C116-B, NV18B/NV31/NV34, 8MX16DDR, 64MB, VIDEO OUT, VGA

Page Overview

1 C116B PAGE OVERVIEW

2 NV18B AGP Section and AGP connector

3 NV18B FRAME BUFFER Interface

4 MEMORY 64MB, 8Mx16DDR Bits 0..31

5 MEMORY 64MB, 8Mx16DDR Bits 32..63

6 NV18B STRAPPING, I/O Interface & BIOS, FAN CONNECTOR

7 NV18B DACA, DACB output, SYNC amplifier & PLL Section

8 PRIMARY DISPLAY Filter and Connector

9 NV18 TMDS Power, VIDEO OUT CONNECTOR

10 POWER SUPPLY & A3V3 & FBVDDQ & NVVDD & FBVDD

11 MECHANICS

HISTORY:

0B

A. Change R534 from 2.43K_1% to 2.55K_1% (R11-2551T13-Y01), R533 change from 1.05K_1% to 1.18K_1% (R11-1181T13-Y01) to get FBVDDQ=2.528V.
B. Add R591 (2.2 ohm_0603_5%) and C409 (2200p_0603) to reduce VRM noise on L1 pin1.
200. SHORT ALL MEMORY DAMPING RESISTOR AND CHANGE COLOR TO RED.
210. ADD FBAA12 TO SUPPORT 16M*16 MEMORY

1 change all 0402 footprint to 0603.

2.Page 2
a.removeC62,C590,C574,C566,C615,C628,C642,C631,C626,C648,C647,C645,C624,R609,R625
b.add 2 MOSFET for U200 daul-lay

3.Page 3
remove C603,C609,C618,C611,C612,C610,C604,C592,
R768,R770,R772,R774

4.Page 4,5
a.removeC1112,C238,C241,C1115,C250,C1113,
C1114,C228,C230,C1120,C1119,C247,C245,C244,
C1121,C232,C1122
b.removeC1100,C247,C277,C1101,C1102,C286,C264,
C1104,C1106,C280,C281,C299,C1107,C1108,
C269,C270
c.remove memory data all damping(15ohm).
d.Move bypass capacitors(C1161,C1162,C1163,C1164)of memory clock to
close GPU(PAGE3).

5.Page 6
remove U13(BIOS(ALTERNATIVE)),TEMP Sensor
6.Page 7
change Y3 package to DIP

7.Page 8
remove R695,R694,R693,R7,R1,C788,C797,C819,
C806,C787,C796,C805,C818,C786,
C795,C817,C804,L510,L509,L508

8. Page 10
a.remove S_OUT1,AV_OUT1,C789,C809,C790,
C810,C791,C812,L519,L520,L521
b.add 9pin-mini-din

9. Page 11
a.remove ISL6529
b.add mosfet and OP(LM358) for NVVDD,FBVDD,FBVDDQ
c.change C41,C39 to DIP package

0728

change data[48:63) sequence
ddr suport 16*16M

0728

SUPORT NV18B

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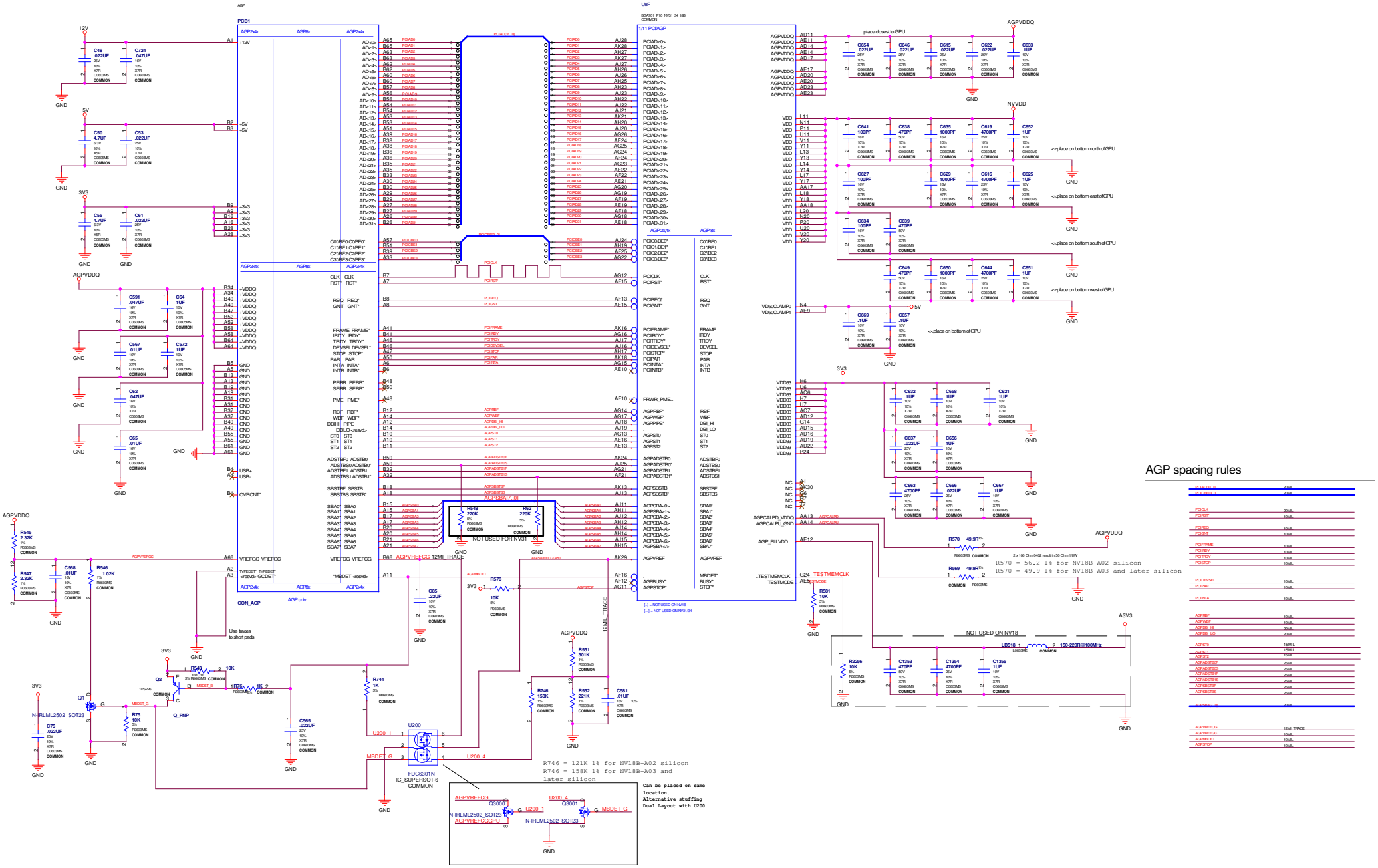
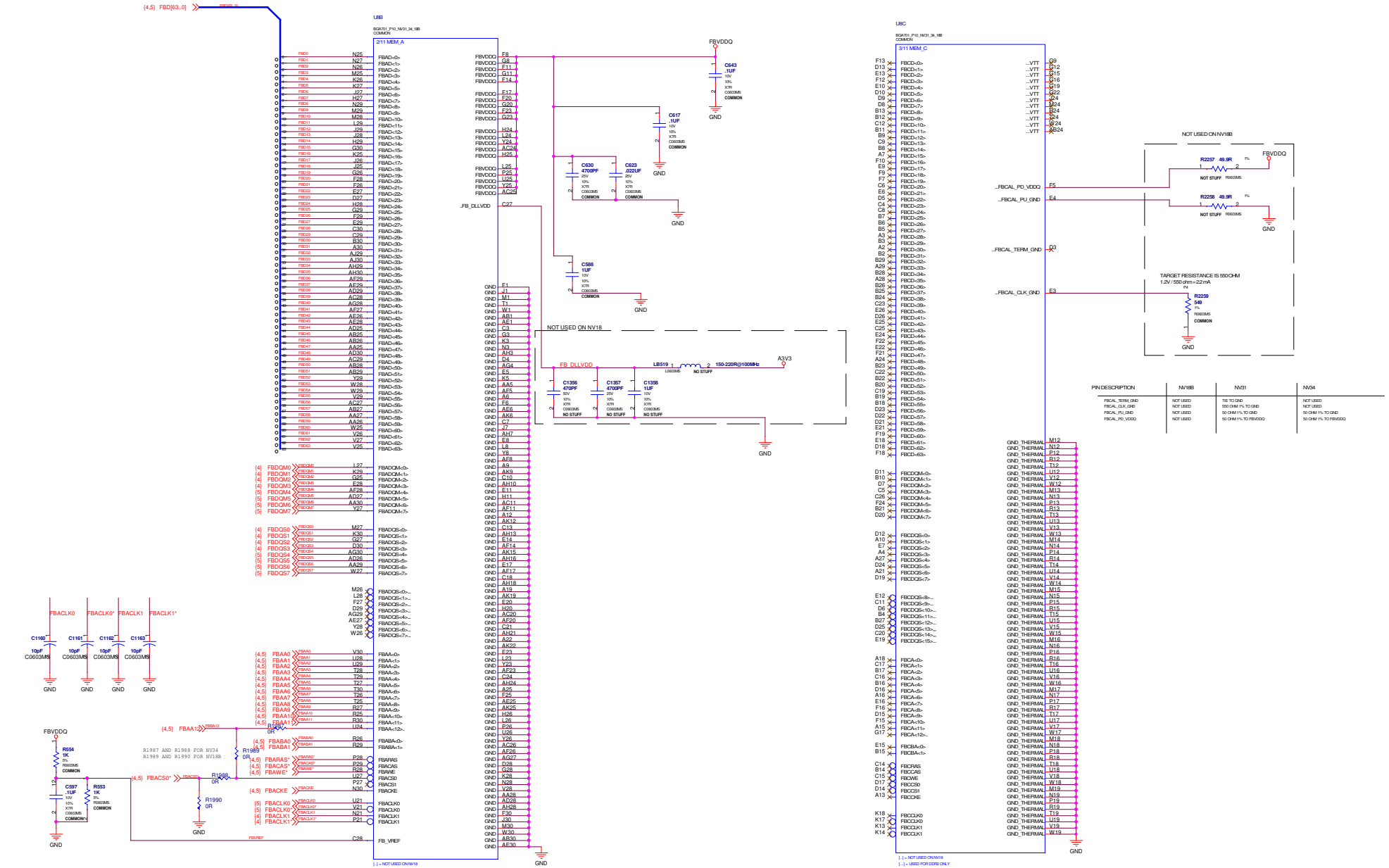
NV18 AGP SECTION AND AGP CONNECTOR



NV18 FRAMEBUFFER INTERFACE AND DECOUPLING



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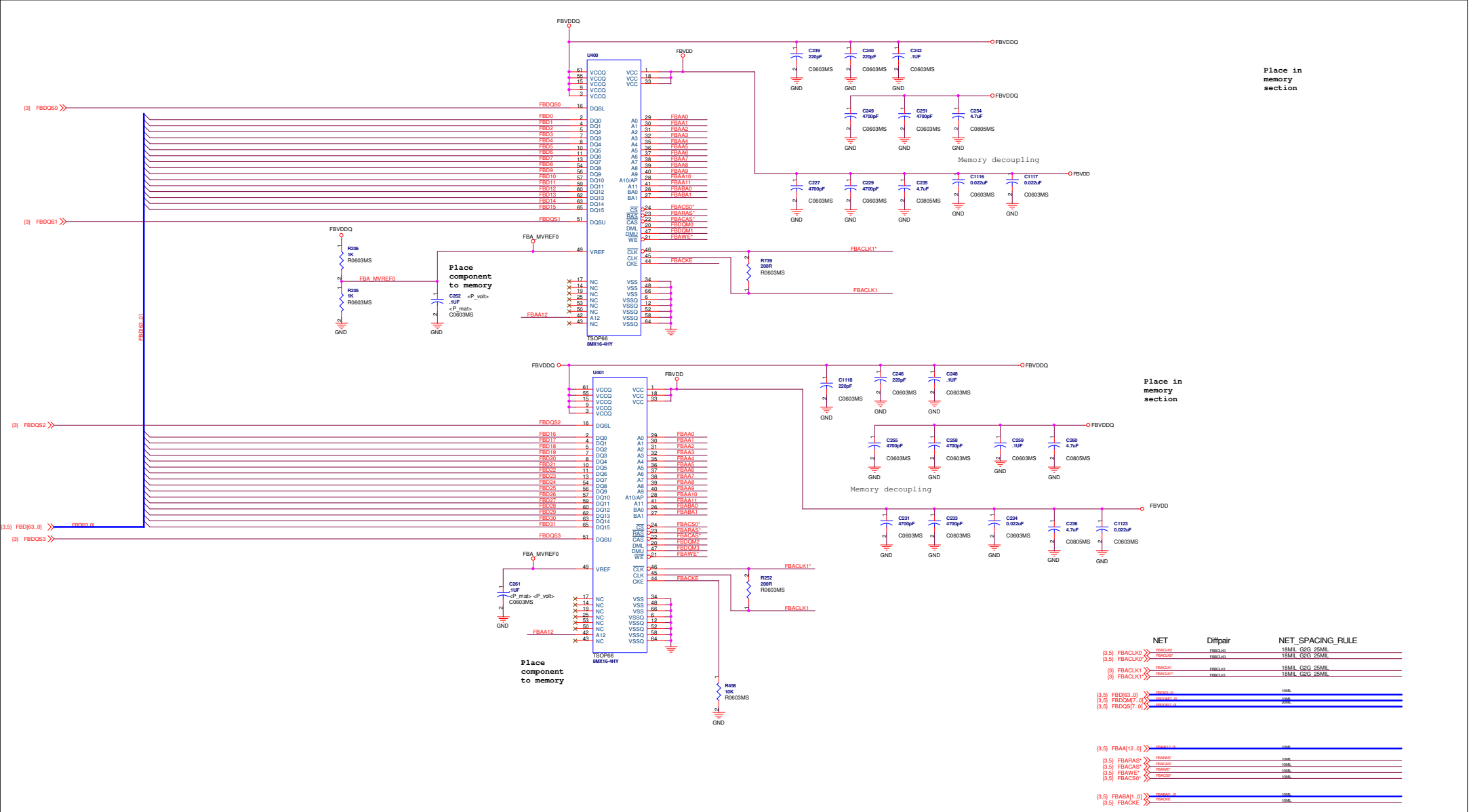
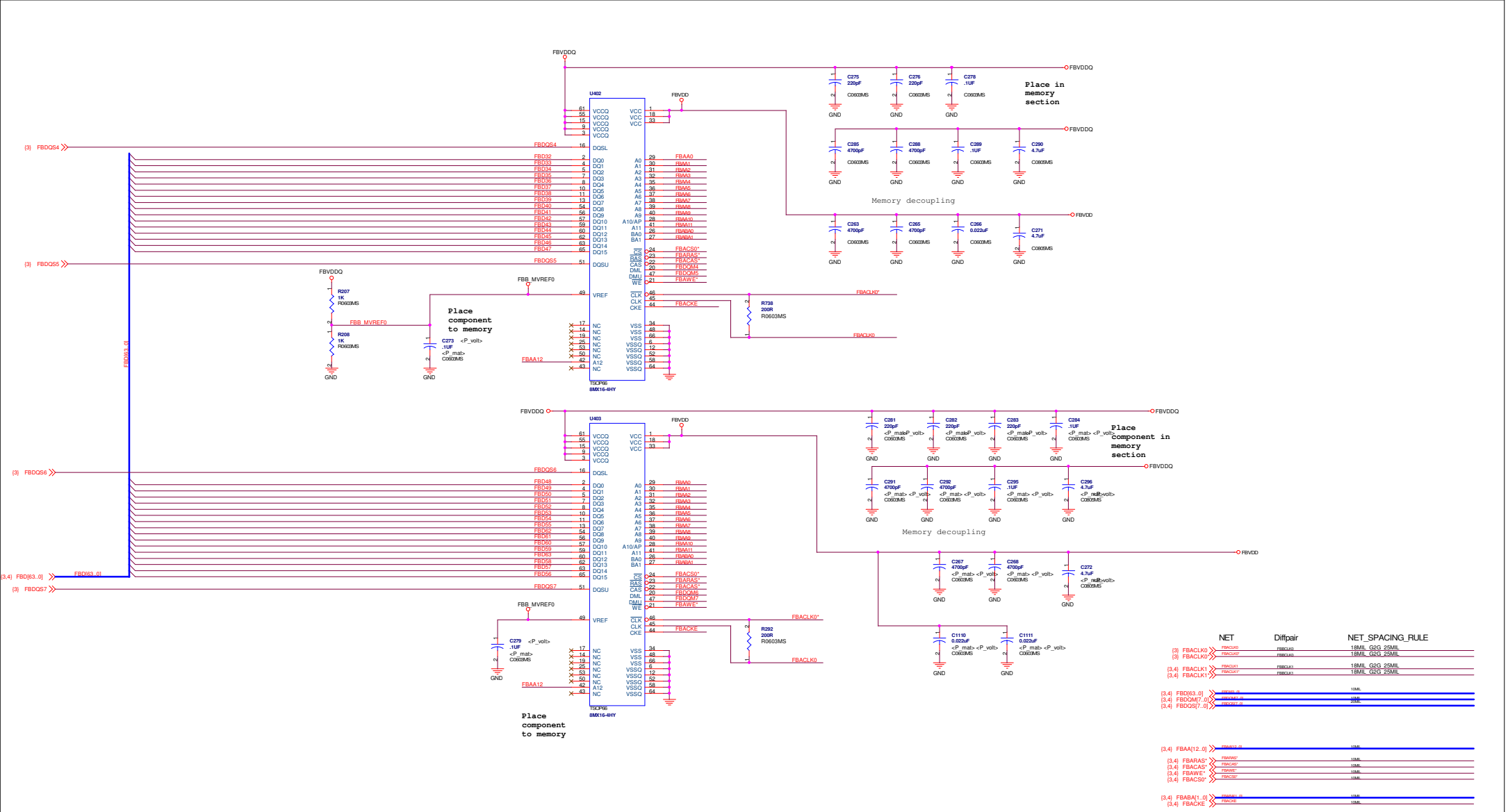
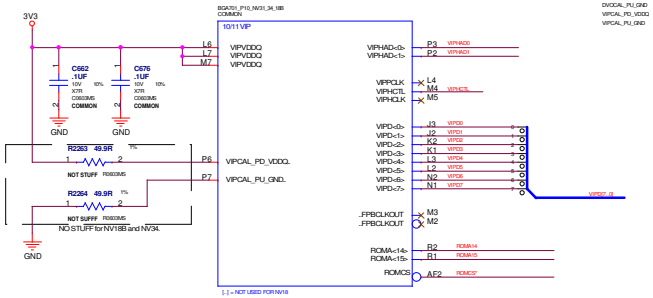
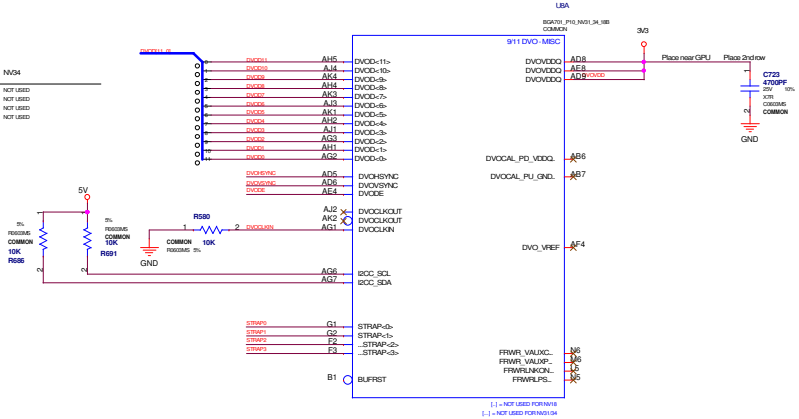

FBVDDQ
FBVDD
U400
U401
TSOP66
8MX16-4HY
Place component to memory
Memory decoupling
Place in memory section
FBA_MVREF0
FBACLK1*
FBACLK1
FBACKE
FBDQS0
FBDQS1
FBDQS2
FBDQS3
FBD[63..0]
FBAA12
R205 1K R0603MS
R206 1K R0603MS
R739 200R R0603MS
R252 200R R0603MS
R49B 10K R0603MS
C262 .1UF <P_volt> <P_mat> C0603MS
C261 1UF <P_mat> <P_volt> C0603MS
C239 220pF C0603MS
C240 220pF C0603MS
C242 .1UF C0603MS
C249 4700pF C0603MS
C251 4700pF C0603MS
C254 4.7uF C0805MS
C227 4700pF C0603MS
C229 4700pF C0603MS
C235 4.7uF C0805MS
C1116 0.022uF C0603MS
C1117 0.022uF C0603MS
C1118 220pF C0603MS
C246 220pF C0603MS
C248 .1UF C0603MS
C255 4700pF C0603MS
C258 4700pF C0603MS
C259 .1UF C0603MS
C260 4.7uF C0805MS
C231 4700pF C0603MS
C233 4700pF C0603MS
C234 0.022uF C0603MS
C236 4.7uF C0805MS
C1123 0.022uF C0603MS
GND
NET
Diffpair
NET_SPACING_RULE
18MIL G2G 25MIL
{3,5} FBACLK0
{3,5} FBACLK0*
{3} FBACLK1
{3} FBACLK1*
{3,5} FBD[63..0]
{3,5} FBDQM[7..0]
{3,5} FBDQS[7..0]
{3,5} FBAA[12..0]
{3,5} FBARAS*
{3,5} FBACAS*
{3,5} FBAWE*
{3,5} FBACS0*
{3,5} FBABA[1..0]
{3,5} FBACKE
10MIL

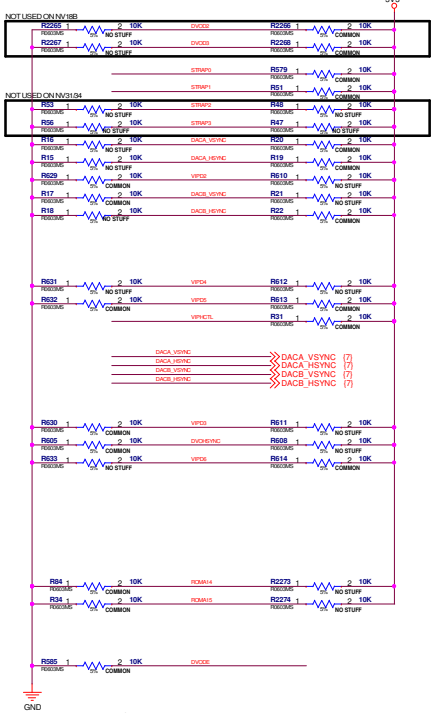

FBVDDQ
FBVDD
U402
U403
TSOP66
8MX16-4HY
Place component to memory
Place component in memory section
Memory decoupling
FBB_MVREF0
FBACLK0*
FBACLK0
FBACKE
FBAA12
FBD[63..0]
FBDQS4
FBDQS5
FBDQS6
FBDQS7
FBDQS[7..0]
GND
NET
Diffpair
NET_SPACING_RULE
18MIL G2G 25MIL
FBAA[12..0]
FBABA[1..0]

NV18 STRAPPING, BIOS, FAN CONNECTOR



PIN DESCRIPTION	NV18B	NV31	NV34
DVOCAL_PD_VDDQ	NOT USED	50 OHM 1% TO GND	NOT USED
DVOCAL_PU_GND	NOT USED	55 OHM 1% TO DVOVDDQ	NOT USED
VIPCAL_PD_VDDQ	NOT USED	50 OHM 1% TO GND	NOT USED
VIPCAL_PU_GND	NOT USED	50 OHM 1% TO VIPVDDQ	NOT USED



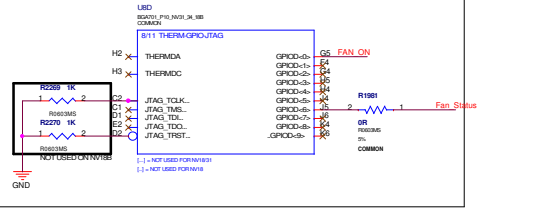


PLEASE DUALLAY THE PULL-UP
RESISTER AND PULL-DOWN RESISTER.

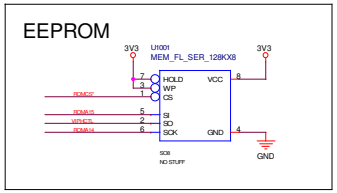
STRAPPING OPTIONS

Bit	Signal	VALUE_ID	VALUEs	
00: PCI_AD_SWAP		PCI_AD	0 REVERSED 1 NORMAL	
01: SUB_VENDOR		SUB_VENDOR	0 NO_BIOS 1 read from BIOS	
02: RAM_CFG_0		RAMCFG[3:0]	0000 2Bk32 SDR 0001 4Bk16 SDR 0010 RFU 0011 RFU 0100 RFU 0101 4Bk32 DDR 0110 8Bk16 SDR 0111 2Bk32 DDR	1000 2Bk32 DDR 1001 2Bk32 DDR 1010 4Bk16 DDR 1011 8Bk16 DDR 1100 Bk32 DDR 1101 4Bk32 DDR 1110 RFU 1111 4Bk32 DDR
03: RAM_CFG_1				
04: RAM_CFG_2				
05: RAM_CFG_3				
06: CRYSTAL_0		CRYSTAL[1:0]	00 13.500 Mhz 01 14.318/18 Mhz	10 27.000 Mhz 11 unknown
07: TV_MODE_0		TVMODE[1:0]	00 SECAM 01 NTSC 10 PAL 11 CRT	
08: TV_MODE_1				
09: AGPIntrBx				
10: AGP_SBA		AGP_SBA	0 SBA enabled 1 SBA disabled	
11: AGP_FASTWR				
12: PCI_DEVID_0		PCI_DEVID[3:0]	0000 0x0180 ... 1111 0x0187	
13: PCI_DEVID_1				
14: BUS_TYPE		BUS_TYPE[0]	0 PCI 1 AGP	
15: ITP_IFACE				
16: USER_0				
17: USER_1				
18: USER_2				
19: USER_3				
20: PCI_DEVID_2				
21: PCI_DEVID_3				
22: CRYSTAL_1				
23: FB_0				
24: FB_1				
25: BR				
26: BR_128M				
27: BR_AGP				
28: BR_IO				
29: ROM_TYPE_0		ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F	
30: ROM_TYPE_1			10 Serial_SST45xF 11 RFU	
01: 1394_EN_0		1394[0]	0 disabled 1 enabled	

NV18 GPIO

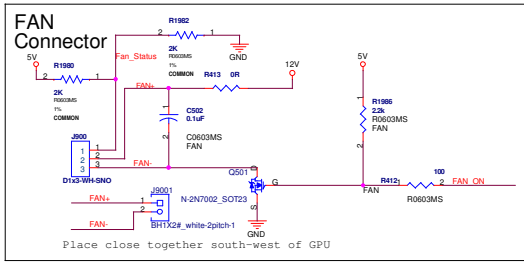


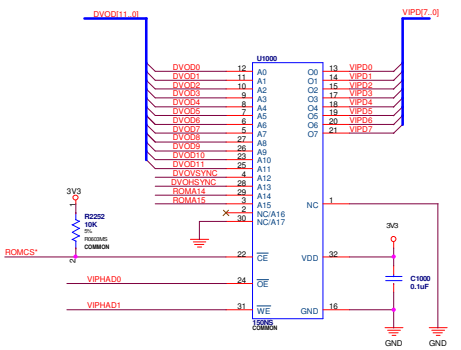
EEPROM



U1000 AND U1001 IS DUALAY.

FAN Connector





VOLTAGE

NET	Diffpair	NET_SPACING_RULE
DVOD11..0		10MIL
DVODE		10MIL
DVOHSYNC		10MIL
DVOVSYNC		10MIL

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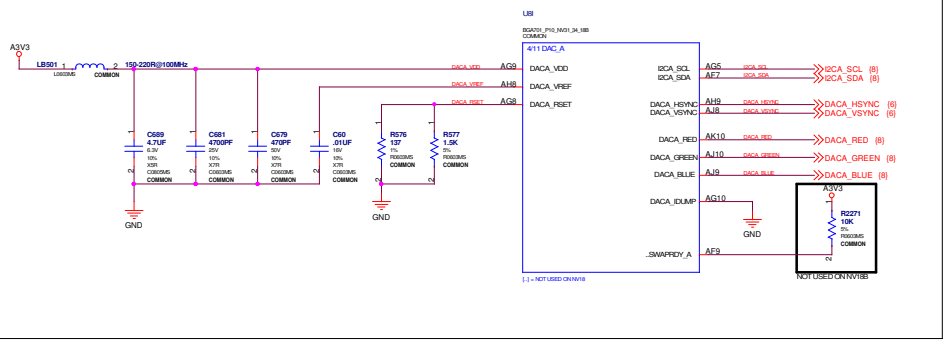
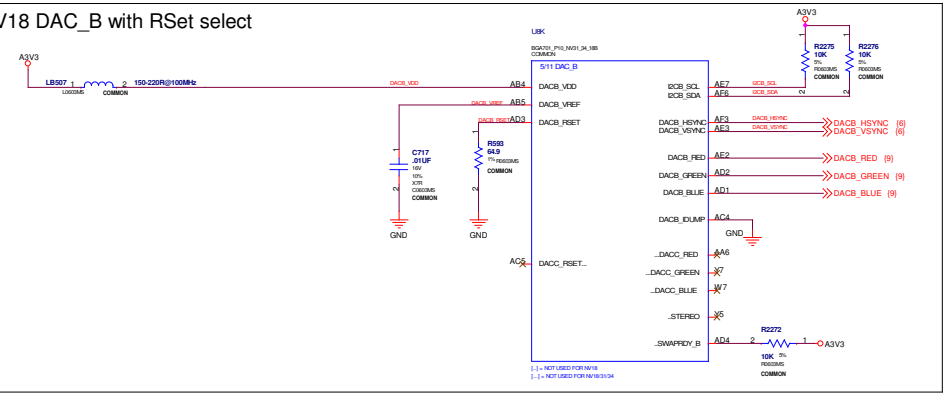
NV18 DAC_A, DAC_B, PLL, SYNC AMPL

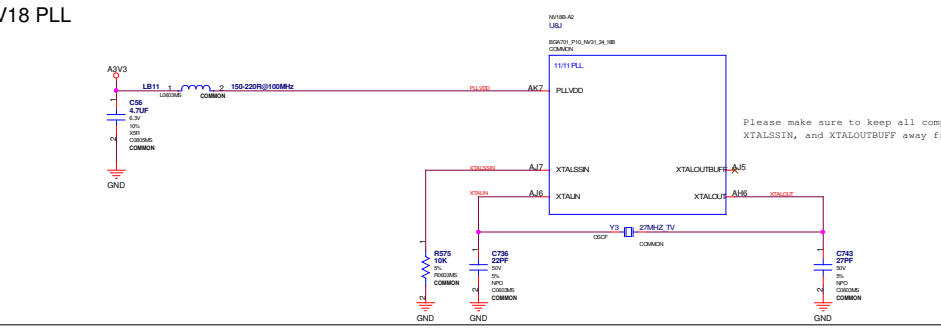
NV18 DAC_A



NV18 DAC_B with RSet select

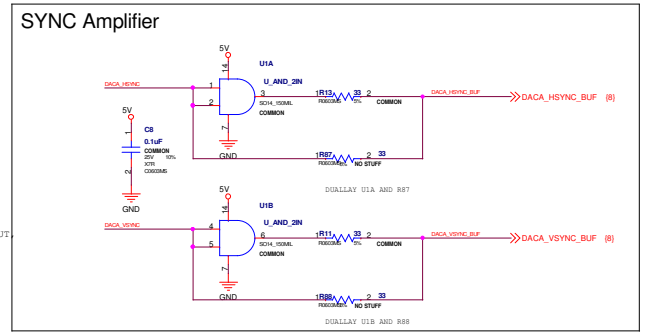


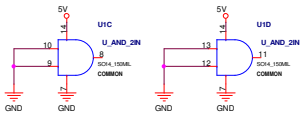
NV18 PLL



Please make sure to keep all components and nets related to pins XTALIN, XTALOUT, XTALSSIN, and XTALOUTBUFF away from everything else (place all on TOP).

SYNC Amplifier





NET	NET_PHYSICAL_TYPE	VOLTAGE
DACA_VDD	10MIL_TRACE	3.3V
DACA_VREF	5MIL_TRACE	
DACA_RSET	5MIL_TRACE	
DACB_VDD	10MIL_TRACE	3.3V
DACB_VREF	5MIL_TRACE	
DACB_RSET	5MIL_TRACE	
PLLVDD	10MIL_TRACE	3.3V

NET	IMPEDANCE	NET_SPACING_RULE
(8) DACA_RED	DACA_RED 37.5 OHM	20MIL_GR0_30MIL
(8) DACA_GREEN	DACA_GREEN 37.5 OHM	20MIL_GR0_30MIL
(8) DACA_BLUE	DACA_BLUE 37.5 OHM	20MIL_GR0_30MIL
(9) DACB_RED	DACB_RED 37.5 OHM	20MIL_GR0_30MIL
(9) DACB_GREEN	DACB_GREEN 37.5 OHM	20MIL_GR0_30MIL
(9) DACB_BLUE	DACB_BLUE 37.5 OHM	20MIL_GR0_30MIL

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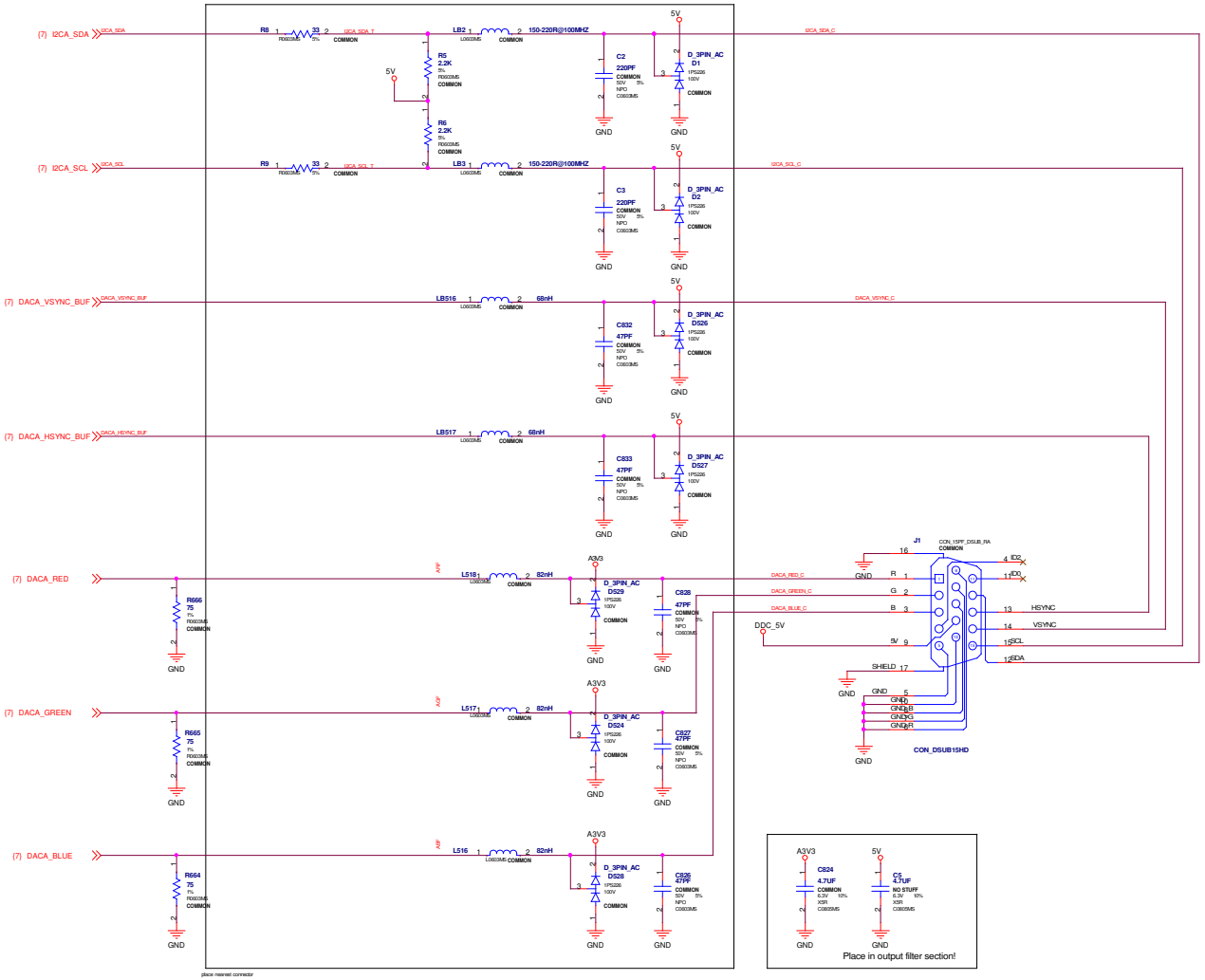
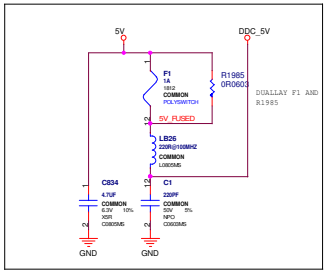
DACB output

EMI-FILTER



DDC 5V



NET	IMPEDANCE	NET_SPACING_RULE
APF	37.5 OHM	20MIL_G2G_30MIL
AGF	37.5 OHM	20MIL_G2G_30MIL
ABF	37.5 OHM	20MIL_G2G_30MIL
DACA_RED_C	10MIL_TRACE	20MIL_G2G_30MIL
DACA_GREEN_C	10MIL_TRACE	20MIL_G2G_30MIL
DACA_BLUE_C	10MIL_TRACE	20MIL_G2G_30MIL

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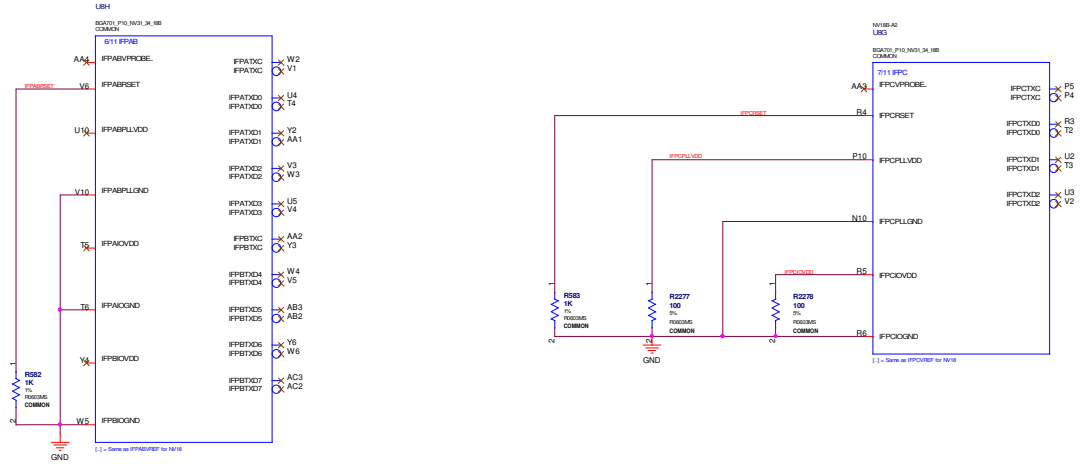
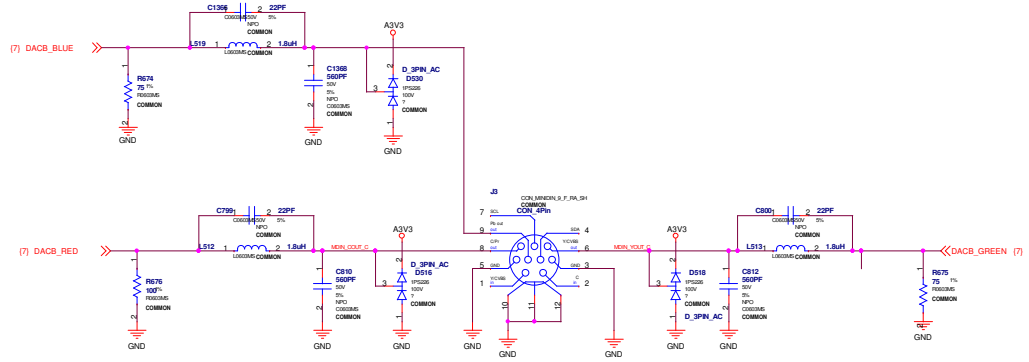
INTERNAL TMDS POWER AND DECOUPLING



VIDEO OUT CONNECTOR



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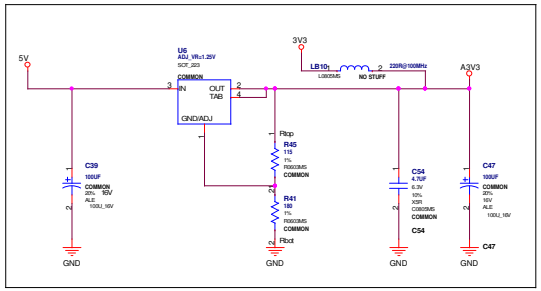
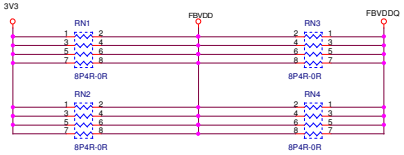
POWER SUPPLY

NET	NET_PHYSICAL_TYPE	VOLTAGE
12V		
5V		
NVVDD		
A3V3		
3V3		
3V3	10MIL_TRACE	3.3V
A3V3	10MIL_TRACE	3.3V
NVVDD	10MIL_TRACE	1.65V
5V	10MIL_TRACE	5V
12V	10MIL_TRACE	12V
A3V3_ADJ	10MIL_TRACE	
FBVDDQ	10MIL_TRACE	2.5V
FBVDD	10MIL_TRACE	3.3V

ANALOG 3V3

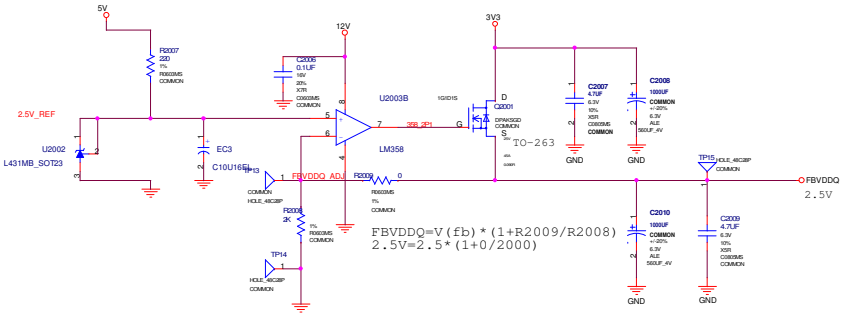


FBVDD 3.3V

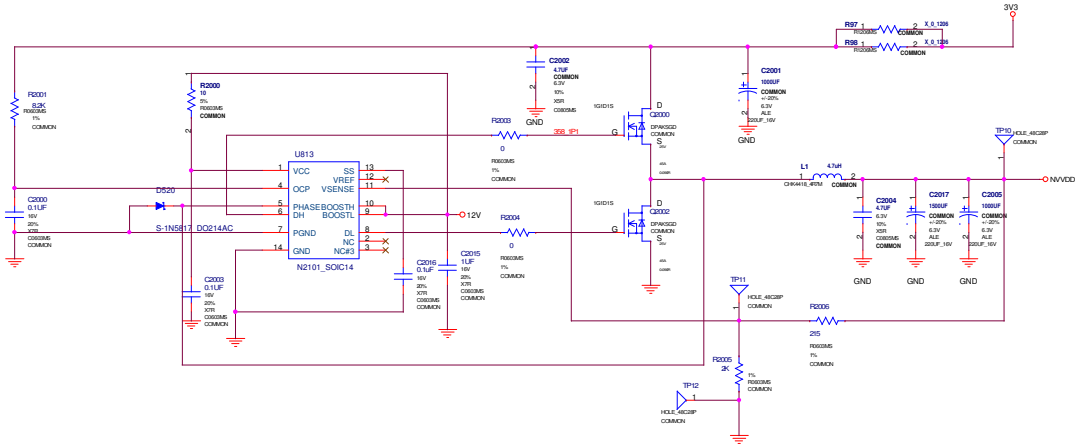


For SAMSUNG DDR FBVDD=FBVDDQ=2.6
HYNIX DDR FBVDD=3V3=3.3V

FBVDDQ



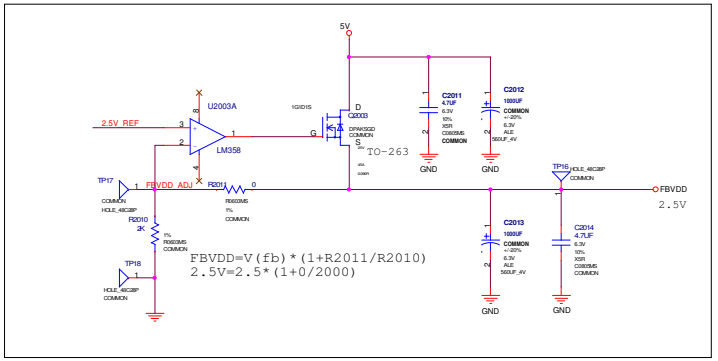
NVVDD



NVVDD=Vref*(1+Rtop/Rbot)

1.4=1.265*(1+215/2000)

FBVDD



NO STUFF

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MECHANICS

FM2
SW_FB

FM1
SW_FB

FM5
SW_FB

FM4
SW_FB

FM3
SW_FB

BKT1 NPTH126
COMMON
1
MECH MOUNTING TOP
BRACKET

COMMON HEATSINK1

3V3
J901
1
2
X_F ST SHR IRT
COMMON
SIP2

J902
1
2
GND
X_F ST SHR IRT
COMMON
SIP2

E22-8935010-C22

Mech, VGA Card, Bracket, SPCC/2,V,D-S,V152, FOR MS-8935/8936

Bracket Same as MS-8847

STD
COMMON SCREW-1
MEC_SCREW

STD
COMMON SCREW-2
MEC_SCREW

NET	NET_PHYSICAL_TYPE	VOLTAGE
3V3	12MIL TRACE	3.3V
5V	12MIL TRACE	5V

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