

PG166-A02

TU116,192b GDDR6 2CHx16,90W/120W  
DVI-D DL + HDMI + DP

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Page Description

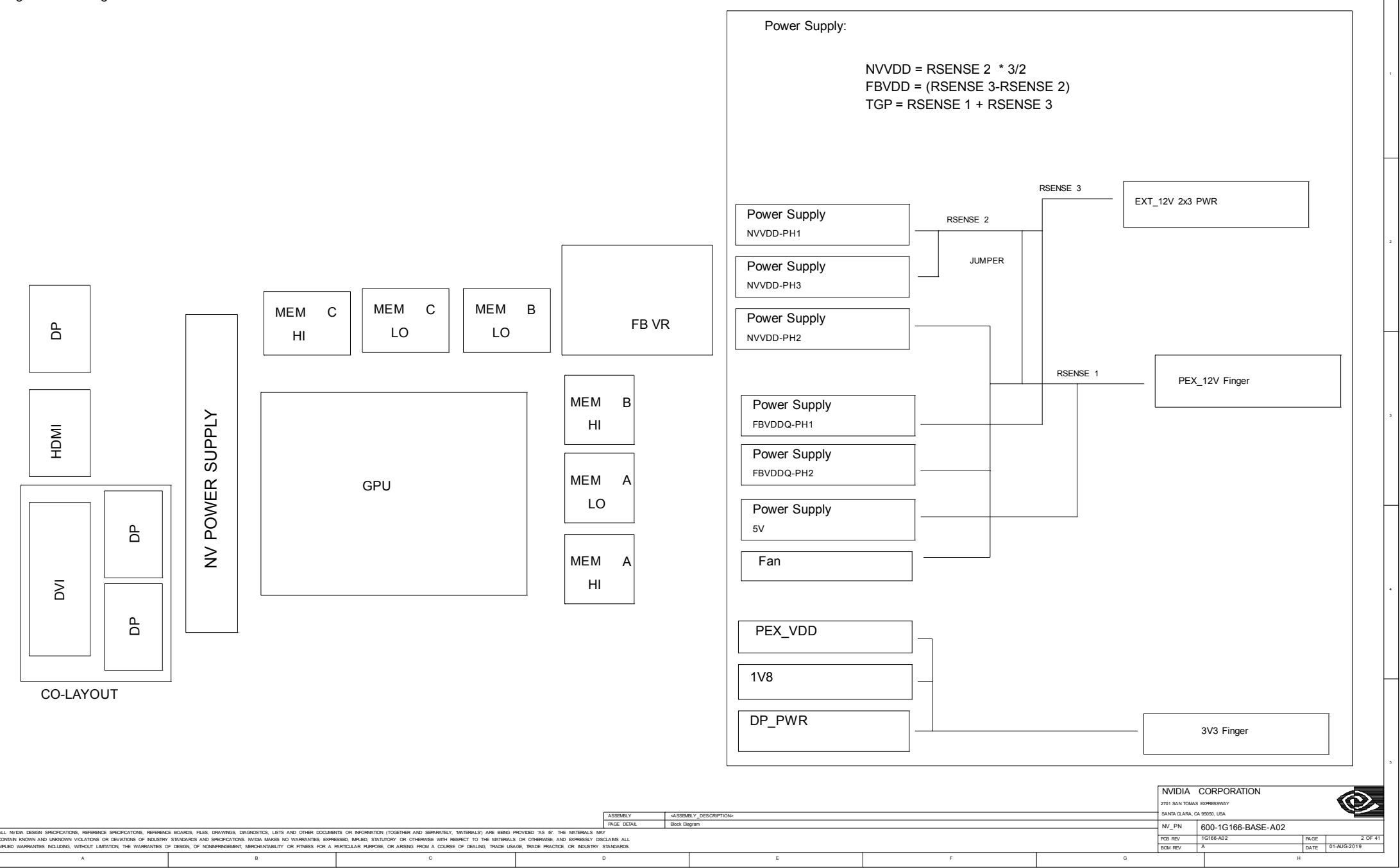
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|         |                    |      |             |
|---------|--------------------|------|-------------|
| NV_PN   | 600-1G166-BASE-A02 |      |             |
| PCB REV | 1G166-A02          | PRG# | 1 OF 41     |
| BOM REV | A                  | DATE | 01-AUG-2019 |

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|-------------|------------------------|
| ASSEMBLY    | <ASSEMBLY_DESCRIPTION> |
| PAGE DETAIL | PCI Express            |

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| PCB REV | 1G166-A02 |
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| DATE | 01-AUG-2019 |
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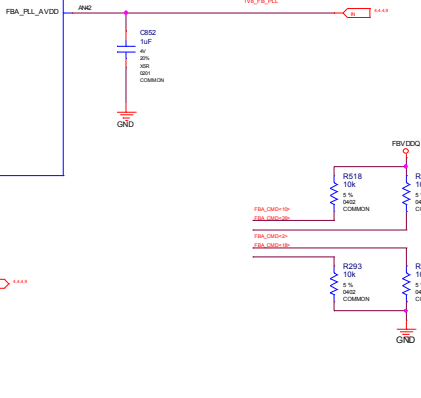
AF49+CMD32, AQ52+CMD33 IN TU104  
AF49+CMD33, AQ52+CMD32 IN GP104

G1B

TU104-400-A1

BGA2008

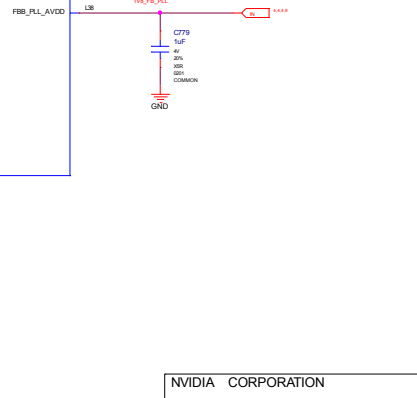
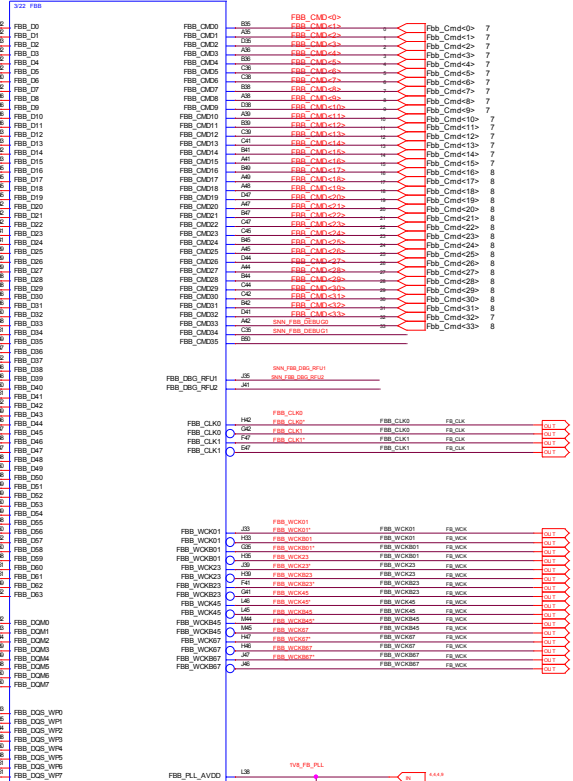
compatible



G1C

TU104-400-A1

BGA2008

D41+CMD32, A42+CMD33 IN TU104  
D41+CMD32, A42+CMD32 IN GP104ASSEMBLY DESCRIPTION  
FRIDGE DETAIL MEMORY: GPU FB\_A/B

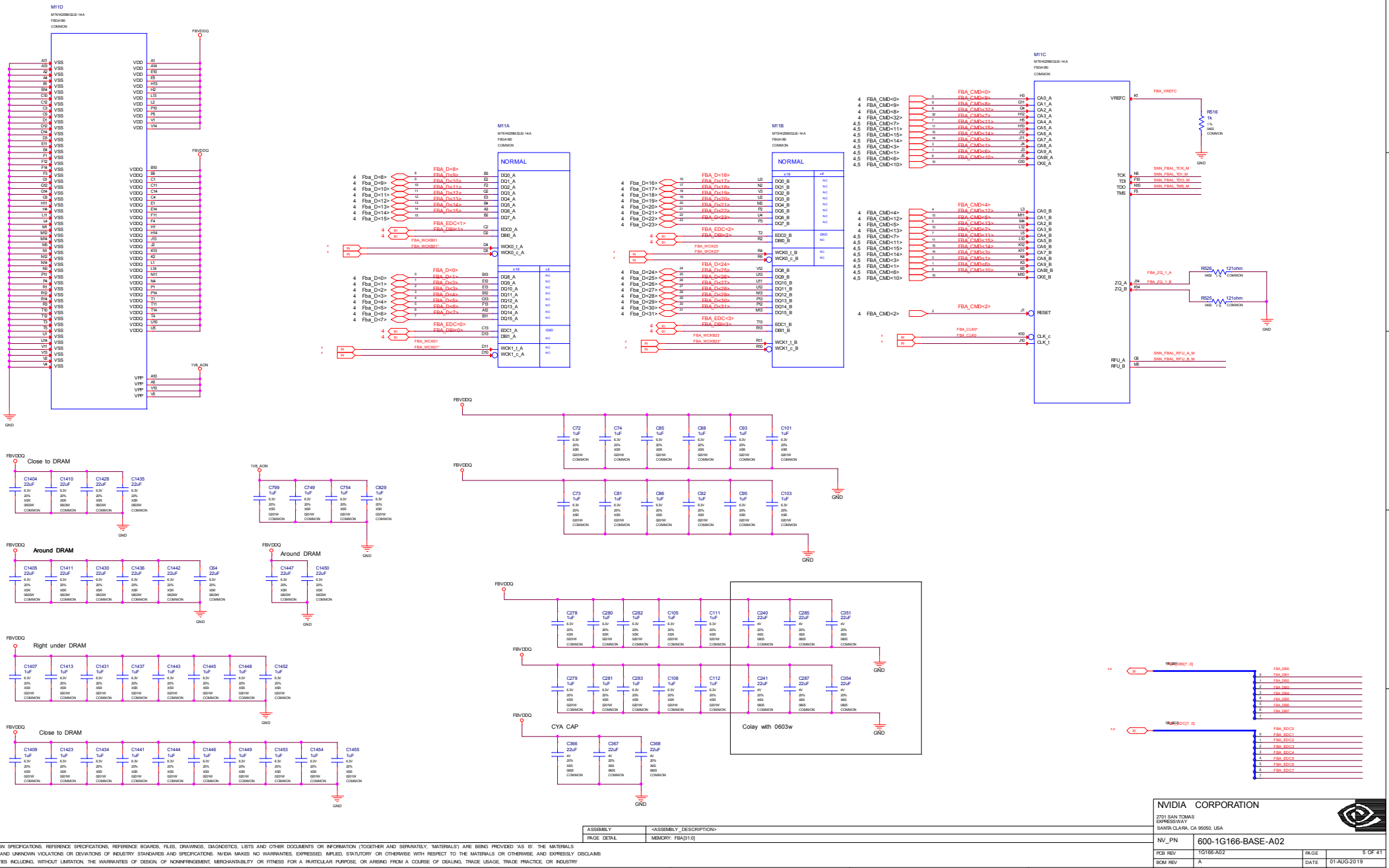
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NV\_PN 600-1G166-BASE-A02

PCB REV 10166-A02 FRIDGE 4 OF 41  
BOM REV A DATE 01-AUG-2019

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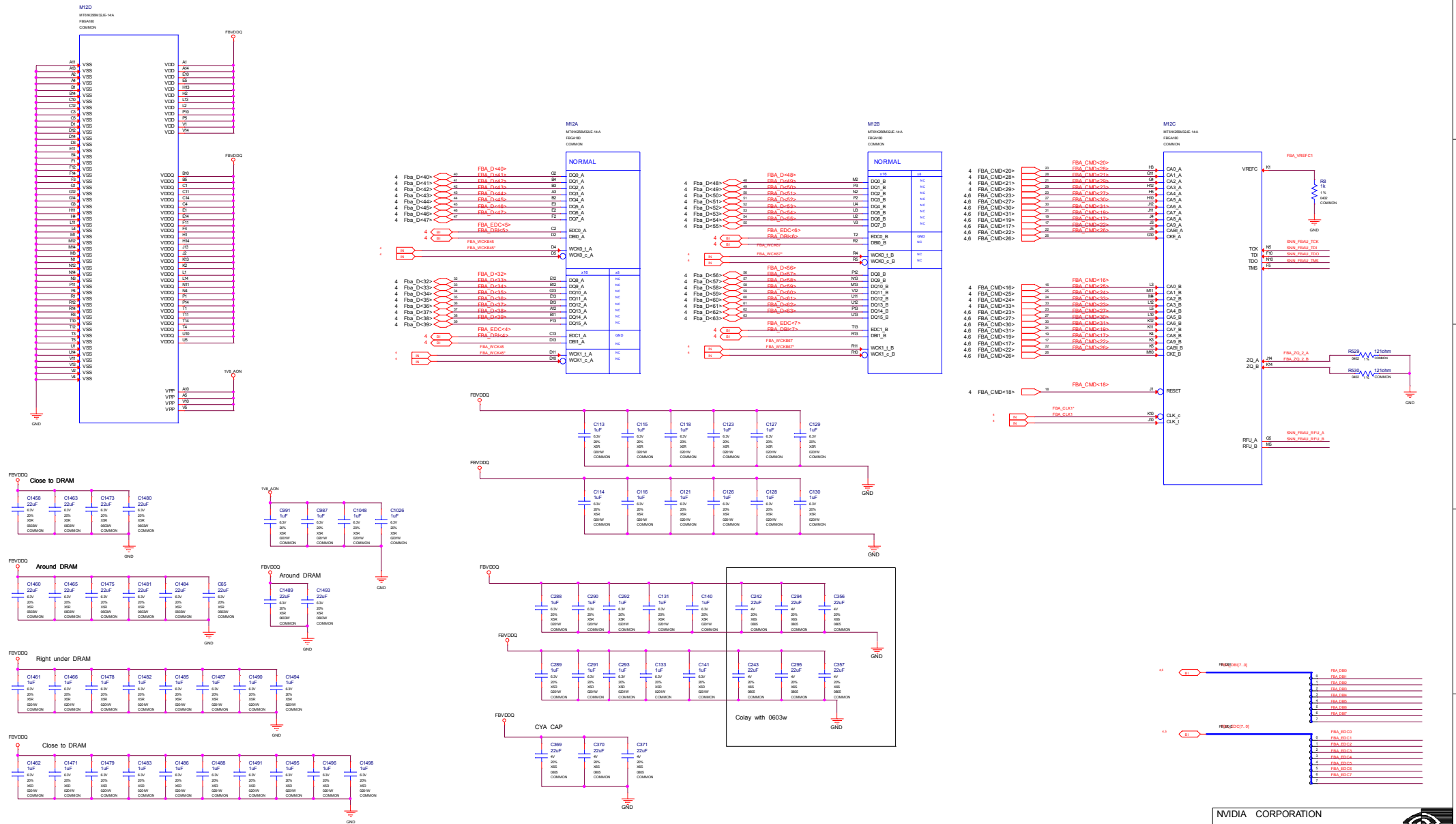
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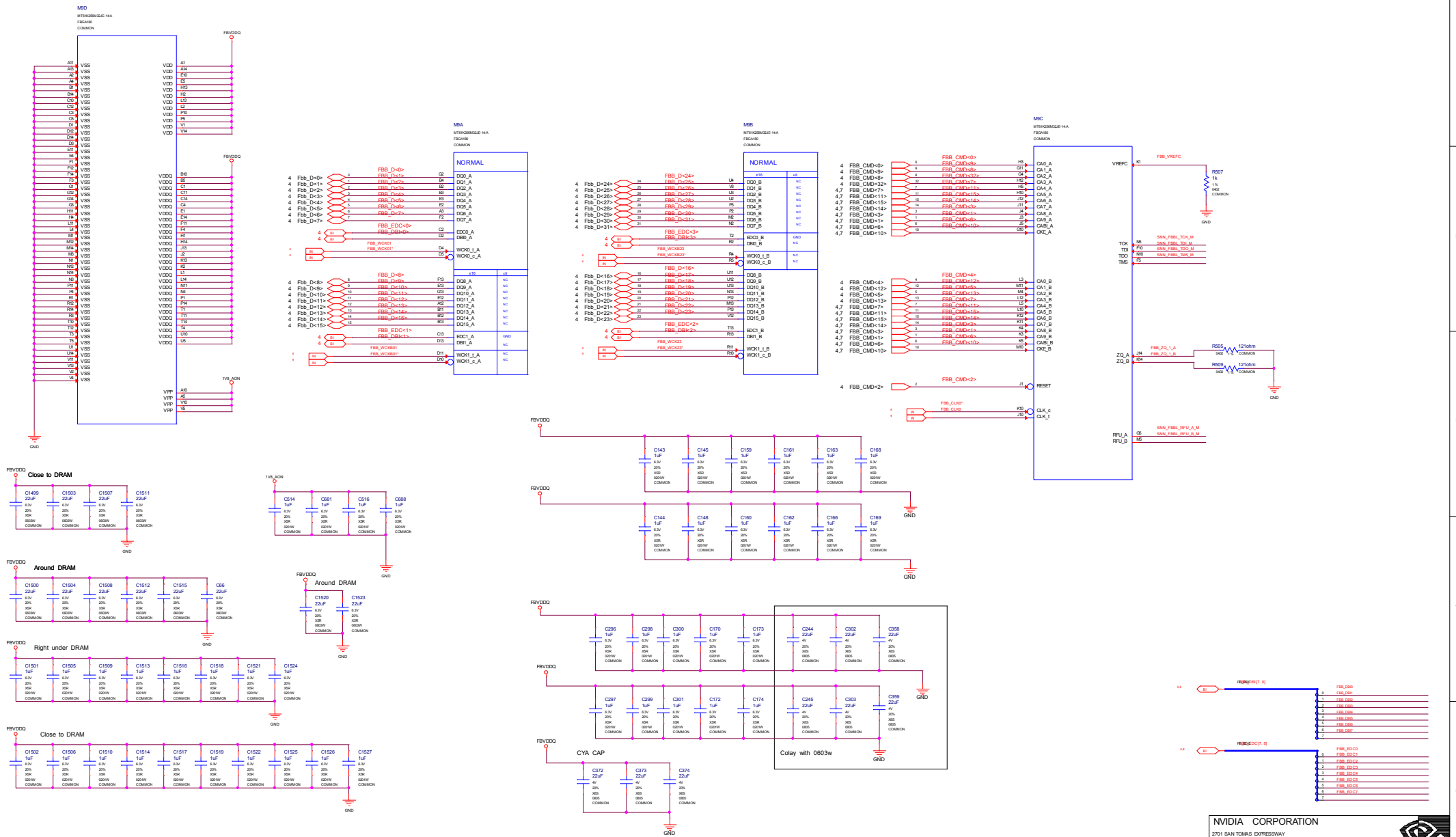
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NV\_PN: 600-1G166-BASE-A02  
PCB REV: T0166-A02  
ROM REV: A  
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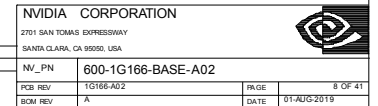
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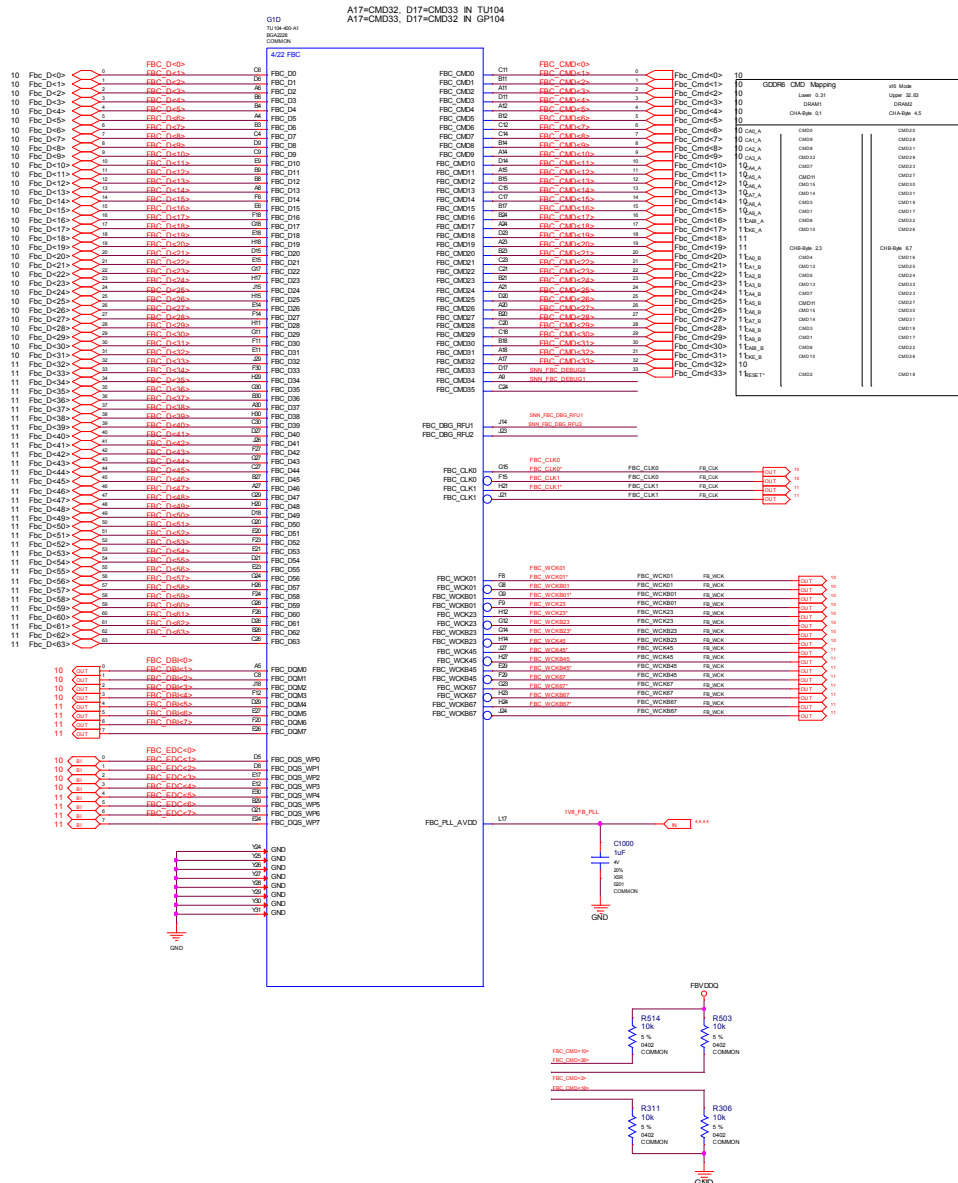
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 PCB REV: 10166-A02  
 BOM REV: A

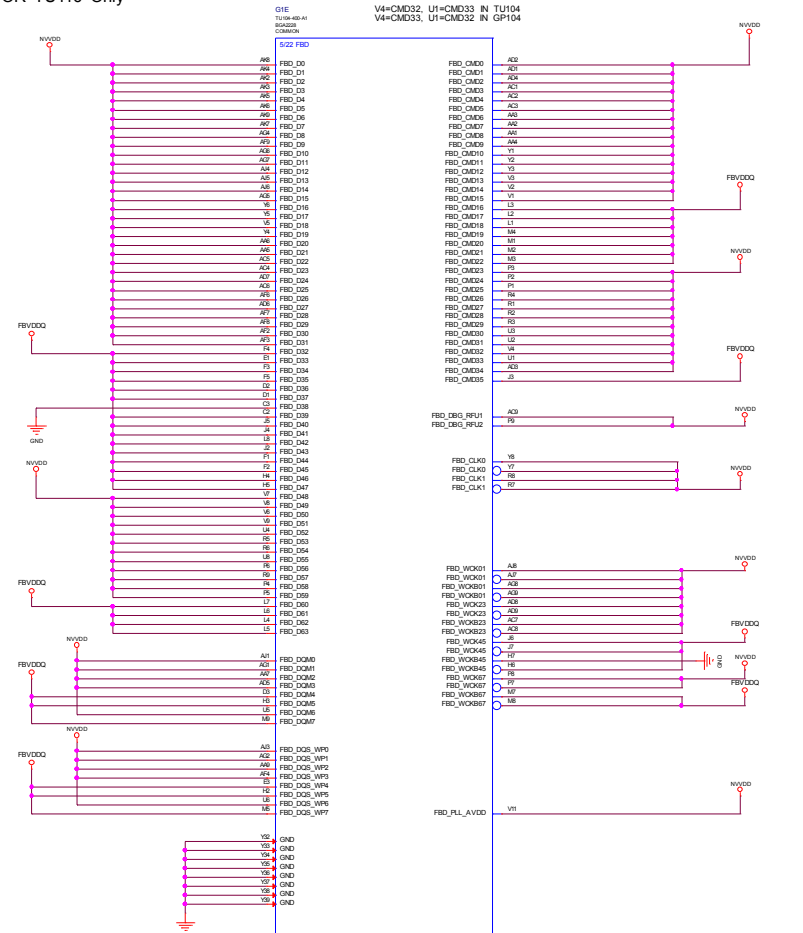
DATE: 01-AUG-2019

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Use NC pin to Improve NVVDD,FBVDDQ,1V8 PDN  
FOR TU116 Only



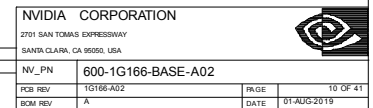
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| NV_PN | 600-1G166-BASE-A02 |
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| PCB REV | 1G166-A02 | PAGE | 9 OF 41     |
| BOM REV | A         | DATE | 01-AUG-2019 |





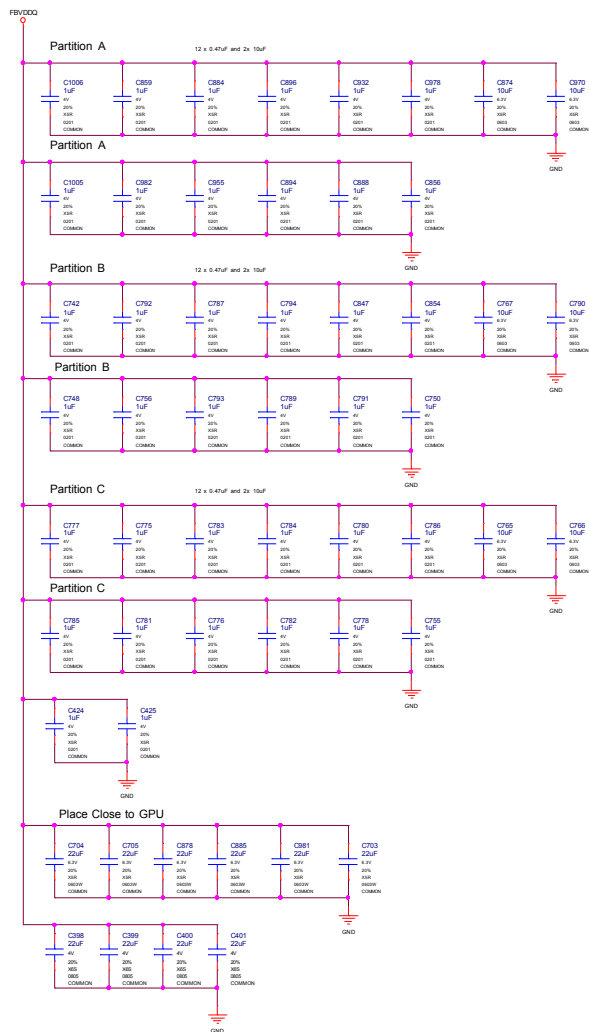
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|---------|-----------|------|-------------|
| FCB REV | FCB007402 | PAGE | 11 OF 41    |
| BCM REV | A         | DATE | 01-AUG-2019 |

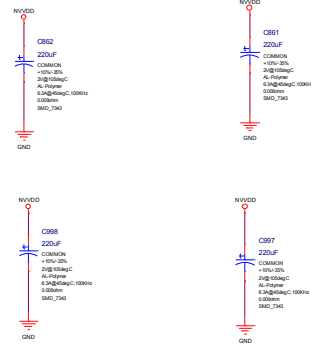
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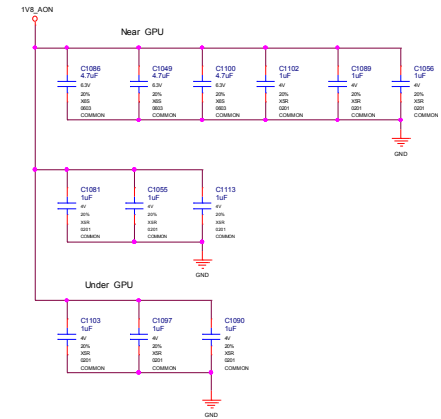
### FBVDDQ



### NVDD



### 1V8\_AON

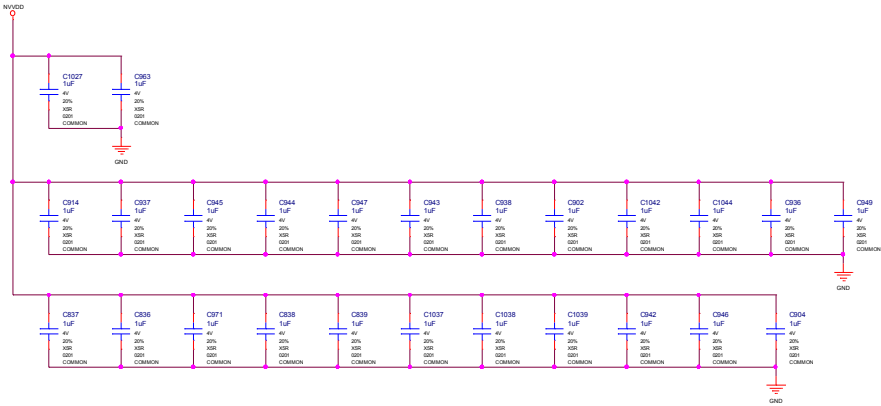
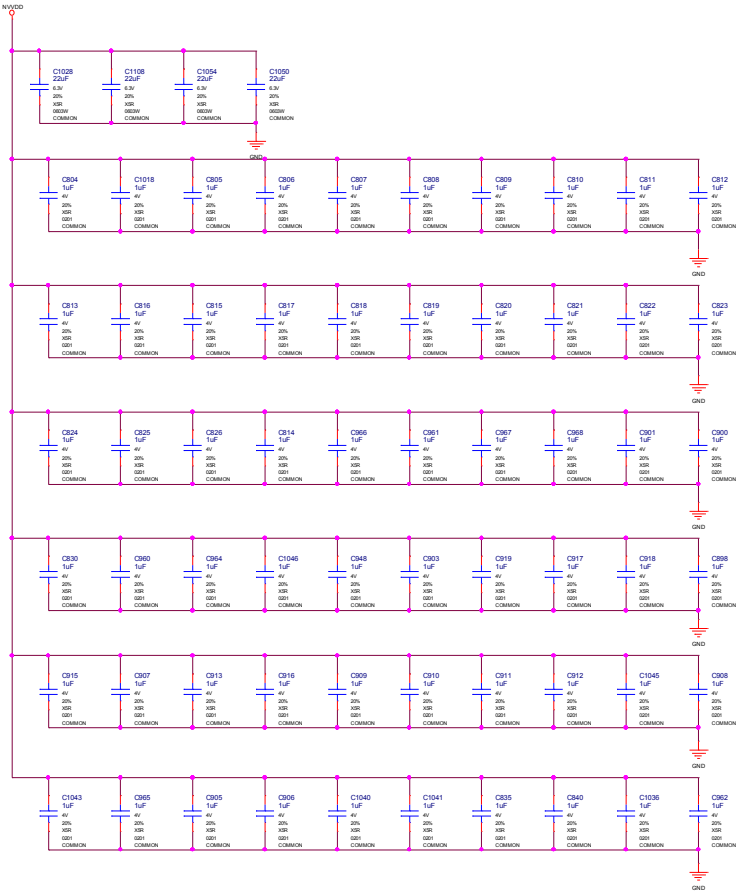


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| ASSEMBLY    | ASSEMBLY DESCRIPTION |
|-------------|----------------------|
| FRGE DETAIL | GPU DECOUPLING 1     |

|                            |                    |
|----------------------------|--------------------|
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| PCB REV                    | 1G166-A02          |
| BOM REV                    | A                  |
| FRGE                       | 13 OF 47           |
| DATE                       | 01-AUG-2019        |

NVDD

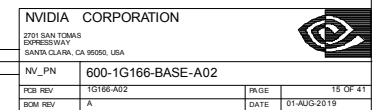


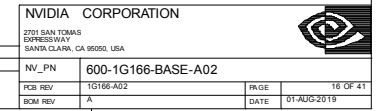
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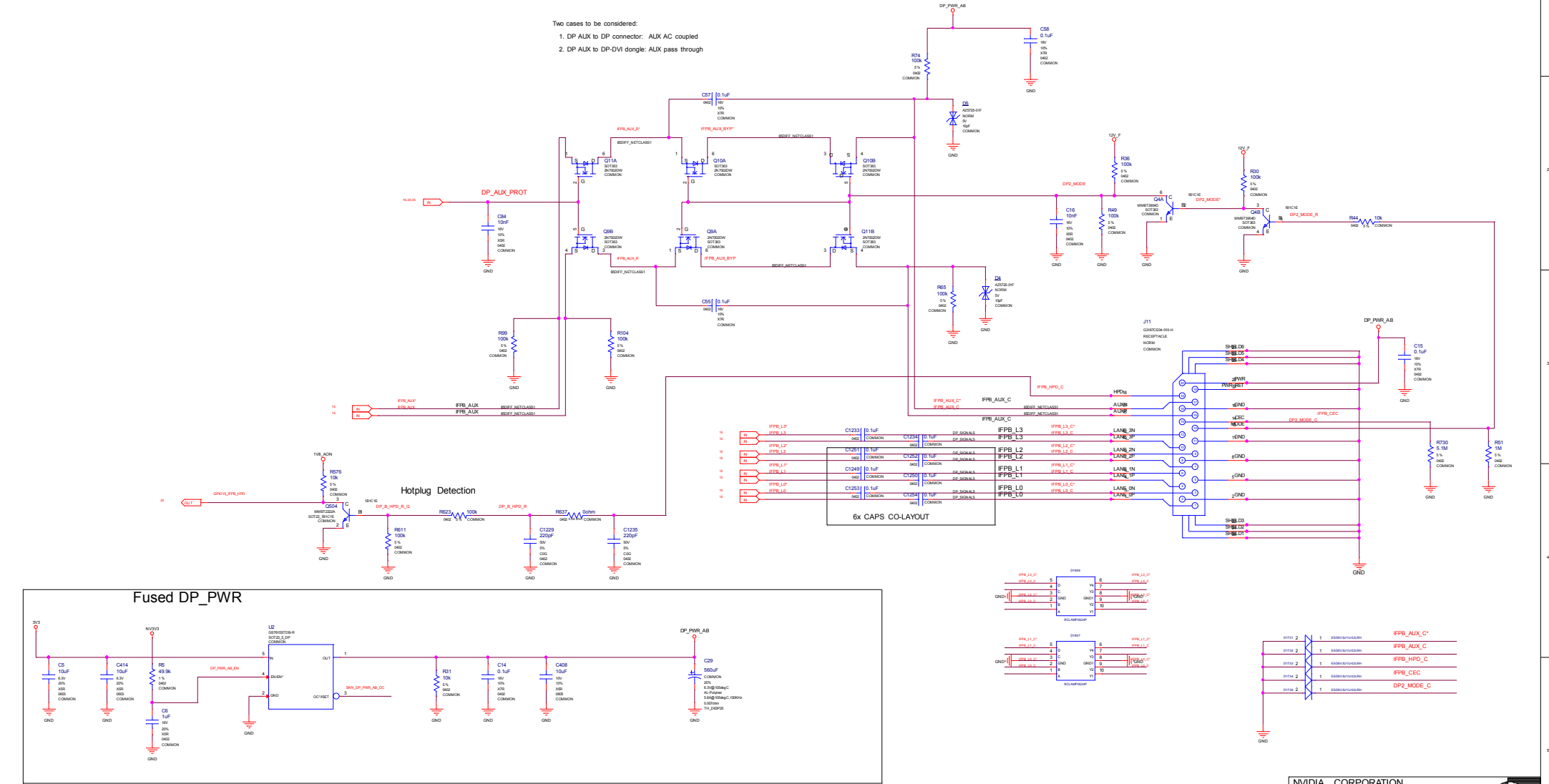
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| ASSEMBLY   | ASSEMBLY DESCRIPTION* |
| PCB DETAIL | GPU DECOUPLING 2      |

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| PCB REV                    | T0166-A02          | PRG# | 14 OF 41    |
| BCM REV                    | A                  | DATE | 01-AUG-2019 |

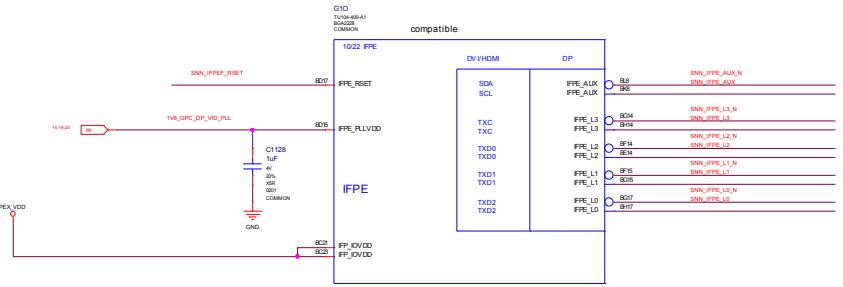
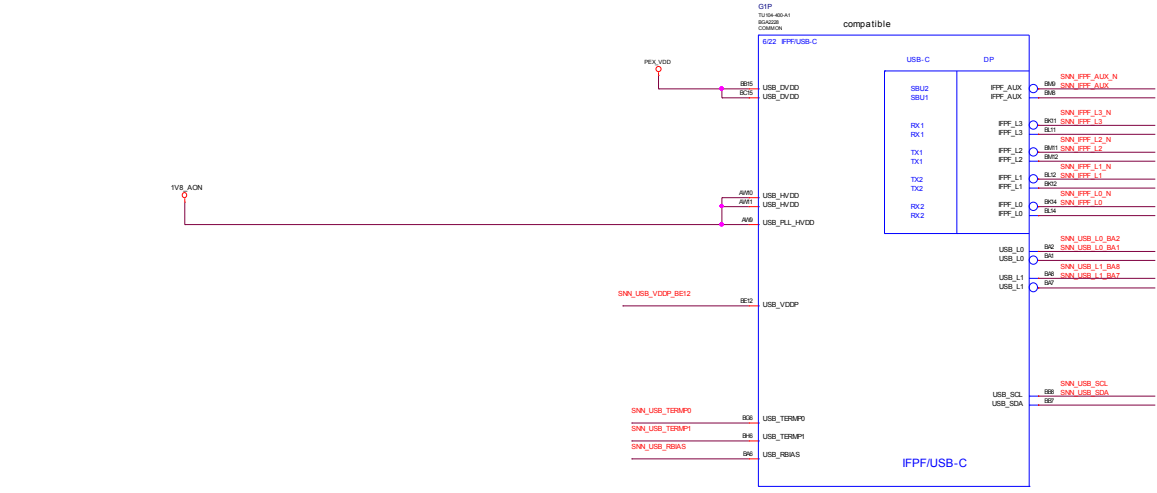








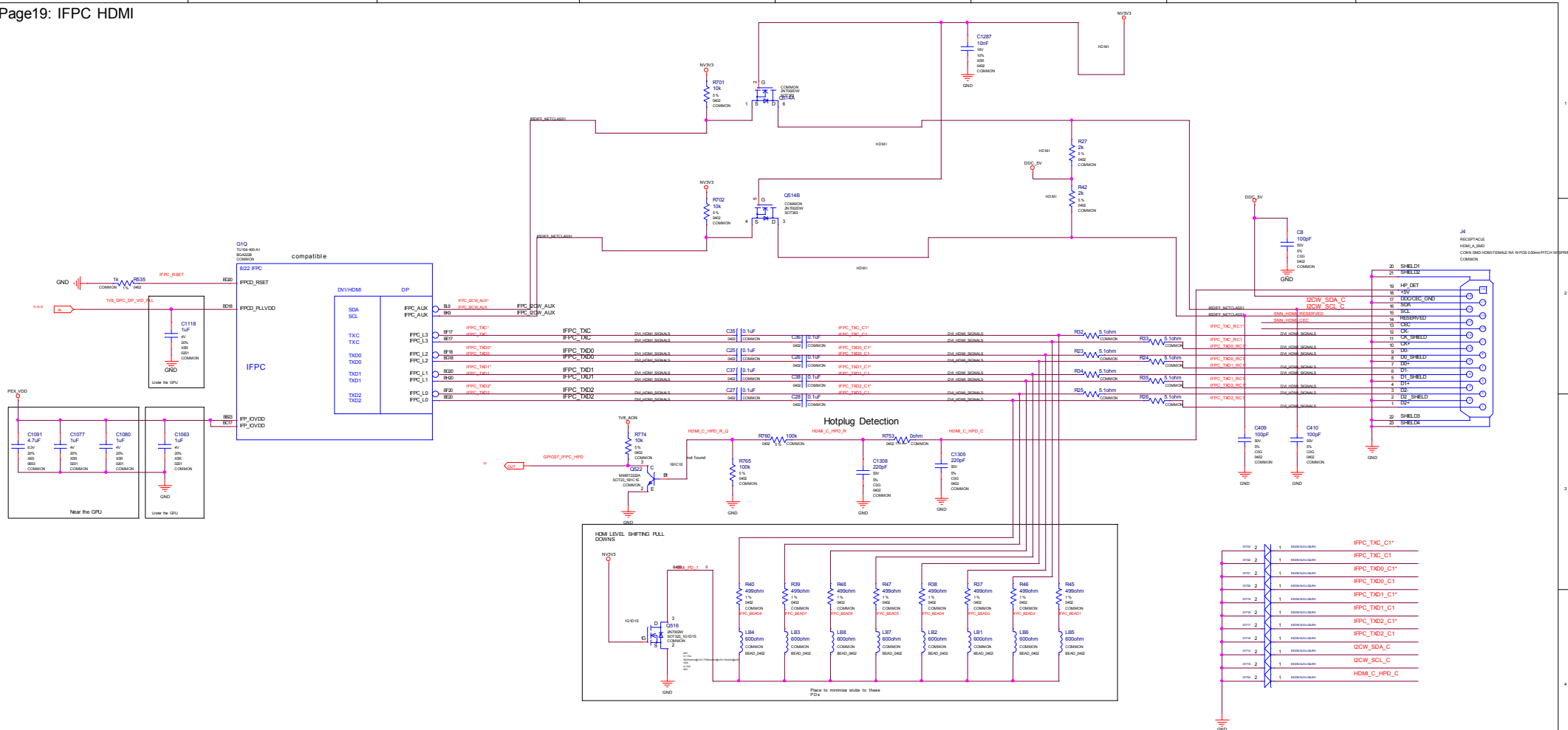
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| STANDARDS.                                                                                                                                                                                                                              |  | NVIDIA CORPORATION         |  |
| ASSEMBLY                                                                                                                                                                                                                                |  | 600-1G166-BASE-A02         |  |
| PCB REV                                                                                                                                                                                                                                 |  | TGT166-A02                 |  |
| PCB DETAIL                                                                                                                                                                                                                              |  | A                          |  |
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| ASSEMBLY   | ASSEMBLY DESCRIPTION |                    |          |
| PCB DETAIL |                      |                    |          |
| NV_PN      |                      | 600-1G166-BASE-A02 |          |
| PCB REV    | A                    | DATE               | 18 OF 41 |
| ROM REV    | A                    | DATE               |          |





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| ASSEMBLY    | <ASSEMBLY_DESCRIPTION |
| PAGE DETAIL | ID: FPC HDMI          |

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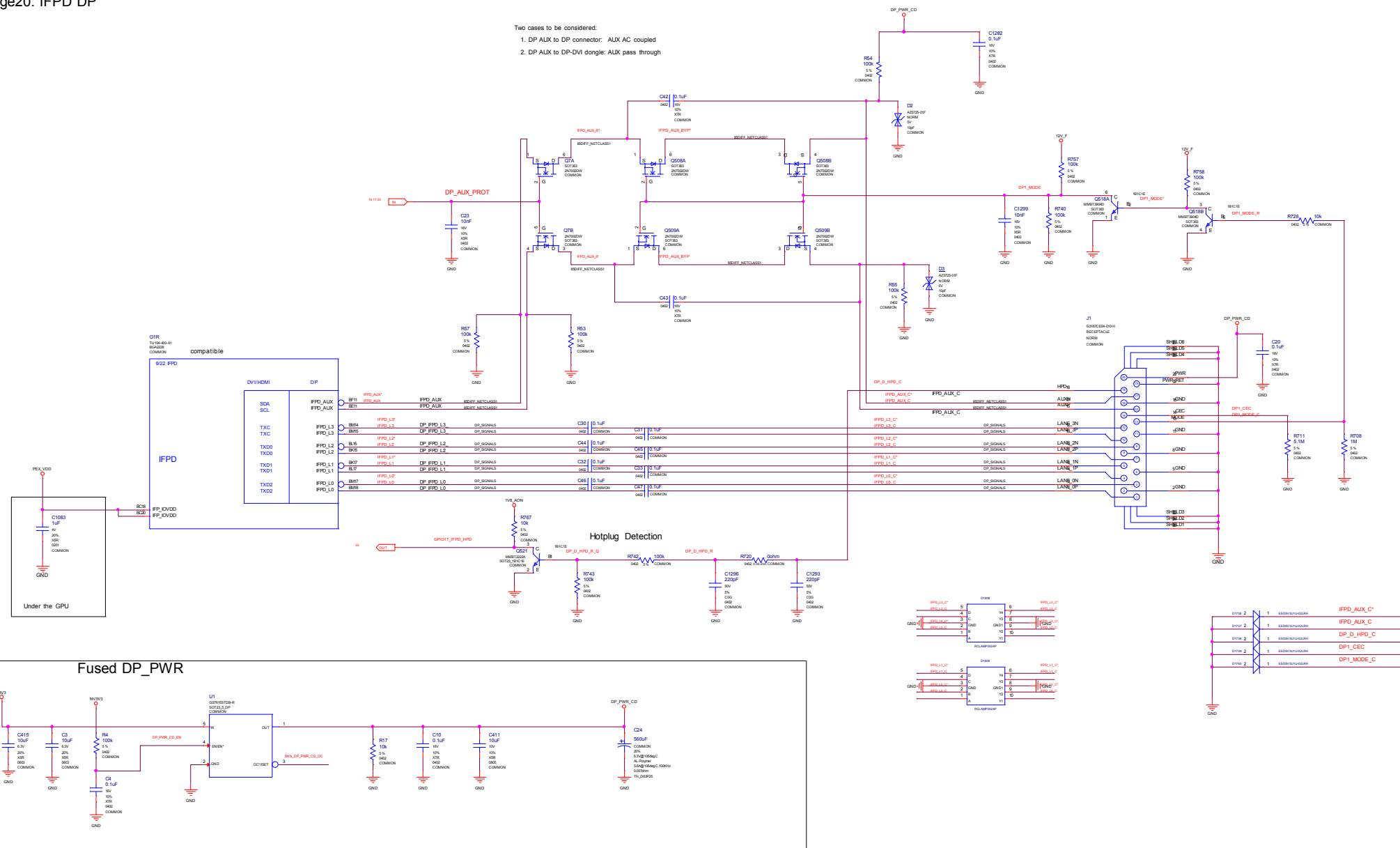
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| PCB REV |
| BOM REV |

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| PCB REV |
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| 1G166-A02 |
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| PAGE | 19 OF 4     |
| DATE | 01-AUG-2019 |

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



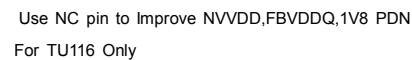
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|---------|-----------|------|-------------|
| PCB REV | 10166-A02 | PRG# | 20 OF 41    |
| BCM REV | A         | DATE | 01-AUG-2019 |

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| <b>NV_PN</b>                                                                         |           | <b>600-1G166-BASE-A02</b>                                                             |             |
| PCB REV                                                                              | 1G166-A02 | PAGE                                                                                  | 21 OF 41    |
| BOM REV                                                                              | A         | DATE                                                                                  | 01-AUG-2019 |

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| <b>NV_PN</b>                                                                         |           | <b>600-1G166-BASE-A02</b> |                                                                                       |  |
| PCB REV                                                                              | 1G166-A02 | FRGE                      | 22 OF 41                                                                              |  |
| BOM REV                                                                              | A         | DATE                      | 01-AUG-2019                                                                           |  |

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

| STRAP2 | STRAP1 | STRAP0 | RAMCFG[4:0] |                                       |
|--------|--------|--------|-------------|---------------------------------------|
| L      | L      | L      | 0000        | Samsung 8Gb 256Mx32 K4ZB0325BC-HC14   |
| L      | L      | H      | 0001        | Micron 8Gb 256Mx32 MT61K256M32JE-14-A |
| L      | H      | L      | 0010        | Hynix 8Gb 256Mx32 H56C8H24MJR-S2C     |
| L      | H      | H      | 0011        | Samsung 8Gb 256Mx32 K4ZB032BC-HC12    |
| 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 |         |
|--------|--------|----------|---------------------|--------------------|---------|
| L      | L      | L        | XXX1                | FS_OVERT ENABLE    | DEFAULT |
| L      | L      | M        | XXX0                | FS_OVERT DISABLE   |         |

| STRAP5 | STRAP4 | STRAP3 | SMB_ALT_ADDR | DEVID_SEL | PCIE_CFG | VGA_DEVICE |
|--------|--------|--------|--------------|-----------|----------|------------|
| M      | H      | H      | 1            | 1         | 1        | 1          |
| M      | H      | L      | 1            | 1         | 1        | 0          |
| M      | L      | H      | 1            | 1         | 0        | 1          |
| M      | L      | L      | 1            | 1         | 0        | 0          |
| L      | H      | M      | 1            | 0         | 1        | 1          |
| L      | M      | H      | 1            | 0         | 1        | 0          |
| L      | M      | L      | 1            | 0         | 0        | 1          |
| L      | L      | M      | 1            | 0         | 0        | 0          |
| H      | H      | H      | 0            | 1         | 1        | 1          |
| H      | H      | L      | 0            | 1         | 1        | 0          |
| H      | L      | H      | 0            | 1         | 0        | 1          |
| H      | L      | L      | 0            | 1         | 0        | 0          |
| L      | H      | H      | 0            | 0         | 1        | 1          |
| L      | H      | L      | 0            | 0         | 1        | 0          |
| L      | L      | H      | 0            | 0         | 0        | 1 DEFAULT  |
| L      | L      | L      | 0            | 0         | 0        | 0          |

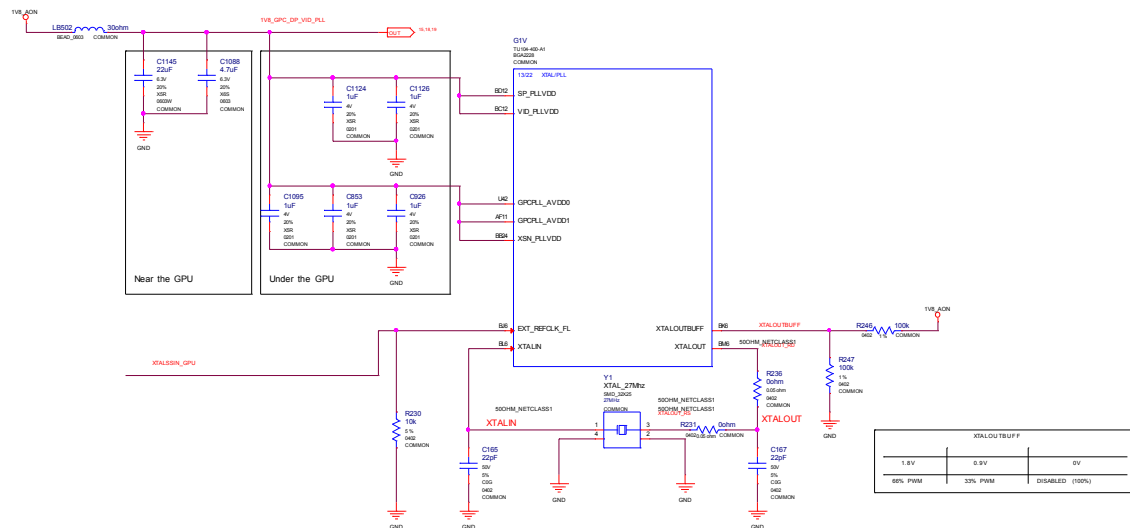
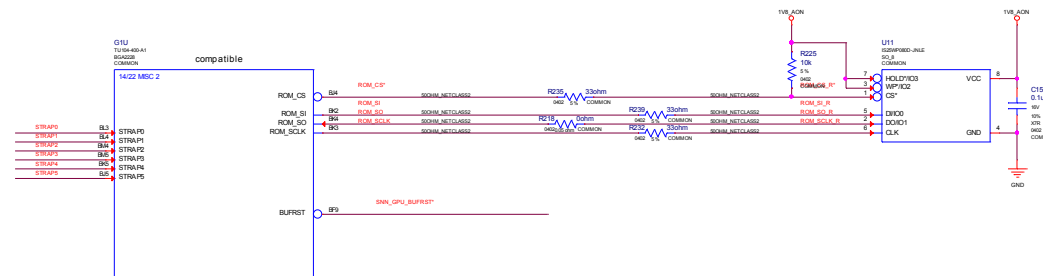
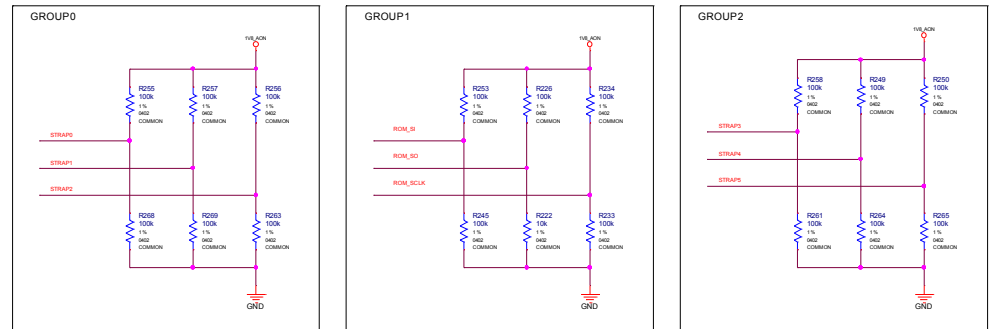
H=High :Tied to 1.8V  
M=Middle:Tied to 0.9V  
L=Low :Tied to 0V

1:SMB\_ALT\_ADDR ENABLE  
0:SMB\_ALT\_ADDR DISABLE

1:DEVID\_SEL REBRAND  
0:DEVID\_SEL ORIGINAL

1:PCIE\_CFG LOW POWER  
0:PCIE\_CFG HIGH POWER

1:VGA\_DEVICE ENABLE  
0:VGA\_DEVICE DISABLE



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NV\_PN 600-1G166-BASE-A02

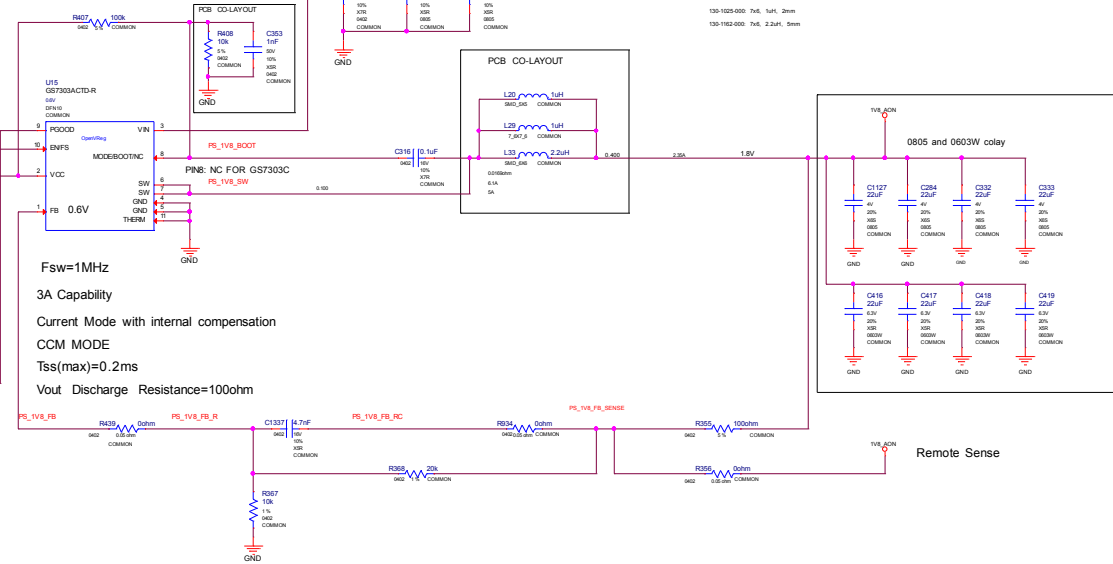
PCB REV 1G166-A02  
ROM REV A

DATE 01-AUG-2019

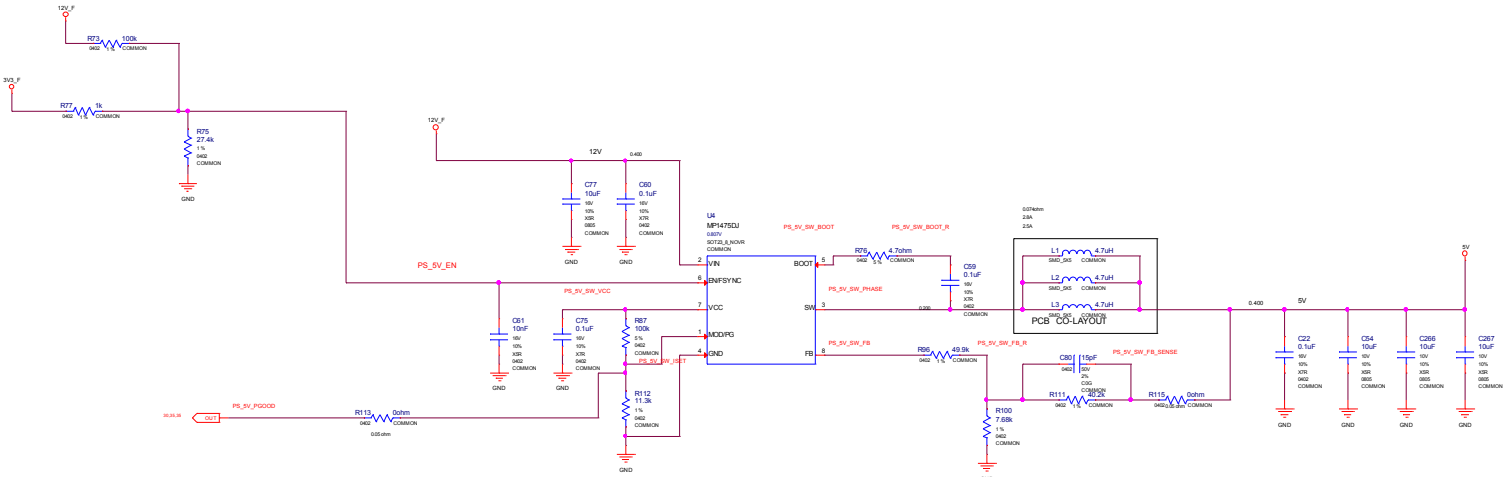
23 OF 41

## OVR0

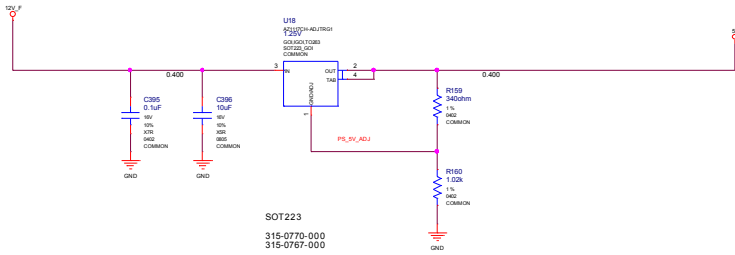
135-1025-000: 7x6, 1uH, 2mm  
135-1162-000: 7x6, 2.2uH, 5mm

$$0.6V \cdot (1 + 20K/10K) = 1.8V$$


|                                                                                      |           |                           |                                                                                       |  |
|--------------------------------------------------------------------------------------|-----------|---------------------------|---------------------------------------------------------------------------------------|--|
| <b>NVIDIA CORPORATION</b><br>2701 SAN TOMAS EXPRESSWAY<br>SANTA CLARA, CA 95050, USA |           |                           |  |  |
| <b>NV_PN</b>                                                                         |           | <b>600-1G166-BASE-A02</b> |                                                                                       |  |
| PCB REV                                                                              | 1G166-A02 | FRGE                      | 24 OF 41                                                                              |  |
| BOM REV                                                                              | A         | DATE                      | 01-AUG-2019                                                                           |  |



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



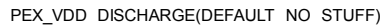
$V_{out} = 1.25V \cdot (1 + 1020 / 340) + 60\mu A \cdot 1020 = 5.06V$

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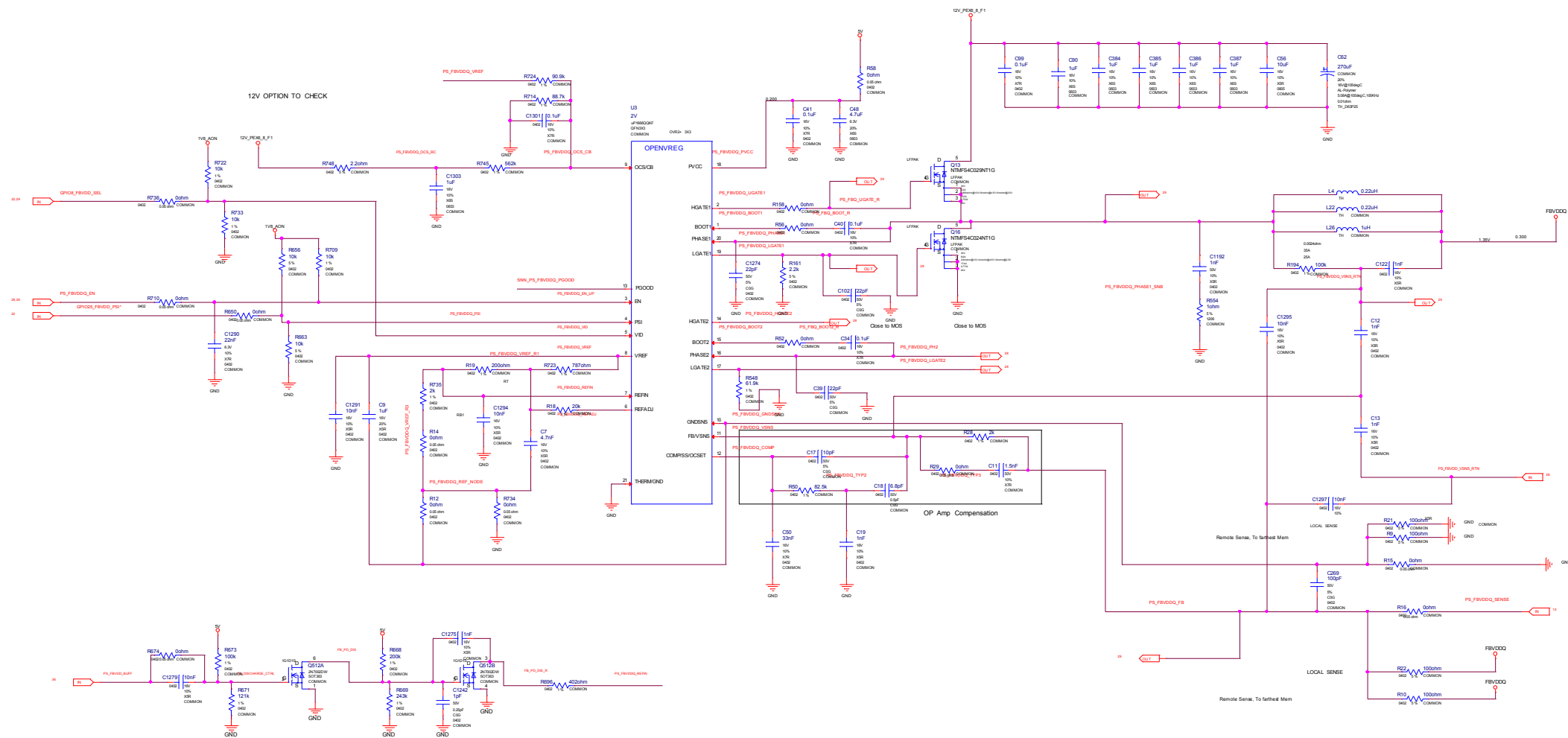
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|----------------------------|--------------------|------|-------------|
| NVIDIA CORPORATION         |                    |      |             |
| 2701 SAN TOMAS EXPRESSWAY  |                    |      |             |
| SANTA CLARA, CA 95050, USA |                    |      |             |
| NV_PN                      | 600-1G166-BASE-A02 | PKG  | 25 OF 41    |
| PCB REV                    | TG166-A02          | DATE | 01-AUG-2019 |
| BCM REV                    | A                  | DATE | 01-AUG-2019 |

## PEX\_VDD Switcher

ADD 3 MORE MLCC  
3V3 F is Far Away From Source



|                            |                    |                                                                                       |             |
|----------------------------|--------------------|---------------------------------------------------------------------------------------|-------------|
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| NV_PN                      | 600-1G166-BASE-A02 |                                                                                       |             |
| PCB REV                    | 1G166-A02          | PRGE                                                                                  | 28 OF 41    |
| BOM REV                    | A                  | DATE                                                                                  | 01-AUG-2019 |



|             |                        |
|-------------|------------------------|
| ASSEMBLY    | <ASSEMBLY_DESCRIPTION> |
| PAGE DETAIL | PS: FBVDDQ             |

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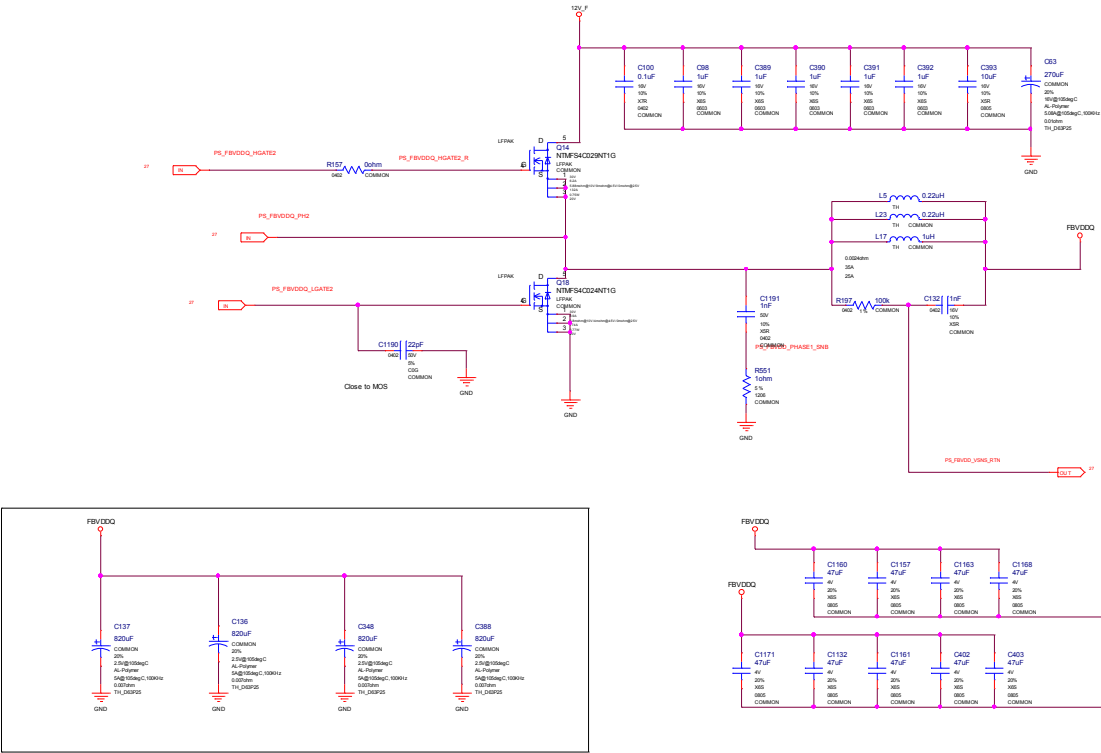
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| NV_PN | 600-1G166-BASE-A02 |
|-------|--------------------|

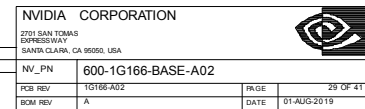
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|---------|-----------|
| PCB REV | 1G166-A02 |
|---------|-----------|

|  |         |  |
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|  | BOM REV |  |
|--|---------|--|

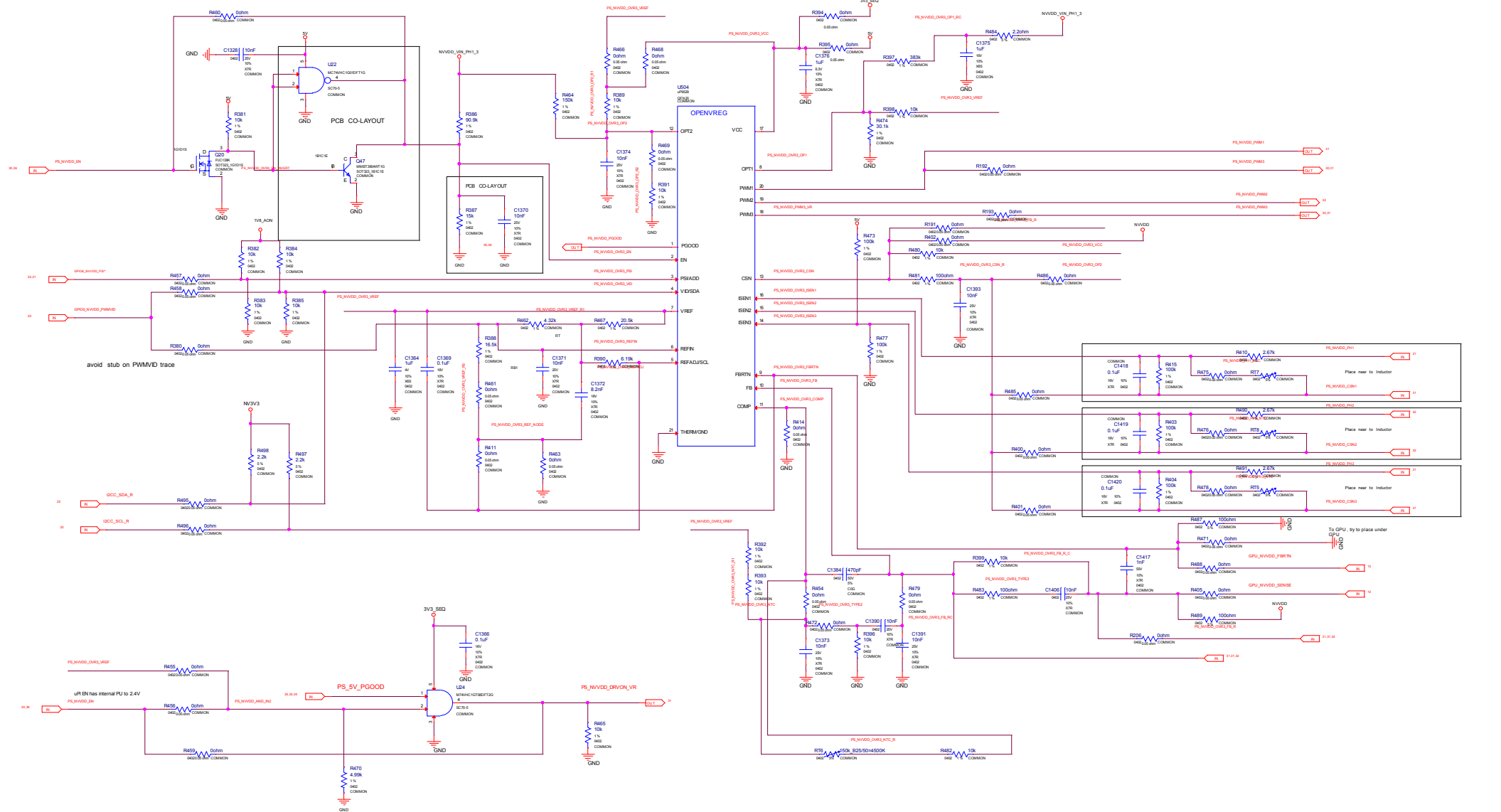
|      |          |
|------|----------|
| PAGE | 27 OF 41 |
|------|----------|

|      |             |
|------|-------------|
| DATE | 01-AUG-2019 |
|------|-------------|





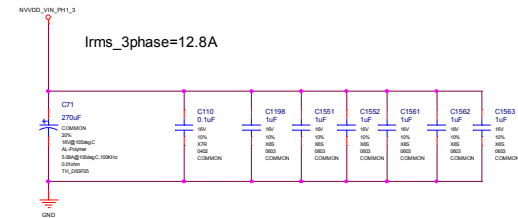
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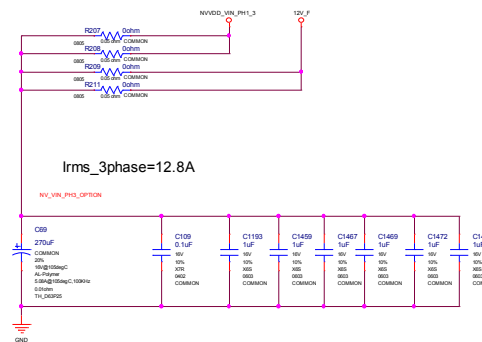
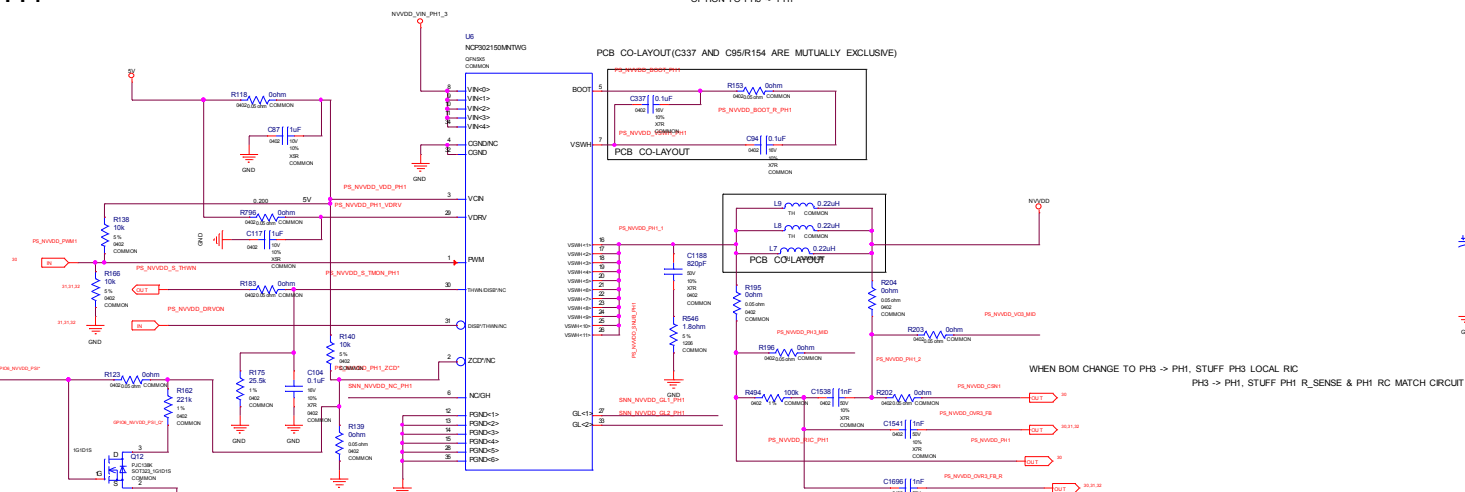
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| ASSEMBLY      | ASSEMBLY DESCRIPTION |
|---------------|----------------------|
| PS: NVVDD CTR | PS: NVVDD Controller |

|                                                          |                    |
|----------------------------------------------------------|--------------------|
| NVIDIA CORPORATION                                       |                    |
| 2701 SAN TOMAS EXPRESS WAY<br>SANTA CLARA, CA 95050, USA |                    |
| NV_PN                                                    | 600-1G166-BASE-A02 |
| PCB REV                                                  | TG166-A02          |
| ICOM REV                                                 | A                  |
| PRG#                                                     | 30 OF 41           |
| DATE                                                     | 01-AUG-2019        |



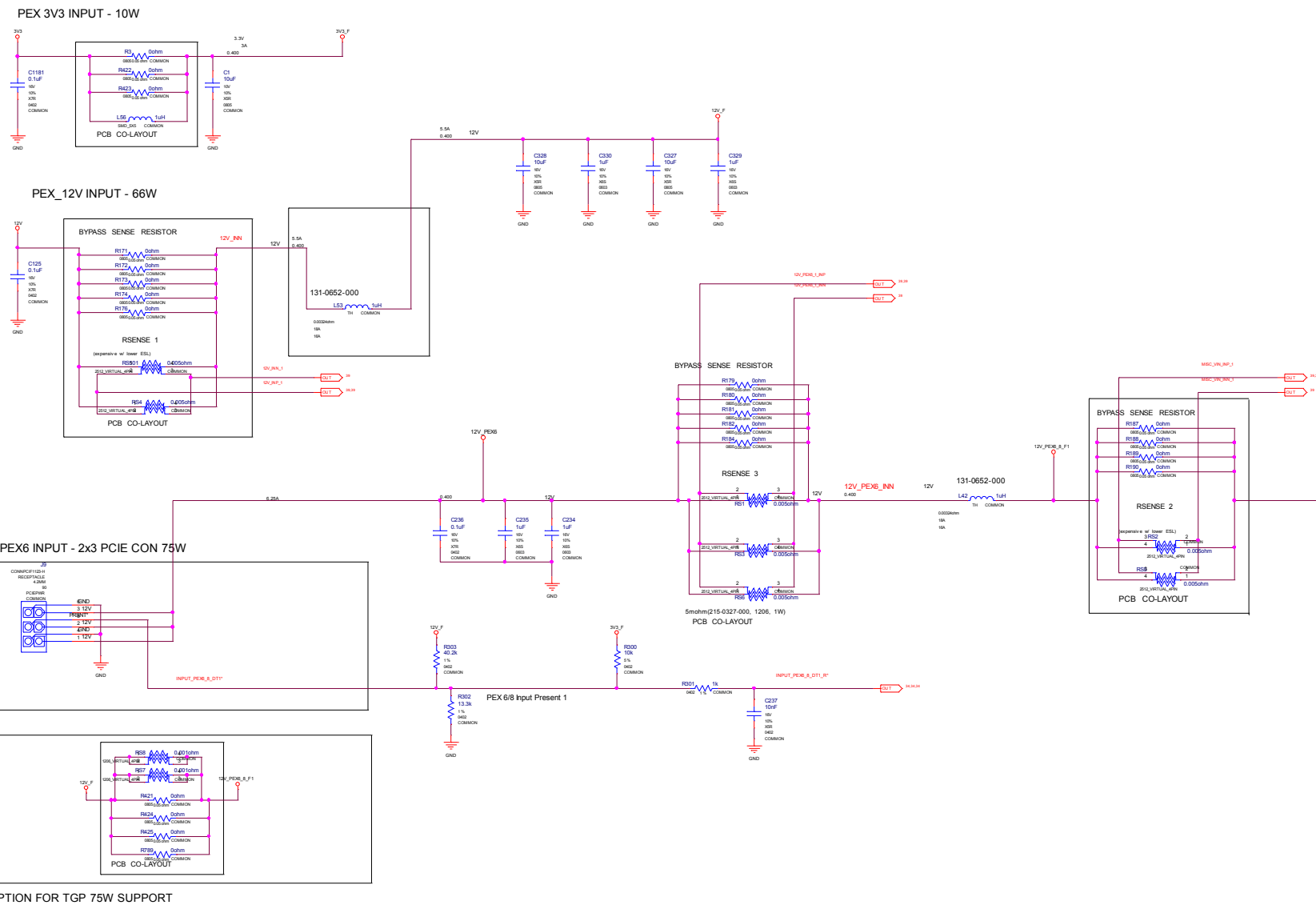
## PH1

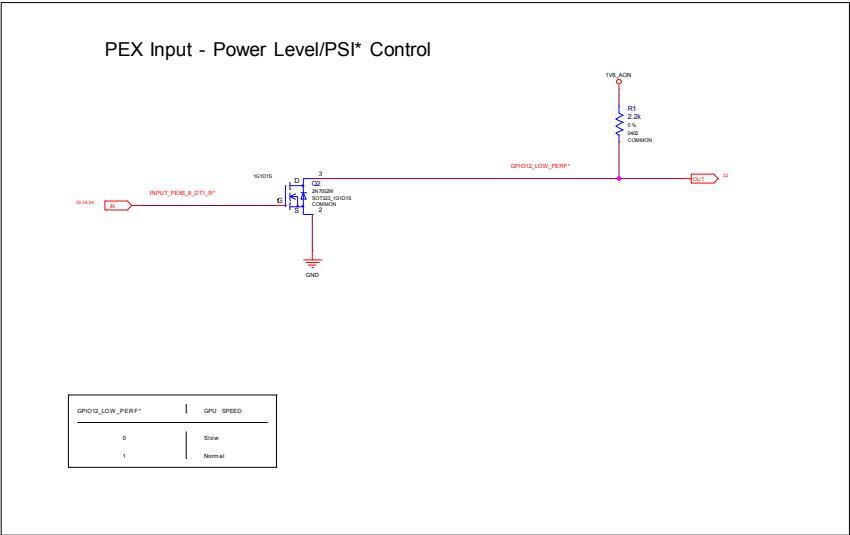
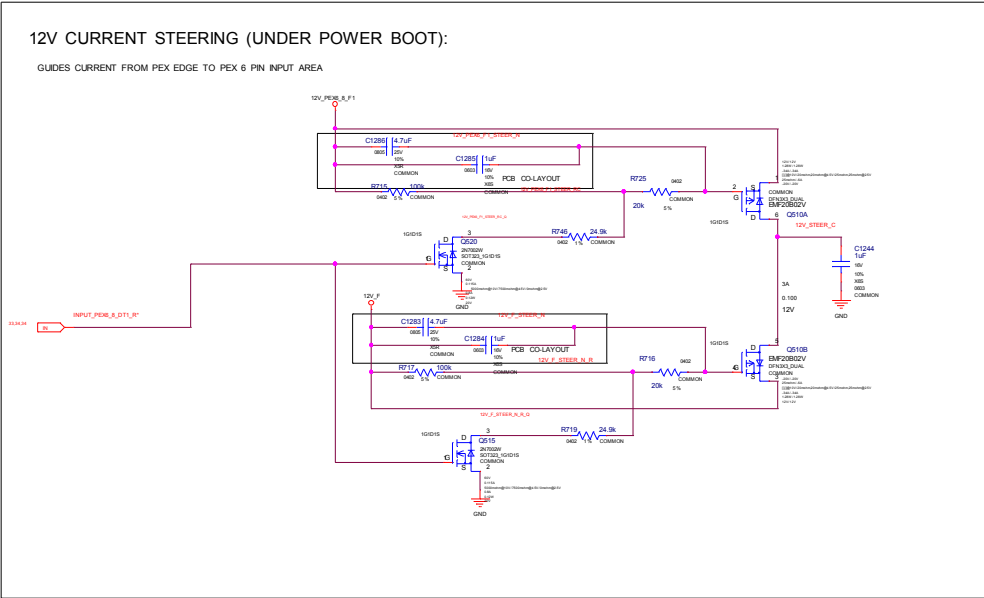
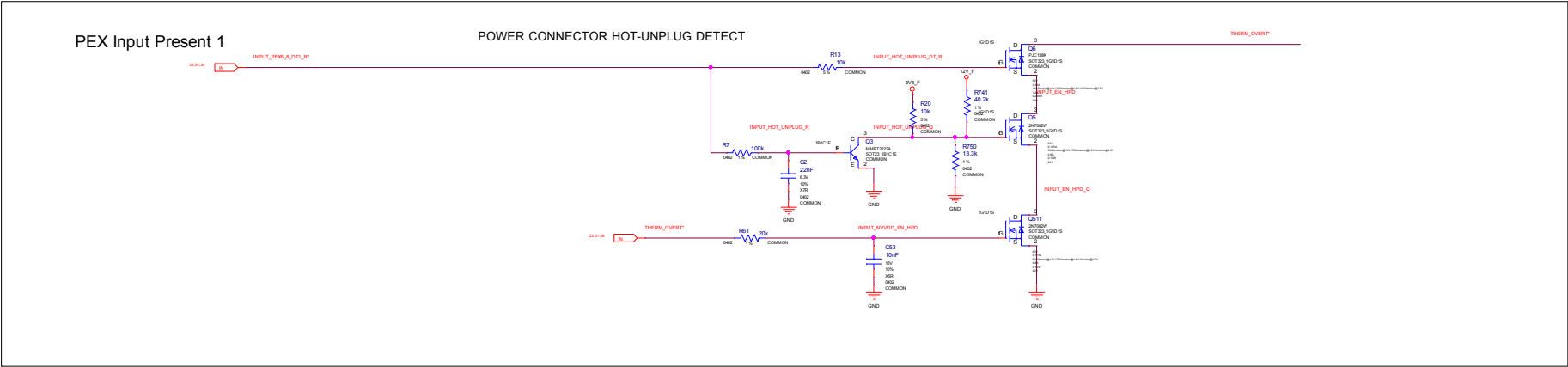


|             |                        |
|-------------|------------------------|
| COMMON      |                        |
| ASSEMBLY    | <ASSEMBLY_DESCRIPTION> |
| PAGE DETAIL | PS: NVVDD Phase 1,3    |

|                                                                                         |           |                                                                                       |             |
|-----------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------|-------------|
| <b>NVIDIA CORPORATION</b><br>2701 SAN TOMAS<br>EXPRESSWAY<br>SANTA CLARA, CA 95050, USA |           |  |             |
| <b>NV_PN</b>                                                                            |           | <b>600-1G166-BASE-A02</b>                                                             |             |
| <b>PCB REV</b>                                                                          | 1G166-A02 | <b>PRGE</b>                                                                           | 31 OF 4     |
| <b>BOM REV</b>                                                                          | A         | <b>DATE</b>                                                                           | 01-AUG-2019 |







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ASSEMBLY

FRGE DETAIL

ASSEMBLY DESCRIPTION

PS: STEERING, LFB & HOT-UNPLUG

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NV\_PN

600-1G166-BASE-A02

PCB REV

10166-A02

BOM REV

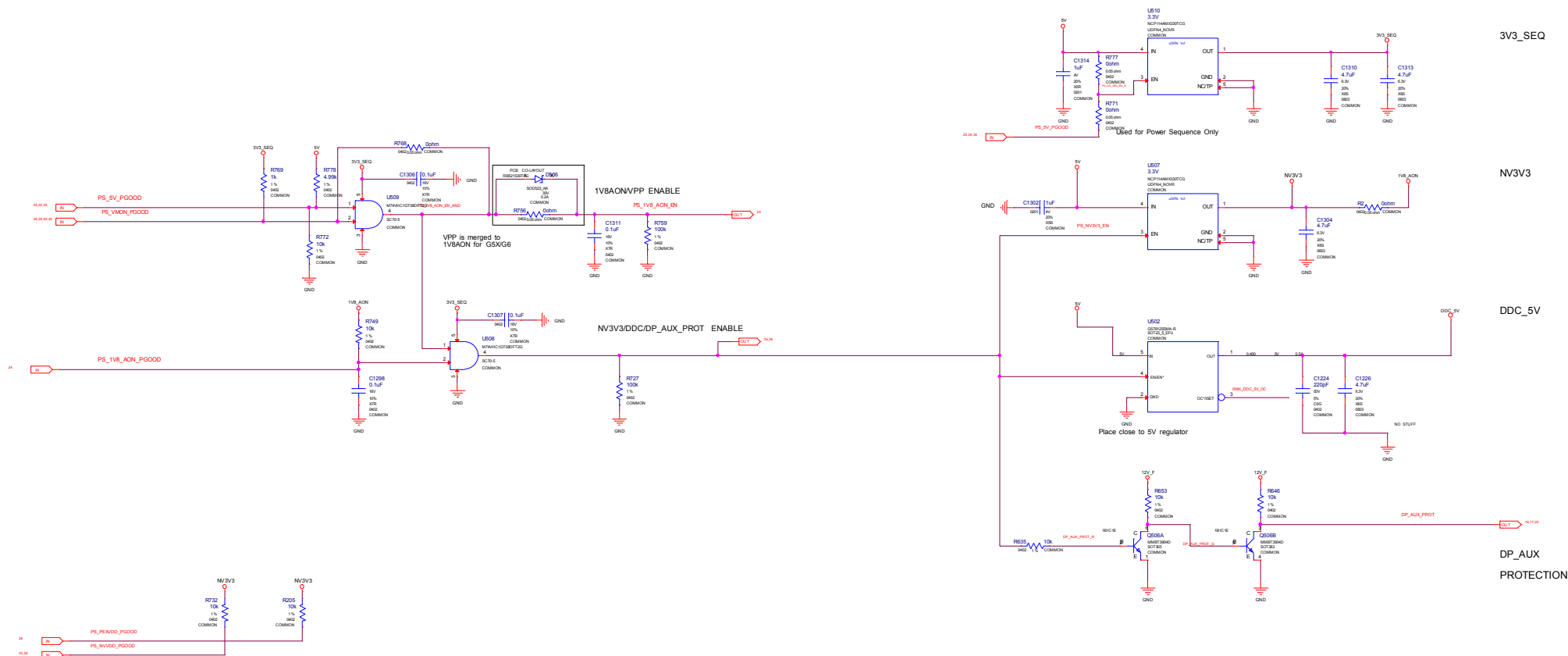
A

PRGE

DATE

34 OF 41

01-AUG-2019

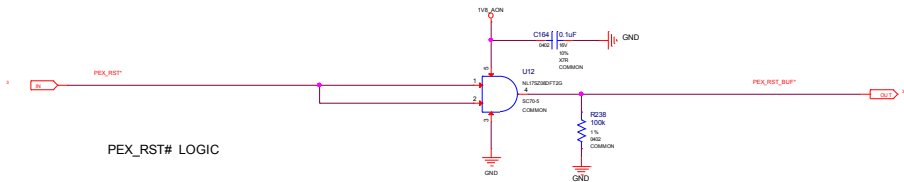
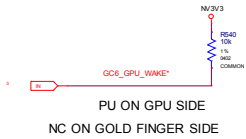


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|             |                                                  |
|-------------|--------------------------------------------------|
| ASSEMBLY    | <ASSEMBLY_DESCRIPTION>                           |
| PAGE DETAIL | SEQ 1V8_AON, 3V3_SEQ, NV3V3, DDC_5V, DP_AUX_PROT |

|                            |                    |      |             |
|----------------------------|--------------------|------|-------------|
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| NV_PN                      | 600-1G166-BASE-A02 |      |             |
| PCB REV                    | 1G166-A02          | PAGE | 35 OF 41    |
| ROM REV                    | A                  | DATE | 01-AUG-2019 |

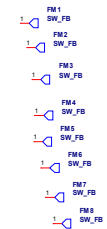
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| <b>NVIDIA CORPORATION</b><br>2701 SAN TOMAS EXPRESSWAY<br>SANTA CLARA, CA 95050, USA |           |                           |  |  |
| <b>NV_PN</b>                                                                         |           | <b>600-1G166-BASE-A02</b> |                                                                                       |  |
| PCB REV                                                                              | 1G166-A02 | PAGE                      | 36 OF 41                                                                              |  |
| BOX REV                                                                              | A         | DATE                      | 01-AUG-2019                                                                           |  |



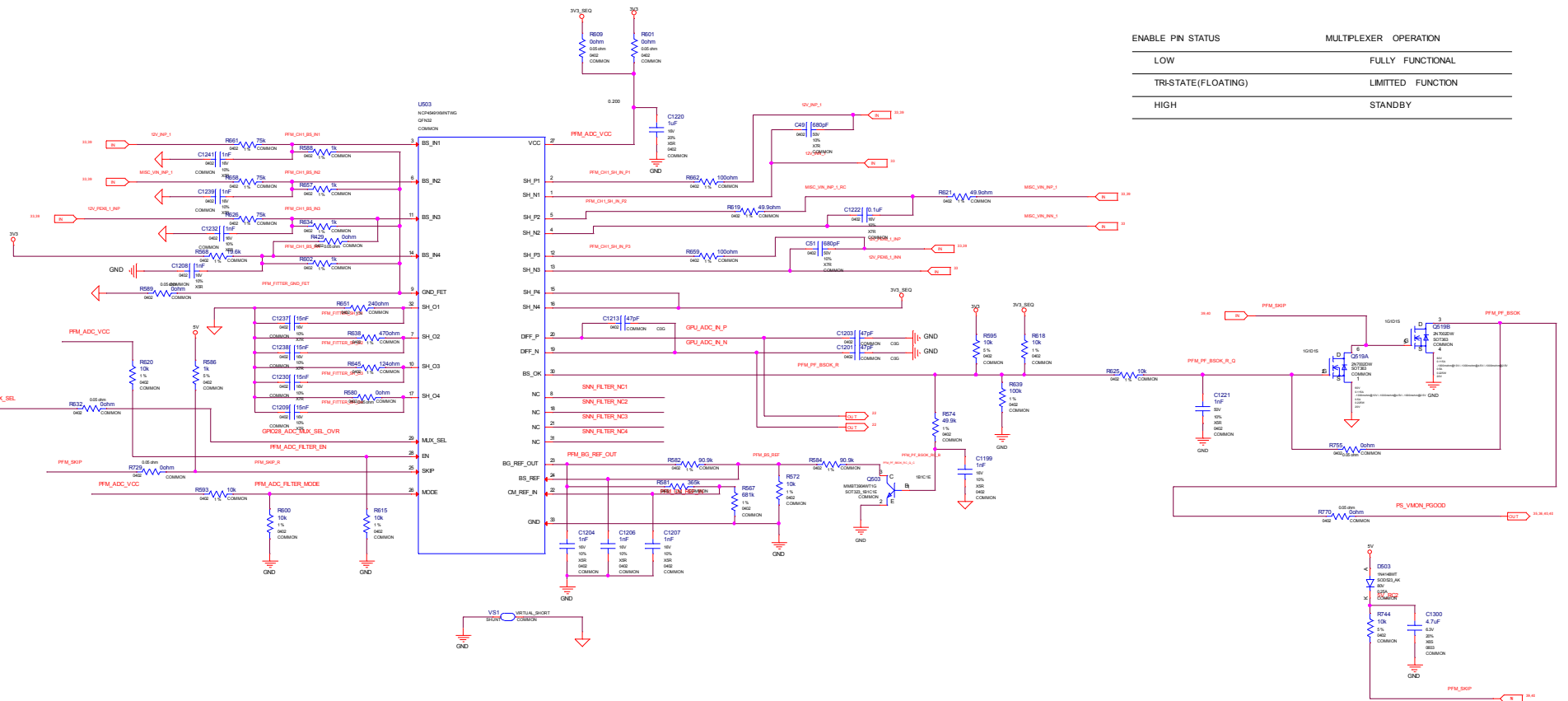
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| NV_PN                      |           | 600-1G166-BASE-A02 |             |
| PCB REV                    | T0166-A02 | PRGE               | 37 OF 41    |
| ROM REV                    | A         | DATE               | 01-AUG-2019 |

## Page38: FAN



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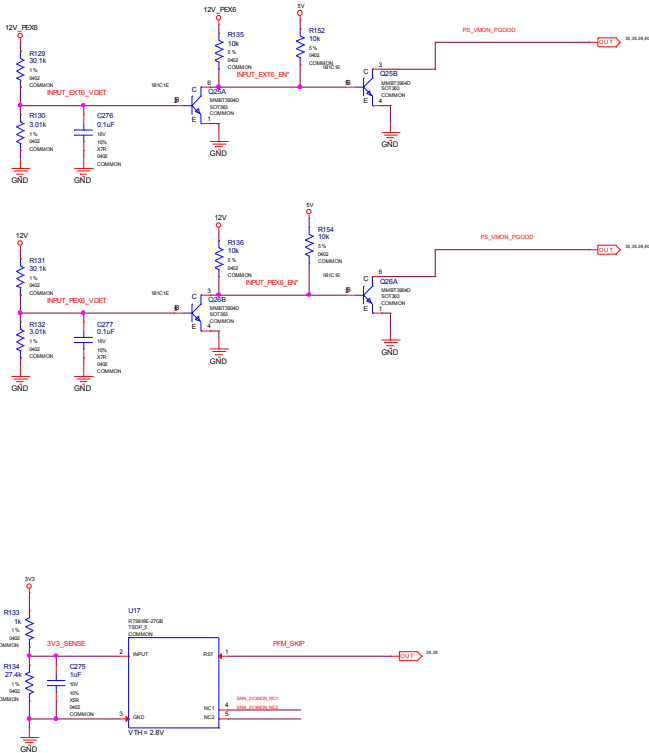
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EXPRESSWAY  
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NV\_PN 600-1G166-BASE-A02

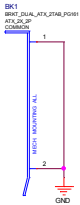
| PCB REV | TG166-A02 | PKG  | 39 OF 41    |
|---------|-----------|------|-------------|
| BCM REV | A         | DATE | 01-AUG-2019 |



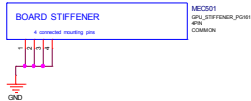
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| NV_PN                      | 600-1G166-BASE-A02 |      |             |
| PCB REV                    | TG166-A02          | PKG  | 40 OF 41    |
| BCM REV                    | A                  | DATE | 01-AUG-2019 |

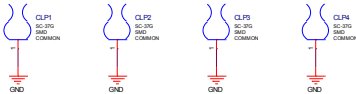
Bracket:



BACK STIFFENER:



EMI CLIP:



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| NV_PN                      |           | 600-1G166-BASE-A02 |             |
| PCB REV                    | T0166-A02 | PRGE               | 41 OF 41    |
| ROM REV                    | A         | DATE               | 01-AUG-2019 |