35/38P172- NV35/38 Short Form Production Board

35/38P172_B00 - NV38 Flipchip BGA, 4 x 64MB DDR1 (16 x 4Mx32 = 256MB)
External TMDS (SINGLE link), Internal TVout or External HDTVout (7108), TV Capture (7114 or 7108)

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28. Power Supply I: A3V3
29. Power Supply II FBVDD
30. Power Supply III: FBVDDQ/ FBVTT
31. Power Supply IV: NVVDD
32. Mechanical

A00 PCB SKUs

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	602-10172-base-sch	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	000	602-10172-0000-000	P172: NV35-U, 450/425, 256MB, DVI-I, VGA, VIVO, PCIID:0x330
2	001	602-10172-0001-000	P172: NV35, 400/425, 128MB, DVI-I, VGA, TV OUT, PCIID:0x331
3	002	602-10172-0002-000	P172: NV35-U, 450/425, 256MB, DVI-I, VGA, VIDEO IN, HDTV OUT, PCIID:0x330
4	003	602-10172-0003-000	P172: NV35-U, 450.425, 256MB, DVI-I, VGA, TV OUT, PCIID:0x330
5	004	602-10172-0004-000	P172: NV35, 400/425, 128MB, DVI-I, VGA, VIVO, PCIID:0x331
6	005	602-10172-0005-000	P172; NV35, 400/425, 256MB, DVI-I, VGA, VIVO, PCIID: 0x331
7	006	602-10172-0006-000	P172; NV35 400/425, 256MB, DVI-I, VGA, TV OUT, PCIID: 0x331
8	007	602-10172-0007-000	P172: NV35, 400/350, 128MB, DVI-I, VGA, TV OUT, PCIID:0x331
9	008	602-10172-0008-000	P172; NV35, 400/350, 128MB, DVI-I, VGA, VIVO, PCIID:0x331
10	009	602-10172-0009-000	p172; NV35, 400/350, 256MB, DVI-I, VGA, TV OUT, PCIID:0x331
11	010	602-10172-0010-000	P172; NV35, 400/350, 256MB, DVI-I, VGA, VIVO, PCIID:0x331
12	011	602-10172-0011-000	P172: NV35-U, 450/425, 256MB, DVI-I, VGA, VIDEO IN, HDTV OUT, P186 COMPANION, PCIID:0x330
13	012	602-10172-0012-000	P172: NV35-U, 450/425, 256MB, DVI-I, VGA, VIVO, P186 COMPANION, PCIID:0x330
14	013	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

B00 PCB SKUs

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-f0ppp-xxxx-vvv	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	014	600-10172-0014-000	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, TV OUT, PCIID:0x333
2	015	600-10172-0015-000	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
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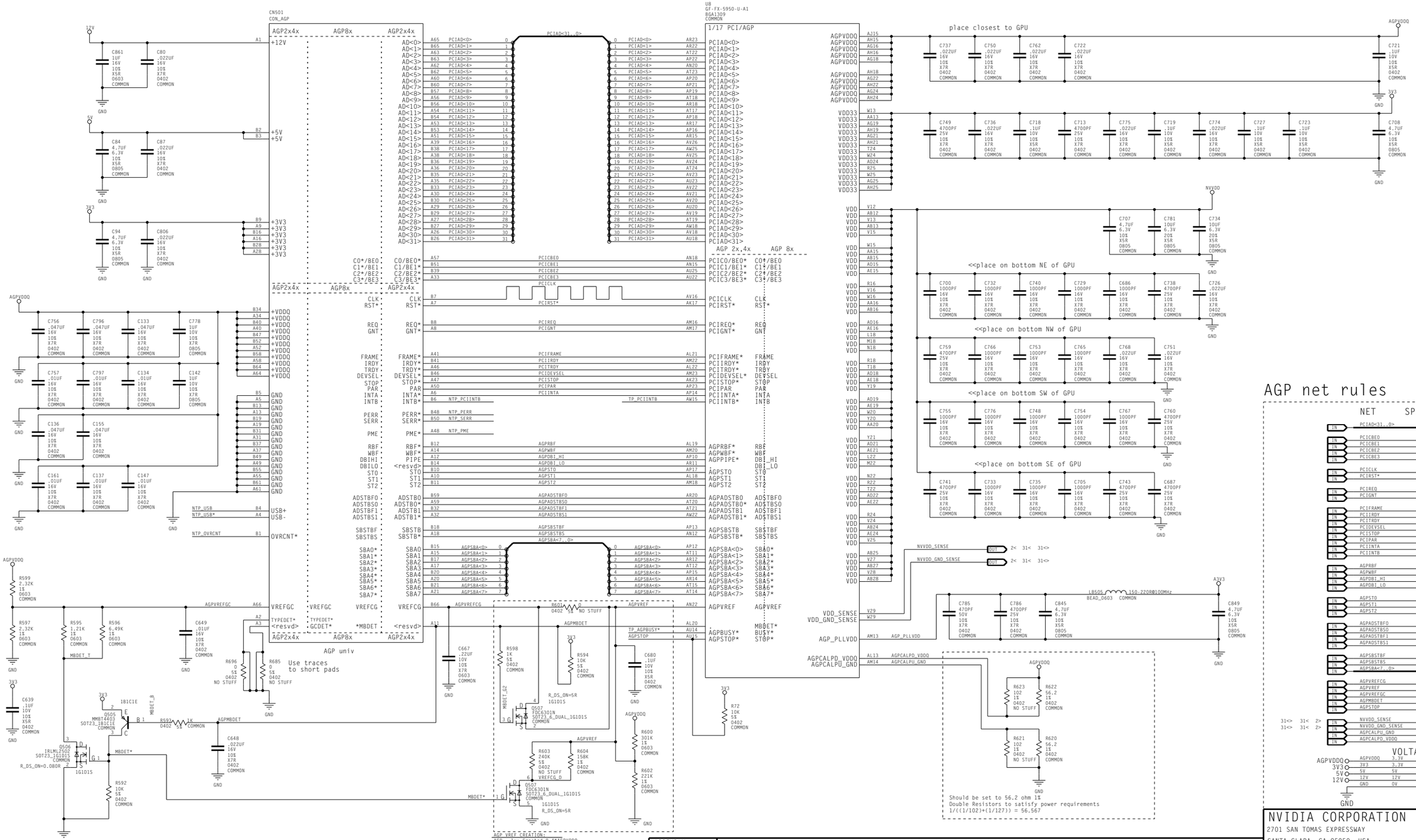
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
11	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Table of Contents

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-10172-0015-000		
ID	design	PAGE	1 OF 38
NAME	Emler / Hunter	DATE	27-AUG-2003

2. AGP 8X Interface



AGP net rules

NET	SPACEING	PHYS.
PCIAD<31..0>	20MIL	
PCICBE0	20MIL	
PCICBE1	20MIL	
PCICBE2	20MIL	
PCICBE3	20MIL	
PCICLK	20MIL	
PCIRST*	10MIL	
PCIREQ	10MIL	
PCIGNT	10MIL	
PCIFRAME	10MIL	
PCIIRDY	10MIL	
PCITRDY	10MIL	
PCIDEVSEL	10MIL	
PCISTOP	10MIL	
PCIPAR	10MIL	
PCIINTA	10MIL	
PCIINTB	10MIL	
AGPRBF	10MIL	
AGPWBF	10MIL	
AGPDBI_HI	20MIL	
AGPDBI_LO	20MIL	
AGPSTO	20MIL	
AGPST1	20MIL	
AGPST2	20MIL	
AGPADSTBF0	25MIL	
AGPADSTBS0	25MIL	
AGPADSTBF1	25MIL	
AGPADSTBS1	25MIL	
AGPSBSTBF	25MIL	
AGPSBSTBS	25MIL	
AGPSBA<7..0>	20MIL	
AGPVREFCG	10MIL	12MIL_TRACE
AGPVREF	10MIL	12MIL_TRACE
AGPVREFGC	10MIL	12MIL_TRACE
AGPMBDET	10MIL	5MIL_TRACE
AGPSTOP	10MIL	12MIL_TRACE
NVVDD_SENSE	20MIL	10MIL_TRACE
NVVDD_GND_SENSE	20MIL	10MIL_TRACE
AGPCALPU_GND	20MIL	
AGPCALPD_VDDQ	20MIL	

VOLTAGE

AGPVDDQ	AGPVDDQ	3.3V	12MIL_TRACE
3V3	3V3	3.3V	12MIL_TRACE
5V	5V	5V	12MIL_TRACE
12V	12V	12V	12MIL_TRACE
GND	GND	0V	12MIL_TRACE

ASSEMBLY	P172_800: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	AGP 8X Interface

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
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ID	design	PAGE	2 OF 38
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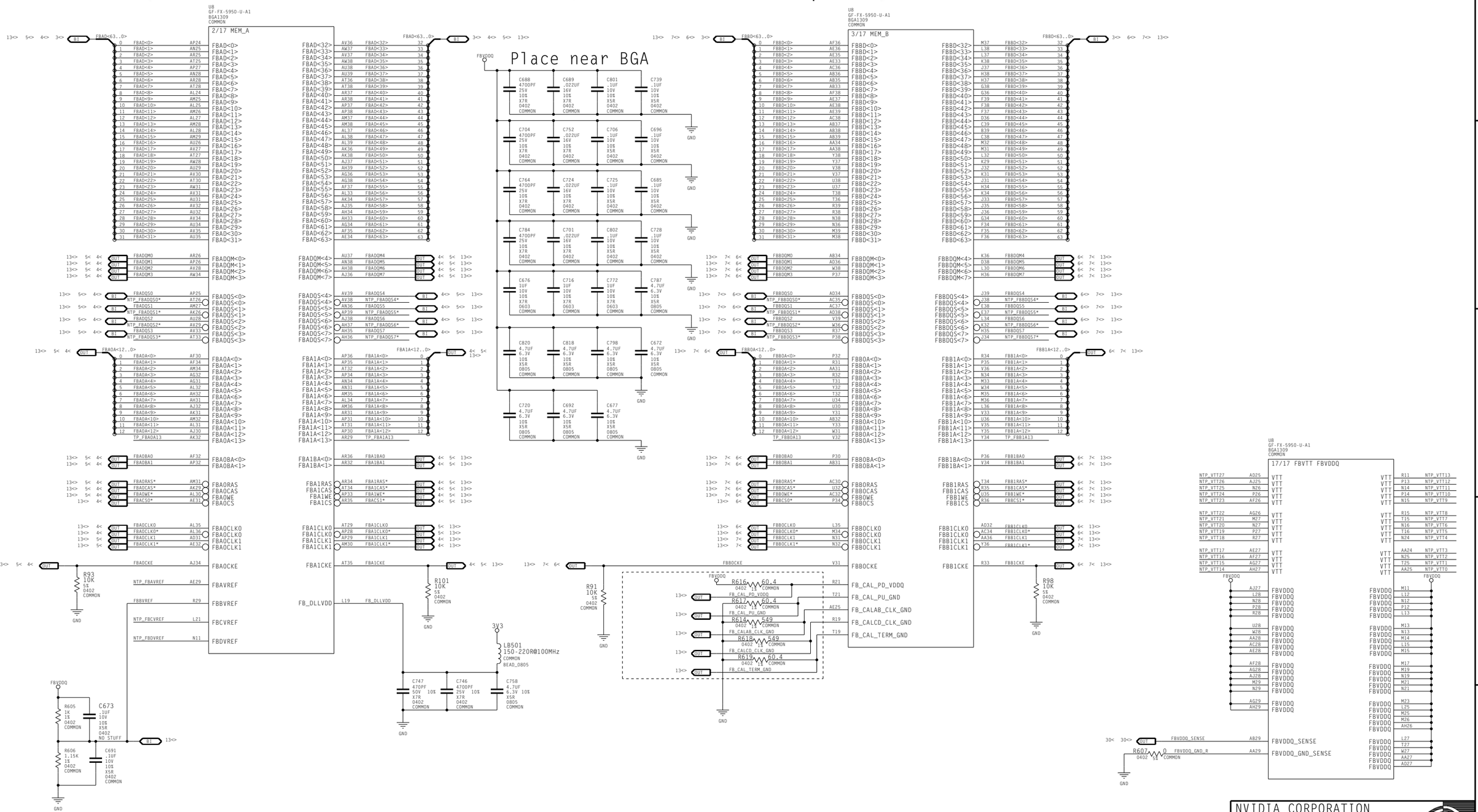
3.Memory - FB_A & FB_B Partitions, FBVDD/Q decoupling



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_A & FB_B Partitions, FBVDD/Q & FBVTT decoupling

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
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NV_PN	600-10172-0015-000		
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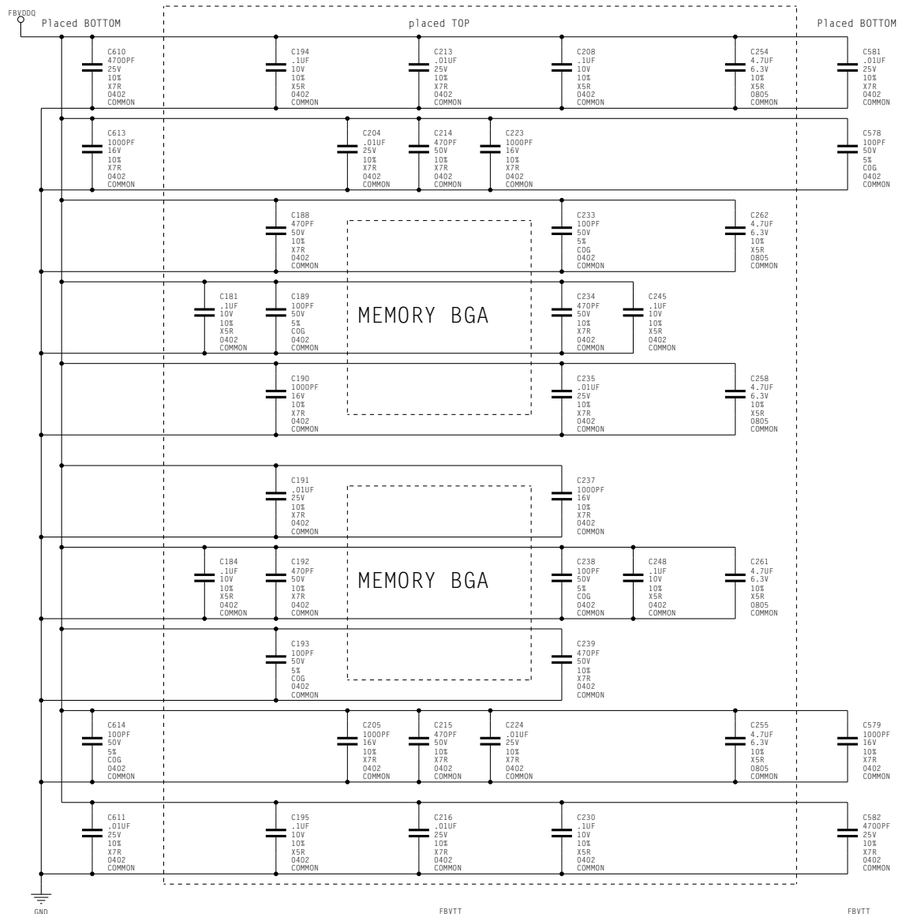
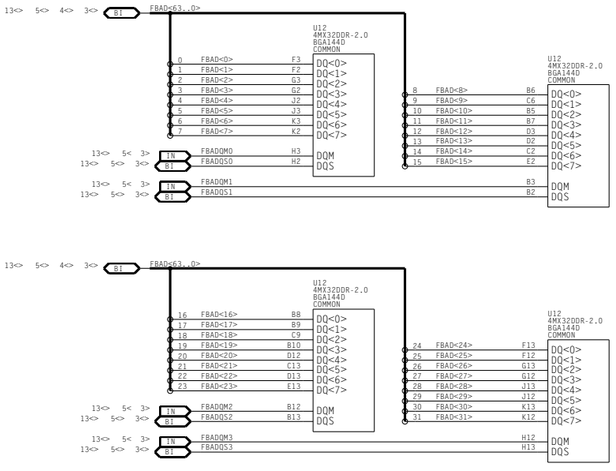
4. Memory Part. A - FBAD0..63 - Bank0

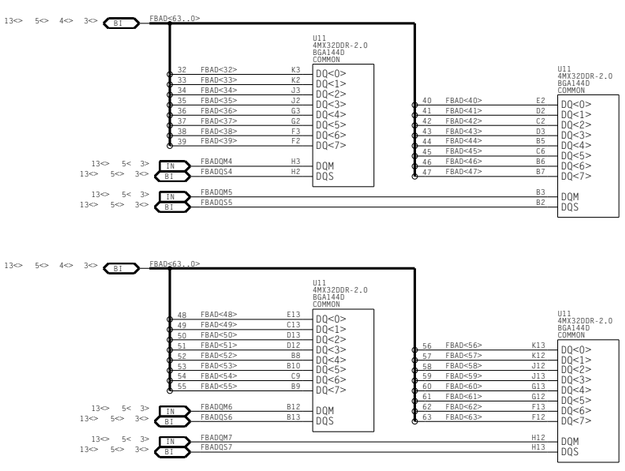
FBA0 0..31

FBA1 32..63

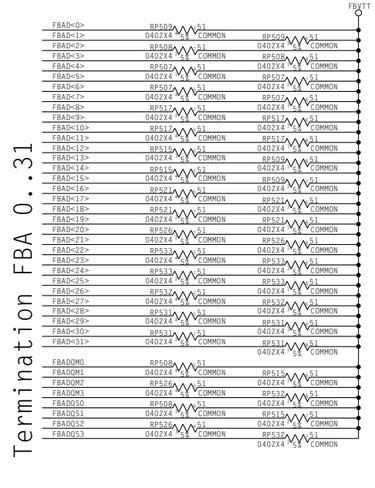
FBVDDQ Decoupling placement for whole Partition



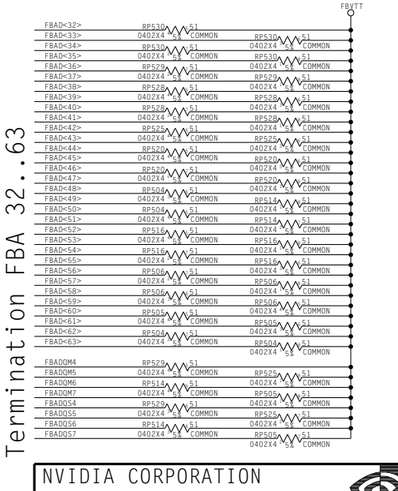




Termination FBA 0..31



Termination FBA 32..63



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2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_A - Bank0

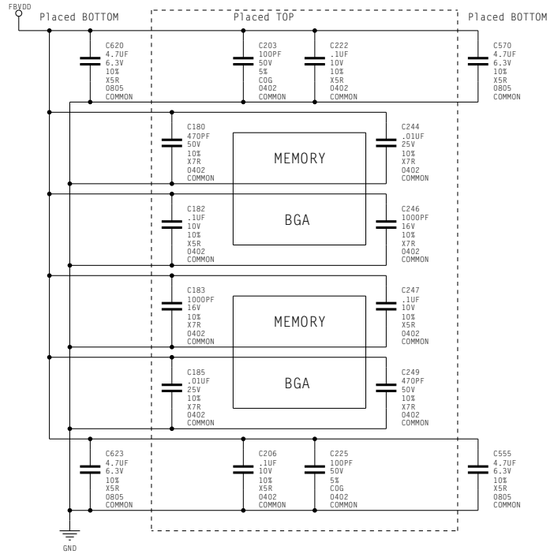
NV_PN	600-10172-0015-000		
ID	design	PAGE	4 OF 38
NAME	Emler / Hunter	DATE	27-AUG-2003

5. Memory Part. A - FBAD0..63 - Bank1

FBA1 0..31

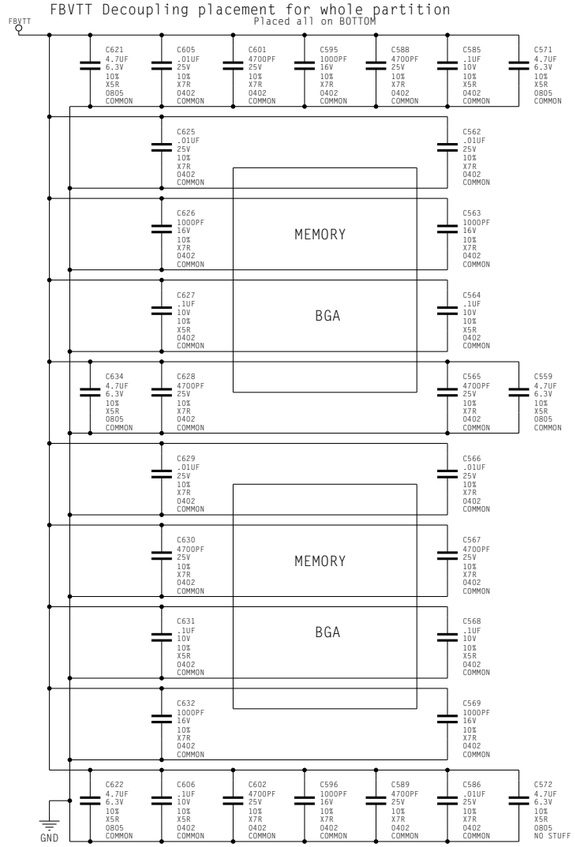
FBA0 32..63

FBVDD Decoupling placement for whole partition



FBVTT Decoupling placement for whole partition

Placed all on BOTTOM



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_A - Bank1

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NV_PN	600-10172-0015-000		
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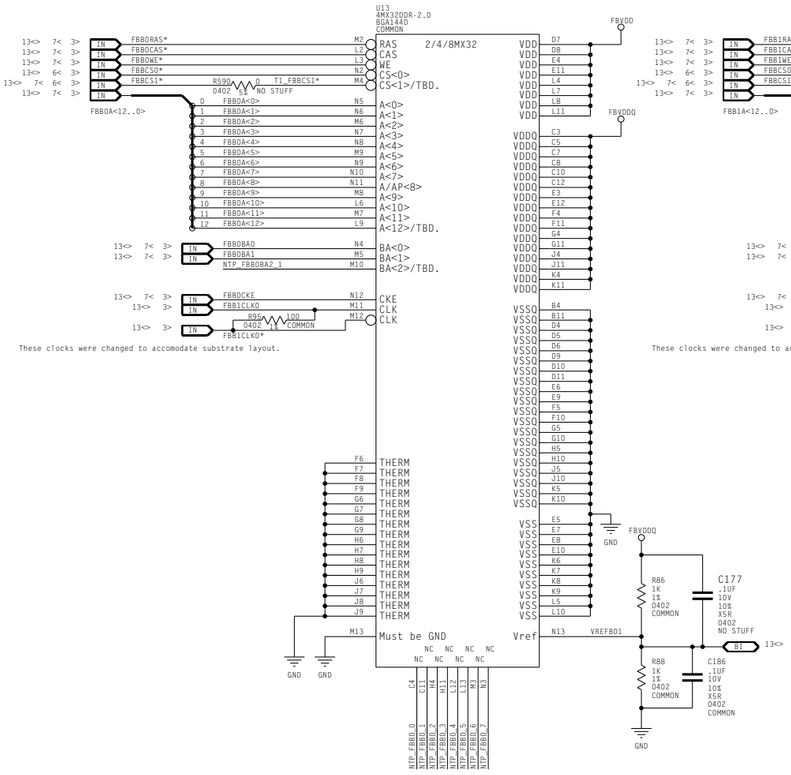
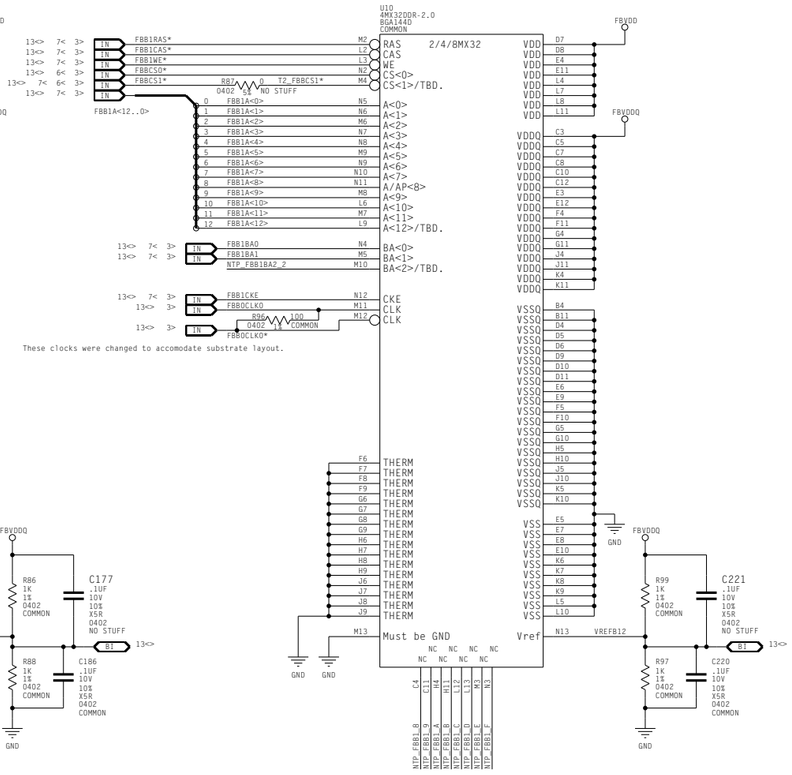
6. Memory Part. B - FBBD0..63 - Bank0

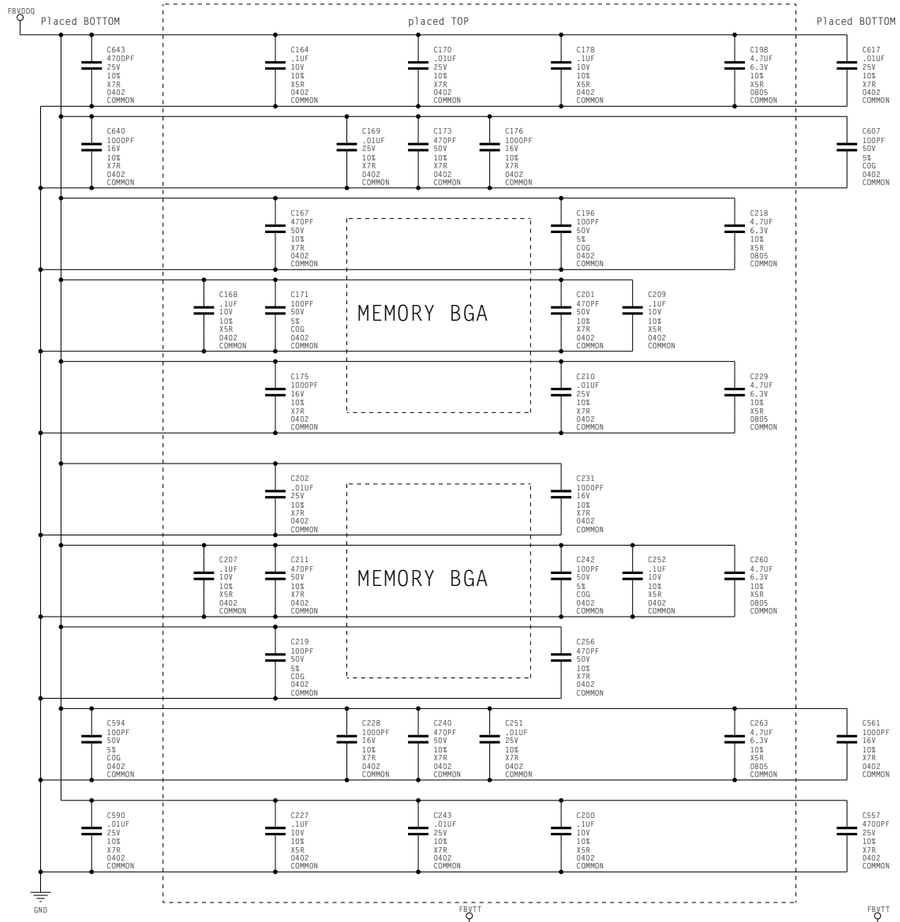
FBB0 0..31

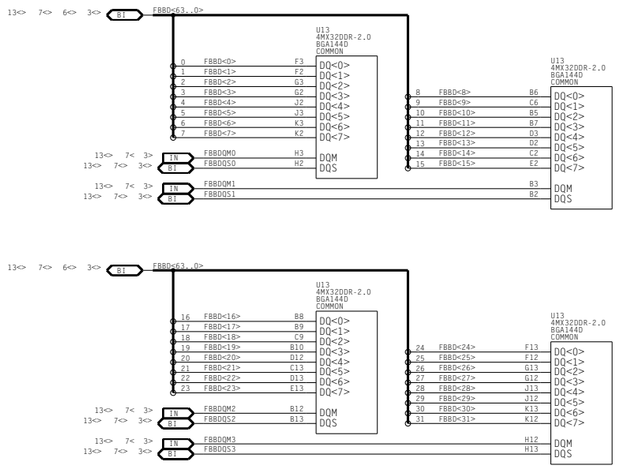


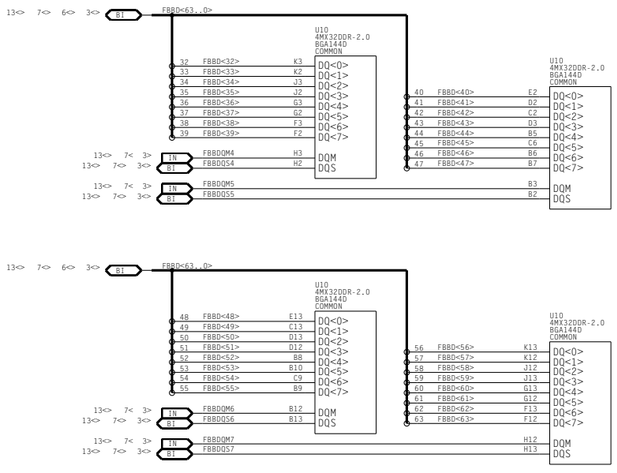
FBB1 32..63

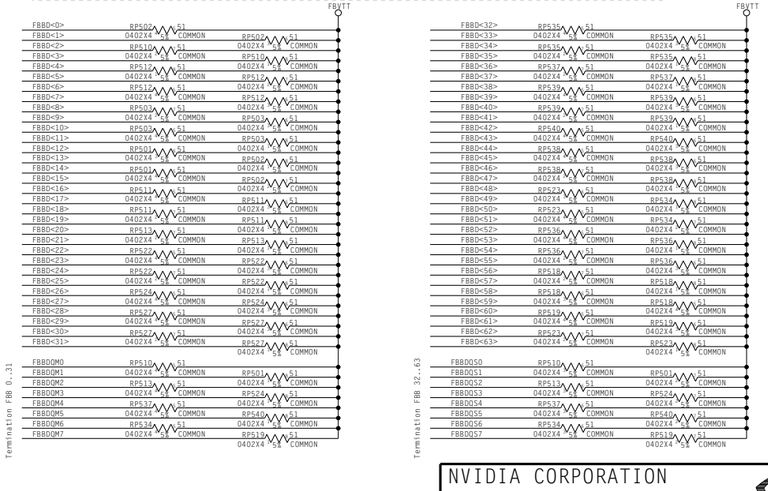


FBVDDQ Decoupling placement for whole Partition









ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_B - Bank0

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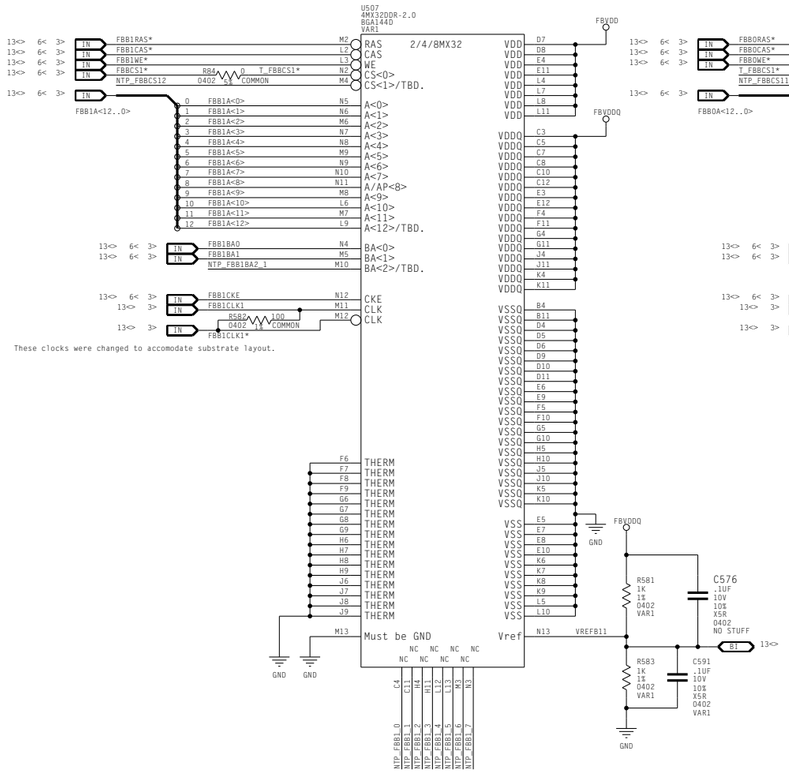
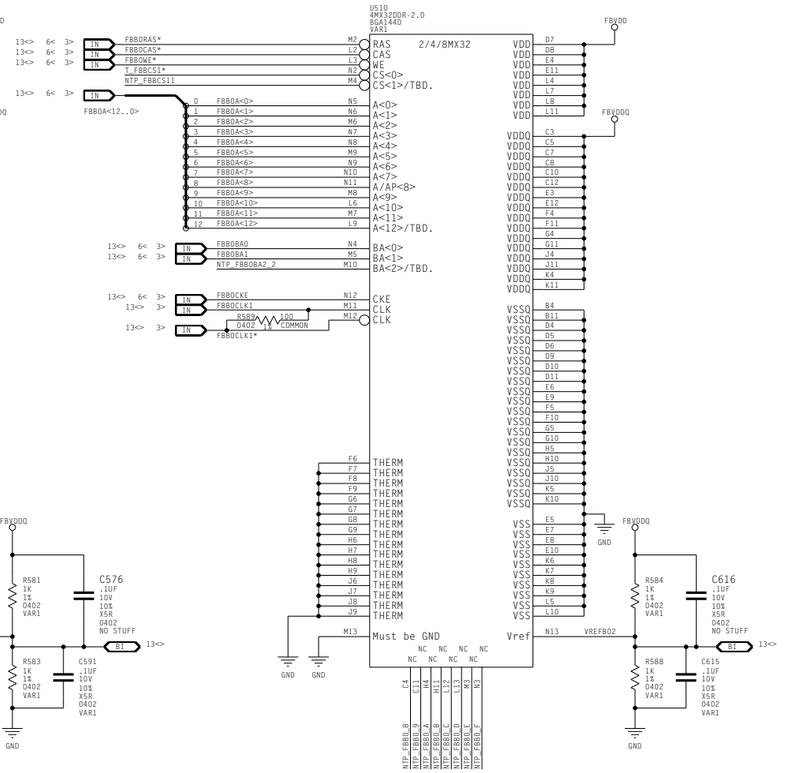
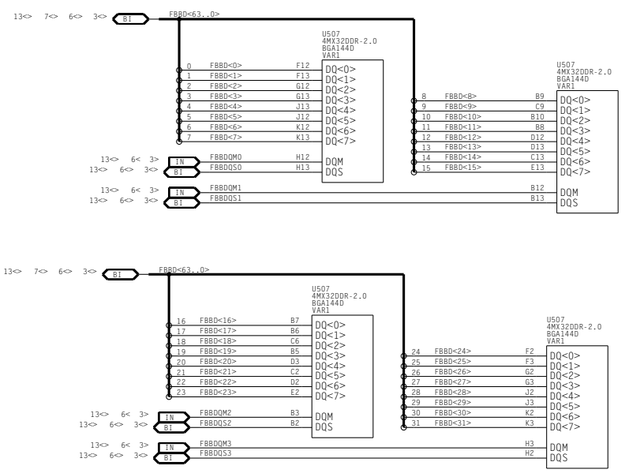
7. Memory Part. B - FBBD0..63 - Bank1

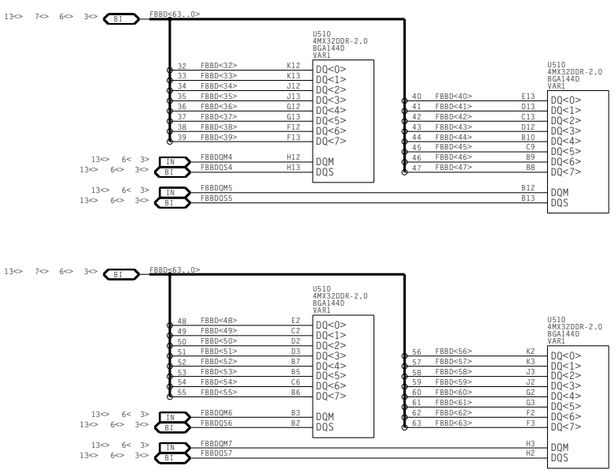
FBB1 0..31



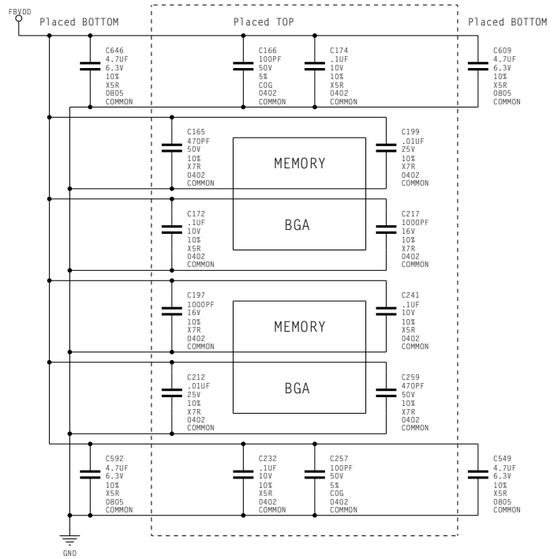
FBB0 32..63



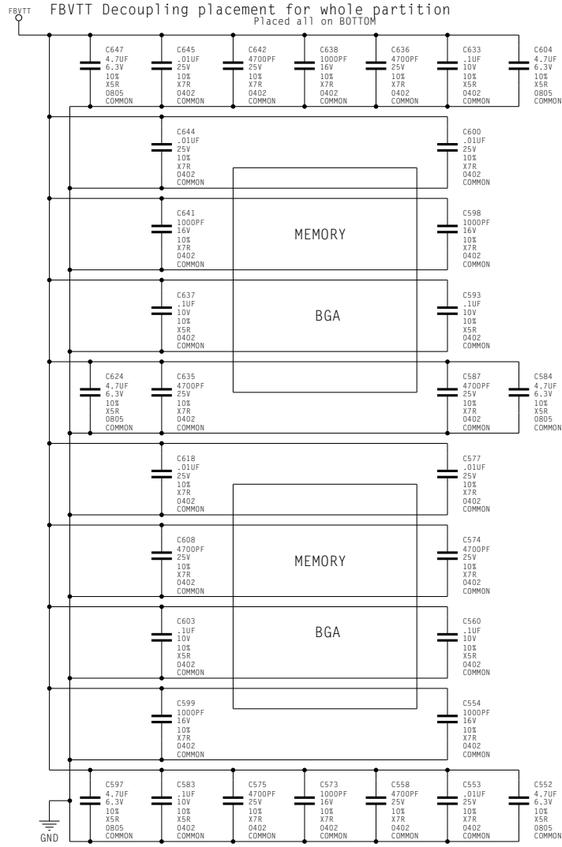




FBVDD Decoupling placement for whole partition



FBVTT Decoupling placement for whole partition



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_B - Bank1

NVIDIA CORPORATION
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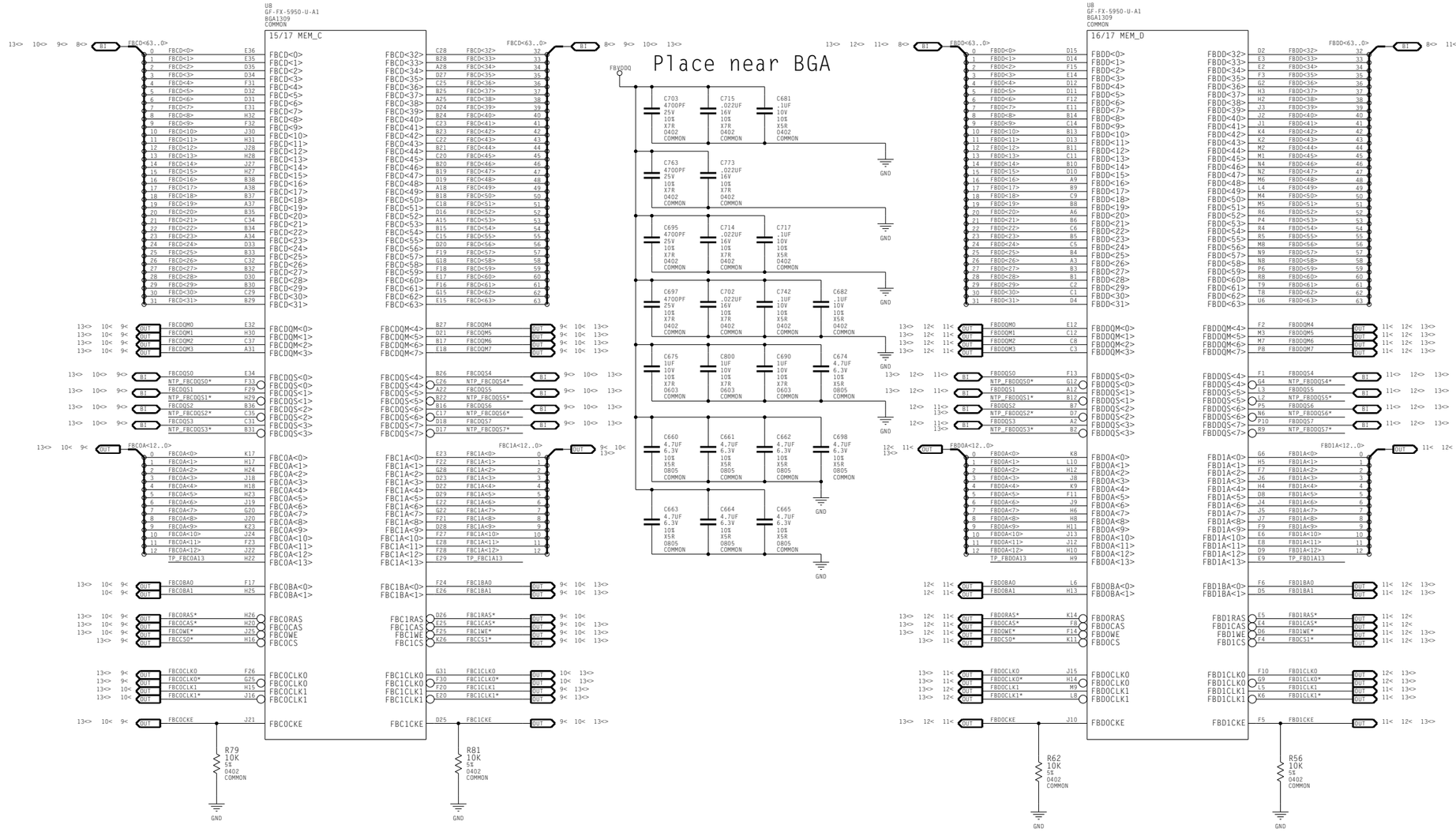
8. Memory FBC & FBD, FBVDD/Q decoupling, FBVTT decoupling



TO DO: RENAME TP_FBCxA13 & TP_FBDxA13 TO ABOVE NAMES

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_C & FB_D Partitions, FBVDD/Q & FBVTT decoupling

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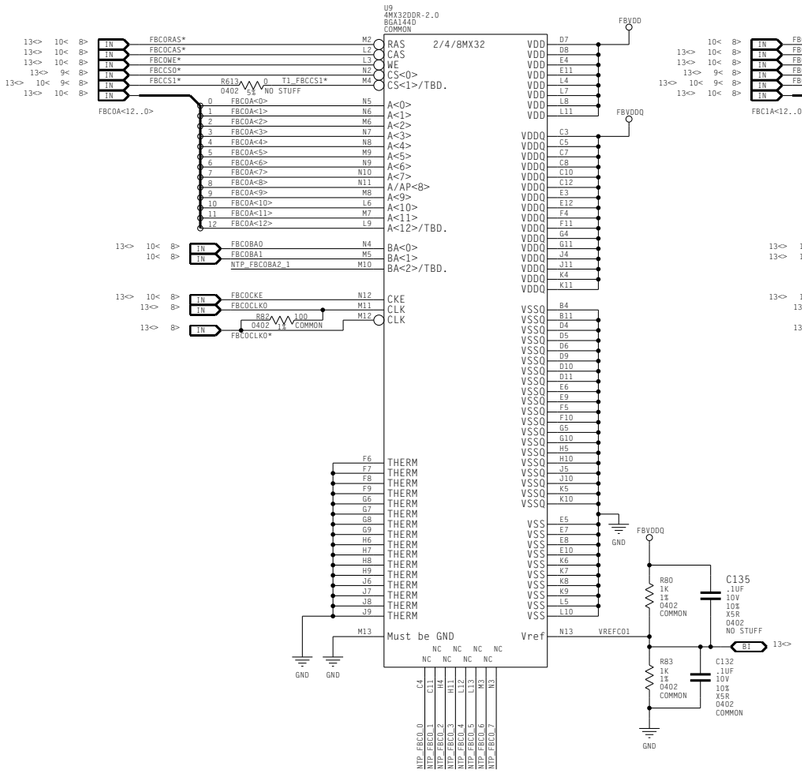
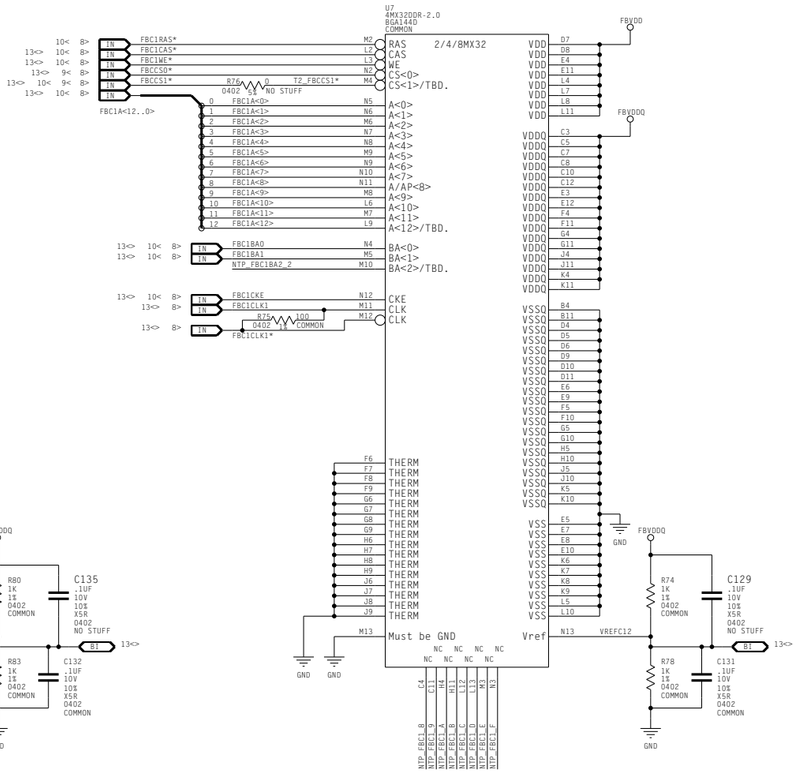
9. Memory Part. C - FBCD0..63 - Bank0

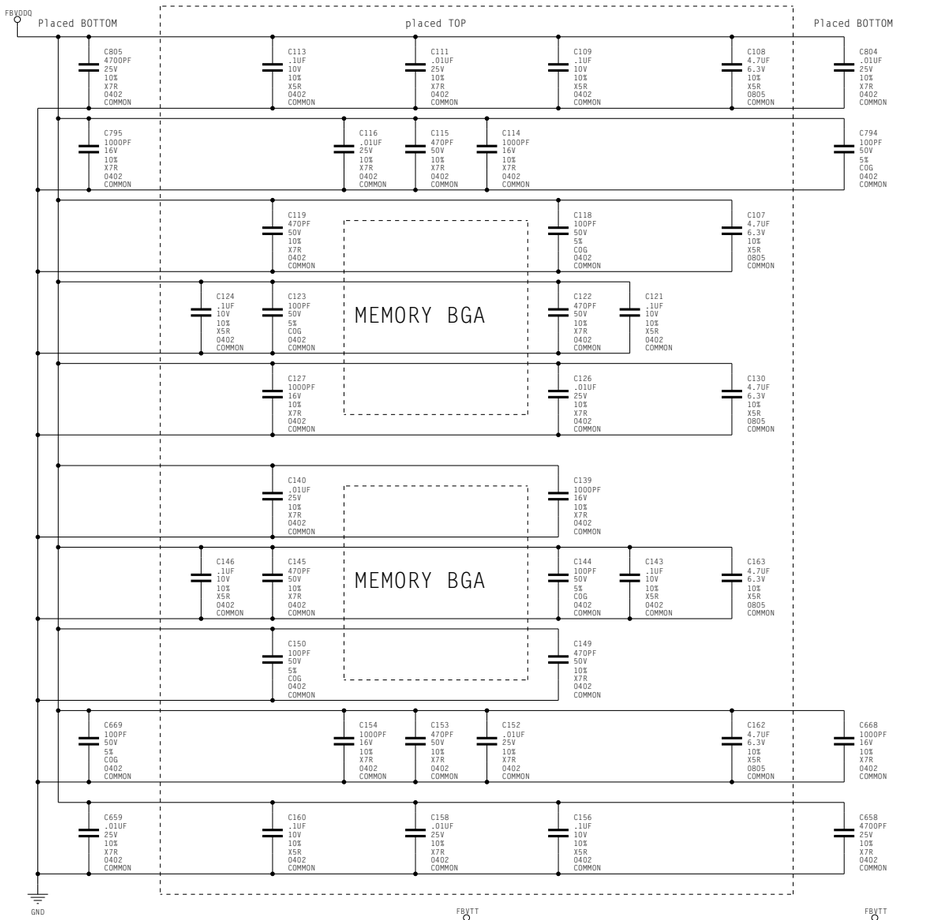
FBC0 0..31



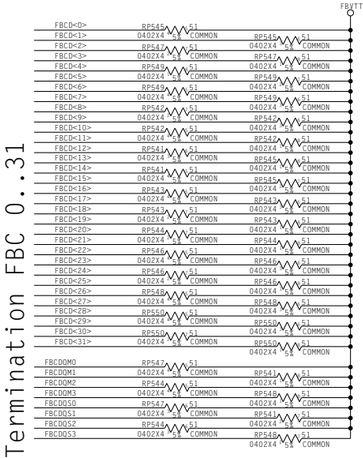
FBC1 32..63



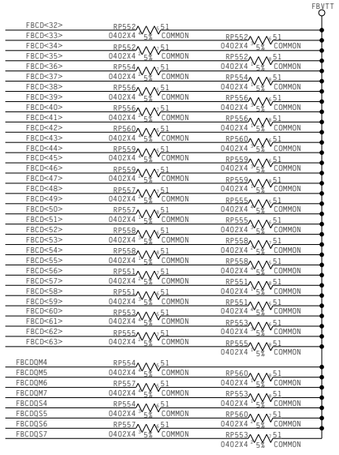
FBVDDQ Decoupling placement for whole Partition



Termination FBC 0..31



Termination FBC 32..63



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_C - Bank0

NVIDIA CORPORATION
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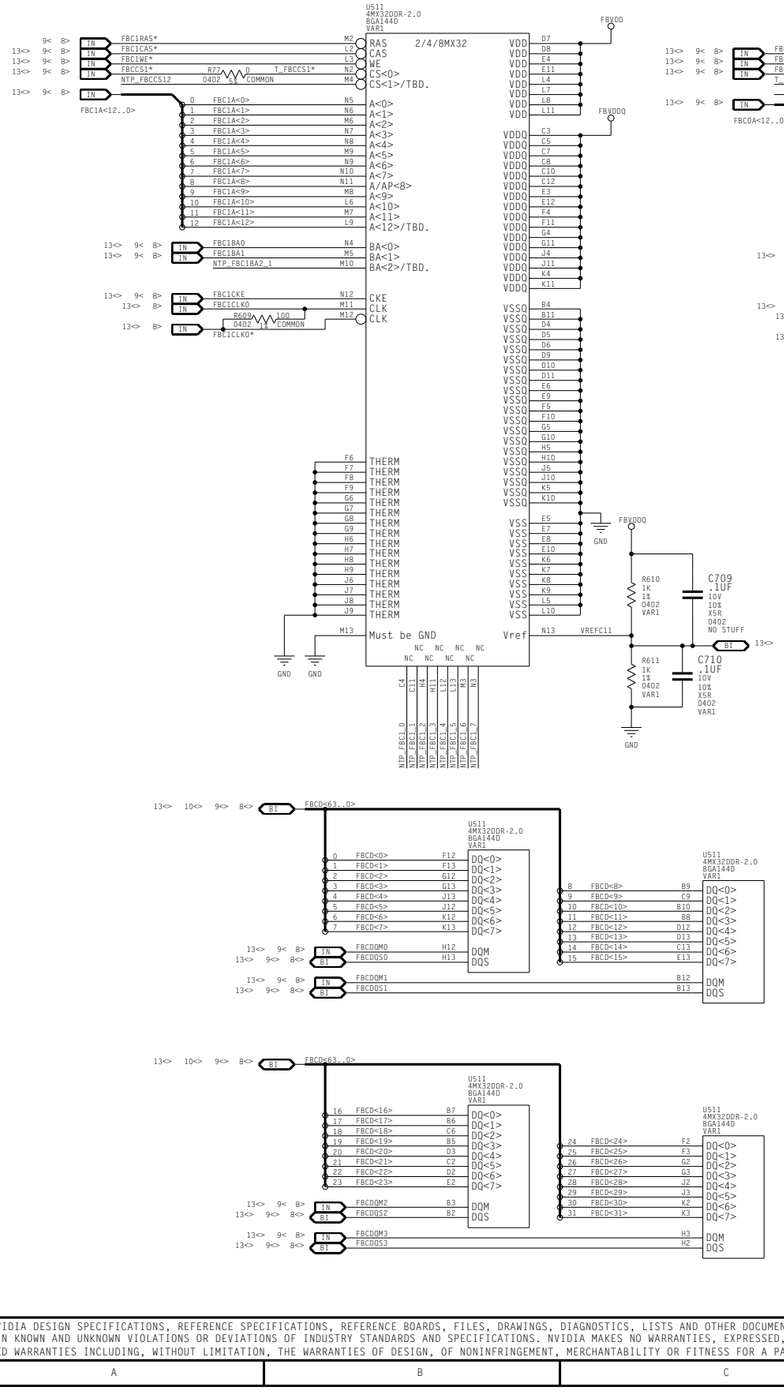
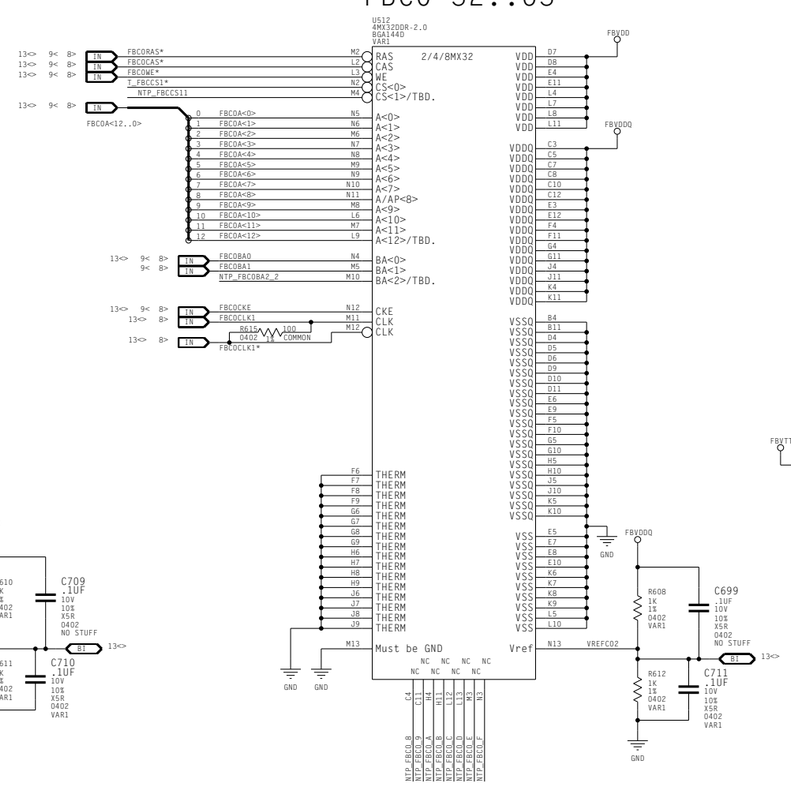
NV_PN	600-10172-0015-000		
ID	design	PAGE	9 OF 38
NAME	Emler / Hunter	DATE	27-AUG-2003

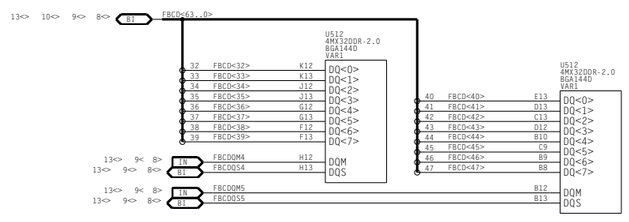
10. Memory Part. C - FBCD0..63 - Bank1

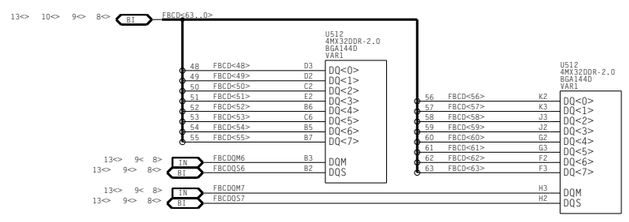
FBC1 0..31



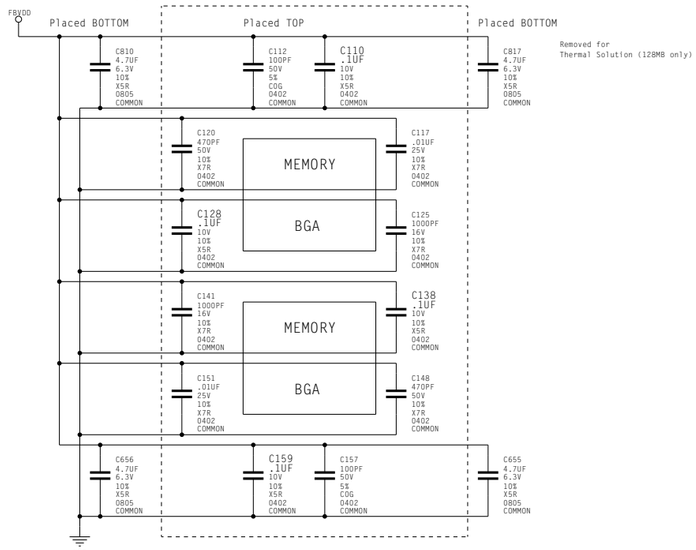
FBC0 32..63



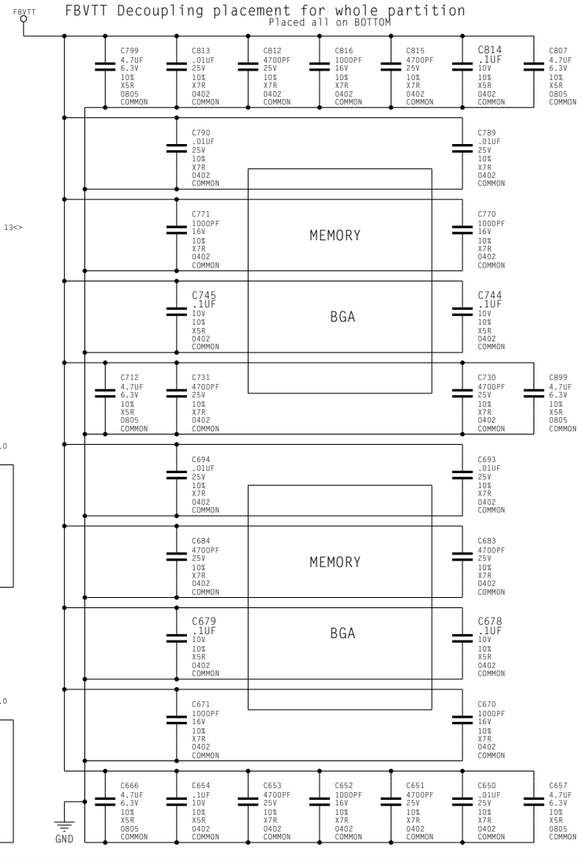




FBVDD Decoupling placement for whole partition



FBVTT Decoupling placement for whole partition



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_C - Bank1

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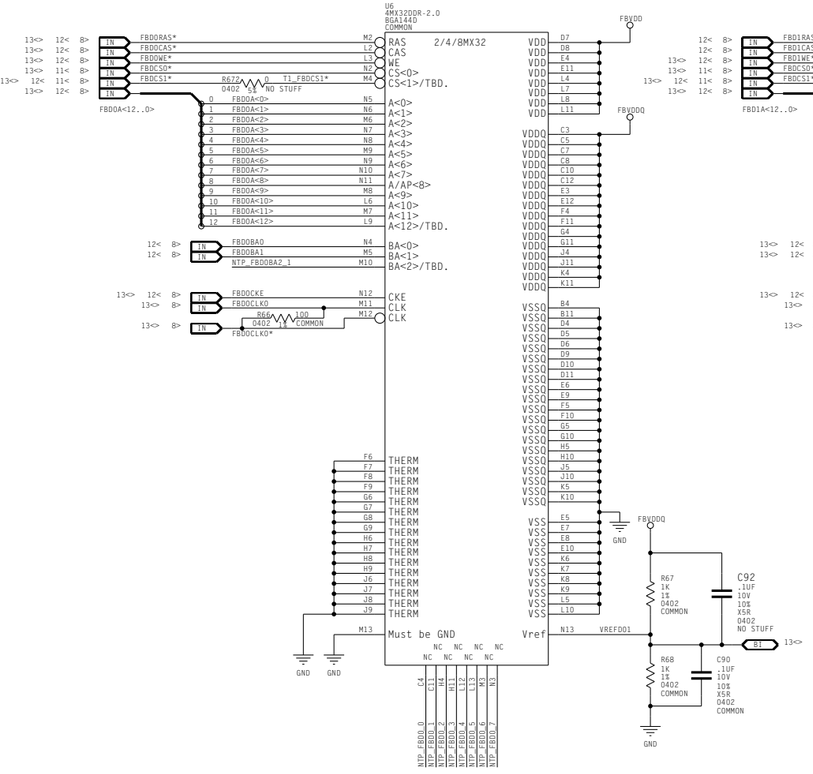
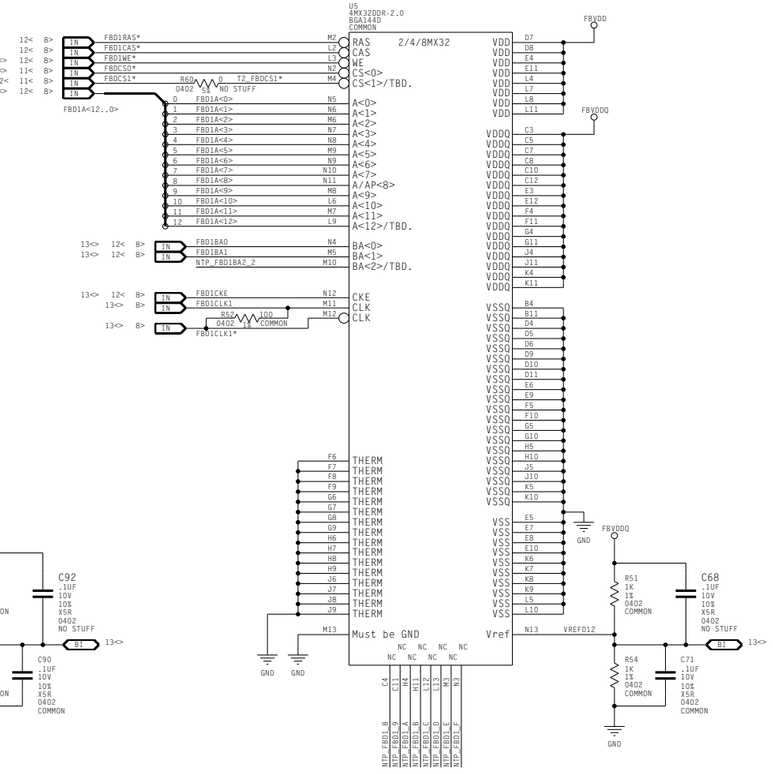
11. Memory Part. D - FBDD0..63 - Bank0

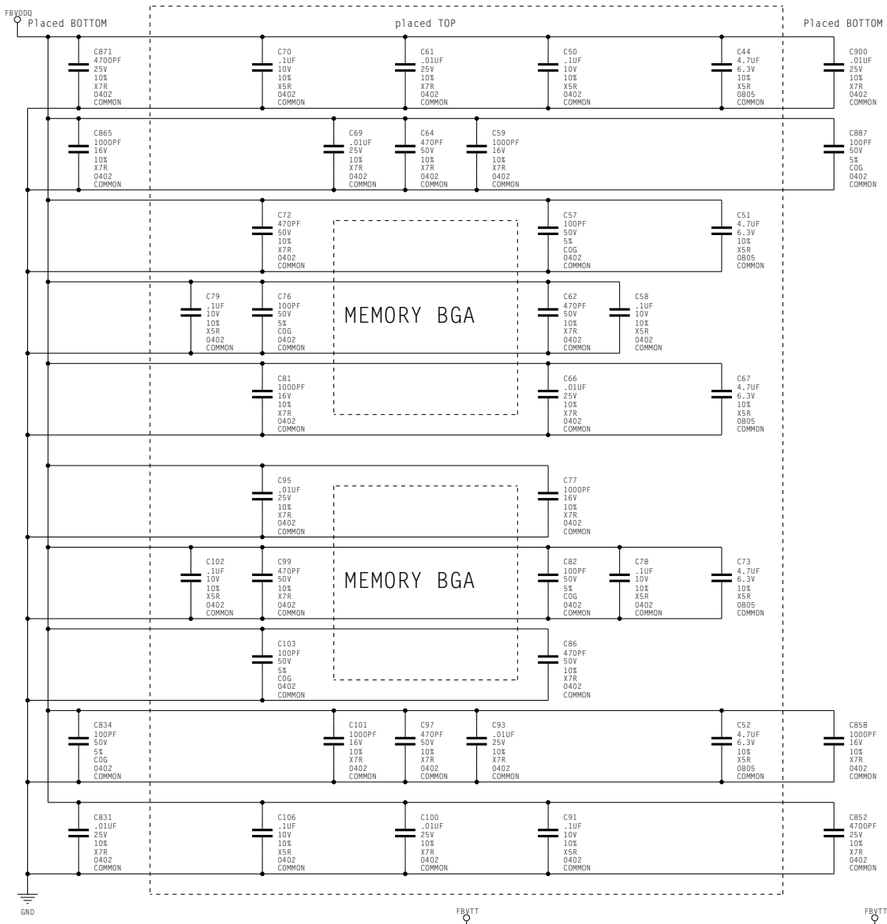
FBD0 0..31



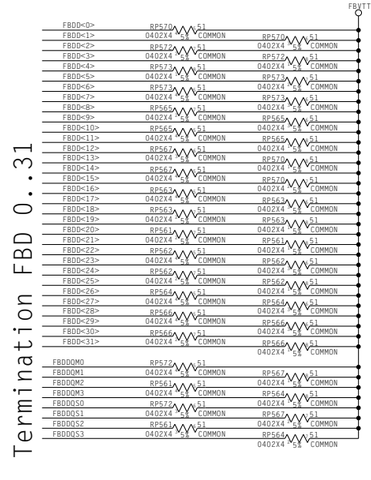
FBD1 32..63



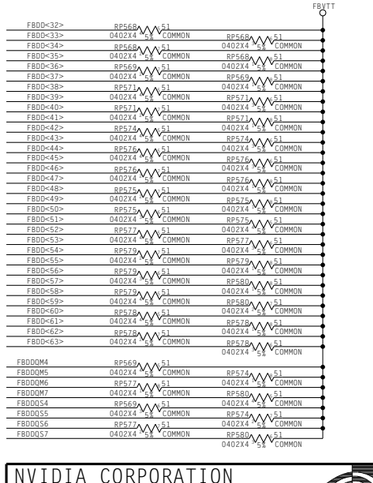
FBVDDQ Decoupling placement for whole Partition



Termination FBD 0..31



Termination FBD 32..63



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_D - Bank0

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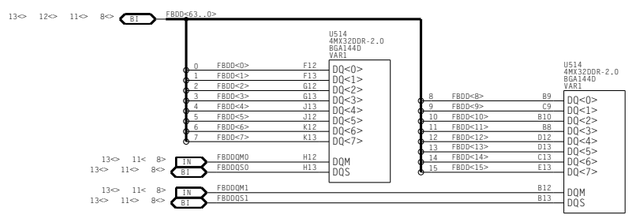
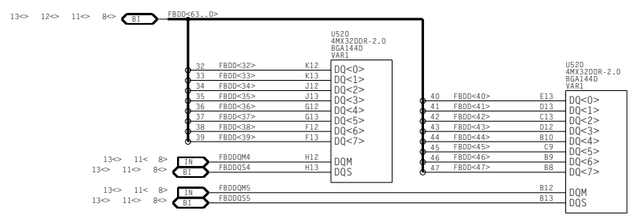
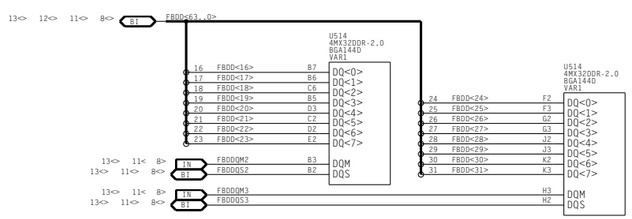
12. Memory Part. D - FBDD0..63 - Bank1

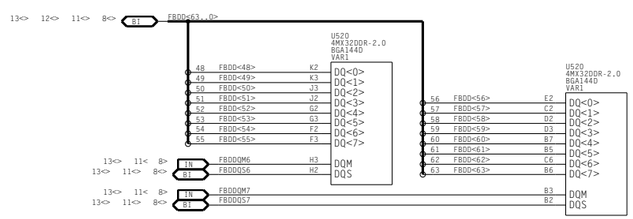
FBD1 0..31

FBD0 32..63

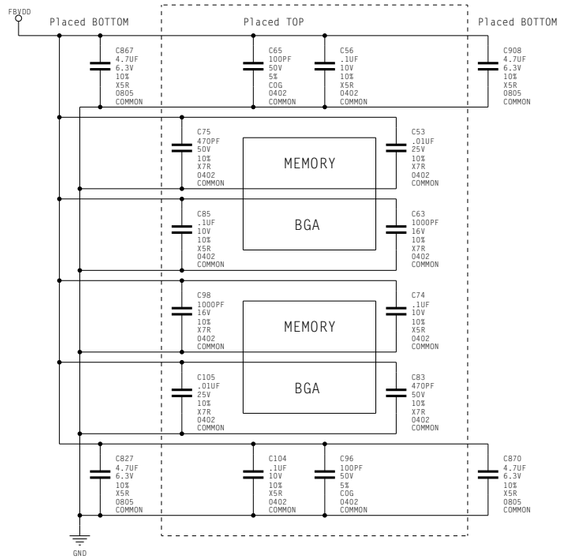






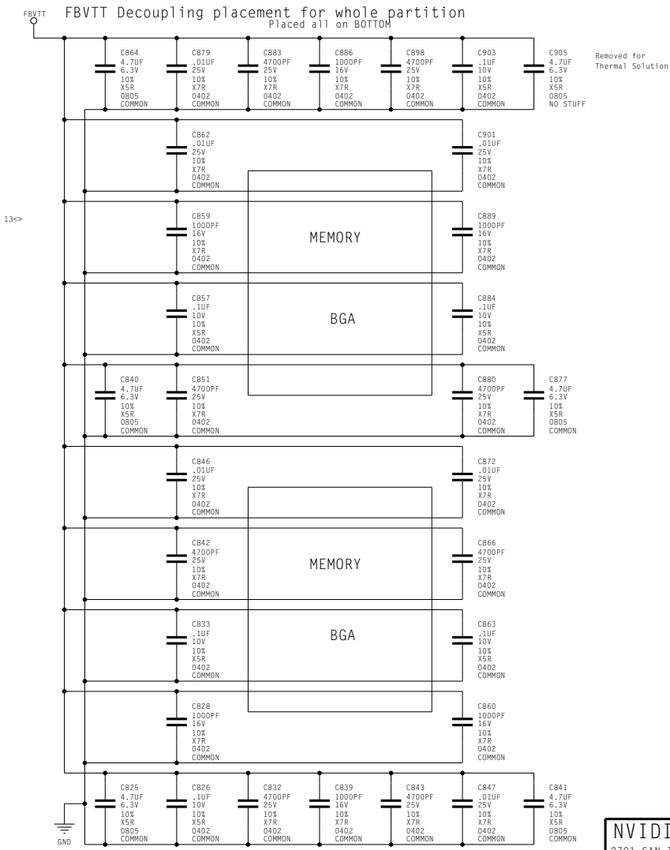


FBVDD Decoupling placement for whole partition



FBVTT Decoupling placement for whole partition

Placed all on BOTTOM



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory: FB_D - Bank1

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13. Memory NET SPACING RULES

Memory FBA FBB

NET Name	Diffpair	Spacing
FBAOCLKO	FBAOCLKO	18MIL_G2G_25MIL
FBAOCLKO*	FBAOCLKO	18MIL_G2G_25MIL
FBAOCLK1	FBAOCLK1	18MIL_G2G_25MIL
FBAOCLK1*	FBAOCLK1	18MIL_G2G_25MIL
FBA1CLKO	FBA1CLKO	18MIL_G2G_25MIL
FBA1CLKO*	FBA1CLKO	18MIL_G2G_25MIL
FBA1CLK1	FBA1CLK1	18MIL_G2G_25MIL
FBA1CLK1*	FBA1CLK1	18MIL_G2G_25MIL
FBB0CLKO	FBB0CLKO	18MIL_G2G_25MIL
FBB0CLKO*	FBB0CLKO	18MIL_G2G_25MIL
FBB0CLK1	FBB0CLK1	18MIL_G2G_25MIL
FBB0CLK1*	FBB0CLK1	18MIL_G2G_25MIL
FBB1CLKO	FBB1CLKO	18MIL_G2G_25MIL
FBB1CLKO*	FBB1CLKO	18MIL_G2G_25MIL
FBB1CLK1	FBB1CLK1	18MIL_G2G_25MIL
FBB1CLK1*	FBB1CLK1	18MIL_G2G_25MIL
FBAD<63..0>		15MIL
FBBD<63..0>		15MIL
FBADQM0		15MIL
FBADQM1		15MIL
FBADQM2		15MIL
FBADQM3		15MIL
FBADQM4		15MIL
FBADQM5		15MIL
FBADQM6		15MIL
FBADQM7		15MIL
FBBDQM0		15MIL
FBBDQM1		15MIL
FBBDQM2		15MIL
FBBDQM3		15MIL
FBBDQM4		15MIL
FBBDQM5		15MIL
FBBDQM6		15MIL
FBBDQM7		15MIL
FBADQS0		20MIL
FBADQS1		20MIL
FBADQS2		20MIL
FBADQS3		20MIL
FBADQS4		20MIL
FBADQS5		20MIL
FBADQS6		20MIL
FBADQS7		20MIL
FBBDQS0		20MIL
FBBDQS1		20MIL
FBBDQS2		20MIL
FBBDQS3		20MIL
FBBDQS4		20MIL
FBBDQS5		20MIL
FBBDQS6		20MIL
FBBDQS7		20MIL
FBAOA<13..0>		10MIL
FBA1A<13..0>		10MIL
FBBOA<13..0>		10MIL
FBB1A<13..0>		10MIL
FBAORAS*		10MIL
FBAOCAS*		10MIL
FBAOWE*		10MIL
FBAOCKE		10MIL
FBAOBAO		10MIL
FBAOBA1		10MIL
FBA1RAS*		10MIL
FBA1CAS*		10MIL
FBA1WE*		10MIL
FBA1CKE		10MIL
FBA1BAO		10MIL
FBA1BA1		10MIL
FBBORAS*		10MIL
FBBOCAS*		10MIL
FBBOWE*		10MIL
FBBOCKE		10MIL
FBBOBAO		10MIL
FBBOBA1		10MIL
FBB1RAS*		10MIL
FBB1CAS*		10MIL
FBB1WE*		10MIL
FBB1CKE		10MIL
FBB1BAO		10MIL
FBB1BA1		10MIL
FBACSO*		10MIL
FBAC$1*		10MIL
FBBCSO*		10MIL
FBBCS1*		10MIL

FB_CAL...

FB_CAL_PD_VDDQ		20MIL_G2G_25MIL
FB_CAL_PU_GND		20MIL_G2G_25MIL
FB_CAL_CLK_GND		20MIL_G2G_25MIL
FB_CAL_TERM_GND		20MIL_G2G_25MIL
FB_CALAB_CLK_GND		20MIL_G2G_25MIL
FB_CALCD_CLK_GND		20MIL_G2G_25MIL

Memory FBC FBD

NET Name	Diffpair	Spacing
FBCOCLKO	FBCOCLKO	18MIL_G2G_25MIL
FBCOCLKO*	FBCOCLKO	18MIL_G2G_25MIL
FBCOCLK1	FBCOCLK1	18MIL_G2G_25MIL
FBCOCLK1*	FBCOCLK1	18MIL_G2G_25MIL
FBC1CLKO	FBC1CLKO	18MIL_G2G_25MIL
FBC1CLKO*	FBC1CLKO	18MIL_G2G_25MIL
FBC1CLK1	FBC1CLK1	18MIL_G2G_25MIL
FBC1CLK1*	FBC1CLK1	18MIL_G2G_25MIL
FBDOCLKO	FBDOCLKO	18MIL_G2G_25MIL
FBDOCLKO*	FBDOCLKO	18MIL_G2G_25MIL
FBDOCLK1	FBDOCLK1	18MIL_G2G_25MIL
FBDOCLK1*	FBDOCLK1	18MIL_G2G_25MIL
FBD1CLKO	FBD1CLKO	18MIL_G2G_25MIL
FBD1CLKO*	FBD1CLKO	18MIL_G2G_25MIL
FBD1CLK1	FBD1CLK1	18MIL_G2G_25MIL
FBD1CLK1*	FBD1CLK1	18MIL_G2G_25MIL
FBCD<63..0>		15MIL
FBDD<63..0>		15MIL
FBCDQM0		15MIL
FBCDQM1		15MIL
FBCDQM2		15MIL
FBCDQM3		15MIL
FBCDQM4		15MIL
FBCDQM5		15MIL
FBCDQM6		15MIL
FBCDQM7		15MIL
FBDDQM0		15MIL
FBDDQM1		15MIL
FBDDQM2		15MIL
FBDDQM3		15MIL
FBDDQM4		15MIL
FBDDQM5		15MIL
FBDDQM6		15MIL
FBDDQM7		15MIL
FBCDQS0		20MIL
FBCDQS1		20MIL
FBCDQS2		20MIL
FBCDQS3		20MIL
FBCDQS4		20MIL
FBCDQS5		20MIL
FBCDQS6		20MIL
FBCDQS7		20MIL
FBDDQS0		20MIL
FBDDQS1		20MIL
FBDDQS2		20MIL
FBDDQS3		20MIL
FBDDQS4		20MIL
FBDDQS5		20MIL
FBDDQS6		20MIL
FBDDQS7		20MIL
FBCOA<13..0>		10MIL
FBC1A<13..0>		10MIL
FBDOA<13..0>		10MIL
FBD1A<13..0>		10MIL
FBCORAS*		10MIL
FBCOCAS*		10MIL
FBCOWE*		10MIL
FBCOCKE		10MIL
FBCOBAO		10MIL
FBC1BA1		10MIL
FBCORAS*		10MIL
FBC1CAS*		10MIL
FBC1WE*		10MIL
FBC1CKE		10MIL
FBC1BAO		10MIL
FBC1BA1		10MIL
FBDORAS*		10MIL
FBDOCAS*		10MIL
FBDOWE*		10MIL
FBDOCKE		10MIL
FBD1BAO		10MIL
FBD1BA1		10MIL
FBDORAS*		10MIL
FBDOCAS*		10MIL
FBD1WE*		10MIL
FBD1CKE		10MIL
FBD1BAO		10MIL
FBD1BA1		10MIL
FBCCSO*		10MIL
FBCCS1*		10MIL
FBDCSO*		10MIL
FBDCS1*		10MIL

FBBVREF		12MIL_TRACE
VREFA01		12MIL_TRACE
VREFA02		12MIL_TRACE
VREFA11		12MIL_TRACE
VREFA12		12MIL_TRACE
VREFB01		12MIL_TRACE
VREFB02		12MIL_TRACE
VREFB11		12MIL_TRACE
VREFB12		12MIL_TRACE
VREFC01		12MIL_TRACE
VREFC02		12MIL_TRACE
VREFC11		12MIL_TRACE
VREFC12		12MIL_TRACE
VREFD01		12MIL_TRACE
VREFD02		12MIL_TRACE
VREFD11		12MIL_TRACE
VREFD12		12MIL_TRACE

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Memory Signal Constraints

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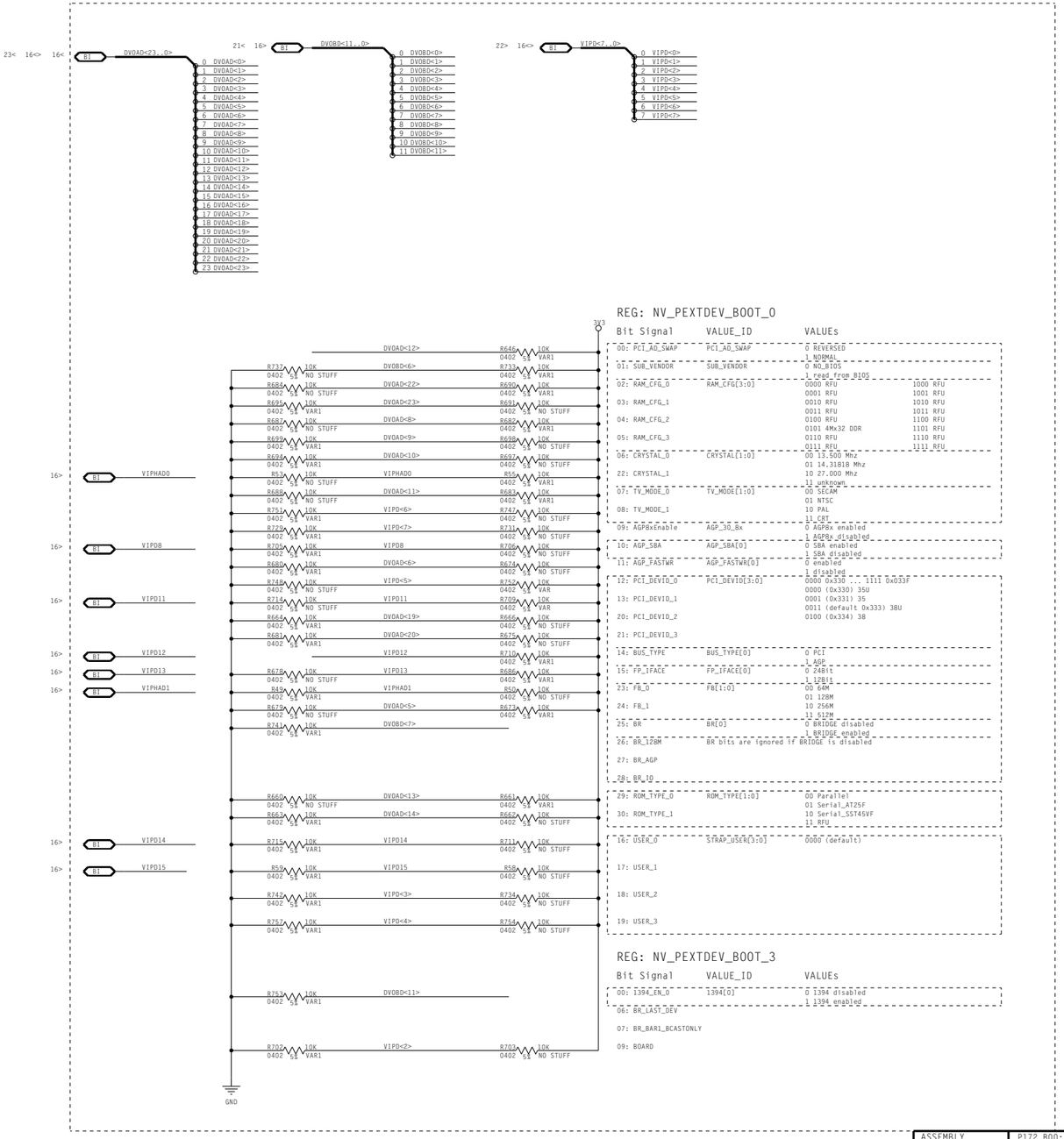
14. BIOS, Straps, Misc

Straps

Assembly: BIOS



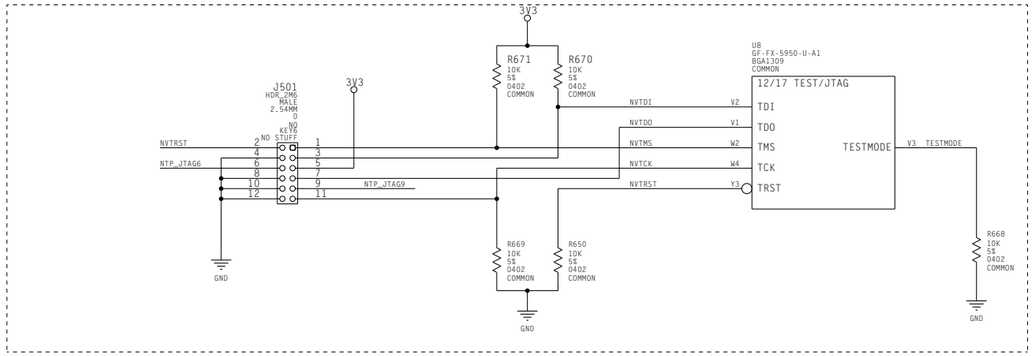
REG: NV_PEXTDEV_BOOT_0

Bit	Signal	VALUE_ID	VALUEs	
00:	PCI_AD_SWAP	PCI_AD_SWAP	0 REVERSED 1 NORMAL	
01:	SUB_VENDOR	SUB_VENDOR	0 NO_BIOS 1 read_from_BIOS	
02:	RAM_CFG_0	RAM_CFG[3:0]	0000 RFU	1000 RFU
03:	RAM_CFG_1		0001 RFU 0010 RFU 0011 RFU	1001 RFU 1010 RFU 1011 RFU
04:	RAM_CFG_2		0100 RFU 0101 4Mx32 DDR	1100 RFU 1101 RFU
05:	RAM_CFG_3		0110 RFU 0111 RFU	1110 RFU 1111 RFU
06:	CRYSTAL_0	CRYSTAL[1:0]	00 13.500 Mhz 01 14.31818 Mhz	
22:	CRYSTAL_1		10 27.000 Mhz 11 unknown	
07:	TV_MODE_0	TV_MODE[1:0]	00 SECAM 01 NTSC	
08:	TV_MODE_1		10 PAL 11 CRT	
09:	AGPBxEnable	AGP_3D_Bx	0 AGPBx enabled 1 AGPBx disabled	
10:	AGP_SBA	AGP_SBA[0]	0 SBA enabled 1 SBA disabled	
11:	AGP_FASTWR	AGP_FASTWR[0]	0 enabled 1 disabled	
12:	PCI_DEVID_0	PCI_DEVID[3:0]	0000 0x330 - 1111 0x033F	
13:	PCI_DEVID_1		0000 (0x330) 35U 0001 (0x331) 35	
20:	PCI_DEVID_2		0011 (default 0x333) 38U 0100 (0x334) 38	
21:	PCI_DEVID_3			
14:	BUS_TYPE	BUS_TYPE[0]	0 PCI 1 AGP	
15:	FP_1FACE	FP_1FACE[0]	0 24Bit 1 12Bit	
23:	FB_0	FB[1:0]	00 64M 01 128M	
24:	FB_1		10 256M 11 512M	
25:	BR	BR[0]	0 BRIDGE disabled 1 BRIDGE enabled	
26:	BR_128M	BR bits are ignored if BRIDGE is disabled		
27:	BR_AGP			
28:	BR_10			
29:	ROM_TYPE_0	ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F	
30:	ROM_TYPE_1		10 Serial_SST45VF 11 RFU	
16:	USER_0	STRAP_USER[3:0]	0000 (default)	
17:	USER_1			
18:	USER_2			
19:	USER_3			

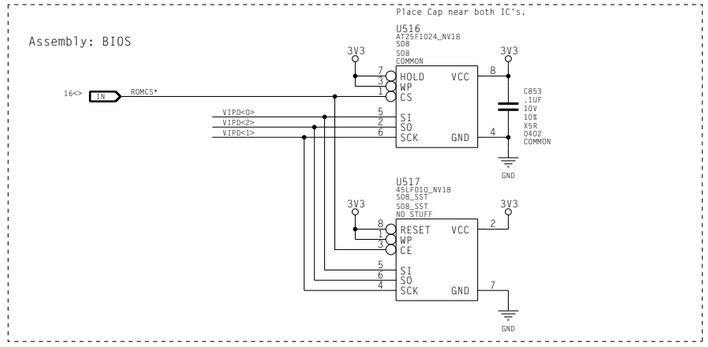
REG: NV_PEXTDEV_BOOT_3

Bit	Signal	VALUE_ID	VALUEs
00:	1394_EN_0	1394[0]	0 1394 disabled 1 1394 enabled
06:	BR_LAST_DEV		
07:	BR_BAR1_BCASTONLY		
09:	BOARD		

Test/JTAG



BIOS (serial)



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	BIOS, Strappings and Misc

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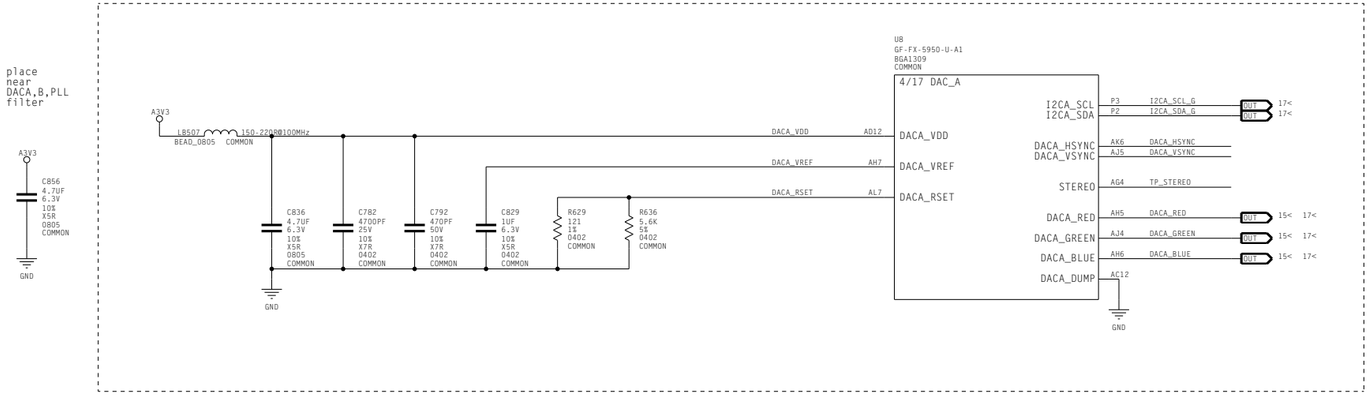
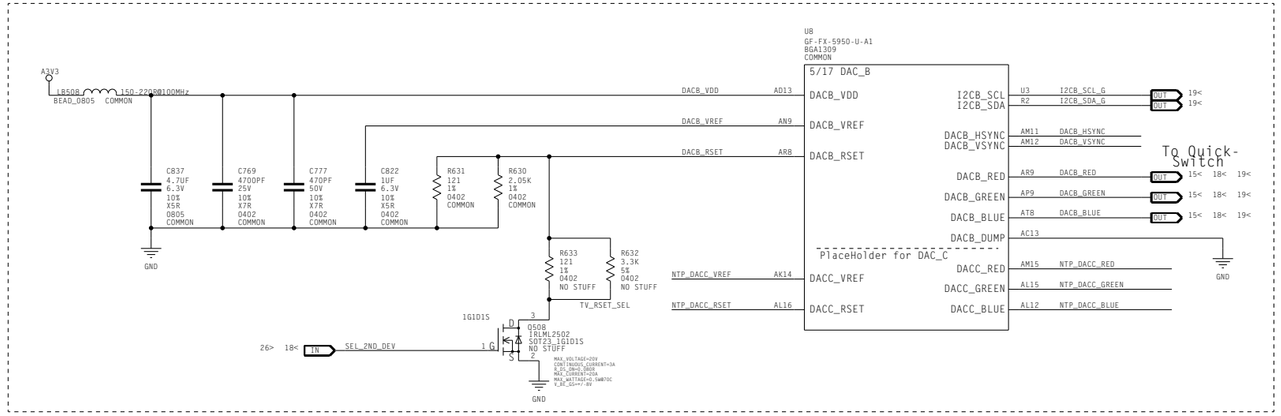
15. DAC_A, DAC_B, PLL, SyncBuffer

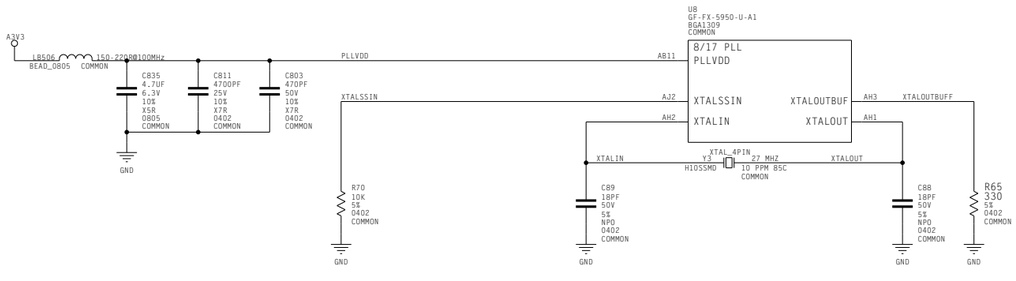
DACA



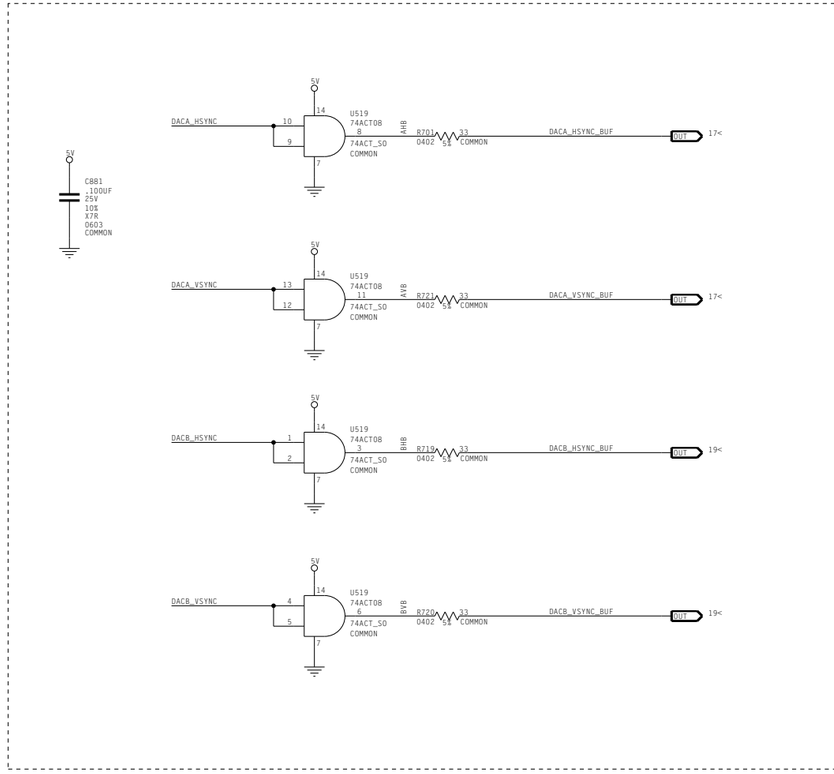
DACB



XTAL/PLLVDD



DAC Sync Buffer



NET RULES

		NET	SPACING	PHYSICAL
	IN	XTALIN	15MIL	5MIL_TRACE
	IN	XTALOUT	15MIL	5MIL_TRACE
17< 15>	IN	DACA_RED	20MIL_G2G_3OMIL	
17< 15>	IN	DACA_GREEN	20MIL_G2G_3OMIL	
17< 15>	IN	DACA_BLUE	20MIL_G2G_3OMIL	
19< 18< 15>	IN	DACB_RED	20MIL_G2G_3OMIL	
19< 18< 15>	IN	DACB_GREEN	20MIL_G2G_3OMIL	
19< 18< 15>	IN	DACB_BLUE	20MIL_G2G_3OMIL	
	IN	DACB_VDD		16MIL_TRACE
	IN	DACB_RSET		16MIL_TRACE
	IN	DACB_VREF		16MIL_TRACE
	IN	DACA_VDD		16MIL_TRACE
	IN	DACA_RSET		16MIL_TRACE
	IN	DACA_VREF		16MIL_TRACE
	IN	PLLVDD		16MIL_TRACE

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	DAC_A, DAC_B, PLL and SYNCbuffer

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16. DVO/VIP Interface

NET RULES

	NET	PHYSICAL	SPACING
IN	SAGP0CALPD_VDDQ	12MIL_TRACE	20MIL
IN	SAGP1CALPD_VDDQ	12MIL_TRACE	20MIL
IN	SAGP0CALPU_GND	12MIL_TRACE	20MIL
IN	SAGP1CALPU_GND	12MIL_TRACE	20MIL
IN	DVOA_VDD	16MIL_TRACE	
IN	DVOB_VDD	16MIL_TRACE	
IN	DVOAD<23..0>		10MIL
IN	DVOAD_R<23..0>		10MIL

23< 16> 14<>

U518
EZ1117
ADJ_VR=1.25V
SOT223_GOI
NO STUFF

5V → IN (3) OUT TAB (2,4) → DVOVDDQ
GND/ADJ (1) → DVO_ADJ
C875 4.7UF 6.3V 10% X5R 0805 NO STUFF
C874 .1UF 10V 10% X5R 0402 NO STUFF
R692 1.21K 1% 0603 NO STUFF
R693 240 1% 0603 NO STUFF
C868 .1UF 10V 10% X5R 0402 NO STUFF
C873 4.7UF 6.3V 10% X5R 0805 NO STUFF
ASSEMBLY=DVOVDDQ_REG*

ATTENTION:
If DVOB_VDD is not A3V3, there are problems with
VideoCapture and BIOS expected!
VideoCapture Output is TTL level Low=0.0..0.8V, High=2.0..VDD
BIOS I/O is 3V3-CMOS level - Low=0.0..0.3*VDD, High=0.7*VDD..VDD

Place near Power Filter
A3V3 → C844 4.7UF 6.3V 10% X5R 0805 COMMON → GND

A3V3 → LB504 150-220R@100MHZ VAR1 BEAD_0603 → DVOVDDQ
LB503 150-220R@100MHZ NO STUFF BEAD_0603
SAGP1VDDQ is VDD DVOA
C830 4.7UF 6.3V 10% X5R 0805 COMMON
C821 .1UF 10V 10% X5R 0402 COMMON
C761 100PF 50V 5% C0G 0402 COMMON
C780 1000PF 16V 10% X7R 0402 COMMON
PLACE CLOSE TO NV35
GND

DVOA_VDD ← OUT 23<
DVOB_VDD

U8
GF-FX-5950-U-A1
BGA1309
COMMON

7/17 DVOA DVOB VIP

SAGP1VDDQ	AJ12	
SAGP1VDDQ	AH13	
SAGP1VDDQ	AJ13	
SAGP1VDDQ	AG15	
ROMCS	AJ3	← BI 14<, ROMCS*, R704 10K 5% 0402 COMMON, 3V3
DVOHSYNC	AV6	← DVOAHSYNC_R ← R69 15 0402 5% COMMON ← DVOAHSYNC ← OUT 23<
DVOVSYNC	AU6	← DVOAVSYNC_R ← R64 15 0402 5% COMMON ← DVOAVSYNC ← OUT 23<
DVODE	AW6	← TP_DVOADE
DVOCLKIN	AT13	← DVOACLKIN ← IN 23>
DVOCLKOUT	AW9	→ DVOACLKOUT_R → R648 0 0402 5% COMMON → DVOACLKOUT ← OUT 23<
DVOCLKOUT	AT10	→ TP_DVOACLKOUT*

R71 10K 5% 0402 NO STUFF
R73 10K 5% 0402 COMMON
3V3 → GND

DVOD<0>	AT7	DVOAD<0>	RP4 15 0402X4 5% COMMON
DVOD<1>	AV7	DVOAD<1>	RP4 15 0402X4 5% COMMON
DVOD<2>	AU8	DVOAD<2>	RP4 15 0402X4 5% COMMON
DVOD<3>	AV8	DVOAD<3>	RP4 15 0402X4 5% COMMON
DVOD<4>	AU9	DVOAD<4>	RP5 15 0402X4 5% COMMON
DVOD<5>	AV9	DVOAD<5>	RP5 15 0402X4 5% COMMON
DVOD<6>	AV10	DVOAD<6>	RP5 15 0402X4 5% COMMON
DVOD<7>	AU11	DVOAD<7>	RP5 15 0402X4 5% COMMON
DVOD<8>	AV11	DVOAD<8>	RP6 15 0402X4 5% COMMON
DVOD<9>	AU12	DVOAD<9>	RP6 15 0402X4 5% COMMON
DVOD<10>	AV12	DVOAD<10>	RP6 15 0402X4 5% COMMON
DVOD<11>	AW12	DVOAD<11>	RP6 15 0402X4 5% COMMON
DVOD<12>	AR6	DVOAD<12>	
DVOD<13>	AT6	DVOAD<13>	
DVOD<14>	AR5	DVOAD<14>	
DVOD<15>	AP7	DVOAD<15>	
DVOD<16>	AP4	DVOAD<16>	
DVOD<17>	AP5	DVOAD<17>	
DVOD<18>	AP6	DVOAD<18>	
DVOD<19>	AN6	DVOAD<19>	
DVOD<20>	AM5	DVOAD<20>	
DVOD<21>	AL6	DVOAD<21>	
DVOD<22>	AL4	DVOAD<22>	
DVOD<23>	AL5	DVOAD<23>	

23< 16< 14<> ← BI DVOAD<23..0>

SAGPOVDDQ	AG11	
SAGPOVDDQ	AH11	
SAGPOVDDQ	AG12	
SAGPOVDDQ	AF13	
VD50CLAMP1	W11	← 5V
I2CC_SCL	R1	I2CC_SCL_G
I2CC_SDA	T2	I2CC_SDA_G
MCHIP_RST	U2	MCHIP_RST
BUFRST	AB5	RESET_BUF*

DVOB_VDD
SAGP0VDDQ is VDD for DVOB/VIP
C788 100PF 50V 5% C0G 0402 COMMON
C779 1000PF 16V 10% X7R 0402 COMMON
C824 .1UF 10V 10% X5R 0402 COMMON
C838 4.7UF 6.3V 10% X5R 0805 COMMON
LB502 150-220R@100MHZ NO STUFF BEAD_0603
L501 150-220R@100MHZ VAR1 BEAD_0603
DVOVDDQ, A3V3
PLACE CLOSE TO NV35
GND

Decoupling for VD50CLAMP1
5V → C791 .1UF 10V 10% X5R 0402 COMMON → GND

5V → R760 2.2K 5% 0402 COMMON
R786 2.2K 5% 0402 COMMON
R784 33 0402 5% COMMON ← I2CC_SCL ← OUT 21< 22< 23< 24< 26>
R758 33 0402 5% COMMON ← I2CC_SDA ← BI 21<> 22<> 23<> 24<> 26<>

3V3 → 10K 5% 0402 COMMON R667
10K 5% 0402 COMMON R724
RESET_BUF* → OUT BI 16> 21< 22< 23< 16> 21< 22< 23<, 14<> 22>
VIPD<7..0>

VIPD<0>	AL2	VIPD<0>	0
VIPD<1>	AM2	VIPD<1>	1
VIPD<2>	AN2	VIPD<2>	2
VIPD<3>	AP1	VIPD<3>	3
VIPD<4>	AL3	VIPD<4>	4
VIPD<5>	AM3	VIPD<5>	5
VIPD<6>	AN4	VIPD<6>	6
VIPD<7>	AP2	VIPD<7>	7
VIPD<8>	AR2	VIPD8	OUT 14<>
VIPD<9>	AR3	SWAPREADY	
VIPD<10>	AT2		
VIPD<11>	AT4	VIPD11	OUT 14<>
VIPD<12>	AU1	VIPD12	OUT 14<>
VIPD<13>	AU2	VIPD13	OUT 14<>
VIPD<14>	AV1	VIPD14	OUT 14<>
VIPD<15>	AV2	VIPD15	OUT 14<>
VIPHAD<0>	AK4	VIPHAD0	OUT 14<>
VIPHAD<1>	AK2	VIPHAD1	OUT 14<>
VIPPCLK	AP3	VIPPCLK	OUT 22<
VIPHCTL	AL1	NTP_VIPHCTL	
VIPHCLK	AU3	NTP_VIPHCLK	
BPCICLK	AW2	NTP_BPCICLK	

srom_si: VIPD<0>
srom_sck:VIPD<1>
srom_so: VIPD<2>

3V3 → R63 3.3K 5% 0402 COMMON

NOTE:
VIPD<9> HAS BEEN REDEFINED AS SWAP_READY1
VIPD<10> HAS BEEN REDEFINED AS SWAP_READY2

DVOBHSYNC	AM10	DVOBHSYNC_R	R652 15 0402 5% COMMON → DVOBHSYNC → OUT 21<
DVOBVSYNC	AP11	DVOBVSYNC_R	R653 15 0402 5% COMMON → DVOBVSYNC → OUT 21<
DVOBDE	AM9	DVOBDE_R	R654 15 0402 5% COMMON → DVOBDE → OUT 21<
DVOBCLKOUT	AL8	DVOBCLKOUT_R	R651 15 0402 5% COMMON → DVOBCLKOUT → OUT 21<
DVOBCLKOUT	AJ10	DVOBCLKOUT_R*	R625 15 0402 5% COMMON → DVOBCLKOUT* → OUT 21<

DVOBD<11..0> → OUT 14<> 21<

DVOBD<0>	AP8	DVOBD0_R	RP1 15 0402X4 5% COMMON → DVOBD<0> 0
DVOBD<1>	AL10	DVOBD1_R	RP1 15 0402X4 5% COMMON → DVOBD<1> 1
DVOBD<2>	AM8	DVOBD2_R	RP1 15 0402X4 5% COMMON → DVOBD<2> 2
DVOBD<3>	AM6	DVOBD3_R	RP1 15 0402X4 5% COMMON → DVOBD<3> 3
DVOBD<4>	AL9	DVOBD4_R	RP2 15 0402X4 5% COMMON → DVOBD<4> 4
DVOBD<5>	AK9	DVOBD5_R	RP2 15 0402X4 5% COMMON → DVOBD<5> 5
DVOBD<6>	AK8	DVOBD6_R	RP2 15 0402X4 5% COMMON → DVOBD<6> 6
DVOBD<7>	AJ6	DVOBD7_R	RP2 15 0402X4 5% COMMON → DVOBD<7> 7
DVOBD<8>	AK11	DVOBD8_R	RP3 15 0402X4 5% COMMON → DVOBD<8> 8
DVOBD<9>	AJ8	DVOBD9_R	RP3 15 0402X4 5% COMMON → DVOBD<9> 9
DVOBD<10>	AH9	DVOBD10_R	RP3 15 0402X4 5% COMMON → DVOBD<10> 10
DVOBD<11>	AH8	DVOBD11_R	RP3 15 0402X4 5% COMMON → DVOBD<11> 11

DVOA_VDD, DVOB_VDD
R634 100 1% 0402 COMMON
R635 100 1% 0402 COMMON
R641 100 1% 0402 COMMON
R639 100 1% 0402 COMMON

SAGP0CALPD_VDDQ	AM4	SAGP0CALPD_VDDQ
SAGP1CALPD_VDDQ	AT5	SAGP1CALPD_VDDQ
SAGP0CALPU_GND	AH4	SAGP0CALPU_GND
SAGP1CALPU_GND	AT9	SAGP1CALPU_GND
SAGPVREF	AR4	SAGPVREF

R638 100 1% 0402 COMMON
R640 100 1% 0402 COMMON
R628 100 1% 0402 COMMON
R627 100 1% 0402 COMMON
GND

A3V3 → R645 1K 5% 0402 COMMON
R644 1K 5% 0402 COMMON
C819 .1UF 10V 10% X5R 0402 COMMON
GND

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	DVO/VIP Interface

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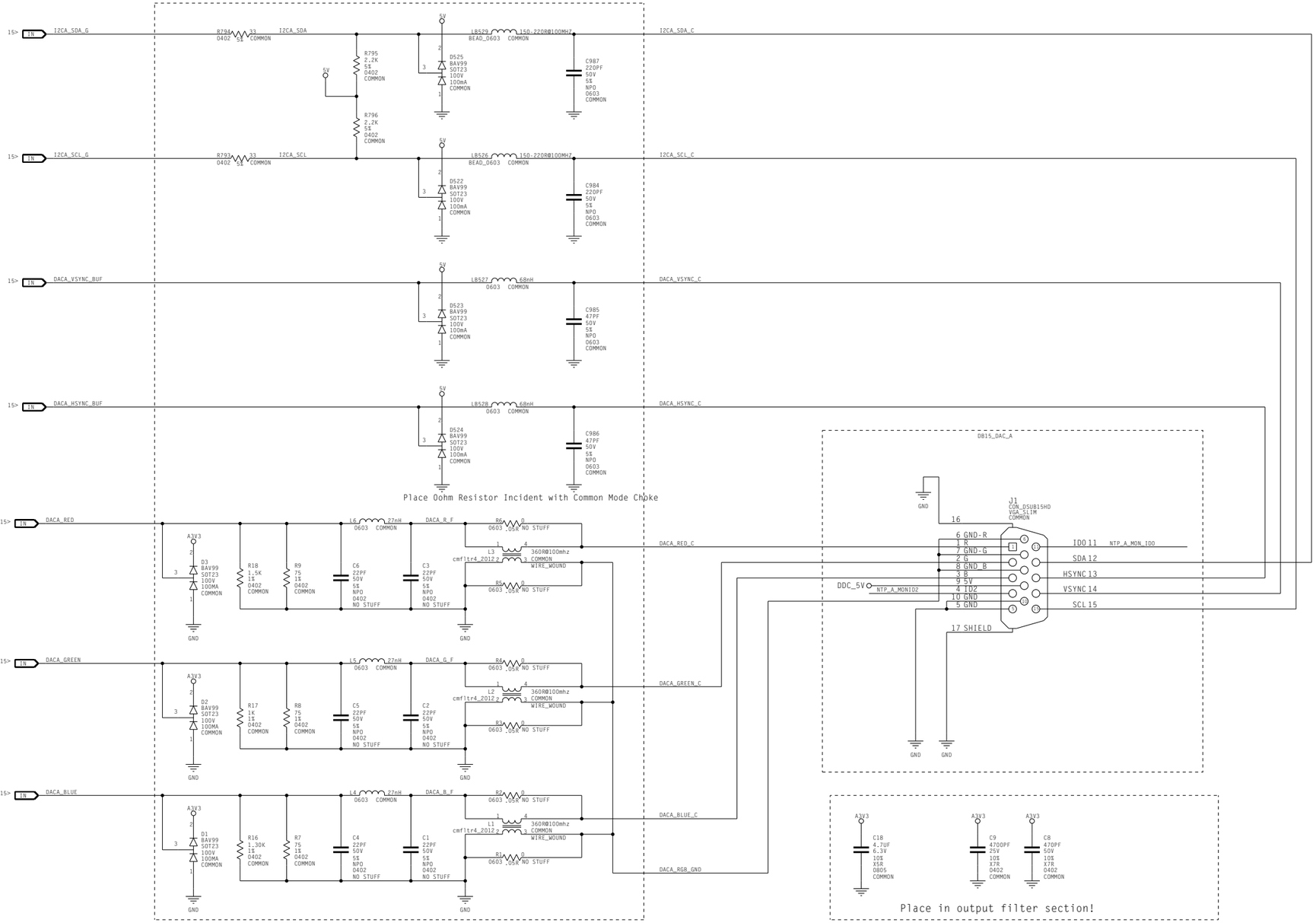
17. DACA RGB filters, VGA connector Output (south)

NET RULES

	NET	PHYSICAL	SPACING
17< 15< 15>	DACA_RED	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
17< 15< 15>	DACA_GREEN	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
17< 15< 15>	DACA_BLUE	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACA_R_F	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACA_G_F	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACA_B_F	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACA_RED_C	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACA_GREEN_C	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACA_BLUE_C	NOTE:37.50hm Impedance	20MIL_G2G_30MIL

DACA RGB-FILTER



DACA VGA connector

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	DACA Filter and VGA connector

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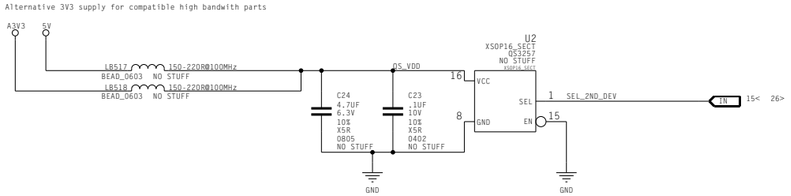
18. DACB VGA/TV Switch

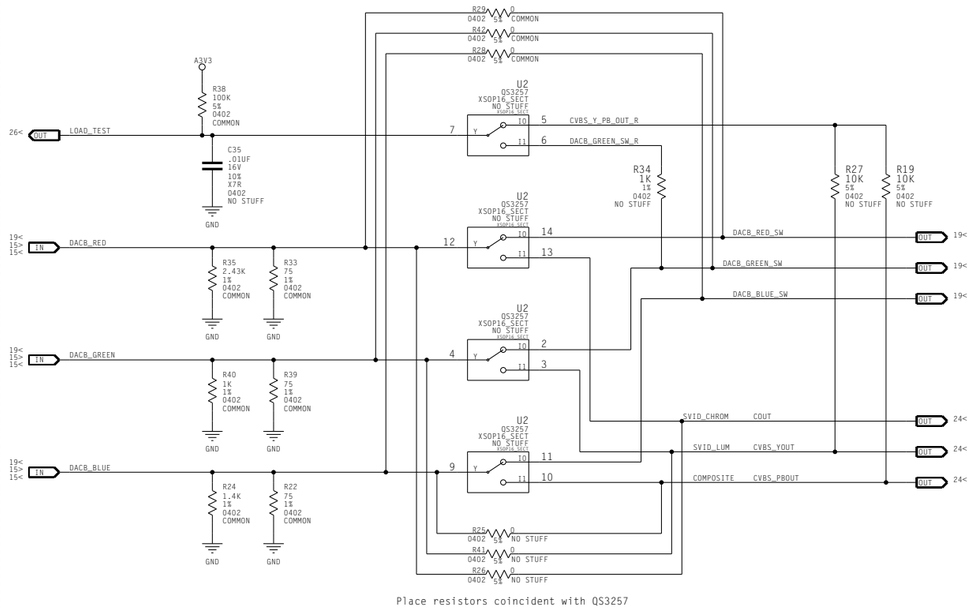
Quickswitch for DACB



Use alternative part IDTQS4A205 if bandwidth problems

Place near DACB filter

Place resistors coincident with QS3257



Place resistors coincident with QS3257

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	DACB VGA/TV Switch

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19. DACB RGB filters, VGA connector (north)

NET RULES

	NET	PHYSICAL	SPACING
18< 15< 15>	DACB_RED	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
18< 15< 15>	DACB_GREEN	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
18< 15< 15>	DACB_BLUE	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACB_R_F	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACB_G_F	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
	DACB_B_F	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
20< 19>	DACB_RED_C	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
20< 19>	DACB_GREEN_C	NOTE:37.50hm Impedance	20MIL_G2G_30MIL
20< 19>	DACB_BLUE_C	NOTE:37.50hm Impedance	20MIL_G2G_30MIL

DACB RGB-FILTER

15> IN I2CB_SDA_G — R780 33 0402 5% COMMON — I2CB_SDA — LB521 150-220R@100MHZ BEAD_0603 COMMON — OUT 20< I2CB_SDA_C
- R790 2.2K 5% 0402 COMMON (5V)
- R789 2.2K 5% 0402 COMMON
- D519 BAV99 SOT23 100V 100mA COMMON
- C980 220PF 50V 5% NPO 0603 COMMON

15> IN I2CB_SCL_G — R787 33 0402 5% COMMON — I2CB_SCL — LB522 150-220R@100MHZ BEAD_0603 COMMON — OUT 20< I2CB_SCL_C
- D518 BAV99 SOT23 100V 100mA COMMON
- C979 220PF 50V 5% NPO 0603 COMMON

15> IN DACB_VSYNC_BUF — LB523 68nH 0603 COMMON — OUT 20< DACB_VSYNC_C
- D520 BAV99 SOT23 100V 100mA COMMON
- C981 47PF 50V 5% NPO 0603 COMMON

15> IN DACB_HSYNC_BUF — LB525 68nH 0603 COMMON — OUT 20< DACB_HSYNC_C
- D521 BAV99 SOT23 100V 100mA COMMON
- C983 47PF 50V 5% NPO 0603 COMMON

Place 0ohm Resistor Incident with Common Mode Choke

18> IN DACB_RED_SW — L11 27nH 0603 COMMON — DACB_R_F — R13 0 0603 .05R NO STUFF — OUT 19< 20< DACB_RED_C
- A3V3 — D5 BAV99 SOT23 100V 100MA COMMON
- C16 22PF 50V 5% NPO 0402 NO STUFF
- C12 22PF 50V 5% NPO 0402 NO STUFF
- L8 cmf1tr4_2012 360R@100mhz COMMON WIRE_WOUND
- R12 0 0603 .05R NO STUFF
- GND

18> IN DACB_GREEN_SW — L12 27nH 0603 COMMON — DACB_G_F — R15 0 0603 .05R NO STUFF — OUT 19< 20< DACB_GREEN_C
- A3V3 — D6 BAV99 SOT23 100V 100MA COMMON
- C17 22PF 50V 5% NPO 0402 NO STUFF
- C13 22PF 50V 5% NPO 0402 NO STUFF
- L9 cmf1tr4_2012 360R@100mhz COMMON WIRE_WOUND
- R14 0 0603 .05R NO STUFF
- GND

18> IN DACB_BLUE_SW — L10 27nH 0603 COMMON — DACB_B_F — R11 0 0603 .05R NO STUFF — OUT 19< 20< DACB_BLUE_C
- A3V3 — D4 BAV99 SOT23 100V 100MA COMMON
- C15 22PF 50V 5% NPO 0402 NO STUFF
- C11 22PF 50V 5% NPO 0402 NO STUFF
- L7 cmf1tr4_2012 360R@100mhz COMMON WIRE_WOUND
- R10 0 0603 .05R NO STUFF — OUT 20< DACB_RGB_GND
- GND

DACB VGA connector

assy: DB15_DAC_B

J2 CON_DSUB15HD VGA_SLIM_DVIMTG VGA_SLIM_DVIMTG NO STUFF

6 GND-R	IDO 11	NTP_B_MON_IDO
1 R		
7 GND-G	SDA 12	
2 G		
8 GND_B	HSYNC 13	
3 B		
9 5V	VSYNC 14	
4 IDZ		
10 GND	SCL 15	
5 GND		

DDC_5V — NTP_B_MONID2

GND

A3V3
- C25 4.7UF 6.3V 10% X5R 0805 COMMON
- C21 470PF 25V 10% X7R 0402 COMMON
- C20 470PF 50V 10% X7R 0402 COMMON

Place in output filter section!

ASSEMBLY	P172_800: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	DACB Filter and VGA connector

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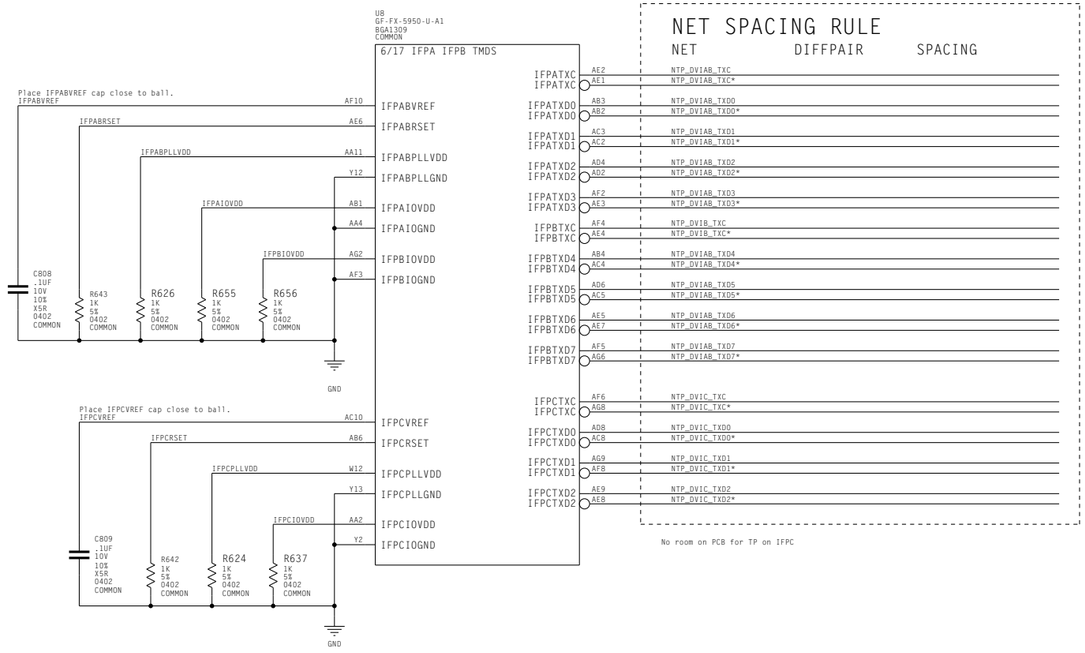
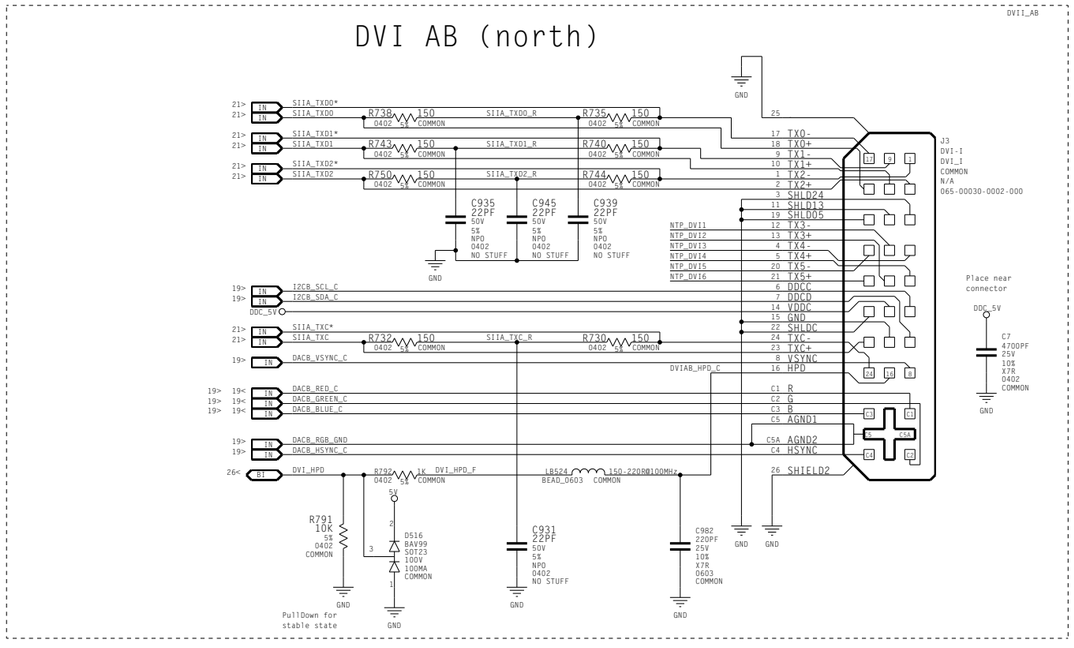
20. Internal TMDS/LVDS .. Link A/B, Link C

NET RULES (OTHER)

NET	PHYSICAL	VOLTAGE
IFPABPLLVDD	10MIL_TRACE	3.3V
IFPAIOVDD	10MIL_TRACE	3.3V
IFPBIOVDD	10MIL_TRACE	3.3V
IFPABVREF	10MIL_TRACE	3.3V
IFPABRSET	10MIL_TRACE	3.3V
IFPCPLLVDD	10MIL_TRACE	3.3V
IFPCIOVDD	10MIL_TRACE	3.3V
IFPCVREF	10MIL_TRACE	3.3V
IFPCRSET	10MIL_TRACE	3.3V





ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	DVI Connector

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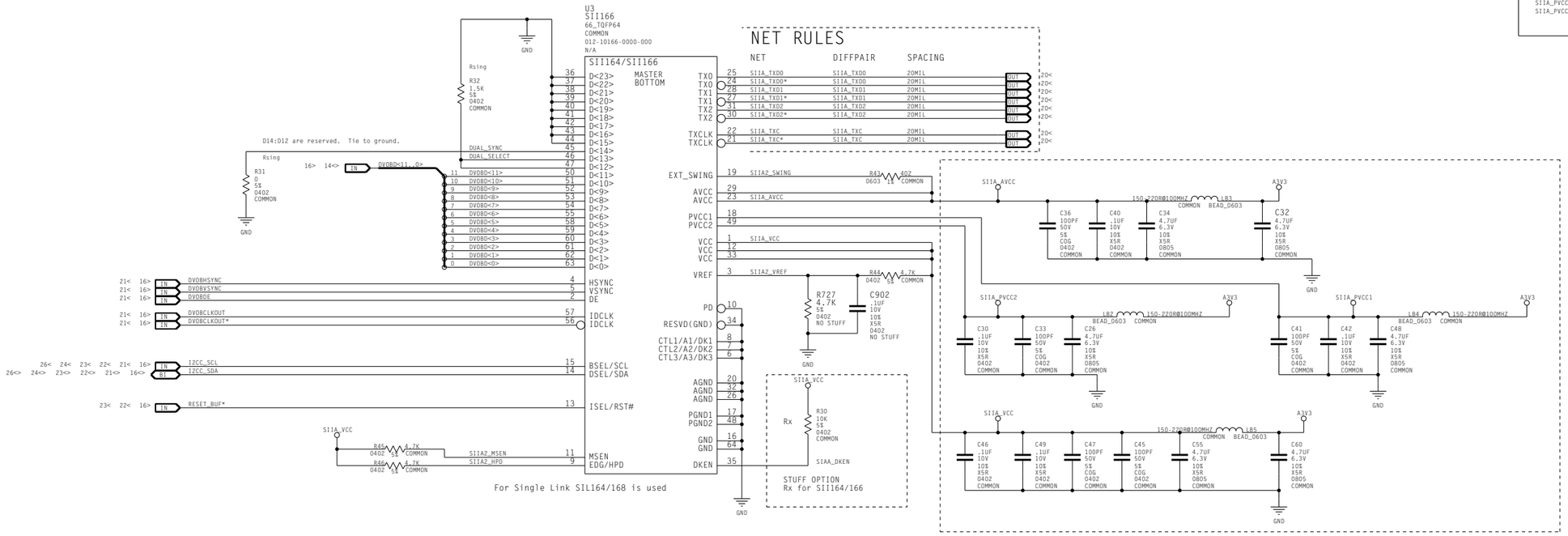
21. External Single-Link Transmitter

NET RULES (OTHER)

NET	PHYSICAL
SIIA_VCC	SIIA_VCC 12MIL_TRACE
SIIA_AVCC	SIIA_AVCC 12MIL_TRACE
SIIA_PVCC1	SIIA_PVCC1 12MIL_TRACE
SIIA_PVCC2	SIIA_PVCC2 12MIL_TRACE

ASSY: DVOA_SII178_DUAL



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	TMDS External with Silicon Image

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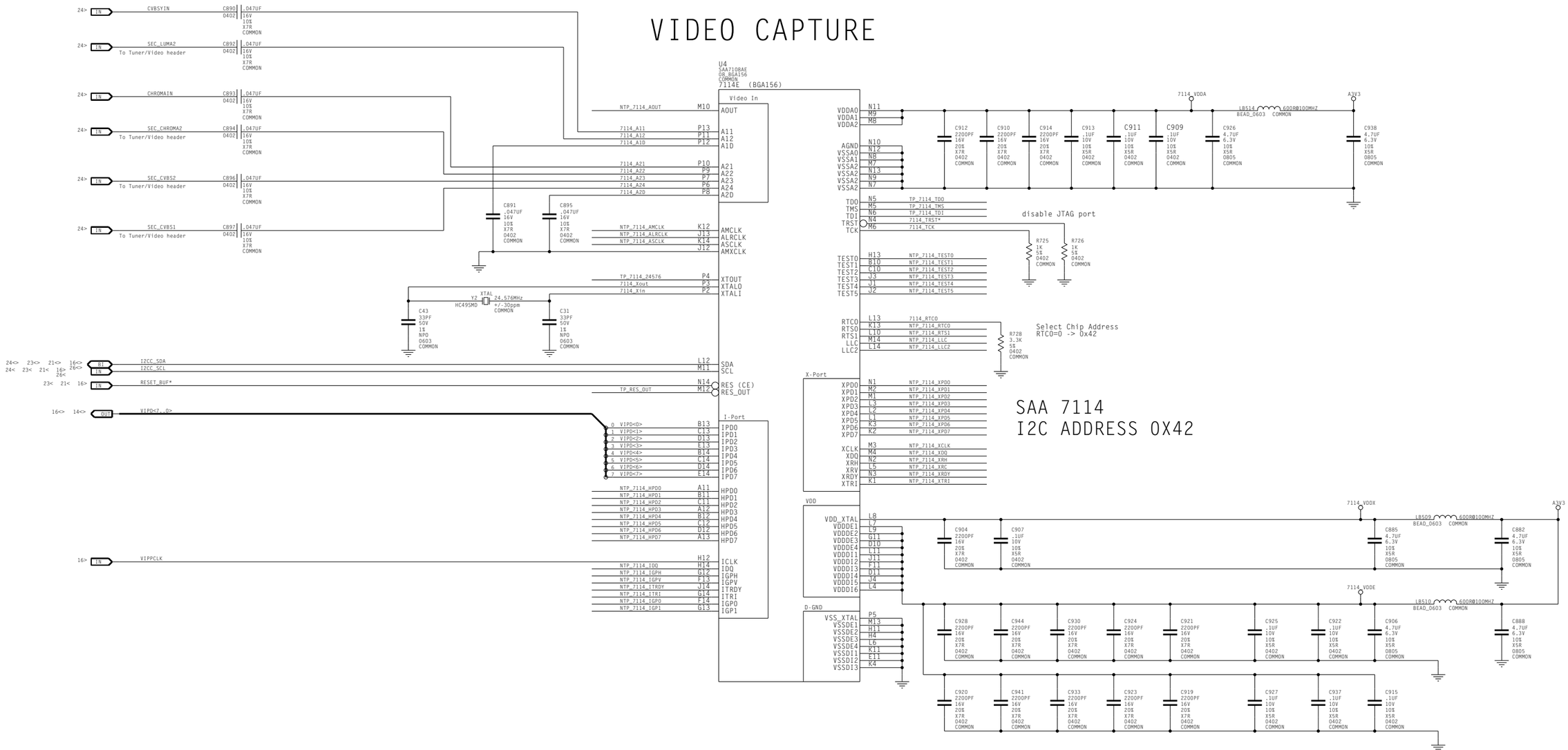
22. Video Capture

NET RULES

NET	SPACING	PHYSICAL	VOLTAGE
7114_VDDA		12MIL_TRACE	3.3V
7114_VDDE		12MIL_TRACE	3.3V
7114_VDDX		12MIL_TRACE	3.3V
7114_Xout	20MIL		
7114_Xin	20MIL		

ASSY: 7114_COMMON

VIDEO CAPTURE



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Video Capture (SAA7108AE)

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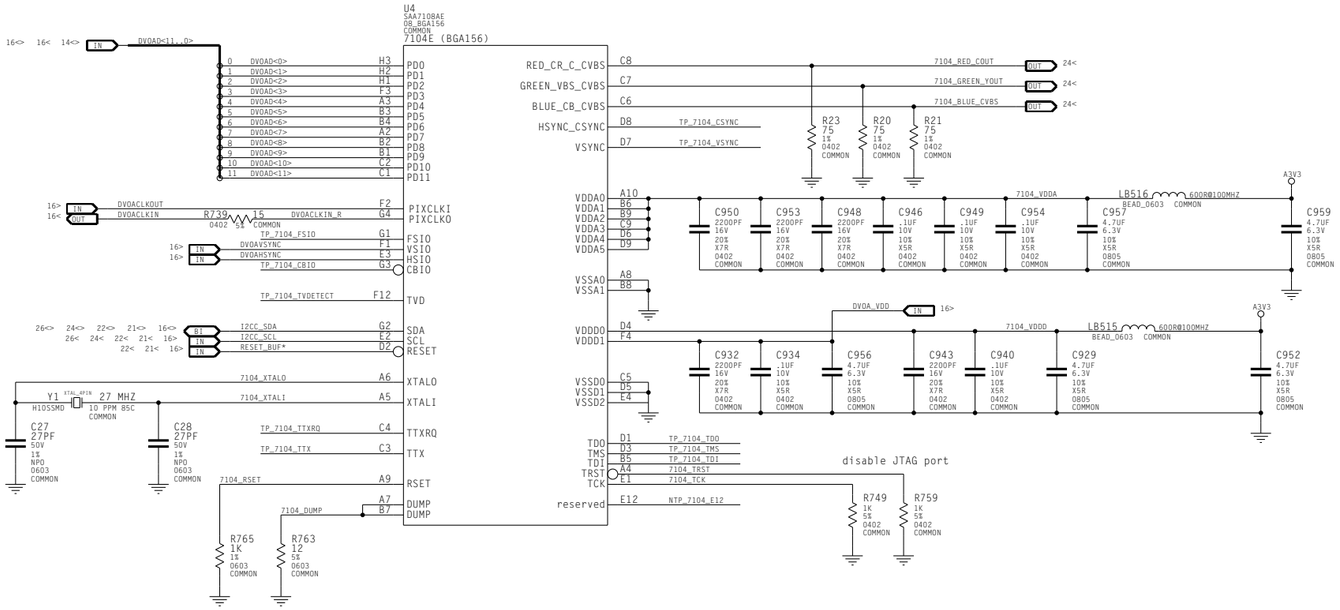
23. TV Encoder (Philips 7108AE)



ASSEMBLY	P172_800: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	TV Encoder (Philips SAA7108AE)

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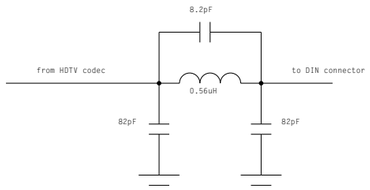
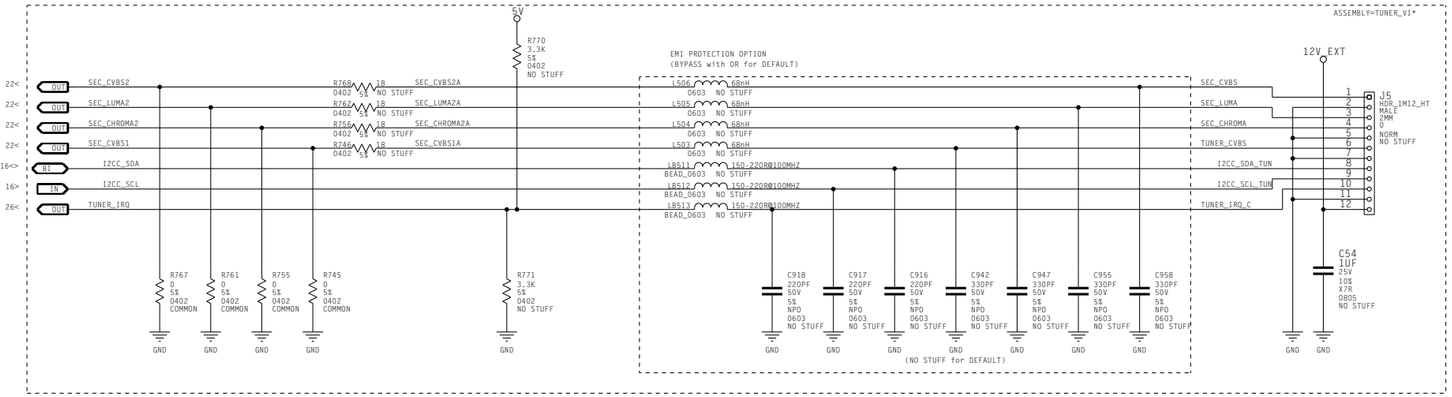
24. S-Video Out, CVBS Out, CVBS/S-Video in, MINIDIN

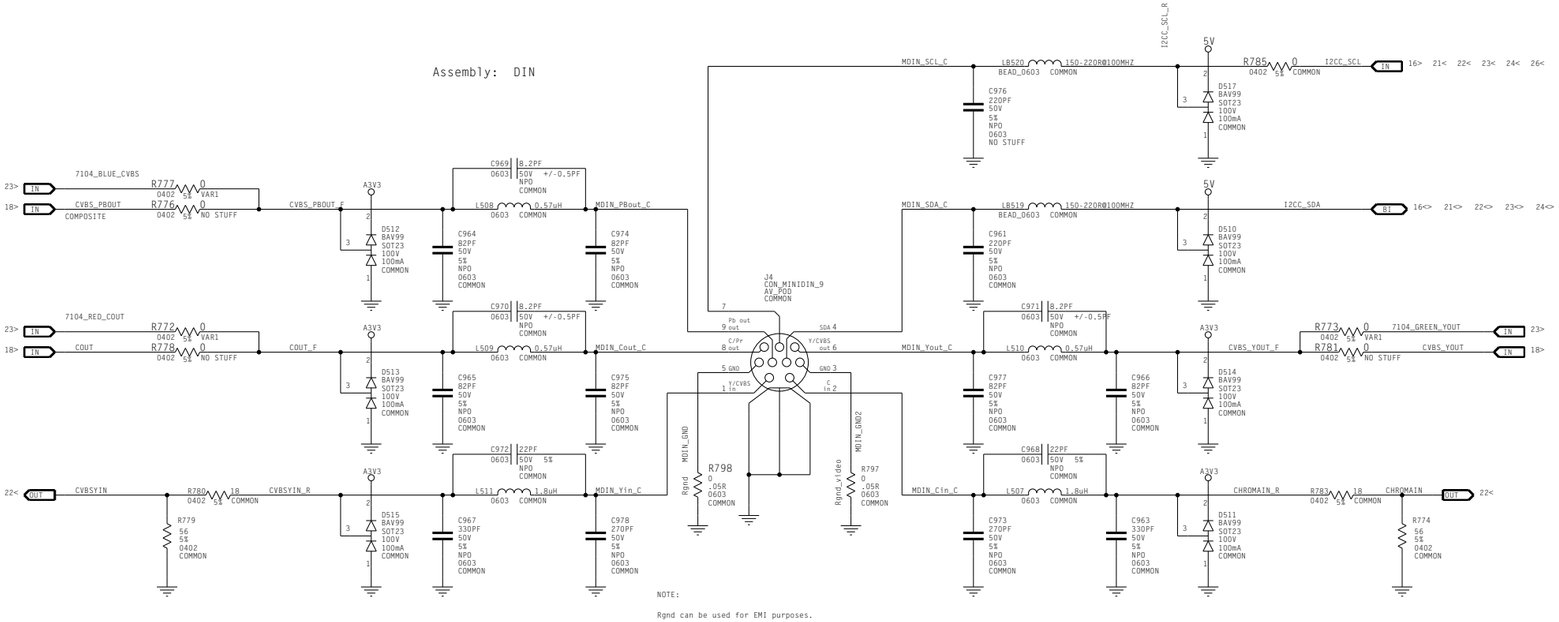
HDTV FILTER VALUES



PCI TUNER / INTERNAL VIDEO NOTES:
1X5 header can be used if only internal video is required.
1X12 header will be populated for both PCI tuner and internal video.



Assembly: DIN



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Video In/Out Connector External/Internal (MiniDin)

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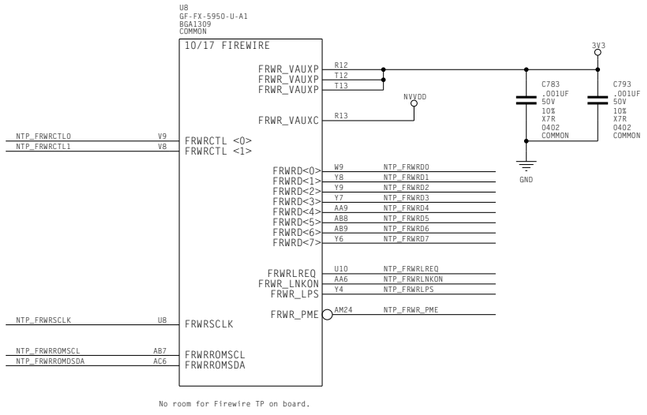
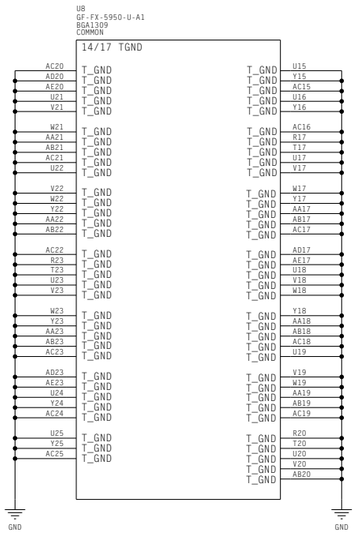
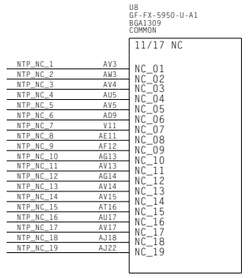
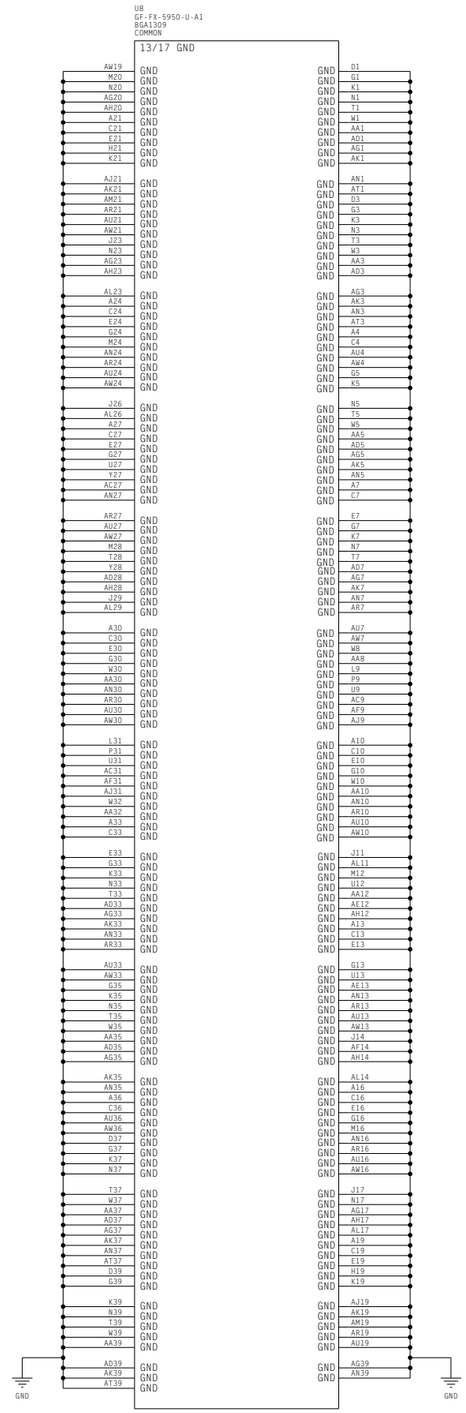
25. GND, Thermal GND and Misc...



No room for Firewire TP on board.







NET RULES

	NET	PHYSICAL	SPACING
IN	D1D2CALPD_VDDQ	12MIL_TRACE	20MIL
IN	D1D2CALPU_GND	12MIL_TRACE	20MIL

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	GNDs, Thermal GNDs, Misc

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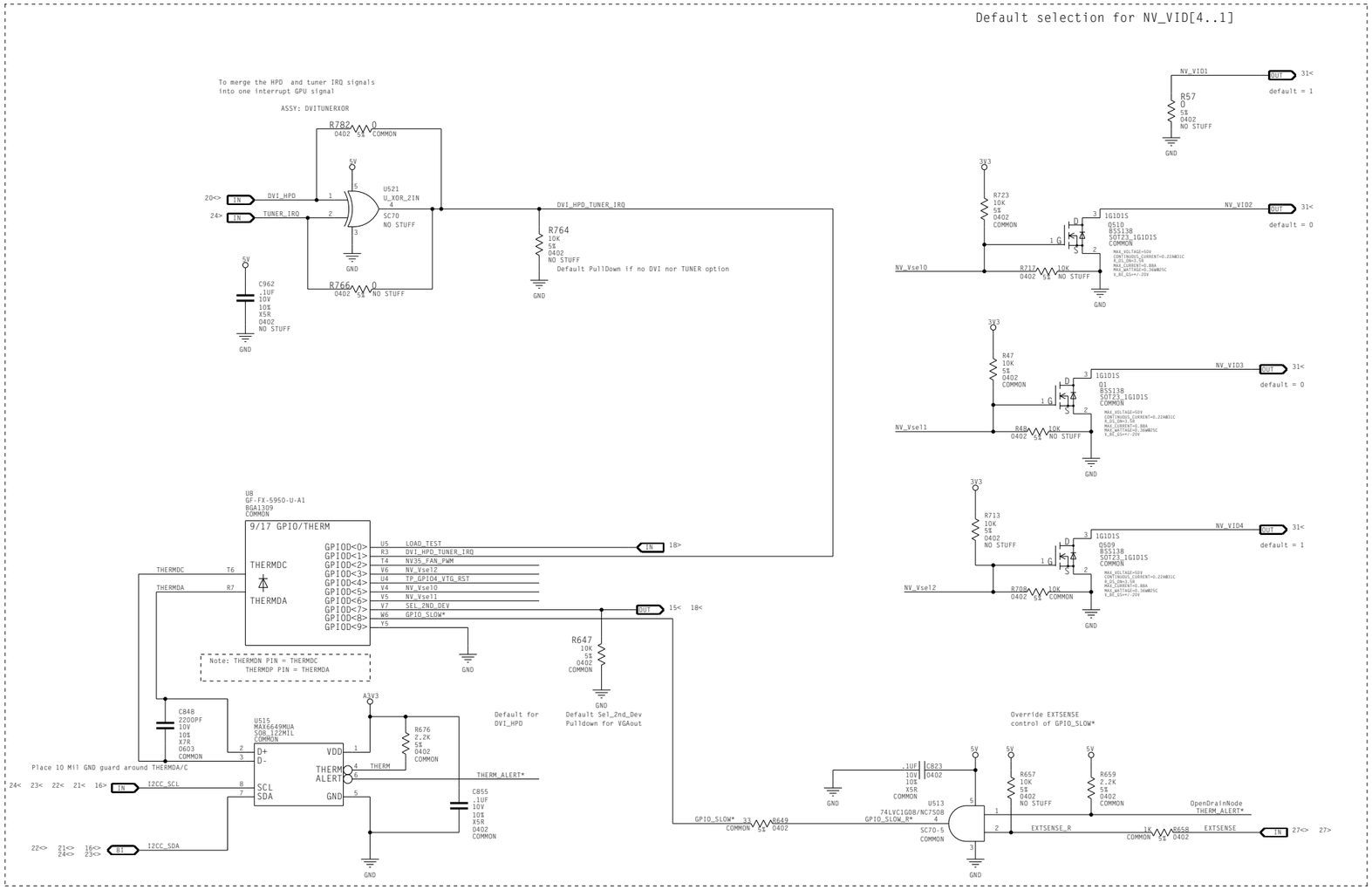
26. GPIO's, NVVDD Control, Fan & Thermal Control

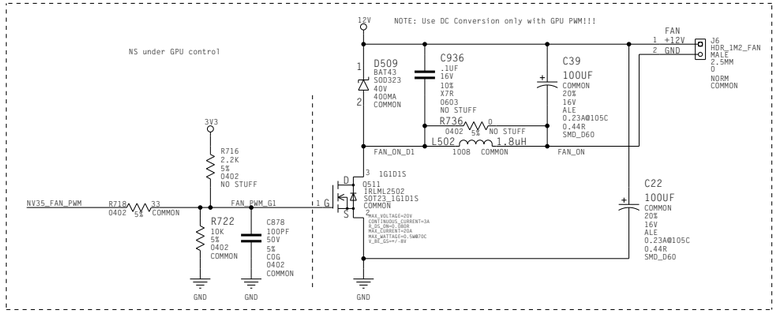
NET RULES

NET	SPACING	PHYSICAL
THERMDA		10MIL_TRACE
THERMDC		10MIL_TRACE
WB_Therm1		10MIL_TRACE
WB_Therm2		10MIL_TRACE
WB_PWM1	20MIL	
WB_PWM2	20MIL	
NV35_FAN_PWM	20MIL	
FAN_PWM_G1	20MIL	
FAN_PWM_G2	20MIL	

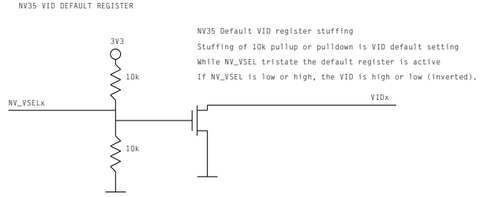
GPIO CONTROL



FAN1 CONTROL (north left of board)



NV35 VID DEFAULT REGISTER



ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	GPIOs, NVVDD VID, TEMP and FAN Control

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27. EXT POWER CONNECTION AND DETECTION

NET RULES

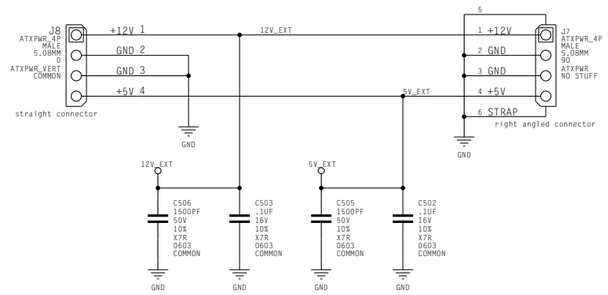
	NET	PHYSICAL	VOLTAGE
5V_EXT	5V_EXT	36MIL_TRACE	5V
12V_EXT	12V_EXT	36MIL_TRACE	12V

5V_EXT and 12V_EXT need to be 220mil internal and 72 mil external

R1	12V_EXT_D	12MIL_TRACE	
R1	12V_EXT_R	12MIL_TRACE	
R1	5V_EXT_R	12MIL_TRACE	
R1	ENABLE_12V_EXT*	12MIL_TRACE	12V
R1	ENABLE_5V_EXT*	12MIL_TRACE	5V
R1	EXTSENSE	8MIL_TRACE	
	DDC_5V	12MIL_TRACE	
R1	5V_FUSED	12MIL_TRACE	5V

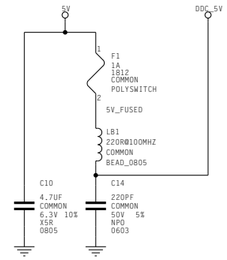
27> 26<

EXTERNAL 5.25 DEVICE CONNECTOR



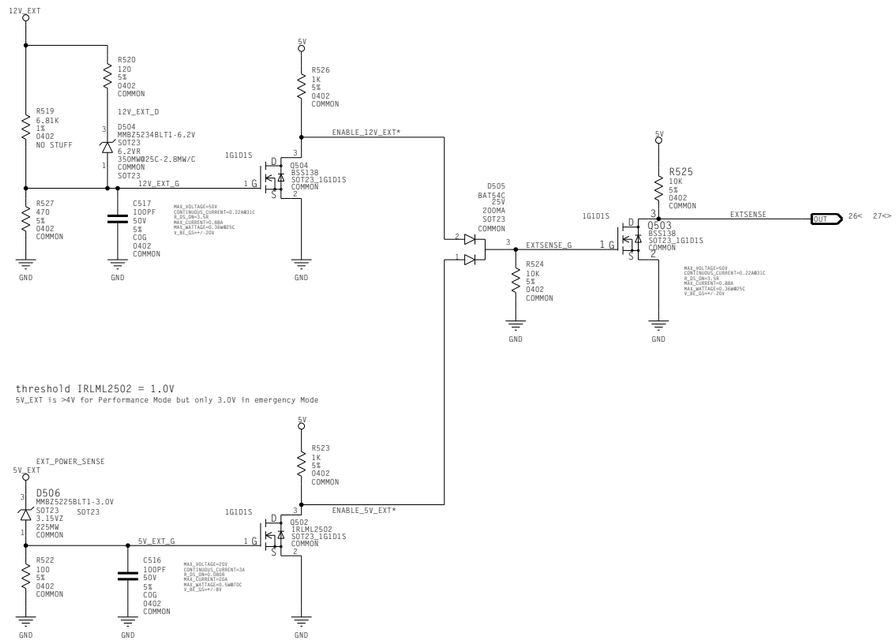
NOTE:
Shutdown power before (dis)connecting external!

DDC 5V

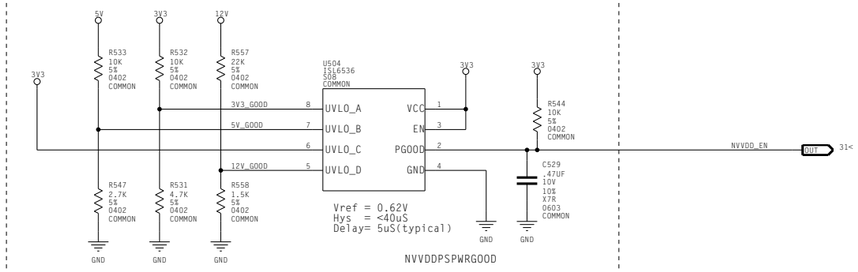


POWER_DDC5V

EXTERNAL Power detection signals



Power Good



Approx. 1V Threshold for nominal rail voltages
Approx. ~.8V Threshold for NV_12V

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	External Power Connection and Detection

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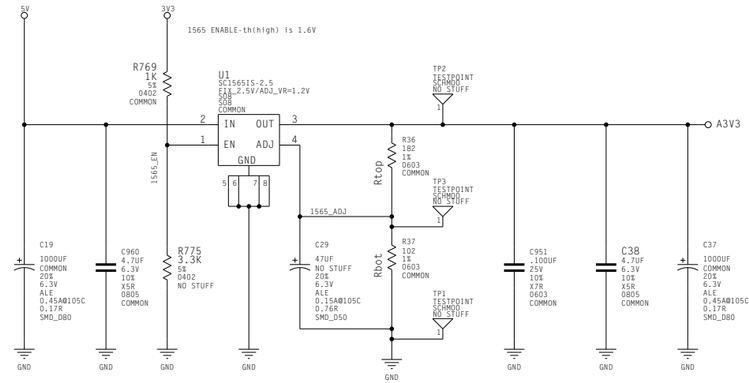
28. Power Supply I: Analog 3V3

NET RULES

	NET	PHYSICAL	VOLTAGE
A3V3	A3V3	12MIL_TRACE	3.3V
B1	1565_ADJ	10MIL_TRACE	3.3V

A3V3 Supply (1.5A)



Vout = VRef * (1+Rtop/Rbot)

3.34V = 1.200V * (1+(182/102))

POWER_A3V3_REG

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Power Supply I: A3V3

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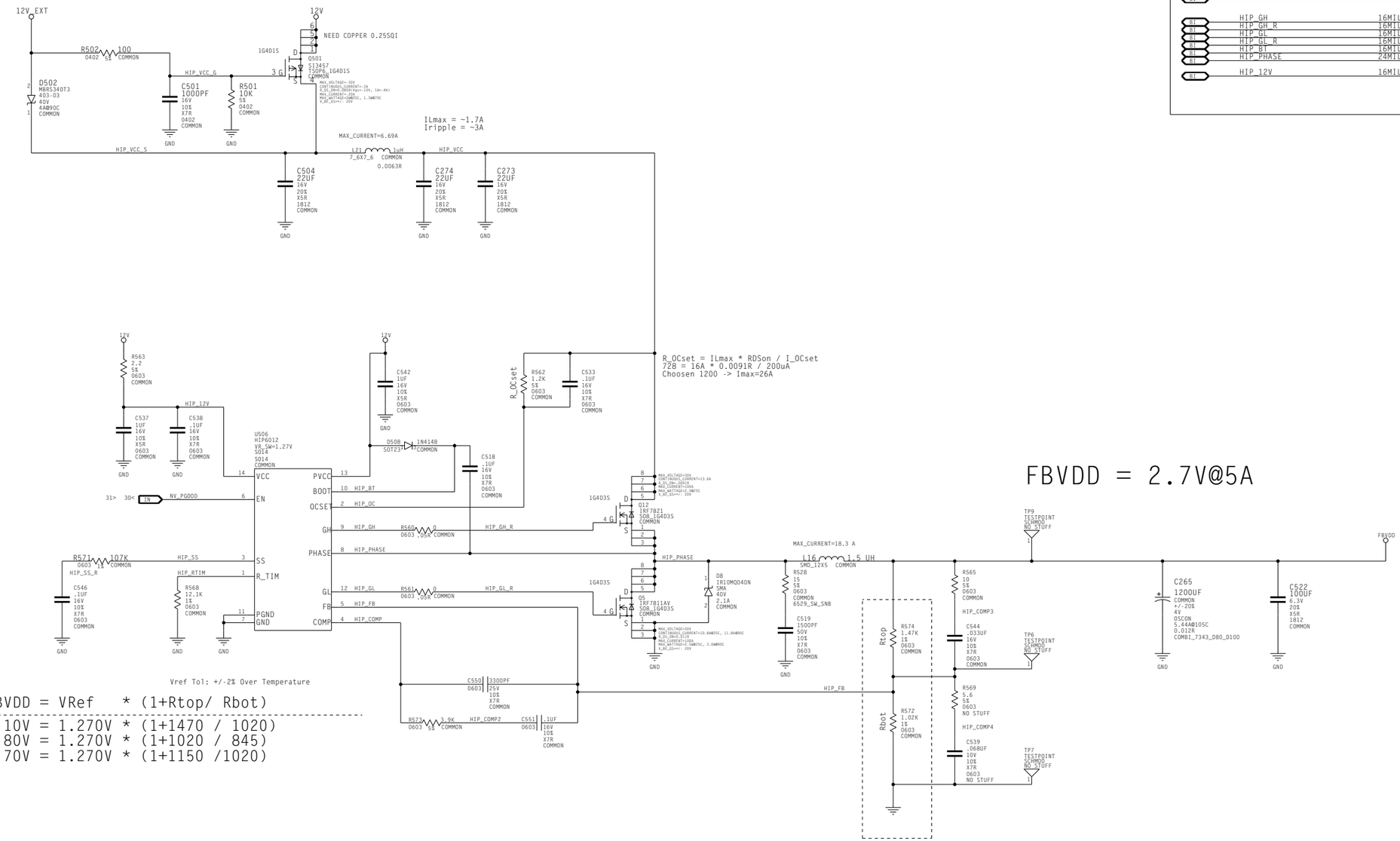
29. Power Supply II: FBVDD

NET RULES

NET	PHYSICAL	VOLTAGE
FBVDD	12MIL_TRACE	2.8V
HIP_VCC	16MIL_TRACE	12V
HIP_VCC_S	16MIL_TRACE	12V
HIP_OC	10MIL_TRACE	12V
HIP_FB	10MIL_TRACE	2.8V
HIP_COMP	10MIL_TRACE	2.8V
HIP_COMP2	10MIL_TRACE	2.8V
HIP_GH	16MIL_TRACE	12V
HIP_GH_R	16MIL_TRACE	12V
HIP_GL	16MIL_TRACE	12V
HIP_GL_R	16MIL_TRACE	12V
HIP_BT	16MIL_TRACE	20V
HIP_PHASE	24MIL_TRACE	2.8V
HIP_12V	16MIL_TRACE	12V

FBVDD-SWITCHER HIP6012



FBVDD = 2.7V@5A

Vref Tol: +/-2% Over Temperature

	FBVDD = VRef * (1+Rtop/ Rbot)
HIP6012	3.10V = 1.270V * (1+1470 / 1020)
HIP6012	2.80V = 1.270V * (1+1020 / 845)
HIP6012	2.70V = 1.270V * (1+1150 /1020)

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Power Supply II FBVDD

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30. Power Supply III: FBVDDQ/FBVTT

NET RULES

	NET	NET_PHYSICAL_TYPE	VOLTAGE
BI	6225_VCC	36MIL_TRACE	12V
BI	6225_PHASE1	12MIL_TRACE	12V
BI	6225_PHASE2	12MIL_TRACE	2.8V
BI	6225_VSEN1	10MIL_TRACE	3.3V
BI	6225_BOOT1	10MIL_TRACE	3.3V
BI	6225_BOOT2	10MIL_TRACE	3.3V
BI	6225_ISEN1	10MIL_TRACE	3.3V
BI	6225_ISEN2	10MIL_TRACE	3.3V
BI	6225_LGATE1	10MIL_TRACE	3.3V
BI	6225_LGATE2	10MIL_TRACE	3.3V
BI	6225_OCSET1	10MIL_TRACE	3.3V
BI	6225_OCSET2	10MIL_TRACE	3.3V
BI	6225_UGATE1	10MIL_TRACE	5V
BI	6225_UGATE2	10MIL_TRACE	5V
BI	FBVDDQ_SENSE	10MIL_TRACE	2.8V
FBVDDQ	FBVDDQ	36MIL_TRACE	2.8V
FBVTT	FBVTT	36MIL_TRACE	1.4V

12V_EXT, 5V

D503 MBRS340T3 40V 4A090C COMMON

ILmax = ~ 2.2A
Irripple = ~4A

Change MLCC to OSCON??
Add 1uF cap

MAX_CURRENT=5.52A
L18 2.2UH 7_6X7_6 COMMON

6225_VCC

C515 22UF 16V 20% X5R 1812 COMMON

C269 150UF COMMON +/-20% 20V OSCON 4.32A@105C 0.020R COMBI_7343D80D100I812

GND

D507 BAT54ALT1 30V 200MA SOT23 COMMON

Tie Vin with 100k to GND for OutOfPhase Mode

R539 100K 5% 0402 NO STUFF

R536 100K 5% 0402 COMMON

U505 ISL6225_300KHZ VR_SW=0.9V SSOP28LD SSOP28 COMMON

6225_VIN, 6225_BOOT1

VIN, BOOT1

C543 1UF 16V 10% X5R 0603 COMMON

FBVDDQ

C264 1UF 16V 10% X5R 0603 COMMON

VCC DDR, BOOT2

6225_BOOT2

1G2D1S

C535 .1UF 16V 10% X7R 0603 COMMON

Q4 IRF7821 SO8_1G4D3S COMMON

Q2 IRF7811AV SO8_1G4D3S COMMON

1G4D3S

6225_UGATE1, 6225_PHASE1, 6225_ISEN1, 6225_LGATE1, 6225_PGND1

UGATE1, PHASE1, ISEN1, LGATE1, PGND1

Q3 IRF7311 SO8_DUAL_1G2D1S COMMON

UGATE2, PHASE2, ISEN2, LGATE2

6225_UGATE2, 6225_PHASE2, 6225_ISEN2, 6225_LGATE2

C534 .1UF 16V 10% X7R 0603 COMMON

MAX_CURRENT=6.69A

L17 1uH 7_6X7_6 COMMON

FBVTT

FBVTT = 1.55V, 5A

FBVDDQ = 2.9V, 5A (incl VTT)

Vout1 = VRef * (1+(Rtop/Rbot))
2.80V = 0.9V * (1+(2340/1150))
2.91V = 0.9V * (1+(1800/ 806))

30<> 3> IN FBVDDQ_SENSE

R575 2.43K 0603 1% NO STUFF

TP10 TESTPOINT SCH000 NO STUFF

TP4 TESTPOINT SCH000 NO STUFF

TP8 TESTPOINT SCH000 NO STUFF

Rtop R577 1.8K 1% 0603 COMMON

Rbot R578 806 1% 0603 COMMON

FBVDDQ

C253 1200UF COMMON +/-20% 4V OSCON 5.44A@105C 0.012R COMBI_7343_D80_D100

C226 100UF 6.3V 20% X5R 1812 COMMON

MAX_CURRENT=18.3 A

L15 1.5 UH SMD_12X5 COMMON

C531 .1UF 16V 10% X7R 0603 COMMON

R566 0 5% 0402 NO STUFF HYS Mode

R567 0 5% 0402 COMMON CCM Mode

R104 5.6 5% 0603 COMMON

6225_PHASE1_R

C268 680PF 50V 5% NPO 0603 COMMON

D7 IR10MQ040N SMA 40V 2.1A COMMON

Rcs

R564 2.3K 0603 5% COMMON

Q2 IRF7811AV SO8_1G4D3S COMMON 1G4D3S

VDDQ_MODE, 6225_VSEN1, 6225_EN, NTP_6225_PG1, 6225_SOFT1, 6225_OCSET1

VOUT1, VSEN1, EN1, PG1, SOFT1, OCSET1, GND

C526 .033UF 25V 10% X7R 0603 COMMON

Rocset R551 68K 5% 0603 COMMON

VOUT2, VSEN2, EN2, PG2/REF, SOFT2, OCSET2

VTT_MODE, FBVTT, 6225_EN, 6225_PG2, NTP_6225_SOFT2, 6225_OCSET2

R550 0 0402 5% NO STUFF

Rref

C521 1UF 10V 10% X7R 0603 COMMON

Rref chooses internal VTT reference

D9 IR10MQ040N SMA 40V 2.1A COMMON

R570 5.6 5% 0603 NO STUFF

6225_PHASE2_R

C545 680PF 50V 5% NPO 0603 NO STUFF

HYS Mode, CCM Mode

R537 0 5% 0402 NO STUFF

R530 0 5% 0402 COMMON

C540 100UF 6.3V 20% X5R 1812 COMMON

C267 1200UF COMMON +/-20% 4V OSCON 5.44A@105C 0.012R COMBI_7343_D80_D100

Rcs = Imax * RDSon(low) / 75uA - 100R
1953R = 14A * 0.011R / 75uA - 100R
choosen 2k => Imax = 14.3A = (2k + 100R) / 0.011R * 75uA
This is for optimising output drivers!

Rocset = 9.6V * (Rcs + 10D) / Ioc / RDSon(low)
101818R = 9.6V * (200D + 10D) / 18A / 0.011R
choosen 10DK => Ioc = 18.3A = 9.6V * (200D + 10D) / 100k / 0.011R

FBVTT
Vout2 = Vout1 * Rbot / (Rtop + Rbot)
1.400V = 2.80V * 1500 / (1500 + 1500)
1.551V = 2.90V * 1150 / (1000 + 1150)

TP12 TESTPOINT SCH000 NO STUFF

Rtop R548 1K 1% 0603 COMMON

Rbot R552 1.15K 1% 0603 COMMON

C527 .010UF 25V 10% X7R 0603 COMMON

31> 29< IN NV_PGOOD

R555 0 0402 5% COMMON

ASSEMBLY	ASSEMBLY=P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Power Supply III: FBVDDQ/ FBVTT

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31. Power Supply IV: NVVDD

NOTE For shmoo NVVDD
To fine adjust within 25mV, Replace Roff < 5K
To coarse adjust, Change VIDx Pull Down resistors as per table
Prefer removing ALL VSEL0 and VSEL1 control resistors

NET RULES

NET	PHYSICAL	VOLTAGE
NVVDD	24MIL_TRACE	1.4V
NV_PHASE1_IN	24MIL_TRACE	12V
NV_PHASE2_IN	24MIL_TRACE	12V
NV_PHASE1	12MIL_TRACE	1.2V
NV_PHASE2	12MIL_TRACE	1.2V
NV_VCC	12MIL_TRACE	5V
NV_BOOT1	12MIL_TRACE	3.3V
NV_BOOT1_R	12MIL_TRACE	3.3V
NV_BOOT2	12MIL_TRACE	3.3V
NV_BOOT2_R	12MIL_TRACE	3.3V
NV_COMP	10MIL_TRACE	3.3V
NV_COMP_FB	10MIL_TRACE	3.3V
NV_FB	10MIL_TRACE	3.3V
NV_PWM1	10MIL_TRACE	3.3V
NV_PWM2	10MIL_TRACE	3.3V
NV_VDIFF	10MIL_TRACE	3.3V
NV_OFS	10MIL_TRACE	3.3V
NV_ISEN1	10MIL_TRACE	3.3V
NV_ISEN2	10MIL_TRACE	3.3V
PH1_SNB	10MIL_TRACE	1.2V
PH2_SNB	10MIL_TRACE	1.2V
NV_UG1	24MIL_TRACE	12V
NV_UG2	24MIL_TRACE	12V
NV_UG1_R	24MIL_TRACE	12V
NV_UG2_R	24MIL_TRACE	12V
NV_LG1	24MIL_TRACE	12V
NV_LG2	24MIL_TRACE	12V
NV_LG1_R	24MIL_TRACE	12V
NV_LG2_R	24MIL_TRACE	12V
660x_VCC	24MIL_TRACE	12V
660x_PVCC	24MIL_TRACE	12V

NET	DIFFPAIR	PHYSICAL
NVVDD_SENSE	NOTE:DIFFPAIR ROUTING	10MIL_TRACE
NVVDD_GND_SENSE	NOTE:DIFFPAIR ROUTING	10MIL_TRACE
NV_VSEN	NOTE:DIFFPAIR ROUTING	10MIL_TRACE
NV_RGND	NOTE:DIFFPAIR ROUTING	10MIL_TRACE

NVVDD Voltage Select

Regulator: ISL6569

Control via NV_GPIOs NV_VSEL[2..0] :

NV_VSEL VID	NVVDD (Vofs=0V)
2 1 0 4 3 2 1 0	Vout
1 1 1 0 0 0 1 0	1.50V
1 1 0 0 0 1 1 0	1.40V
1 0 1 0 0 1 0 1 0	1.30V
1 0 0 0 1 1 1 0	1.20V
0 1 1 1 0 0 1 0	1.10V (default)
0 1 0 1 0 0 1 0	1.00V
0 0 1 1 0 1 0	0.90V
0 0 0 1 1 1 1 0	0.80V

* GPIO's are inverted
Defaults are defined on Page 24
Rofs = OR

Voltage Offset Example
Vofs[V] = Rofs[Ohm] * 10UuA / 10
Vofs[mV] = Rofs[kOhm] * 10
300[mV] = 30[kOhm] * 10

NVVDD = 1.0V..1.45V (30A)

TOP: 7821 OR 4892

BOT: 7811AV OR 4430 x2

TOP: 7821 OR 4892

BOT: 7811AV OR 4430 x2

Load Sense

Connect to NVVDD via SenseBack from NV35

Connect to NVVDD and GND at output cap

FOR BRINGUP OUTPUT CAP IS SENSE

Comp Network

Open:
No DROOP

Set VID0=LOW
to prevent
Shutdown state

5-Bit VID Table

VID[4:0]	VOLTAGE	VID[4:0]	VOLTAGE
00	1.550	10	1.150
01	1.525	11	1.125
02	1.500*	12	1.100
03	1.475	13	1.075
04	1.450	14	1.050
05	1.425	15	1.025
06	1.400*	16	1.000
07	1.375	17	0.975
08	1.350	18	0.950
09	1.325	19	0.925
0A	1.300*	1A	0.900
0B	1.275	1B	0.875
0C	1.250	1C	0.850
0D	1.225	1D	0.825
0E	1.200*	1E	0.800
0F	1.175	1F	SHDN

Table is with Rofs=OR

short routed thru resistor to cut
one OR resistor to gnd no schmoo

Vref Tol: +/-0.5% over Temperature
Dynamic VID o/p rate = 25mV/(2 * 1/Freq)
SoftStart-stable o/p Delay = 204B/Freq

NVVDDPS

Risen (overcurrent per Phasenode) = RDSon(low) * Iout / 2 / 50e-6
For current sharing, NV_phase1 Risen = 1.54k
For current sharing, NV_phase2 Risen = 1.43k

Voltage section depending on chip!
H1P6601 H1P6603 ISL6605
12V 12V 5V
12V 5V 5V
PVCC is EN for ISL6605

ESR : 3mOhm max

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ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Power Supply IV: NVVDD

MEC1
HEX_JACK_SCREW
STD
COMMON

MEC2
HEX_JACK_SCREW
STD
COMMON

MEC3
HEX_JACK_SCREW
STD
COMMON

MEC4
HEX_JACK_SCREW
STD
COMMON

BKT1
DB15_DIN,DVI, NO NVTM12
ATX_2X_NO
COMMON

bkt - 151-10000-5011-000
cooler - 095-Z0000-0007-000

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	Mechanical

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*** Signal Cross-Reference for the entire design ***

5V_EXT_R	27.1G<>
5V_FUSED	27.1G<> 27.2E
12V_EXT_D	27.1G<> 27.3A
12V_EXT_R	27.1G<>
660X_PVCC	31.2G<> 31.3C 31.3D 31.4C
660X_VCC	31.2G<> 31.3C 31.3D 31.4C
1565_ADJ	28.1G<> 28.2B
6225_BOOT1	30.1G<> 30.3E
6225_BOOT2	30.1G<> 30.3E
6225_ISEN1	30.1G<> 30.3E
6225_ISEN2	30.1G<> 30.3E
6225_LGATE1	30.1G<> 30.3E
6225_LGATE2	30.1G<> 30.3E
6225_OCSET1	30.1G<> 30.4E
6225_OCSET2	30.1G<> 30.4E
6225_PHASE1	30.1G<> 30.3E
6225_PHASE2	30.1G<> 30.3E
6225_UGATE1	30.1G<> 30.3E
6225_UGATE2	30.1G<> 30.3E
6225_VCC	30.1G<> 30.2D
6225_VSEN1	30.1G<> 30.4E
7104_BLUE_CVBS	23.2D> 24.3A<
7104_GREEN_YOUT	23.2D> 24.4F<
7104_RED_COUT	23.2D> 24.4A<
7114_XIN	22.1G< 22.2C
7114_XOUT	22.1G< 22.2C
AGPADSTBF0	2.3C 2.4H<
AGPADSTBF1	2.4C 2.4H<
AGPADSTBS0	2.4C 2.4H<
AGPADSTBS1	2.4C 2.4H<
AGPCALPD_VDDQ	2.4E 2.5H<
AGPCALPU_GND	2.4E 2.5H<
AGPDBI_HI	2.3C 2.4H<
AGPDBI_LO	2.3C 2.4H<
AGPMBDET	2.4D 2.5B 2.5H<
AGPRBF	2.3C 2.4H<
AGPSBA<0>	2.4C 2.4D
AGPSBA<7..0>	2.4C 2.4H<
AGPSBA<1>	2.4C 2.4D
AGPSBA<2>	2.4C 2.4D
AGPSBA<3>	2.4C 2.4D
AGPSBA<4>	2.4C 2.4D
AGPSBA<5>	2.4C 2.4D
AGPSBA<6>	2.4C 2.4D
AGPSBA<7>	2.4C 2.4D
AGPSBSTBF	2.4C 2.4H<
AGPSBSTBS	2.4C 2.4H<
AGPST0	2.3C 2.4H<
AGPST1	2.3C 2.4H<
AGPST2	2.3C 2.4H<
AGPSTOP	2.4D 2.5H<
AGPVREF	2.4D 2.5D 2.5H<
AGPVREFCG	2.4C 2.4H<
AGPVREFGC	2.4B 2.5H<
AGPWBF	2.3C 2.4H<
CHROMAIN	22.2A< 24.4E>
COUT	18.4D> 24.4A<
CVBSYIN	22.1A< 24.4A>
CVBS_PBOUT	18.4D> 24.3A<
CVBS_YOUT	18.4D> 24.4F<
D1D2CALPD_VDDQ	25.1G<
D1D2CALPU_GND	25.1G<
DACA_BLUE	15.2E> 15.4F< 17.1G< 17.5A<
DACA_BLUE_C	17.1G< 17.5D
DACA_B_F	17.1G< 17.5C
DACA_GREEN	15.2E> 15.4F< 17.1G< 17.4A<
DACA_GREEN_C	17.1G< 17.4D
DACA_G_F	17.1G< 17.4C
DACA_HSYNC_BUF	15.1H> 17.3A<
DACA_RED	15.2E> 15.4F< 17.1G< 17.3A<
DACA_RED_C	17.1G< 17.3D
DACA_RSET	15.2C 15.5F<
DACA_R_F	17.1G< 17.3C
DACA_VDD	15.1C 15.4F<
DACA_VREF	15.2C 15.5F<
DACA_VSYNC_BUF	15.2H> 17.2A<
DACB_BLUE	15.3E> 15.4F< 18.4A< 19.1G<
DACB_BLUE_C	19.1G< 19.5D> 20.4A<
DACB_BLUE_SW	18.3D> 19.5A<
DACB_B_F	19.1G< 19.5B
DACB_GREEN	15.3E> 15.4F< 18.4A< 19.1G<
DACB_GREEN_C	19.1G< 19.4D> 20.4A<
DACB_GREEN_SW	18.3D> 19.4A<
DACB_G_F	19.1G< 19.4B
DACB_HSYNC_BUF	15.3H> 19.3A<
DACB_HSYNC_C	19.3D> 20.5A<
DACB_RED	15.3E> 15.4F< 18.3A< 19.1G<
DACB_RED_C	19.1G< 19.3D> 20.4A<
DACB_RED_SW	18.3D> 19.3A<
DACB_RGB_GND	19.5D> 20.5A<
DACB_RSET	15.3C 15.4F<
DACB_R_F	19.1G< 19.3B
DACB_VDD	15.3C 15.4F<
DACB_VREF	15.3C 15.4F<
DACB_VSYNC_BUF	15.3H> 19.2A<
DACB_VSYNC_C	19.2D> 20.4A<
DVI_HPD	20.5A<> 26.2A<
DVOACLKIN	16.2B< 23.2A>
DVOACLKOUT	16.3B> 23.2A<
DVOAD<0>	14.1A 16.3B 23.2B
DVOAD<11..0>	23.2A<
DVOAD<23..0>	14.1A<> 16.1G< 16.4B<>
DVOAD<1>	14.1A 16.3B 23.2B
DVOAD<2>	14.1A 16.3B 23.2B
DVOAD<3>	14.1A 16.3B 23.2B
DVOAD<4>	14.1A 16.3B 23.2B
DVOAD<5>	14.1A 14.4B 16.3B 23.2B
DVOAD<6>	14.1A 14.3B 16.3B 23.2B
DVOAD<7>	14.2A 16.3B 23.2B
DVOAD<8>	14.2A 14.3B 16.3B 23.2B

DVOAD<9>	14.2A 14.3B 16.3B 23.2B
DVOAD<10>	14.2A 14.3B 16.3B 23.2B
DVOAD<11>	14.2A 14.3B 16.3B 23.2B
DVOAD<12>	14.2A 14.2B 16.3B
DVOAD<13>	14.2A 14.4B 16.3B
DVOAD<14>	14.2A 14.4B 16.3B
DVOAD<15>	14.2A 16.3B
DVOAD<16>	14.2A 16.3B
DVOAD<17>	14.2A 16.3B
DVOAD<18>	14.2A 16.3B
DVOAD<19>	14.2A 14.3B 16.3B
DVOAD<20>	14.2A 14.3B 16.3B
DVOAD<21>	14.2A 16.3B
DVOAD<22>	14.2A 14.2B 16.3B
DVOAD<23>	14.2A 14.3B 16.3B
DVOAD_R<0>	16.3C
DVOAD_R<23..0>	16.1G<
DVOAD_R<1>	16.3C
DVOAD_R<2>	16.3C
DVOAD_R<3>	16.3C
DVOAD_R<4>	16.3C
DVOAD_R<5>	16.3C
DVOAD_R<6>	16.3C
DVOAD_R<7>	16.3C
DVOAD_R<8>	16.3C
DVOAD_R<9>	16.3C
DVOAD_R<10>	16.3C
DVOAD_R<11>	16.3C
DVOAHSYNC	16.2B> 23.2A<
DVOAVSYNC	16.2B> 23.2A<
DVOA_VDD	16.1G 16.2D> 16.4B 23.2D<
DVOBCLKOUT	16.4F> 21.2A< 21.2A<
DVOBCLKOUT*	16.4F> 21.2A< 21.2A<
DVOBD<0>	14.1B 16.4F 21.2C
DVOBD<11..0>	14.1B<> 16.4G> 21.2B<
DVOBD<1>	14.1B 16.4F 21.2C
DVOBD<2>	14.1B 16.4F 21.2C
DVOBD<3>	14.1B 16.4F 21.2C
DVOBD<4>	14.1B 16.4F 21.2C
DVOBD<5>	14.1B 16.4F 21.2C
DVOBD<6>	14.1B 14.2B 16.4F 21.2C
DVOBD<7>	14.1B 14.4B 16.4F 21.2C
DVOBD<8>	14.2B 16.4F 21.2C
DVOBD<9>	14.2B 16.4F 21.2C
DVOBD<10>	14.2B 16.4F 21.2C
DVOBD<11>	14.2B 14.5B 16.4F 21.2C
DVOBDE	16.4F> 21.2A< 21.2A<
DVOBHSYNC	16.4F> 21.2A< 21.2A<
DVOBVSYNC	16.4F> 21.2A< 21.2A<
DVOB_VDD	16.1G 16.2D> 16.4C
DVOVDDQ	16.1E> 16.2B 16.2F
ENABLE_5V_EXT*	27.1G<> 27.4B
ENABLE_12V_EXT*	27.1G<> 27.3B
EXTSENSE	26.4E< 27.1G<> 27.4D>
FAN_PWM_G1	26.1G<> 26.4G
FAN_PWM_G2	26.1G<>
FBA0A<0>	3.3A 4.1A 5.1C
FBA0A<12..0>	3.3A> 4.1A< 5.1C<
FBA0A<13..0>	13.3B<>
FBA0A<1>	3.3A 4.1A 5.1C
FBA0A<2>	3.3A 4.1A 5.1C
FBA0A<3>	3.3A 4.1A 5.1C
FBA0A<4>	3.3A 4.2A 5.2C
FBA0A<5>	3.3A 4.2A 5.2C
FBA0A<6>	3.3A 4.2A 5.2C
FBA0A<7>	3.3A 4.2A 5.2C
FBA0A<8>	3.3A 4.2A 5.2C
FBA0A<9>	3.3A 4.2A 5.2C
FBA0A<10>	3.3A 4.2A 5.2C
FBA0A<11>	3.3A 4.2A 5.2C
FBA0A<12>	3.3A 4.2A 5.2C
FBA0BA0	3.3A> 4.2A< 5.2C< 13.4B<>
FBA0BA1	3.3A> 4.2A< 5.2C< 13.4B<>
FBA0CAS*	3.3A> 4.1A< 5.1C< 13.3B<>
FBA0CKE	3.4A> 4.2A< 5.2C< 13.4B<>
FBA0CLK0	3.4A> 4.2C< 13.1B<>
FBA0CLK0*	3.4A> 4.2C< 13.1B<>
FBA0CLK1	3.4A> 5.2C< 13.1B<>
FBA0CLK1*	3.4A> 5.2C< 13.1B<>
FBA0RAS*	3.3A> 4.1A< 5.1C< 13.3B<>
FBA0WE*	3.4A> 4.1A< 5.1C< 13.3B<>
FBA1A<0>	3.3C 4.1C 5.1A
FBA1A<12..0>	3.3C> 4.1C< 5.1A<
FBA1A<13..0>	13.3B<>
FBA1A<1>	3.3C 4.1C 5.1A
FBA1A<2>	3.3C 4.1C 5.1A
FBA1A<3>	3.3C 4.1C 5.1A
FBA1A<4>	3.3C 4.2C 5.2A
FBA1A<5>	3.3C 4.2C 5.2A
FBA1A<6>	3.3C 4.2C 5.2A
FBA1A<7>	3.3C 4.2C 5.2A
FBA1A<8>	3.3C 4.2C 5.2A
FBA1A<9>	3.3C 4.2C 5.2A
FBA1A<10>	3.3C 4.2C 5.2A
FBA1A<11>	3.3C 4.2C 5.2A
FBA1A<12>	3.3C 4.2C 5.2A
FBA1BA0	3.3C> 4.2C< 5.2A< 13.4B<>
FBA1BA1	3.3C> 4.2C< 5.2A< 13.4B<>
FBA1CAS*	3.3C> 4.1C< 5.1A< 13.4B<>
FBA1CKE	3.4C> 4.2C< 5.2A< 13.4B<>
FBA1CLK0	3.4C> 5.2A< 13.2B<>
FBA1CLK0*	3.4C> 5.2A< 13.2B<>
FBA1CLK1	3.4C> 4.2A< 13.2B<>
FBA1CLK1*	3.4C> 4.2A< 13.2B<>
FBA1RAS*	3.3C> 4.1C< 5.1A< 13.4B<>
FBA1WE*	3.4C> 4.1C< 5.1A< 13.4B<>
FBACS0*	3.4A> 4.1A< 4.1C< 13.4B<>
FBACS1*	3.4C> 4.1A< 4.1C< 5.1A< 13.4B<>
FBAD<0>	3.1A 4.4B 4.4F 5.4B
FBAD<63..0>	3.1A<> 3.1C<> 4.4A<> 4.4C<> 4.5A<> 4.5C<> 5.4A<> 5.4D<> 5.5A<> 5.5D<> 13.2B<>

FBAD<1>	3.1A 4.4B 4.4F 5.4B
FBAD<2>	3.1A 4.4B 4.4F 5.4B
FBAD<3>	3.1A 4.4B 4.4F 5.4B
FBAD<4>	3.1A 4.4B 4.4F 5.4B
FBAD<5>	3.1A 4.4B 4.4F 5.4B
FBAD<6>	3.1A 4.4B 4.4F 5.4B
FBAD<7>	3.1A 4.4B 4.4F 5.4B
FBAD<8>	3.1A 4.4C 4.4F 5.4C
FBAD<9>	3.1A 4.4C 4.4F 5.4C
FBAD<10>	3.1A 4.4C 4.4F 5.4C
FBAD<11>	3.1A 4.4C 4.4F 5.4C
FBAD<12>	3.1A 4.4C 4.4F 5.4C
FBAD<13>	3.2A 4.4C 4.4F 5.4C
FBAD<14>	3.2A 4.4C 4.4F 5.4C
FBAD<15>	3.2A 4.4C 4.4F 5.4C
FBAD<16>	3.2A 4.4F 4.5B 5.5B
FBAD<17>	3.2A 4.4F 4.5B 5.5B
FBAD<18>	3.2A 4.4F 4.5B 5.5B
FBAD<19>	3.2A 4.4F 4.5B 5.5B
FBAD<20>	3.2A 4.4F 4.5B 5.5B
FBAD<21>	3.2A 4.4F 4.5B 5.5B
FBAD<22>	3.2A 4.4F 4.5B 5.5B
FBAD<23>	3.2A 4.4F 4.5B 5.5B
FBAD<24>	3.2A 4.4F 4.5C 5.5C
FBAD<25>	3.2A 4.5C 4.5F 5.5C
FBAD<26>	3.2A 4.5C 4.5F 5.5C
FBAD<27>	3.2A 4.5C 4.5F 5.5C
FBAD<28>	3.2A 4.5C 4.5F 5.5C
FBAD<29>	3.2A 4.5C 4.5F 5.5C
FBAD<30>	3.2A 4.5C 4.5F 5.5C
FBAD<31>	3.2A 4.5C 4.5F 5.5C
FBAD<32>	3.1C 4.4D 4.4G 5.4D
FBAD<33>	3.1C 4.4D 4.4G 5.4D
FBAD<34>	3.1C 4.4D 4.4G 5.4D
FBAD<35>	3.1C 4.4D 4.4G 5.4D
FBAD<36>	3.1C 4.4D 4.4G 5.4D
FBAD<37>	3.1C 4.4D 4.4G 5.4D
FBAD<38>	3.1C 4.4D 4.4G 5.4D
FBAD<39>	3.1C 4.4D 4.4G 5.4D
FBAD<40>	3.1C 4.4E 4.4G 5.4E
FBAD<41>	3.1C 4.4E 4.4G 5.4E
FBAD<42>	3.1C 4.4E 4.4G 5.4E
FBAD<43>	3.1C 4.4E 4.4G 5.4E
FBAD<44>	3.1C 4.4E 4.4G 5.4E
FBAD<45>	3.2C 4.4E 4.4G 5.4E
FBAD<46>	3.2C 4.4E 4.4G 5.4E
FBAD<47>	3.2C 4.4E 4.4G 5.4E
FBAD<48>	3.2C 4.4G 4.5D 5.5D
FBAD<49>	3.2C 4.4G 4.5D 5.5D
FBAD<50>	3.2C 4.4G 4.5D 5.5D
FBAD<51>	3.2C 4.4G 4.5D 5.5D
FBAD<52>	3.2C 4.4G 4.5D 5.5D
FBAD<53>	3.2C 4.4G 4.5D 5.5D
FBAD<54>	3.2C 4.4G 4.5D 5.5D
FBAD<55>	3.2C 4.4G 4.5D 5.5D
FBAD<56>	3.2C 4.4G 4.5E 5.5E
FBAD<57>	3.2C 4.5E 4.5G 5.5E
FBAD<58>	3.2C 4.5E 4.5G 5.5E
FBAD<59>	3.2C 4.5E 4.5G 5.5E
FBAD<60>	3.2C 4.5E 4.5G 5.5E
FBAD<61>	3.2C 4.5E 4.5G 5.5E
FBAD<62>	3.2C 4.5E 4.5G 5.5E
FBAD<63>	3.2C 4.5E 4.5G 5.5E
FBADQM0	3.2A> 4.4B< 4.5F 5.4B< 13.2B<>
FBADQM1	3.2A> 4.4B< 4.5F 5.4B< 13.2B<>
FBADQM2	3.2A> 4.5B< 4.5F 5.5B< 13.2B<>
FBADQM3	3.2A> 4.5B< 4.5F 5.5B< 13.2B<>
FBADQM4	3.2C> 4.4D< 4.5G 5.4D< 13.2B<>
FBADQM5	3.2C> 4.4D< 4.5G 5.4D< 13.2B<>
FBADQM6	3.2C> 4.5D< 4.5G 5.5D< 13.2B<>
FBADQM7	3.2C> 4.5D< 4.5G 5.5D< 13.2B<>
FBADQS0	3.2A<> 4.4B<> 4.5F 5.4B<> 13.3B<>
FBADQS1	3.3A<> 4.4B<> 4.5F 5.4B<> 13.3B<>
FBADQS2	3.3A<> 4.5B<> 4.5F 5.5B<> 13.3B<>
FBADQS3	3.3A<> 4.5B<> 4.5F 5.5B<> 13.3B<>
FBADQS4	3.2C<> 4.4D<> 4.5G 5.4D<> 13.3B<>
FBADQS5	3.3C<> 4.4D<> 4.5G 5.4D<> 13.3B<>
FBADQS6	3.3C<> 4.5D<> 4.5G 5.5D<> 13.3B<>
FBADQS7	3.3C<> 4.5D<> 4.5G 5.5D<> 13.3B<>
FBB0A<0>	3.3E 6.1A 7.1C
FBB0A<12..0>	3.3D> 6.1A< 7.1C<
FBB0A<13..0>	13.3B<>
FBB0A<1>	3.3E 6.1A 7.1C
FBB0A<2>	3.3E 6.1A 7.1C
FBB0A<3>	3.3E 6.1A 7.1C
FBB0A<4>	3.3E 6.2A 7.2C
FBB0A<5>	3.3E 6.2A 7.2C
FBB0A<6>	3.3E 6.2A 7.2C
FBB0A<7>	3.3E 6.2A 7.2C
FBB0A<8>	3.3E 6.2A 7.2C
FBB0A<9>	3.3E 6.2A 7.2C
FBB0A<10>	3.3E 6.2A 7.2C
FBB0A<11>	3.3E 6.2A 7.2C
FBB0A<12>	3.3E 6.2A 7.2C
FBB0BA0	3.3E> 6.2A< 7.2C< 13.4B<>
FBB0BA1	3.3E> 6.2A< 7.2C< 13.4B<>
FBB0CAS*	3.3E> 6.1A< 7.1C< 13.4B<>
FBB0CKE	3.4D> 6.2A< 7.2C< 13.4B<>
FBB0CLK0	3.4E> 6.2C< 13.2B<>
FBB0CLK0*	3.4E> 6.2C< 13.2B<>
FBB0CLK1	3.4E> 7.2C< 13.2B<>
FBB0CLK1*	3.4E> 7.2C< 13.2B<>
FBB0RAS*	3.3E> 6.1A< 7.1C< 13.4B<>
FBB0WE*	3.4E> 6.1A< 7.1C< 13.4B<>
FBB1A<0>	3.3F 6.1C 7.1A
FBB1A<12..0>	3.3G> 6.1C< 7.1A<
FBB1A<13..0>	13.3B<>
FBB1A<1>	3.3F 6.1C 7.1A
FBB1A<2>	3.3F 6.1C 7.1A
FBB1A<3>	3.3F 6.1C 7.1A
FBB1A<4>	3.3F 6.2C 7.2A
FBB1A<5>	3.3F 6.2C 7.2A

FBB1A<6>	3.3F 6.2C 7.2A
FBB1A<7>	3.3F 6.2C 7.2A
FBB1A<8>	3.3F 6.2C 7.2A
FBB1A<9>	3.3F 6.2C 7.2A
FBB1A<10>	3.3F 6.2C 7.2A
FBB1A<11>	3.3F 6.2C 7.2A
FBB1A<12>	3.3F 6.2C 7.2A
FBB1BA0	3.3F> 6.2C< 7.2A< 13.4B<>
FBB1BA1	3.3F> 6.2C< 7.2A< 13.4B<>
FBB1CAS*	3.3F> 6.1C< 7.1A< 13.4B<>
FBB1CKE	3.4F> 6.2C< 7.2A< 13.4B<>
FBB1CLK0	3.4F> 6.2A< 13.2B<>
FBB1CLK0*	3.4F> 6.2A< 13.2B<>
FBB1CLK1	3.4F> 7.2A< 13.2B<>
FBB1CLK1*	3.4F> 7.2A< 13.2B<>
FBB1RAS*	3.3F> 6.1C< 7.1A< 13.4B<>
FBB1WE*	3.4F> 6.1C< 7.1A< 13.4B<>
FBBCS0*	3.4E> 6.1A< 6.1C< 13.4B<>
FBBCS1*	3.4F> 6.1A< 6.1C< 7.1A< 13.4B<>
FBBD<0>	3.1E 6.4B 6.4F 7.4B
FBBD<63..0>	3.1D<> 3.1G<> 6.4A<> 6.4D<> 6.5A<> 6.5D<> 7.4A<> 7.4C<> 7.5A<> 7.5C<> 13.2B<>
FBBD<1>	3.1E 6.4B 6.4F 7.4B
FBBD<2>	3.1E 6.4B 6.4F 7.4B
FBBD<3>	3.1E 6.4B 6.4F 7.4B
FBBD<4>	3.1E 6.4B 6.4F 7.4B
FBBD<5>	3.1E 6.4B 6.4F 7.4B
FBBD<6>	3.1E 6.4B 6.4F 7.4B
FBBD<7>	3.1E 6.4B 6.4F 7.4B
FBBD<8>	3.1E 6.4C 6.4F 7.4C
FBBD<9>	3.1E 6.4C 6.4F 7.4C
FBBD<10>	3.1E 6.4C 6.4F 7.4C
FBBD<11>	3.1E 6.4C 6.4F 7.4C
FBBD<12>	3.1E 6.4C 6.4F 7.4C
FBBD<13>	3.2E 6.4C 6.4F 7.4C
FBBD<14>	3.2E 6.4C 6.4F 7.4C
FBBD<15>	3.2E 6.4C 6.4F 7.4C
FBBD<16>	3.2E 6.4F 6.5B 7.5B
FBBD<17>	3.2E 6.4F 6.5B 7.5B
FBBD<18>	3.2E 6.4F 6.5B 7.5B
FBBD<19>	3.2E 6.4F 6.5B 7.5B
FBBD<20>	3.2E 6.4F 6.5B 7.5B
FBBD<21>	3.2E 6.4F 6.5B 7.5B
FBBD<22>	3.2E 6.4F 6.5B 7.5B
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FBBD<24>	3.2E 6.4F 6.5C 7.5C
FBBD<25>	3.2E 6.5C 6.5F 7.5C
FBBD<26>	3.2E 6.5C 6.5F 7.5C
FBBD<27>	3.2E 6.5C 6.5F 7.5C
FBBD<28>	3.2E 6.5C 6.5F 7.5C
FBBD<29>	3.2E 6.5C 6.5F 7.5C
FBBD<30>	3.2E 6.5C 6.5F 7.5C
FBBD<31>	3.2E 6.5C 6.5F 7.5C
FBBD<32>	3.1F 6.4D 6.4G 7.4D
FBBD<33>	3.1F 6.4D 6.4G 7.4D
FBBD<34>	3.1F 6.4D 6.4G 7.4D
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FBBD<40>	3.1F 6.4E 6.4G 7.4E
FBBD<41>	3.1F 6.4E 6.4G 7.4E
FBBD<42>	3.1F 6.4E 6.4G 7.4E
FBBD<43>	3.1F 6.4E 6.4G 7.4E
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FBBD<45>	3.2F 6.4E 6.4G 7.4E
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FBBD<48>	3.2F 6.4G 6.5D 7.5D
FBBD<49>	3.2F 6.4G 6.5D 7.5D
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FBBDQM1	3.2E> 6.4B< 6.5F 7.4B< 13.2B<>
FBBDQM2	3.2E> 6.5B< 6.5F 7.5B< 13.2B<>
FBBDQM3	3.2E> 6.5B< 6.5F 7.5B< 13.2B<>
FBBDQM4	3.2F> 6.4D< 6.5F 7.4D< 13.2B<>
FBBDQM5	3.2F> 6.4D< 6.5F 7.4D< 13.3B<>
FBBDQM6	3.2F> 6.5D< 6.5F 7.5D< 13.3B<>
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FBBDQS1	3.3E<> 6.4B<> 6.5G 7.4B<> 13.3B<>
FBBDQS2	3.3E<> 6.5B<> 6.5G 7.5B<> 13.3B<>
FBBDQS3	3.3E<> 6.5B<> 6.5G 7.5B<> 13.3B<>
FBBDQS4	3.2F<> 6.4D<> 6.5G 7.4D<> 13.3B<>
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FBBDQS7	3.3F<> 6.5D<> 6.5G 7.5D<> 13.3B<>
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FBC0A<13..0>	13.3D<>
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FBC0A<2>	8.3A 9.1A 10.1C
FBC0A<3>	8.3A 9.1A 10.2C
FBC0A<4>	8.3A 9.2A 10.2C
FBC0A<5>	8.3A 9.2A 10.2C
FBC0A<6>	8.3A 9.2A 10.2C

FBC0A<7>	8.3A 9.2A 10.2C
FBC0A<8>	8.3A 9.2A 10.2C
FBC0A<9>	8.3A 9.2A 10.2C
FBC0A<10>	8.3A 9.2A 10.2C
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FBC0BA0	8.3A> 9.2A< 10.2C< 13.4D<>
FBC0BA1	8.3A> 9.2A< 10.2C<
FBC0CAS*	8.4A> 9.1A< 10.1C< 13.3D<>
FBC0CKE	8.4A> 9.2A< 10.2C< 13.3D<>
FBC0CLK0	8.4A> 9.2A< 13.1D<>
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FBC0CLK1	8.4A> 10.2C< 13.1D<>
FBC0CLK1*	8.4A> 10.2C< 13.1D<>
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FBC1A<12..0>	8.3C> 9.1C< 10.1A<
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FBC1A<2>	8.3C 9.1C 10.1A
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FBC1A<4>	8.3C 9.2C 10.2A
FBC1A<5>	8.3C 9.2C 10.2A
FBC1A<6>	8.3C 9.2C 10.2A
FBC1A<7>	8.3C 9.2C 10.2A
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FBC1A<11>	8.3C 9.2C 10.2A
FBC1A<12>	8.3C 9.2C 10.2A
FBC1BA0	8.3C> 9.2C< 10.2A< 13.4D<>
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FBC1CAS*	8.4C> 9.1C< 10.1A< 13.4D<>
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FBC1WE*	8.4C> 9.1C< 10.1A< 13.4D<>
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FBCCS1*	8.4C> 9.1A< 9.1C< 10.1A< 13.4D<>
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FBCD<23>	8.2A 9.4F 9.5B 10.5B
FBCD<24>	8.2A 9.4F 9.5C 10.5C
FBCD<25>	8.2A 9.5C 9.5F 10.5C
FBCD<26>	8.2A 9.5C 9.5F 10.5C
FBCD<27>	8.2A 9.5C 9.5F 10.5C
FBCD<28>	8.2A 9.5C 9.5F 10.5C
FBCD<29>	8.2A 9.5C 9.5F 10.5C
FBCD<30>	8.2A 9.5C 9.5F 10.5C
FBCD<31>	8.2A 9.5C 9.5F 10.5C
FBCD<32>	8.1C 9.4D 9.4G 10.4D
FBCD<33>	8.1C 9.4D 9.4G 10.4D
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FBCD<36>	8.1C 9.4D 9.4G 10.4D
FBCD<37>	8.1C 9.4D 9.4G 10.4D
FBCD<38>	8.1C 9.4D 9.4G 10.4D
FBCD<39>	8.1C 9.4D 9.4G 10.4D
FBCD<40>	8.1C 9.4E 9.4G 10.4E
FBCD<41>	8.1C 9.4E 9.4G 10.4E
FBCD<42>	8.1C 9.4E 9.4G 10.4E
FBCD<43>	8.1C 9.4E 9.4G 10.4E
FBCD<44>	8.2C 9.4E 9.4G 10.4E
FBCD<45>	8.2C 9.4E 9.4G 10.4E
FBCD<46>	8.2C 9.4E 9.4G 10.4E
FBCD<47>	8.2C 9.4E 9.4G 10.4E
FBCD<48>	8.2C 9.4G 9.5D 10.5D
FBCD<49>	8.2C 9.4G 9.5D 10.5D
FBCD<50>	8.2C 9.4G 9.5D 10.5D
FBCD<51>	8.2C 9.4G 9.5D 10.5D
FBCD<52>	8.2C 9.4G 9.5D 10.5D
FBCD<53>	8.2C 9.4G 9.5D 10.5D
FBCD<54>	8.2C 9.4G 9.5D 10.5D
FBCD<55>	8.2C 9.4G 9.5D 10.5D
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FBCD<58>	8.2C 9.5E 9.5G 10.5E
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FBCD<60>	8.2C 9.5E 9.5G 10.5E
FBCD<61>	8.2C 9.5E 9.5G 10.5E
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NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-10172-0015-000		
ID	design	PAGE	33 OF 38
NAME	Emler / Hunter	DATE	27-AUG-2003

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FBDOA<4>	8.3E 11.2A 12.2C
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FBDOA<6>	8.3E 11.2A 12.2C
FBDOA<7>	8.3E 11.2A 12.2C
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FBDOA<12>	8.3E 11.2A 12.2C
FBDOBA0	8.3E> 11.2A< 12.2C<
FBDOBA1	8.3E> 11.2A< 12.2C<
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FBD1A<2>	8.3F 11.1C 12.1A
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FBD1A<4>	8.3F 11.2C 12.2A
FBD1A<5>	8.3F 11.2C 12.2A
FBD1A<6>	8.3F 11.2C 12.2A
FBD1A<7>	8.3F 11.2C 12.2A
FBD1A<8>	8.3F 11.2C 12.2A
FBD1A<9>	8.3F 11.2C 12.2A
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FBD1A<11>	8.3F 11.2C 12.2A
FBD1A<12>	8.3F 11.2C 12.2A
FBD1BA0	8.3F> 11.2C< 12.2A< 13.4D<> 13.4D<>
FBD1BA1	8.3F> 11.2C< 12.2A< 13.4D<> 13.4D<>
FBD1CAS*	8.4F> 11.1C< 12.1A<
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FBDD<2>	8.1E 11.4B 11.4F 12.4B
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FBDD<7>	8.1E 11.4B 11.4F 12.4B
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FBDD<18>	8.2E 11.4F 11.5B 12.5B
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FBDD<22>	8.2E 11.4F 11.5B 12.5B
FBDD<23>	8.2E 11.4F 11.5B 12.5B
FBDD<24>	8.2E 11.4F 11.5C 12.5C
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FBDD<28>	8.2E 11.5C 11.5F 12.5C
FBDD<29>	8.2E 11.5C 11.5F 12.5C
FBDD<30>	8.2E 11.5C 11.5F 12.5C
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FBDD<37>	8.1F 11.4D 11.4G 12.4D
FBDD<38>	8.1F 11.4D 11.4G 12.4D
FBDD<39>	8.1F 11.4D 11.4G 12.4D
FBDD<40>	8.1F 11.4E 11.4G 12.4E
FBDD<41>	8.1F 11.4E 11.4G 12.4E
FBDD<42>	8.1F 11.4E 11.4G 12.4E
FBDD<43>	8.1F 11.4E 11.4G 12.4E
FBDD<44>	8.2F 11.4E 11.4G 12.4E
FBDD<45>	8.2F 11.4E 11.4G 12.4E
FBDD<46>	8.2F 11.4E 11.4G 12.4E
FBDD<47>	8.2F 11.4E 11.4G 12.4E
FBDD<48>	8.2F 11.4G 11.5D 12.5D
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FBDD<51>	8.2F 11.4G 11.5D 12.5D
FBDD<52>	8.2F 11.4G 11.5D 12.5D
FBDD<53>	8.2F 11.4G 11.5D 12.5D
FBDD<54>	8.2F 11.4G 11.5D 12.5D
FBDD<55>	8.2F 11.4G 11.5D 12.5D
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FBDD<57>	8.2F 11.5E 11.5G 12.5E
FBDD<58>	8.2F 11.5E 11.5G 12.5E
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FBDD<61>	8.2F 11.5E 11.5G 12.5E
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FBDD<63>	8.2F 11.5E 11.5G 12.5E
FBDDQM0	8.2E> 11.4B< 11.5F 12.4B< 13.2D<>
FBDDQM1	8.2E> 11.4B< 11.5F 12.4B< 13.2D<>
FBDDQM2	8.2E> 11.5B< 11.5F 12.5B< 13.2D<>
FBDDQM3	8.2E> 11.5B< 11.5F 12.5B< 13.2D<>
FBDDQM4	8.2F> 11.4D< 11.5G 12.4D< 13.2D<>
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FBDDQM7	8.2F> 11.5D< 11.5G 12.5D< 13.3D<>
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FBDDQS7	8.3F<> 11.5D<> 11.5G 12.5D<> 13.3D<>
FBVDDQ_SENSE	3.5G> 30.2G<> 30.3B<
FB_CALAB_CLK_GND	3.4D> 13.5A<>
FB_CALCD_CLK_GND	3.4D> 13.5A<>
FB_CAL_CLK_GND	13.5A<>
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FB_CAL_TERM_GND	3.4D> 13.5A<>
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HIP_PHASE	29.2G<> 29.4C 29.4D
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HIP_VCC_S	29.1G<> 29.2B
I2CA_SCL_G	15.1E> 17.2A<
I2CA_SDA_G	15.1E> 17.1A<
I2CB_SCL_C	19.2D> 20.4A<
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I2CB_SDA_C	19.1D> 20.4A<
I2CB_SDA_G	15.3E> 19.1A<
I2CC_SCL	16.2G> 21.2A< 21.2A< 22.3A< 23.2A< 24.2D< 24.3E< 26.4A<
I2CC_SDA	16.2G<> 21.2A<> 21.2A<> 22.3A<> 23.2A<> 24.2D<> 24.3E<> 26.4A<>
IFPABPLLVDD	20.1C 20.1G<
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LOAD_TEST	18.3A> 26.3C<
NV35_FAN_PWM	26.1G<> 26.3B 26.4F
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NV_BOOT1_R	31.1G<> 31.3D
NV_BOOT2	31.1G<> 31.5D
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NV_LG2	31.2G<> 31.5D
NV_LG2_R	31.2G<> 31.5D
NV_OFS	31.1G<> 31.4A 31.4B
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NV_PHASE2_IN	31.1G<> 31.2D 31.4E
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PCIAD<9>	2.1C 2.1D
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PCIAD<31>	2.2C 2.2D
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PCICBE1	2.2C 2.3H<
PCICBE2	2.2C 2.3H<
PCICBE3	2.2C 2.3H<
PCICLK	2.2C 2.3H<
PCIDEVSEL	2.3C 2.4H<
PCIFRAME	2.3C 2.4H<
PCIGNT	2.3C 2.4H<
PCIINTA	2.3C 2.4H<
PCIINTB	2.4H<
PCIIRDY	2.3C 2.4H<
PCIPAR	2.3C 2.4H<
PCIREQ	2.3C 2.3H<
PCIRST*	2.2C 2.3H<
PCISTOP	2.3C 2.4H<
PCITRDY	2.3C 2.4H<
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PHI_SNB	31.2G<> 31.5F
PLLVDD	15.4B 15.5F<
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SAGPOCALPU_GND	16.1G< 16.4C
SAGP1CALPD_VDDQ	16.1G< 16.4C
SAGP1CALPU_GND	16.1G< 16.4C
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SEC_CVBS2	22.2A< 24.1D>
SEC_LUMA2	22.1A< 24.2D>
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SIIA_TXD2	20.4A< 21.1E>
SIIA_TXD2*	20.4A< 21.1E>
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THERMDC	26.1G> 26.3A
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VIPD11	14.3A<> 14.3B 16.3E>
VIPD12	14.3B 14.4A<> 16.3E>
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ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
PAGE DETAIL	<edit here to insert page detail>

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	600-10172-0015-000		
ID	**design**	PAGE	**34 OF 38**
NAME	**Emler / Hunter**	DATE	27-AUG-2003

*** Part Cross-Reference for the entire design ***

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2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

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TP1	TESTPOINT	28
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TP3	TESTPOINT	28
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TP9	TESTPOINT	29
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TP11	TESTPOINT	31
TP12	TESTPOINT	30
U1	U_VREG_5PIN	28
U2	U_SW_ANA_3257	18
U3	U_PNLNK_SIIXX	21
U4	U_VDEC_SAA7IXX	22 23
U5	U_MEM_SD_DDR_X32	11
U6	U_MEM_SD_DDR_X32	11
U7	U_MEM_SD_DDR_X32	9
U8	U_GPU_NV35	2 3 8 14 15 16 20 25 26
U9	U_MEM_SD_DDR_X32	9
U10	U_MEM_SD_DDR_X32	6
U11	U_MEM_SD_DDR_X32	4
U12	U_MEM_SD_DDR_X32	4
U13	U_MEM_SD_DDR_X32	6
U501	U_SWREG_HIP660X	31
U502	U_SWREG_HIP660X	31
U503	U_SWREG_ISL6569	31
U504	U_PGOOD_ISL6536	27
U505	U_SWREG_ISL6225	30
U506	U_SWREG_HIP6012	29
U507	U_MEM_SD_DDR_X32	7
U508	U_MEM_SD_DDR_X32	5
U509	U_MEM_SD_DDR_X32	5
U510	U_MEM_SD_DDR_X32	7
U511	U_MEM_SD_DDR_X32	10
U512	U_MEM_SD_DDR_X32	10
U513	U_AND_2IN	26
U514	U_MEM_SD_DDR_X32	12
U515	U_TEMP_AD1032	26
U516	U_MEM_FL_SER_128KX8	14
U517	U_MEM_FL_SER_128KX8	14
U518	U_VREG_3PIN	16
U519	U_AND_2IN	15
U520	U_MEM_SD_DDR_X32	12
U521	U_XOR_2IN	26
Y1	XTAL_4PIN	23
Y2	XTAL	22
Y3	XTAL_4PIN	15

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
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NVIDIA CORPORATION
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R802	R	19.4F
R803	R	24.4C
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RP6	R_PAK	16.3C
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RP503	R_PAK	6.4F 6.4G
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RP505	R_PAK	4.5H
RP506	R_PAK	4.4H 4.5H 4.5H
RP507	R_PAK	4.4F 4.4G
RP508	R_PAK	4.4F 4.4G 4.5F
RP509	R_PAK	4.4F 4.4G
RP510	R_PAK	6.4F 6.4G 6.5F 6.5H
RP511	R_PAK	6.4F 6.4F 6.4G
RP512	R_PAK	6.4F 6.4G
RP513	R_PAK	6.4F 6.4G 6.5F 6.5H
RP514	R_PAK	4.4H 4.5H
RP515	R_PAK	4.4F 4.5G
RP516	R_PAK	4.4H
RP517	R_PAK	4.4F 4.4G
RP518	R_PAK	6.4H 6.5H 6.5H
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RP521	R_PAK	4.4F 4.4F 4.4G
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RP524	R_PAK	6.5F 6.5G 6.5H
RP525	R_PAK	4.4H 4.5H
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RP528	R_PAK	4.4H
RP529	R_PAK	4.4H 4.5H
RP530	R_PAK	4.4H
RP531	R_PAK	4.5F 4.5G
RP532	R_PAK	4.5F 4.5G
RP533	R_PAK	4.4F 4.4G 4.5G
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RP542	R_PAK	9.4F 9.4G
RP543	R_PAK	9.4F 9.4F 9.4G
RP544	R_PAK	9.4F 9.4G 9.5F
RP545	R_PAK	9.4F 9.4G
RP546	R_PAK	9.4F 9.4G 9.5G
RP547	R_PAK	9.4F 9.4G 9.5F
RP548	R_PAK	9.5F 9.5G
RP549	R_PAK	9.4F 9.4G

RP550	R_PAK	9.5F 9.5G
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RP552	R_PAK	9.4H
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RP558	R_PAK	9.4H
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RP566	R_PAK	11.5F 11.5G
RP567	R_PAK	11.4F 11.5G
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RP570	R_PAK	11.4F 11.4G 11.4G
RP571	R_PAK	11.4H
RP572	R_PAK	11.4F 11.4G 11.5F
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RP575	R_PAK	11.4H
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RP577	R_PAK	11.4H 11.5H
RP578	R_PAK	11.5H
RP579	R_PAK	11.4H 11.5H
RP580	R_PAK	11.5H
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TP7	TESTPOINT	29.4F
TP8	TESTPOINT	29.4F
TP9	TESTPOINT	29.3F
TP10	TESTPOINT	30.4B
TP11	TESTPOINT	31.4A
TP12	TESTPOINT	30.4B
U1	U_VREG_5PIN	28.2B
U2	U_SW_ANA_3257	18.1C 18.3C 18.4C
U3	U_PNLNK_SII1XX	21.1C
U4	U_VDEC_SAA71XX	22.1D 23.1B
U5	U_MEM_SD_DDR_X32	11.1D 11.4D 11.4E 11.5D 11.5E
U6	U_MEM_SD_DDR_X32	11.1B 11.4B 11.4C 11.5B 11.5C
U7	U_MEM_SD_DDR_X32	9.1D 9.4D 9.4E 9.5D 9.5E
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U9	U_MEM_SD_DDR_X32	9.1B 9.4B 9.4C 9.5B 9.5C
U10	U_MEM_SD_DDR_X32	6.1D 6.4D 6.4E 6.5D 6.5E
U11	U_MEM_SD_DDR_X32	4.1D 4.4D 4.4E 4.5D 4.5E
U12	U_MEM_SD_DDR_X32	4.1B 4.4B 4.4C 4.5B 4.5C
U13	U_MEM_SD_DDR_X32	6.1B 6.4B 6.4C 6.5B 6.5C
U14	U_PGOOD_ISL6536	27.3F
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U502	U_SWREG_H1P660X	31.4D
U503	U_SWREG_H1P660X	31.3D
U504	U_SWREG_ISL6569	31.3B
U505	U_COMP	29.2B
U506	U_SWREG_ISL6225	30.3E
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U513	U_MEM_SD_DDR_X32	10.1D 10.4D 10.4E 10.5D 10.5E
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Y2	XTAL	22.3C
Y3	XTAL_4PIN	15.5D

ASSEMBLY	P172_B00: NV38-U, 475/475, 256MB, DVI-I, VGA, VIDEO IN, HDTVOUT, PCIID:0x333, SSID:0x01C6
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