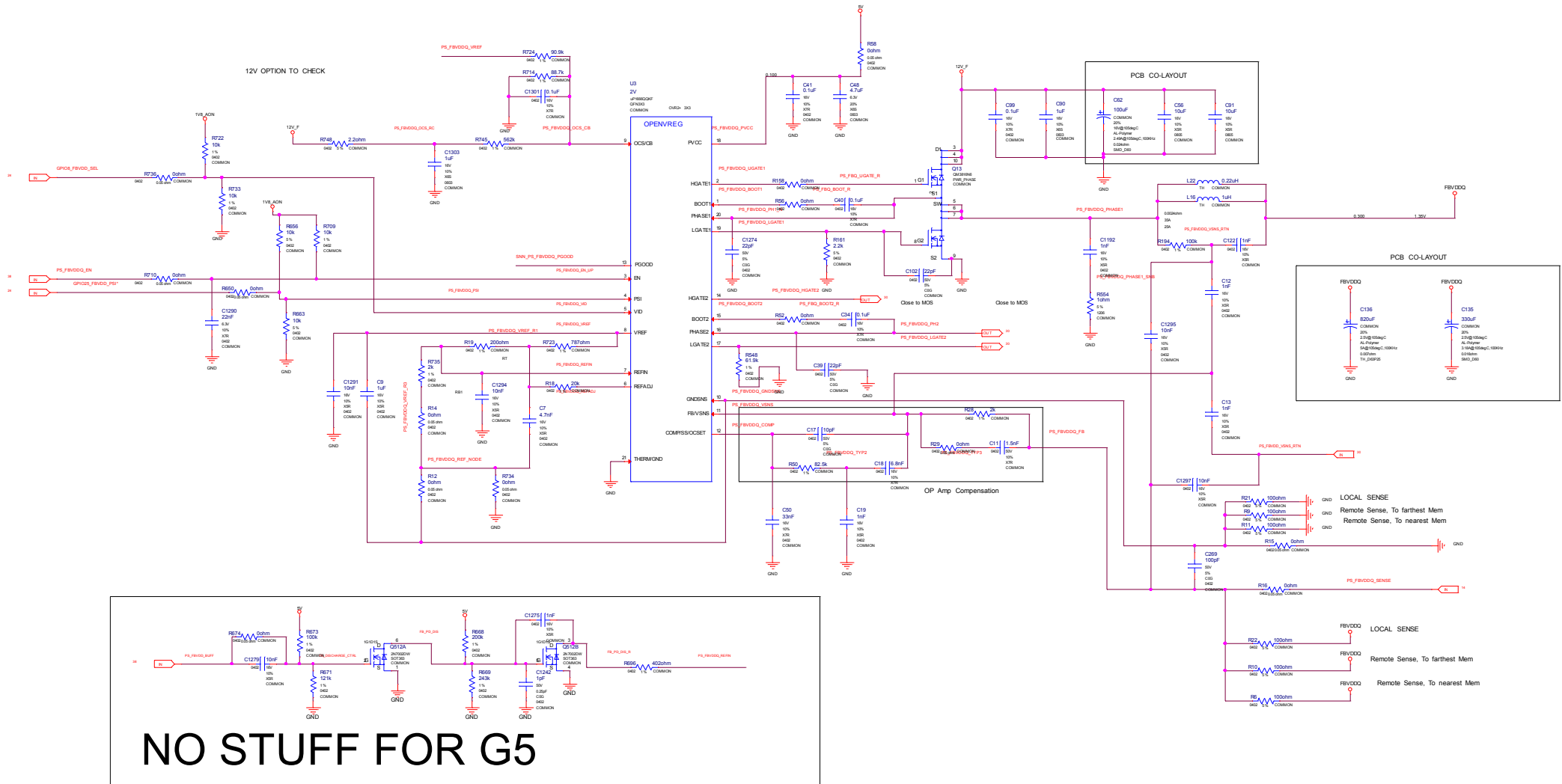
$0.6V \cdot (1 + 10K/14.7K) = 1.008V$

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NV_PN	600-1G165-BASE-000		
PCB REV	PG165-ADD	PRGE	28 OF 42
BCM REV	B	DATE	14 DEC 2018

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS_PEXVDD



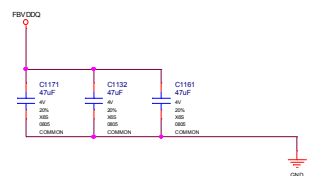
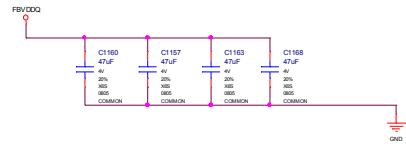
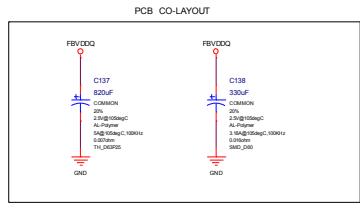
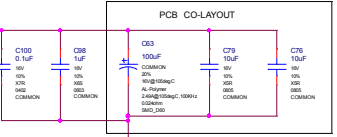
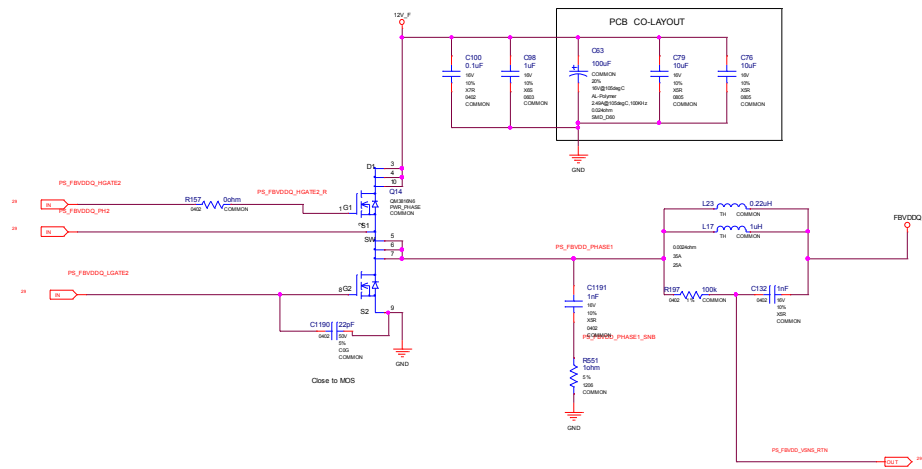


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ASSEMBLY	<ASSEMBLY_DESCRIPTION>	NV_PN	600-1G165-BASE-000
PAGE DETAIL	PS_FBVDDQ	PCB REV	PG165-ADD
		BCM REV	B
		FRGE	29 OF 42
		DATE	14 DEC 2018

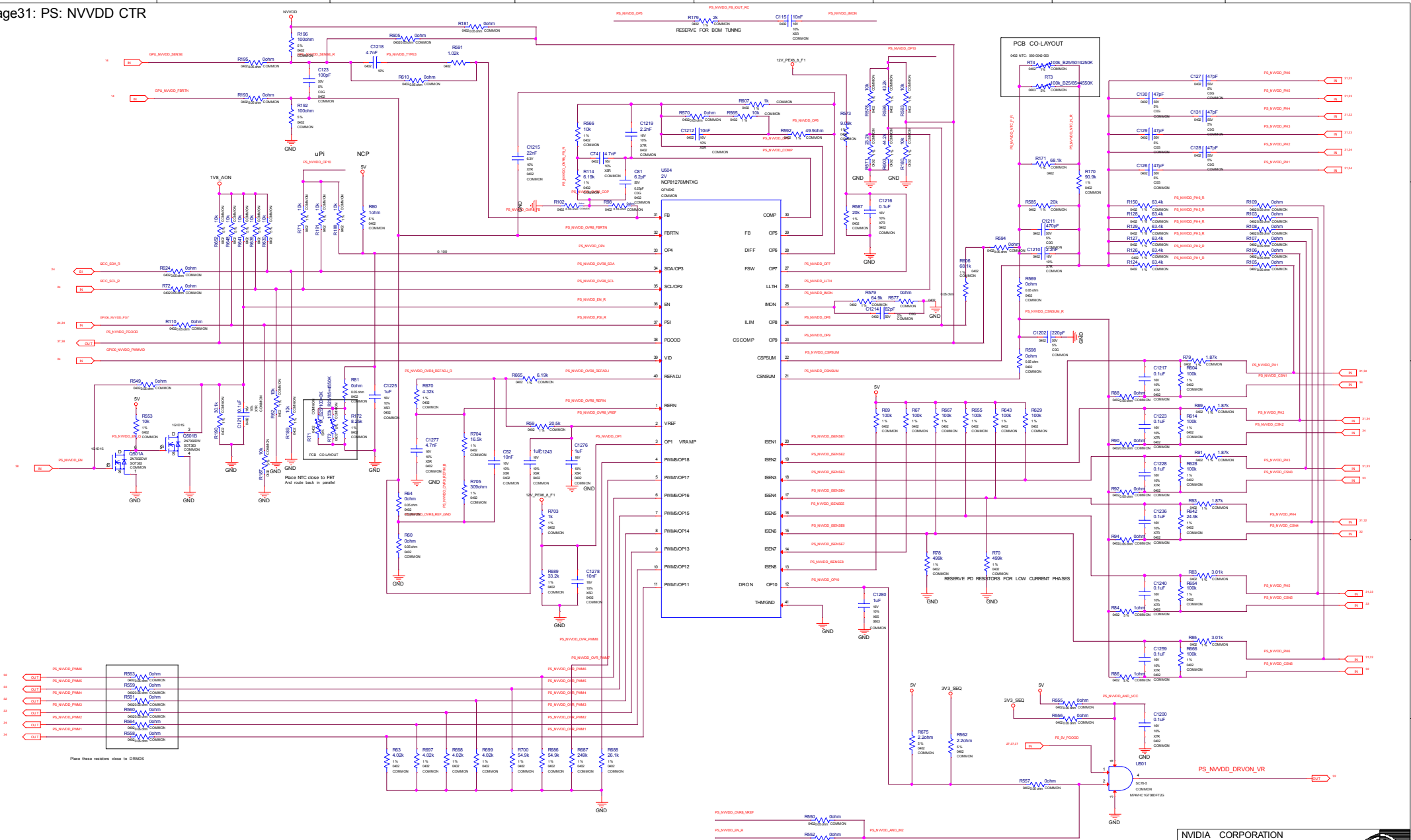
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ASSEMBLY	ASSEMBLY DESCRIPTION
FRGE DETAIL	PS: FBVDDQ PH2


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NV_PN	600-1G165-BASE-000	FRGE	30 OF 42
PCB REV	PG165-A00	DATE	14-DEC-2018
BCW REV	B		



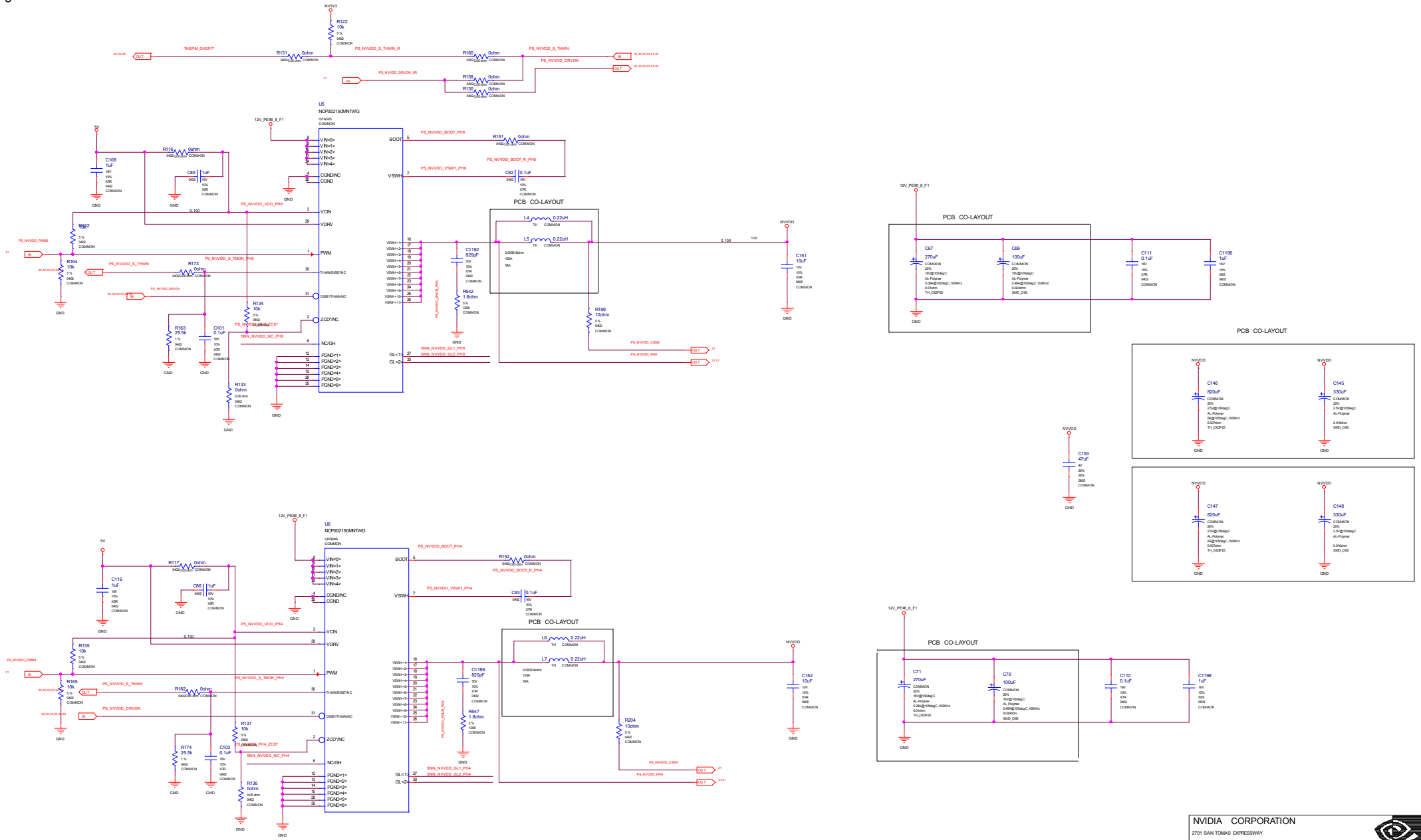
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ASSEMBLY	*ASSEMBLY DESCRIPTION*
PAGE DETAIL	PS: NVVDD Controller

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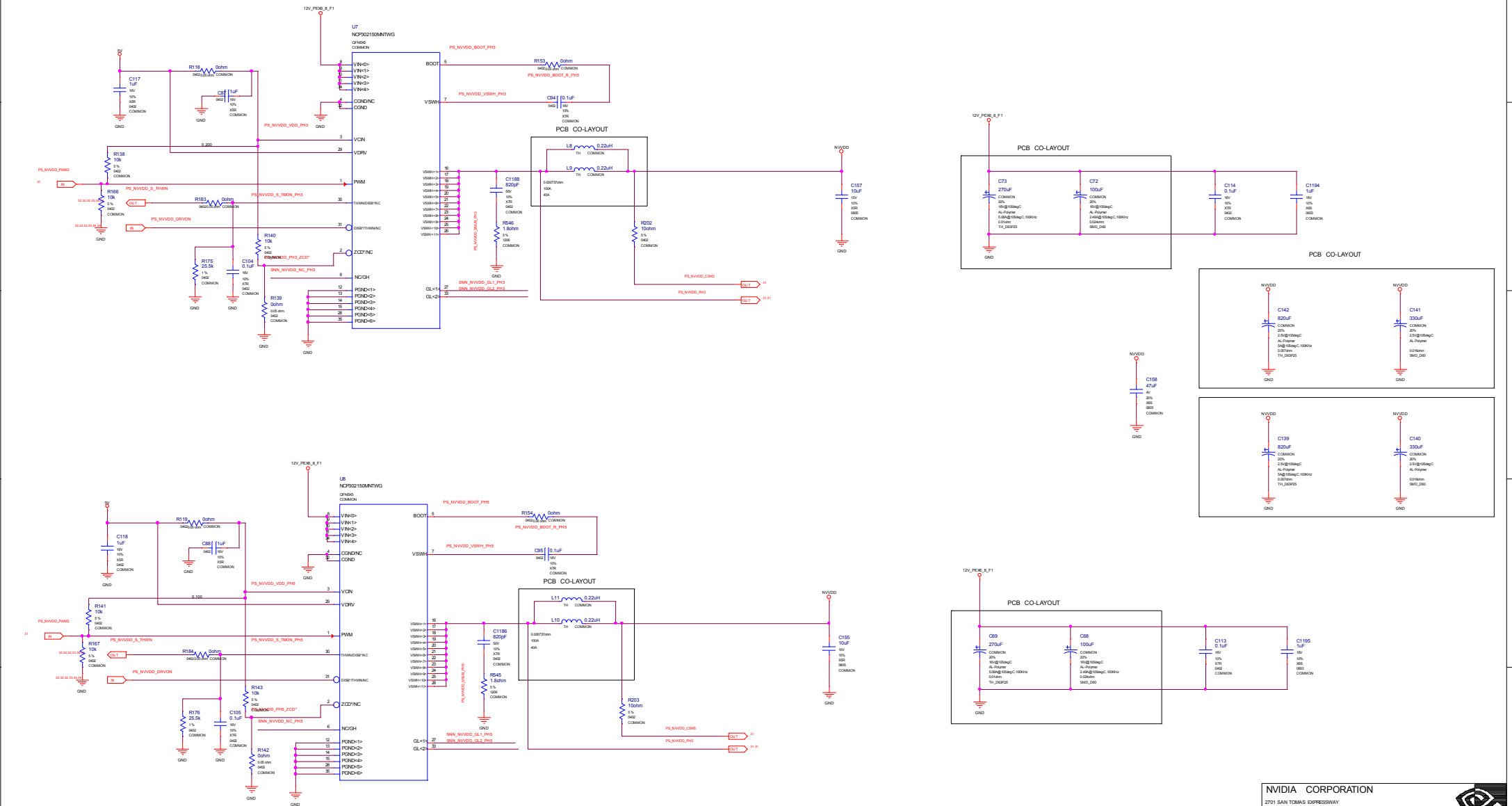
NV_PN	600-1G165-BASE-000
PCB REV	PG165-A00
BOM REV	B
FRG#	31 OF 42
DATE	14-DEC-2018



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>	NVIDIA CORPORATION	
PAGE	DETAIL	7701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA	
PCB REV	B	NV_PN	600-1G165-BASE-000
BCM REV	B	PG165-ADD	
		DATE	14 DEC 2018
		PRGE	32 OF 42





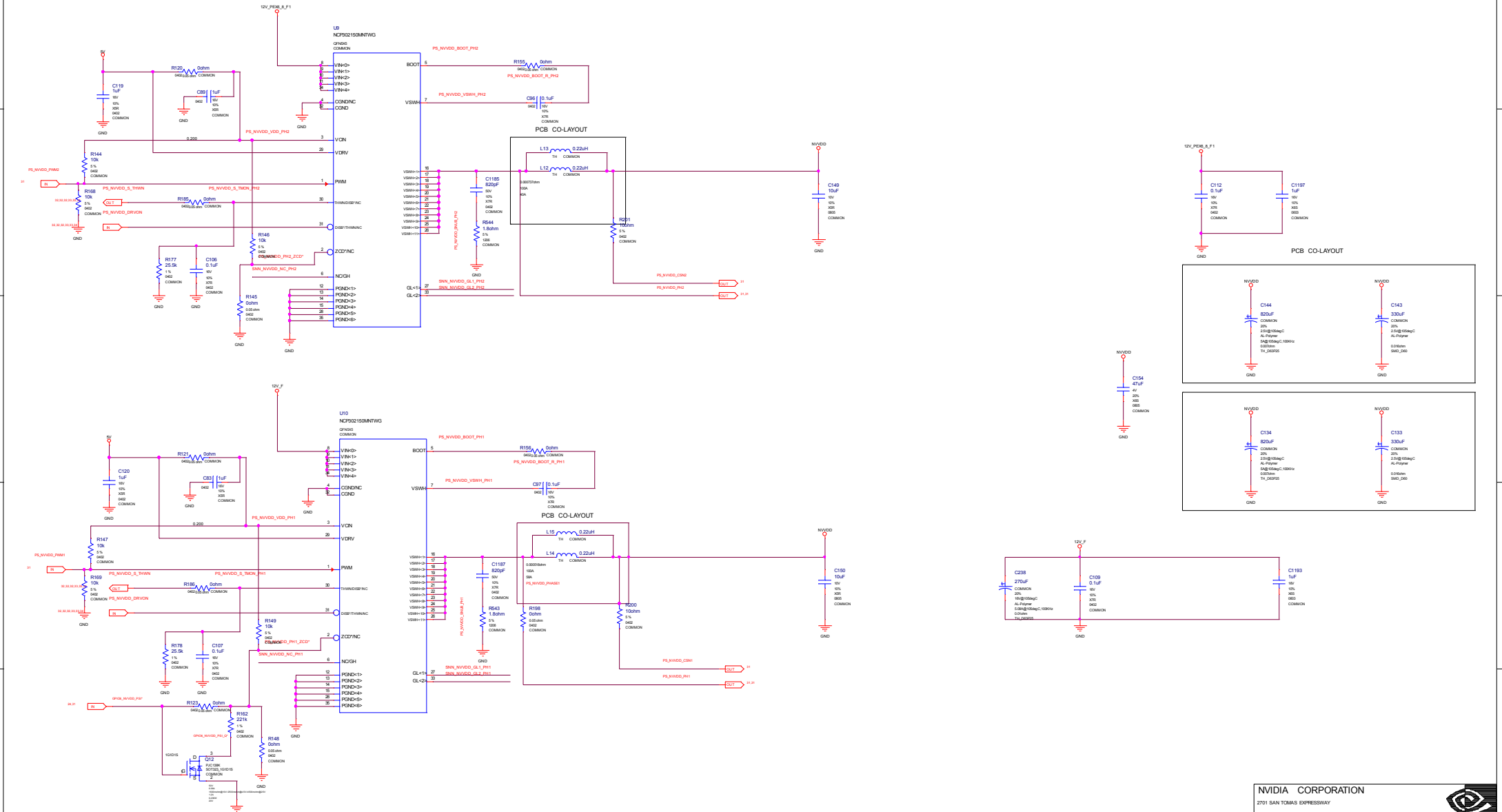
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PAGE DETAIL	PS: NVVDD Phase 3.5

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NV_PN	600-1G165-BASE-000
PCB_PN	PG165-ADD
PCB_REV	B
DATE	14 DEC 2018
FRGE	33 OF 42

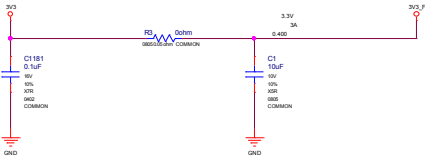


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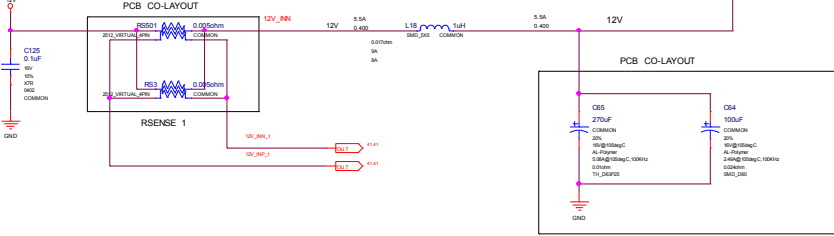
ASSEMBLY	<ASSEMBLY_DESCRIPTION>
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NVIDIA CORPORATION			
7701 SAN TOMAS EXPRESSWAY			
SANTA CLARA, CA 95050, USA		NV_PN	600-1G165-BASE-000
PCB REV	B	PGT65-ADD	PG 34 OF 42
DATE	14 DEC 2018		

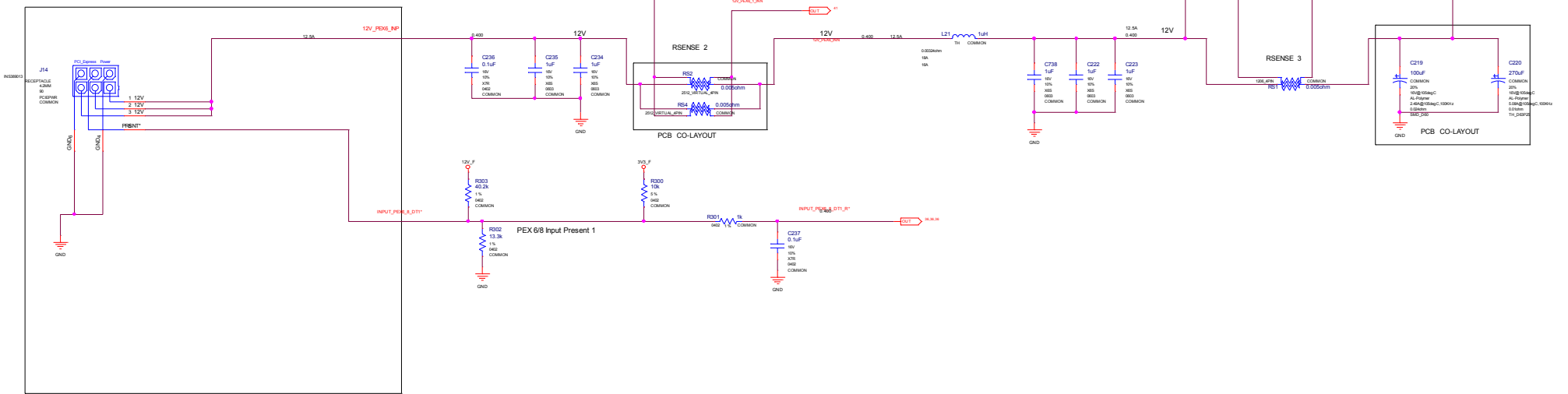
PEX 3V3 INPUT - 10W



PEX_12V INPUT - 66W



PEX8 INPUT 1 - 2x4 PCIE CON 150W



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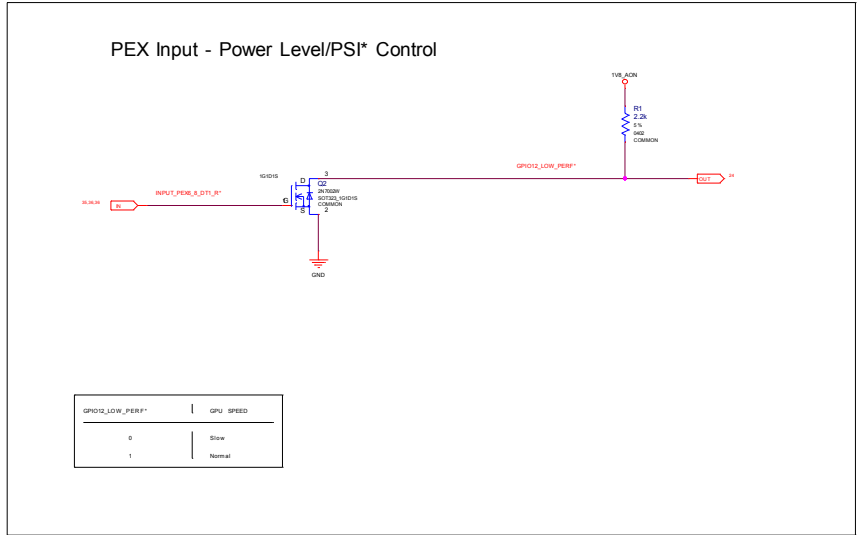
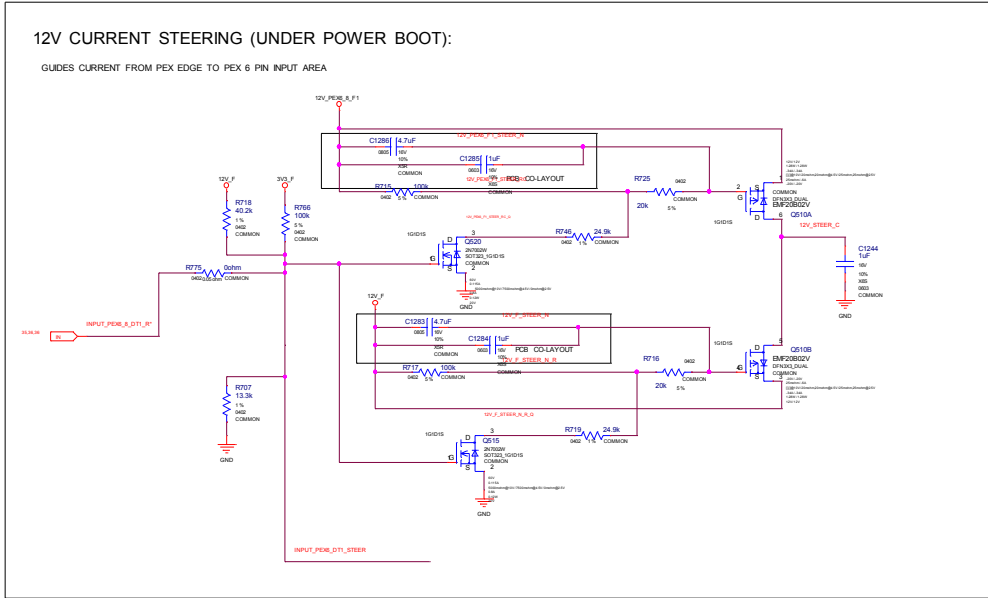
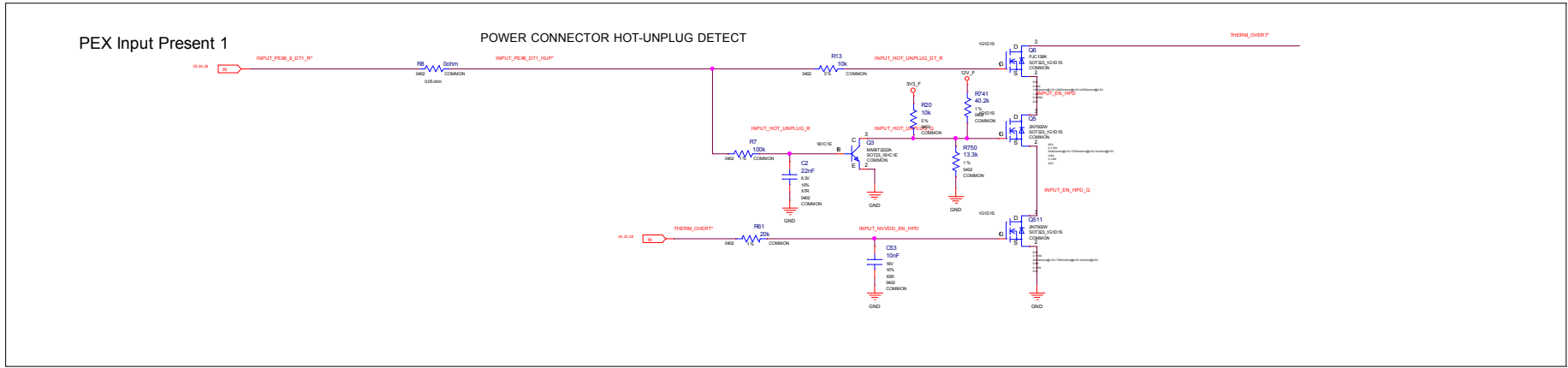
NVIDIA CORPORATION
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Nv_PN	600-1G165-BASE-000
PCB REV	PG165-ADD
RCM REV	B

PG. 35 OF 42
 DATE: 14-DEC-2018



ASSEMBLY	ASSEMBLY DESCRIPTION
PCB DETAIL	PS: PEX_INPUT, 12V_EXT_INPUT, FILTERING

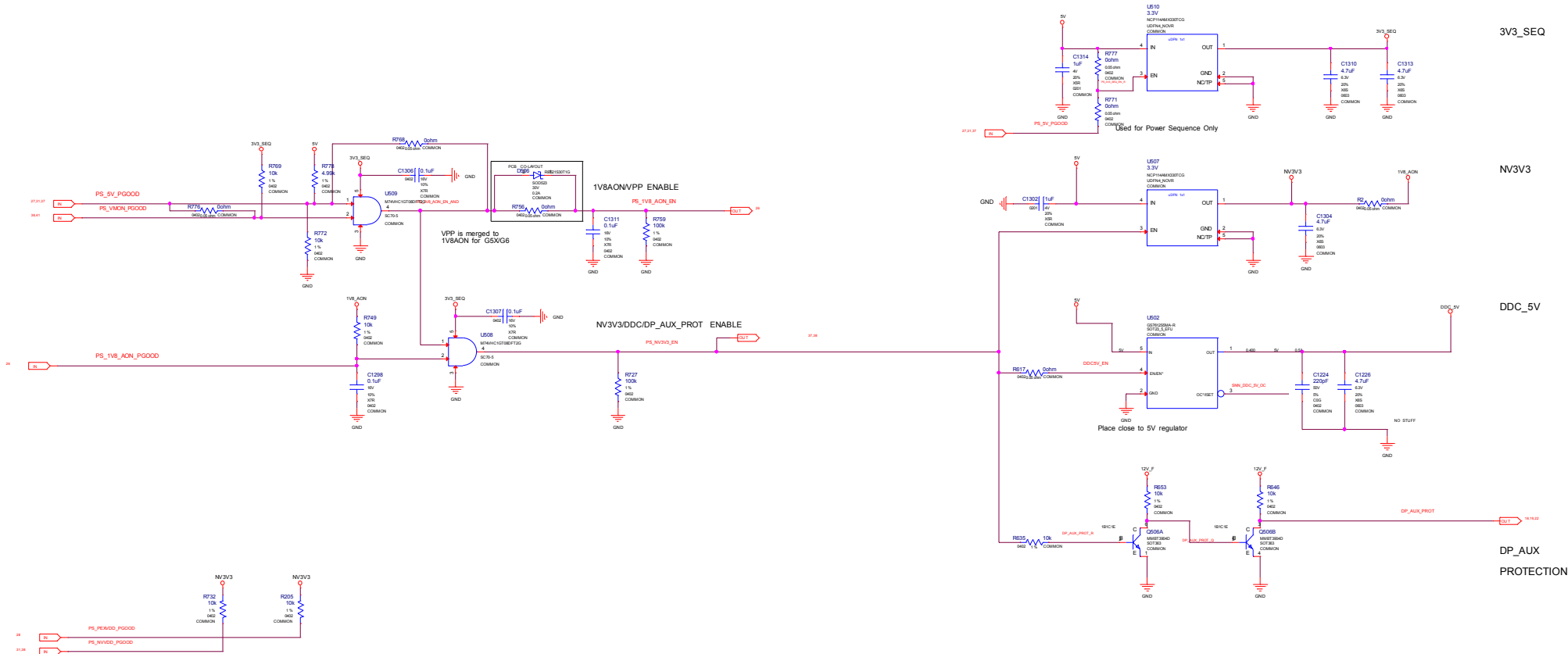


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NV_PN	600-1G165-BASE-000
PCB REV	PG165-A00
BCW REV	B

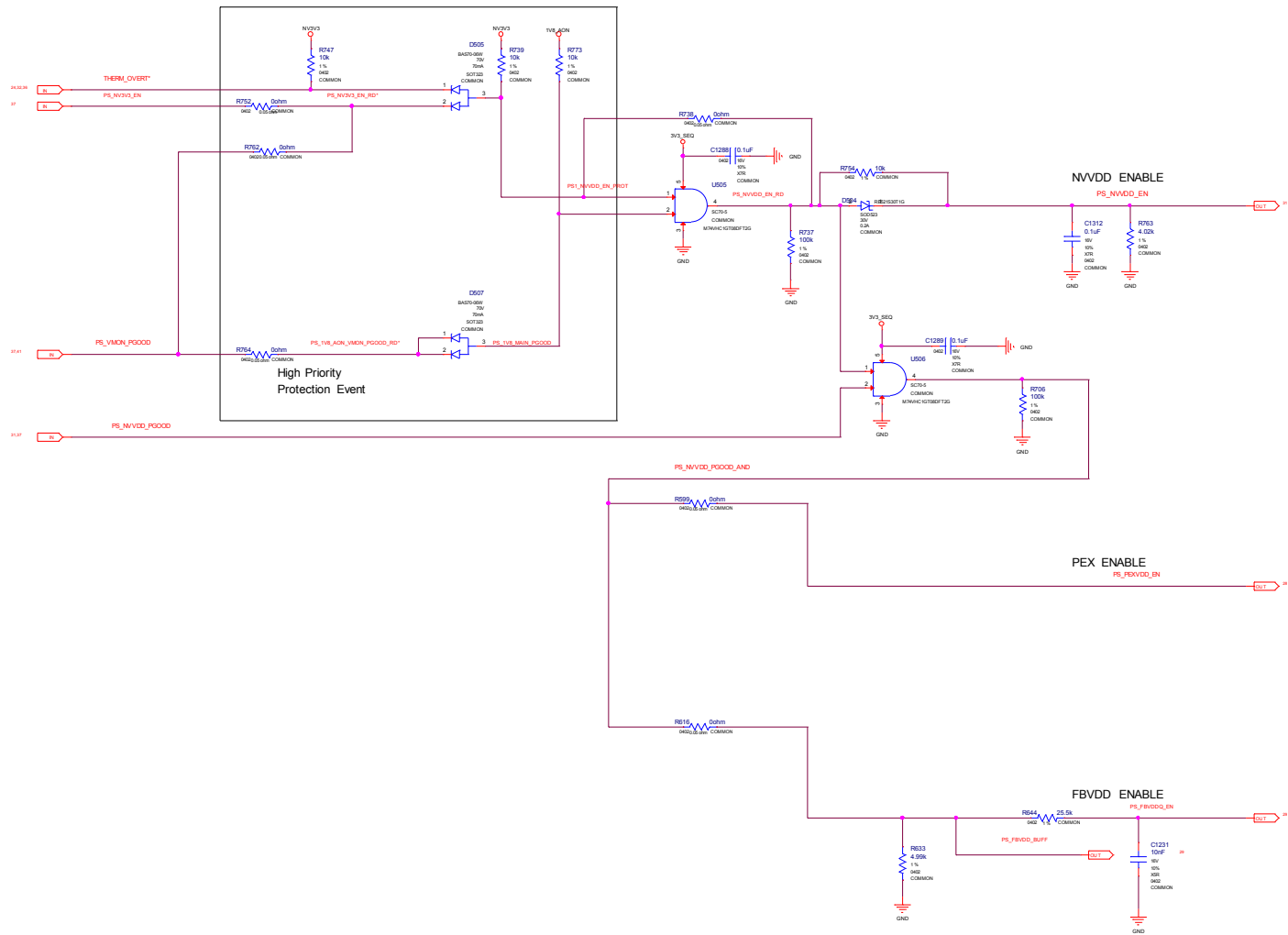
FR.GE	36 OF 42
DATE	14-DEC-2018



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ_1V8_AON_3V3_SEQ_NV3V3_DDC_5V_DP_AUX_PROT

NVIDIA CORPORATION			
2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
NV_PN	600-1G165-BASE-000	FRGE	37 OF 42
PCB REV	PG165-ADD	DATE	14 DEC 2018
BCM REV	B		

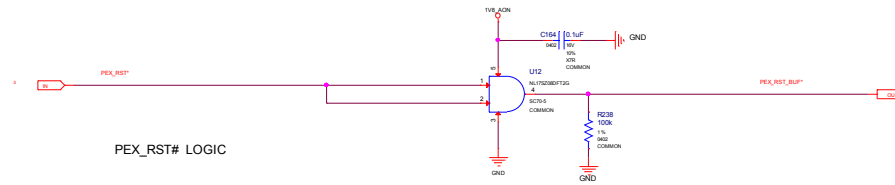
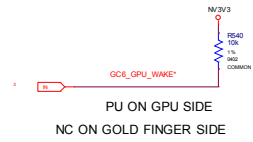


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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: NVVDD, PEX, FBVDDQ ENABLE

NVIDIA CORPORATION 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
NV_PN	600-1G165-BASE-000		
PCB REV	PG165-ADD	PKGE	38 OF 42
BCM REV	B	DATE	14 DEC 2018





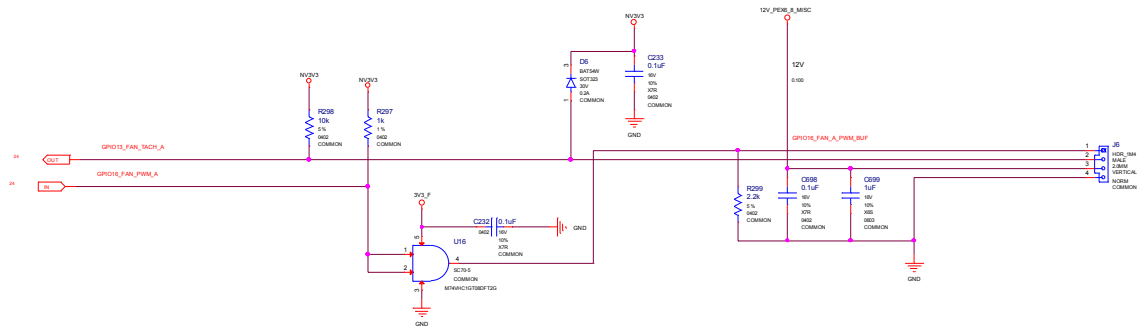
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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: MISC

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NV_PN	600-1G165-BASE-000		
PCB REV	PG165-ADD	PKGE	39 OF 42
BCM REV	B	DATE	14 DEC 2018

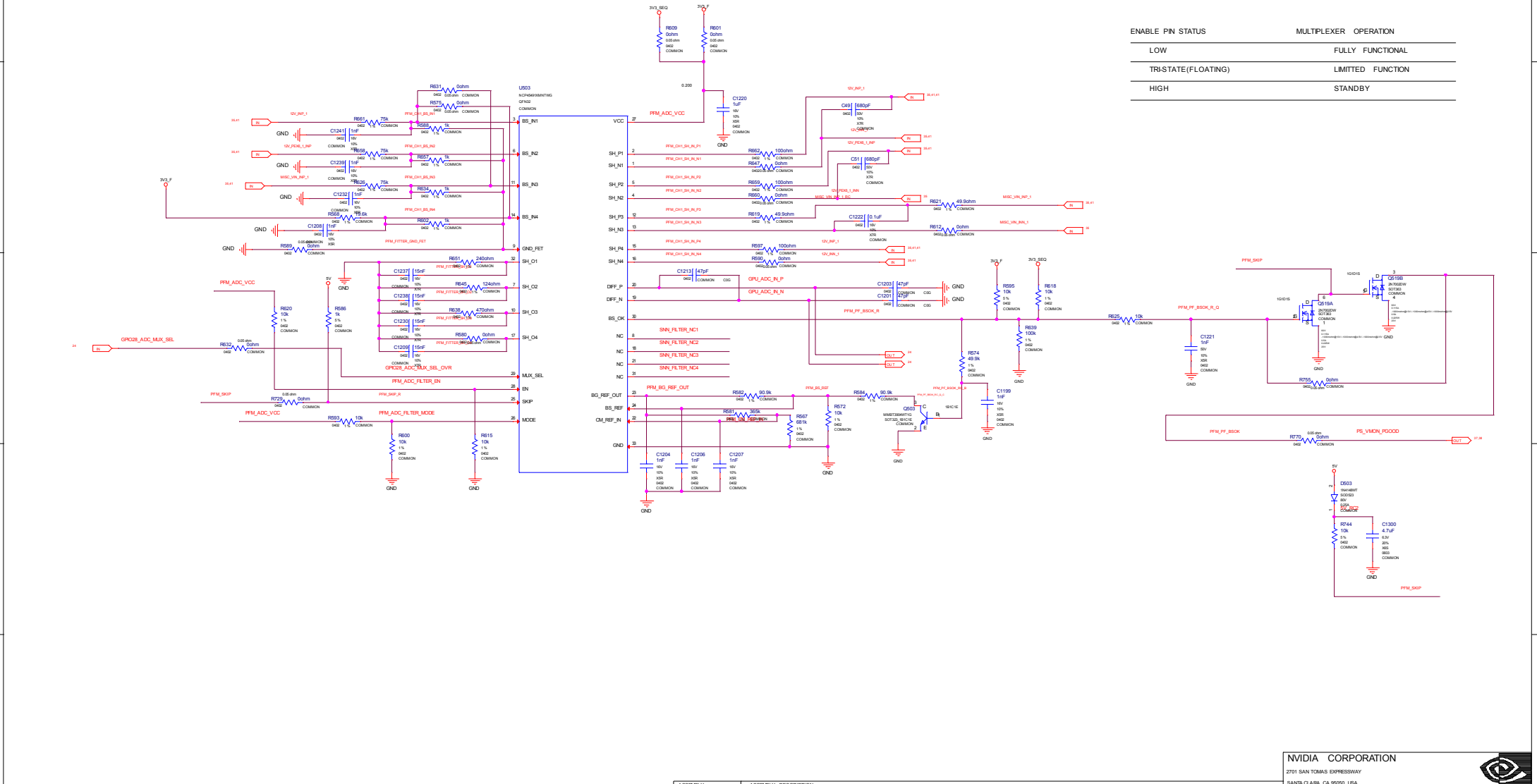


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2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
NV_PN	600-1G165-BASE-000		
PCB REV	PG165-A00	PKG	40 OF 42
RCW REV	B	DATE	14-DEC-2018



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ASSEMBLY	ASSEMBLY DESCRIPTION
PCB DETAIL	FAN




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

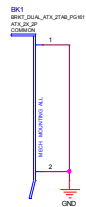
ENABLE PN STATUS	MULTIPLEXER	OPERATION
LOW	FULLY FUNCTIONAL	
TRI-STATE(FLOATING)	LIMITED FUNCTION	
HIGH	STANDBY	

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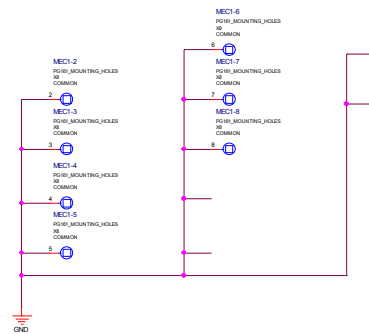
ASSSEMBLY	ASSEMBLY DESCRIPTION
PCB DETAIL	PSI_OVRM_PWR SENSE

NVIDIA CORPORATION 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA		
NV_PN	600-1G165-BASE-000	
PCB REV	PG165-ADD	
BOM REV	B	PRGE 41 OF 42 DATE 14-DEC-2018

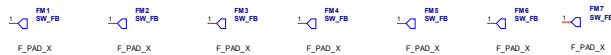
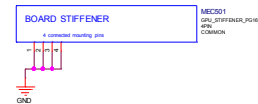
Bracket:



MOUNTING HOLES FOR HS:



BACK STIFFENER:



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ASSEMBLY	<ASSEMBLY_DESCRIPTION>		
PAGE DETAIL	MECH		
NV_PN	600-1G165-BASE-000		
PCB REV	PG165-ADD	PRGE	42 OF 42
BCM REV	B	DATE	14 DEC 2018

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