

V191-30

P684-A01 GT216 DESKTOP Low Profile  
PCI-EXPRESSx16 DL-DVI HDMI VGA DDR3

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V191 0A pcb change list

- Page 2 : Add EC1802 for 12V input
- Page 9 : Move ESD part to I/O input and change ESD parts footprint
- Page 10 : Move ESD part to I/O input and change ESD parts footprint and change DACB DSUB Header
- Page 11 : Move ESD part to hotplug input and change ESD parts footprint and Add EMI solution
- Page 12 : Move ESD part to hotplug input and change ESD parts footprint and Add EMI solution
- Page 16 : Add Fly\_cable / MC1 HDMI screw / PCB and change EMI Spring footprint
- Page 17 : Remove J6 JTAG
- Page 18 : Add HAD\_RST\* pull down Resistor
- Page 19 : Change 5V solution to SOT223 LDO and remove U3 reserve and add C52 for 3V3 and C138 for IFP\_PLLVDD
- Page 20 : Change FBVDDQ to UP6101 and PEX\_VDD to UP7706 solution
- Page 21 : Change NVVDD to UP6101 solution and add impedance test header

V191 30 pcb change list

- Page 9 : Add Capacitor on ESD part for RGB
- Page 10 : Remove Flycable function
- Page 11 : Move hotplug input ESD part locate to same as P684
- Page 12 : Move hotplug input ESD part locate to same as P684
- Page 18 : Remove HDCP and Biosinfo ROM
- Page 21 : change EC321,EC323 footprint size to 6.3x9

REV	VARIANT	NVPN	ASSEMBLY
0	BASE	600-10684-base-100	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO. STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SRU000	600-10684-0000-100	GT216-300 600/1000MHz 1024MB 64MBx16 BGAT100 800MHz DDR3 DVI-UDPHDMI-VGA
2	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
3	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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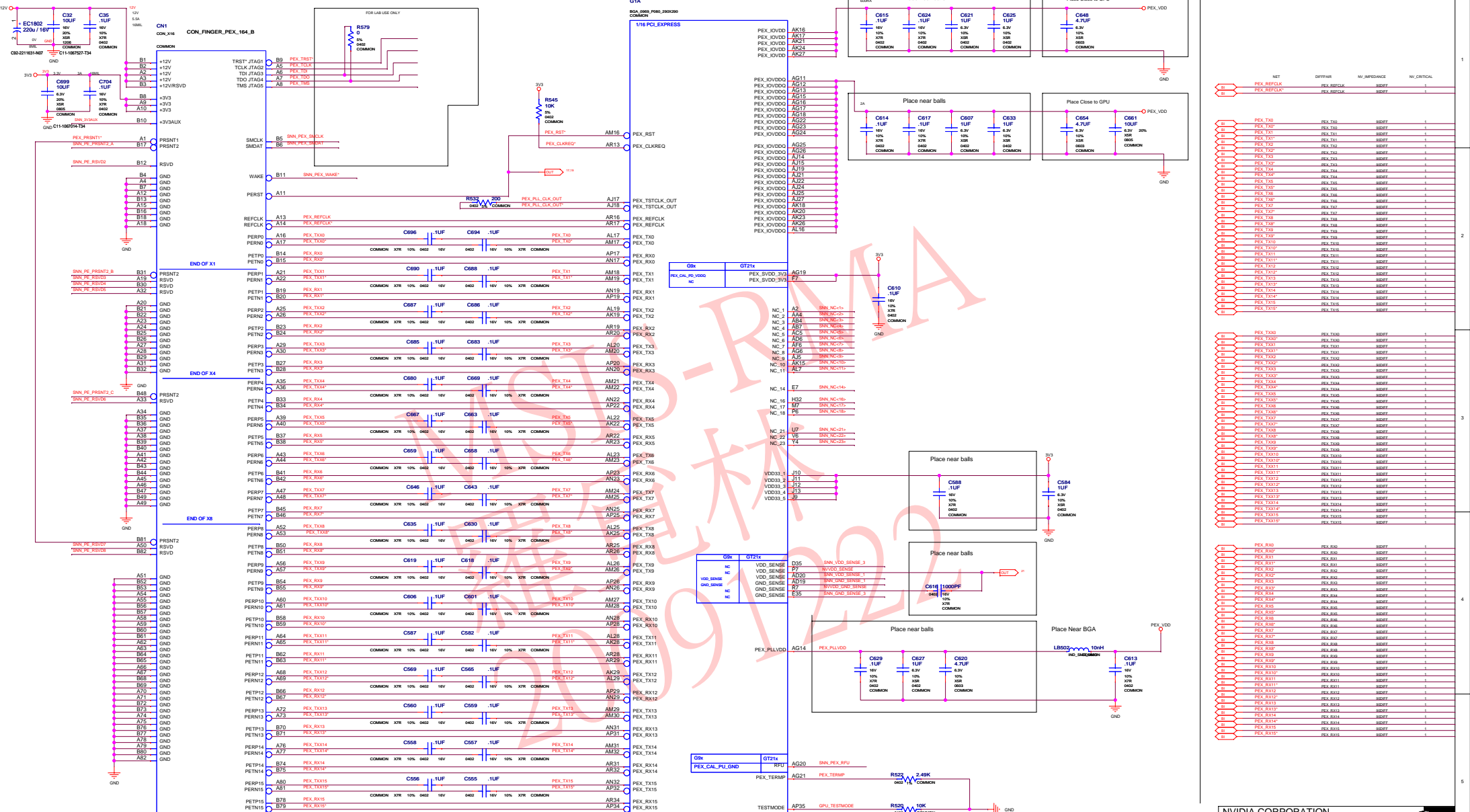
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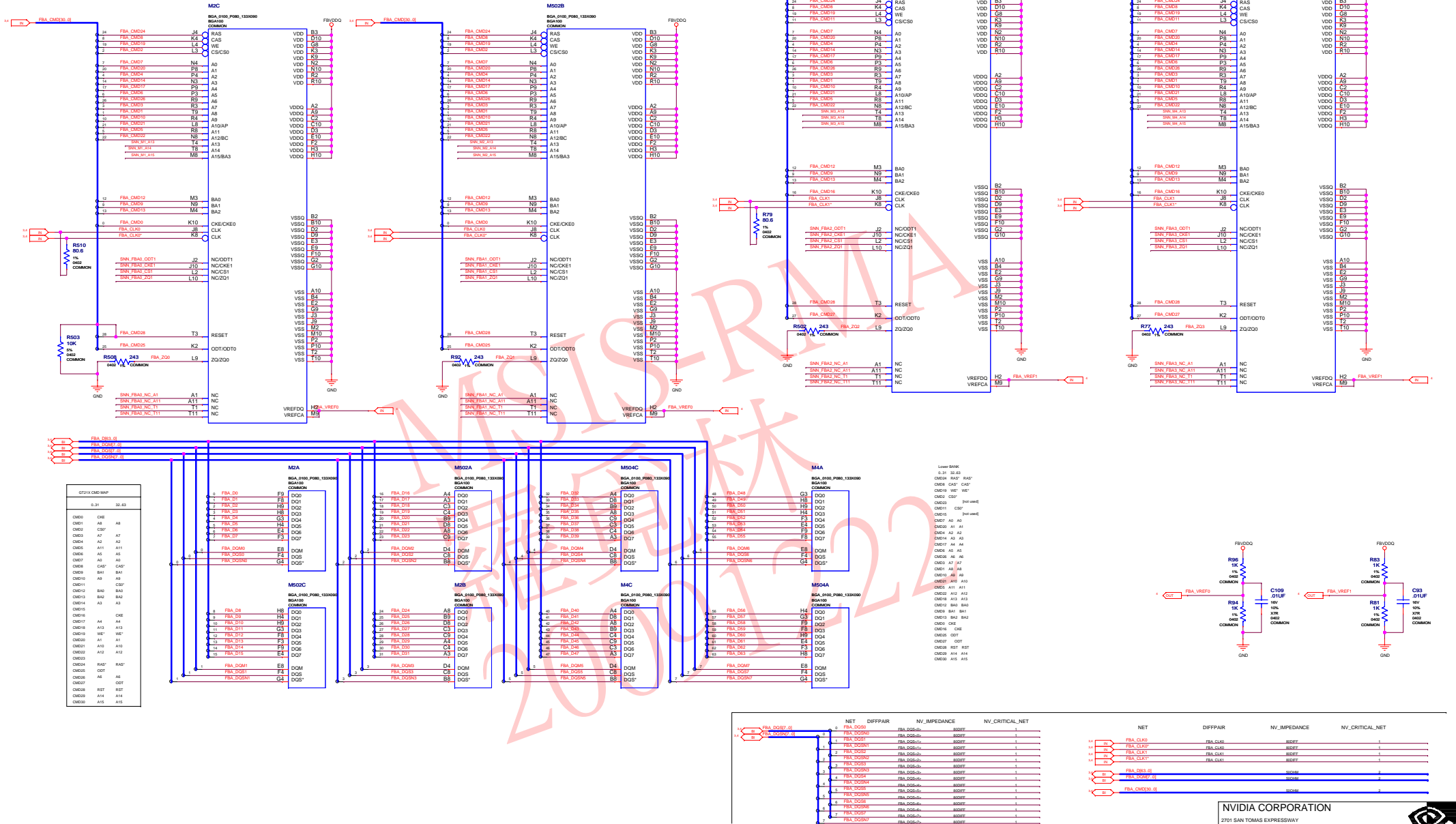


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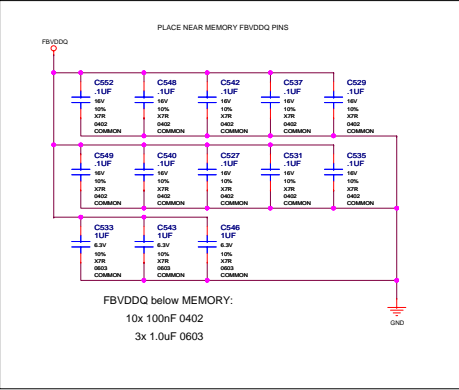


PARTITION A MEMORY

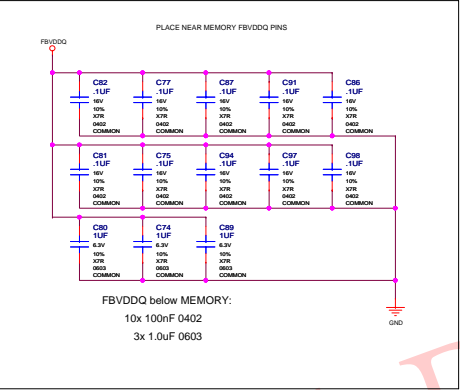


FBA DECOUPLING CAPS & NVVDD DECOUPLING CAPS

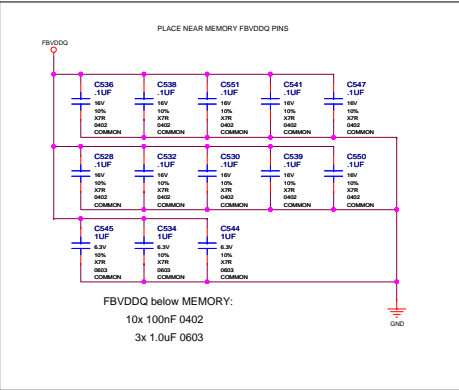
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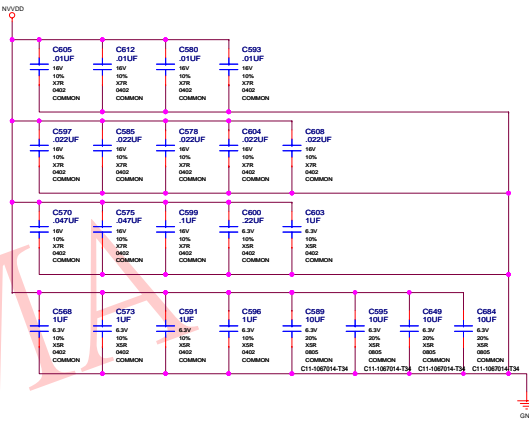
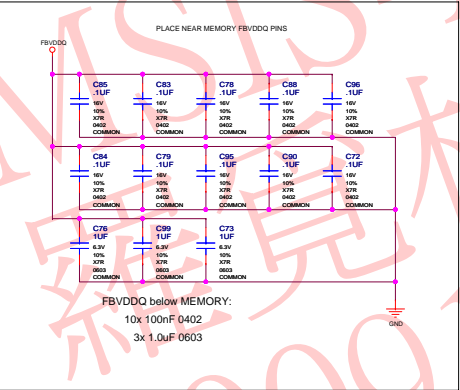
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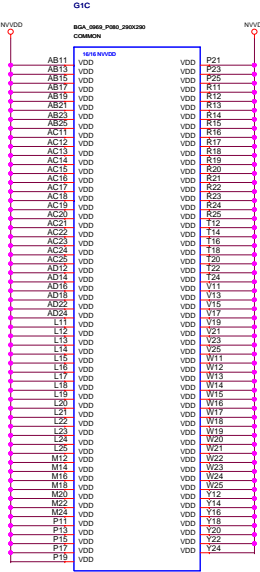
Decoupling for FBA 32..47



Decoupling for FBA 48..63

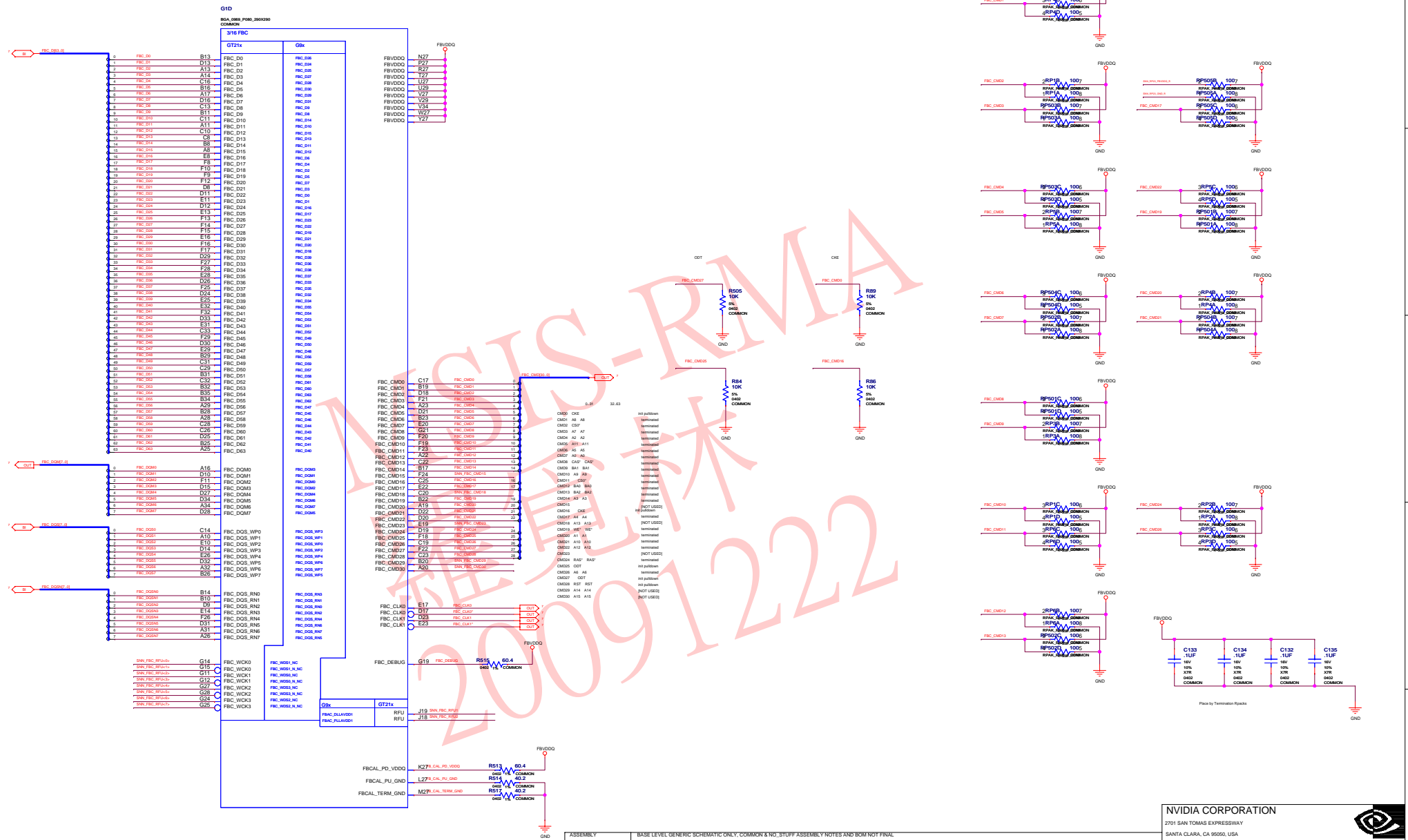


NVVDD under GPU:  
4x 0.01uF 0402 X7R  
5x 0.022uF 0402 X7R  
2x 0.047uF 0402 X7R  
1x 0.1uF 0402 X7R  
1x 0.22uF 0402 X7R  
4x 1.0uF 0402 X5R  
1x 2.2uF 0402 X5R  
2x 10uF 0805 X5R



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## PARTITION C FRAME BUFFER INTERFACE



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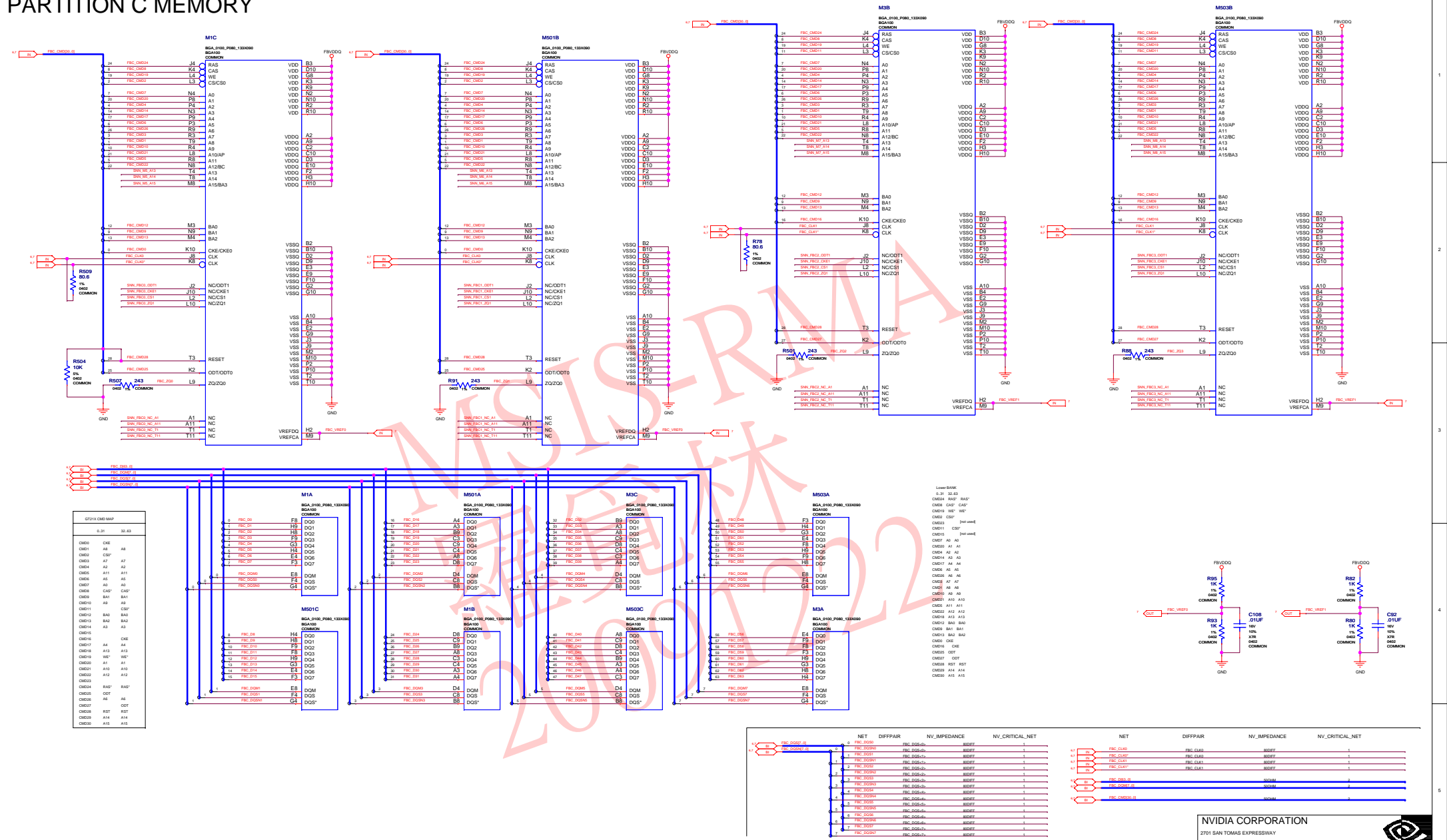
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## PARTITION C MEMORY



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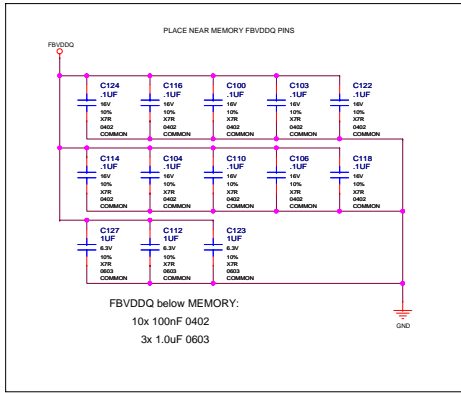
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PAGE DETAIL	PARTITION C MEMORIES

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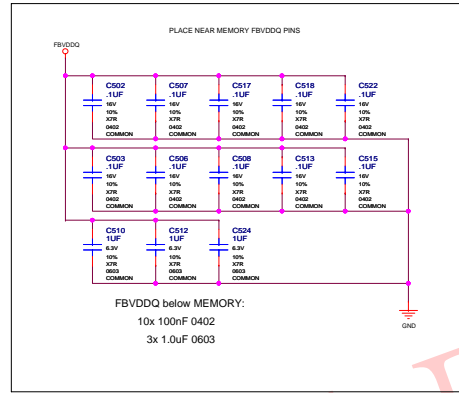


## FBC DECOUPLING CAPS & NVVDD DECOUPLING CAPS

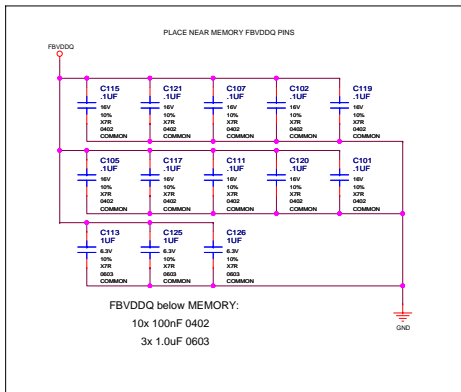
## Decoupling for FBC 0..15



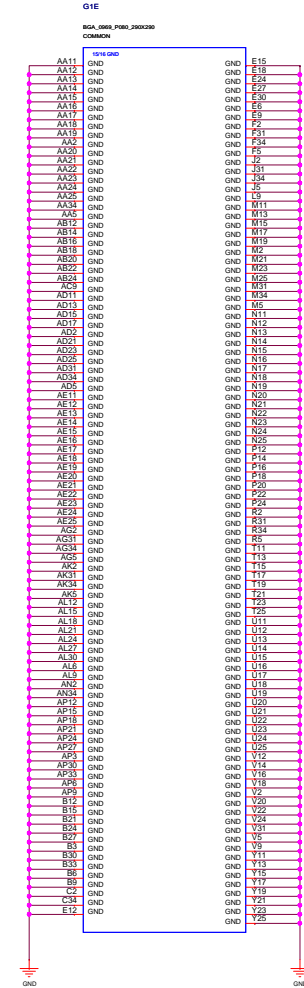
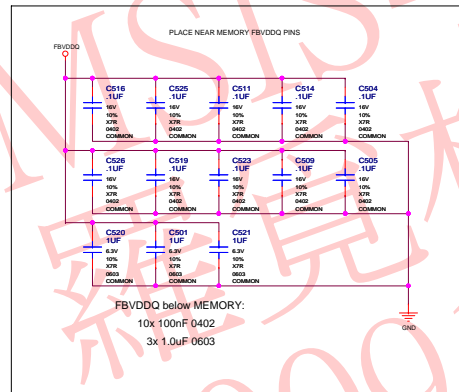
## Decoupling for FBC 16..31



## Decoupling for FBC 32..47



## Decoupling for FBC 48..63



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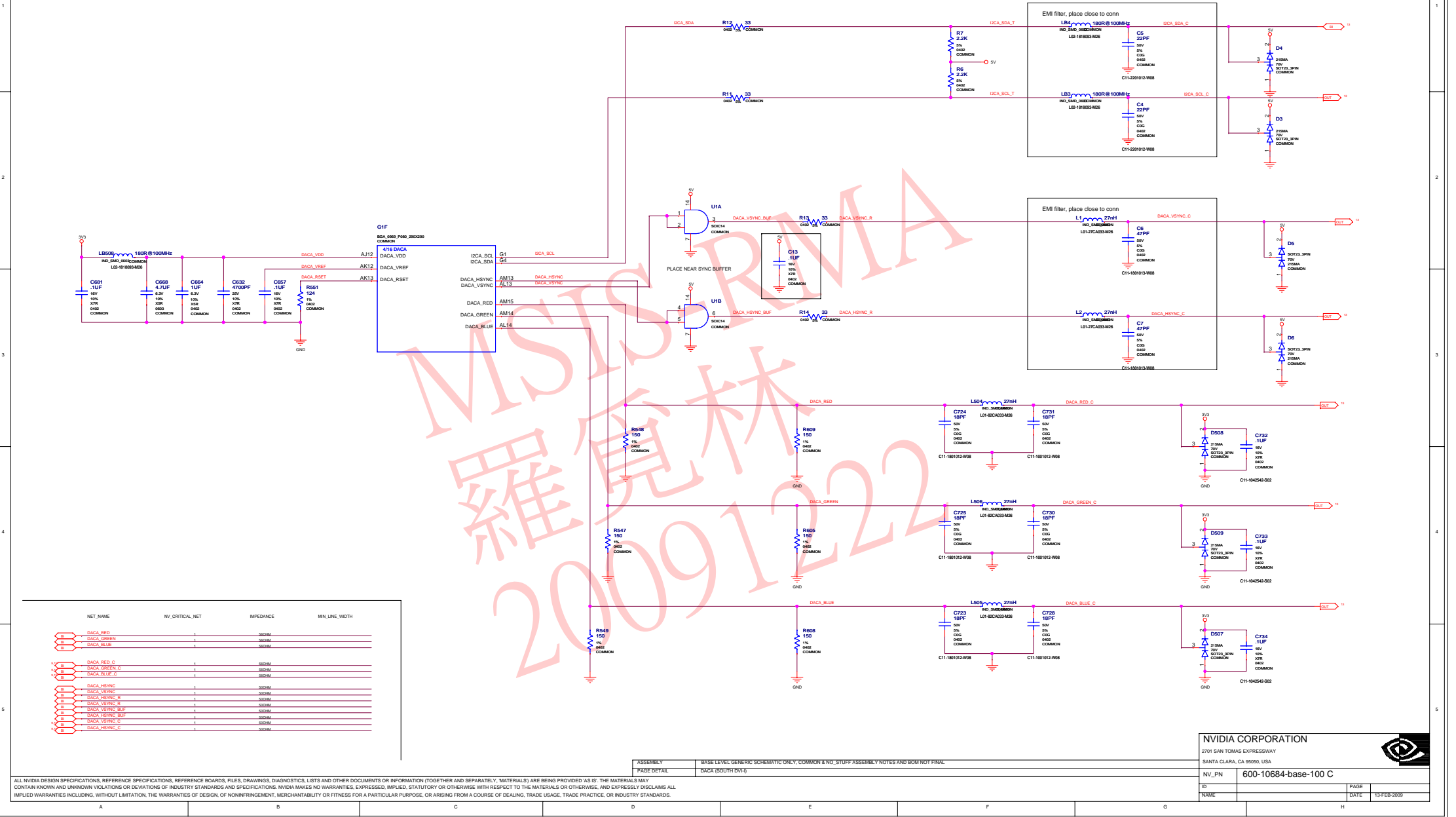
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DACA (SOUTH DVI-I)



NET_NAME	NV_CRITICAL_NET	IMPEDANCE	MIN_LINE_WIDTH
DACA_RED	+	50.0Ω	
DACA_GREEN	+	50.0Ω	
DACA_BLUE	+	50.0Ω	
DACA_RED_C	+	50.0Ω	
DACA_GREEN_C	+	50.0Ω	
DACA_BLUE_C	+	50.0Ω	
DACA_HSYNC	+	50.0Ω	
DACA_VSYNC	+	50.0Ω	
DACA_VSYNC_B	+	50.0Ω	
DACA_VSYNC_R	+	50.0Ω	
DACA_VSYNC_G	+	50.0Ω	
DACA_VSYNC_C	+	50.0Ω	

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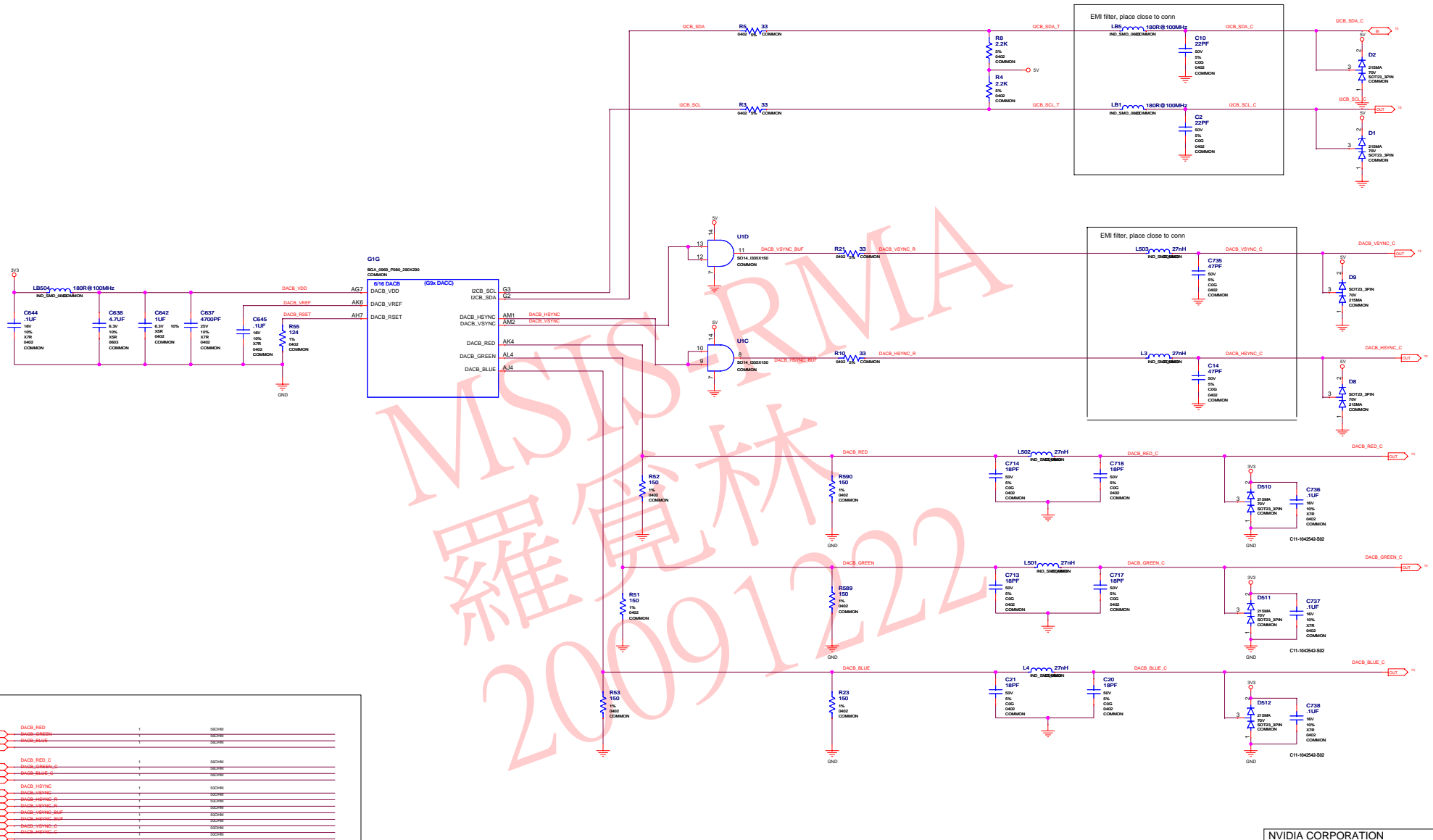
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PAGE DETAIL	DACA (SOUTH DVI-I)

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DACB (cable-up VGA)



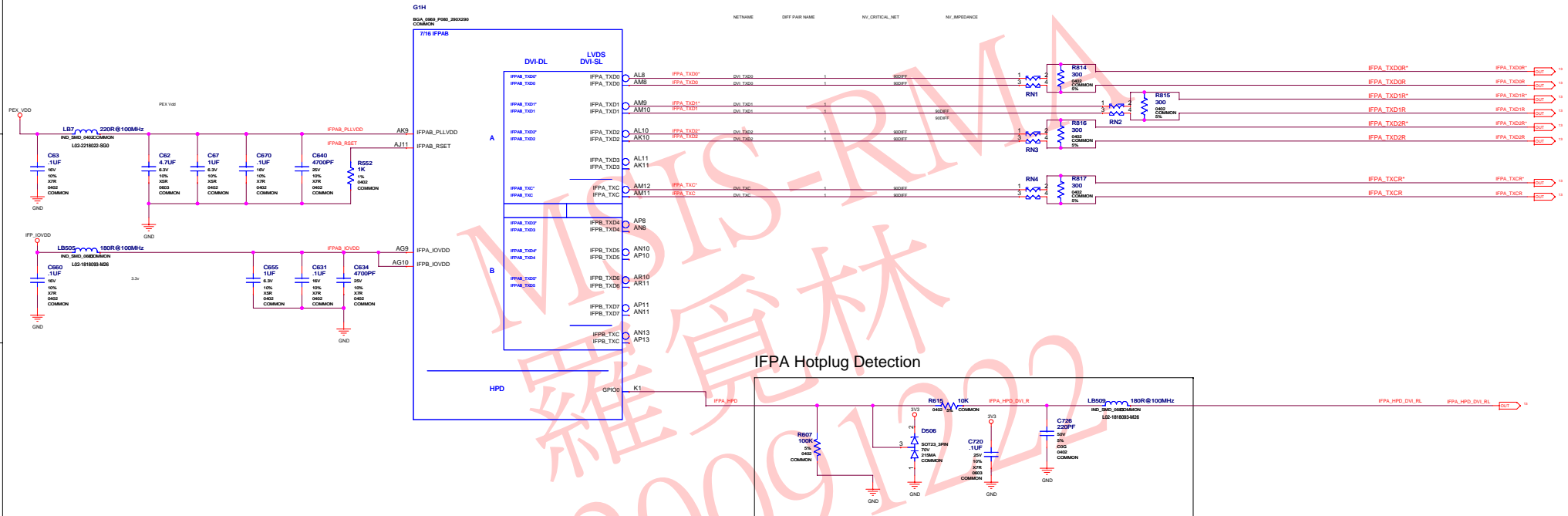
E	DACB_RED	1	500W
E	DACB_RED-0	1	500W
E	DACB_BLUE	1	500W
E			
E	DACB_RED-C	1	500W
E	DACB_GREEN-C	1	500W
E	DACB_BLUE-C	1	500W
E			
E	DACB_HSTING	1	500W
E	DACB_HSTING-0	1	500W
E	DACB_HSTING-0	1	500W
E	DACB_HSTING-0	1	500W
E	DACB_HSTING-BUF	1	500W
E	DACB_HSTING-BUF	1	500W
E	DACB_HSTING-BUF	1	500W
E	DACB_HSTING-C	1	500W
E	DACB_HSTING-C	1	500W
E	DACB_HSTING-C	1	500W

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	DACB (MID DVI-I)

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## IFP AB (SOUTH DVI-I)

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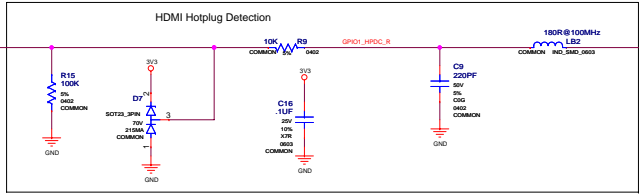
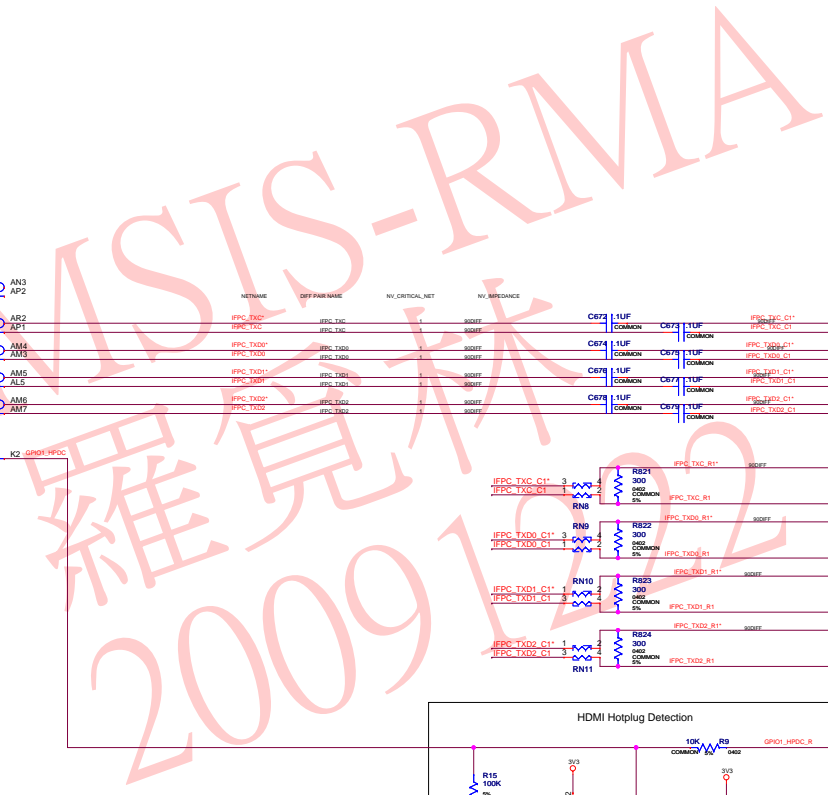
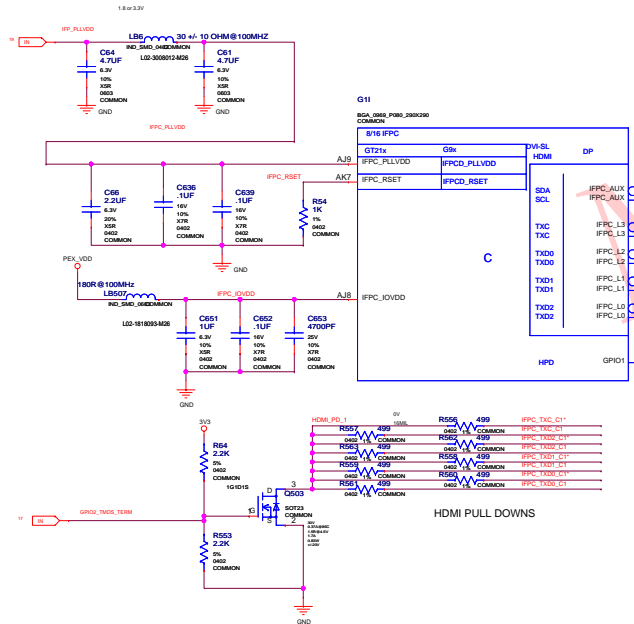
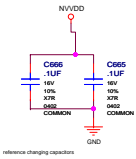
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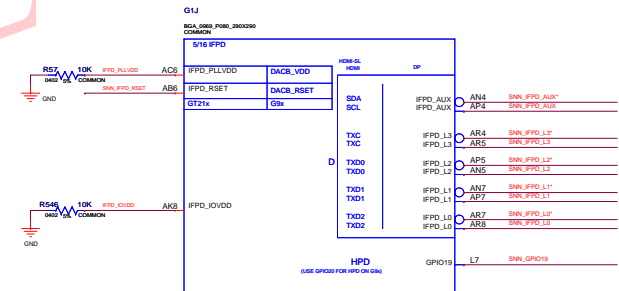
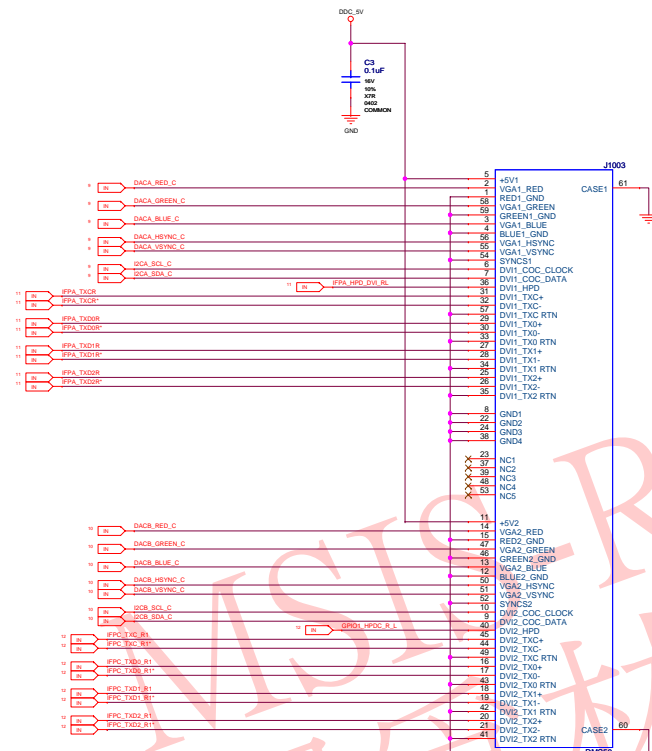
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IFP C (NORTH HDMI)



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## IFP D (UNUSED)



	NET	PAIR	NV_CRITICAL	IMPEDANCE
10	FFPE_AUX_BYP		1	
11	FFPE_AUX_BYP	FFPE_AUX_BYP	1	SOFT
12	FFPE_AUX_BYP	FFPE_AUX_BYP		SOFT

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ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	IFP D (UNUSED) & MID DISPLAYPORT

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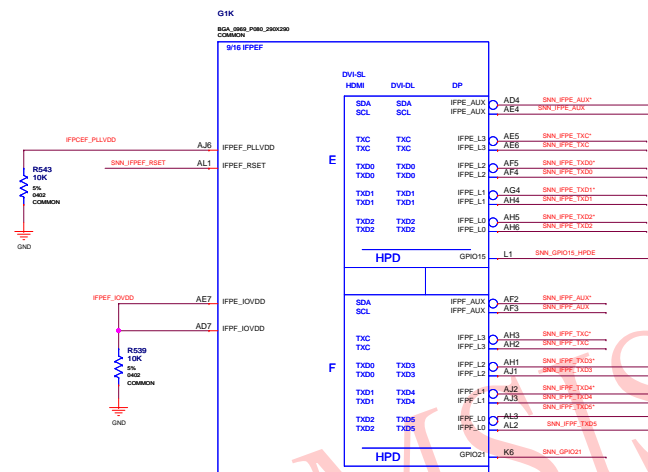
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## IFP EF (unused)



	PAIR	INV_CRITICAL	IMPEDANCE
(B)	EPW TAD <sup>1</sup>	EPW TAD <sup>1</sup>	1
(B)	EPW TAD <sup>2</sup>	EPW TAD <sup>2</sup>	1
(B)	EPW TAD <sup>3</sup>	EPW TAD <sup>3</sup>	1
(B)	EPW TAD <sup>4</sup>	EPW TAD <sup>4</sup>	1
(B)	EPW TAD <sup>5</sup>	EPW TAD <sup>5</sup>	1
(B)	EPW TAD <sup>6</sup>	EPW TAD <sup>6</sup>	1
(B)	EPW TAD <sup>7</sup>	EPW TAD <sup>7</sup>	1
(B)	EPW TAD <sup>8</sup>	EPW TAD <sup>8</sup>	1
(B)	EPW TAD <sup>9</sup>	EPW TAD <sup>9</sup>	1
(B)	EPW TAD <sup>10</sup>	EPW TAD <sup>10</sup>	1
(B)	EPW TAD <sup>11</sup>	EPW TAD <sup>11</sup>	1
(B)	EPW TAD <sup>12</sup>	EPW TAD <sup>12</sup>	1
(B)	EPW TAD <sup>13</sup>	EPW TAD <sup>13</sup>	1
(B)	EPW TAD <sup>14</sup>	EPW TAD <sup>14</sup>	1
(B)	EPW TAD <sup>15</sup>	EPW TAD <sup>15</sup>	1
(B)	EPW TAD <sup>16</sup>	EPW TAD <sup>16</sup>	1
(B)	EPW TAD <sup>17</sup>	EPW TAD <sup>17</sup>	1
(B)	EPW TAD <sup>18</sup>	EPW TAD <sup>18</sup>	1
(B)	EPW TAD <sup>19</sup>	EPW TAD <sup>19</sup>	1
(B)	EPW TAD <sup>20</sup>	EPW TAD <sup>20</sup>	1
(B)	EPW TAD <sup>21</sup>	EPW TAD <sup>21</sup>	1
(B)	EPW TAD <sup>22</sup>	EPW TAD <sup>22</sup>	1
(B)	EPW TAD <sup>23</sup>	EPW TAD <sup>23</sup>	1
(B)	EPW TAD <sup>24</sup>	EPW TAD <sup>24</sup>	1
(B)	EPW TAD <sup>25</sup>	EPW TAD <sup>25</sup>	1
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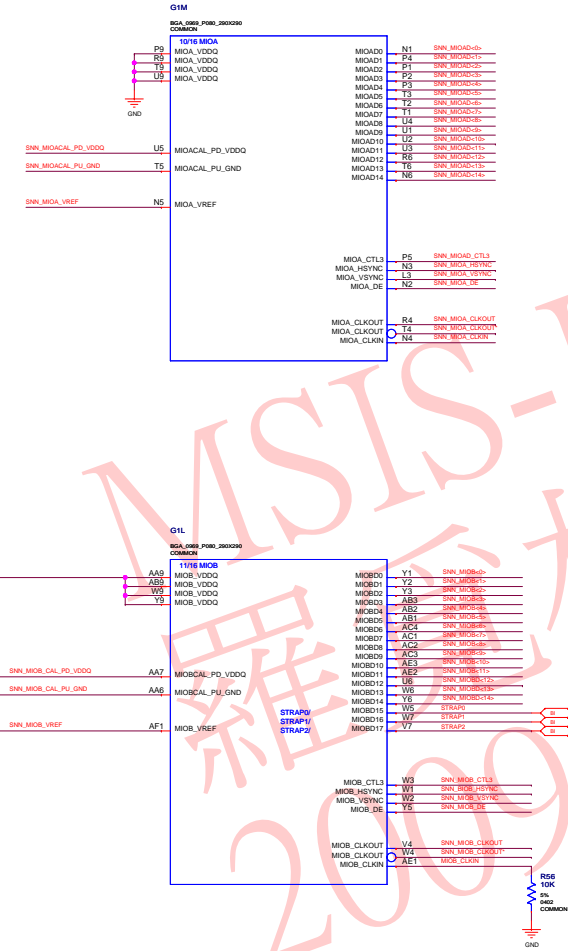


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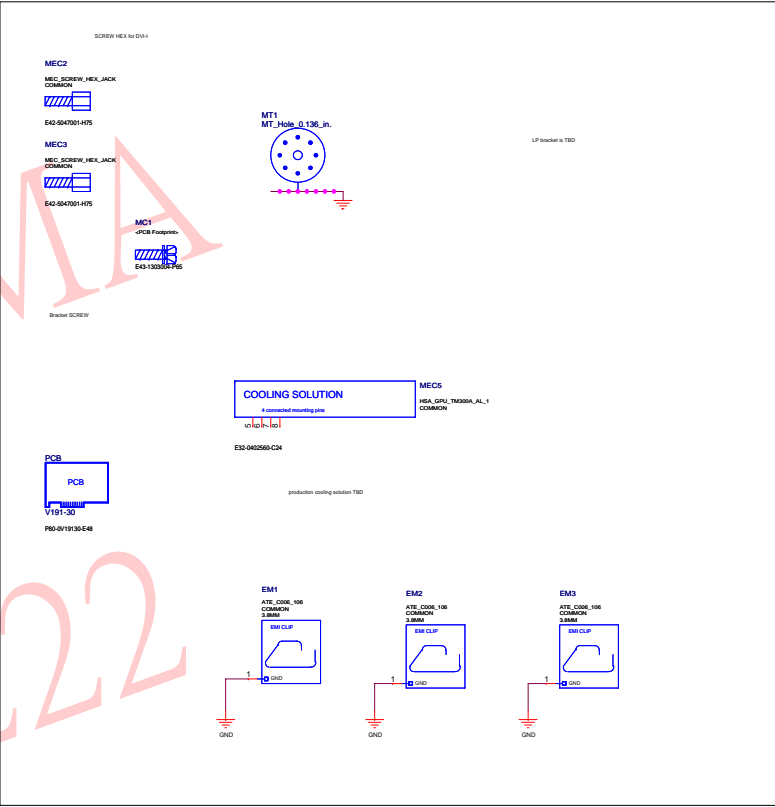
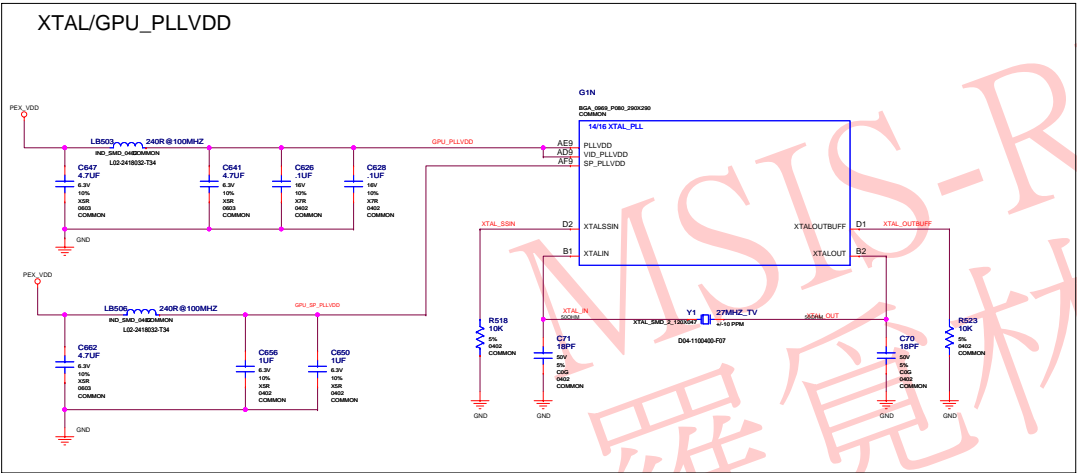


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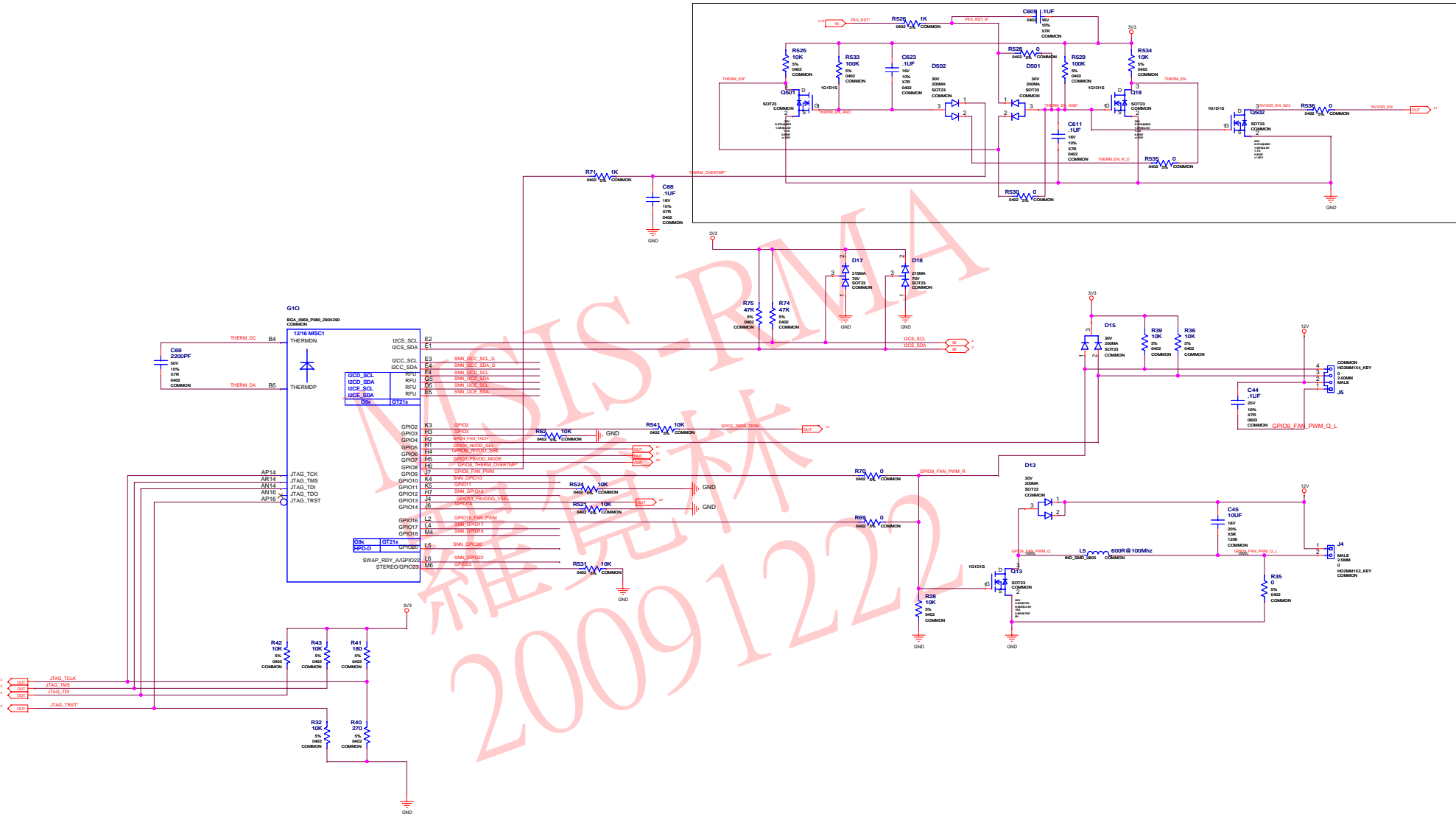
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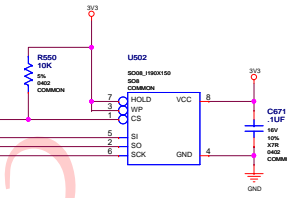
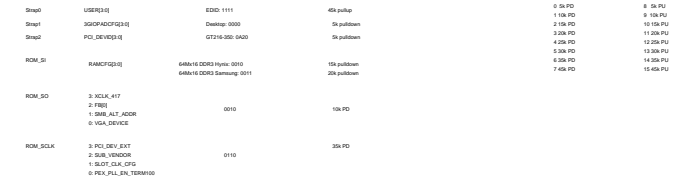
FAN CONTROL, GPIO, JTAG

OVERTEMP LATCH



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## STRAPPING OPTIONS



	MULTI_STRAP_REF1_GND	MULTI_STRAP_REF0_GND
BINARY PRODUCTION STRAP MODE:	40.2k 1% TO GND	NC
BINARY BRINGUP STRAP MODE:	NC	NC
MULTI-LEVEL STRAP MODE:	40.2k 1% TO GND	40.2k 1% TO GND



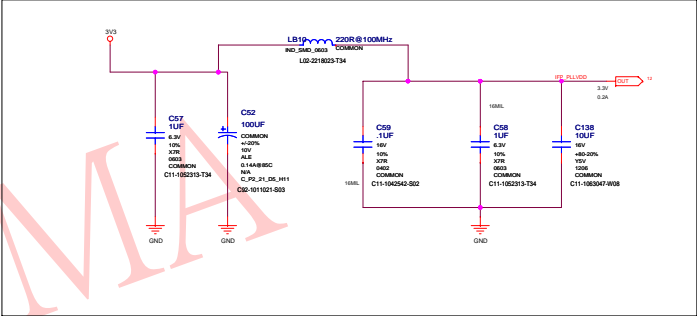
NV_PN	600-10684-base-100 C
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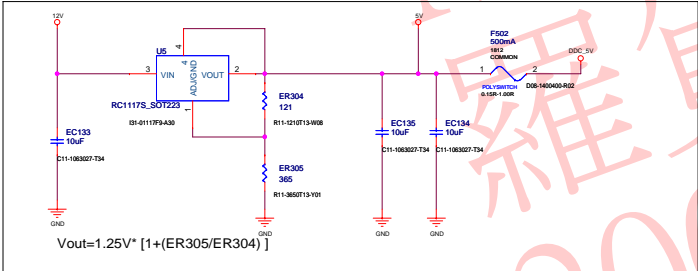
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LINEAR POWER SUPPLIES

IFP\_PLLVDD SUPPLY

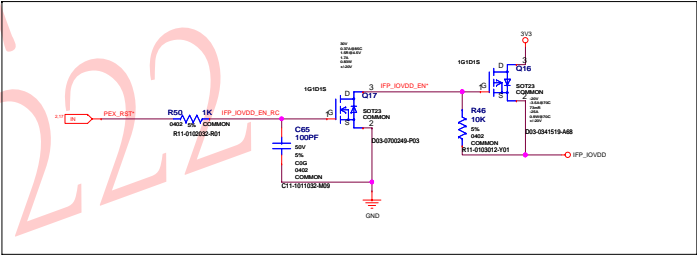


5V & DDC\_5V REGULATOR



$5.0206 = 1.25V * [1+(ER305/ER304)]$

IFP\_IOVDD BACKDRIVE PREVENTION



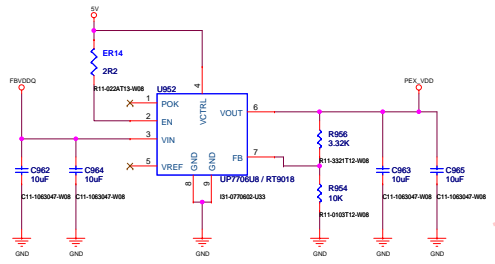
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FBVDDQ/PEXVDD POWER SUPPLY

PEX\_VDD = 1.05V @ 2.7A



PEXVDD = 1.05V @ 3A



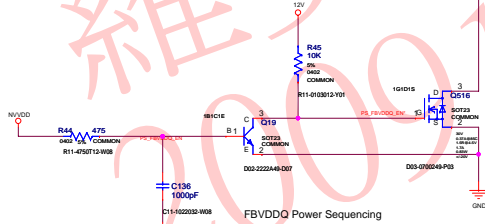
$V_{out} = V_{ref} * (1 + R_{top} / R_{bot})$   
 $1.05V = 0.8V * (1 + R574 / R573)$   
 $1.06582V = 0.8V * (1 + 105 / 316)$

**$V_{out}=0.8V * (1 + R956 / R954)$**   
 **$1.0656=0.8V * (1 + 3.32k / 10k)$**

loop = -Vocp / Rds(on) @ Lower MOSFET with 10mohm Rds(on)

Rscp (ohm)	4000	42k	39k	10k
Vocp (mV)	-375	-1300	-285	-155
Rscp (n)	37.5	25	22.5	15

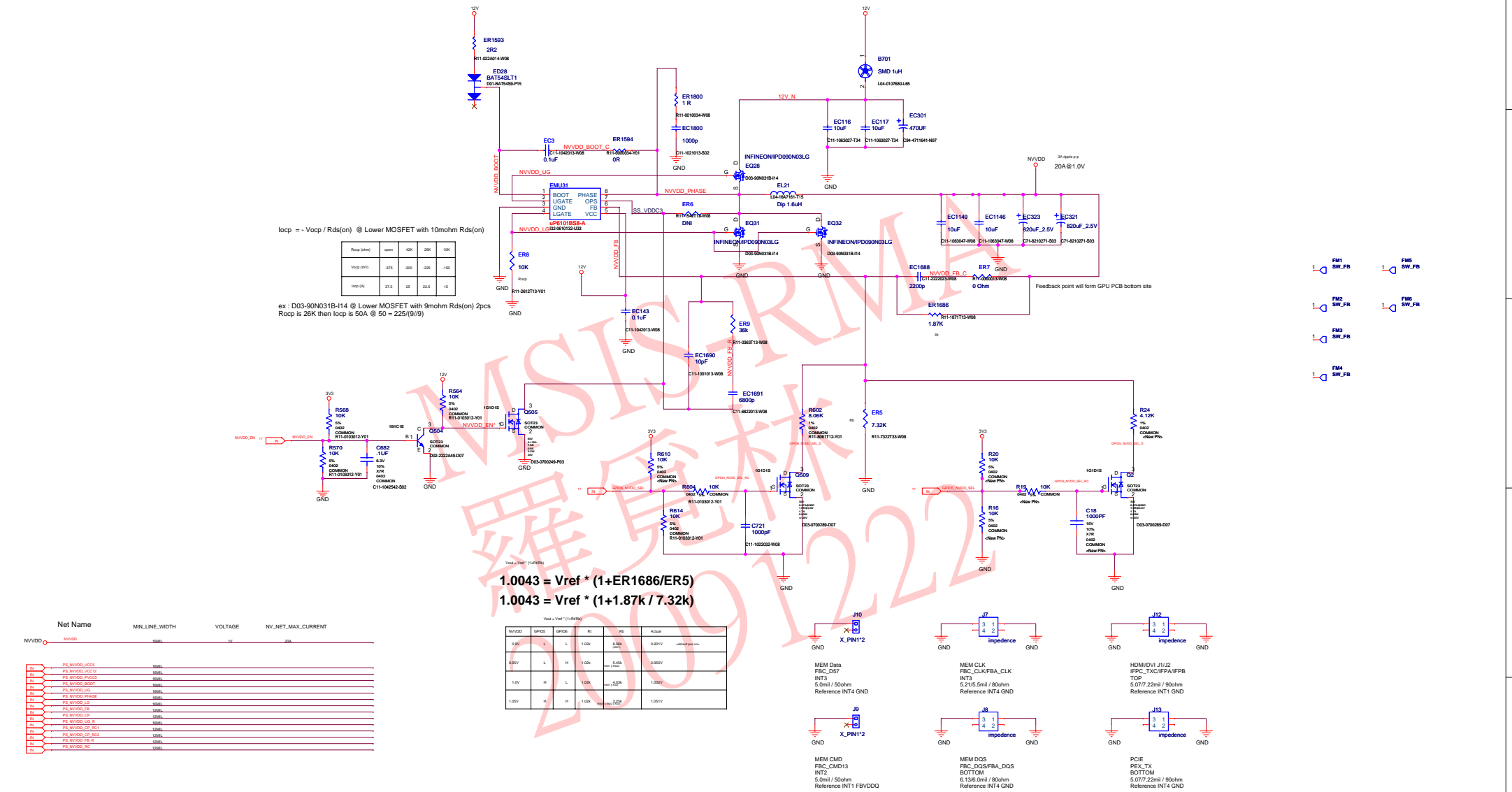
ex : D03-90N031B-114 @ Lower MOSFET with 9mohm Rds(on) 1pcs  
Rscp is 10K then loop is 16.6A @ 16.6 = 150/9




$FBVDDQ = V_{ref} * (1 + R_{top} / R_{bot})$   
 $1.50V = 0.8V * (1 + R570 / R572) @ GPIO13 = 0 [DEFAULT]$   
 $1.51208V = 0.8V * (1 + 1.62k / 1.82k) @ GPIO13 = 0 [DEFAULT]$   
 **$1.512V = 0.8V * (1 + ER12 / ER13)$**   
 **$1.51208V = 0.8V * (1 + 1.62k / 1.82k)$**



## NVVDD POWER SUPPLY



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